



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

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

February 16, 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 - REQUEST FOR INFORMATION FOR AN  
NRC TRIENNIAL BASELINE DESIGN BASES ASSURANCE INSPECTION  
(TEAM): INSPECTION REPORT 05000331/2017008

Dear Mr. Curtland:

On May 1, 2017, the U. S. Nuclear Regulatory Commission (NRC) will begin a Triennial Baseline Design Bases Assurance Inspection (Team) at your Duane Arnold Energy Center. This inspection will be performed in accordance with NRC Baseline Inspection Procedure 71111.21M.

The Design Bases Assurance Inspection focuses on the design, maintenance, and operation of risk-significant components with low margin, or associated with an accident scenario, or a specific system. The inspection also monitors the implementation of modifications to structures, systems, and components as modifications to one system may also affect the design bases and functioning of interfacing systems as well as introduce the potential for common cause failures. The components and modifications to be reviewed during this baseline inspection will be identified as part of the preparation for the inspection and finalized during the in-office preparation week that occurs prior to the first onsite inspection week. In addition, operating experience issues, associated with the component samples, will also be selected for review. The inspection team may request scenarios to be performed on the simulator. This request would require support from your simulator staff to validate scenarios, simulator time, and a crew to perform the actions which would most likely occur during the second onsite week. The team will work closely with your staff early on during the inspection process to ensure this activity can be accomplished with minimal impact.

The inspection will include 2 weeks onsite. The inspection team will consist of six NRC inspectors who will focus on engineering/maintenance/operations of the selected components and modifications. The current inspection schedule is as follows:

Preparation week: April 24 – 28, 2017

Onsite weeks: May 1 – 5, 2017; and May 15 – 19, 2017.

Experience with previous baseline design/modification inspections of similar depth and length has shown that this type of inspection is 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 parties, we have enclosed a request for information needed for 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. Insofar as possible, this information should be provided electronically to the lead inspector. The information request has been divided into three groups:

- The first group lists information necessary for our initial inspection scoping activities. This information should be provided to the lead inspector no later than March 13, 2017. By April 7, 2017, the lead inspector will communicate the initial selected set of approximately seven components and seven modifications.
- The second group of documents requested is those items needed to support our in-office preparation activities. This set of documents, including the calculations associated with the initially selected components and the modification packages associated with the initially selected modifications, should be provided to the lead inspector at the Regional Office no later than April 19, 2017. During the in-office preparation activities, the team may identify additional information needed to support the inspection.
- The last group includes the additional information above as well as plant specific reference material. This information should be available to the team onsite on May 1, 2017. It is also requested that corrective action documents and/or questions developed during the inspection be provided to the lead inspector as the documents are generated.

The lead inspector for this inspection is Mr. James Neurauter. We understand that our licensing contact for this inspection is Ms. Tracy Weaver of your organization. If there are any questions about the inspection or the material requested in the enclosure, please contact the lead inspector at 630-829-9828 or via e-mail at [James.Neurauter@nrc.gov](mailto:James.Neurauter@nrc.gov).

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, Control Number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget Control Number.

D. Curtland

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This letter and its enclosure 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."

Sincerely,

**/RA/**

James E. Neurauter, Senior Reactor Inspector  
Engineering Branch 1  
Division of Reactor Safety

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

Enclosure:  
Design Bases Assurance Inspection  
Document Request

cc: Distribution via LISTSERV®

## DESIGN BASES ASSURANCE INSPECTION DOCUMENT REQUEST

**Inspection Report:** 05000331/2017008

**Inspection Dates:** May 1 – May 5, 2017; and May 15 – May 19, 2017.

**Inspection Procedure:** 71111.21M, “Design Bases Assurance Inspection (Team)”

**Lead Inspector:** James E. Neurauter, Senior Reactor Inspector, DRS  
630-829-9828  
[James.Neurauter@nrc.gov](mailto:James.Neurauter@nrc.gov)

### ***I. Information Requested for Selection of Components/Modifications***

The following information is requested by March 13, 2017, or sooner, to facilitate inspection preparation. If you have any questions regarding this information, please call the lead inspector as soon as possible. (Please provide the information electronically in “pdf” files, Excel, or other searchable formats, preferably on some portable electronic media (e.g., CD-ROM, DVD, etc.). The portable electronic media should contain descriptive names, and be indexed and hyperlinked to facilitate ease of use. Information in “lists” should contain enough information to be easily understood by someone who has knowledge of light water reactor technology).

