



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

October 10, 2017

Mr. Dean Curtland
Director of Site Operations
NextEra Energy Duane Arnold, LLC
3277 DAEC Road
Palo, IA 52324-9785

**SUBJECT: DUANE ARNOLD ENERGY CENTER—NOTIFICATION OF NRC TRIENNIAL
FIRE PROTECTION BASELINE INSPECTION REQUEST FOR INFORMATION**

Dear Mr. Curtland:

On January 8, 2018, the U.S. Nuclear Regulatory Commission (NRC) will begin a Triennial Fire Protection Baseline Inspection at your Duane Arnold Energy Center. This inspection will be performed in accordance with Inspection Procedure (IP) 71111.05XT, the NRC's baseline National Fire Protection Association 805 Fire Protection IP.

The IP 71111.05XT requires the Fire Protection Inspection to review your actions to mitigate postulated events that could potentially cause loss of large areas of power reactor facilities due to explosions or fires. This requirement was implemented by the issuance of the Interim Compensatory Measures Order EA-02-026, Section B.5.b and the subsequent requirements of Title 10 of the *Code of Federal Regulations*, Part 50.54(hh)(2), which are collectively referred to as B.5.b requirements. During this inspection, the B.5.b requirements review will be performed during the first onsite week of the inspection starting on January 10, 2018.

The schedule for the onsite inspection activity is as follows:

- Information Gathering Visit: January 8–10, 2018;
- B.5.b Requirements: January 10–12, 2018; and
- Fire Protection Inspection: January 22–26, 2018, and February 5–9, 2018.

The purpose of the information gathering visit is: (1) to obtain information and documentation needed to support the inspection; (2) to become familiar with the Duane Arnold Energy Center Fire Protection Program, fire protection features, post-fire safe shutdown capabilities, and plant layout; and (3) to arrange administrative details, such as office space, availability of knowledgeable office personnel, and to ensure unescorted site access privileges.

Experience has shown that the baseline fire protection inspections are extremely resource intensive, both for the NRC inspectors and the licensee staff. In order to minimize the inspection impact on the site and to ensure a productive inspection for both organizations, we have enclosed a request for documents needed for the inspection. These documents have been divided into four groups.

- The first group lists information necessary to aid the inspection team in choosing specific focus areas for the inspection. It is requested that this information be provided to the lead inspector via mail or electronically no later than December 15, 2017.

- The second group also lists information and areas for discussion necessary to aid the inspection team in choosing specific fire protection focus areas for the inspection and to ensure that the inspection team is adequately prepared for the inspection. It is requested this information be available during the information gathering visit (January 8, 2018).
- The third group of requested documents consists of those items that the team will review, or need access to, during the inspection. Please have this information available by the first day of the second onsite inspection week (January 22, 2018).
- The fourth group lists the information necessary to aid the inspection team in tracking issues identified as a result of the inspection. It is requested that this information be provided to the lead inspector as the information is generated during the inspection. It is important that all of these documents are up to date and complete in order to minimize the number of additional documents requested during the preparation and/or the onsite portions of the inspection.

The lead inspector for this inspection is Alan Dahbur. We understand that our regulatory contact for this inspection is Tracy Weaver of your organization. If there are any questions about the inspection or the material requested, please contact the lead inspector at (630) 829-9810 or via e-mail at alan.dahbur@nrc.gov.

This letter will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

However, the enclosed report contains Security-Related Information, so the enclosed report will not be made publically available in accordance with 10 CFR 2.390(d)(1). If you choose to provide a response that contains Security-Related Information, please mark your entire response "Security-Related Information—Withhold from public disclosure under 10 CFR 2.390" in accordance with 10 CFR 2.390(d)(1) and follow the instructions for withholding in 10 CFR 2.390(b)(1). The NRC is waiving the affidavit requirements for your response in accordance with 10 CFR 2.390(b)(1)(ii).

