



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 21, 2017

Mr. Dean Curtland
Next Era Energy
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER - ISSUANCE OF AMENDMENT 301 TO
REVISE EMERGENCY PLAN (CAC NO. MF8390)

Dear Mr. Curtland:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 301 to Renewed Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC). The amendment consists of changes to the DAEC Emergency Plan in response to your application dated September 13, 2016, as supplemented by letters dated April 7, 2017, and June 19, 2017.

The amendment revises the DAEC Emergency Plan to increase staff augmentation times for Emergency Response Organization (ERO) response functions.

A copy of the Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Chawla" followed by a stylized surname.

Mahesh L. Chawla, Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosures:

1. Amendment No. 301 to DPR-49
2. Safety Evaluation

cc: ListServ



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NUCLEAR REGULATORY COMMISSION
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NEXTERA ENERGY DUANE ARNOLD, LLC

DOCKET NO. 50-331

DUANE ARNOLD ENERGY CENTER

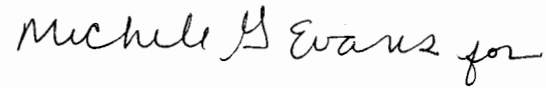
AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 301
License No. DPR-49

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by NextEra Energy Duane Arnold, LLC dated September 13, 2016, as supplemented by letters dated April 7, 2017, and June 19, 2017, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, by Amendment No. 301, Renewed Facility Operating License No. DPR-49 is hereby amended to authorize revision to the Duane Arnold Energy Center Emergency Plan, as set forth in the application submitted on September 13, 2016, as supplemented by letters dated April 7, 2017, and June 19, 2017, and as evaluated in the NRC staff's safety evaluation enclosed with this amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 180 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Brian E. Holian, Acting Director
Office of Nuclear Reactor Regulation

Attachment: Safety Evaluation

Date of Issuance: September 21, 2017



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 301 TO FACILITY OPERATING LICENSE NO. DPR-49
REVISION TO THE EMERGENCY PLAN
NEXTERA ENERGY DUANE ARNOLD, LLC, DUANE ARNOLD ENERGY CENTER
DOCKET NO. 50-331

1.0 INTRODUCTION

By application dated September 13, 2016 (Reference 1), and as supplemented by the letters dated April 7, 2017, and June 19, 2017 (References 2 and 3 respectively), NextEra Energy Duane Arnold, LLC (the licensee), submitted changes to the Duane Arnold Energy Center (DAEC) Emergency Plan for U.S. Nuclear Regulatory Commission (NRC or Commission) staff review and prior approval pursuant to Section 50.54(q)(4) of Title 10 of the *Code of Federal Regulations* (10 CFR). The following proposed changes would revise the DAEC Emergency Plan, as follows:

1. Section A, "Assignment of Responsibilities (Organizational Control)," Subsection 2.5, "Direction and Coordination," clarifies the Emergency Response Organization (ERO) activation criteria.
2. Section B, "Emergency Response Organization," Subsection 2.2, "Onsite Response Assignments":
 - a) Revises the response time for the following ERO positions from 30 minutes to 60 minutes:
 - Emergency Coordinator,
 - Site Radiation Protection Coordinator,
 - Security and Support Supervisor,
 - Technical and Engineering Supervisor,
 - Reactor Engineer,
 - Operational Support Center (OSC) Supervisor, and
 - Health Physics (HP) Supervisor.

- b) Removes Emergency Coordinator duties from the Technical and Engineering Supervisor position.
 - c) Adds the Technical Support Center (TSC) Operations Liaison position;
 - d) Removes responsibility for offsite and ERO notifications from the Security Force;
3. Section B, Table B-1, "On-Shift Staffing & Staff Augmentation Assignments," and Figure B-1, "On-site Emergency Response Organization."
- a) Corresponding changes to align with proposed changes to the DAEC Emergency Plan.
 - b) Adjusts the ERO augmentation timing for 30 minutes responders to 60 minutes, and adjusts the ERO augmentation timing for 60 minutes responders to 90 minutes.
4. Section E, "Notification Methods and Procedures," clarifies ERO activation criteria;
5. Section H, "Emergency Facilities Staffing, Activation and Equipment," clarifies emergency response facility (ERF) activation criteria.
6. Appendix 6, "Definition," adds a definition for "Facility Activation."

