



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
2443 WARRENVILLE RD. SUITE 210
LISLE, IL 60532-4352

August 6, 2015

Mr. Thomas A. Vehec
Vice President
NextEra Energy Duane Arnold, LLC
3277 DAEC Road
Palo, IA 52324-9785

**SUBJECT: DUANE ARNOLD ENERGY CENTER—NRC INTEGRATED INSPECTION
REPORT 05000331/2015002**

Dear Mr. Vehec:

On June 30, 2015, 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 July 9, 2015, with Mr. P. Hansen, and other members of your staff.

Based on the results of this inspection, two NRC-identified findings of very-low safety significance were documented. The findings involved violations of NRC requirements. However, because of their very-low safety significance, and because the issues were entered into your Corrective Action Program, the NRC is treating the issues as Non-Cited Violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NVCs, 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 copies to the Regional Administrator, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector 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

-2-

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

Sincerely,

/RA/

Karla K. Stoedter, Chief
Branch 1
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000331/2015002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000331/2015002

Licensee: NextEra Energy Duane Arnold, LLC

Facility: Duane Arnold Energy Center

Location: Palo, IA

Dates: April 1, 2015, through June 30, 2015

Inspectors: L. Haeg, Senior Resident Inspector
R. Baker, Acting Senior Resident Inspector
J. Steffes, Resident Inspector
K. Carrington, Resident Inspector, Quad Cities
V. Myers, Health Physicist

Approved by: K. Stoedter, Chief
Branch 1
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY	2
REPORT DETAILS	4
Summary of Plant Status.....	4
1. REACTOR SAFETY	4
1R01 Adverse Weather Protection (71111.01).....	4
1R04 Equipment Alignment (71111.04)	5
1R05 Fire Protection (71111.05)	6
1R06 Flooding (71111.06)	8
1R11 Licensed Operator Requalification Program (71111.11)	8
1R12 Maintenance Effectiveness (71111.12).....	10
1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)	10
1R15 Operability Determinations and Functional Assessments (71111.15)	11
1R18 Plant Modifications (71111.18)	15
1R19 Post-Maintenance Testing (71111.19).....	16
1R22 Surveillance Testing (71111.22)	17
2. RADIATION SAFETY	18
2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02).....	18
2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)	18
2RS5 Radiation Monitoring Instrumentation (71124.05)	22
4. OTHER ACTIVITIES.....	23
4OA1 Performance Indicator Verification (71151).....	23
4OA2 Identification and Resolution of Problems (71152).....	23
4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153)	28
4OA6 Management Meetings	28
SUPPLEMENTAL INFORMATION.....	2
Key Points of Contact.....	2
List of Items Opened, Closed and Discussed	2
List of Documents Reviewed	2
List of Acronyms Used	8

SUMMARY

Inspection Report 05000331/2015002; 04/01/2015—06/30/2015; Duane Arnold Energy Center; Operability Determinations and Functional Assessments, and In-Plant Airborne Radioactivity Control and Mitigation.

This report covers a 3-month period of inspection by resident inspectors, and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors. These findings were considered Non-Cited Violations (NCVs) of U.S. Nuclear Regulatory Commission (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 April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," effective date December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. 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.

NRC-Identified and Self-Revealed Findings

Cornerstone: Barrier Integrity

- Green. A finding of very low safety significance and an associated NCV of Title 10, *Code of Federal Regulations* (CFR), Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to identify a degraded condition warranting compensatory measures/actions for assuring operability, as required by Section 4.3.12 of procedure EN-AA-203-1001, "Operability Determinations/Functionality Assessments." Specifically, on April 29 and April 30, 2015, the licensee failed to accomplish procedure EN-AA-203-1001 in a manner appropriate to the circumstances to assess equipment operability following the identification of an unexpected condition associated with the flow indication controller (FIC) on the "B" Standby Gas Treatment (SBGT) subsystem. Following completion of the surveillance testing, the "B" SBGT system was initially declared operable and fully qualified. In response to questions from the inspectors, the licensee subsequently declared the "B" SBGT system operable but degraded. The licensee entered the issues associated with the FIC into the Corrective Action Program (CAP) as condition report (CR) 02044191 and CR 02044702, and entered the inspectors' concerns into the CAP as CR 02052508.

The performance deficiency was determined to be more than minor safety significance in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because if left uncorrected, failing to properly assess operability as required by procedure could potentially result in incorrect/untimely operability conclusions, and the failure to take action to correct degraded or deficient conditions as required by the Technical Specifications. Specifically, the performance deficiency resulted in not properly assessing operability of the "B" SBGT subsystem that resulted in the failure to implement appropriate compensatory measures/actions to assure operability until final corrective actions were taken. The performance deficiency is associated with the Barrier Integrity attribute of systems, structures, and components and Barrier Performance associated with standby gas trains, which adversely affects the cornerstone objective. (To provide reasonable assurance that physical design barriers protect the public from radionuclide

releases caused by accidents or events.) The inspectors applied IMC 0609, Attachment 4, "Initial Characterization of Findings," issued June 19, 2012, to this finding. The inspectors answered "No" to all questions within Table 3, "[Significance Determination Process] SDP Appendix Router," and transitioned to IMC 0609, Appendix A, "The SDP for Findings At-Power," issued June 19, 2012. Per Exhibit 3, "Barrier Integrity Screening Questions," the inspectors determined that because the finding only represented a degradation of the radiological barrier function provided by the SBGT system, the finding screened as very-low safety significance (Green). This finding was associated with the cross-cutting aspect of conservative bias in the area of Human Performance, because the licensee did not use decision-making practices that emphasize prudent choices over those that are simply allowable. Specifically, the licensee's decision making practices in implementing EN-AA-203-1001 were non-conservative, and failed to identify the FIC-5828B process deviation as a degraded condition warranting compensatory measures/actions which resulted in incorrectly declaring the "B" SBGT subsystem operable and fully qualified. (H.14) (Section 1R15)

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a finding of very-low safety significance (Green), and an associated NCV of 10 CFR 20.1703, "Use of Individual Respiratory Protection Equipment," for the licensee's failure to supply breathing air in accordance with manufacturer requirements, which voided the National Institute for Occupational Safety and Health (NIOSH) approval of their self-contained breathing apparatuses (SCBAs). This issue was entered into the licensee's CAP as CR 2056826. Corrective actions included obtaining an air sample to be sent for analysis and ensuring that the required dew point would be maintained in compliance with the manufacture's specifications.

The performance deficiency was determined to be of more than minor safety significance in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the introduction of excessive moisture to the SCBA could have resulted in the sudden loss of all breathing air to the individual. The removal of the SCBA in this occurrence could have led the individual to be exposed to both radiological and non-radiological airborne hazards. The inspectors also reviewed IMC 0612, Appendix E, "Examples of Minor Issues," dated August 11, 2009, but did not identify any similar examples. The finding was assessed using IMC 0609, Appendix C, "Occupation Radiation Safety SDP," dated August 19, 2008, and determined to be of very-low safety significance (Green) because it was not an as-low-as-reasonably-achievable planning issue, there were no overexposures, nor substantial potential for overexposures, and the licensee's ability to assess dose was not compromised. The inspectors determined that the cause of the issue had a cross-cutting aspect of resources in the human performance area. Specifically, the licensee did not ensure that procedures for testing breathing air quality were in compliance with manufacturer requirements, and therefore, the NIOSH approval for the SCBAs was void. [H.1.] (Section 2RS3)

REPORT DETAILS

Summary of Plant Status

Duane Arnold Energy Center (DAEC) was operating at full power at the beginning of the inspection period. On May 2, 2015, the licensee lowered power to approximately 65 percent to perform power suppression testing and identify potential fuel defects. Following completion of the power suppression testing, DAEC began a modified gradual power ascension on May 4, 2015, and returned to full power on May 8, 2015. The plant remained at full power for the remainder of the inspection period with the exception of brief down-power maneuvers to accomplish rod pattern adjustments, or planned surveillance testing activities.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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 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 program procedures.

