



January 30, 2026
L-2026-008
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Duane Arnold Energy Center
Docket Nos. 50-331, 72-32
Renewed Facility License No. DPR-49

License Amendment Request (TSCR-195): Application to Revise the Emergency Plan to Support Resumption of Power Operation

References:

1. USNRC to NextEra Energy, "Issuance of Amendments Regarding Fleet Emergency Plan Amendment," dated December 13, 2024 (ADAMS Accession No. ML24285A103)
2. USNRC to Florida Power and Light Company, "Exemptions from Certain Emergency Planning Requirements and Related Safety Evaluation," dated April 13, 2021 (ADAMS Accession No. ML21097A141)
3. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Certification of Permanent Removal of Fuel from the Reactor Vessel for Duane Arnold Energy Center," dated October 12, 2020 (ADAMS Accession No. ML20286A317)
4. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Regulatory Path to Potential Reauthorization of Power Operations," dated January 23, 2025 (ADAMS Accession No. ML25023A265)
5. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Request for Exemption from Certain Termination of License Requirements of 10 CFR § 50.82," dated January 23, 2025 (ADAMS Accession No. ML25023A270)

Pursuant to 10 CFR 50.90, NextEra Energy Duane Arnold, LLC (NEDA) is submitting a license amendment request (LAR) to replace the current Duane Arnold Energy Center (DAEC) Emergency Response Plan to reflect the resumption of power operations at DAEC. The new plan consists of the approved NextEra Common Emergency Plan (Reference 1) and a DAEC site-specific annex.

Additionally, NEDA requests that previously granted emergency plan related exemptions (Reference 2) be rescinded effective with NRC notification of licensee's readiness for restart. The exemptions reduced or eliminated emergency plan requirements that were no longer necessary due to the decommissioning status of the facility. With the return to power operation, those exemptions are no longer needed.

The transition of DAEC from an operating nuclear plant to a facility in decommissioning occurred on October 12, 2020, when the 10 CFR § 50.82(a)(1)(ii) certification was docketed (Reference 3).

Reference 4 describes the regulatory path NextEra intends to follow to support the restoration of the previous DAEC licensing basis and reauthorization of power operations at DAEC. The NRC

review of these submittals, along with reinstatement of the oversight process applicable to operating reactors, will ensure that DAEC will only be authorized to resume operations if the NRC has reasonable assurance that it can do so in a manner that protects public health and safety in conformance with DAEC's operating licensing basis. The first action in this regulatory path is a request for a one-time exemption from 10 CFR 50.82(a)(2). This request was submitted in Reference 5. With this exemption, the DAEC licensing basis in effect prior to the 10 CFR 50.82 certifications can be restored through the 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit", license amendment request process for the DAEC Renewed Facility License, Technical Specifications, and other programmatic requirements.

Enclosure 1 of this letter provides NEDA's evaluation of the proposed changes. Attachment 1 of the Enclosure compares the NextEra companies' fleet Common Emergency Plan and the proposed DAEC Annex to NUREG-0654/FEMA-REP-1, Revision 2 to confirm consistency. The current revision of the NextEra fleet Common Emergency Plan is contained in Enclosure 2. The proposed DAEC Emergency Plan Annex is contained in Enclosure 3.

Enclosure 4 contains the proposed power operations Emergency Action Level (EAL) Technical Bases.

Enclosure 5 contains the on-shift staffing analysis to support the staffing level in the fleet Common Emergency Plan. These staffing levels are adopted by NEDA without change.

Enclosure 6 contains copies of the offsite response organization letters confirming acknowledgement and support for the DAEC operating plant emergency planning.

To coordinate implementing this LAR, consistent with IMC 2562, NextEra plans to submit a notification of readiness to transition to power operations letter to the NRC certifying that the exemption implementation conditions and the license amendments effectiveness conditions are met, and that the 10 CFR 50.82(a)(1) certifications are rescinded. Pursuant to IMC 2562, after NRC documents the licensee's readiness to restart, all inspection cornerstones are transitioned back to the Reactor Oversight Process, all operating licensing actions are implemented, and NextEra makes a final decision to restart operations, DAEC will transition back to a power operations plant.

This letter contains no new and no revised regulatory commitments.

In accordance with 10 CFR 50.91, a copy of this application with the enclosures is being provided to the designated State of Iowa official.

As discussed in Enclosure 1, the proposed change does not involve a significant hazards consideration pursuant to 10 CFR 50.92, and there are no significant environmental impacts associated with the change. The DAEC Safety Review Group has reviewed the proposed license amendment.

If you have any questions or require additional information, please contact Robert Murrell, Licensing Project Manager, at 319-851-9496.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 30, 2026



Kenneth A. Mack
Director, Regulatory Affairs

Enclosures:

1. Description and Evaluation of the Proposed Changes
Attachment 1 – Proposed Plan Comparison to NUREG 0654, Revision 2
2. NextEra Fleet Common Emergency Plan
3. DAEC Emergency Plan Annex
4. Emergency Action Level Technical Bases
5. On Shift Staffing Study
6. Offsite Response Organization Support Letters

cc: NRC Region III Administrator
NRC Decommissioning Inspector
NRC NMSS Project Manager
Designated Iowa State Official

Enclosure 1

NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER

L-2026-008

LICENSE AMENDMENT REQUEST (TSCR-195)

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGES

(32 pages follow)

**NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER**

**License Amendment Request (TSCR-195): Application to Revise the Emergency Plan to
Support Resumption of Power Operation**

EVALUATION OF PROPOSED CHANGE

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1.0 SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90, NextEra Energy Duane Arnold, LLC (NEDA) is submitting a license amendment request (LAR) to update the licensing basis by replacing the current Duane Arnold Energy Center (DAEC) Emergency Response Plan to reflect the resumption of power operations at DAEC. The new plan consists of the approved NextEra Common Emergency Plan (CEP) (Reference 1) and a DAEC site-specific annex.

Additionally, NEDA requests that previously granted exemptions (Reference 2) be rescinded. The exemptions reduced or eliminated emergency plan requirements that were no longer necessary due to the decommissioning status of the facility. With the return to power operation, those exemptions are no longer needed.

2.0 DETAILED DESCRIPTION

2.1 Reason for Proposed Change

The DAEC facility license has not been terminated and remains valid, though it currently does not authorize operation. The transition of DAEC from an operating nuclear plant to a facility in decommissioning occurred on October 12, 2020, when the 10 CFR 50.82(a)(1)(ii) certification was docketed (Reference 3). On May 31, 2022, other previously approved license amendments and exemptions that reduced regulatory requirements to facilitate decommissioning at DAEC were implemented. NextEra has not commenced a "major decommissioning activity" at DAEC, as defined by 10 CFR 50.2, "Definitions".

Reference 4 describes the regulatory path NextEra intends to follow to support the restoration of the previous DAEC licensing basis and reauthorization of power operations at DAEC. The NRC review of these submittals, along with reinstatement of the oversight process applicable to operating reactors, will ensure that DAEC will only be authorized to resume operations if the NRC has reasonable assurance that it can do so in a manner that protects public health and safety; in conformance with DAEC's operating licensing basis. The first action in this regulatory path is a request for a one-time exemption from 10 CFR 50.82(a)(2). This request was submitted in Reference 5. With this exemption, the DAEC licensing basis in effect prior to the 10 CFR 50.82 certifications can be restored through the 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit", license amendment request process for the DAEC Renewed Facility License (RFL), Technical Specifications (TSs), and other programmatic requirements.

This LAR is necessary to create a DAEC emergency plan to support returning DAEC to a power operations plant. The current DAEC Independent Spent Fuel Storage Installation (ISFSI)-only emergency plan is being replaced by the NextEra Common Emergency Plan (CEP) and proposed DAEC Emergency Plan Annex (Annex), which are based on NUREG-0654/FEMA-REP-1 Revision 2 (NUREG 0654, Revision 2) guidance.

2.2 Description of Proposed Change

The proposed DAEC emergency plan is a complete replacement of the current ISFSI-only emergency plan, which was approved by the NRC (Reference 6) and implemented at DAEC. The proposed DAEC emergency plan will establish an updated licensing basis that complies

with current NRC regulations in 10 CFR 50.47 and Appendix E to 10 CFR Part 50 for a power operations facility. The proposed emergency plan consists of the approved NextEra CEP along with the proposed site-specific DAEC Annex.

The approved NextEra CEP is located in Enclosure 2. The proposed site-specific DAEC Annex is in Enclosure 3. Enclosure 4 contains the proposed EALs and the site-specific staffing study is in Enclosure 5. Offsite responsible organization (ORO) support letters are contained in Enclosure 6.

By letter dated April 2, 2020 (Reference 7), pursuant to 10 CFR 50.12, "Specific Exemptions," NEDA requested, and subsequently received, exemption from portions of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR Part 50, Appendix E for DAEC. The exemption allowed DAEC to reduce emergency planning requirements consistent with the permanently defueled condition of the station. With this submittal, NEDA is requesting rescission of the exemptions requested in Reference 7.

The approved exemption to 10 CFR 50.47(b) eliminates the requirement for emergency planning zones and offsite agency response to an emergency at DAEC. Therefore, the Protective Action Recommendation Technical Basis that had been developed for DAEC was no longer applicable nor updated. This exemption is no longer appropriate nor needed once DAEC returns to power operation. Therefore, the Protective Action Recommendation Technical Bases is being developed with the affected offsite responsible organizations considering the guidance as provided in NUREG 0654, Supplement 3 (Reference 8) and NEI 12-10 (Reference 9).

The NRC approved an exemption from 10 CFR 50.47(b)(10) and Part 50, Appendix E, Sections IV.2 through IV.6 with respect to the requirement to develop an evacuation time estimate (ETE) due to the reduced nature of the radiological threat at the DAEC facility (Reference 2). Therefore, the ETE was not updated following the 2020 census. This exemption is no longer appropriate nor needed once DAEC returns to power operation. Therefore, the ETE has now been updated to address the 2020 census results and has been submitted for NRC review in Reference 22.

DAEC is currently exempt from the requirement to maintain an Alert and Notification System (ANS) (Reference 2) per Part 50, Appendix E, Sections IV.D.3 and IV.D.4. This exemption is no longer appropriate nor needed once DAEC returns to power operation. DAEC, in cooperation with Benton and Linn Counties, is developing an ANS Evaluation Report to satisfy planning standards E and F of 10 CFR 50.47(b), 44 CFR 350.5(a), and the associated guidance in NUREG-0654, Revision 2 to support the DAEC emergency plan. Once completed, the ANS report will be submitted to the U.S. Federal Emergency Management Agency (FEMA) for review and approval.

DAEC is not proposing changes to the on-shift or the minimum augmenting ERO positions outlined in the fleet common emergency plan.

3.0 TECHNICAL EVALUATION

The DAEC is located near the town of Palo on the western side of Cedar River in Linn County, Iowa. It is approximately 8 miles northwest of Cedar Rapids, 35 miles southeast of Waterloo,

and 30 miles northwest of Iowa City. The Emergency Planning Zone (EPZ) consists of parts of Linn and Benton Counties in Iowa.

A licensee's emergency plan provides the necessary information to demonstrate to the NRC with reasonable assurance that adequate protective measures are in place and can and will be taken in the event of a radiological emergency.

DAEC has entered the decommissioning process and subsequently transitioned to an ISFSI-only emergency plan commensurate with possible emergencies in its current condition with all fuel in the ISFSI. The changes proposed in this LAR support the return of DAEC to power operations and remove relaxations to the DAEC emergency plan that were made to reflect an ISFSI-only facility. The proposed emergency plan was developed based on NRC guidance provided in NUREG-0654, Revision 2.

The DAEC emergency plan currently in effect recognizes exemptions from portions of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and Appendix E to 10 CFR Part 50 that allowed DAEC to make changes commensurate with the credible site-specific risks that are present during decommissioning. Because the current DAEC ISFSI-only emergency plan reflects NRC-approved exemptions and the fuel storage condition, this amendment request provides a proposed replacement emergency plan.

The proposed DAEC emergency plan considers the radiological consequences of postulated design basis accidents and transient scenarios applicable to DAEC during power operations, as contained in Chapter 15 of the DAEC Updated Final Safety Analysis Report (UFSAR), Revision 25 (Reference 10). These scenarios and analyses are expected to be reinstated as they exist in Revision 25 of the UFSAR. Any changes to these analyses will be evaluated via the 10 CFR 50.59, "*Changes, tests, and experiments*," process.

3.1 DAEC Emergency Plan Background

- In December 1982, the NRC approved the DAEC Emergency Plan (Reference 11).
- In 2020, the NRC issued a revised Emergency Plan for DAEC in Amendment 310 (Reference 12) to reflect the condition of the plant following permanent shutdown.
- In 2021, the NRC issued Amendment 313 (Reference 13) which revised the Emergency Plan to reflect a permanently defueled facility.
- In 2022, the NRC issued an ISFSI-only Emergency Plan in Amendment 318, which remains the current Emergency Plan (Reference 6).

3.2 Current DAEC Emergency Plan

The current DAEC emergency plan was approved by the NRC in 2022 (Reference 6) and addresses an ISFSI-only emergency scheme. The ISFSI-Only Emergency Plan (IOEP) describes the plan for responding to emergencies that may arise at DAEC with all fuel transferred to the ISFSI. DAEC has provided certification to the NRC required by 10 CFR 50.82(a)(1)(i) and (ii) that DAEC has permanently ceased power operations, and all fuel has been transferred to dry storage at the DAEC ISFSI site. The IOEP adequately addresses the risks associated with DAEC's current conditions.

The NUHOMS Updated Final Safety Analysis Report (UFSAR) describes the Design Basis Accidents applicable to the DAEC ISFSI along with the radiological dose calculation results. As provided in the NUHOMS UFSAR, the analyses of the potential radiological impacts of postulated off-normal, natural phenomena, and accident events involving the ISFSI indicate that any releases would result in a dose to the public below those limits established in 10 CFR 72.106(b). Exposure levels, which warrant pre-planned response measures, are generally limited to the ISFSI and immediate vicinity, and for this reason, radiological emergency planning is focused on this area.

The concepts presented in the current plan address the applicable regulations stipulated in 10 CFR 50.47, "Emergency Plans", and 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," as exempted. Exemptions to selected portions of 10 CFR 50.47(b); 10 CFR 50.47(c)(2); and 10 CFR 50, Appendix E were previously approved by the NRC (Reference 2). The plan is consistent with the remaining applicable guidelines established in NUREG-0654, Revision 1.

3.3 Proposed DAEC Emergency Plan

The proposed DAEC Emergency Plan consists of the following separately maintained emergency preparedness licensing basis documents:

- NextEra CEP
- DAEC Emergency Plan Annex
- DAEC Emergency Action Level Technical Basis
- DAEC On-Shift Staffing Analysis
- DAEC Evacuation Time Estimate Study
- DAEC Protective Action Recommendation Strategy Technical Basis
- DAEC Alert and Notification System Design Report

The NextEra CEP, the DAEC Annex, the Emergency Action Level Technical Basis and the On Shift Staffing Analysis are enclosed with this LAR. The Evacuation Time Estimate Study is submitted separately. The Protective Action Recommendation Technical Bases is being developed with the affected offsite responsible organizations and will be available for inspection during emergency planning drills. The Alert and Notification System Design Report will be sent to FEMA for review. FEMA will provide their findings to the NRC.

Additionally, direction is provided through Emergency Plan Implementing Procedures (EPIPs), and associated program administrative documents. The emergency plan outlines the basis for response actions that would be implemented in an emergency. The proposed DAEC Emergency Plan establishes the concepts, evaluation and assessment criteria, and protective actions that are necessary to limit and mitigate the consequences of potential or actual radiological emergencies.

NextEra Common Emergency Plan

The NextEra CEP establishes an updated licensing basis for DAEC that complies with current NRC regulations in 10 CFR 50.47 and 10 CFR 50 Appendix E, and the guidance contained in NUREG-0654, Revision 2 (Reference 15).

The CEP was developed using the NUREG-0654, Revision 2 outline and is organized such that each evaluation criterion (or planning element) is explicitly stated, followed by a description of how the NextEra CEP addresses that criterion.

The NextEra CEP provides the basis for response actions that would be implemented in an emergency and the requirements for maintenance and administration of the emergency preparedness program. Planning elements common to all sites are encompassed within the common emergency plan.

The DAEC annex contains unique information such as:

- Local agency and support organizations, site specific agreement lists, etc.
- Site specific response facilities and equipment

The NRC approved NextEra CEP became effective on June 18, 2025, and was implemented at all NextEra operating plant sites. There has been one revision since NRC approval that removed a general statement from Element N.1 regarding unique initiating conditions exercises. The statement is unnecessary based on the specificity of Evaluation Criteria N drill and exercise requirements. This change was evaluated per 10 CFR 50.54(q) and was determined to not result in a reduction in commitment.

3.4 Evaluation of Proposed DAEC Emergency Plan

The change process in 10 CFR 50.54(q)(3) and the guidance in Regulatory Guide 1.219 (Reference 16) are applicable to those licensed facilities that have certified the permanent cessation of operations but have not had their license terminated. 10 CFR 50.54(q)(3)(i) describes that changes to an emergency plan may be acceptable if they do not reduce the effectiveness of the plan and the plan, as changed, continues to meet the requirements in 10 CFR 50, Appendix E and the planning standards of 10 CFR 50.47(b). The change evaluation is a comparison between the current NRC-approved emergency plan, and the emergency plan with the changes being considered.

The current NRC-approved DAEC emergency plan reflects NRC-approved exemptions and DAEC's permanently defueled condition following a sufficient decay of the spent fuel. The proposed DAEC emergency plan is based on an operating facility with a restored licensing basis and no exemptions. Therefore, a comparison between the proposed DAEC emergency plan and the existing emergency plan is necessarily limited in scope to those areas that overlap in the two plans and reflects the differences in licensing basis. The differences in the plans were evaluated to determine if any of the changes resulted in a reduction in effectiveness that required NRC approval. No reduction in effectiveness was identified. However, to support resumption of power operation, the proposed DAEC emergency plan is submitted for NRC approval.

The proposed DAEC emergency plan consists of the approved CEP and the DAEC Annex. The information below comes from those two documents. The document is noted in the discussion. Discussions below are paraphrased from their respective documents. See the documents for the complete discussion.

Evaluation Criteria A – Assignment of Responsibility

Current DAEC emergency plan	Proposed DAEC emergency plan
Responsibility for emergency response lies with the Emergency Director. The ERO augments the normal on-shift organization to respond to declared emergencies when activated. The ERO is activated at the Alert declaration or at the discretion of the Emergency Director. The designated on-shift and augmented ERO staff are capable of continuous (24-hour) operations for a protracted period. The minimum staff required to conduct routine and immediate emergency mitigation is maintained at the station.	<u>CEP</u> Emergencies are initially declared and responded to by the on-shift staff under the direction of the Shift Manager. Augmentation of the shift ERO is required at the Alert emergency classification level or higher, and discretionary at the Unusual Event emergency classification level. NextEra maintains a depth to the ERO that is capable of providing continuous (24 hour/day) operation throughout a declared emergency by providing relief of the on-shift and augmenting ERO positions by qualified individuals. Staffing is described in Planning Standard B.

Evaluation Criteria B – Emergency Response Organization

Current DAEC emergency plan	Proposed DAEC emergency plan
The ISFSI Shift Supervisor position is staffed 24 hours a day and assumes the Emergency Director role. The Emergency Director shall assume command and control. The augmentation personnel are available from DAEC or corporate staff and can be requested from various contractors. The Resource Manager will be in contact with the Emergency Director within two (2) hours of an emergency declaration. They coordinate any required resources, including serving as the public information interface. The Resource Manager does not need to physically report to DAEC to perform the assigned responsibilities. For a declared emergency involving radiological consequences, a minimum of one person trained in radiological monitoring and assessment will report to the DAEC ISFSI within four (4) hours of the emergency declaration. Security is administered in accordance with the Security Plan. Table B.1 is provided in the emergency plan.	<u>CEP</u> The Shift Manager position is staffed 24 hours a day. The Site Emergency Director will relieve the Shift Manager of overall Command and Control and the other key functions at an Alert or higher emergency classification level. The minimum augmenting ERO is composed of numerous personnel at various emergency support facilities consistent with the potential for offsite release of radioactive material. Some augmenting ERO may provide remote response support. For radiological support, only Radiation Protection Technicians are assigned to the ERO. Security is staffed in accordance with the Security Plan. Table B.1 is provided in the CEP. DAEC will staff the ERO in accordance with Table B.1 in the CEP.