The supplemental letters dated April 7, 2017, and June 19, 2017, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the NRC staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on November 22, 2016 (81 FR 83877).

2.0 REGULATORY EVALUATION

The regulatory requirements and guidance on which the NRC staff based its acceptance are as follows:

2.1 Regulatory Requirements

10 CFR 50.47, "Emergency plans," sets forth emergency plan requirements for nuclear power plant facilities. Specifically, the regulations in 10 CFR 50.47(a)(1)(i) state, in part, that:

...no initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

As described in 10 CFR 50.47(a)(2), the NRC will base its finding, in part, on an assessment as to whether the applicant's onsite emergency plans are adequate and whether there is reasonable assurance that they can be implemented.

10 CFR 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for the NRC staff to make a positive finding that there is reasonable assurance that the licensee can, and will, take adequate protective measures in the event of a radiological emergency. With respect to shift staffing and emergency plans, augmentation is addressed in: 10 CFR 50.47(b)(1), which states, in part, that, "...each principal response organization has staff to respond and to augment its initial response on a continuous basis," and 10 CFR 50.47(b)(2) which states, in part, that the emergency response plan must ensure that, "...adequate staffing to

provide initial facility accident response in key functional areas is maintained at all times,” and that “timely augmentation of response capabilities is available....”

10 CFR 50.54(q)(1)(iii) defines the term “emergency planning function” as:

A capability or resource necessary to prepare for and respond to a radiological emergency, as set forth in the elements of section IV of appendix E to [Part 50] and, for nuclear power reactor licensees, the planning standards of §50.47(b).

10 CFR 50.54(q)(1)(iv) defines the term “reduction in effectiveness” as:

A change in an emergency plan that results in reducing the licensee’s capability to perform an emergency planning function in the event of a radiological emergency.

Section IV, Part A, “Organization,” to Appendix E of 10 CFR Part 50, “Emergency Planning and Preparedness for Production and Utilization Facilities,” states, in part,

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee’s emergency organization....

2.2 Guidance

Regulatory Guide (RG) 1.101, Revision 2, “Emergency Planning and Preparedness for Nuclear Power Reactors” (Reference 4), provides guidance on methods acceptable to the NRC staff for implementing specific parts of the NRC’s regulations – in this case, 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. RG 1.101, Revision 2, endorses Revision 1 to NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” (NUREG-0654) (Reference 5), which provides specific acceptance criteria for complying with the standards set forth in 10 CFR 50.47. These criteria provide a basis for NRC licensees, and State and local governments to develop acceptable radiological emergency plans.

Regulatory Guide 1.219 (RG 1.219), “Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors” (Reference 6), provides guidance on methods acceptable to the NRC staff for implementation of 10 CFR 50.54(q) as it relates to making changes to emergency response plans.

In NUREG-0654, Section II, “Planning Standards and Evaluation Criteria,” Evaluation Criteria II.B.1 and II.B.5 address planning standard 10 CFR 50.47(b)(2). Evaluation Criteria II.B.1 specifies the onsite emergency organization of plant staff personnel for all shifts, and its relation to the responsibilities and duties of the normal shift complement. Evaluation Criteria II.B.5, states, in part, that:

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed changes to the DAEC Emergency Plan, as described in the application dated September 13, 2016, and as supplemented by letters dated April 7, 2017, and June 19, 2017, respectively.

An evaluation based upon the major functional areas of the DAEC ERO was performed, and many of the changes are supported by enhancements to equipment (technology), procedural improvements, training, process improvements (i.e., dose assessments), and increases in staffing levels. These enhancements compensate for the increases in augmentation timing and the reduction in available on-shift maintenance expertise, thus, maintaining the NRC staff's reasonable assurance finding in accordance with 10 CFR 50.47(a).