Sincerely,

/RA/

Alan Dahbur, Senior Reactor Inspector
Engineering Branch 3
Division of Reactor Safety

Docket No. 50–331
License No. DPR–49

Enclosure:
Fire Protection Inspection Document Request

cc: Distribution via LISTSERV®

Letter to Dean Curtland for Alan Dahbur dated October 10, 2017

SUBJECT: DUANE ARNOLD ENERGY CENTER—NOTIFICATION OF NRC TRIENNIAL
FIRE PROTECTION BASELINE INSPECTION REQUEST FOR INFORMATION

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FIRE PROTECTION INSPECTION DOCUMENT REQUEST

2. Operations
 - a. Operating procedures to achieve and maintain nuclear safety performance criteria from the control room, with a postulated fire in the selected fire areas.
 - b. Operating procedures to achieve and maintain nuclear safety performance criteria from outside the control room, with a postulated fire in the control room, cable spreading room, or any area requiring recovery actions (other than recovery actions performed in the control room or primary control stations).

II. Information Requested During the Information Gathering Visit (January 8, 2018):

The following information is requested to be provided to the inspection team during the onsite information gathering visit. Except for Item 7, it is requested that the following information be provided on three sets of CDs (searchable, if possible) with the B.5.b Mitigating Strategies information (Item 7) provided on one separate CD.

1. One set of hard-copy documents for facility layout drawings which identify plant fire area delineation; areas protected by automatic fire suppression and detection; and locations of fire protection equipment.
2. Design and Licensing Basis Documents:
 - a. List of post-fire safe shutdown components (i.e., safe shutdown equipment list).
 - b. Fire protection system design basis document.
 - c. List of applicable NFPA codes and standards and issuance dates (i.e., codes of record).
 - d. List of deviations from (a) NFPA codes of record, or (b) NFPA 805 Fundamental Fire Protection Program and design elements (i.e., NFPA 805, Chapter 3).
 - e. NFPA Compliance Review Report.
 - f. Report or evaluation that compares the Fire Protection Program to the U.S. Nuclear Regulatory Commission (NRC) Branch Technical Position 9.5-1 Appendix A.
 - g. Copy of licensee submittals and NRC Safety Evaluation Reports that are specifically listed in the facility operating license for the approved Fire Protection Program.
 - h. Copy of NRC Safety Evaluation Reports that form the licensing basis for the Fire Protection Program and post-fire nuclear safety capability.
 - i. Copy of NRC-approved exemptions for plant fire protection and post-fire nuclear safety capability features.

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- j. Copy of exemption requests submitted but not yet approved for plant fire protection and post-fire nuclear safety capability features.
 - k. List of nuclear safety capability design changes completed in the last 3 years (including their associated Title 10 of the *Code of Federal Regulations* (CFR), Part 50.59 and NFPA 805 plant change evaluations).
3. General Plant Design Documents (available onsite for inspector review)
- a. Piping and instrumentation diagrams (P&IDs) and legend list for components used to achieve and maintain nuclear safety performance criteria for: (C-size paper drawings)
 - i. Fires outside the main control room; and
 - ii. Fires in areas requiring recovery actions at other than primary control stations.
 - b. P&IDs and legend list for fire protection systems, including fire water supply, water suppression sprinklers & deluge, and carbon dioxide and Halon systems (C-size paper drawings).
 - c. Yard layout drawings for underground fire protection buried piping (C-size paper drawings).
 - d. AC and DC electrical system single line diagrams, from off-site power down to the highest safety-related bus level (typically 4kV, EDG bus) (C-size paper drawings).
 - e. Single line diagrams for motor control centers that supply post-fire nuclear safety component loads (only for selected fire areas) (C-size paper drawings).
 - f. Equipment location drawings which identify the physical plant locations of post-fire nuclear safety capability equipment (C-size paper drawings).
 - g. Logic diagrams showing the components used to achieve and maintain hot standby and cold shutdown.
4. Operations
- a. List of calculations and engineering analyses, studies, or evaluations for the nuclear safety capability methodology.
 - b. For recovery actions, provide the following:
 - i. Manual Action Feasibility Study;
 - ii. Operator Time Critical Action Program;
 - iii. Time lines for time-critical recovery actions; and
 - iv. Time line validations.
 - c. Thermal hydraulic calculation or analysis that determines the time requirements for time-critical manual operator actions.