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

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the Updated Final Safety Analysis Report (UFSAR) for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also walked down underground bunkers/manholes subject to flooding that contained multiple train or multiple function risk-significant cables. The inspectors also reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one external flooding sample as defined in 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:

- Reactor core isolation cooling (RCIC) system with the high pressure coolant injection (HPCI) system out-of-service for scheduled maintenance;

- “A” standby gas treatment system (SBGT) subsystem with the “B” SBGT subsystem out of service for maintenance; and
- “A” residual heat removal service water (RHRSW) subsystem with the “B” RHRSW subsystem unavailable for scheduled maintenance.

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, 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.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

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

- Reactor building elevation 757', fire zones 2A, 2B, and 2D;
- Reactor building elevation 812';
- Reactor building elevation 828'; and
- Reactor building elevation 855'.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and implemented adequate compensatory measures for out-of-service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later

additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the attachment to this report, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed; that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's CAP. Documents reviewed are listed in the Attachment to this report.

These inspections constituted four routine resident inspector tour samples as defined in IP 71111.05–05.

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On June 9, and June 22, 2015, the inspectors observed fire brigade activations for simulated fires reported in the cable spreading room within the control building complex and the area above the control rod drive room in the southwest corner room area of the reactor building respectively. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were:

- Proper wearing of turnout gear and self-contained breathing apparatus;
- Proper use and layout of fire hoses;
- Employment of appropriate firefighting techniques;
- Sufficient firefighting equipment brought to the scene;
- Effectiveness of fire brigade leader communications, command, and control;
- Search for victims and propagation of the fire into other plant areas;
- Smoke removal operations;
- Utilization of pre-planned strategies;
- Adherence to the pre-planned drill scenario; and
- Drill objectives.

Documents reviewed are listed in the Attachment to this report.

These inspections constituted one annual fire protection sample as defined in IP 71111.05–05.

b. Findings

No findings were identified.

1R06 Flooding (71111.06)

.1 Underground Vaults

a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as a sump pump, the device was operable and level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following underground bunkers/manholes subject to flooding:

- MH104, MH105, MH106, MH107; and
- MH217, MH218, MH219, MH221.

Specific documents reviewed during this inspection are listed in the Attachment to this report.

These inspections constituted one underground vaults 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 June 11, 17, and 18, 2015, the inspectors observed the administration of emergency response organization tabletop exercises, credited for Drill/Exercise Performance—Performance Indicator opportunities, given to newly licensed Senior Reactor Operators. Additionally, on June 18, 2015, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas 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.

These inspections 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 during Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On May 2-3, 2015, the inspectors observed reactor power maneuvers from the control room to support power suppression testing. This was an activity that required heightened awareness or was 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 and Emergency Plan actions and notifications.

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.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Emergency service water system due to being close to exceeding unavailability hours; and
- Fuel pool cooling system.

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 Title 10, *Code of Federal Regulations* (CFR), Part 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:

- “A” moisture separator reheater drain valve troubleshooting;
- Work week 1517 involving residual heat removal (RHR), SBT, and switchyard activities;
- “A” main steam isolation valve, reactor protection system relay failure troubleshooting and resolution; and
- Work week 1525 involving condensate demineralizer septa change-out.

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 during this inspection are listed in the Attachment to this report.

These inspections constituted four maintenance risk assessment and emergent work control samples as defined in IP 7111.13–05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (7111.15)

a. Inspection Scope

The inspectors reviewed the following issues:

- Low-pressure coolant injection (LPCI) loop select relay failure;
- “C” RHR pump motor breaker failure to open;
- Drywell floor drain sump failure to pump down;
- “B” SBT flow indication controller (FIC) process value reading variance; and
- 1P70, RHR/core spray fill system pump, motor replacement.

The inspectors selected these potential operability issues based on the risk significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified, and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and UFSAR to the licensee's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors 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 five operability evaluation samples as defined in IP 71111.15-05.

b. Findings

Failure to Accomplish a Procedure for an Activity Affecting Quality in a Manner Appropriate to the Circumstances

Introduction: The inspectors identified a finding of very-low safety significance (Green), and an associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to identify a degraded condition warranting compensatory measures/actions for assuring operability, as required by Section 4.3.12 of procedure EN-AA-203-1001, "Operability Determinations/Functionality Assessments." Specifically, on April 29 and April 30, 2015, the licensee failed to accomplish procedure EN-AA-203-1001 in a manner appropriate to the circumstances to assess equipment operability following the identification of an unexpected condition associated with the FIC on the "B" SBT subsystem.

Description: On April 28, 2015, a control room operator identified that the process value for the "B" SBT FIC-5828B was reading 1438 cfm while the subsystem was in a standby (not in service) condition. Normally, the "A" and "B" FIC process values read 1000 cfm in a standby condition (lower limit of the controller zero). The operator informed the shift manager of the condition and the "B" SBT subsystem was declared inoperable due to the unknown impact of the FIC process value deviation. Following troubleshooting that did not reveal or identify the apparent cause of the process value deviation, the licensee performed Surveillance Test Procedure (STP) 3.6.4.3-01B, "B" SBT Operation with Heaters On." The test was completed and met all TS acceptance criteria for subsystem operation. The FIC-5828B responded as normal during the test, controlling flow of the "B" SBT subsystem. Although the process value remained at ~1438 cfm following the surveillance and no further corrective actions were taken, the licensee determined that the "B" SBT subsystem was operable and fully qualified and exited the TS required action statement. The licensee documented the unplanned inoperability, troubleshooting, testing, and declaration of operability within CR 02044191 with actions to calibrate FIC-5828B, and/or validate the standby process value.

On April 30, 2015, the same control room operator that initially identified the FIC-5828B issue on April 28th, again inspected the controller process value. The operator identified that the process value had changed from ~1438 cfm to ~1737 cfm. The operator again informed the shift manager of the condition. The "B" SBT system was considered operable and fully qualified, and STP 3.6.4.3-01B was again performed successfully to provide assurance of the operability status. The licensee documented the issue and operability determination in CR 02044702, but implemented an adverse condition monitoring plan to inspect the FIC-5828B process value more frequently until the scheduled replacement of the controller.

On May 1, 2015, the inspectors discussed the issues with operations management and challenged the operability determination of the "B" SBT subsystem based on the FIC process value deviation. Specifically, the inspectors were concerned that:

- The licensee had documented both the initial inoperability and subsequent operability assessments of the issue within the same condition report. This made

it unclear how procedural requirements of EN-AA-203-1001, "Operability Determinations/Functionality Assessments," were complied with since the procedure did not address the ability to restore operability within the immediate operability determination process;

- The licensee had declared the inoperable "B" SBT subsystem operable and fully qualified on April 28, 2015, but had only considered successful performance of STP 3.6.4.6-01B as the sole input to operability. The FIC-5828B process value deviation had not been corrected or evaluated as a potential degraded condition; and
- The licensee had not formally instituted a compensatory measure/action to monitor the deficient FIC value, upon discovery of the degraded condition, until final corrective actions were taken. Since the cause of the deviation was not understood, further degradation could have progressed into an inoperable condition and gone unrecognized.