3.1 Enhancements

Plant Process Computer (PPC) and the Safety Parameter Display System (SPDS): The licensee states that the installation of the PPC that transmits SPDS data to the TSC and emergency operations facility (EOF) aids and enhances its ability to evaluate plant status by rapidly displaying and trending critical plant information. This data is in parallel with data available elsewhere in the control room. The SPDS allows for timely dissemination and trending of key plant data such that responders in the TSC and EOF can effectively make informed decisions related to emergency action levels (EALs) and protective action recommendations (PARs), and develop event mitigation strategies. The PPC and SPDS have multiple power source options available. Use of the PPC and SPDS is demonstrated during every drill and exercise that results in activation of ERFs.

Dose Assessment: The licensee states that the Meteorological Information and Dose Assessment System (MIDAS) has been utilized at DAEC since the mid-1990s. The original software had accessibility limitations and lengthy processing times. Computer displays of plant, radiological effluent, area radiation monitor, and meteorological information were available only from SPDS software and on proprietary SPDS displays. DAEC now uses MIDAS software that is based upon a common computer platform (i.e., Microsoft Windows) that provides significant flexibility in where these assessments can be performed, as well as significantly improve the computing speed and resultant dose assessment results. This speed and flexibility has enhanced the ability of dose assessors to perform timely dose assessments with limited interaction(s) needed.

Automated ERO Call-Out Systems: The licensee states that DAEC now uses an automated call-out system set up to effectively call-out the ERO in a timely manner. This system is demonstrated during drills and exercises, and, periodically, in accordance with the DAEC Emergency Plan and implementing procedures (EIPs). Once activated, the process is

automated requiring no physical response from the on-shift staff. However, if the automated system (which also has automated backup capability) fails, the on-shift staff is trained on how to effectively initiate a manual call-out process.

Procedure Improvements: The licensee states that many procedural enhancements related to the DAEC Emergency Plan and response to radiological events have been made. The licensee also stated that since the original emergency plan approval, Emergency Operating Procedures (EOPs) have been improved through industry initiatives, primarily through station involvement with Boiling Water Reactor Owners Group (BWROG). BWR EOPs are symptom based which demands less assessment and interpretation of plant conditions by the Operating crews. In addition, the EOPs are flowcharted, better human factored, and have an improved layout allowing for more consistent implementation. The improvements on how EOPs and EPIPs are integrated, particularly for EAL determination, has improved the overall emergency classification process.

Training: The licensee states that since the original emergency plan approval, the application of the Systematic Approach to Training (SAT) has resulted in developing a task list for Operations personnel. The SAT process ensures training is conducted to industry-accepted standards and has led to accreditation of the Operations Training Programs by the National Academy for Nuclear Training. The training of DAEC operations staff includes response to events where implementation of the DAEC Emergency Plan is required based upon an emergency classification level (ECL) declaration. The control room staff, through the use of simulator-based training, demonstrates the ability to: recognize and classify events; determine the appropriate ECL determine the appropriate PAR as necessary, and to make all required notifications (ERO, State/county, and to the NRC). The ability of the on-shift Operations staff to manage DAEC Emergency Plan responsibilities, without compromising the situational awareness of the event, demonstrates that the increase in augmentation timing does not negatively impact the response to the event and timely implementation of the DAEC Emergency Plan.

On-Shift Staffing Levels: The licensee states that the DAEC on-shift staffing has increased and now consists of 16 personnel. This increase in on-shift staff provides additional personnel to support DAEC Emergency Plan functions, while also allowing for the on-shift staff to perform mitigative strategies to limit the consequences to the public from a radiological event. In particular, the ability to dedicate an on-shift communicator removes the need for an on-shift position needing to be responsible for offsite communications while also being responsible for other collateral functions.

3.2 Major Functional Areas

3.2.1 Plant Operations and Assessment of Operational Aspects

The proposed changes to this major functional area consist of clarification as to where the Operations personnel are staffed (control room), as well as the addition of a third control room operator to be assigned as the Fire Brigade Leader, if necessary. Operations and Fire Brigade staffing is not considered part of the scope of this license amendment request; however, it is noted to ensure that all changes to these areas are identified.