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5. Administrative Control, Oversight, and Corrective Action Programs
 - a. Corrective actions associated with operator actions to achieve and maintain post-fire nuclear safety performance criteria.
 - b. List of open and closed condition reports for the fire protection system for the last 3 years.
 - c. List of open and closed condition reports for post-fire nuclear safety capability issues for the last 3 years. This includes issues affecting the nuclear safety capability analysis, fire hazards analysis, NFPA 805 design basis, fire risk evaluations, plant change evaluations, post-fire operating procedures and/or training, timeline evaluations for operator actions, and supporting engineering evaluations, analysis, or calculations.
 - d. List of procedures that control the configuration of the Fire Protection Program, features, and post-fire nuclear safety capability methodology and system design.

6. General Information
 - a. A listing of abbreviations and /or designators for plant systems;
 - b. Organization charts of site personnel down to the level of fire protection staff personnel; and
 - c. A phone list for onsite personnel.

7. B.5.b Mitigating Strategies Documents (provided on one separate compact disk on January 10, 2018)
 - a. List of all changes to regulatory commitments made to meet the requirements of 10 CFR 50.54(hh)(2).
 - b. List of procedures and guidelines that were revised or generated to implement the mitigating strategies. These could be extensive damage mitigation guidelines, severe accident management guidelines, emergency operating procedures, abnormal operating procedures, etc.
 - c. A matrix that shows the correlation between the mitigation strategies identified in Nuclear Energy Institute 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guideline," issued December 2006, and the site-specific procedures or guidelines that are used to implement each strategy.
 - d. List of engineering evaluations or calculations that were used to verify the engineering bases for the mitigating strategies.
 - e. P&ID and legend list or simplified flow diagrams for systems relied upon in the mitigating strategies. These could be the type used for training (C-size paper drawings).

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- f. List of modification packages or summary descriptions of modifications with simplified drawings, for necessary facility changes to implement the mitigating strategies.
- g. List of routine tests, surveillances, and preventive maintenance for equipment and tools needed to implement 10 CFR 50.54(hh)(2) strategies.
- h. For equipment and tools needed to implement 10 CFR 50.54(hh)(2) strategies, provide the following:
 - i. Procedures for inventory and inspection; and
 - ii. Most recent inspection and inventory results.
- i. List of 10 CFR 50.54(hh)(2) strategies, if any, which have implementing details that differ from that documented in the submittals or the Safety Evaluation Report.
- j. Site general arrangement drawings that show the majority of buildings and areas referenced in 10 CFR 50.54(hh)(2) documents.
- k. Training records, training matrix, and lesson plans related to 10 CFR 50.54(hh)(2).
- l. Copies of memoranda of understanding (e.g., with local fire departments) required to implement any mitigating strategies.

8. Onsite Discussions:

In addition, during the information gathering visit, it is requested that licensee staff be available for the following:

- a. Informal discussion on plant procedures operators would use in the event of fire or explosion (including B.5.b mitigation strategies) and under what conditions would the plant be shutdown using alternative shutdown methodology;
- b. Informal discussion on the plant's safe shutdown cable routing database and the plant-wide cable routing database, as applicable; and
- c. A tour of fire areas.
- d. A discussion of scheduling of fire drills which may occur during the inspection so that the inspectors may be able to observe a fire drill, if possible.

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III. Information Requested to be Available on first Day of the Second Onsite Inspection Week (January 22, 2018):

The following information is requested to be provided on the first day of inspection. It is requested that this information be provided on three sets of CDs (searchable, if possible).