The inspectors noted that EN-AA-203-1001, Section 4.3.12.E required, in part, that if an SSC is not operable, an assignment was to be initiated to complete a final corrective action, and to evaluate the SSC for a maintenance rule functional failure. On April 28, 2015, when the dayshift shift manager declared the "B" SBT system inoperable, the EN-AA-203-1001 procedural requirements to define the final corrective actions necessary (rework, repair, or use-as-is) to return a component to an operable status were not followed.

Following subsequent troubleshooting and successful completion of STP 3.6.4.3-01B, the licensee declared the "B" SBT subsystem operable and fully qualified, since all the TS acceptance criteria for subsystem operation were met. Flow controller FIC-5828B responded normally during the test, controlling flow of the "B" SBT subsystem at approximately 4000 cfm. The troubleshooting proved indeterminate for the cause of the FIC process value deviation. Again, the inspectors noted that Section 2.5 of EN-AA-203-1001 defined a "degraded condition," in part, as one in which the qualification of an SSC is reduced, such as with an equipment deficiency, which existed with FIC-5828B process value indicating an unexpected value of 1438 cfm when it should be indicating a value of 1000 cfm with the subsystem in standby. Attachment 2, Section 2.3 of EN-AA-203-1001 stated, in part, that an SSC is not necessarily considered operable solely because it meets its applicable surveillance criteria. Further, EN-AA-203-1001 Section 4.3.12.D required, in part, that if an operable but degraded condition is identified for an SSC, an assignment to the Engineering department for completion of final corrective action is to be initiated. On April 29, 2015, when the nightshift shift manager declared the "B" SBT subsystem operable and fully qualified, the EN-AA-203-1001 procedural requirements to identify a degraded condition and assign the action for the Engineering department to define the final corrective actions necessary to restore full qualification were not followed.

Additionally, EN-AA-203-1001 Section 4.7.1 stated, in part, that the shift manager may implement compensatory measures as interim actions (until final corrective actions to resolve the condition are completed) to restore inoperable SSCs to an operable but degraded status or to enhance or maintain an SSCs operable but degraded capability to perform its specified safety functions. A prompt operability determination is required when compensatory measures are used to restore inoperable SSCs to operable but degraded status. Section 4.7.10 stated, in part, that the shift manager shall ensure that an adverse condition monitoring plan is developed to ensure the compensatory

measures are implemented and that appropriate limit/alert values are included to prevent exceeding required values. These procedural requirements are not appropriate for operable and “fully “qualified” SSCs.

During control room operator rounds on April 30, 2015, when the FIC-5828B process value was identified to have changed from ~1438 cfm to ~1737 cfm, the “B” SBGT system STP 3.6.4.3-01B was again performed to provide assurance of the operability status. The STP was completed successfully, and the “B” SBGT subsystem was still considered operable and “fully qualified.” Although the shift manager now implemented an adverse condition monitoring plan to inspect the FIC-5828B process value more frequently until replacement of the controller, EN-AA-203-1001 procedural requirements to identify a degraded condition and implement actions to monitor continued operability were not accomplished commensurate with the conditions.

The licensee acknowledged the inspectors’ concerns, designated the FIC-5828B process value deviation as an operable but degraded condition, accounted for the adverse condition monitoring plan actions as compensatory measures/actions, and generated CR 02052508 to review the timeline and decision making process beginning on April 28, 2015. As a final corrective action, FIC-5828B was replaced, the “B” SBGT subsystem was tested, and the subsystem was declared operable and fully qualified on May 2, 2015.

Analysis: The inspectors determined that the failure to identify and designate the deviant FIC-5828B process value as a degraded condition warranting compensatory measures/actions for assuring operability, as required by Section 4.3.12 of procedure EN-AA-203-1001, “Operability Determinations/Functionality Assessments,” was a performance deficiency. The performance deficiency was determined to be more than minor safety significance in accordance with IMC 0612, Appendix B, “Issue Screening,” dated September 7, 2012, because if left uncorrected, failing to properly assess operability as required by procedure could potentially result in incorrect/untimely operability conclusions and the failure to take action to correct degraded or deficient conditions as required by the TS. Specifically, the performance deficiency resulted in not properly assessing operability of the “B” SBGT subsystem that resulted in the failure to implement appropriate compensatory measures/actions to assure operability until final corrective actions were taken.

The inspectors applied IMC 0609, Attachment 4, “Initial Characterization of Findings,” issued June 19, 2012, to this finding. The inspectors answered “No” to all questions within Table 3, “SDP Appendix Router,” and transitioned to IMC 0609, Appendix A, “The SDP for Findings At-Power,” issued June 19, 2012. Per Exhibit 3, “Barrier Integrity Screening Questions,” the inspectors determined that because the finding only represented a degradation of the radiological barrier function provided for the SBGT system, 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 conservative bias in the human performance cross-cutting area, and involved individuals using decision-making practices that emphasize prudent choices over those that are simply allowable. Specifically, the licensee’s decision making practices in implementing EN-AA-203-1001 were non-conservative, and failed to identify the FIC-5828B process deviation as a degraded condition warranting compensatory measures/actions which resulted in incorrectly declaring the “B” SBGT subsystem operable and fully qualified. [H.14]

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. On April 28, 29, and 30, 2015, the licensee implemented procedure EN-AA-203-1001, "Operability Determinations/ Functionality Assessments," to assess the operability of the "B" SGBT subsystem, an SSC required to be operable by TS. Section 2.5 defined what circumstances constitute a "degraded condition," and Section 4.3.12 stated that, if an operable but degraded condition is identified for an SSC, an assignment to the engineering department for completion of final corrective action is to be initiated.

Contrary to the above, on April 29 and 30, 2015, the licensee failed to identify a degraded condition affecting the FIC on the "B" SGBT subsystem, and failed to accomplish activities in accordance with procedure EN-AA-203-1001, "Operability Determinations/Functionality Assessments," Revision 19, to properly assess operability of the affected TS SSC and implement necessary procedural requirements following discovery of a degraded condition.

Corrective actions included declaring the "B" SGBT system operable but degraded, implementing a compensatory action for increased monitoring of indicated FIC Program display values to track the ongoing condition of the FIC, and planned a work order to replace the degraded FIC.

Because this violation was of very-low safety significance, and because the issue was entered into the licensee's CAP as CRs 02044702 and 02052508, consistent with Section 2.3.2 of the Enforcement Policy, it is being treated as an NCV.

(NCV 05000331/2015002-01, Failure to Accomplish a Procedure for an Activity Affecting Quality in a Manner Appropriate to the Circumstances)

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modifications:

- Temporary modifications in place greater than 90 days.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected systems. The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. 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 temporary 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:

- Testing of HPCI following maintenance window;
- HPCI steam supply valve packing leak;
- “B” SGBT operability run following system maintenance window; and
- “B” standby filter unit operability test following system work window.

These activities were selected based upon the SSC’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 TSs, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various U.S. Nuclear Regulatory Commission (NRC) generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the CAP, and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

These inspections constituted four post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 Surveillance Testing

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:

- Leakage surveillance test procedure with floor drain sump inoperable (reactor coolant system (RCS));
- "B" LPCI operability test (In-Service Test);
- Standby liquid control pump operability test and comprehensive pump test (Routine);
- Main steam isolation valves functional test (Routine);
- LPCI swing bus AC and DC undervoltage transfer test (Routine); and
- Quarterly bypass valves and turbine stop/control valves test (Routine).

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

- Did pre-conditioning 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 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.

These inspections constituted four routine surveillance testing samples, one in-service testing sample, and one RCS leak detection inspection sample, as defined in IP 71111.22, Sections–02 and–05.

b. Findings

No findings were identified.