3.2.2 Emergency Direction and Control

The guidance in NUREG-0654, Table B-1, indicates that the Shift Technical Advisor (STA), Shift Supervisor, or designated facility manager should be assigned the Emergency Direction and Control function and that they may be assigned other collateral functions. The overall direction of facility response may be transferred to the EOF Director when all ERFs are fully manned. NUREG-0654, Table B-1, designates an augmentation time of 60 minutes for the EOF Director. Note that the position of EOF Director, from NUREG-0654, Table B-1, is named the Emergency Response and Recovery Director (ER&RD) in the DAEC Emergency Plan.

In its submittal, the licensee states that the Emergency Coordinator and ER&RD have been relocated on Table B-1 from the major functional area of "Emergency Direction and Control" to "Radiological Accident Assessment and Support of Operational Assessment." The Emergency Coordinator and ER&RD continue to be tasked with overall utility emergency management and offsite agency interface. The proposed augmentation time for the Emergency Coordinator is 60 minutes from an Alert declaration or higher. The augmentation time for the ER&RD has not changed and, therefore, remains at 60 minutes from a Site Area Emergency declaration or higher. The titles of the positions for this task have been clarified with no change in intent. The addition of personnel on-shift, as well as technological and procedural enhancements developed since 1982 adequately compensate for the additional 30 minutes where the Shift Manager would be responsible for the Emergency Coordinator task.

As the proposed changes to this major functional area consist of moving the positions of Emergency Coordinator and ER&RD to a different major functional area, the only remaining position identified in this major functional area is the shift manager. This position was already considered part of the on-shift ERO and is only being clarified on the proposed Table B-1.

The advances in technology, training and procedures as described earlier, as well as the additional on-shift operations personnel, adequately compensate for any additional burden imposed on the shift manager by the retention of the Emergency Coordinator function for an additional 30 minutes. As such, the NRC staff finds the changes to the proposed Table B-1 to be acceptable. Therefore, with the proposed changes, the DAEC Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.2.3 Notification/Communications

The guidance in NUREG-0654, Table B-1, provides that one communicator will be assigned on-shift with a dedicated communicator augmenting the on-shift communicator within 30 minutes.

The licensee states that DAEC will have an on-shift dedicated communicator and the TSC will have the operations liaison and NRC emergency notification systems communicator respond to the TSC within 60 minutes of an Alert declaration or higher, while the EOF will have the EOF/Operations Liaison and Rad & EOF Manager respond to the EOF within 60 minutes of a Site Area Emergency declaration or higher. The proposed changes would increase the response times for the 30 minutes responders in the Notifications/Communications area to 60 minutes. This major functional area identifies the on-shift communicator to be a dedicated on-shift ERO position.

Enhancements in equipment (technology), procedures and processes, as well as having a dedicated on-shift communicator, adequately compensate for the increase in augmentation times without compromising the ability of the ERO to effectively implement the DAEC Emergency Plan.

As such, the DAEC Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.2.4 Radiological Accident Assessment and Support of Operational Assessment/Protective Actions (In-Plant)

The function of onsite radiological assessment is to: review radiological conditions onsite using data from available instrumentation; assess the impact of changing radiological conditions on emergency classification; assist in accident assessment based upon those changing radiological conditions, and recommend appropriate onsite protective measures. This major functional area includes the following tasks:

Overall Utility Emergency Management and Offsite Agency Interface: This major task was discussed previously in the Emergency Direction and Control Major Functional Area.

Offsite Dose Assessment and PARs: The guidance in NUREG-0654, Table B-1 identifies one person to perform the offsite dose assessment function as a 30-minute augmented position.

In its submittal, the licensee states that the Site Radiation Protection Coordinator and MIDAS operator in the TSC are tasked with offsite dose assessment and PARs. These positions would respond within 60 minutes of an Alert declaration or higher. The on-shift chemistry technician is tasked with performing dose assessments until relieved by the MIDAS operator. An additional chemistry technician responds within 60 minutes of an Alert classification or higher. The on-shift chemistry technician can adequately perform this task for an additional 30 minutes until relocated to the TSC and reassigned as the MIDAS operator.