Evaluation Criteria C – Emergency Response Support and Resources

Current DAEC emergency plan	Proposed DAEC emergency plan
Arrangements for requesting and utilizing resources have been made and other organizations capable of augmenting the planned response have been identified. Letters of Agreement are in place for those local organizations that will provide ambulance services, treatment of contaminated and injured patients, fire support services, and law enforcement response as requested by DAEC. These letters are maintained on file at DAEC. The identified agencies are: Linn County Sheriff's Office, Palo Volunteer Fire Department, Hiawatha Fire and Rescue Department, and Mercy Medical Center in Cedar Rapids.	<u>CEP</u> Coordination of response actions and exchange of information among Emergency Directors from appropriate response organizations is provided via pre-designated communication links between NextEra, the NRC, and ORO EOCs. When an emergency occurs, ERO personnel will ensure ERDS operation as soon as possible but not later than one hour after an alert or higher emergency classification level is declared, in accordance with 10 CFR 50.72(a)(4). The ERO is capable of maintaining continuous communications with the NRC. When requested, open communication lines will be staffed by knowledgeable personnel to ensure efficient and effective information flow. <u>Annex</u> The principal state agencies having planning and implementation responsibilities for emergencies for DAEC are: Iowa Department of Homeland Security and Emergency Management (HSEM), Iowa Department of Health and Human Services - Bureau of Radiological Health, Iowa Department of Public Safety - Iowa State Patrol, Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources, Iowa Department of Inspections, Appeals and Licensing, Iowa State Hygienic Laboratory (ISHL), and Iowa State University Extension Service. The counties with emergency service departments and other agencies interrelated to these local governments within the 10-mile EPZ (plume exposure pathway) of DAEC are: • Benton County • Linn County The local agencies having responsibilities for emergencies at DAEC are:

	Benton County Emergency Management Agency, Benton County Sheriff's Department Linn County Emergency Management Agency, Linn County Sheriff's Department, Mercy Medical Center, Mercy One Waterloo Medical Center, Palo Fire Department, Hiawatha Ambulance Service, Area Ambulance Service, and Palo Community Center. Letters of Agreement are maintained at DAEC. The station's main chemistry laboratory is located in the Control Building. The back-up chemistry laboratory is located at the Point Beach Nuclear Station.

Evaluation Criteria D – Emergency Classification System

Current DAEC emergency plan	Proposed DAEC emergency plan
The emergency classification system categorizes accidents and/or emergency situations into two emergency classification levels depending on emergency conditions at the time of the incident. The emergency classification levels applicable to DAEC, in order of increasing severity are NOUE and Alert. Each of these emergency classes requires notification of the responsible State of Iowa and Linn County authorities, and the Nuclear Regulatory Commission (NRC). The Emergency Response Organization (ERO) will be notified at an Alert declaration. DAEC's ISFSI-Only emergency classification system is developed consistent with NEI 99-01, Revision 6. The emergency classification system and the EALs are reviewed with the State of Iowa and Linn County on an annual basis.	<u>CEP</u> NextEra has established and maintains a standard emergency classification and emergency action level scheme. The EAL Technical Basis Document is referenced in the site annex. The spectrum of postulated emergency events is categorized into the following four (4) emergency classification levels (ECLs): • Unusual Event • Alert • Site Area Emergency • General Emergency Emergency Action Levels (EALs) at DAEC have been developed in accordance with NEI 99-01, Revision 6. The EAL scheme is reviewed with the sites' respective OROs on an annual basis. NextEra has and maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL threshold has been met or exceeded.

Evaluation Criteria E – Notification Methods and Procedures

Current DAEC emergency plan	Proposed DAEC emergency plan
DAEC is capable of notifying and activating its Emergency Response Organization 24 hours per day. It is also able to make notifications to the State of Iowa and Linn County, and the NRC on a 24 hour per day basis. Notification to the responsible State and County authorities is required within 60 minutes of the emergency classification. The NRC will be notified as soon as possible after State/County notifications and within 60 minutes of event classification or change in classification message. No ANS is required based on an exemption from 10 CFR 50.47(b).	<u>CEP</u> The Emergency Director will direct or perform notification of the ERO for all emergency classification levels. NextEra, in cooperation with the OROs, has established mutually agreeable content, methods and procedures for notification of OROs. NextEra will notify the NRC using ENS as soon as possible after notification of the OROs, and not later than 60 minutes after event declaration. An accelerated call to the NRC will be made immediately after notification of local law enforcement agencies (LLEAs), or within about 15 minutes of the recognition of the security-based threat. The NextEra ANS is utilized to alert and notify the general public within the plume exposure pathway EPZ.

Evaluation Criteria F – Emergency Communications

Current DAEC emergency plan	Proposed DAEC emergency plan
In the event that personnel required to staff ERO positions are not on-site at the time an emergency is declared, they may be contacted by commercial telephone including land lines and/or wireless devices capable of receiving telephone calls and text messages. The commercial telephone network serves as the primary means to provide emergency notification to State and County agencies. In the event the commercial telephone system is unavailable, wireless communications can be used to make emergency notifications. In addition, electronic means may be used to transmit the notification. The NRC Emergency Notification System (ENS) is a dedicated telephone system used to notify the NRC Operations Center of an emergency. Communications with the primary and secondary medical facilities will be accomplished through the use of the commercial telephone system. Communications with the ambulance will be accomplished through the use of the Linn County fire frequency radio network. Provisions for periodic testing of the emergency communications system are described.	<u>CEP</u> Provisions exist for continuous capability of communications with OROs and the NRC. Systems available for internal and external communications include: • Telephone Systems • Public Address System • Radio Communications • Cellular Telephones • Satellite Telephones • Local and Wide Area Networks • Data Systems Cellular and satellite telephones provide communications capability should the main telephone systems lose power. Sites use an automated ERO notification system to notify ERO members of a declared emergency. Multiple redundancies are incorporated such that activation of the system can be performed by computer or from any phone system, and operation can take place from more than one location. Communication systems testing is accomplished in accordance with Table F-1.

Evaluation Criteria G – Public Education and Information

Current DAEC emergency plan	Proposed DAEC emergency plan
The function of providing public information will be performed by the Resource Manager or Communications personnel. The Emergency Director or Resource Manager will notify the Communications staff of an emergency declaration. The Communications staff monitors media activity and coordinates with senior management to address rumors and disseminate information to the public. The spokesperson will participate in news conferences as appropriate. The Communications staff is available for media	<u>CEP</u> NextEra, in coordination with OROs, updates and distributes site related emergency planning information annually to residents living within the plume-exposure pathway emergency planning zone (EPZ). A spokesperson is designated as the primary point of contact for NextEra and is responsible for the consistency of the information released by the utility. OROs address public response and actions in accordance with their respective plans.

inquiries, and the positional duties include maintaining liaison with local media and coordinating with Federal, State and local emergency response organizations to disseminate appropriate information regarding an emergency at DAEC. Annual information distribution to residents is not required per the exemption.	NextEra personnel coordinate with ORO and federal PIOs via the JIC, when activated, to identify and address public inquiries and inaccurate information. The news media will be provided materials to acquaint them with emergency planning effort at the NextEra specific site(s) annually.

Evaluation Criteria H – Emergency Facilities and Equipment

Current DAEC emergency plan	Proposed DAEC emergency plan
During an emergency, command and control functions are managed within the Emergency Response Facility (ERF). The facility provides sufficient space to accommodate anticipated response personnel and provides 24-hour availability of the communications systems specified in Section F. Radiological conditions resulting from the design basis accidents specified in the NUHOMS UFSAR do not inhibit staffing of the ERF. Emergency equipment and supplies necessary to carry out the provisions of the IOEP and support procedures are maintained at the ERF. First aid supplies and equipment are located at the ERF. Qualified personnel are available 24 hours a day to provide medical treatment.	<u>CEP</u> The Technical Support Center (TSC) provides a dedicated location for management and technical support to operations personnel and to relieve the operations staff of emergency response actions and communications not related to plant system manipulations. Personnel in the TSCs are protected from radiological hazards. The facility has the capability to supply and display technical information for use by technical and designated management personnel in support of reactor operations and Control Room functions during emergency and recovery operations. The TSC's normal power is from onsite power and backup power is supplied from emergency power source. Each TSC provides communications to the Control Room, OSC, EOF, Corporate Headquarters, NRC, and OROs. The Operations Support Center (OSC) provides a dedicated location for coordinating and planning event response activities and for staging personnel and equipment. The OSC is sized to accommodate ERO responders. Dosimetry (dose of legal record and self-reading capable of monitoring emergency radiation exposure), respiratory protection, radiation survey equipment, and RWPs are available to OSC personnel. In the event of a personnel contamination, decontamination will be performed in the area normally designated for this purpose.

	The Emergency Operations Facility (EOF) provides a dedicated location for support of the site event response activities. The EOFs are sized to accommodate ERO responders and NRC, FEMA, and state representatives. The EOFs have the capability for the acquisition, display, and evaluation of unit, radiological and meteorological conditions necessary to perform accident assessment and determine protective measures. Each EOF provides communications to the Control Room, TSC, field monitoring teams, NRC, and OROs. Alternate temporary locations for the Emergency Operations Facility may be designated by the EOF Manager. An alternative facility provides a location for the staging of ERO personnel in the event of a Security or Hostile Action threat for each NextEra site. A near-site JIC (outside the 10-mile EPZ) is established for each site. NextEra sites have installed instrumentation for seismic monitoring, radiation monitoring, hydrologic monitoring, meteorological monitoring, and fire/ toxic gas/combustion products detectors in accordance with site Current Licensing Basis (CLB) documents. Each NextEra site maintains a supply of equipment, either at the site or the near-site EOF, for two Field Monitoring Teams assigned to perform onsite and offsite radiological monitoring and sampling functions. ERDS provides the NRC with selected meteorological data points on a near real-time basis. Emergency kits are assembled for radiation protection, field monitoring, first aid or other emergency use needs based on location and availability at each site. The site radiological laboratory is the primary location for receipt of field monitoring team samples.

Evaluation Criteria I – Accident Assessment

Current DAEC emergency plan	Proposed DAEC emergency plan
The activation of the IOEP and the continued assessment of accident conditions requires monitoring and assessment capabilities. DAEC maintains and operates on-site monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment. The assessment activities required to evaluate a particular emergency depend on the specific nature and classification of the emergency. The Emergency Director is responsible for the initial measurement of ISFSI dose rates after off-normal, natural phenomena, or accident events. The EALs identify the parameter value to determine the emergency condition. Classification of events is performed by the Emergency Director in accordance with the EAL scheme. If the measured ISFSI dose rates exceed the EAL threshold, the Emergency Director ensures a radioactive release assessment in the vicinity of the affected storage module or cask is performed. After the assessment is complete, the Emergency Director contacts the Resource Manager for assistance in interpreting the results of the radioactive release assessment.	<u>CEP</u> The magnitude of a release of radioactive material to the environment is primarily identified directly by effluent monitors. Survey and sample analysis may also be used to determine the magnitude of a release. Indirect means such as core damage estimates and release pathway assumptions may be used to estimate the magnitude of a release of radioactive material. NextEra uses site specific versions of the Unified RASCAL Interface (URI) off-site dose projection computer model. The underlying dose assessment model in URI is the NRC RASCAL 4 model, based on the methods and equations documented in NUREG-1940. Environmental surveys inside and outside the protected area are performed by Field Monitoring Team members under the direction of the EOF RP Coordinator. The ERO monitors plant parameters using information provided by plant data transmittal systems to assess the status of reactor fuel using core damage assessment procedures. Each NextEra site has arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere, and spent fuel pool. Dose assessment results and field monitoring readings assist in evaluating appropriate ECLs based on radiological EALs, and for developing any related PARs. NextEra field monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as 1E-7 µCi/cc in the presence of noble gases. NextEra field monitoring teams will track the plume from any radiological release by monitoring radiation levels and by obtaining and analyzing air samples.

Evaluation Criteria J – Protective Response

Current DAEC emergency plan	Proposed DAEC emergency plan
Protective actions for personnel at the facility are provided for their health and safety. Accountability should be considered and used as a protective action whenever a site-wide risk to health and safety exists and prudence dictates. If personnel accountability is required, at the direction of the Emergency Director, all individuals at the site (including non-essential employees, visitors, and contractor personnel) shall be notified by using the commercial telephone system, cell phones, site radios, and by face-to-face communication. Accountability of all personnel on the site should be accomplished within 60 minutes of the accountability announcement. All visitors and unnecessary contractors are relocated from the facility at the discretion of the Emergency Director. In the event of a suspected radiological release, personnel are monitored for radioactive contamination prior to leaving the Protected Area. An ETE is not required due to the exemption. PARs are not required due to the exemption.	<u>CEP</u> NextEra maintains procedures to provide for a range of protective actions for all areas controlled by the site. Protective actions have been developed for radiological incidents and to protect personnel during hostile actions directed at the site. Sitewide notifications and announcements are routinely made using the Public Address (PA) system. Site evacuation is required following a Site Area Emergency or General Emergency unless delayed due to safety issues. The sounding of an alarm over the public address system occurs for the initiation of site evacuation. Designated offsite locations for site evacuees, and the process to use them, have been identified through coordination with local emergency management personnel. Personnel evacuating are monitored for contamination, and, if possible and necessary, decontaminated before leaving the site. Typically, accountability of personnel inside the Protected Area is completed within 30 minutes of event declaration. Following a hostile action event, the personnel accountability process is initiated following containment or cessation of the threat. Protective equipment and supplies are available to personnel remaining on site or arriving on site during the emergency to minimize the effects of radiological exposures or contamination in accordance with radiation protection procedures. NextEra sites have developed PARs, in accordance with agreements made with the state agencies, for the plume exposure pathway EPZ that include evacuation, sheltering, and recommendations for radioprotective Potassium Iodide use. Updated ETE studies are submitted to the NRC.

	Applicable plume exposure pathway EPZ PARs are developed for use at the General Emergency classification level

Evaluation Criteria K – Radiological Exposure Control

Current DAEC emergency plan	Proposed DAEC emergency plan
The Emergency Director will ensure Radiological Control Areas (RCAs) are established in response to the event. The Emergency Director will limit access to all RCAs except for immediate access required to protect personnel or facilitate emergency repairs. Individuals authorized to enter RCAs are required to have dosimetry capable of measuring a dose received from external sources of ionizing radiation. All reasonable measures shall be taken to control the radiation exposure to emergency response personnel providing rescue, first aid, decontamination, emergency transportation, medical treatment services, corrective actions, and assessment actions within applicable limits specified in 10 CFR Part 20. The Emergency Director is responsible for authorizing personnel to receive doses in excess of 10 CFR Part 20 limits, if necessary. During emergency conditions, normal facility decontamination and contamination control measures are maintained as closely as possible. However, these measures may be modified, by the Emergency Director, should conditions warrant. Contamination control measures are maintained to address access control, drinking water and food supplies, and the return of areas and items to normal use in accordance with proper radiation and contamination control techniques.	<u>CEP</u> Approval is required if emergency workers are expected to receive dose in excess of 10 CFR 20 occupational dose limits. ALARA practices are utilized during emergencies as much as practical. Emergency worker exposure is monitored at the time of exposure by the use of electronic dosimeters. Radiation safety controls are established 24 hours per day to contain the spread of loose surface radioactive contamination. Personnel decontamination is performed using normal radiation protection procedures in on-site facilities. The site access process into the protected area for local support organizations responding on site during an emergency is controlled by site security personnel. Non-NextEra emergency workers supporting on-site activities will be issued dosimetry and/or be monitored by radiation protection personnel when responding to areas where a radiation dose may be received.

Evaluation Criteria L – Medical and Public Health Support

Current DAEC emergency plan	Proposed DAEC emergency plan
DAEC maintains on-shift personnel and equipment to provide first aid for personnel working at the site. Medical supplies for emergency first aid treatment are provided on	<u>CEP</u> On-shift first aid personnel will provide first aid to individuals who are injured. Radiation protection personnel will provide

the site at various locations. If immediate professional medical help is needed, local ambulance services are available to transport seriously ill, injured, or radioactively contaminated injured personnel. Patients can also be transported to the facility via medical ambulance helicopters. Agreements are in place with Mercy Medical Center in Cedar Rapids for medical treatment. Mercy Medical Center has trained personnel and detailed procedures for handling radioactively contaminated patients from DAEC.	contamination control support to potentially contaminated injured personnel. NextEra maintains first aid supplies, and equipment for the treatment of injured or contaminated/injured persons. <u>Annex</u> The primary and backup offsite medical facilities to treat contaminated, injured personnel from DAEC are: • Primary - Mercy Medical Center located in Cedar Rapids. • Backup – Mercy One Waterloo Medical Center located in Waterloo. These hospitals have agreed to accept and treat injured personnel. <u>CEP</u> The medical procedures are designed to handle routine industrial injuries as well as situations involving radiation and/or contamination. NextEra personnel are available to assist medical personnel with decontamination, radiation exposure monitoring, and contamination control. Injured personnel are evaluated for radiological contamination prior to transport to a medical facility per site procedures. The Radiation Emergency Assistance Center Training Site (REAC/TS) located at Oak Ridge, Tennessee, will provide advice and assistance to offsite medical facilities in the event of a severe radiation accident. <u>Annex</u> Hiawatha Ambulance Service is the primary provider for the transportation of contaminated, injured individuals. Area Ambulance Service may provide backup ambulance service to transport injured persons from DAEC. Each service has the means to control contamination while transporting victims.

Evaluation Criteria M – Recovery, Reentry and Post-Accident Operation

Current DAEC emergency plan	Proposed DAEC emergency plan
Planning for the recovery involves the development of general principles and an organizational capability that can be adapted to any emergency situation. Upon termination of an emergency and transition to recovery phase, the Emergency Director assembles the recovery organization to address the specific emergency circumstances of the terminated event. The Emergency Director directs the recovery organization and is responsible for: • Ensuring the facility is maintained in a safe condition; • Managing onsite recovery activities; and • Keeping corporate support apprised of recovery activities and requirements. The remainder of the recovery is accomplished using the normal facility and emergency organizations as necessary to provide radiological and technical expertise to the Emergency Director in order to restore the facility to normal conditions. When conditions allow a transition from the emergency phase to the recovery phase, the Emergency Director conducts a facility emergency management meeting to discuss the recovery organization. The actions taken by this organization concerning termination of the emergency proceeds in accordance with a recovery plan developed specifically for the accident conditions.	<u>CEP</u> Reentry into the OCA will be based on site conditions. During or following a HAB incident, reentry criteria take into consideration site security and threat conditions. The recovery activities would be managed much like a normal outage, except that certain activities unique to the post-accident situation may be controlled by the recovery organization. The recovery organization would function as a matrix management organization to coordinate activities with the normal company organization. Steps will be taken to terminate from the event, either directly or following a transition period. Decisions to relax protective actions for the public will be made by the appropriate state authorities. When transition from an emergency to a recovery phase is necessary, the Emergency Director will designate a Recovery Manager and develop a recovery organization. The Emergency Director will inform the ERO, OROs, and NRC upon exiting the state of emergency and either returning to normal organizational control or entering recovery.