2. **RADIATION SAFETY**

Cornerstone: Occupational Radiation Safety

2RS2 Occupational As-Low-As-Reasonably-Achievable Planning and Controls (71124.02)

This inspection constituted one complete sample as defined in IP 71124.02-05.

.1 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee's records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

The inspection activities supplemented those documented in Inspection Report (IR) 05000331/2014005, and constituted one complete sample as defined in IP 71124.03–05.

.1 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute of Safety and Health (NIOSH)/Mine Safety and Health Administration or have been approved by the NRC per 10 of the CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their NIOSH/Mine Safety and Health Administration certification, or any conditions of their NRC-approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus (SCBA) bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use. The inspectors selected several individuals qualified to use respiratory protection devices, and assessed whether they have been deemed fit to use the devices by a physician.

Due to limited in-field observations, the inspectors reviewed training curricula for users of respiratory protection devices and requested a demonstration of device use (donning, doffing, functional checks, and device malfunction) from selected individuals.

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (mask or hood, harnesses, air lines, regulators, air bottles, etc.), and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings). The inspectors reviewed the respirator vital components maintenance program to ensure on-site personnel assigned to repair the vital components have received the appropriate manufacturer-approved training.

b. Findings

Failure to Maintain Breathing Air Quality Requirements for Self-Contained Breathing Apparatuses

Introduction: The inspectors identified a finding of very-low safety significance (Green), and an associated NCV of 10 CFR 20.1703, "Use of Individual Respiratory Protection Equipment," for the licensee's failure to supply breathing air in accordance with manufacturer requirements, which voided the NIOSH approval of their SCBAs.

Description: An SCBA is a type of respirator that utilizes a pressurized air cylinder carried by the user and a full face piece respirator mask. These types of respirators may be used for various reasons including firefighting and entry into areas that are immediately dangerous to life and health. These respirators utilize regulators to reduce the high-pressure (>2000 pound per square inch) in the cylinder to a much lower pressure suitable for breathing. Too much moisture in the air contained in the cylinder could allow for water droplets to form. There are two main concerns with this: (1) these water droplets could cause accelerated corrosion of the cylinder and respirator

components; and (2) as water droplets pass through the regulator and are subject to a large pressure drop, the temperature of the water decreases and the water could freeze. Freezing of water in the regulator or clogging caused by corrosion products could cause a sudden loss of breathing air to the individual. One way to describe the amount of water in the air is by dew point, which is the temperature at which water in the air will begin to condense. The lower the dew point, the dryer the air is.

The licensee uses an on-site air compressor to fill cylinders for use with the FireHawk M7 Air Mask SCBA. Breathing air quality checks are performed on the air compressor every 6 months by a vendor laboratory to ensure that the compressor is supplying high-quality breathing air. Per the licensee's instruction, the specification limit for water (dew point) was set to less than -35 degrees Fahrenheit. The most recent air quality check that was performed on January 6, 2015, indicated a dew point of -44 degrees Fahrenheit, which passed the criteria set by the licensee.

Upon review of the instruction manual for the SCBA, the inspectors identified that the manufacturer required that the system be supplied with air with a dew point not to exceed -65 degrees Fahrenheit. Respirators used by licensees must be NIOSH-approved, and this approval is dependent upon the SCBA being used in accordance with manufacturer requirements. Since the licensee did not supply air to the SCBA cylinders with a dew point not to exceed -65 degrees Fahrenheit in accordance with the manufacturer requirements, the NIOSH approval was void.

Analysis: The inspectors determined that not supplying breathing air in accordance with manufacturer requirements was a performance deficiency, the cause of which was reasonably within the licensee's ability to foresee and correct, and should have been prevented. The finding was not subject to traditional enforcement since the incident did not result in a significant safety consequence, did not impact the NRC's ability to perform its regulatory function, and was not willful.

The performance deficiency was determined to be of more than minor safety significance in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the introduction of excessive moisture to the SCBA could have resulted in the sudden loss of all breathing air to the individual. The removal of the SCBA in this occurrence could have led the individual to be exposed to both radiological and non-radiological airborne hazards. The inspectors also reviewed IMC 0612, Appendix E, "Examples of Minor Issues," dated August 11, 2009, but did not identify any similar examples. The finding was assessed using IMC 0609, Appendix C, "Occupation Radiation Safety SDP," dated August 19, 2008, and determined to be of very-low safety significance (Green) because it was not an as-low-as-reasonably-achievable planning issue, there were no overexposures, nor substantial potential for overexposures, and the licensee's ability to assess dose was not compromised.

The inspectors determined that the cause of the issue had a cross-cutting aspect of resources in the human performance area. Specifically, the licensee did not ensure that procedures for testing breathing air quality were in compliance with manufacturer requirements, and therefore, the NIOSH approval for the SCBAs was void. [H.1]

Enforcement: Title 10 CFR 20.1703(a) states, in part, that the licensee shall use only respiratory protection equipment that is tested and certified by NIOSH. Contrary to the above, due to the excessive moisture content introduced into the SCBA cylinders, the

licensee was using SCBAs that had not been tested and certified by NIOSH. The last test which indicated a dew point not to exceed -65 degrees Fahrenheit was performed on June 30, 2014, and this non-conforming condition was ongoing at the time of this inspection. Corrective actions included obtaining an air sample to be sent for analysis and ensuring that the required dew point would be maintained in compliance with manufacture's specification. Since the finding was of very-low safety significance (Green), and has been entered into the licensee's CAP as CR 2056826, this violation is being treated as an NCV, consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000331/2015002-02, Failure to Maintain Breathing Air Quality Requirements for SCBAs).**

.2 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the UFSAR, TSs, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of SCBAs staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting SCBA air bottles to and from the control room, and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., on-site search and rescue duties) to assess whether control room operators and other emergency response, and radiation protection personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of SCBAs (including personal bottle change out). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types were available for use (i.e., in-field mask size and type match what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrected lenses) was available as appropriate.

The inspectors reviewed the past 2 years of maintenance records for select SCBA units used to support operator activities during accident conditions and designated as "ready for service" to assess whether any maintenance or repairs on any SCBA unit's vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically are the pressure-demand air regulator and the low-pressure alarm. The inspectors reviewed the on-site maintenance procedures governing vital component work to determine any inconsistencies with the SCBA manufacturer's recommended practices. For those SCBAs designated as "ready for service," the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up-to-date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.3 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold, and were properly addressed for resolution in the licensee's CAP. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity, and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS5 Radiation Monitoring Instrumentation (71124.05)

The inspection activities supplemented those documented in IR 05000331/2014003, and constituted a partial sample as defined in IP 71124.05–05.

.1 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors selected portable survey instruments that were in use or available for issuance and assessed calibration and source check stickers for currency as well as instrument material condition and operability.

The inspectors walked down area radiation monitors and continuous air monitors to determine whether they were appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local or remote control room indications) with actual area conditions for consistency.

The inspectors selected personnel contamination monitors, portal monitors, and small article monitors and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and licensee procedures.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Leakage performance indicator (PI) for the period from the second quarter 2014 through the first quarter 2015. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 31, 2013, were used. The inspectors reviewed the licensee's operator logs, RCS leakage tracking data, issue reports, event reports and NRC integrated inspection reports for the period of April 2014 through March 2015, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one RCS leakage 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: (1) identification of the problem was complete and accurate; (2) timeliness was commensurate with the safety significance; (3) 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; (4) 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 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of January 2015 through June 2015, although some examples expanded beyond those dates where the scope of the trend warranted.

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

This inspection constituted one semi-annual trend sample as defined in IP 71152-05.

b. Findings

No findings were identified.