1. Risk-ranking of top 250 components from your site specific probabilistic safety analysis (PSA) sorted by Risk-Achievement Worth. Include values for Birnbaum Importance, Risk-Reduction Worth, and Fussell-Veseley (as applicable).
2. Risk-ranking of top 100 containment-related components (i.e., Large Early Release Frequency) from your site specific PSA sorted by Risk-Achievement Worth. See examples in Inspection Manual Chapter 0609, Appendix H, Table 4.1, “Containment-Related SSCs Considered for Large Early Release Frequency Implications.”
3. Provide a list of the top 200 cut-sets from your PSA.
4. Provide a list of the top 100 cut-sets for each initiator modeled in the PSA that contributes more than 5 percent to the baseline plant core damage frequency.
5. Copies of PSA “system notebooks” and latest PSA summary document.
6. Provide copies of the emergency operating procedures.
7. If you have an External Events or Fire PSA Model, provide the information requested in Items 1 and 2 for external events and fire. Provide narrative description of each coded event (including fire, flood zone description).
8. Electronic copy of the site Individual Plant Examination of External Events, if available.
9. Any pre-existing evaluation or list of components and associated calculations with low design margins, (i.e., pumps closest to the design limit for flow or pressure, diesel generator close to design required output, heat exchangers close to rated design heat removal etc.).

Enclosure

## DESIGN BASES ASSURANCE INSPECTION DOCUMENT REQUEST

10. List of available design (setup) margins in both the open and closed direction (identify safety-related direction) for valves in the Motor-Operated Valve and Air-Operated Valve Programs. Identify the basis for how the margin was determined.
11. List of high risk Maintenance Rule systems/components based on engineering or expert panel judgment (i.e., those systems/components not identified high risk in the PSA).
12. Structures, systems, and components (SSCs) in the Maintenance Rule (a)(1) category for the last 3 years.
13. Site top ten issues list (if applicable).
14. A list of operating experience evaluations for the last 3 years.
15. Information of any common cause failure of components experienced in the last 5 years at your facility.
16. List of Root Cause Evaluations associated with component failures or design issues initiated/completed in the last 5 years.
17. List of open operability evaluations.
18. List of SSCs considered operable but degraded/nonconforming.
19. List of "permanent plant modifications" to SSCs that are field work complete in the last 3 years. (For the purpose of this inspection, permanent plant modifications include permanent: plant changes, design changes, set point changes, equivalency evaluations, suitability analyses, and commercial grade dedications.) The list should contain the number of each document, the title, the revision (or date), and the affected system.
20. A list of calculation changes that have been issued for use in the last 3 years.
21. Copies of procedures addressing the following: modifications, design changes, set point changes, equivalency evaluations or suitability analyses, commercial grade dedications, and post-modification testing.
22. A list of corrective action documents (open and closed) in the last 3 years that address permanent plant modifications issues, concerns, or processes. These documents should also include the corrective action documents associated with the modification implementation.
23. Current management and engineering organizational chart.
24. Electronic copies of Updated Final Safety Analysis Report, Technical Specifications, Technical Specifications Bases, and Technical Requirements Manual.
25. Major one line electrical drawings (ac and dc) and key diagrams (paper copies).
26. Electronic copy of Piping and Instrumentation Drawings (if available).