Evaluation Criteria N – Exercises and Drills

Current DAEC emergency plan	Proposed DAEC emergency plan
Periodic exercises are conducted to evaluate major portions of emergency response capabilities. Periodic drills are conducted to develop and maintain key emergency response skills. Deficiencies as a result of exercises or drills are identified and corrected. Biennial exercises shall be conducted to test the timing and content of implementing procedures and methods and to ensure that	<u>CEP</u> Each NextEra site will conduct a plume exposure pathway exercise biennially. OROs will be invited to participate in plume exposure pathway exercises. Biennial plume exposure pathway exercise scenarios are submitted to the NRC at least 60 days before they are held. NextEra will assist in development and participate as requested in an ingestion exposure pathway exercise to

emergency personnel are familiar with their duties. Offsite organizations are offered the opportunity to participate to the extent assistance would be expected during an emergency declaration. A medical emergency drill shall be conducted annually. An accountability drill shall be conducted annually. Health Physics drills are conducted annually involving response to, and the analysis of, simulated elevated in-facility airborne and liquid samples and direct radiation measurements in the environment. An off-hour, unannounced augmentation drill, will be conducted semiannually to estimate emergency response personnel response times. Fire Drills and Security Drills are conducted in accordance with the respective DAEC plans and procedures. A scenario package for exercises is assembled to create the various segments of the scenario. The final scenario shall be approved by a designated member of senior facility management. Critiques will evaluate the participant's performance during a drill or exercise. The ability of participants to self-evaluate weaknesses and identify areas of improvement is the key to successful exercise/drill conduct. Exercise and drill performance objectives are evaluated against measurable demonstration criteria. A written report is prepared including the evaluation of designated objectives.	support FEMA evaluation of ORO emergency plan response activities in this area. Each NextEra site will conduct at least one HAB scenario in an exercise within an eight-year cycle. Each NextEra site will conduct at least one rapid escalation scenario in an exercise within an eight-year cycle. Each NextEra site will conduct at least one scenario that integrates offsite resources provided by local support organizations with onsite response in an exercise within an eight-year cycle. Each NextEra site will conduct at least one scenario requiring demonstration of the ability to transition between procedures and select the strategy(ies) for preventing or mitigating fuel damage and limiting radiological releases, within an eight-year cycle. Each NextEra site will conduct at least one no/minimal radiological release scenario that does not require PARs in an exercise within an eight-year cycle. OROs located within the plume exposure pathway EPZ are invited to participate in exercises with no/minimal radiological release scenarios.

	Each NextEra site will conduct at least one off-hours drill or exercise within an eight-year exercise cycle. Each NextEra site will conduct an off-hours unannounced ERO report-in drill at least once within an eight-year cycle. The NextEra ERO notification is an all-call process. Each NextEra site will conduct an off-hours unannounced ERO call-in drill biennially to verify each minimum staffing ERO position meets the required Table B-1 response time. Each NextEra site will conduct a protective action drill within an eight-year cycle. Each NextEra site will conduct an aircraft threat/attack response drill at least once within an eight-year cycle. Each NextEra site will conduct a minimum staffing drill at least once within an eight-year cycle. Each NextEra site will conduct at least one unannounced drill or exercise within an eight-year cycle. Each NextEra site will conduct an onsite simulated medical drill once per calendar year. Each NextEra site will conduct an environmental monitoring drill once per calendar year. Each NextEra site will conduct communications drills once per calendar year.

Evaluation Criteria O – Radiological Emergency Response Training

Current DAEC emergency plan	Proposed DAEC emergency plan
The training program for ERO personnel is based on applicable requirements of Appendix E to 10 CFR Part 50 and position-specific responsibilities as defined in the IOEP. Emergency response personnel in the	<u>CEP</u> Initial training and annual continuing training is conducted to ensure ERO personnel are properly qualified to their specific position.

following categories receive initial training and annual retraining. ISFSI Shift Supervisors, Resource Managers and Augmented Responders will have training conducted such that proficiency is maintained on topics listed below. These topics should be covered as a minimum on an annual basis: • Emergency Action Level Classification • Radioactive Release Assessment • Federal, State, and local notification procedures • ERO Augmentation • Emergency Exposure Control • Recovery DAEC personnel available during emergencies to perform emergency response activities as an extension of their normal duties receive duty specific training. Personnel assigned the responsibility of on-shift first aid shall attend first aid training. An overview of the Emergency Plan is given to all personnel allowed unescorted access into the Protected Area. Training is offered annually to offsite organizations which may provide specialized services during an emergency at DAEC (fire-fighting, medical services, transport of contaminated and/or injured personnel, etc.). DAEC procedures outline the process to document training of the DAEC Emergency Response Organization.	Categories of ERO personnel requiring training are: • Emergency Directors (includes the aspect of classification, notification and PARs) • Accident Assessment • ERO Field Monitoring Team • Repair and Damage Control Teams • Security • Fire Brigade – Refer to the site fire protection program. • First Aid – Personnel assigned as first aid responders maintain qualifications equivalent to Red Cross Standard First Aid techniques NextEra offers emergency response training annually to local support organizations. The ERO training program is developed and evaluated based on position-specific responsibilities/tasks using Systematic Approach to Training (SAT) principles, when applicable. Changes to the training program are identified from trainee feedback and by critique items captured during drills and incorporated per the principles of the SAT process.

Evaluation Criteria P – Responsibility for the Planning Effort

Current DAEC emergency plan	Proposed DAEC emergency plan
Senior facility leadership is responsible for the development, administration and maintenance of the IOEP, EIPs, review and approval of all EPIP changes (with the exception of the EPIP used for emergency classification), planner training, the overall development and implementation of the DAEC ERO Training and Qualification Program and coordination of off-site emergency organization activities.	<u>CEP</u> The Chief Nuclear Officer has the overall authority and responsibility for the NextEra Common Emergency Plan. The site Regulatory Affairs Managers are responsible for the development, maintenance, review, and updating of the emergency plan, as well as the coordination of the plan with other response organizations.

The DAEC IOEP, ISFSI-Only EAL Technical Bases, and the EIPs included in Appendix 3 are reviewed on an annual basis and updated as needed. All proposed changes will be reviewed in accordance with 10 CFR 50.54(q) to ensure that the change would not compromise the effectiveness of any other EIP or degrade the effectiveness of the IOEP. Letters of Agreement with support agencies shall be reviewed annually. Agreements will be revised or recertified as appropriate. The emergency classification system and the EALs are reviewed with the State of Iowa and Linn County on an annual basis. The DAEC emergency telephone directory will be maintained and updated quarterly. Emergency equipment and instrumentation shall be inventoried, inspected and operationally checked periodically as indicated by the procedure and after each use. Sufficient reserves of equipment and instrumentation are stocked to replace emergency equipment and instrumentation removed from service for calibration and/or repair. The emergency plan contains a table of contents, numbered corresponding to NUREG-0654 evaluation criteria.	Initial EP program training for new EP staff members is performed and documented. Continuing training for EP staff members is performed periodically. The formal emergency plan (as defined in the introduction section) and the emergency plan implementing procedures (as defined in Section P.7) will be reviewed on an annual basis and updated if necessary. Letters of Agreement will be reviewed and verified on an annual basis, and updated if warranted. Changes will be processed in accordance with 10 CFR 50.54(q) requirements and NextEra document control/records management procedures. A listing, by title, of the site-specific response and maintenance procedures required to implement the emergency plan is provided in the site annexes. The NextEra emergency plan contains a specific table of contents. The emergency plan paragraphs are numbered corresponding to the NUREG-0654/FEMA-REP-1 R2 evaluation criteria. Evaluation criteria which do not apply to utilities are listed and identified. NextEra ERO contact information is verified semi-annually and updated as needed. The NextEra corrective action program is used to capture all events that do not meet program regulations, requirements, standards, or are otherwise conditions adverse to quality. Changes in plant configuration are evaluated for their impact on the effectiveness of the emergency plan through the plant modification or license compliance review processes specified in change procedures and, if required, the 10 CFR 50.54(q) change evaluation process.

Each element of NUREG-0654, Revision 2 is clearly stated in the NextEra CEP and each applicable element is stated in the proposed DAEC Annex. The proposed DAEC Annex combined with the approved CEP meets the requirements of NUREG-0654, Revision 2 as

shown in Attachment 1. The proposed emergency plan is a complete replacement for the current ISFSI-only emergency plan in effect at DAEC.

Therefore, the change from the current NRC-approved DAEC emergency plan to the proposed emergency plan meets the requirements of 10 CFR 50.54(q)(3)(i) to not reduce the effectiveness of the plan and to meet the planning standards of 10 CFR 50.47(b).

Interactions with the OROs continues and will result in completion of the activities affecting them. Onsite emergency plan procedures are being developed that follow the requirements in the CEP and the proposed DAEC Annex.

3.5 Emergency Action Levels

NEDA had previously updated its power operations EAL scheme to the NEI 99-01, Revision 6 (Reference 17) scheme as approved by the NRC in Amendment 308 (Reference 18). This previously approved EAL scheme will be reinstated for the power operation emergency plan. The current ISFSI EAL scheme will be discontinued since this new scheme includes the current action levels for the ISFSI.

NEI 99-01, Revision 6 (Reference 17) was endorsed by the NRC, as an acceptable approach to meeting the requirements of 10 CFR 50.47(b)(4), related sections of 10 CFR Part 50, Appendix E, and the associated planning standard evaluation elements of NUREG-0654/FEMA -REP-1.

There have been two revisions to the power operations EAL scheme since the NRC approved it in Reference 18.

Revision 1:

Deleted a bullet that listed the FTS phone system for use in contacting offsite organizations. Based on NEI 99-01 guidance, the FTS phone system is not used to contact the State and County agencies. That system should not have been listed as a communication option or method. The timing of the function of notifying principal response organizations will not change with the removal of a phone system not used for this purpose.

Added a note regarding manual actions to bring SS6 into alignment with SA6 and SU6. This change did not affect the planning standards and an analysis was not performed.

Revision 2:

During the transition from NEI 99-01 Rev. 5 to Rev 6 EALs, site specific text for loss of the RCS barrier in the Fission Product Barrier Table was added to the new wall boards, matching the former revision text for this (unchanged) EAL, but the matching bases language was not included in the new revision. This change corrects that oversight. This change does not affect the function of assessing emergency action levels, the accuracy of the classification, or the timeliness of the classification.

The proposed power operations emergency classification scheme provides clearly defined and readily observable EALs and threshold values. NEDA has adopted industry standard instructions for emergency classification (e.g., transient events, classification of multiple events,

upgrading, downgrading, etc.), and incorporation of features to improve human performance. The emergency classification scheme is appropriate to the risk posed to plant workers and the public, and is consistent with NEI 99-01, Revision 6.

The proposed EAL Technical Basis document is contained in Enclosure 4.

3.6 On-Shift Staffing Analysis (OSA)

Regulatory Issue Summary (RIS) 2016-10, "License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation," (Reference 19) states that an on-shift staffing analysis (OSA) under 10 CFR 50, Appendix E, Section IV.A.9 should not be used to provide the primary basis to support the Technical Evaluation of a License Amendment Request. The OSA, however, may be utilized as part of the overall evaluation of staffing changes.

The RIS states:

...an evaluation performed using only the guidance of NEI 10-05 does not satisfy the requirement to identify and evaluate changes to ERO augmentation timing or ERO augmentation staffing that reduces the capability to perform an Emergency Planning function.

In conjunction with this LAR, NEDA has performed and documented an OSA per 10 CFR 50, Appendix E, Section IV.A.9 following the guidance of NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," (Reference 20).

The task timing study resolved the potential task overlaps in the events that were analyzed. Emergency response tasks were performed sequentially with other tasks such that no overlap or overburden occurred however, NEDA understands that the OSA comprises a select set of identified scenarios and is not used as the sole basis for the conclusions in the technical evaluation supporting this amendment request.

The OSA is attached in Enclosure 5.

3.7 Site Specific EP Commitment Review

This review identifies the DAEC site-specific emergency preparedness commitments made to the NRC and determines whether they continue to be required in the NextEra CEP or the proposed DAEC Annex.

The results of the analysis of on-going DAEC site-specific NRC commitments and the commitments contained in the proposed NextEra CEP and DAEC Annex revealed that any site-specific NRC commitments are captured within the proposed emergency plan.

There are no new commitments identified in this analysis.

3.8 Protective Action Guidance

Protective action recommendations are not required for the current DAEC emergency plan since DAEC presents a low likelihood of any credible accident resulting in radiological releases

requiring offsite protective measures because of the permanently shut down and defueled status of the reactor.

PARs have been developed using the guidance of NUREG-0654, Supplement 3 (Reference 8) which provides an acceptable method to comply with 10 CFR 50, Appendix E, Section IV, paragraph 3 in the use of evacuation time estimates in the formulation of PARs for the plume exposure emergency planning zone, and provides guidance for the provisions of 10 CFR 50.47(b)(10) in the development of a range of PARs.

Offsite protective actions, including sheltering, evacuation and contamination control, will be taken in accordance with the action criteria established in the EPA Protective Action Guides (PAGs). The responsibilities associated with implementation of such protective actions are specified in the Linn County and Benton County Radiological Emergency Response Plans.

The DAEC ETE for Linn and Benton Counties identifies population distributions, evacuation time estimates, and evacuation routes. EPZ evacuation routes are as delineated in the Linn County and Benton County Radiological Emergency Response Plans and the State of Iowa Radiological Emergency Response Plan. The county plans contain the EPZ evacuation plans.

A site-specific logic diagram was generated using the guidance in NUREG 0654, Supplement 3 and the station's ETEs. The logic diagram includes decision points for use by NEDA such as 1) rapidly occurring severe reactor accidents, 2) impediments including security events, and 3) expansion of PARs based on dose projections exceeding PAGs.

DAEC emergency plan procedures provide clear guidance on the requirement to provide timely offsite notifications for emergency declarations and PARs within 15 minutes. These procedures provide for the ability to expand public protective action recommendations beyond the initial plant condition PAR and guidance on de-escalation and termination of classified events.

3.9 Evacuation Time Estimate

The ETE report describes the analyses undertaken and the results obtained by a study to develop ETE for DAEC, located in Linn County, Iowa. The ETE are part of the required planning basis and provide NEDA and the OROs with site-specific information needed for protective action decision-making.

In the performance of this effort, guidance is provided by documents published by Federal Governmental agencies. Most important of these are:

- 10 CFR 50, Appendix E, Emergency Planning and Preparedness for Production and Utilization Facilities, NRC, 2011.
- NUREG/CR-7002, Revision 1, Criteria for Development of Evacuation Time Estimate Studies, February 2021.
- NUREG 0654/FEMA P-1028, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, December 2023.

The ETE report contains the assumptions, methodology and results of the study. It was submitted to the NRC separately in Reference 22.

3.10 Alert and Notification System

The previous operational Emergency Plan utilized sirens as the primary method to notify the public in the event of a radiological emergency at DAEC. Since the transition to an ISFSI only Emergency Plan the sirens were sold to the OROs and are not part of the emergency plan. NEDA has elected to use a new method for the primary Alert and Notification System to alert and disseminate information regarding an emergency at DAEC: the Federal Emergency Management Agency (FEMA) national system for local alerting, the Integrated Public Alert and Warning System (IPAWS).

IPAWS provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts (IPAWS-WEA), through radio and television via the Emergency Alert System (IPAWS-EAS), and through the National Oceanic and Atmospheric Administration's (NOAA) Weather Radio. IPAWS-WEA messages are short emergency messages. These messages are sent from authorized Federal, State, and local public alerting authorities and go through the Integrated Public Alert and Warning System Open Platform for Emergency Networks (IPAWS-OPEN) to receive and authenticate messages transmitted by alerting authorities. IPAWS-OPEN then routes the IPAWS-WEA message to participating wireless carriers, which then push the alerts to mobile devices in the specified geographical target area.

IPAWS-EAS is a method to activate the Emergency Alert System (EAS), which is a national warning system in the United States designed to allow authorized officials to broadcast emergency alerts and warning messages to the public via cable, satellite and broadcast television and AM, FM and satellite radio.

The ANS for DAEC will rely on the IPAWS-WEA and IPAWS-EAS as the primary means of alerting and notifying the public respectively, and an independent electronic Mass Notification System (MNS) as the backup means. Additional details of the system are described in the ANS Design Report. This report will be submitted to FEMA for approval.

Capabilities to notify the public are fully maintained as part of this change. As such, the DAEC Emergency Plan will meet regulatory requirements, including those in 10 CFR Part 50 Appendix E, Section IV.D.3 relating to timely communication during a response to a declared emergency.

3.11 Impact of Proposed Changes on ORO Emergency Plans

A draft copy of the proposed DAEC Annex along with the approved CEP will be provided to emergency preparedness representatives at the State of Iowa, Benton County and Linn County to inform them of the proposed changes and solicit comments.

State and county personnel acknowledged their intent to participate in planning efforts that support meeting NUREG-0654 criteria, including any required field demonstrations. The specific nature of arrangements in support of emergency preparedness for operation of DAEC are still in development and will be clearly established in a properly executed and binding letter of agreement that will be documented in the DAEC emergency plan. Further concurrence will be acquired upon NRC approval of the DAEC Emergency Plan Annex and revisions to the ORO

emergency preparedness programs will be conducted during the requested implementation period, as necessary.

Refer to Enclosure 6, Correspondence from State Agencies, for agency intent regarding proposed changes to the DAEC emergency plan.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

The planning standards, as set forth in 10 CFR 50.47(b), establish the requirements that the onsite and offsite emergency response plans must meet in order for the NRC staff to find there is reasonable assurance that the licensee will take adequate protective measures in the event of a radiological emergency.

In addition, Appendix E to 10 CFR Part 50, "Emergency Planning and Preparedness for Production and Utilization Facilities," Section IV.1, states, in part, that "...the emergency response plans submitted by an applicant for a nuclear power reactor operating license under this part, or for an early site permit (as applicable) or combined license under 10 CFR part 52, shall contain information needed to demonstrate compliance with the standards described in § 50.47(b), and they will be evaluated against those standards."

The requirements for making changes to emergency plans, as set forth in 10 CFR 50.54(q)(4), state, "[t]he changes to a licensee's emergency plan that reduce the effectiveness of the plan as defined in paragraph (q)(1)(iv) of this section may not be implemented without prior approval by the NRC."

NUREG-0654/FEMA-REP-1, Revision 2, provides specific evaluation criteria that the NRC has determined as an acceptable means of complying with the planning standards in 10 CFR 50.47. These criteria provide a basis for NRC licensees (and applicants), and State and local OROs to develop acceptable radiological emergency preparedness plans.

4.2 Precedent

Precedent for implementing a power operation emergency plan after docketing the 10 CFR 50.82(a)(1) certification and before reaching the renewed facility license expiration date has been issued. Palisades Nuclear Plant has received approval of an emergency plan supporting resumption of power operation, as described in the following:

- USNRC letter to Holtec International, LLC, "Issuance of Amendment No. 278 re: Revise the Site Emergency Plan to Support Resumption of Power Operations" dated July 24, 2025 (ADAMS Accession No. ML25150A281)

Additionally, Crane Clean Energy Center has submitted a license amendment request to update their current emergency plan to reflect the proposed power operation condition of the plant.

- Letter from Constellation to USNRC, "License Amendment Request - Proposed Changes to Christopher M. Crane Clean Energy Center (CCEC) Site Emergency Plan and Emergency

Action Level Scheme for an Operating Facility and Exemption Rescission Request," dated October 31, 2025 (ADAMS Accession No. ML25304A098)

These precedents differ from this request because they reinstate a previous power operations emergency plan with changes. This request does not reinstate a previous power operations emergency plan but instead adopts the CEP and creates a site-specific annex. Therefore, the information justifying this first-of-a-kind request differs from that provided in these precedents.

4.3 No Significant Hazards Consideration

Pursuant to 10 CFR 50.90, NextEra Energy Duane Arnold, LLC (NEDA) is submitting a license amendment request (LAR) to update the licensing basis by replacing the current Duane Arnold Energy Center (DAEC) Emergency Response Plan to reflect the resumption of power operations at DAEC. The new plan consists of the approved NextEra Common Emergency Plan and a DAEC site-specific annex.

By standardizing the emergency plan, DAEC will become consistent with the NextEra fleet in the areas of organizations, duties and responsibilities, procedures, and training. DAEC will align with other NextEra fleet sites by using consistent standards and definitions. The proposed changes will align the DAEC emergency preparedness program with NUREG-0654/FEMA-REP-1, Revision 2.

The proposed changes have been reviewed considering the applicable requirements of 10 CFR 50.47, 10 CFR 50 Appendix E and other applicable NRC guidance criteria.