.4 Selected Issue Follow-Up Inspection: Assessment of Corrective Actions to Address the Open Cross Cutting Issue in Human Performance-Consistent Process (H.13)

a. Inspection Scope

During the end-of-cycle assessment for the 2014 calendar year, the NRC staff identified a substantive cross-cutting issue in the area of human performance related to the use of a consistent, systematic approach to decision making. The results of this assessment were provided to the licensee in Report 05000331/2014001, "Annual Assessment Letter for Duane Arnold Energy Center," dated March 4, 2015, (ML15062A582). [H.13]

The specific focus for the inspectors' review was the time period from January 1, 2015, through June 30, 2015. The inspectors reviewed the licensee's implemented corrective actions, performance improvement efforts, and related documents in detail, to determine whether or not the corrective actions addressed generic implications, and to verify that they were appropriately focused to correct the human performance problems. In reviewing the licensee's human performance improvement efforts and related documents, the inspectors considered the evaluation and disposition of operability issues, and application of risk insights for prioritization of issues, and the evaluation and disposition of identified performance issues. The related documents reviewed included, but were not limited to, Root Cause Evaluations (RCE) addressing both the cross-cutting issue in H.13, and the potential cross-cutting issue in P.2, Nuclear Oversight Daily Quality Summary reports, Management Review Committee (MRC) initial CR screening quality feedback reports, fleet and site administrative control procedures (ACPs) revised per implemented corrective actions, as well as specific CAP entries related to the cross-cutting issue. The documents reviewed are listed in the Attachment.

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

b. Assessment and Observations

For the focus period noted above, the inspectors identified five findings, with four associated NCVs of very-low safety significance (Green), and one associated violation of low to moderate safety significance, where human performance was identified as the major causal factor for the findings. However, in all instances the cross-cutting aspect of H.13 was not identified as the major causal factor for the findings.

The inspectors noted that the licensee's RCE addressing the cross-cutting issue in human performance (H.13) identified one root cause with three contributing causes as listed below:

- RC1 – Less than adequate implementation of procedural requirements when screening condition reports for immediate operability determinations (IODs), risk significance categorization, and appropriate actions to address the conditions associated with equipment issues;
- CC1 – Less than adequate work order planning process Implementation on risk significant SSCs resulted in inoperability/non-functionality;
- CC2 – Lack of questioning attitude and inappropriate decision making resulted in not identifying operability/functionality issues with risk significant SSCs; and

- CC3 – No actions were taken based on the recent declining performance in H.13, which did not prevent the H.13 aspect from becoming a substantive cross-cutting issue opened in 2015.

The licensee has assigned two items as corrective actions to prevent recurrence (CAPR) for the identified root cause.

The first item, CAPR 01898931-14/26, to revise EN-AA-203-100, "Operability Determinations/Functionality Assessments," to incorporate the use of an IOD form, is actually the same corrective action developed from the RCE for the White finding associated with the RCIC turbine trip during STP 3.5.3-02 from August 2013. The RCIC turbine trip RCE identified very similar root and contributing causes: RC2 – Less than adequate immediate operability determination; and CC5 – Less than adequate decision making during the operability, CR, and work order screening. The licensee completed this CAPR during the second quarter of 2014, the same time frame as two of the four findings associated with the cross-cutting issue were identified, and has therefore taken credit for this corrective action as addressing improvements in using a consistent systematic approach for decision making. The inspectors reviewed the licensee's recently completed effectiveness review of IODs performed on risk-significant systems over a 6 month period from September 1, 2014, through February 28, 2015. The review identified 318 CRs initiated over the 6 month period on risk-significant systems. A sample of 35 CRs were randomly selected and assessed to determine if complete and accurate IODs were performed and properly documented. The review concluded that all 35 IODs were performed correctly. Additional enhancements associated with peer checks on the facility's ten most risk-significant systems were identified, documented in the CAP, and the results designated as a discussion topic during subsequent operation's department shift manager leadership meetings. The inspectors determined that this particular CAPR has proven effective in improving the IOD process for the facility's top ten risk-significant systems, and is sustainable as no incorrect IODs on these systems have occurred during the past four quarters.

The second item, CAPR 02015746-14, to create a metric for tracking changes made to the Corrective Action Program Coordinator (CAPCO) screenings, recommended by MRC or external entities, after the initial CAPCO reviews are completed. This metric will be reviewed bi-weekly. The results from the MRC reviews has been collected daily since being proceduralized by a revision to ACP 114.15, "Corrective Action Review (DCARB) and Screening." The MRC is currently performing the biweekly metric results review. The inspectors reviewed the results collected to date, from May 4, 2015, through June 19, 2015. The majority of changes recommended by MRC are associated with: (1) weak documentation of actions performed, and (2) change in the assignment of the responsible department for required actions. The inspectors also noted that approximately 1.5 percent of the CRs reviewed by MRC each week were required to be changed to a condition adverse to quality. Continued monitoring will be required to assess whether a positive change in initial CAPCO screening quality results.

The licensee has implemented several additional corrective actions to address the contributing causes identified by the RCE addressing the cross-cutting issue in human performance. These include:

- Modified site procedure PI-AA-103[DAEC], “Human Performance Program,” to institute an administrative “Procedure in Hand Day” as a year round action (performed bi-weekly by department/shop);
- Develop and administer a computer based training module for CAPCO and MRC qualified individuals on CR screening, risk significance categorization, and correction action development;
- Revise ACP 114.15, “Corrective Action Review (DCARB) and Screening,” to require a “devil’s advocate” present for all MRC and corrective action review board meetings, and include a structured review on the CR screening aid to ensure required evaluations are performed, or the basis for not performing an evaluation includes a reference to a standard; and
- Revise the “Plan of the Day” and “End of the Day” meeting agendas to include discussions by department/shop of activities performed to support the site’s new intrusiveness improvement initiative.

The corrective actions listed above have been implemented by the licensee, and data is being collected to assess the trend in personnel behaviors and the quality of work products completed. The computer based training module for CAPCO and MRC qualified individuals has been developed and will be rolled out in the 3rd quarter of 2015. The results from additional data collection efforts in the areas of maintenance work planning, and work package quality, already in place from previous corrective actions, are being used to provide feedback for improvements in those areas.

The licensee has continued to give an appropriately high-priority to the actions intended to address the open cross-cutting issue in human performance. The inspectors have continued to observe licensee meeting at all levels of supervision to determine the impact of the licensee’s efforts. The licensee conducted a site stand-down on January 5, 2015, which included a focus on procedure use and adherence and remaining in process while performing activities. The licensee has implemented an intrusiveness improvement effort for all site personnel, including the management team, which emphasizes an increased awareness of human performance fundamentals, the use of human performance tools, and ensure activities performed remain in-process.

During the focus period, in addition to the items that met the threshold for being documented in an inspection report, the inspectors reviewed issues in the CAP identified to have human performance as the primary or contributing cause, in an effort to identify whether the trend in human performance issues was apparent. The inspectors also analyzed the data presented in the licensee’s collection efforts to identify whether the trend in human performance issues related to the use of a consistent, systematic approach to making decisions was declining, improving, or steady. Since most of the corrective actions were only put in place during the second quarter of 2015, the amount of analyzed data available was limited. Based on the unavailability of results associated with the feedback on the process improvements implemented, additional monitoring would be required to assess whether the current trend in human performance is sustainable. The licensee acknowledged that sustained improvement in using a consistent systematic approach to making decisions had yet to be conclusively demonstrated. The inspectors will continue to evaluate the licensee’s efforts to improve human performance by reviewing the cumulative effect of their corrective actions.

c. Findings

No findings were identified.

