



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

September 19, 2014

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

**SUBJECT: DUANE ARNOLD ENERGY CENTER – NRC FOLLOW-UP INSPECTION
REPORT 05000331/2014010 AND NOTICE OF VIOLATION-**

Dear Mr. Vehec:

On September 3, 2014, the U.S. Nuclear Regulatory Commission (NRC) completed a follow-up inspection conducted during the week of April 21, 2014, at your Duane Arnold Energy Center (DAEC). The purpose of the inspection was to evaluate corrective actions for recent Non-Cited Violations (NCVs) associated with the discovery of submerged safety-related cables in embedded conduits. The enclosed report presents the results of this inspection, which were discussed on September 3, 2014, with Mr. G. Pry, and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions in your license. Within these areas, the inspection consisted of a selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has identified an issue that was evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that a violation is associated with this issue. This violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's web site at (<http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>).

The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in detail in the subject inspection report. The violation is being cited in the Notice because DAEC had failed to restore compliance, or demonstrate objective evidence of plans to restore compliance in a reasonable period following documentation of four associated NCVs issued from January 30, 2013, to December 5, 2013.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC's review of your response to the Notice will also determine whether further enforcement action is necessary to ensure your compliance with regulatory requirements.

T. Vehec

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In addition, if you disagree with the cross-cutting aspect assigned to the 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 Duane Arnold Energy Center.

In accordance with Title 10, *Code of Federal Regulations* (CFR), Section 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 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>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Kenneth G. O'Brien, Director
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000331/2014010;
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

NOTICE OF VIOLATION

NextEra Energy Duane Arnold
Duane Arnold Energy Center

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

During an NRC inspection conducted from April 21 2014, to April 25, 2014, with continued in-office review through September 3, 2014, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected.

Contrary to the above, from October 16, 2012, to July 10, 2014, the licensee did not assure that conditions adverse to quality were corrected. Specifically, the licensee failed to remove water from nine conduits containing safety-related cables and the cables were not qualified for continuous exposure to water. Safety-related components served by these cables were essential safety busses, residual heat removal pumps, both emergency diesel generator control and output power, and high pressure coolant injection.

This violation is associated with a (Green) Significant Determination Process (SDP) finding.

Pursuant to the provisions of 10 CFR 2.201, NextEra Energy Duane Arnold is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region III, and a copy to the NRC Resident Inspector at the Duane Arnold Energy Center, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation; VIO 05000331/2014010-01" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If

NOTICE OF VIOLATION

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personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

Dated this 23 day of September, 2014

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000331/2014010

Licensee: NextEra Energy Duane Arnold, LLC

Facility: Duane Arnold Energy Center

Location: Palo, IA

Dates: April 21 through September 3, 2014

Inspectors: D. Oliver, Senior Resident Inspector (Point Beach)
S. Shah, Reactor Engineer

Approved by: Kenneth G. O'Brien, Director
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000331/2014010, 04/21/2014 – 09/03/2014; Duane Arnold Energy Center (DAEC);
Problem Identification and Resolution

This report covers a 1-week period of announced onsite baseline inspection by Region III based engineering inspectors. With continued in-office review through September 3, 2014, one finding was identified by the inspectors. The finding was considered a cited violation of NRC regulations. The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Cross-cutting aspects were determined using IMC 0310, "Components Within the Cross Cutting Areas." Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. All violations of NRC requirements are disposition in accordance with the NRC's Enforcement Policy dated July 9, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

Green: The inspectors identified a finding of very low safety significance and an associated cited violation of Title 10, Code of Federal Regulations (CFR), Part 50, Appendix B, Criterion XVI, "Corrective Action," where the licensee failed to correct a condition adverse to quality following the discovery of water in several safety-related electrical conduits. Specifically, the licensee identified water in 23 embedded conduits containing cables for safety-related equipment. However, the licensee failed to take corrective action to remove water from nine of the conduits. This violation is being cited because the licensee had failed to restore compliance, or demonstrate objective evidence of plans to restore compliance in a reasonable period following documentation of four associated Non-Cited Violations (NCVs) issued from January 30, 2013 to December 5, 2013.