NEDA has evaluated whether a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

The proposed changes do not increase the probability or consequences of an accident. The proposed changes do not impact the function of plant Structures, Systems, or Components (SSCs). The proposed changes do not affect accident initiators or accident precursors, nor do the changes alter design assumptions. The proposed changes establish a new DAEC site specific annex to the approved NextEra Common Emergency Plan. The new emergency plan meets applicable requirements and standards as well as provide for effective emergency response. The new emergency plan also provides necessary response staff for emergencies as demonstrated by staffing analysis in accordance with 10 CFR 50 Appendix E.IV.A.9.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

The proposed changes have no impact on the design, function, or operation of any plant SSCs. The proposed changes do not affect plant equipment or accident analyses. The proposed changes do not involve a physical alteration of the plant (i.e., no new or different type of equipment will be installed), a change in the method of plant operation, or new operator actions. The proposed changes do not introduce failure modes that could result in a new accident, and the proposed changes do not alter assumptions made in the safety analysis. The proposed changes establish a new DAEC site specific annex to the approved NextEra Common Emergency Plan. The new emergency plan meets applicable requirements and standards as well as provides for effective emergency response. The new emergency plan also provides necessary response staff for emergencies as demonstrated by staffing analysis in accordance with 10 CFR 50 Appendix E.IV.A.9.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No

Margin of safety is associated with confidence in the ability of the fission product barriers (i.e., fuel cladding, reactor coolant system pressure boundary, and containment structure) to limit the level of radiation dose to the public. The proposed changes do not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analyses. There are no changes being made to safety analysis assumptions, safety limits, or limiting safety system settings that would adversely affect plant safety as a result of the proposed changes. Margins of safety are unaffected by the proposed changes to the DAEC emergency plan.

The proposed changes do not impact operation of the plant or its response to transients or accidents. The proposed changes do not involve a change in the method of plant operation, and no accident analyses will be affected by the proposed changes. Safety analysis acceptance criteria are not affected by these proposed changes. The proposed changes will continue to provide effective emergency response.

Therefore, the proposed changes do not involve a significant reduction in a margin of safety.

4.4 Conclusions

Based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) 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.

5.0 ENVIRONMENTAL CONSIDERATIONS

In Reference 21 NEDA provided an Environmental Report to the NRC evaluating the potential environmental effects of restart activities, including this proposed license amendment.

6.0 REFERENCES

1. USNRC to NextEra Energy, "Issuance of Amendments Regarding Fleet Emergency Plan Amendment," dated December 13, 2024 (ADAMS Accession No. ML24285A103)
2. USNRC to Florida Power and Light Company, "Exemptions from Certain Emergency Planning Requirements and Related Safety Evaluation," dated April 13, 2021 (ADAMS Accession No. ML21097A141)
3. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Certification of Permanent Removal of Fuel from the Reactor Vessel for Duane Arnold Energy Center," dated October 12, 2020 (ADAMS Accession No. ML20286A317)
4. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Regulatory Path to Potential Reauthorization of Power Operations," dated January 23, 2025 (ADAMS Accession No. ML25023A265)
5. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Request for Exemption from Certain Termination of License Requirements of 10 CFR § 50.82," dated January 23, 2025 (ADAMS Accession No. ML25023A270)
6. USNRC to Florida Power and Light Company, "Issuance of Amendment No. 318 to Renewed Facility Operating License to Implement the Independent Spent Fuel Storage Installation Emergency Plan," dated April 25, 2022 (ADAMS Accession No. ML22066A763)
7. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Request for Exemption from Portions of 10 CFR 50.47 and 10 CFR 50, Appendix E," dated April 2, 2020 (ADAMS Accession No. ML20101M799)
8. NUREG-0654/FEMA-REP-1, Revision 1, Supplement 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants: Guidance for Protective Action Strategies," dated November 2011
9. NEI 12-10, "Guideline for Developing a Licensee Protective Action Recommendation Procedure Using NUREG-0654 Supplement 3," dated April 2014
10. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Transmittal of Revision 25 of the DAEC Updated Final Safety Analysis Report and the Current DAEC Technical Specification Bases," dated March 21, 2019 (ADAMS Accession No. ML19100A042)
11. USNRC to Iowa Electric Light and Power, "Safety Evaluation Report," dated December 23, 1982 (ADAMS Accession No. ML20028C763)
12. USNRC to Florida Power and Light Company, "Issuance of Amendment No. 310 re: Changes Post-Shutdown Emergency Plan for Duane Arnold Energy Center," dated April 29, 2020 (ADAMS Accession No. ML20083G008)
13. USNRC to Florida Power and Light Company, "Issuance of Amendment No. 313 Regarding Changes to the Emergency Plan to Reflect the Permanently Defueled Condition and Make Changes to the Emergency Action Level Scheme," dated April 28, 2021 (ADAMS Accession No. ML21098A166)
14. Not used.

15. NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 2, dated December 2019 (ADAMS Accession No. ML19347D139)
16. Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors, Revision 1," dated July 2016
17. NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors," dated November 2012
18. USNRC to NextEra Energy Duane Arnold, LLC, "Issuance of Amendment No. 308 to Upgrade Emergency Action Level Scheme for Duane Arnold Energy Center," dated November 30, 2018 (ADAMS Accession No. ML18292A566)
19. RIS 2016-10, License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation, dated August 2016 (ADAMS Accession No. ML16124A002)
20. NEI 10-05, Assessment of On-Shift Emergency Response Organization Staffing and Capabilities, Revision 0, dated June 2011
21. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Submittal of Environmental Report in Support of Restart of Duane Arnold Energy Center," dated November 10, 2025 (ADAMS Accession No. ML25315A003)
22. Letter from NextEra Energy Duane Arnold, LLC to USNRC, "Evacuation Time Estimate for Duane Arnold Energy Center," dated January 26, 2026

ATTACHMENT 1

PROPOSED PLAN COMPARISON TO NUREG-0654/FEMA-REP-1 REVISION 2

(127 pages follow)

PROPOSED PLAN COMPARISON TO NUREG-0654/FEMA-REP-1, REVISION 2

Introduction

NextEra was issued a License Amendment for a Common Emergency Plan (CEP) with site-specific annexes on December 13, 2024 (ML24285A103). This License Amendment Request adds the site-specific DAEC annex to the existing NextEra CEP with site-specific annexes.

The NextEra CEP, along with the proposed DAEC Annex, establishes an updated licensing basis for DAEC that complies with current NRC regulations in 10 CFR 50.47 and 10 CFR 50 Appendix E, and the guidance contained in NUREG-0654/FEMA-REP-1 Revision 2.

The CEP and the proposed DAEC annex were developed using the NUREG-0654/FEMA-REP-1 Revision 2 outline and are organized such that each applicable evaluation criterion (or planning element) is explicitly stated, followed by a description of how the NextEra CEP and proposed DAEC Annex addresses that criterion.

The NextEra CEP provides the basis for response actions that would be implemented in an emergency and the requirements for maintenance and administration of the emergency preparedness program. Planning elements common to all NextEra sites, including DAEC, are encompassed within the CEP.

Each element of NUREG-0654 R2 is clearly stated in the proposed NextEra CEP and each applicable site-specific element is stated in the DAEC Emergency Plan Annex. The proposed annex combined with the approved CEP meets the requirements of NUREG-0654 R2 as shown below.

Each applicable evaluation criteria and element are described. Regulatory requirements are stated. The CEP section addressing the element is paraphrased in the first column. The proposed DAEC Annex section is paraphrased or repeated in the second column, as applicable. The Assessment column summarizes how the combined NextEra CEP and DAEC Annex meet the evaluation criteria or element as approved by the NRC for the NextEra CEP. The conclusion for each evaluation criteria provides additional information confirming how the plan meets the evaluation criteria and related planning standard.

The comparison assumes that the stated actions in the proposed DAEC Annex have been completed. Interactions with the offsite response organizations continue and will result in completion of the activities affecting them. Onsite emergency plan implementing procedures are being developed and follow the requirements in the CEP and the proposed DAEC Annex.

NUREG-0654 Evaluation Criteria A: Assignment of Responsibility

NUREG-0654, Evaluation Criterion II.A, addresses planning standard 10 CFR 50.47(b)(1), which states:

“Primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.”

Section IV.A of Appendix E to 10 CFR Part 50, requires, in part, that “[t]he 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 and the means for notification of such individuals in the event of an emergency.”

The requirements of 10 CFR 50.47(b)(1) and the applicable requirements of Section IV.A of Appendix E to 10 CFR Part 50 are addressed in Section A, “Assignment of Responsibility,” of the NextEra CEP with the proposed DAEC site-specific annex.

A.1 The federal, state, local, tribal, licensee, and other private sector organizations that comprise the overall response for the EPZs are identified.

A.1.a The organizations having an operational role specify their concept of operations and relationship to the total effort.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The CEP describes the role that NextEra and federal organizations have in the emergency response effort. The Offsite Response Organizations are described in the site annexes.	The principal state agencies having planning and implementation responsibilities for emergencies for DAEC are listed in the annex and their responsibilities are described. The counties with emergency service departments and other agencies interrelated to these local governments within the 10-mile EPZ (plume exposure pathway) of DAEC are: • Benton County • Linn County	The CEP in conjunction with the DAEC Annex provides information related to the licensee, federal, state and local response organizations concerning their operational roles, concept of operations and relationship to the total effort. The CEP in conjunction with the DAEC Annex meets the intent of element A.1.a.

	Under the provisions of the Iowa Code Chapter 29C, Emergency Management and Security, and the Benton and Linn County Emergency Government Ordinances, authorities of both counties have the responsibility and authority to coordinate offsite emergency activities in the event of a radiological incident. Additional information and the concept of operations is described in the county emergency plans. The DAEC Plume Exposure EPZ approximates a 10-mile radius around the plant site and is described and illustrated in the station's Evacuation Time Estimate Study report. A Figure identifying the site's 50-mile Ingestion Pathway Zone is contained in the proposed annex.	

A.1.b Each organization's emergency plan illustrates these interrelationships in a block diagram.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Section B.4 of the CEP provides a block diagram illustrating the interrelationships between the NextEra ERO, federal response organizations, and the OROs.	N/A	The block diagram found in section B.4 of the CEP illustrates the common set of interrelationships between the NextEra nuclear sites and their federal, state and local partners and meets the intent of element A.1.b. No additional information is required in the DAEC Annex to meet this element.

A.1.c Each organization identifies the individual, by title/position, who will be in charge of the emergency response.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Sections B.2 and B.2.a of the CEP identify the Site Emergency Director as the person at each NextEra nuclear facility who will be in charge of the emergency response.	N/A	The description of the Site Emergency Director as the person at each NextEra nuclear facility who will be in charge of the emergency response found in sections B.2 and B.2.a of the CEP adequately addresses the intent of element A.1.c. No additional information is required in the DAEC Annex to meet this element.

A.2 References to the applicable acts, codes, or statutes that provide the legal basis for emergency response-related authorities, including those that delegate responsibility and authority to state, local, and tribal governments are included. Each emergency plan indicates who may declare a "State of Emergency" and the powers that ensue.

This element is not applicable to the licensee emergency plan.

A.3 Each organization specifies the key individual(s), by title/position, responsible for the following functions, as applicable to that organization: command and control, alert and notification, communications, public information, accident assessment, public health and sanitation, social services, fire and rescue, traffic control, emergency medical services, law enforcement, transportation, protective response (including authority to request Federal assistance and to initiate other protective actions), and radiological exposure control.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The CEP refers to element B.1.a and Table B-1 for a list of key individuals responsible for command and control, alerting and notification, communications, public information, accident assessment, protective response (including authority to request federal assistance and to initiate other protective actions), and radiological exposure control.	N/A	Element B.1.a and Table B-1 specify the key individual(s), by title/position, at all NextEra nuclear sites responsible for the functions specified in element A.3. DAEC adopts the CEP staffing described in element B.1.a and Table B-1 of the CEP. No additional information is required in the DAEC Annex to meet this element.

A.4 Written agreements with the support organizations having an emergency response role within the EPZs are included. The agreements describe the concept of operations, emergency measures to be provided, mutually acceptable criteria for their implementation, and arrangements for exchange of information.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The CEP states that assistance will be provided, as necessary, by federal response organizations and OROs that are mandated by charter, regulation or law to protect public health and safety. Support agreements are necessary when an organization or individual is expected to provide assistance to NextEra and is not required otherwise to do so. To that extent, LOAs have been developed between NextEra and several entities to provide emergency response support and services consistent with this plan. The current signature copies of applicable LOAs and contracts are listed in the site annexes and are maintained locally on file.	Site specific letters of agreement (LOAs) or memorandums of understanding (MOUs) are maintained by DAEC with a number of organizations necessary to support emergency response. These organizations are listed in the Annex.	The LOAs and/or MOUs provide the necessary agreement and outline responsibilities for support from various agencies, organizations and private contractors. These written agreements are maintained by DAEC. This meets the intent of element A.4

A.5 Each principal response organization is capable of continuous operations for a protracted period. The principal response organization specifies the individual, by title/position, who is responsible for ensuring continuity of resources (technical, administrative, and material).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra maintains a depth to the ERO that is capable of providing continuous (24 hour/day) operation throughout a declared emergency by providing relief of the on-shift and augmenting ERO positions by qualified individuals. The shift rotation and ERO staffing for protracted ERO operations is designated by the Emergency Director. The Emergency Director is the individual responsible for assuring continuity of resources (technical, administrative, and material) within the ERO.	N/A	The CEP addresses the capability of continuous operations for a protracted period common to all NextEra nuclear sites including DAEC. This meets the intent of element A.5. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria A

The NextEra CEP describes the assignment of responsibility to NextEra, and State and local OROs within the Emergency Planning Zones (EPZs) for the NextEra sites, including DAEC. NUREG 0654 Evaluation Criteria A.1 through A.5 provide the primary responsibilities for emergency response by NextEra, and by Federal, State and local OROs within the EPZs. The interrelationships between NextEra, Federal, State and local OROs, and local services support (e.g., fire, medical and local law enforcement) are illustrated in a block diagram in element B.4 of the NextEra CEP.

The NextEra CEP identifies the individuals who will oversee the emergency response. It further identifies the responsibilities of key individuals responsible for command-and-control, alerting and notification, communications, public information, accident assessment, protective response (including the authority to request Federal assistance and to initiate other protective actions), and radiological exposure control.

The NextEra CEP relies on Federal, State, and local organizations to provide emergency response assistance. That assistance will be provided by Federal, State and local OROs that are mandated by charter, regulation, or law to protect public health and safety. Additional support agreements (Letters of Agreement (LOAs) and Memoranda of Understanding (MOUs)) are not required with these agencies.

The additional entities that are expected to provide emergency response support have developed LOAs or contracts/purchase orders with NextEra. LOAs and contracts are referenced by organization and title in the proposed DAEC site-specific annex to the NextEra CEP, with the actual LOAs and contracts maintained on file at DAEC. A contract/purchase order with a private contractor is considered acceptable in lieu of an LOA for the specified duration of the contract. The NextEra CEP states that NextEra maintains an ERO that can provide continuous operation for an extended period. The Emergency Director is the individual responsible for assuring continuity of resources (technical, administrative and material).

The proposed DAEC site-specific annex has a listing of the local OROs with an emergency response role, as well as figures identifying the site's 10-mile EPZ and 50-mile Ingestion Pathway Zone. The proposed DAEC site-specific annex has a list of LOAs/MOUs that are maintained by the site with the listed organizations.

NextEra has identified the primary responsibilities for emergency response by NextEra, and State and local OROs within the EPZs, confirmed that the emergency responsibilities of the various supporting organizations have been specifically established, and that each principal response organization has staff to respond and to augment its initial response on a continuous basis. Therefore, the planning standard of 10 CFR 50.47(b)(1) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria B: Emergency Response Organization

NUREG-0654, Evaluation Criterion II.B, addresses planning standard 10 CFR 50.47(b)(2), which states:

"On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified."

Section IV.A of Appendix E to 10 CFR Part 50 requires, in part, that "[t]he 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 and the means for notification of such individuals in the event of an emergency."

The requirements of 10 CFR 50.47(b)(2) and applicable requirements of Section IV.A of Appendix E to 10 CFR Part 50 are addressed in portions of Section B, "Emergency Response Organization," of the NextEra CEP with the proposed DAEC site-specific annex.

In conjunction with this LAR, NextEra has performed and documented an On-Shift Staffing Analysis per 10 CFR Part 50, Appendix E, Section IV.A.9 following the guidance of the Nuclear Energy Institute (NEI) document NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, June 2011 (ML111751698). The On Shift Staffing Analysis is provided as Enclosure 4 of this LAR.

B.1 The emergency plan specifies how the requirements of 10 CFR 50.47(b)(2) and the applicable sections of Appendix E to 10 CFR Part 50 are met.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
1.10 CFR 50.47(b)(2) Compliance: In December of 2019, the NRC issued NUREG-0654 R2, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants. The scope of NUREG-0654 R2 states "NPP applicants and licensees may voluntarily use the guidance in this document to demonstrate compliance with the underlying NRC regulations." The NextEra emergency plan and site annexes are based on the criteria provided in NUREG-0654 R2 as approved by the NRC. 2. 10 CFR 50 Appendix E Compliance: Refer to the 10 CFR 50 Appendix E.IV.A cross-reference in Appendix 3 of the CEP.	N/A	The CEP specifies how the requirements of 10 CFR 50.47(b)(2) and the applicable sections of Appendix E to 10 CFR Part 50 are met at all NextEra sites including DAEC. This meets the intent of element B.1.

B.1.a: The site-specific emergency response organization (ERO) is developed. Note that while other site programs, such as operations, fire response, rescue and first aid, and security, may be controlled via other licensing documents, it is only when these personnel are assigned EP functions that they become part of this regulatory standard. Consideration is given to ensure that EP functions are not assigned to individuals who may have difficulties performing their EP function(s) simultaneously with their other assigned (non-EP) duties. Appendix E to 10 CFR Part 50 requires licensees to perform an on-shift staffing analysis to ensure on-shift staff can support the EP functions assigned, as well as other assigned duties.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
A description of the normal site operating organization is contained in each site's UFSAR. The requirements for on-shift operations staff, security force staff, and fire brigade/first aid staff are controlled by Technical Specifications and other licensing and administrative documents. Positions from these departments are described in the emergency plan only when assigned an emergency preparedness function that is performed during an emergency. Site specific on-shift staffing analysis reports are developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05. The site specific on-shift staffing analysis reports are maintained as part of the site emergency plans and are referenced in the site annexes. Section B.1.a specifically lists the on-shift ERO and minimum augmenting ERO positions and describes their assigned responsibilities.	DAEC adopts the ERO on-shift staffing and the minimum augmenting ERO positions as shown in the CEP without deviation. The DAEC on-shift staffing analysis report has been developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05. It concludes that the on-shift staff at DAEC can support the EP functions assigned as well as other assigned duties. The staffing analysis report is provided in Enclosure 3 of this license amendment request.	The CEP specifies a common ERO used at all NextEra sites including DAEC. A DAEC on-shift staffing analysis report has been developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05. This meets the element B.1.a.

B.1.b: The remote emergency response organization (ERO) positions are defined. Resources necessary to perform the functions and tasks assigned to the remote response positions, as well as a backup capability, are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The NextEra ERO includes remote response positions. Remote response positions are not required to physically manipulate plant equipment or take other physical actions at the site. Remote response positions are provided the resources to collaborate with ERO personnel in their assigned emergency facility. ERO members responding remotely to an emergency are capable of performing all functions and tasks assigned to their position, including support provided to other ERO members, as described in the emergency plan and implementing procedures.	DAEC adopts the ERO on-shift staffing and the minimum augmenting ERO positions as shown in the CEP without deviation.	The CEP specifies a common ERO used at all NextEra sites including DAEC. Remote ERO positions are defined. DAEC will use remote responders as identified in the CEP. This meets Evaluation Standard B.1.b.

B.2 An individual is designated as the on-shift emergency coordinator (individual title may vary) who has the authority and responsibility to immediately and unilaterally initiate any emergency response measures, including approving protective action recommendations (PARs) to be disseminated to authorities responsible for implementing offsite emergency response measures.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Emergency Director ERO position has overall command and control of a declared emergency at a NextEra site. The Shift Manager is the individual who is on-shift at all times and assumes the role of Emergency Director upon emergency declaration. As Emergency Director, the Shift Manager has the authority and responsibility to immediately and unilaterally initiate any emergency actions, including providing protective action recommendations (PARs) to authorities responsible for implementing offsite emergency measures, The Shift Manager maintains overall command and control until relieved. The remote positions (refer to Section B.1.b) report to the Shift Manager until their associated response facility is activated.	N/A	The CEP specifies the Emergency Director ERO position as the designated on-shift emergency coordinator who has the authority and responsibility to initiate emergency response measures, including approving protective action recommendations. This title and authority applies to all NextEra sites including DAEC. This meets the intent of element B.2. No additional information is required in the DAEC Annex to meet this element.