.5 Selected Issue Follow-Up Inspection: Electronic Work Program Implementation

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized several corrective action items documenting issues with transition and implementation of the Electronic Work Program (EWP). The licensee, in an effort to save on resources, transitioned to a near paperless system to execute work at the site. The inspectors reviewed the identified issues for unrecognized impacts to site processes and procedures with a particular focus on their significance to plant risk. The inspectors noted that although numerous issues were identified as function of the transition to EWP, in general the site appropriately classified and dispositioned the discrepancies in accordance with their CAP process appropriate to their safety significance. The inspectors review did not identify any concerns, and found the CAP to be effective.

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 Detection, Evaluation, and Response to Elevated Fission Product Gasses Indicative of Fuel Defect

a. Inspection Scope

The inspectors reviewed the plant's response to the identification of elevated fission product gasses in the off-gas pre-treat system that were indicative of a fuel defect. The inspectors interviewed licensee personnel to determine whether fuel monitoring procedures were being implemented at the correct threshold, that actions were being developed to perform power suppression testing, and after suppression testing; plans to continue monitoring the issue. 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 July 9, 2015, the inspectors presented the inspection results to Mr. P. Hansen, Acting Plant General Manager, 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 inspection results for the areas of occupational as-low-as-reasonably-achievable planning and controls; in-plant airborne radioactivity control and mitigation; and radiation monitoring instrumentation with Mr. P. Hansen, Acting Plant General Manager, on June 25, 2015.

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

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Vehec, Site Vice President
P. Hansen, Acting Plant General Manager
K. Kleinheinz, Site Engineering Director
M. Davis, Emergency Preparedness and Licensing Manager
B. Simmons, 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

U.S. Nuclear Regulatory Commission

K. Stoedter, Chief, Reactor Projects Branch 1
M. Chawla, Project Manager, NRR

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000331/2015002-01	NCV	Failure to Accomplish a Procedure for an Activity Affecting Quality in a Manner Appropriate to the Circumstances (Section 1R15)
05000331/2015002-02	NCV	Failure to Maintain Breathing Air Quality Requirements for SCBAs (Section 2RS3)

Closed

05000331/2015002-01	NCV	Failure to Accomplish a Procedure for an Activity Affecting Quality in a Manner Appropriate to the Circumstances (Section 1R15)
05000331/2015002-02	NCV	Failure to Maintain Breathing Air Quality Requirements for SCBAs (Section 2RS3)

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 Adverse Weather Protection (71111.01)

- Abnormal Operating Procedure (AOP) 902; Flood; Revision 52
- AOP 903; Severe Weather; Revision 50
- OP-AA-102-1002; Seasonal Readiness; Revision 7
- CR 02033103; AOP 902 Flood Material Inventory Identification Problems
- CR 02017184; Discrepancy in Electronic Files for Flood Calculation
- CR 02040177; New External Event-US Geological Society Report Assessing Inundation Hazards
- CR 02047019; 1P132B Pump House Sump Pump Unable to Maintain Sump Level
- CR 01996514; 1P132A Fails to Move Water which Leads to Water in Pump House Basement
- WO 4032485401; Potential Missile Hazard Inspections
- WO 4031451701; 1VEF013B Turbine Building Air Ejector Area Exhaust Fan Belts Degraded and Need to be Replaced
- WO 4031451601; 1VEF013A Turbine Building Air Ejector Area Exhaust Fan Belts Degraded and Needs to be Replaced

1R04 Equipment Alignment (71111.04)

- OP-AA-102-1003; Guarded Equipment; Revision 7
- Operating Instruction (OI) 150A1; RCIC System Electrical Lineup; Revision 2
- OI 150A2; RCIC System Valve Lineup and Checklist; Revision 12
- OI 170; SBTG System; Revision 61
- OI 170A1; SBTG System Electrical Lineup; Revision 8
- OI 170A2; A SBTG System Valve Lineup and Checklist; Revision 4
- OI 416; RHRSW System; Revision 65
- OI 416A1; RHRSW System Electrical Lineup; Revision 6
- OI 416A2; A RHRSW System Valve Lineup and Checklist; Revision 11
- OI 416A6; RHRSW System Control Panel Lineup; Revision 5
- CR 02040699; V25-0014 In Contact with Insulation and Loose Insulation
- CR 02040705; Light In Contact with V33-0084 In RCIC RM
- CR 02041228; Protective Shield Bent Which Contains TE 2447A
- CR 02053371; Discrepancy Identified by NRC in OP-AA-102-1003 Guarded Equipment
- Drawing BECH-M124; Reactor Core Isolation Cooling System (Steam Side); Revision 62
- Drawing BECH-M158; Heating, Ventilation and Air Conditioning Air Flow Diagram for the Standby Gas Treatment System; Revision 46
- Drawing BECH-M146; Service Water System Pumphouse; Revision 88

1R05 Fire Protection (71111.05Q)

- ACP 1203.53; Fire Protection; Revision 11
- ACP 1412.2; Control of Combustibles; Revision 43
- ACP 1412.4; Impairments to Fire Protection Systems; Revision 74
- FP-AB-100; DAEC Fire Protection Program; Revision 2

- STP NS13F006; Structural Steel Fireproofing Inspection; Revision 19
- FHA-400; Fire Protection Program- Fire Hazards Analysis; Revision 17
- PFP-RB-757; Pre-Fire Plan Reactor Building El. 757; Revision 1
- PFP-RB-812; Pre-Fire Plan Reactor Building El. 812; Revision 1
- PFP-RB-828; Pre-Fire Plan Reactor Building El. 828; Revision 1
- PFP-RB-855; Pre-Fire Plan Reactor Building El. 855; Revision 1
- PFP-SOP [Standard Operating Procedure]-001; Revision 3
- PDA FRP 20005_2015-02; Fire Brigade Requal Cycle 2 – 2015; Revision 0
- PFP-CB-772; Pre-Fire Plan Control Building El. 772; Revision 1
- PFP-RB-716; Pre-Fire Plan Reactor Building El. 716; Revision 1
- EBD [EAL Bases Document] H; Hazards and Other Conditions Affecting Plant Safety; Revision 13
- CR 02052970; Fire Drill Observation/EAL Bases Discussion
- CR 02055938; NRC Fire Brigade Leader Observation-PPE Donning
- CR 02056267; Trend CR-Incorrect EAL Determination During Fire Drill

1R06 Flooding (71111.06)

- AOP-902; Flood; Revision 52
- ECPM SECT 4.4; Electrical Manhole Inspection Frequency; Revision 1
- WO 40308721; SUS99.09 Inspect Manholes MH104, MH105, MH106 and MH107
- BECH-E350<1>; Underground Duct Bank Layout; Revision 7
- BECH-E351<1>; Manhole Details; Revision 2
- CR 02054495; Water in Manholes MH219 and MH221

1R11 Licensed Operator Regualification Program (71111.11)

- OP-AA-100-1000; Conduct of Operations; Revision 15
- Licensed Operator Continuing Training; 50008; Training Program Description
- Simulator Exercise Guide PDA OPS 2015C-03S Revision 0
- 2015 Control Room Supervisor Tabletop Drill 2
- 2015 Control Room Supervisor Tabletop Drill 3
- 2015 Control Room Supervisor Tabletop Drill 6
- DAEC Emergency Notification Form; NOTE-05; June 11, 2015 at 1603
- DAEC Emergency Notification Form; NOTE-05; June 11, 2015 at 1629
- DAEC Emergency Notification Form; NOTE-05; June 17, 2015 at 1550
- DAEC Emergency Notification Form; NOTE-05; June 18, 2015 at 0920
- CR 02047875; Scheduled DEP Opportunity Not Taken During EOF Table Top
- Reactivity Management Plan; Downpower for Power Suppression Testing; dated May 2015