The performance deficiency was determined to be more than minor, because the finding was associated with the Mitigating Systems cornerstone's attribute of design control for ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, by not removing water from the conduits, cables were continuously exposed to water which is an adverse environment for which they were not qualified, designed or evaluated for, and will lead to cable degradation and could potentially cause cable failure. Cable failure would prevent the systems from carrying out their intended safety-related functions. The finding had a cross-cutting aspect in the area of Human Performance because the licensee did not operate and maintain equipment within design margins. Margins were not carefully guarded or changed only through a systematic and rigorous process. Special attention was not placed on maintaining defense-in-depth, and safety-related equipment. Specifically, the corrective actions developed by the licensee were insufficient to restore safety-related cables to their design environment to ensure that cables did not remain submerged. [H.6] (Section 40A2)

B. Licensee-Identified Violations

None

REPORT DETAILS

4. OTHER ACTIVITIES (OA)

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Mitigating Systems

.1 Selected Issue Follow-Up Inspection: Corrective Actions Following Discovery That Standby Diesel Generator (SBDG) Cables Were Submerged

a. Inspection Scope

The inspectors reviewed 18 corrective action process documents that were related to the follow-up actions to recent non-cited violations associated with the discovery of submerged safety-related cables in embedded conduits. The inspectors reviewed these documents to evaluate the effectiveness and timeliness of corrective actions taken and proposed related to the quality assurance and design control of safety-related cabling. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problems into the corrective action system. The list of specific corrective action documents that were sampled and reviewed by the inspectors is provided in the Attachment to this report.

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

b. Findings

(1) Failure to Remove Water From Conduits Containing Safety-Related Cables

Introduction: The inspectors identified a finding of very low safety significance (Green) and an associated cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to correct a condition adverse to quality following the discovery of water in several safety-related electrical conduits. Specifically, the licensee identified water in 23 embedded conduits containing cables for safety-related equipment. However, the licensee failed to take corrective action to remove water from nine of the conduits. This violation is being cited because the licensee had failed to restore compliance, or demonstrate objective evidence of plans to restore compliance in a reasonable period following documentation of four associated non-cited violations issued from January 30, 2013 to December 5, 2013.

Description: Thirty-four conduits containing cables for safety-related equipment and equipment important to safety were included in the licensee's Aging Management Program for Inaccessible and Embedded Cables (AMP). The scope of this AMP had been recently expanded to include conduits that contained low voltage cables as a result of the discovery of water in October 2012 in conduit 1K111, which contained cables that support the 'A' SBDG. These cables were replaced because of a failed cable in that conduit. As described in NRC Inspection Report 05000331/2013008, the licensee performed Apparent Cause Evaluation (ACE) 01812795-00, "Water Damaged SR [Safety-Related] Cables in the TB [Turbine Building] Floor at Elevation 734'," dated October 16, 2012. The ACE included an extent of condition evaluation to determine how

many conduits contained similar conditions of wetted and submerged cables. The licensee's extent of condition evaluation determined that all conduits associated with both SBDGs that were embedded in the Turbine Building's concrete base mat contained water in sufficient quantity to submerge the cables contained within the conduits. This discovery prompted the licensee to include all conduits that were embedded in the turbine and reactor building concrete base mats into the AMP.

As a result of the licensee's inspections of embedded conduits with the expanded scope of the AMP, the licensee discovered water in a total 23 of the 25 conduits inspected, with 9 conduits remaining to be inspected. Of the 23 conduits containing water, 11 conduits were subsequently closed following their inspection with water remaining in the conduits. Boroscope video taken by the licensee during inspections revealed that some conduits had retained enough water to completely submerge the cables contained within. Among the 11 conduits containing water, 9 contained safety-related cabling for:

- 4kV feeds to essential busses from both Standby Transformers;
- 4kV power cables for "A", "B" and "C" Residual Heat Removal pumps;
- 'A' SBDG low voltage control and 480 VAC cables;
- 'B' SBDG 4kV power cables; and
- High Pressure Coolant Injection low voltage control cables

In addition to the cables listed above, the licensee had determined that water had been removed from 12 of the conduits. However, during the week of April 21, 2014, the inspectors noted that while the licensee was performing inspections from the turbine building end of conduits that terminated in the reactor building, visible signs of water seepage was present at the conduit seals in the reactor building, indicating that water could be present in conduits that were determined by the licensee to be dry, or dewatered because they had only been inspected from one end.