B.2.a The functional responsibilities assigned to the ERO are established and the responsibilities that may not be delegated to other members of the ERO are clearly specified in the emergency plan.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Site Emergency Director will relieve the Shift Manager of overall Command and Control and the other key functions listed in Table B-1 at an Alert or higher emergency classification level. Non-delegable responsibilities include the following: Event declaration; ORO and NRC Notification; PARs for the general public; Emergency Exposure. Approving departures from license conditions per 10 CFR 50.54(x) transition from the Shift Manager to the Site Emergency Director upon transfer of command and control.	N/A	The CEP specifies the functional responsibilities assigned to the ERO that are established and the responsibilities that may not be delegated to other members of the ERO are clearly specified in the emergency plan. The responsibility assignment applies to all NextEra sites including DAEC. This meets the intent of element B.2.a. No additional information is required in the DAEC Annex to meet this element.

B.3 A table is developed depicting the site-specific on-shift staffing plan, as well as the ERO staffing augmentation plan. Table B-1, "Emergency Response Organization (ERO) Staffing and Augmentation Plan," provides a model for licensees to consider.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The ERO is composed of on-shift personnel located at the site at all times, and augmenting personnel (responding to their assigned emergency facility or remotely). Table B-1 establishes the on-shift and augmenting ERO staffing plan for the NextEra sites including DAEC.	N/A	The CEP Table B-1, "Emergency Response Organization (ERO) Staffing and Augmentation Plan," provides an ERO staffing plan common to all NextEra nuclear sites including DAEC. This meets the intent of element B.3. DAEC adopts the CEP staffing described in element B.1.a and Table B-1 of the CEP. No additional information is required in the DAEC Annex to meet this element.

B.4 The interfaces between and among the licensee functional areas of emergency activity, local services support, and state, local, and tribal government organizations are identified. The information includes all licensee emergency response facilities. A block diagram is preferred for ease of use, but not required.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Figure B.4 identifies the interfaces between NextEra ERFs, NRC, OROs, and local support organizations in the form of a block diagram.	N/A	The CEP provides a block diagram to describe the interfaces between licensee functional areas of emergency activity and local support services, and state, and local government organizations. This diagram is common to all NextEra nuclear sites including DAEC. This meets the intent of element B.4. No additional information is required in the DAEC Annex to meet this element.

B.5 The external organizations, including contractors, that may be requested to provide technical assistance to and augmentation of the ERO, as applicable, are specified.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The CEP lists INPO as an external organization that may provide technical assistance to the ERO. Other external (non-NextEra) support organizations that may be requested to provide technical assistance are described in the site annexes.	The Annex lists both Bechtel (architect engineer) and General Electric (NSSS vendor) as external organizations that may be requested to provide technical assistance.	These organizations have technical knowledge specific to DAEC and can provide support during an emergency. This meets the intent of element B.5

Conclusion for Evaluation Criteria B

The following discussion addresses alignment of the NextEra CEP staffing with the Emergency Preparedness (EP) functions as provided by NUREG-0654. DAEC follows this staffing plan without exception or deviation.

In conjunction with this LAR, NextEra has performed and documented an On-Shift Staffing Analysis (OSA) per 10 CFR Part 50, Appendix E, Section IV.A.9 following the guidance of the Nuclear Energy Institute (NEI) document NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, June 2011 (ML111751698).

Command-and-control

The purpose of the ERO command-and-control function is to: (1) provide overall ERO command-and-control, until relieved; (2) approve emergency action level (EAL) and/or protective action recommendation (PAR) classifications, until relieved; and (3) authorize personnel dose extensions, until relieved. The Shift Manager is the on-shift individual who will initially assume the ERO command-and-control function. Once relieved of the ERO command-and-control function, the Shift Manager will direct the operation of the plant to mitigate consequences of the event and assist the emergency director with reclassifications and protective action recommendations.

The guidance in NUREG-0654, Table B-1, "Emergency Response Organization (ERO) Staffing and Augmentation Plan," provides that the Operations Shift Manager will provide on-shift command-and-control capability. NUREG-0654 further provides that the on-shift Shift Manager will be relieved of the command-and-control function by the Emergency Coordinator in Technical Support Center (TSC) within 60 minutes of an Alert or greater emergency classification level with further augmentation by an Emergency Director in the Emergency Operations Facility (EOF) within 60 minutes of a Site Area Emergency or greater emergency classification level.

The NextEra CEP augments with a qualified Site Emergency Director in the TSC within 60 minutes of the Alert or greater emergency classification level and an EOF Manager within 90 minutes of the Alert or greater emergency classification level. The EOF Manager responds within 90 minutes of an Alert or greater emergency classification level; however, the command-and-control function remains with the qualified Site Emergency Director in the TSC.

As described in the NextEra CEP, the augmentation of a qualified Site Emergency Director in the TSC within 60 minutes of an Alert or greater emergency classification provides support to the Shift Manager for the command-and-control and Emergency Classifications functions. In addition, NextEra augments with a Radiation Protection (RP) Supervisor and an OSC Fix-it-Now (FIN) Supervisor within 60 minutes of an Alert or greater emergency classification level. The RP Supervisor provides support for the supervision of augmenting RP staff. If an urgent/high priority repair activity is required prior to OSC activation at 90 minutes, the Site Emergency Director will direct the OSC FIN Supervisor to perform the required repair activity or help operations to perform the repair activity. The augmenting 60-minute responders described above provide the Shift Manager adequate staffing to delegate task, prioritize, and provide command-and-control/oversight of the event.

Therefore, NextEra CEP meets the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the command-and-control function.

Communications

The purpose of the Communications function is to communicate EAL and PARs to the Offsite Response Organizations (OROs) and the NRC, until relieved.

NUREG-0654, Table B-1 recommends one on-shift communicator that may be assigned other duties. Following an Alert or greater emergency classification level, the TSC will be staffed with two communicators within 60 minutes, and an additional communicator, as needed, within 90 minutes. In addition, NUREG-0654, Table B-1 recommends the staffing of one communicator in the EOF within 60 minutes of a Site Area Emergency or greater emergency classification level.

NextEra employs a system (Emergency Response Notifications for Incidents and Events (ERNIE)) that performs initial ORO and NRC notifications using electronic means. Specifically, the technology advancements have enhanced the initial notification to the ORO by using an electronic system that contacts the ORO warning points and emergency management staff via email, text and verbal computer-generated voice communications, thus eliminating the need for a communicator to perform the verbal portion of the initial notification. Therefore, the ENS and ORO communications are performed by the following:

- An on-shift Communicator is assigned as a collateral duty to the designated ERNIE operator and is available to make the ENS notification and further continuous communications with the OROs and the NRC until relieved by the ORO Communicator and ENS Communicator positions in the TSC within 90 minutes of an Alert or greater emergency classification level.
- After the on-shift Dose Assessor is relieved by the Remote Dose Assessor (within 60 minutes), the on-shift Dose Assessor is available to assume on-shift ORO Communicator position until relieved by the ORO Communicator and ENS Communicators in the TSC within 90 minutes of an Alert or greater emergency classification level.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Communications function.

Radiation Protection

The purpose of the RP Function is to: (1) provide qualified RP coverage for responders accessing potentially unknown radiological environments during emergency conditions; (2) provide in-plant surveys, and (3) control dosimetry and Radiologically Controlled Area access.

NUREG-0654, Table B-1 recommends two RP technicians for a single unit site and one RP Technician per unit for a multi-unit site, with augmentation by three RP technicians within 60 minutes of an Alert or greater emergency classification level and an additional three RP technicians within 90 minutes of an Alert or greater emergency classification level.

The NextEra CEP includes Table B-1, "On-shift and Augmenting ERO Staffing Plan," that provides two on-shift RP technicians who are augmented by three RP technicians within 60 minutes of an Alert or greater emergency classification level and an additional three RP technicians within 90 minutes of an Alert or greater emergency classification level.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the RP function.

Supervision of RP Staff and Site RP

The purpose of the supervision of RP staff and site RP functions is to: (1) evaluate and assess plant and offsite radiological data in the development of onsite protective actions and offsite PARs; (2) recommend onsite and offsite PARs to the applicable decision-maker; (3) direct all RP activities, including radiological field monitoring team (FMT) activities; and (4) provide relevant information to applicable communicators who are communicating offsite PARs to OROs.

NUREG-0654, Table B-1 recommends that the supervision of RP function be augmented by a Site RP Coordinator in the TSC within 60 minutes of an Alert or higher classification, and by a RP Manager in the EOF within 60 minutes of a Site Area Emergency or greater emergency classification level.

The NextEra CEP requires an RP Supervisor to physically arrive on site within 60 minutes of an Alert or greater emergency classification level to address the Supervision of RP ERO staffing function. The RP Supervisor will provide support to the Shift Manager for the supervision of RP Technicians and site RP functions within 60 minutes of an Alert or greater emergency classification level until augmentation by the TSC RP Coordinator within 90 minutes from the Alert or greater emergency classification level.

The NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Supervision of RP Staff and Site RP function.

Dose Assessments/Projections

The purpose of this function is to perform dose assessments and projections, and provide input to the Emergency Director, until relieved. NUREG-0654, Table B-1 identifies the dose assessment/projection function as an on-shift position and clarifies that: "[o]ther personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time."

NextEra has one on-shift Dose Assessor augmented by one remote Dose Assessor within 60 minutes of an Alert or greater emergency classification level and one EOF Dose Assessor within 90 minutes of an Alert or greater emergency classification level.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Dose Assessments/Projections function.

Emergency Classifications

The purpose of the emergency classification function is to evaluate plant conditions and recommend emergency classification, until relieved. NUREG-0654, Table B-1 recommends that an emergency classification advisor perform this function on shift and clarifies that: "[o]ther personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time." Additionally, NUREG-0654, Table B-1 recommends that the on-shift Emergency Classification Advisor be augmented by one Emergency Classification Advisor in the TSC within 60 minutes of an Alert or greater emergency classification level.

NextEra determined that the on-shift SRO would be the best person to provide advice and recommendations on emergency classification due to their training and experience, and since they are experiencing the event in real time. Additionally, the Site Emergency Director (located in the TSC) will be responding within 60 minutes and a TSC Classification Advisor within 90 minutes from an Alert or greater emergency classification level to provide assistance to the Shift Manager/Emergency Director for the Emergency Classification function.

Because the NextEra CEP would use the affected unit SRO to provide advice and recommendations on emergency classification to the Shift Manager with support provided by the Site Emergency Director in the TSC within 60 minutes and a TSC Classification Advisor within 90 minutes of an Alert or greater emergency classification level, the Emergency Classification function is acceptable.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Emergency Classification function.

Engineering

The purpose of the engineering function is to provide engineering coverage related to core/thermal hydraulics, electrical/instrumentation and control (I&C) systems and equipment, and mechanical systems and equipment, until relieved.

NUREG-0654, Table B-1 recommends a Core/Thermal Hydraulics Engineer to evaluate reactor conditions for the on-shift engineering function and clarifies that: "[o]ther personnel may be assigned this function if no collateral duties are assigned to an individual that are beyond the capability of that individual to perform at any given time." Additionally, it recommends augmentation by one Electrical/I&C engineer, one Mechanical Engineer and one Core/Thermal Hydraulics engineer within 60 minutes of an Alert or greater emergency classification level.

The NextEra CEP has the Shift Technical Advisor on shift perform the Engineering function as a collateral duty, augmented by one Reactor Engineer, one Mechanical Engineer, and one Electrical Engineer responding remotely within 60 minutes of an Alert or greater emergency classification level.

Because the NextEra staffing provides engineering coverage within 60 minutes of an Alert or greater emergency classification, the Engineering function is acceptable.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Engineering function.

Security

NUREG-0654, Table B-1 recommends the on-shift security function to be provided by security staffing per the Site-Specific Security Plan. Table B-1 does not include on-shift staffing for security. NextEra has one on-shift Security Shift Supervisor per the site security plan. The Security Shift Supervisor communicates directly with the Shift Manager informing them of security-related actions and conditions. This communication does not change with the augmentation of the ERO.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Security function.

Repair Team Activities

NUREG-0654, Table B-1 recommends that the following maintenance personnel should respond to the OSC to support repair team activities:

- One electrician and one mechanic within 60 minutes of an Alert or greater emergency classification level to provide support for emergency core cooling system equipment, event mitigation, and equipment repair.
- One I&C technician within 90 minutes of an Alert or greater emergency classification level to aid with logic manipulation, support for event mitigation and equipment repair, and support of digital I&C, if applicable.

The NextEra CEP requires the OSC FIN Supervisor to physically arrive on site by 60 minutes of an Alert or greater emergency classification level to address the Repair Team Activities function as an alternative approach. If an urgent/high priority repair activity is required prior to OSC activation at 90 minutes, the Site Emergency Director will direct the OSC FIN Supervisor to perform the required repair activity or provide assistance to operations to perform the repair activity.

NextEra has one electrician, one mechanic, and one I&C technician in the OSC within 90 minutes of an Alert or greater emergency classification level. Because the OSC FIN Supervisor is trained, qualified and proficient equivalent to both the mechanical and electrical technician and the OSC FIN Supervisor will respond within 60 minutes of an Alert or greater emergency classification level, with further augmentation of a mechanical, electrical and I&C technician within 90 minutes of an Alert or greater emergency classification level, the Repair Team Activities function is acceptable.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Repair Team Activities function.

Supervision of Repair Team Activities

NUREG-0654, Table B-1 recommends a lead OSC Supervisor to staff the OSC within 60 minutes with a mechanical supervisor, an RP supervisor, an electrical supervisor, and an I&C Supervisor (who may be combined with the electrical supervisor) to respond within 90 minutes of an Alert or greater emergency classification level.

The NextEra CEP requires the OSC FIN Supervisor to physically arrive on site by 60 minutes of an Alert or greater emergency classification level to address the Repair Team Activities function as an alternative approach, with further augmentation by a Lead OSC Supervisor within 90 minutes of an Alert or greater emergency classification level.

Because the OSC FIN Supervisor will respond to the site within 60 minutes of an Alert or greater emergency classification level and will be supporting the Repair Team Activities function until the augmentation of the Lead OSC Supervisor within 90 minutes from an Alert or greater emergency classification level, the Supervision of Repair Team Activities function is acceptable.

Therefore, the NextEra CEP with site-specific annexes would meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Repair Team Activities function.

Field Monitoring

NUREG-0654, Table B-1 recommends one onsite FMT and one offsite FMT to be staffed within 60 minutes of an Alert or greater emergency classification level, and a second offsite FMT within 90 minutes of an Alert or greater emergency classification level. Each FMT would consist of a driver and one qualified individual (i.e., a field monitor) to assess the area for radiation and contamination. The field monitors for the offsite FMTs would also provide radioactive plume tracking.

NextEra states that the FMT monitoring is covered in two phases:

First phase, if a release is occurring, the interim Radiation Protection supervisor will direct an RP Technician to perform on-site (out-of-plant) Field Monitoring function at 60 minutes. The NextEra CEP identifies an RP Technician performing the Field Monitoring function at 60 minutes as part of the RP function. On-site (out-of-plant) is the area between site buildings and the Protected Area fence. The protected area of the DAEC site is small enough that a driver and vehicle are not required, so drivers and vehicles are not part of the first phase (Protected Area monitoring).

Second phase, two FMTs consisting of personnel qualified to perform FMT duties respond within 90 minutes of an Alert of greater emergency classification level. These personnel are under the direction of the EOF RP Coordinator. At the direction of the EOF RP Coordinator, these FMTs can perform monitoring of the protected area, Owner Controlled Area, or the EPZ (offsite), depending on the release rate, duration, and distance.

NextEra has the capability to perform on site (out-of-plant) surveys as a means of early identification of releases and provide data inputs to dose assessment, with the augmentation of FMTs within 90 minutes of an Alert or greater emergency classification and, therefore, meets reasonable assurance of the FMT function.

Therefore, the NextEra CEP meets the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A with respect to the timely and effective performance of the Field Monitoring function.

Media Information

The purpose of the media information function is to manage and coordinate media information related to the event. NUREG-0654, Table B-1 recommends that Joint Information Center (JIC)/Joint Information System (JIS) staff address media inquiries within 60 minutes of an Alert or greater emergency classification level but notes that this function does not need to be performed at the TSC or OSC but needs to be established at this point. NUREG-0654, Table B-1 further recommends additional staff to perform JIC/JIS-related functions within 60 minutes of a Site Area Emergency or greater classification. NUREG-0654 does not specify an on-shift capability and does not identify specific staff positions for the minimum staff for the JIC/JIS.

The NextEra CEP includes augmentation of Remote JIS staff within 60 minutes of an Alert or greater emergency classification level, with further augmentation of a Site JIS Manager and a Site JIS Coordinator at the JIC, and a Remote JIS Manager-Remote within 90 minutes of an Alert or greater emergency classification level.

The NextEra Corporate Communications and key business units maintain a staff to operate a JIS for day-to-day operations and at all emergency classification levels. The NextEra Corporate Communications and key business units respond to media and public inquiries for abnormal conditions and events at any declared emergency classification level. The NextEra Corporate Communications and key business units coordinate with site management and ERO personnel, when staffed, to respond to media inquiries. Press releases are issued as appropriate from the NextEra Corporate Communications and key business units.

NextEra implements JIS practices that are capable of performing the media information function at all emergency classification levels. The near-site JIC is activated when determined appropriate with the offsite agencies (at an Alert or greater emergency classification level).

Because NextEra provides an organization to provide media information within 60 minutes an Alert or greater emergency classification level, with further augmentation within 90 minutes of an Alert or greater emergency classification level, the Media Information function is acceptable.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A.

Information Technology

The purpose of the Information Technology (IT) function is to provide support for computer-based equipment if relied upon to perform emergency plan functions. NUREG-0654, Table B-1 states that IT staffing is only required to be described in the emergency plan if critical digital assets (CDAs) are identified per 10 CFR 73.54, "Protection of digital computer and communication systems and networks."

The NextEra CEP relies on the Digital Control System/Emergency Response Data Acquisition and Display System for monitoring plant parameters, which NextEra has determined to be a CDA. The IT process for addressing issues with CDAs operates full time outside the emergency plan on a 24/7 basis. Additionally, NextEra maintains an IT Help Desk 24 hours per day, 7 days a week. Many computer issues are addressed remotely with an IT specialist through the Help Desk.

NextEra evaluates each of the emergency plan-related digital assets are evaluated as part of implementation of the Cyber Security Rule, 10 CFR 73.54(b). Using the guidance in NEI 13-10, "Cyber Security Control Assessments," Revision 7, dated October 2021(ML21342A203), that was endorsed by the NRC in letter dated May 22, 2022 (ML22112A139), EP Critical Digital Assets are assessed and controls are put in place to protect the assets against cyber-attack. In conjunction with these controls, alternate administrative, non-digital, or adequately independent means are in place for performing each EP function, should the digital component or program fail.

Because NextEra maintains an IT department process for 24/7 coverage and built-in redundancy for communication systems and digital EP assets, the Information Technology function is acceptable.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A.

Minimum Augmenting ERO Positions

NUREG-0654, Table B-1, Note iii states:

The minimum ERO staffing plan is that which is required to effectively implement the site-specific emergency plan (i.e., the emergency plan cannot be effectively implemented without this staff). The emergency plan should only describe the minimum ERO staffing plan, while supporting implementing procedures can describe any other staff response desired by the licensee, as this additional staff is not critical to effective emergency plan implementation. The augmentation times listed are intended to provide a model for applicants and licensees to consider in the development of their site-specific emergency plan.

The NextEra CEP contains the list of the minimum augmenting ERO positions.

Non-Minimum Augmenting ERO Positions (Support Positions)

The non-minimum augmenting ERO positions that will remain in the implementing procedures are notified at the Alert emergency classification level, at the same time as the minimum augmenting ERO. However, non-minimum augmenting ERO positions are not required to be present to activate the facility and do not relieve the on-shift ERO of any emergency plan responsibilities. Non-minimum augmenting ERO positions have no augmentation time requirement.

Therefore, the NextEra CEP continues to meet the planning standard of 10 CFR 50.47(b)(2) and the requirements of Appendix E to 10 CFR Part 50, Section IV.A.

NextEra has defined on-shift responsibilities, provides adequate staffing to always maintain initial accident response in key functional areas, includes timely augmentation of response capabilities, and specifies the interfaces among various onsite and offsite response activities and support. Therefore, the planning standard of 10 CFR 50.47(b)(2) and applicable requirements of Appendix E to 10 CFR Part 50 are adequately addressed.