1R12 Maintenance Effectiveness (71111.12)

- Drawing BECH-M134; Fuel Pool Cooling and Cleanup System; Revision 46
- Drawing BECH-M135; Fuel Pool Filter Demineralizer System; Revision 22
- Duane Arnold Energy Center MSPI Basis Document; Revision 16
- DAEC Performance Criteria Basis Document- Essential Service Water SUS 54; Revision 22
- Unavailabilities by Startup System; dated May 1, 2014 to June 1, 2014
- Criteria- ESW Unavailability; dated September 2012 to April 2015
- CDE Unit Performance; dated January 2014 to December 2014
- System Parameter Information- ESW Train A Unavailability; dated October 2007 to September 2014

- System Parameter Information- ESW Train B Unavailability; dated September 2009 to September 2014
- SD-454; Emergency Service Water; Revision 7
- CR 02040682; Maint Rule/MSPI Data Discrepancy for ESW May 2014
- CR 01990573; 1P214A Fuel Pool Cooling Failed to Start
- CR 02039055; Review Status of Fuel Pool A Maintenance Rule Criteria
- CR 02043167; Fuel Pool Cooling Enters Maintenance Rule A(1) Status
- Performance Criteria Basis Document Fuel Pool Cooling and Cleanup System (FPC) SUS 35.00; Revision 3
- ER-AA-100-2002; Maintenance Rule Program Administration; Revision 2
- ER-AA-201-2001; System and Program Health Reporting; Revision 8
- OI 435; Fuel Pool Cooling System; Revision 67
- Document No. 19508-C-012; Integrity Assessment of Buried Pipe 6" HBD-025; Revision 0
- Report No.1200723.401; GWT/UT Assessments at Duane Arnold Energy Center; dated January 15, 2013
- NEI 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 7
- NUMARC 93-01; Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants; Revision 4A
- Alarm Response Procedure (ARP) 1C06A(D-1): "A" RHRSW/ESW Pit Lo Level; Revision 68
- CR 02040203; ESW Exited Maint. Rule Yellow Status
- DAEC Operations Logbook –Unavailabilities by Startup System- SUS ID = 54; dated May 1, 2014 to June 1, 2014
- DAEC Performance Criteria Basis Document- Essential Service Water SUS 54; Revision 2
- SD-454: Figure #1: 'A' Emergency Service Water; Revision 7
- NEI 99-02: Regulatory Assessment Performance Indicator Guideline; Revision 7
- Criteria- ESW Unavailability; dated July 2012 to March 2015

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

- Work Planning Guideline-1; Work Process Guideline; Revision 62
- Work Planning Guideline-2; Online Risk Management Guideline; Revision 67
- OP-AA-104-1007; Online Aggregate Risk; Revision 3
- WM-AA-1000; Work Activity Risk Management; Revision 4
- OP-AA-102-1003; Guarded Equipment; Revision 7
- Work Week 1525 Work Activity Risk Management (WARM) Summary and Weekly Probabilistic Risk Analysis (PRA)
- WO 4037232701; 1T013A A Condensate Demineralizer Septa Changeout
- CR 02056302; Dose Rates Higher Than Expected on A Condensate Demineralizer
- CR 02056592; Accumulated Dose Exceeded Dose Estimate for A Condensate Demineralizer Septa Changeout

1R15 Operability Determinations and Functionality Assessments (71111.15)

- EN-AA-203-1001; Operability Determinations/ Functionality Assessments; Revision 19
- OP-AA-100-1000; Conduct of Operations; Revision 14
- AD-AA-100-1004; Preparation, Revision, Review and Approval of Site-Specific Procedures; Revision 15
- CR 0203204902; Past Operability Review for E11A-K028A LPCI Loop Select Half Second Delay Relay Found Out of Tolerance and Unable to be Adjusted
- CR 0203204904; Apparent Cause Evaluation Report for E11A-K028A Found Out of Tolerance

- EC 275798; LPCI Loop Select Recirculation Riser Differential Pressure Indicating Switches Design Change Package; Revision 0
- Instruction Manual for Solid State Digital Timer Model SST-9203; Revision 4
- CR 01781882; 3.3.5.1-29 – Containment Spray Logic System Functional Test
- CR 02032049; E11A-K028A as Found Out of Tolerance. Unable to Adjust
- CR 02032390; E11A-K028A Relay Timing Issues
- CR 02032309; Unplanned LPCI LCO Following Expiration of Instrument Specification
- CR 02041705; FIC-5828B Controller Has Abnormal Indication on the 2nd Line
- CR 02044191; B SBTG Indicating Flow While Not in Operation
- CR 02044702; FIC-5828B “B” SBTG Train Flow Indication Controller
- CR 02048449; The DW Floor Sump Pumps Have Not Pumped in 24 Hours
- CR 02048628; LS3701 Meter/Relay #2 Does Not Pick Up It’s Attached Relay
- CR 02052508; B SBTG Controller IOD Lessons Learned
- OI 149; Residual Heat Removal System; Revision 149
- OI 151; Core Spray System; Revision 75
- WO 40300844-01; 1P070-M RHR, RHR & Core Spray Line Fill Pump Motor-Replacement
- MA-AA-202; Work Order Execution Process; Revision 9
- DAEC UFSAR Section 6.3.2.2.4; Low-Pressure Coolant Injection; Revision 21
- DAEC 10 CFR 50.59 Screening; Package # 4786
- DAEC 10 CFR 50.59 Screening; Package # 10842
- DAEC Calculation No. CAL-IELP-E91-05; Setpoint Calculation for Core Spray Discharge Line Monitoring (Keep Fill) Instrumentation Pressure Switches PS-2116B and PS-2136B; Revision 0
- CR 02053770; Work Order 40300844-01 Had Incomplete Steps
- CR 02054472; Questions Posed By the Resident Inspector Office

1R18 Plant Modifications (71111.18)

- OP-AA-101-1000; Clearance and Tagging; Revision 10
- OP-001; Operator Burden and Clearance Audit; Revision 63
- CR 02034403; 50.59 Screening Request for Clearance Hanging >250 Days
- CR 02034401; 50.59 Screening Request for Clearance Hanging >250 Days

1R19 Post-Maintenance Testing (71111.19)

- MD-024; Post Maintenance Testing Program; Revision 80
- MD-062; Work Order Task(s); Revision 10
- STP 3.6.4.3-01B; SBTG Unit B Operation; Revision 13
- STP 3.7.4-05B; Standby Filter Unit B Operation with Heaters On; Revision 6
- CR 02043385; HPCI Turbine Steam Supply Isolation Packing Leak
- CR 02043413; HPCI/RCIC Cooler Glycol Level Low
- CR 02043443; MO-2202 HPCI Steam Supply Packing Leak Worse After Adjustment
- CR 02043494; MO-2202 HPCI Steam Supply Valve Stem Galled
- CR 02043535; MO-2202 Packing Leak While Valve is Being Stroked
- WO 40382384; MO2202 HPCI Steam Supply Valve has a Packing Leak
- GMP-MECH-08; Section A; Packing Adjustment; Revision 23

1R22 Surveillance Testing (71111.22)

- ACP 107; Surveillance Tests; Revision 19
- STP 3.8.7-01; LPCI Swing Bus AC and DC Undervoltage Transfer Test; Revision 12
- STP 3.5.1-02B; B LPCI System Operability Test; Revision 17