The licensee states that the radiological assessment coordinator and MIDAS operator in the EOF are also tasked with offsite dose assessment and PARs. These positions respond within 60 minutes of a Site Area Emergency declaration or higher. This is not an actual change to the DAEC Emergency Plan, just an enhancement to Table B-1.

Based on the licensee's current dose assessment capability and the use of a dedicated on-shift position to perform dose assessment, the NRC staff concludes that there is no loss of function or impact on the timing for performing dose assessment. Therefore, with the proposed changes, the DAEC Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

Offsite and Onsite Surveys, and In-Plant Surveys: The guidance in NUREG-0654, Table B-1, identifies two persons to perform the offsite survey function as 30 minute augmented positions, with two additional persons as 60 minute augmented positions. Additionally, the guidance in NUREG-0654, Table B-1, identifies one person to perform the onsite survey (out-of-plant) function as a 30 minute augmented position, with one additional person as a 60-minute augmented position. It further identifies one person

on-shift to perform in-plant surveys, with one person augmenting in 30 and 60 minutes respectively.

The licensee states that the major task of Offsite and Onsite Survey (Field) Teams have a proposed increase in augmentation times. Currently DAEC has one Offsite Field Team and one Onsite Field Team responding within 30 minutes, and one Offsite Field Team and one Onsite Field Team responding within 60 minutes. DAEC proposes to revise this to one Offsite and one Onsite Field Team responding within 60 minutes and one Offsite Field Team and one Onsite Field Team responding within 90 minutes. The extension in augmentation timing for the Onsite Field Team is compensated by the availability of in-plant and effluent monitoring for this 60 minute period. These instruments can provide adequate information for the development of any onsite protection actions. The extension in Offsite Field Team augmentation is supported by maintaining the capability of performing dose assessments, and the enhancements made to the dose assessment software and procedures. An additional 30 minutes to augment this task does not impact the ability of the licensee to develop PARs, nor does it negatively impact the ability of the licensee to track a radioactive release plume, if one exists (by definition this would be at the General Emergency classification level).

The major task of In-plant Surveys maintains one HP technician on-shift, with a proposed augmentation of one additional HP technician within 60 minutes and one additional HP technician within 90 minutes of an Alert declaration or higher. In addition, DAEC proposed the addition of one HP technician on-shift in the Protective Actions Major Functional Area (see below). Based on technological improvements for dose assessment, the assignment of an additional HP technician on-shift, and the extensive installed radiation monitoring system at DAEC, the NRC staff finds the extension of the augmentation time to be acceptable. Therefore, with the proposed changes, the DAEC Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.2.5 Plant System Engineering Repair and Corrective Actions

This major functional area includes the following tasks:

Technical Support: The guidance in NUREG-0654, Table B-1, identifies one on-shift STA and core/thermal hydraulics engineering expertise to be available in 30 minutes, and electrical and mechanical engineering expertise to be available in 60 minutes. Table B-1 in the current DAEC Emergency Plan includes an on-shift STA and a reactor engineer reporting to the TSC within 30 minutes of an Alert declaration or higher.

DAEC proposed an increase in the augmentation time for the reactor engineer from 30 minutes to 60 minutes. This increase in augmentation timing is compensated by the availability of the STA to perform this task for the additional 30 minutes. DAEC has no changes proposed for the electrical and mechanical engineer positions.

The licensee states that the STA performs independent assessments of plant operating concerns, appropriateness of corrective actions, analysis of events and their effects, effectiveness of response(s) to emergent conditions, classifications of emergencies, development of recommendations to protect the public, and any other actions related to critical safety functions and plant safety during abnormal and emergency situations. The licensee further provides that a review of procedural actions for this position

demonstrated that failed fuel determinations, as well as establishing recovery/reentry priorities, would not be required during the first 60 minutes of the event. Initial reactor core stabilization activities are performed by the operations crew under the advisement of the STA.