Since October 2012 when the licensee initially discovered water in the conduits associated with the 'A' SBDG, the licensee has not restored the cables to compliance by removing the water and drying the cables out; nor has the licensee provided any objective plans to do so in the future. Rather the licensee has made several attempts to qualify cables that were not initially designed, procured, tested, or installed for submerged environmental conditions.

The issue of submerged cabling in the industry has been the subject of numerous NRC regulatory guidance documents, public meetings and NRC findings and violations stemming from a range of issues from failure to meet design control to actual events that resulted from these conditions.

Information Notice 2010-26, "Submerged Electrical Cables," dated December 2, 2010, stated the following:

- *"The NRC expects licensees to identify conditions that are adverse to quality for cables, such as long-term submergence in water. Upon discovery of a submerged condition, the licensee should take prompt corrective actions to restore the environment to within the cable's design specifications, immediately determine the operability of the cable(s) to perform its intended design function,*

and determine the impact of the adverse environment on the design life of the cable.”

- *“Cables not designed or qualified for, but exposed to, wet or submerged environments have the potential to degrade. Cable degradation increases the probability that more than one cable will fail on demand because of a cable fault, lightning surge, or a switching transient. Although a single failure is within the plant design basis, multiple failures of this kind would be challenging for plant operators. Also, an increased potential exists for a common-mode failure of accident mitigating system cables if they are subjected to the same environment and degradation mechanism for which they are not designed or qualified for.”*

There are numerous NRC publications, such as Information Notice 2010-26, “Submerged Electrical Cables” mentioned above, written on this issue and referenced by the licensee, which acknowledge the potential for safety-related cables to become submerged. These standards reflect expectations for licensees to detect this condition and to take prompt and effective corrective action in accordance with the licensee’s Corrective Action Program to prevent further degradation from being exposed to wetting or submergence lasting more than a few days. In the case of DAEC, the licensee had concluded that cables in wetted or submerged environments constitutes a nonconforming condition, but did not evaluate the continued degradation that occurs as the cables remain exposed to the adverse environment.

The inspectors concluded that by not removing the safety-related cables from the adverse environment, restoring the design conditions and evaluating degradation, the licensee had allowed a condition adverse to quality to persist. Additionally, the inspectors determined, by a review of the intended future actions and interviews with the licensee’s staff, that the licensee had no objective plans to remove the water from the conduits or dry the cables out to prevent further degradation.

Analysis: The inspectors determined that failure to correct a condition adverse to quality following the discovery of water in conduits containing safety-related cables was contrary to 10 CFR Part 50, Appendix B, Criterion XVI and was within the licensee’s ability to foresee and correct. Therefore, this was a performance deficiency. Specifically, the licensee identified water in nine conduits containing safety-related cables which were not qualified for continuous exposure to water and failed to take corrective action to remove the water from the conduits. The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems’ cornerstone’s attribute of design control for ensuring the availability, reliability, and capability of systems that respond to Initiating Events to prevent undesirable consequences. Specifically, by not removing water from the conduits, cables were continuously exposed to water, which is an adverse environment for which they were not qualified, designed or evaluated for, and will lead to cable degradation and could potentially cause cable failure. Cable failure would prevent the systems from carrying out their intended safety-related functions.

In accordance with IMC 0609, “Significance Determination Process,” Attachment 0609.04, “Initial Characterization of Findings,” Table 2, the inspectors determined that the finding affected the Mitigating Systems cornerstone. As a result, the inspectors determined that the finding could be evaluated using Appendix A, “The Significance Determination Process (SDP) for Findings At-Power,” Exhibit 2 for the Mitigating Systems cornerstone and determined that the finding is a deficiency affecting the design or qualification of a mitigating structures, systems and components (SSC), and that the

SSCs currently maintain their operability or functionality as applicable; and therefore, the issue is screened as having very low safety significance (Green).

The finding had a cross-cutting aspect in the area of Human Performance because the licensee did not operate and maintain equipment within design margins. Margins were not carefully guarded or changed only through a systematic and rigorous process. Special attention was not placed on maintaining defense-in-depth, and safety-related equipment. Specifically, the corrective actions developed by the licensee were insufficient to restore safety-related cables to their design environment to ensure that cables did not remain submerged. [H.6]

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. Contrary to the above, from October 16, 2012, to at least July 10, 2014, the licensee did not assure that conditions adverse to quality were corrected. Specifically, the licensee failed to remove water from nine conduits containing safety-related cables and the cables were not qualified for continuous exposure to water.