1. Classic Fire Protection
 - a. Copy of Fire Protection Program implementing procedures (e.g., administrative controls, surveillance testing, and fire brigade).
 - b. List of calculations and engineering analyses, studies, or evaluations for the fire protection system, including the fire water system.
 - c. Hydraulic calculations or analyses for fire protection water system.
 - d. Copy of the evaluation or analysis of the effects of fire suppression activities on the ability to achieve the nuclear safety performance criteria (only for selected fire areas), including:
 - i. An automatic or manually actuated suppression system, due to a fire in a single location, will not indirectly cause damage to the success path; and
 - ii. Inadvertent actuation or rupture of a suppression system will not indirectly cause damage to the success path; and
 - iii. Demonstration of adequate drainage for areas protected by water suppression systems;
 - iv. Hydrostatic rating of any floor penetration seals installed within the fire areas that are credited with keeping water from leaking into fire areas below.
 - e. Pre-fire plans for selected fire areas.
 - f. List of fire protection system design changes completed in the last 3 years (including their associated 10 CFR 50.59 and NFPA 805 plant change evaluations).
 - g. List of fire protection system NFPA 805 engineering equivalency evaluations completed in the last 3 years.
 - h. Copy of any test, surveillance, or maintenance procedure (current revision), including any associated data forms, for any requested "last performed" test, surveillance, or maintenance.
2. Electrical
 - a. Nuclear safety circuit coordination analysis for fuse and breaker coordination of nuclear safety capability components (only for selected fire areas).
 - b. Administrative or configuration control procedures that govern fuse replacement (e.g., fuse control procedures).

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- c. Maintenance procedures that verify breaker over-current trip settings to ensure coordination remains functional, for post-fire nuclear safety capability components.
 - d. Last surveillance demonstrating operability of those components operated from the primary control stations.
 - e. Schematic or elementary diagrams for circuits to be reviewed (C-size paper drawings).
 - f. Cable routing for components and equipment credited for post-fire nuclear safety capability systems and components (only for selected fire areas).
 - g. List of post-fire nuclear safety capability system and component design changes completed, in the last three years.
 - h. List of identified fire induced circuit failure analyses (only for selected fire areas).
3. Operations
- a. For safe shutdown equipment and tools, provide the following:
 - i. Procedure for inventory and inspection; and
 - ii. Most recent inspection and inventory results.
 - b. List of procedures that implement Cold Shutdown Repairs.
 - c. For Cold Shutdown Repairs, provide the following:
 - i. Procedure for inventory and inspection (i.e., needed tools, material, etc.); and
 - ii. Most recent inspection and inventory results.
 - d. List of licensed operator Job Performance Measures for operator actions required to achieve and maintain post-fire nuclear safety performance criteria.
 - e. List of non-licensed operator training associated with non-licensed operator actions to achieve and maintain post-fire nuclear safety performance criteria (including Job Performance Measures, in-field training walkdowns, simulations, or initial qualification).
 - f. Lesson plans for post-fire nuclear safety capability training for licensed and non-licensed operators.
 - g. For Radio communications, provide the following:
 - i. Communications Plan for firefighting and post-fire safe shutdown manual actions;
 - ii. Repeater locations;
 - iii. Cable routing for repeater power supply cables;

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- iv. Radio coverage test results; and
 - v. Radio Dead Spot locations in the plant.
 - h. Environmental and habitability evaluations for post-fire operator actions (temperature, smoke, humidity, SCBAs, etc.).
- 4. Administrative Control, Oversight, and Corrective Action Programs
 - a. Self-assessments, peer assessments, and audits of fire protection activities for the last 3 years.
 - b. Self-assessments, peer assessments, and audits of post-fire nuclear safety capability methodology for the last 3 years.
 - c. List of fire event analysis reports for the last 3 years.
- 5. Any updates to information previously provided.

IV. Information Requested to Be Provided Throughout the Inspection:

- 1. Copies of any corrective action documents generated as a result of the inspection team's questions or queries during this inspection.
- 2. Copies of the list of questions submitted by the inspection team members and the status/resolution of the information requested (provided daily during the inspection to each inspection team member).

If you have questions regarding the information requested, please contact the lead inspector