Based on the improved monitoring systems available to the STA and in the operating procedures as described previously, as well as the addition of the three engineers responding to the TSC within 60 minutes, the NRC staff finds the changes to the proposed Table B-1 to be acceptable. Therefore, with the proposed changes, the DAEC Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

Repair and Corrective Actions: The guidance in NUREG-0654, Table B-1, specifies the major task of repair and corrective actions is to be fulfilled on-shift by a total of two personnel and "[m]ay be provided by shift personnel assigned other functions." One person would perform the function of a mechanic and one person would perform the function of an electrician. One electrician and one instrument and control (I&C) technician would respond within 30 minutes to augment the ERO. One mechanic/radiological waste operator and one additional electrician/I&C technician would respond within 60 minutes to augment the ERO.

DAEC proposed to eliminate limited mechanical and electrical maintenance capability on-shift. The proposed augmentation timing of maintenance resources is:

- One electrical maintenance staff, and maintain one mechanical maintenance staff responding within 60 minutes
- One I&C technician and one electrical maintenance staff responding within 90 minutes

The need for maintenance resources during the initial 60 minutes of an event is negligible given the robust design and redundancy of plant emergency core cooling system (ECCS), as well as training and procedural improvements made to assist on-shift plant operators in the response to significant plant events. The ECCS are: High Pressure Coolant Injection, Automatic Depressurization System, Core Spray System, and the Low Pressure Coolant Injection mode of the Residual Heat Removal System. The robust design and redundancy of the ECCS, as well as the training and procedural enhancements, adequately compensate for the proposed increases in augmentation timing, as well as the elimination of specific maintenance resources on-shift.

DAEC proposed to add the OSC supervisor to Table B-1 with an augmentation time of 60 minutes. The licensee states that since maintenance resources assigned to the OSC are augmented within 60 minutes (proposed), the timing associated with this position is consistent and adequate.

Based on the availability of on-shift operators with the necessary training and expertise to perform minor maintenance actions to mitigate an event until augmented and the addition of the augmenting maintenance personnel to the proposed Table B-1, the NRC staff finds the requested changes to augmentation times to be acceptable. Therefore, with the proposed changes, the DAEC Emergency Plan continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.2.6 Protective Actions

The guidance in NUREG-0654, Table B-1, specifies the major task of Protective Actions (In-Plant) to be fulfilled on-shift by a total of two personnel and “[m]ay be provided by shift personnel assigned other functions.” Additionally, the guidance in NUREG-0654, Table B-1 identifies two persons to perform this function as 30-minute augmented positions, with two additional persons as 60-minute augmented positions.

DAEC proposed the addition of one HP technician on-shift, with a proposed increase in augmentation timing of the 30 minutes responder to a proposed 60 minutes, and the 60 minutes responder to a proposed 90 minutes from an Alert declaration or higher. Technological enhancements made to electronic dosimetry and access control processes, as well as enhancements to the radiation work permit system and the increase of on-shift staff, adequately compensates for the additional 30 minutes for the augmentation of HP technicians.

Based on technological improvements for access control to radiologically controlled areas, the assignment of an additional HP technician on-shift, and the extensive installed radiation monitoring system at DAEC, the NRC staff finds the extension of the augmentation time to be acceptable. Therefore, with the proposed changes, DAEC continues to meet the standards of 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50.

3.3 Additional Proposed DAEC Emergency Plan Changes

3.3.1 DAEC Emergency Plan – Section A.2.5, “Direction and Coordination”

The licensee proposed changes to clarify ERO activation criteria, when the ERFs are considered activated, and the timing for when each ERF is to be activated. The proposed changes are to maintain alignment with the other proposed changes evaluated below. The TSC and OSC have a proposed activation time of 60 minutes from an Alert declaration or higher, and the EOF has an activation time of 60 minutes from a Site Area Emergency declaration or higher. The ERFs are considered activated when the designated minimum staff has arrived, been briefed on the event, and are ready to perform their ERO function(s).