- STP NS490003B; B RHR System Leakage Inspection Walkdown; Revision 3
- CR 02052858; KY4401 Tie Breaker 52-4401 Time Delay Relay Failed to Meet Time Requirement
- CR 02051228; Relays Found in Unexpected Conditions for RPS
- CR 02051759; Philosophy of RPS Test Box
- CR 02051558; Main Steam Isolation Valve Functional Test
- CR 02051898; MSIV Limit Switches CV4413 and 4421 Mounting Screws
- CR 02052964; RFO24 MSIV limit Switch Replacement Process Breakdowns
- STP 3.3.1.1-17; Main Steam Isolation Valve Functional Test; Revision 8
- STP 3.3.1.1-17; Main Steam Isolation Valve Functional Test; Revision 9
- Reactivity Management Plan; Downpower and Control Rod Sequence Exchange; dated June 2015
- STP 3.7.7-01; Bypass Valves Test; Revision 17
- STP NS930002; Main Turbine Stop and Combined Intermediate Valves Test; Revision 5
- STP 3.3.1.1-13; Turbine Control Valve EOC RPT Logic and RPS Instrument Functional Test; Revision 15
- STP 3.3.1.1-19; Functional Test of TSV Closure Input to RPS and RPT; Revision 18

2RS2 Occupational ALARA Planning and Controls (71124.02)

- DAEC 5-Year ALARA Plan 2014-2018; Revision 1

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

- Laboratory Report Compressed Air/Gas quality Testing; Various Dates
- ProCheck3 Test Results for SCBAs; Various Dates
- SCBA Audible Alarm Test Record; Various Dates
- Form HP-81; SCBA Checks; Various Dates
- ACP 1411.20; Respiratory Protection; Revision 36
- HPP 3106.04; Inspection, Maintenance and Quality Assurance of Respiratory Protection Equipment; Revision 29
- CR 01996355; Worker Was Issued PAPR W/O Having Hands-On Practical Qual
- CR 01840678; NRC-Potential Green Non-Cited Violation Respiratory Program
- CR 02023626; Alternate SCBA Mask Sizes Not Available in the Control Room
- CR 02003044; SAQH & Preps For NRC Inspection Under IP 71124.03
- Lesson Plan 100RES; Respiratory Protection Training; Revision 12
- Lesson Plan 10009; Self Contained Breathing Apparatus; Revision 12

2RS5 Radiation Monitoring Instrumentation (71124.05)

- HPP 3110.39; Calibration and Response Check of the Rados RTM 950 Portal Monitor; Revision 15
- HPP 3110.86; Calibration of the RADOS RTM-860 Whole Body Contamination Monitor; Revision 8
- HPP 3110.38; Calibration of Eberline PCM-2 Personnel Contamination Monitor; Revision 9

4OA1 Performance Indicator Verification (71151)

- NRC PI Data Calculation, Review and Approvals; RCS Leakage; dated 2nd Quarter 2014 through 1st Quarter 2015
- OI 920; Drywell Sump System; Revision 46

4OA2 Identification and Resolution of Problems (71152)

- RCE 02015746; NRC Cross-Cutting Issue H.13 Adverse Trend
- RCE 01898931; RCIC Turbine Trip During STP 3.5.3-02
- OA-AA-100-1002; Plant Status Control Management; Revision 0
- EN-AA-203-1001; Operability Determinations/ Functionality Assessments; Revision 19
- PI-AA-103[DAEC]; Human Performance Program (DAEC Specific); Revision 10
- PI-AA-103-1000; Human Performance Program Error Reduction Tools; Revision 3
- PI-AA-104-1000; Corrective Action; Revision 4
- ACP 1410.2; LCO Tracking and Safety Function Determination Program; Revision 33
- ACP 114.15; Corrective Action Review (DCARB) and Screening; Revision 6
- OP-AA-101-1000; Clearance and Tagging; Revision 10
- PI-AA-100-1005; Root Cause Analysis; Revision 12
- PI-AA-100-1007; Apparent Cause Evaluation; Revision 11
- CR 02044504; Near Miss of STP 3.3.5.1-01 Due to Scheduling Process Error
- CR 02056333; Trend – Large Number of Electronic QA Records with Errors
- CR 02046110; EWP Controlled Work Documents Versus Signature of Record
- CR 02042968; STP not Scheduled Properly
- CR 02044335; EWP Improvement Opportunity
- CR 02042177; Instrument and Control Work Order Planning not Ready for EWP Implementation
- CR 02046473; EWP Work Order Step Left Blank
- CR 02053262; EWP Replanning of Work Order
- MRC Feedback Process Metric Sheets; dated May 4, 2015 through June 19, 2015
- CR 02051529; MRC and MRC CARB Cancelled on 6/2/15
- CR 02040990; Increase in IOD Scoring Comments
- CR 02047974; AR01898931-24 ERF Review Comment
- Effective Review for CR 01898931-24; dated May 14, 2015
- Nuclear Oversight Duane Arnold Daily Quality Summary(s); dated April 7, 2015 through June 23, 2015
- MA-AA-100-1010; Work Package Planning Quality; Revision 5
- MD [Maintenance Directive]-066; Work Order Review Process; Revision 1
- PDA PIP CAP 004; CAPCO Screening Requirements and Risk Significant Determination Process; Revision 0

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

- STD-F-001; Failed Fuel Monitoring and Action Plan; Revision 15
- ACP 102.15; Fuel Reliability Program; Revision 14
- CR 02043600; Perform Benchmarking on Industry Practices on Fuel Leak Procedures
- CR 02043873; Increased Fission Product Gases Above Action Level 1
- CR 02043854; Offgas Sum of Six = 800 uCi/Sec
- CR 02043222; Nuclear Fuels Confirmed Action Level 1 Entry
- CR 02042277; Elevated Pre-Treat Xe-133 Analysis Result

LIST OF ACRONYMS USED

AC	Alternating Current
ACP	Administrative Control Procedure
ADAMS	Agencywide Document Access and Management System
CAP	Corrective Action Program
CAPCO	Corrective Action Program Coordinator
CAPR	Corrective Action to Prevent Recurrence
cfm	cubic feet per minute
CFR	Code of Federal Regulations
CR	Condition Report
DAEC	Duane Arnold Energy Center
EWP	Electronic Work Program
FIC	Flow Indication Controller
HPCI	High-Pressure Coolant Injection
IMC	Inspection Manual Chapter
IOD	Immediate Operability Determination
IP	Inspection Procedure
IR	Inspection Report
LPCI	Low-Pressure Coolant Injection
MRC	Management Review Committee
NCV	Non-Cited Violation
NIOSH	National Institute of Safety & Health
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
RCE	Root Cause Evaluation
RCS	Reactor Coolant System
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
SBGT	Standby Gas Treatment
SCBA	Self-Contained Breathing Apparatus
SDP	Significance Determination Process
SSC	Systems, Structures, and Components
STP	Surveillance Test Procedure
TS	Technical Specification
TSO	Transmission System Operator
UFSAR	Updated Final Safety Analysis Report

T. Vehec

-2-

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

Sincerely,

/RA/

Karla K. Stoedter, Chief
Branch 1
Division of Reactor Projects

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

Enclosure:
Inspection Report 05000331/2015002
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

DISTRIBUTION:

Kimyata MorganButler
RidsNrrDorLpl3-1 Resource
RidsNrrPMDuaneArnold Resource
RidsNrrDirslrib Resource
Cynthia Pederson
Darrell Roberts
Richard Skokowski
Allan Barker
Carole Ariano
Linda Linn
DRPIII
DRSIII
Jim Clay
Carmen Olteanu
ROPreports.Resource@nrc.gov

ADAMS Accession Number ML15219A175

☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive
To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII		RIII		RIII	
NAME	CPhilips for RNg:cl		KStoedter					
DATE	08/06/15		08/06/15					

OFFICIAL RECORD COPY