NUREG-0654 Evaluation Criteria C: Emergency Response Support And Resources

NUREG-0654, Evaluation Criterion II.C, addresses the planning standard 10 CFR 50.47(b)(3), which states:

“Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee’s Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.”

Section IV.A.7 of Appendix E to 10 CFR Part 50 requires the “identification of, and a description of the assistance expected from, appropriate State, local, and Federal agencies with responsibilities for coping with emergencies, including hostile action at the site.”

Section IV.E of Appendix E to 10 CFR Part 50 requires in part, that “adequate provisions shall be made and described for emergency facilities and equipment....”

The requirements of 10 CFR 50.47(b)(3) and applicable requirements of Sections IV.A.7 and IV.E of Appendix E to 10 CFR Part 50 are addressed in portions of Section C, “Emergency Response Support and Resources,” of the NextEra CEP with proposed DAEC site-specific annex.

C.1 Emergency response support and resources provided to the licensee’s EOF, as agreed upon, are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The EOF contains dedicated work areas and logistics resources for federal and, depending on the site, state response personnel. Federal and state personnel respond to the EOF in accordance with their emergency response plans and procedures.	N/A	The CEP describes logistics resources available at licensee EOFs. This description is common to all NextEra nuclear sites including DAEC. This meets the intent of element C.1. No additional information is required in the DAEC Annex to meet this element.

C.2 Provisions made for additional emergency response support and resources are described and include the following:

C.2.a The individual(s), by title/position, authorized to request emergency response support and resources from responding organizations.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

In the CEP, the individual authorized to request assistance and resources from responding organizations is the Emergency Director.	N/A	The CEP describes the individual(s), by title/position, authorized to request emergency response support and resources from responding organizations. This description is common to all NextEra nuclear sites including DAEC. This meets the intent of element C.2.a. No additional information is required in the DAEC Annex to meet this element.

C.2.b (1) Each organization from which emergency response support and/or resources may be requested, (2) the circumstance(s) in which the emergency response support and/or resources would be required, (3) the process for requesting needed emergency response support and/or resources, (4) categories of capabilities and/or resources expected to be provided, (5) when the expected emergency response support and/or resources would be available once requested, and (6) how integration would occur.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Elements A.1.a and A.4 of the CEP provides description and details of the provisions made for additional assistance and resources.	N/A	Elements A.1.a and A.4 of the CEP provides description and details of the provisions made for additional assistance and resources. This meets the intent of element C.2.b. No additional information is required in the DAEC Annex to meet this element.

C.2.c Coordination of NPP site access and support for external organizations that have agreed to provide requested emergency response support and resources

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

Site access is controlled at all times by the Security organization in accordance with the site security plan and procedures. The Security organization is responsible for coordination with external organizations when site access is needed for non-badged response personnel at an Alert or higher emergency classification level.	N/A	Coordination of NPP site access and support for external organizations is described in the CEP and is common to all NextEra nuclear sites including DAEC. This meets the intent of element C.2.c. No additional information is required in the DAEC Annex to meet this element.

C.2.d Agreements between licensees and local agencies for law enforcement, medical and ambulance services, fire, hospital support, and other support.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Local support organizations may be called to assist onsite for events requiring firefighting, medical, or law enforcement. Immediate assistance with firefighting, medical, and law enforcement at the sites is initiated using pre-established site-specific communications systems. Agreements have been formally developed and documented through memorandums of understanding (MOUs), contracts, and/or letters of agreement (LOAs). element A.4 provides details on agreements.	N/A	Agreements have been formally developed and documented for external organization support and is described in the CEP and is common to all NextEra nuclear sites including DAEC. This meets the intent of element C.2.d. No additional information is required in the DAEC Annex beyond the details in element A.4 to meet this element.

C.3 The capability of each principal organization to coordinate with other principal organizations leading the incident response is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

Coordination of response actions and exchange of information among Emergency Directors from appropriate response organizations is provided via pre-designated communication links between NextEra, the NRC, and ORO EOCs.	N/A	The capability of each principal organization to coordinate with other principal organizations leading the incident response is described in the CEP and is common to all NextEra nuclear sites including DAEC. This meets the intent of element C.3. No additional information is required in the DAEC Annex to meet this element.

C.4 Radiological laboratories, their general capabilities, and expected availability to provide radiological monitoring analysis services that can be used in an emergency are described. Plans to augment the identified radiological laboratories are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra has radiological laboratories located at each site. The site laboratories are the central point for receipt and analysis of onsite samples and includes equipment for chemical and radiological analyses. Site specific details for the radiological laboratories are described in the site annexes.	The station's main chemistry laboratory is located in the Control Building The back-up chemistry laboratory is located at the Point Beach Nuclear Station. The Iowa State Hygienic Laboratory (ISHL) offers a wide range of radiological testing services. These services include testing environmental samples from nuclear power facilities.	The Annex description of the onsite laboratory and the backup laboratories available to DAEC meets the intent of element C.4.

C.5 Arrangements are described for integrating the licensee's response with the NRC Headquarters and regional incident response centers and, when dispatched, the NRC's site response team.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

The Site Emergency Director in the TSC and the EOF Manager are the initial primary contact positions for the NRC site response team personnel sent to those facilities. Consistent with 10 CFR 50, Appendix E, areas within the EOF and TSC are established for NRC site response teams that include: Space for members of an NRC site team; Space for conducting briefings with emergency response personnel; Communication with other NextEra and offsite emergency response facilities; Access to plant data and radiological information; Access to office equipment and supplies.	N/A	Arrangements described for integrating the NextEra's response with the NRC Headquarters and regional incident response centers is described in the CEP and is common to all NextEra sites including the DAEC. This meets the intent of element C.5. No additional information is required in the DAEC Annex to meet this element.

C.5.a The activation process for the NRC's emergency response data system (ERDS) during an emergency is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
When an emergency occurs, ERO personnel will ensure ERDS operation as soon as possible but not later than one hour after an alert or higher emergency classification level is declared, in accordance with 10 CFR 50.72(a)(4).	N/A	The activation process for the NRC's emergency response data system (ERDS) during an emergency is described in the CEP and is common to all NextEra sites including the DAEC. This meets the intent of element C.5.a. No additional information is required in the DAEC Annex to meet this element.

C.5.b Provisions to continuously maintain open communications lines with the NRC, when requested, are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

The ERO is capable of maintaining continuous communications with the NRC. When requested, open communication lines will be staffed by knowledgeable personnel to ensure efficient and effective information flow.	N/A	Provisions to continuously maintain open communications lines with the NRC, when requested, are described in the CEP and is common to all NextEra sites including the DAEC. This meets the intent of element C.5.b. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria C

The NextEra CEP states that the NextEra EOFs contain dedicated work areas and logistics resources for Federal and State response personnel. Federal and State personnel respond to the EOF in accordance with their emergency response plans and procedures.

The NextEra CEP states that site access is controlled at all times by the Security organization in accordance with the site security plan and procedures. The Security organization is responsible for coordination with external organizations when site access is needed for non-badged response personnel at an Alert or higher emergency classification level.

The NextEra CEP states that local support organizations may be called to assist onsite for events requiring firefighting, medical services, or law enforcement. Immediate assistance with firefighting, medical services, and law enforcement at the sites is initiated using pre-established site-specific communications systems. Agreements are developed and documented through MOUs, contracts, and/or LOAs.

The NextEra CEP states that coordination of response actions and exchange of information among Emergency Directors from appropriate response organizations is provided via pre-designated communication links between NextEra, the NRC and ORO Emergency Operations Centers.

NextEra has radiological laboratories located at each site, including DAEC. The site laboratories are the central point for receipt and analysis of onsite samples and include equipment for chemical and radiological analyses. The laboratories provide analyses of samples from plant systems. Environmental monitoring sample analysis is also performed on site, or arrangements are made with off-site facilities. Site specific details for the radiological laboratories are described in the proposed DAEC site annex.

The NextEra CEP states that ERO personnel will activate and confirm activation of emergency response data system operation as soon as possible but no later than one hour of an Alert or greater emergency classification level.

The NextEra CEP states that the ERO is capable of maintaining continuous communications with the NRC. When requested, open communication lines will be staffed by knowledgeable personnel to ensure efficient and effective information flow.

NextEra has identified the arrangements for requesting and effectively using assistance resources, provided arrangements to accommodate State and local staff at the licensee's EOF, and identified other organizations capable of augmenting the planned response. Therefore, the planning standard of 10 CFR 50.47(b)(3) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria D: Emergency Classification System

NUREG-0654, Evaluation Criterion II.D, addresses planning standard 10 CFR 50.47(b)(4), which states:

"A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures."

Section IV.B.1 of Appendix E to 10 CFR Part 50 requires that "[t]he means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and State agencies, the Commission, and other Federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety."

Section IV.C.2 of Appendix E to 10 CFR Part 50 requires that "nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level."

The requirements of 10 CFR 50.47(b)(4) and applicable requirements of Sections IV.B.1 and C.2 of Appendix E to 10 CFR Part 50, are addressed in Section D, "Emergency Classification System," of the NextEra CEP with site-specific annexes.

D.1 A standard emergency classification and action level scheme is established and maintained. The scheme provides detailed EALs for each of the four ECLs in Section IV.C.1 of Appendix E to 10 CFR Part 50.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

NextEra has established and maintains a standard emergency classification and emergency action level scheme. The EAL Technical Basis Document is referenced in the site annexes.	The Annex identifies the procedure that documents the EAL Technical Basis.	The CEP establishes and maintains a standard emergency classification and emergency action level scheme, and the Annex documents the location of that scheme for DAEC. This meets the intent of element D.1.

D.1.a The EALs are developed using guidance provided or endorsed by the NRC that is applicable to the reactor design.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
EALs at NextEra sites have been developed in accordance with NRC endorsed guidance. This guidance and the NextEra site EAL schemes have been approved by the NRC. If the entire EAL scheme is to be changed, then the new EAL scheme will be submitted to the NRC for approval prior to implementation.	N/A	The CEP establishes EALs that are developed using guidance provided or endorsed by the NRC that is applicable to the reactor design for all NextEra sites including the DAEC. This meets the intent of element D.1.a. No additional information is required in the DAEC Annex to meet this element. DAEC has developed an EAL scheme based on NEI 99-01, Revision 6. It was previously approved in Amendment 308 (ML18292A566). It is submitted as Enclosure 4 of this license amendment request.

D.1.b The initial emergency classification and action level scheme is discussed and agreed to by the licensee and OROs, and approved by the NRC. Thereafter, the scheme is reviewed with OROs on an annual basis.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

The NRC approved NextEra EAL schemes have been agreed to by the OROs associated with the site. The current EAL scheme is reviewed with the sites' respective OROs on an annual basis.	N/A	The CEP describes that the approved EAL schemes are discussed with and agreed to by the OROs. The EAL scheme will be reviewed with the ORO's annually. This meets the intent of element D.1.b. No additional information is required in the DAEC Annex to meet this element. DAEC has developed an EAL scheme that is based on NEI 99-01, Revision 6. It was previously approved in Amendment 308 (ML18292A566). It is submitted as Enclosure 4 of this license amendment request.

D.2 The capability to assess, classify, and declare the emergency condition within 15 minutes after the availability of indications to NPP operators that an EAL has been met or exceeded is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra has and maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL threshold has been met or exceeded. Details for classification timeliness criteria are documented in the site specific EAL Technical Bases Document.	N/A	The CEP establishes the capability to assess, classify, and declare the emergency condition within 15 minutes after the availability of indications to NPP operators that an EAL has been met or exceeded. Details for classification timeliness criteria are documented in the site specific EAL Technical Bases Document for each site including DAEC. This meets the intent of element D.2. No additional information is required in the DAEC Annex to meet this element.

		The site specific EAL Technical Basis Document is submitted as Enclosure 2 of this license amendment request. The DAEC Emergency Action Level (EAL) scheme is documented in EP-PDA-151, DAEC EAL Technical Basis Manual.

D.3 A summary of emergency response measures to be taken for each ECL is provided. The detailed emergency response measures are described in implementing procedures.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra maintains procedures that include immediate actions to be taken that are consistent with any declared ECL. Emergency Operating Procedures provide instructions to Control Room personnel to assist in mitigating the consequences of a broad range of accidents and multiple equipment failures. These procedures are based on guidelines developed by the owners' groups. Emergency plan implementing procedures provide instructions to ERO personnel for response activities primarily associated with assessment, classification, notification and protective actions. Other functions such as communications, termination and recovery are also addressed.	N/A	The CEP provides a summary of emergency response measures to be taken for each ECL. This provision is available for each NextEra site including DAEC. This meets the intent of element D.3. No additional information is required in the DAEC Annex to meet this element.

D.4 Emergency response measures based on the ECL declared by the licensee and applicable offsite conditions are described.

This element is not applicable to the licensee emergency plan.

Conclusion for Evaluation Criteria D

The NextEra CEP provides an overall discussion regarding classification of emergencies and the basis for emergency classification. The emergency action levels (EALs) for DAEC were developed in accordance with NRC endorsed guidance. Most recently, the industry developed NEI 99-01, "Development of Emergency Action Levels for Non-Passive Reactors," Revision 6, dated November 21, 2012 (ML12326A805), which was endorsed by the NRC in a letter dated March 28, 2013 (ML13091A2090), as acceptable generic EAL scheme development guidance. The EALs for DAEC are documented in an EAL Technical Basis Document. It is attached to the LAR as Enclosure 4. The EAL scheme will be agreed upon by State and local governmental authorities and will be reviewed by State and local governmental authorities on an annual basis.

The NextEra CEP states that NextEra has and maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL threshold has been met or exceeded.

The proposed DAEC site-specific annex identifies the EAL scheme document for DAEC.

NextEra has identified a standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters. Therefore, the planning standard of 10 CFR 50.47(b)(4) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria E: Notification Methods And Procedures

NUREG-0654, Evaluation Criterion II.E, addresses planning standard 10 CFR 50.47(b)(5), which states:

Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone [EPZ] have been established.

Section IV.D.1 of Appendix E to 10 CFR Part 50, requires that "[a]dministrative and physical means for notifying local, State, and Federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described."

Section IV.D.3 of Appendix E to 10 CFR Part 50 requires that "[a] licensee shall have the capability to notify responsible State and local governmental agencies within 15 minutes after declaring an emergency."

Section IV.D.3 further requires that “[t]he design objective of the prompt public alert and notification system shall be to have the capability to essentially complete the initial alerting and initiate notification of the public within the plume exposure pathway EPZ within about 15 minutes.”

The requirements of 10 CFR 50.47(b)(5) and applicable requirements of Section IV.D of Appendix E to 10 CFR Part 50, are addressed in Section E, “Notification Methods and Procedures,” of the NextEra CEP with the proposed DAEC site-specific annex.

E.1 The mutually agreeable process for direct and prompt notification of response organizations, aligned with the emergency classification and action level scheme, is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Emergency Director will direct or perform notification of the ERO for all emergency classification levels. The means for alerting and notifying ERO members are described in element F.1.c. NextEra, in cooperation with the OROs, has established mutually agreeable content, methods and procedures for notification of OROs. Receipt location of notification messages is site specific. ORO notification locations are described in the site annexes. NextEra will notify the NRC using ENS as soon as possible after notification of the OROs, and not later than 60 minutes after event declaration.	The following state and county 24/7 warning points are notified of a declared emergency at DAEC: State of Iowa; Benton County; Linn County.	The CEP identifies the ERO notification. It also identifies mutually agreeable processes for notification of OROs. The DAEC Annex specifies the specific notification points. Additionally, it identifies the notification of the NRC via the ENS. Taken together these meet the intent of element E.1.

E.1.a Provisions for notification of response organizations are established, including the means for verification of messages.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

The provisions for notification of response organizations are described in element E.1. Notifications to OROs include a means of verification or authentication within the automated system or by providing call back verification phone numbers.	N/A	Provisions for notification of response organizations are established in the CEP, including the means for verification of messages. This meets the intent of element E.1.a. No additional information is required in the DAEC Annex to meet this element.

E.1.b The capability to notify responsible OROs within 15 minutes and the NRC within 60 minutes is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The capability to notify offsite response organizations and the NRC within the required time periods is described in element E.1.	N/A	The capability to notify responsible OROs within 15 minutes and the NRC within 60 minutes is described in element E.1. This meets the intent of element E.1.b. No additional information is required in the DAEC Annex to meet this element.

E.2 The alert and notification systems (ANS) used to alert and notify the general public within the plume exposure pathway EPZ, and methods of activation are described. This description includes the administrative and physical means, the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ, and the organizations or titles/positions responsible for activating the system.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The ANS is designed to provide an alerting signal to essentially 100% of the population on an area wide basis throughout the 10-mile EPZ. The OROs provide an informational or instructional message to the population via various methods as approved by FEMA. Detailed information is maintained in the ANS design report for each site as listed in the site-specific annexes to the CEP. If the primary alerting signal fails, back-up systems are described in the site-specific annexes and ANS design report.	Primary Alert and Notification System (ANS): IPAWS-WEA and IPAWS-EAS. Backup ANS: Alert Iowa (Mass Notification System) Benton and Linn County are responsible for coordination of activation and operability of the primary and backup ANS. Detailed information on the FEMA approved system used to alert and notify the general public is maintained in EP-PDA-155 DAEC Alert and Notification System Design Report.	The DAEC Annex provides the site-specific detail about the ANS used in the area surrounding DAEC. This, along with the CEP, meets the intent of element E.2.

E.3 The licensee and state, local, and tribal government organizations establish the contents of the initial and follow-up emergency notifications to be sent from the NPP.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra sites and OROs have established the content of the initial notification message to be used during an emergency. Minimum content of the initial notification will include the following: The site's name; Time of event; The ECL; Protective Action Recommendation (PAR); Whether a release is taking place. In conjunction with OROs, NextEra sites have established the content of the follow-up messages, which will include additional information regarding event conditions and response actions.	N/A	The CEP establishes the contents of the initial and follow-up emergency notifications. This meets the intent of element E.3. No additional information is required in the DAEC Annex to meet this element.

E.4 Each organization establishes the contents of the initial and follow-up messages to the public including, as applicable, instructions for protective actions.

This element is not applicable to the licensee emergency plan.

E.5 Provisions are made to provide timely supplemental information periodically throughout the radiological incident to inform the public.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
ORO procedures provide for initial and follow-up messages to the public including instructions for protective actions, if required. NextEra will assist with establishment of appropriate instructions and message content when requested by the ORO.	N/A	The CEP identifies that ORO procedures provide for initial and follow-up messages to the public and provide timely supplemental information periodically throughout the radiological incident. The CEP establishes the content of the initial and follow-up emergency notifications. This meets the intent of element E.3. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria E

NextEra, in cooperation with the OROs, has established mutually agreeable content, methods and procedures for notification of OROs. When an emergency classification is initially declared, or upgraded, or changes are made to PARs, a notification to the OROs is made within 15 minutes. Receipt location of notification messages is site specific. ORO notification locations are described in the site annexes.

The alert and notification system (ANS) is designed to provide an alerting signal to essentially 100 percent of the population on an area wide basis throughout the 10-mile EPZ. The OROs provide an informational or instructional message to the population via various methods as approved by the Federal Emergency Management Agency (FEMA). If the primary alerting signal fails, back-up systems are described in the site-specific annexes and ANS design report. Activation of the ANS requires procedures and relationships between both NextEra and the OROs. Prompt alerting and notification of the public within the plume exposure pathway EPZ is the obligation of State and local OROs or other responsible authority.

Detailed ANS information is maintained in the ANS design report for each site as listed in the site annexes.

In conjunction with OROs, NextEra nuclear sites have established the content of the initial notification message, as well as the follow-up notification message to be used during an emergency.

The site-specific annexes identify the site-specific State and local OROs to be notified of a declared emergency. The annexes also provide a description of the site-specific ANS, and the responsibilities for activation of the ANS and the FEMA design report for each site. NextEra has established provisions for notification of State and local OROs and of licensee emergency personnel, the content of initial and follow-up messages to response organizations and means to provide early notification and clear instruction to the populace within the plume exposure pathway EPZ at each site. Therefore, the planning standard of 10 CFR 50.47(b)(5) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria F: Emergency Communications

NUREG-0654, Evaluation Criterion II.F, addresses planning standard 10 CFR 50.47(b)(6) which states:

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Section IV.E of Appendix E to 10 CFR Part 50 requires that a licensee describe provisions for prompt communications among principal response organizations to emergency personnel and to the public.