3.3.2 DAEC Emergency Plan – Section B, “Emergency Response Organization”

B.2.2 – “Onsite Response Assignments”:

The licensee proposed changes related to the ERO in addition to those discussed previously in Section 3.2. The NRC staff has determined that the changes, as described below, are an acceptable approach to meeting the intent of the guidance and to maintain compliance with the regulations. [Note that the responding ERO has two distinct purposes: (1) some positions relieve the on-shift staff of emergency response responsibilities, thus allowing them to focus on their other (non-emergency plan) responsibilities, and (2) some positions are intended to support the licensee’s implementation of the DAEC Emergency Plan.]

- Site Radiation Protection Coordinator: The licensee proposed to revise the response time for this position from 30 minutes to 60 minutes. The NRC staff determined that the enhancements in technology and training compensate for the additional 30 minutes where the operations shift manager must fulfill the Site Radiation

Protection Coordinator role until relieved.

- Security and Support Supervisor: The licensee proposed to revise the response time for this position from 30 minutes to 60 minutes. The NRC staff determined that the enhancements in technology and training compensate for the additional 30 minutes where the on-shift ERO must function without this support position.
- Technical and Engineering Supervisor: The licensee proposed to revise the response time for this position from 30 minutes to 60 minutes. The staff determined that the enhancements in technology and training compensate for the additional 30 minutes, where the on-shift ERO must function without this support position. The licensee also removed the expectation that this position will exercise supervision and direction over the personnel assigned to the Technical Support Center, while the Emergency Coordinator is in the Control Room receiving a turnover. The staff determined that this is acceptable as the ability of the Emergency Coordinator to receive a turnover and assume control of the ERO is not compromised by the transition time between the control room and the TSC.
- TSC Operations Liaison: The licensee added this position to their Emergency Plan to align with their current ERO staffing requirements. The NRC staff determined that the enhancements in technology and training compensate for the additional 30 minutes, where the on-shift STA must fulfill this role until relieved. Note that this position is already in the TSC; it just has not been formally documented in the DAEC Emergency Plan.
- OSC Supervisor: The licensee proposed to revise the response time for this position from 30 minutes to 60 minutes. The NRC staff determined that the enhancements in technology and training compensate for the additional 30 minutes where the on-shift ERO must function without this support position.
- HP Supervisor: The licensee proposed to revise the response time for this position from 30 minutes to 60 minutes. The NRC staff determined that the enhancements in technology and training compensate for the additional 30 minutes where the on-shift ERO must function without this support position.

B.2.2.13 – Minimum Staffing:

The licensee noted that the on-shift staff has been validated by an on-shift staffing analysis as required by 10 CFR 50 Appendix E.IV.A.9. This does not invalidate any aspect of the DAEC Emergency Plan and is acceptable.

B.2.2.14 – Other DAEC Organizational Assignments:

The licensee removed initial notification responsibility from the DAEC Security Force. The licensee has a Shift Communicator, thus, removing this responsibility from the DAEC Security Force does not compromise the ability to effectively implement the DAEC Emergency Plan and is acceptable.

B.2.3 – Offsite (EOF & [Joint Information Center] JIC) Response Assignments:

The licensee added the timing requirement for the ER&RD in the EOF. This position is to be staffed within 60 minutes of a Site Area Emergency declaration or higher. The emergency coordinator will fulfill this role until relieved by the ER&RD. This is not a change in the DAEC Emergency Plan, as this expectation was already in the DAEC Emergency Plan, but just not in this particular section.

Table B-1, “On-Shift Staffing & Staff Augmentation Assignments”:

The licensee proposed many changes to this table to clarify timing changes, as evaluated above, and to better delineate ERO position titles (or expertise) and the applicable response locations. An evaluation of the impact of these changes on DAEC Emergency Plan major functional areas was performed and is documented in 3.2 above.

Figure B-1, “On-Site Emergency Response Organization”:

The licensee proposed many changes to this figure, particularly in order to delineate which ERO positions are considered minimum staff. While some of these changes were not specifically discussed in the licensee’s application and supplemental letters, the NRC staff has determined that the changes are an acceptable approach to meeting the intent of the guidance and to maintaining compliance with the regulations.