This violation is being cited as described in the Notice of Violation, which is enclosed with this inspection report. This is consistent with the NRC Enforcement Policy, Section 2.3.2.a.2, which states, in part, that the licensee must restore compliance within a reasonable period of time (i.e., in a timeframe commensurate with the significance of the violation) after a violation is identified. The performance deficiency was previously identified by the NRC on December 5, 2013, and documented as a Non-Cited Violation (NCV) along with another NCV for creating a procedure that allowed cables to remain submerged indefinitely. Associated NCVs relating to this performance deficiency were also issued from January 30, 2013, to December 5, 2013. (Inspection Reports 05000331/2012005, 05000331/2013002, and 05000331/2013008). The inspectors determined that the licensee had failed to restore compliance within a reasonable time following issuance of these NCVs, and failed to have objective plans to restore compliance in the future. **(VIO 05000331/2014010-01, "Failure to Remove Water From Conduits Containing Safety-Related Cables)**

4OA6 Management Meetings

.1 Exit Meeting Summary

On September 3, 2014, the inspectors presented the inspection results to Mr. G. Pry 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

G. Pry, Plant General Manager
M. Davis, Licensing/Emergency Preparedness (EP) Manager
M. Fairchild, Program Engineer Motors and Cables
K. Kleinheinz, Engineering Director
L. Swenzinski, Senior Licensing Engineer
D. Church, Manager Program Engineering
L. Nicholson, Nextera Fleet Licensing

NRC

R. Daley, Chief, Engineering Branch 3
C. Lipa, Chief, Reactor Project Branch 1
D. Oliver, Senior Resident Inspector, Point Beach Nuclear Plant
L. Haeg, Senior Resident Inspector, DAEC
J. Steffes, Resident Inspector, DAEC
C. Phillips, Project Engineer, Reactor Project Branch 1
R. Ng, Project Engineer, Reactor Project Branch 1
J. Gilliam, Reactor Engineer, Engineering Branch 3
M. Jeffers, Reactor Engineer, Engineering Branch 3

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

| | | |
|---------------------|-----|---|
| 05000331/2014010-01 | VIO | Failure to Remove Water From Conduits Containing Safety-Related Cables (Section 40A2) |
|---------------------|-----|---|

Closed

None

Discussed

None

LIST OF DOCUMENTS REVIEWED

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

CORRECTIVE ACTION PROGRAM DOCUMENTS ISSUED DURING INSPECTION

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|---|--------------------------------|
| 1812795 | Apparent Cause Evaluation for Failed Cables in 1K111 | 3 |
| 1960738 | NECR Conduit Seals Appear to be Damp | April 23, 2014 |
| 1961073 | Evaluate Potential Cable Effect from Damp Conduit Seals | April 24, 2014 |

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|--|--------------------------------|
| 1960358 | Megger Readings for 1P044A-M and Cable are Inconsistent | April 22, 2014 |
| 1960587 | Conduit 1K109 Inspection Results | April 22, 2014 |
| 1960223 | Debris Found in Conduit 1K112 During Inspection | April 22, 2014 |
| 1960222 | "A" SBDG 1K110, 1K111, & 1K112 Conduit Inspection Results: | April 21, 2014 |
| 1916178 | Untimely Corrective Actions in the Work Management Process | October 29, 2013 |
| 1917237 | Cable 1A0311-D is in a Wetted Environment | November 1, 2013 |
| 1915185 | Review Corrective Actions on Conduits | September 19, 2013 |
| 1939810 | Water Found in 2A204 "B" RHR Feeder Conduit | February 10, 2014 |
| 1968613 | Replacement of SBDG Cables | May 29, 2014 |
| 1965405 | A Cable in Conduit 1K112 Appears to Have a Split Jacket | May 13, 2014 |
| 1950040 | Evaluate Installing Level Alarms in Manholes | March 20, 2014 |
| 1950235 | WO40301105 (MH107) Sump Was on a Block Not Fully Pumping | March 20, 2014 |
| 1950277 | Cables for Standby XFMR Breakers Not Included in POD 1913616 | March 20, 2014 |
| 1967520 | Evaluate Opening the NECR SBDG Conduits for Inspection | May 22, 2014 |