## DESIGN BASES ASSURANCE INSPECTION DOCUMENT REQUEST

**II. *Information Requested (for the approximate seven selected components and seven selected modifications) to be Available by April 19, 2017, (will be reviewed by the team in the Regional office during the week of April 24, 2017).***

This information should be separated for each selected component or modification, especially if provided electronically (e.g., folder with component or modification name that includes calculations, condition reports, maintenance history, etc.). Items 1-12 are associated with the selected components and item 13 for the selected modifications.

1. List of condition reports (corrective action documents) associated with each of the selected components for the last 6 years.
2. The maintenance history (corrective, preventive, and elective) associated with each of the selected components for the last 10 years. Identify frequency of preventive maintenance activities.
3. Copies of calculations associated with each of the selected components (if not previously provided), excluding data files. Please review the calculations and also provide copies of important referenced material (such as drawings, engineering requests, and vendor letters). [Pipe stress calculations are excluded from this request]
4. System Health Reports, System Descriptions, Design Basis Documents, and/or Training Lesson Plans associated with each of the selected components.
5. A list of modifications, including equivalency evaluations and setpoint changes, associated with each of the selected components. This list should include a descriptive paragraph on the purpose of the modification. Please ensure this list only includes design completed (not canceled) modifications.
6. Copies of operability evaluations (open/closed for last 3 years) associated with each of the selected components and plans for restoring operability, if applicable.
7. Copies of selected operator work-around evaluations associated with each of the selected components and plans for resolution, if applicable.
8. Copies of any open temporary modifications associated with each of the selected components, if applicable.
9. Trend data on the selected electrical/mechanical components' performance for last 3 years (For example, pumps' performance including in-service testing, other vibration monitoring, oil sample results, etc., for valves: stroke time and leak rate results, diagnostic trend data, etc.).
10. Provide copies of the normal and abnormal operating procedures associated with the selected components and selected scenarios.
11. List of time critical or risk significant operator actions associated with components. Identify those actions that do not have job performance measures.
12. Copy of latest completed tests and surveillances for each component, for example:
  - a. Pumps: comprehensive test, quarterly test, flow balance, etc.

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- b. Valves: stroke time testing, diagnostic testing, leak testing, interlocks, etc.
  - c. Heat Exchangers/room coolers: thermal performance, clean/inspect, fan flows, etc.
  - d. Components: Technical Specification surveillances.
  - e. Acceptance criteria basis calculations should also be included.
13. For each of the selected modifications, copies of associated documents such as modification package, engineering changes, 50.59 screening or evaluation, calculations, post-modification test packages, corrective action documents, design drawings, preventive maintenance requirements and procedures, etc.
14. A copy of any internal/external self-assessments and associated corrective action documents generated in preparation for the inspection.
15. A copy of engineering/operations related audits completed in the last 2 years.

### ***III. Additional Information to be Provided on May 1, 2017, Onsite (for final selected components and modifications)***

- 1. During the in-office preparation activities, the team will be making final selections and may identify additional information needed to support the inspection. The lead inspector will provide a list of the additional information needed during the week of April 24, 2017.
- 2. Schedule of any testing/maintenance activities to be conducted on the selected components during the two onsite inspection weeks.

### ***IV. Information Requested to be Provided Throughout the Inspection***

- 1. Copies of any corrective action documents generated as a result of the team's questions or queries during this inspection.
- 2. Copies of the list of questions submitted by the team members and the status/resolution of the information requested (provide daily by 2:00 p.m. during the inspection to each team member).
- 3. One complete set of Piping and Instrumentation Drawings s (paper copies).
- 4. Reference materials. (make available if needed during all onsite weeks):
  - a. Individual Plant Examination/Probabilistic Risk Assessment report;
  - b. Procurement documents for components and modifications selected (verify retrievable);
  - c. Plant procedures (normal, abnormal, emergency, surveillance, etc.); and
  - d. Vendor manuals.

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

D. Curtland

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Letter to Dean Curtland from James E. Neurauter dated February 16, 2017

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