3.3.4 DAEC Emergency Plan – Section E.2.2, “Notification and Activation of the ERO”

The licensee proposed to revise this section to clarify when the TSC and OSC are staffed, and how this is accomplished. No change in the intent of the DAEC Emergency Plan occurs as a result of this change as it is still considered an acceptable approach to meeting the intent of the guidance and to maintaining compliance with the regulations.

3.3.5 DAEC Emergency Plan – Section H, “Emergency Facilities Staffing, Activation and Equipment”

The licensee clarified the activation criteria and timing for the TSC and OSC to align with Section B of the DAEC Emergency Plan. The TSC and OSC are to be staffed upon an Alert declaration or higher. The NRC staff finds the changes made to this section primarily serve to clarify TSC and OSC activation criteria and is an acceptable approach to meeting the intent of the guidance and to maintaining compliance with regulations.

3.3.6 DAEC Emergency Plan – Appendix 6, “Definitions”

The licensee added a definition of “Facility Activation” to ensure that the applicable ERF is considered activated when the minimum staff has arrived, been briefed on the event, and is ready to perform as required by the DAEC Emergency Plan. The NRC staff has determined that the change is an acceptable approach to meeting the intent of the guidance and to maintaining compliance with the regulations.

4.0 SUMMARY

The NRC staff performed a technical and regulatory review of the proposed changes to the DAEC Emergency Plan. The staff determined that these changes do not alter the intent of any

major functional area or major task, and is an acceptable approach to meeting the intent of the guidance and to maintaining compliance with the regulations. The staff has determined that there is reasonable assurance the licensee can and will take adequate protective measures in the event of a radiological emergency. The staff also reviewed the concurrence to these changes provided by applicable offsite response officials, as documented in Enclosure 3 of the licensee's supplemental letter, dated April 7, 2017.

Based on the above, the NRC staff has determined that the proposed changes meet the guidance in NUREG-0654, planning standard 10 CFR 50.47(b)(4), and the requirements in Appendix E to Part CFR 50. Therefore, the NRC staff concludes that the proposed DAEC Emergency Plan changes, provided as Enclosure 1, Attachment 2, of the licensee's supplemental letter dated June 19, 2017, are acceptable.

5.0 STATE CONSULTATION

In accordance with the Commission's regulations on August 14, 2017, the NRC staff notified the State of Iowa official of the proposed issuance of the amendment. The State official had no comments.

6.0 ENVIRONMENTAL CONSIDERATIONS

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that maybe released offsite, and that there is no significant increase in individual cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (81 FR 83877). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

7.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) there is reasonable assurance that such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

8.0 REFERENCES

1. NextEra Energy Duane Arnold, LLC, "License Amendment Request (TSCR-149) Revision to Staff Augmentation Times in the Duane Arnold Energy Center Emergency Plan," dated September 13, 2016 (ADAMS Accession No. ML16263A071).
2. NextEra Energy Duane Arnold, LLC, "Response to Request for Additional Information Relating to Revision to Staff Augmentation Times in the Duane Arnold Energy Center Emergency Plan," dated April 7, 2017 (ADAMS Accession No. ML17097A232).

3. NextEra Energy Duane Arnold, LLC, "Revision to Request for Additional Information Relating to Revision to Staff Augmentation Times in the Duane Arnold Energy Center Emergency Plan," dated June 19, 2017 (ADAMS Accession No. ML17170A341).
4. Regulatory Guide 1.101, Revision 2, "Emergency Planning and Preparedness for Nuclear Power Reactors," dated October 31, 1981 (ADAMS Accession No. ML090440294).
5. NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 30, 1980 (ADAMS Accession No. ML040420012).
6. Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," dated November 30, 2011 (ADAMS Accession No. ML102510626).

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Date of issuance: September 21, 2017

SUBJECT: DUANE ARNOLD ENERGY CENTER - ISSUANCE OF AMENDMENT 301 TO
 REVISE EMERGENCY PLAN (CAC NO. MF8390)
 DATED SEPTEMBER 21, 2017

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