1967523

Evaluate Opening the Reactor Building
Embedded Conduits

May 22, 2014

DRAWINGS

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|---|--------------------------------|
| BECH-E301 | Turbine Generator Building Embedded Conduit Below EL-734'0" | 5 |
| BECH-E302 | Reactor Building Embedded Conduit Below EL.716'-9" | 5 |

PROCEDURES

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|--|--------------------------------|
| ACP 1210.7 | Electrical and I&C Aging Management Programs | 5 |
| ACP 1210.8 | Electrical Cables and Connections Inspection Procedure | 1 |

REFERENCES

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|---|--------------------------------|
| N/A | Duane Arnold Inaccessible Cable Program – Actions Being Taken to Address OBD/OBN Conditions | April 21, 2014 |
| ECPM SECT 1.0 | Electrical Cable Program Description | 3 |
| ECPM SECT 2.0 | Electrical Cable Scoping and Population | 3 |
| ECPM SECT 3.0 | Cable Program Inspection/Test Population Selection | 2 |
| ECPM SECT 3.1 | Cable Program Inspection/Test List | 1 |
| ECPM SECT 4.1 | Cable Aging Management Review | 1 |
| ECPM SECT 4.2 | Cable Aging due to Ohmic Heating | 0 |
| ECPM SECT 4.3 | Adverse Localized Equipment Environments | 1 |
| ECPM SECT 4.4 | Electrical Manhole Inspection Frequency | 1 |
| ECPM SECT 4.5 | Electrical Cable Operability | 4 |
| ECPM SECT 4.6 | Test and Inspection Data Review and Trending | 1 |
| ECPM SECT 4.7 | Test and Inspection Methodology | 0 |
| ECPM SECT 4.8 | Action for Failed or Degraded Cables | 2 |
| ECPM SECT 4.9 | Susceptibility of Water Collection in Control Building Embedded Conduits | 0 |
| ER-AA-106 | Cable Condition Monitoring Program | 3 |
| N/A | Inaccessible 4160 V and 480 V Power Cable Test Results | March 31, 2014 |
| N/A | Embedded Conduit Inspection Results | March 31, 2014 |

VENDOR DOCUMENTS

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|--|--------------------------------|
| 12-021 | Condition Assessment of 5KV and 600 V Cables Removed from the Duane Arnold Nuclear Plant | February 29, 2012 |
| 12-111 | Evaluation of 600 V Cables with Damaged Insulation Removed from the Duane Arnold Nuclear Power Plant | August 2, 2012 |

WORK ORDERS

| <u>Number</u> | <u>Description or Title</u> | <u>Date or Revision</u> |
|----------------------|---|--------------------------------|
| 40235151 | SUS24.01 Inspect TURB BLDG Side of Conduits for Water | April 22, 2014 |

LIST OF ACRONYMS USED

| | |
|-------|---|
| ACE | Apparent Cause Evaluation |
| ADAMS | Agencywide Documents Access And Management System |
| AMP | Aging Management Program for Inaccessible and Embedded Cables |
| CFR | Code of Federal Regulations |
| DAEC | Duane Arnold Nuclear Center |
| IMC | Inspection Manual Chapter |
| NRC | Nuclear Regulatory Commission |
| PARS | Public Available Records System |
| SBDG | Standby Diesel Generator |
| SDP | Significance Determination Process |
| SSC | Structure, System, and Component |

T. Vehec

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In addition, if you disagree with the cross-cutting aspect assigned to the 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 Duane Arnold Energy Center.

In accordance with Title 10, *Code of Federal Regulations* (CFR), Section 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 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>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Sincerely,

/RA/

Kenneth G. O'Brien, Director
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000331/2014010;
w/Attachment: Supplemental Information

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| OFFICE | RIII | Via email | RIII | | | | | | |
| NAME | DJOliver:ls | | SOrth | | CLipa | | RCDaley | | KGOBrien |
| DATE | 09/15/14 | | 09/18/14 | | 09/19/14 | | 09/22/14 | | 09/23/14 |

OFFICIAL RECORD COPY

Letter to Thomas Vehec from Kenneth G. O'Brien dated September 23, 2014.

SUBJECT: DUANE ARNOLD ENERGY CENTER – NRC FOLLOW-UP INSPECTION
REPORT 05000331/2014010 AND NOTICE OF VIOLATION

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