Section IV.E.9 of Appendix E to 10 CFR Part 50 requires in part, “[a]t least one onsite and one offsite communications system; each system shall have a backup power source. All communication plans shall have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication.”

Section IV.E.9.a of Appendix E to 10 CFR Part 50 requires “[p]rovision for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.”

Section IV.E.9.b of Appendix E to 10 CFR Part 50 requires “[p]rovision for communications with Federal emergency response organizations. Such communications systems shall be tested annually.”

Section IV.E.9.c of Appendix E to 10 CFR Part 50 requires “[p]rovision for communications among the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications systems shall be tested annually.”

Section IV.E.9.d of Appendix E to 10 CFR Part 50 requires “[p]rovisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite technical support center, and the emergency operations facility. Such communications shall be tested monthly.”

The requirements of 10 CFR 50.47(b)(6) and applicable requirements of Section IV.E of Appendix E to 10 CFR Part 50 are addressed in Section F, “Emergency Communications,” of the NextEra CEP with the proposed DAEC site-specific annex.

F.1 Each principal response organization establishes redundant means of communication and addresses the following provisions:

F.1.a Continuous capability for notification to, and activation of, the emergency response network, including a minimum of two independent communication links.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

Each site maintains communications systems that are designed to facilitate normal and emergency communication. Refer to the UFSARs for descriptions of the primary site communications systems. Provisions exist for continuous capability of communications with OROs and the NRC. Site specific communications system are described in the site annexes.	The Annex describes an All Call System which is a communication path between the Control Room, TSC, Simulator, EOF, Iowa Homeland Security and Emergency Management Division, Benton County and Linn County Emergency Operations Centers, Benton County and Linn County Sheriff 911 Dispatch Centers via LAN/Internet with satellite backup capabilities. A fixed cell phone system connects the DAEC Control Room and TSC with the Shellsburg cell tower via exterior antenna. This phone system has a UPS power supply in the event of a loss of power. A Control Room satellite phone system connects the DAEC Control Room to a communications satellite. The NRC ENS and NRC HPN telephones are both installed in DAEC emergency facilities. Both telephones are connected to the Federal Telephone System (FTS-2001). Additional details are contained in the Annex.	The CEP along with the DAEC Annex describes the continuous capability for notification to, and activation of, the emergency response network, including a minimum of two independent communication links. This meets the intent of element F.1.a.

F.1.b Communication with applicable organizations to include a description of the methods that may be used when contacting each organization.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

The methods for notification of response organizations are described in elements E.1 and F.1.a.	N/A	The CEP describes communication with applicable organizations to include a description of the methods that may be used when contacting each organization in elements E.1 and F.1.a for all NextEra sites including DAEC. This meets the intent of element F.1.b. No additional information is required in the DAEC Annex to meet this element

F.1.c Systems for alerting or activating emergency personnel in each response organization.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Personnel within the Protected Area are notified of the emergency classification via the public address system. The sounding of alarms and announcement of the emergency classification and other pertinent data relating to the emergency classification are made over the public address system. Notification of personnel located onsite, but outside the Protected Area, is accomplished through PA system announcements, administrative controls, and by Security personnel. NextEra sites use an automated ERO notification system to notify ERO members of a declared emergency. Multiple redundancies are incorporated such that activation of the system can be performed by computer or from any phone system, and operation can take place from more than one location.	N/A	The CEP describes systems for alerting or activating emergency personnel in each response organization for all NextEra sites including DAEC. This meets the intent of element F.1.c. No additional information is required in the DAEC Annex to meet this element.

F.2 Systems for coordinated communication methods for applicable fixed and mobile medical support facilities are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Communications methods have been coordinated with medical facilities (ambulance and hospital). Site specific communications systems used for hospital and ambulance coordination are described in the site annexes.	DAEC uses the 911 emergency dispatch system to call out medical support facilities. The 911 dispatcher communicates with fixed and mobile facilities as necessary to coordinate response.	The description for communication with medical support facilities is described. This meets the intent of element F.2

F.3 The testing method and periodicity for each communication system used for the functions identified in evaluation criteria E.2, F.1, and F.2 are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Communication systems testing is accomplished in accordance with CEP Table F-1, Communication System Testing Requirements.	N/A	The NextEra CEP provides a description of the testing method and periodicity for each communication system used for the functions identified in evaluation criteria E.2, F.1, and F.2. This meets the intent of element F.3. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria F

The NextEra CEP states that each site maintains communications systems that are designed to facilitate normal and emergency communication. Provisions exist for continuous capability of communications with OROs and the NRC.

The NextEra CEP states, in part, that personnel within the Protected Area are notified of the emergency classification via the public address (PA) system. The sounding of alarms and announcement of the emergency classification and other pertinent data relating to the emergency classification are made over the PA system. Notification of personnel located onsite, but outside the Protected Area, is accomplished through PA system announcements, administrative controls, and by Security personnel. NextEra sites use an automated ERO notification system to notify ERO members of a declared emergency. Multiple redundancies are incorporated such that activation of the system can be performed by computer or from any phone system, and operation can take place from more than one location.

The communication systems testing is accomplished in accordance with the NextEra CEP Table F-1, "Communication System Testing Requirements."

NextEra has established provisions for prompt communications among principal response organizations to emergency personnel and to the public. Therefore, the planning standard of 10 CFR 50.47(b)(6) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria G: Public Education and Information

NUREG-0654, Evaluation Criterion II.G, addresses planning standard 10 CFR 50.47(b)(7) which states:

Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.

Section IV.D.2 of Appendix E to 10 CFR Part 50 requires a description of provisions “for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency. Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.”

The requirements of 10 CFR 50.47(b)(7) and applicable requirements of Section IV.D.2 of Appendix E to 10 CFR Part 50 are addressed in Section G, “Public Education and Information,” of the NextEra CEP with the proposed DAEC site-specific annex.

G.1 Provisions are made for a coordinated annual dissemination of information to the public within the plume exposure pathway EPZ, including transient populations and those with access and functional needs, regarding how they will be notified and what actions should be taken. The information is disseminated using multiple methods, to include non-English translations per current Federal guidance.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra, in coordination with OROs, updates and distributes site related emergency planning information annually to residents living within the plume-exposure pathway emergency planning zone (EPZ). Information disseminated to the public is in the form of printed or electronic materials. Public information for the transient population is also provided.	N/A	NextEra provides for a coordinated annual dissemination of information to the public within the plume exposure pathway EPZ for all nuclear sites including DAEC. The information is disseminated using multiple methods, to include non-English translations per current Federal guidance. This meets the intent of element G.1. No additional information is required in the DAEC Annex to meet this element.

Annual distribution of safety information which contains educational information on emergency preparedness, sheltering, ANS, radiation, and telephone numbers of agencies to contact for more information. Information for residents with special needs and non-English translations is incorporated per current federal guidance.		

G.2 Methods, consistent with JIS concepts, are established for coordinating and disseminating information to the public and media. Plans include the physical location(s) for interacting with the media.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra Corporate Communications and business unit personnel maintain programs and processes for the coordination and dissemination of information to the public and media using JIS concepts. Specifically, the process provides a structure and system for developing and delivering coordinated interagency messages; developing, recommending, and executing public information plans and strategies; advising decision makers concerning public affairs issues that could affect a response effort; and controlling rumors and inaccurate information that could undermine public confidence in the emergency response effort.	N/A	The NextEra CEP provides methods consistent with JIS concepts, for coordinating and disseminating information to the public and media. Plans include the physical locations for interacting with the media for the NextEra sites including DAEC. This meets the intent of element G.2. No additional information is required in the DAEC Annex to meet this element. As noted, additional information is provided in element H.5.

Physical locations for interacting with the media are maintained at the corporate headquarters and locally near each site. Specific site locations are described in the site annexes element H.5.		

G.3 Organizations designate news media points of contact and a spokesperson(s) with access to necessary information.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
A spokesperson is designated as the primary point of contact for NextEra and is responsible for the consistency of the information released by the utility. The spokesperson may select individuals to address the public on behalf of NextEra as their respective expertise is needed. This position is not designated as an ERO position.	N/A	The NextEra CEP identifies news media points of contact and a spokesperson responsible for the information released by the utility at all nuclear sites including DAEC. This meets the intent of element G.3. No additional information is required in the DAEC Annex to meet this element.

G.3.a Arrangements are made for the timely exchange of information among the designated spokespersons representing the entities involved in incident response.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Arrangements are made for the exchange of information among the designated spokespersons that use various means and technologies as agreed upon by the particular agencies. NextEra	N/A	The NextEra CEP discusses arrangements for the exchange of information among the designated spokespersons that use various means and technologies as agreed upon by the particular agencies. These arrangements apply to the NextEra nuclear sites including DAEC. This meets the intent of element G.3.a. No additional information is required in the DAEC Annex to meet this element.

will provide information and updates to the ORO and federal public information officers (PIOs) to address the emergency, including plant conditions and associated response actions. OROs address public response and actions in accordance with their respective plans.		

G.4 Organizations establish coordinated arrangements for identifying and addressing public inquiries and inaccurate information.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra personnel coordinate with ORO and federal PIOs via the JIS, or in a JIC when activated, to identify and address public inquiries and inaccurate information. Public information personnel monitor media and public sources for misleading or erroneous information and to address inquiries. Rumors and misinformation are collected and provided to the appropriate individual or agency PIO. The PIOs assess and discuss the rumors and misinformation to coordinate responses. ORO and federal PIOs address misinformation relating to offsite conditions, including protective action directives. NextEra spokespersons address misinformation regarding station/utility rumors. Rumors and incorrect information are addressed in media statements and at news conferences as appropriate.	N/A	The NextEra CEP discusses the coordinated arrangements for identifying and addressing public inquiries and inaccurate information. These arrangements are applicable at all NextEra nuclear sites including DAEC. This meets the intent of element G.4. No additional information is required in the DAEC Annex to meet this element.

G.5 Organizations conduct programs to acquaint news media with the emergency plans at least annually.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The news media will be provided materials to acquaint them with emergency planning effort at the NextEra specific site(s) annually. Typical content includes site information, information concerning radiation, emergency planning, and points of contact for release of information to the media during an emergency.	N/A	The NextEra CEP discusses arrangements for programs to acquaint news media with the emergency plans at least annually. These arrangements apply for all NextEra nuclear sites including DAEC. This meets the intent of element G.5. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria G

NextEra, in coordination with the States and OROs, updates and distributes site-related emergency planning information annually to residents living within the plume-exposure pathway EPZ. Information disseminated to the public is in the form of printed or electronic materials. Public information for the transient population is also provided. NextEra conducts annual distribution of safety information which contains educational information on emergency preparedness, sheltering, ANS, radiation, and telephone numbers of agencies to contact for more information. Information for residents with special needs and non-English translations is incorporated per current federal guidance.

NextEra Corporate Communications and business unit personnel maintain programs and processes for the coordination and dissemination of information to the public and media using JIS concepts. Specifically, the process provides a structure and system for developing and delivering coordinated interagency messages; developing, recommending, and executing public information plans and strategies; advising decision makers concerning public affairs issues that could affect a response effort; and controlling rumors and inaccurate information that could undermine public confidence in the emergency response effort. Physical locations for interacting with the media are maintained at the corporate headquarters and locally near each site. Specific site locations are described in the site annexes' element H.5.

A spokesperson is designated as the primary point of contact for NextEra and is responsible for the consistency of the information released by the utility. The spokesperson may select individuals to address the public on behalf of NextEra as their respective expertise is needed. This position is not designated as an ERO position. Arrangements are made for the exchange of information among the designated spokespersons that use various means and technologies as agreed upon by the particular agencies. NextEra will provide information and updates to the ORO and Federal Public Information Officers (PIOs) to address the emergency, including plant conditions and associated response actions. OROs address public response and actions in accordance with their respective plans.

NextEra personnel coordinate with ORO and Federal PIOs via the JIS, or in a JIC when activated, to identify and address public inquiries and inaccurate information. Public information personnel monitor media and public sources for misleading or erroneous information and to address inquiries. Rumors and misinformation are collected and provided to the appropriate individual or agency PIO. The PIOs assess and discuss the rumors and misinformation to coordinate responses. ORO and Federal PIOs address misinformation relating to offsite conditions, including protective action directives. NextEra spokespersons address misinformation regarding station/utility rumors in media statements and at news conferences as appropriate.

The news media will be provided materials to acquaint them with emergency planning effort at DAEC annually. Typical content includes site information, information concerning radiation, emergency planning, and points of contact for release of information to the media during an emergency.

NextEra has established provisions for adequate public education and information to support the emergency response. Therefore, the planning standard of 10 CFR 50.47(b)(7) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria H: Emergency Facilities And Equipment

NUREG-0654, Evaluation Criterion II.H, addresses planning standard 10 CFR 50.47(b)(8), which states:

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

Section IV.E.8.a of Appendix E to 10 CFR Part 50, requires that “adequate provisions be made and described for emergency facilities and equipment,” including “a licensee’s onsite technical support center and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency,” and for “a licensee onsite operational support center.”

Section IV.E.8.b of Appendix E to 10 CFR Part 50 states in part, “[f]or a nuclear power reactor licensee’s emergency operations facility required by paragraph 8.a of this section, either a facility located between 10 miles and 25 miles of the nuclear power reactor site(s)....”

Section IV.E.8.c.(1) of Appendix E to 10 CFR Part 50 requires that a facility have “[t]he capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves;”.

Section IV.E.8.c.(2) of Appendix E to 10 CFR Part 50 requires that a facility have “[t]he capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves;”

Section IV.E.8.d of Appendix E to 10 CFR Part 50 requires an alternative facility (for use when onsite emergency facilities cannot be safely accessed during hostile actions) that would be accessible and could function as a staging area for augmentation of emergency response staff.

Section IV.G of Appendix E to 10 CFR Part 50 requires a description of “[p]rovisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date.”

The requirements of 10 CFR 50.47(b)(8) and applicable requirements of Sections IV.E.8 and IV.G of Appendix E to 10 CFR Part 50, are addressed in Section H, “Emergency Facilities and Equipment,” of the NextEra CEP with the proposed DAEC site-specific annex.

H.1 A TSC is established, using current Federal guidance, from which NPP conditions are evaluated and mitigative actions are developed.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Technical Support Center (TSC) provides a dedicated location for management and technical support to operations personnel and to relieve the operations staff of emergency response actions and communications not related to plant system manipulations. Requirements for the TSC are in the CEP. Site specific details of the TSC are described in the site annexes.	DAEC site specific TSC details: • The TSC is located in a facility adjacent to the DAEC Administration Building. • The TSC has appropriate shielding and its own emergency ventilation system. • The DAEC Control Room is designated as the backup TSC.	The NextEra CEP along with the DAEC Annex provide details on the location and acceptability of the DAEC TSC. This meets the intent of element H.1.

H.2 An OSC is established, using current Federal guidance, from which repair team activities are planned and teams are dispatched to implement actions.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Operations Support Center (OSC) provides a dedicated location for coordinating and planning event response activities and for staging personnel and equipment. The OSC is sized to accommodate ERO responders. Requirements for the OSC are in the CEP. Site specific details of the OSC are described in the site annexes.	DAEC site specific OSC details: • The OSC is co-located with the TSC. • If the OSC is unavailable, the backup OSC is located [TBD].	The NextEra CEP along with the DAEC Annex provide details on the location and acceptability of the DAEC OSC. The backup OSC will meet the criteria in the CEP. This meets the intent of element H.2.

H.3 An EOF is established, using current Federal guidance, as the primary base of emergency operations for the licensee during a radiological incident. The EOF facilitates the management and coordination of the overall emergency response, including the sharing of information with Federal, state, local, and tribal government authorities.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Emergency Operations Facility (EOF) provides a dedicated location for support of the site event response activities. Requirements for the EOF are in the CEP. Site specific details of the EOF are described in the site annexes.	The Emergency Operations Facility (EOF) is located at [TBD].	The NextEra CEP provides details on the location and acceptability of the DAEC EOF. The location of the DAEC EOF has not been finalized. It will meet the criteria in the CEP. This meets the intent of element H.3.

H.3.a For an EOF that is located more than 25 miles away from the NPP site, provisions are made for locating NRC and offsite responders closer to the NPP site.

This element does not apply as the NextEra EOFs are not located more than 25 miles from the sites.

H.4 An alternative facility (or facilities) is established, using currently provided and/or endorsed guidance, which would be accessible even if the NPP site is under threat of or experiencing hostile action.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
An alternative facility provides a location for the staging of ERO personnel in the event of a Security or Hostile Action threat for each NextEra site. The alternative facility may also serve as an evacuation location for TSC and OSC personnel should those facilities become uninhabitable. Requirements for an alternate facility are in the CEP. Site specific details of the alternative facilities are described in the site annexes.	The alternate TSC is the EOF. The alternate OSC is [TBD].	The NextEra CEP along with the DAEC Annex provide details on the location of an acceptable alternative facility accessible even if the NPP site is under threat of or experiencing hostile action. The alternate OSC facility will meet the criteria in the CEP. This meets the intent of element H.4.

H.5 A JIC is established, and its location is identified, to coordinate communication from Federal, state, local, and tribal government authorities and licensee personnel with the public and media.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
A near-site JIC (outside the 10 mile EPZ) is established for each site. ERO staffing of the JIC is concurrent with other ERFs, although facility activation is coordinated with the joint offsite agencies and has no time requirement. A description of the JIC requirements is in the CEP. Site specific details of the JICs are described in the site annexes.	The Joint Information Center (JIC) is located at [TBD].	The NextEra CEP along with the DAEC Annex provide details on the location of an acceptable JIC from which Federal, state, and local government authorities and licensee personnel can communicate with the public and media. The location of the DAEC JIC has not been finalized. It will meet the criteria in the CEP. This meets the intent of element H.5.

H.6 Each organization establishes an emergency operations center (EOC) for use in directing and controlling response functions. For an EOC located within the plume exposure pathway EPZ, an alternate EOC or location outside the plume exposure pathway EPZ is identified to continue response functions in the event of an evacuation.

This element is not applicable to the licensee emergency plan.

H.7 Onsite monitoring systems used to initiate emergency response measures in accordance with the emergency classification scheme, as well as those to be used for conducting assessment, are identified. Monitoring systems consist of geophysical phenomena monitors, including meteorological, hydrologic, and seismic instrumentation; radiation monitors and sampling equipment; plant process monitors; and fire, toxic gas, and combustion products detectors.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra sites, to include DAEC, have installed instrumentation for seismic monitoring, radiation monitoring, hydrologic monitoring, meteorological monitoring, and fire/ toxic gas/combustion products detectors in accordance with site Current Licensing Basis (CLB) documents.	N/A	The NextEra CEP provides details of the onsite monitoring systems used to initiate emergency response and assessment measures. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.7. No additional information is required in the DAEC Annex to meet this element.

H.8 Provisions are made to acquire data from offsite monitoring and analysis equipment, including data on geophysical phenomena (e.g., meteorological, hydrologic, and seismic monitors) and radiological data (e.g., from FMTs, environmental dosimeters, and laboratory analyses).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

Arrangements for Meteorological Monitoring; Seismic Monitoring; Hydrologic Monitoring; and Radiological Environmental Monitoring have been established. Refer to element C.4 for details on facilities for counting and analyzing samples. The locations of the normal onsite and offsite environmental monitoring stations are described in the site Offsite Dose Assessment Manual (ODCM). Additional predetermined emergency offsite monitoring locations are contained in procedures. The locations of the normal onsite and offsite environmental monitoring stations are described in the site Offsite Dose Assessment Manual (ODCM). Additional predetermined emergency offsite monitoring locations are contained in procedures.	N/A	The NextEra CEP provides detail on data acquisition from offsite monitoring and analysis equipment, including data on geophysical phenomena and radiological data. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.8. No additional information is required in the DAEC Annex to meet this element.

H.9 Organizations directly responsible for offsite radiological monitoring provide for radiological monitoring equipment. This includes equipment that is located or stored near the NPP site, as well as additional equipment that may be brought to the site.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site maintains a supply of equipment, either at the site or the near-site EOF, for two Field Monitoring Teams assigned to perform onsite and offsite radiological monitoring and sampling functions. Federal, industry and private entities can be contacted to coordinate additional material and personnel resources for offsite radiological monitoring.	N/A	The NextEra CEP provides detail on provisions for radiological monitoring equipment including equipment that is located or stored near the site, as well as additional equipment that may be brought to the site. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.9. No additional information is required in the DAEC Annex to meet this element.

H.10 Instrumentation is provided to obtain current meteorological information. Additional provisions are made to obtain representative meteorological information from other sources as needed by the NPP's radiological assessment models for site-specific characterization of plume dispersion and transport. Meteorological information is provided to the control room, TSC, EOF (or backup EOF), and NRC (via ERDS).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The CEP refers to element H.7.1 for a description of the onsite meteorological monitoring capabilities, and element H.8.1 for a description of the offsite meteorological monitoring capabilities. Site meteorological information is available on workstations in the Control Room(s), TSC, EOF, and to remote dose assessors. ERDS provides the NRC with selected meteorological data points on a near real-time basis. Meteorological inputs for the sites' dose assessment model are provided by ERF plant parameter display systems that obtain data from the site meteorological towers. Input parameters include wind speed, wind direction and stability class.	N/A	The NextEra CEP provides a description of the onsite meteorological monitoring capabilities and detail on provisions for obtaining representative meteorological information from other sources as needed by radiological assessment models for site-specific characterization of plume dispersion and transport. The meteorological information is provided to the control room, TSC, EOF, and NRC (via ERDS). This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.10. No additional information is required in the DAEC Annex to meet this element.

H.11 Provisions are made to ensure that emergency equipment and supplies are tested, maintained, and available in sufficient quantities, to include reserves and replacements, when needed.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra emergency equipment and kits are inventoried to verify adequate supplies and materials, and to inspect condition semi-annually and following each use. Emergency use equipment and instruments are operationally checked semi-annually during the inventory, and prior to use if needed as specified in procedures. Sufficient reserves of instruments and equipment are maintained to replace those removed from service for calibration or repair.	N/A	The NextEra CEP provides detail on provisions for ensuring that emergency equipment and supplies are tested, maintained, and available in sufficient quantities, to include reserves and replacements, when needed. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.11. No additional information is required in the DAEC Annex to meet this element.

H.11.a Identification of the organization(s) responsible for the testing and maintenance of emergency equipment.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra personnel are responsible for oversight of maintenance and testing of emergency equipment.	N/A	The NextEra CEP identifies NextEra personnel as responsible for the testing and maintenance of emergency equipment. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.11.a. No additional information is required in the DAEC Annex to meet this element.

H.11.b Calibration and operational checks of emergency equipment per national standards or the manufacturer's instructions, whichever is more frequent.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

Requirements to calibrate emergency equipment and instruments are specified in site procedures.	N/A	The NextEra CEP identifies that the calibration requirements are specified in procedures. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element H.11.b. No additional information is required in the DAEC Annex to meet this element.

H.12 Emergency kits are identified by general category. Contents and quantity of each emergency kit are specified in the emergency plan or other document(s) referenced in the emergency plan.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Emergency kits are assembled for radiation protection, field monitoring, first aid or other emergency use needs based on location and availability at each site. Details of emergency kit contents and locations are contained in site procedures used to maintain facilities and equipment.	N/A	The NextEra CEP identifies emergency kits by general category. Details of emergency kit contents and locations are contained in site procedures for all NextEra nuclear sites including DAEC. This meets the intent of element H.12. No additional information is required in the DAEC Annex to meet this element.

H.13 Each organization identifies the location(s) for the receipt and analysis of field monitoring data and coordination of sample media and identifies the organization(s) responsible for assessing radiological data.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

The site radiological laboratory is the primary location for receipt of field monitoring team samples. The EOF RP Coordinator is responsible for direction and coordination of field monitoring sample analyses, and for assessing the radiological data obtained from the Field Monitoring Teams. Sampling and analysis equipment are available (see element C.4) for quantitative activity determination of liquid and air samples, and qualitative activity determination of terrestrial samples.	N/A	The NextEra CEP identifies the location for the receipt and analysis of field monitoring data and coordination of sample media and identifies the organization responsible for assessing radiological data for all NextEra nuclear sites including DAEC. This meets the intent of element H.13. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria H

The NextEra CEP and the proposed DAEC site-specific annex describes the emergency facilities, including the TSC, OSC, EOF, alternative facility, and various systems, equipment and capabilities supporting emergency response. The JIC and JIS concept described in the NextEra CEP describes public education and information associated with emergency response. The proposed DAEC site-specific annex provides details for the JIC location. The NextEra CEP describes various plant and environmental information sources, monitoring systems, analysis equipment and supplies, and field monitoring capabilities that are available at each site to support emergency response and are required by the applicable guidance. The NextEra CEP also describes the meteorological, hydrologic, seismic, and process monitoring systems and capabilities.

The DAEC site-specific annex provides locations of the TSC, OSC, EOF, alternate facility, and the JIC.

NextEra has established provisions for adequate emergency facilities and equipment to support the emergency response. Therefore, the planning standard of 10 CFR 50.47(b)(8) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria I: Accident Assessment

NUREG-0654, Evaluation Criterion II.I, addresses planning standard 10 CFR 50.47(b)(9), which states:

Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Section IV.B.1 of Appendix E to 10 CFR Part 50, requires a description of “[t]he means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials.”

Section IV.E.2 of Appendix E to 10 CFR Part 50 requires a description of the “[e]quipment used] for determining the magnitude of and for continually assessing the impact of the release of radioactive materials to the environment.”

The requirements of 10 CFR 50.47(b)(9) and applicable requirements of Sections IV.B.1 and IV.E.2 of Appendix E to 10 CFR Part 50 are addressed in Section I, “Accident Assessment,” of the NextEra CEP with the proposed DAEC site-specific annex.

I.1 Capabilities for performing radiological assessment for all reactor core and spent fuel pool sources, individually and collectively, including response to events occurring simultaneously at all units on the NPP site, are described. These capabilities include:

I.1.a Methods for determining the magnitude and isotopic composition of an ongoing release of radioactive material through waterborne or airborne release pathways, or estimating these parameters for a potential release.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The magnitude of the release of radioactive material to the environment is primarily identified directly by effluent monitors. Survey and sample analysis may also be used to determine the magnitude of a release. Indirect means such as core damage estimates and release pathway assumptions may be used to estimate the magnitude of a release of radioactive material. The isotopic composition of the release of radioactive material to the environment may be determined by: (1) effluent gaseous monitors, (2) survey and sample analysis, or (3) source term estimates based on core damage and release pathway assumptions. Dose assessment model methods are capable of estimating source term and magnitude of gaseous releases from effluent monitors or plant parameter data and release rate projections.	N/A	The NextEra CEP identifies the methods for determining the magnitude and isotopic composition of an ongoing release of radioactive material or estimating these parameters for a potential release for all NextEra nuclear sites including DAEC. This meets the intent of element I.1.a. No additional information is required in the DAEC Annex to meet this element.

I.1.b A radiological assessment model for airborne releases that provides estimates of offsite radiation exposures and contamination levels using a dispersion model that is representative of the plant release points, topographical features, and meteorological regimes at the NPP site.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra uses site specific versions of the Unified RASCAL Interface (URI) off-site dose projection computer model. The underlying dose assessment model in URI is the NRC RASCAL 4 model, based on the methods and equations documented in NUREG-1940. The URI model provides off-site radiological dose and dose rate estimates based on near real time or hypothetical inputs. Projected dose is based on EPA-400-R92-001 dose conversion factors and provided as; (1) the total effective dose equivalent, or TEDE (the sum of the effective dose equivalent from immersion, 4 days of ground deposition, and the committed effective dose equivalent from inhalation), and (2) the committed dose equivalent to the thyroid (CDE thyroid). URI dose projection results are given for various locations from the site boundary to 10 miles. URI is capable of providing dose assessment results for multiple release points from the site. URI dose projection results and field monitoring readings are used in assessing radiological EALs and PARs.	N/A	The NextEra CEP identifies a radiological assessment model for airborne releases that provides estimates of offsite radiation exposures and contamination levels using a dispersion model that is representative of the plant release points, topographical features, and meteorological regimes for all NextEra nuclear sites including DAEC. This meets the intent of element I.1.b. No additional information is required in the DAEC Annex to meet this element.

I.1.c A capability to coordinate and implement in-field radiological assessments by FMTs and/or sampling teams and to assess the data obtained.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Environmental surveys inside and outside the protected area are performed by Field Monitoring Team members under the direction of the EOF RP Coordinator. Field monitoring teams are directed to track and evaluate a radioactive plume by monitoring radiation levels and by obtaining and analyzing air samples. Field monitoring surveys and sampling may be performed at pre-identified locations or other geographic locations within the EPZ determined during the event. Samples taken by the offsite monitoring teams will be evaluated further by one of the available laboratory facilities described in element C.4.	N/A	The NextEra CEP identifies the capability to coordinate and implement in-field radiological assessments by field monitoring teams and/or sampling teams and to assess the data obtained for all NextEra nuclear sites including DAEC. This meets the intent of element I.1.c. No additional information is required in the DAEC Annex to meet this element.

I.2 Methods for assessing contamination of drinking water through liquid release pathways or deposition of airborne materials for NPP sites located on or near bodies of water from which public drinking water is drawn.

This element is not applicable to the licensee emergency plan.

I.3 The capability and responsibility for monitoring the following parameters, which provide input to radiological assessments during an emergency, are described: 1. Status of reactor fuel (e.g., no fuel damage, technical specification activity, clad failure, core melt.). 2. Status of containment integrity. 3. Leakage of radioactive material from plant systems, structures and components. 4. Status of engineered safety features used to mitigate the release of radioactive material to the environment (e.g., filters, containment spray, etc.). 5. Onset and duration of an actual release of radioactive material to the environment, or estimating these parameter for a potential release.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The ERO monitors plant parameters using information provided by plant data transmittal systems to assess the status of reactor fuel using core damage assessment procedures. The ERO monitors plant data systems to evaluate the status of containment integrity, systems used to mitigate the release of radioactive material to the environment and to identify leakage of radioactive material from plant systems, structures, and components. Effluent and process monitors are used to determine the onset and duration of an actual or potential release of radioactive material to the environment.	N/A	The NextEra CEP identifies the capability and responsibility for monitoring parameters which provide input to radiological assessments during an emergency for all NextEra nuclear sites including DAEC. This meets the intent of element I.3. No additional information is required in the DAEC Annex to meet this element.

I.4 The methods and responsibility for determining the source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are described.		
<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>

Source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are estimated using effluent, process and area radiation monitor readings, comparison of plant conditions against design basis event scenarios, sample analysis and environmental survey results, and plant parameter indications as inputs into the dose assessment and core damage assessment processes.	N/A	The NextEra CEP describes source term monitoring for all NextEra nuclear sites including DAEC. This meets the intent of element I.4.

I.4.a The methods and responsibility for determining the source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site has arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere, and spent fuel pool. Site specific arrangements to obtain and analyze highly radioactive samples are described in the site annexes.	Chemistry procedures describe post-accident contingency plans for obtaining high activity samples.	The NextEra CEP identifies the contingency arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere, and spent fuel pool storage area for all NextEra nuclear sites including DAEC. This meets the intent of element I.4.a.

I.5 The organizations responsible for FMT activities, and necessary resources, are identified.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra is responsible for NextEra field monitoring team activities. NextEra field monitoring team activities are coordinated with environmental monitoring efforts performed by ORO field monitoring teams.	N/A	The NextEra CEP identifies the organizations responsible for FMT activities, and necessary resources, for all NextEra nuclear sites including DAEC. This meets the intent of element I.5. No additional information is required in the DAEC Annex to meet this element.

I.6 Each organization, where appropriate, provides methods, equipment, and expertise to make timely assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including development of post-plume PARs for comparison to current Federal guidance.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra sites use an industry recognized dose assessment model to make timely assessments of the actual or potential magnitude and locations of any radiological hazards through gaseous release pathways. Dose assessment results and field monitoring readings assist in evaluating appropriate ECLs based on radiological EALs, and for developing any related PARs. The actual or potential magnitude of liquid radiological releases with regard to the ECLs are determined by liquid effluent monitors, direct area surveys, or sample analyses.	N/A	The NextEra CEP identifies methods, equipment, and expertise to make timely assessments of the magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including development of post-plume PARs for comparison to current Federal guidance for all NextEra nuclear sites including DAEC. This meets the intent of element I.6. No additional information is required in the DAEC Annex to meet this element.

With regard to the ingestion pathway, field monitoring teams are used to obtain liquid effluent samples from radioactive liquid releases. Sample results are used in conjunction with Offsite Dose Calculation Manual (ODCM) methods to estimate potential ingestion exposure in support of EAL determination. Also, liquid release monitoring activities are coordinated and sample results shared with ORO agency personnel to assist their determination in intermediate phase protective actions.		

I.7 The capability to detect and measure radioiodine concentrations in air in the plume exposure pathway EPZ as low as 1E-7 µCi/cc (microcuries per cubic centimeter) under field conditions is described. The sample collection process takes into account the sample flow rate, collection efficiency of the sample media used to collect the sample, duration of the sample, counter efficiency, and background radiation, including interference from the presence of noble gases.		
<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra field monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as 1E-7 µCi/cc in the presence of noble gases. Air samples will be taken with portable air sampling equipped with a Silver Zeolite or equivalent cartridge and particulate filter. Interference from the presence of noble gas and background radiation is minimized by ensuring that monitoring teams move to areas of low background prior to analyzing the sample cartridge.	N/A	The NextEra CEP describes the capability to detect and measure radioiodine concentrations in air in the plume exposure pathway EPZ as low as 1E-7 µCi/cc under field conditions for all NextEra nuclear sites including DAEC. This meets the intent of element I.7. No additional information is required in the DAEC Annex to meet this element.

Air sample results can be estimated in the field through the use of portable monitors. The samples can be subsequently analyzed for greater precision by the laboratory facilities described in element C.4.		

I.8 A means is established for relating the various measured parameters (e.g., exposure rates, contamination levels, and air activity levels) to dose or dose rates. Provisions are made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with current federal guidance. In addition, provisions are established to validate dose projections with field data and compare projections with other organizations also calculating dose projections. The detailed provisions are described in implementing procedures.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra field monitoring teams will track the plume from any radiological release by monitoring radiation levels and by obtaining and analyzing air samples. Field monitoring team environmental survey and air sample results are compared with dose assessment results to validate or adjust projections. Additionally, field monitoring results can be input into the dose assessment model to develop projections at different locations.	N/A	The NextEra CEP describes a means for relating the various measured parameters used for estimating integrated dose and for comparing these estimates with current federal guidance. In addition, provisions are established to validate dose projections with field data. The detailed provisions are described for all NextEra nuclear sites including DAEC. This meets the intent of element I.8. No additional information is required in the DAEC Annex to meet this element.

I.9 Arrangements to locate and track the airborne radioactive plume are made using available resources, which includes federal, state, and tribal governments, and/or licensee resources. Provisions are made to characterize the plume including taking peak plume measurements. Identification of the plume, includes determining a measurement that is high enough to be reasonably above background radiation readings and sufficient enough to indicate submersion within the plume.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra maintains equipment for the utility field monitoring teams. Methods to monitor a radioactive plume include establishing peak centerline values and immersion areas. Monitoring strategies may include the traversing of plumes when road networks and exposure rate permit. Additionally, local field sampling and monitoring points are specified to support pre-positioning of teams or use in comparison with dose projection results. Data from the NextEra field monitoring teams is compared to data provided by state field monitoring teams that may be dispatched into the area. Data collected before state field monitoring teams are in the field is made available to state dose assessment personnel.	N/A	The NextEra CEP describes arrangements to locate and track the airborne radioactive plume using available licensee resources. Identification of the plume includes determining a measurement that is high enough to be reasonably above background radiation readings and sufficient enough to indicate submersion within the plume. This is done for all NextEra nuclear sites including DAEC. This meets the intent of element I.9. No additional information is required in the DAEC Annex to meet this element.

I.10 Organizations directly responsible for radiological monitoring, analysis, and dose projections describe the capability for coordinating monitoring efforts, tracking and trending data, and sharing analytical results with other organizations performing radiological assessment functions.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra EOF dose assessment personnel coordinate field monitoring team radiological monitoring activities and compare dose projection results with ORO and NRC representatives.	N/A	The NextEra CEP identifies the organizations responsible for FMT activities, and comparison of results with other organizations, for all NextEra nuclear sites including DAEC. This meets the intent of element I.5. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria I

The magnitude of a release of radioactive material to the environment is primarily identified directly by effluent monitors. Survey and sample analysis may also be used to determine the magnitude of a release. Indirect means such as core damage estimates and release pathway assumptions may be used to estimate the magnitude of a release of radioactive material. The isotopic composition of a release of radioactive material to the environment may be determined by; (1) effluent gaseous monitors, (2) survey and sample analysis, or (3) source term estimates based on core damage and release pathway assumptions. Dose assessment model methods are capable of estimating source term and magnitude of gaseous releases from effluent monitors or plant parameter data and release rate projections.

NextEra uses site specific versions of the Unified RASCAL Interface (URI) off-site dose projection computer model. The underlying dose assessment model in URI is the NRC RASCAL 4 model, based on the methods and equations documented in NUREG-1940, "RASCAL 4: Description of Models and Methods," dated December 2012 (ML13031A448). The URI model provides off-site radiological dose and dose rate estimates based on near real time or hypothetical inputs. Projected dose is based on U.S. Environmental Protection Agency (EPA), "EPA-400-R-92-001, 'Manual of Protective Action Guides and Protective Actions for Nuclear Incidents,'" dated May 1992 (referred to as the "EPA PAG Manual"), dose conversion factors and provided as: (1) the total effective dose equivalent or TEDE (the sum of the effective dose equivalent from immersion, 4 days of ground deposition, and the committed effective dose equivalent (CDE) from inhalation), and (2) the committed dose equivalent to the thyroid (CDE thyroid). URI dose projection results are given for various locations from the site boundary to 10 miles. URI is capable of providing dose assessment results for multiple release points from the site.

Environmental surveys inside and outside the protected area are performed by FMT members under the direction of the EOF RP Coordinator. FMTs are directed to track and evaluate a radioactive plume by monitoring radiation levels and by obtaining and analyzing air samples.

Field monitoring surveys and sampling may be performed at pre-identified locations or other geographic locations within the EPZ determined during the event.

NextEra field monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as $1 \text{ E-7 } \mu\text{Ci/cc}$ in the presence of noble gases. Air samples will be taken with portable air sampling equipped with a Silver Zeolite or equivalent cartridge and particulate filter. Interference from the presence of noble gas and background radiation is minimized by ensuring that monitoring teams move to areas of low background radiation prior to analyzing the sample cartridge.

NextEra maintains equipment for the NextEra FMTs. Methods to monitor a radioactive plume include establishing peak centerline values and immersion areas. Monitoring strategies may include the traversing of plumes when road networks and exposure rate permit. Additionally, local field sampling and monitoring points are specified to support pre-positioning of teams or use in comparison with dose projection results. Data from the NextEra FMTs is compared to data provided by state field monitoring teams that may be dispatched into the area. Data collected before State FMTs are in the field is made available to state dose assessment personnel.

A description of contingency arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere, and spent fuel pool storage area are described in the site-specific annexes

NextEra has established provisions for adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition. Therefore, the planning standard of 10 CFR 50.47(b)(9) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria J: Protective Response

NUREG-0654, Section II.J, addresses planning standard 10 CFR 50.47(b)(10), which states:

A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates [ETEs] have been developed by applicants and licensees. Licensees shall update the [ETEs] on a periodic basis.

Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

Sections IV.2 of Appendix E to 10 CFR Part 50 require nuclear power reactor licensees to “provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date of the applicant submits its application to the NRC.”

Section IV.3 of Appendix E to 10 CFR Part 50 require nuclear power reactor licensees to “use NRC-approved [ETEs] and updates to the ETes in the formulation of [PARs],” and to “provide the ETes and ETE updates to State and local governmental authorities for use in developing offsite protective action strategies.”

Section IV.B.1 of Appendix E to 10 CFR Part 50 requires a description of the EALs “that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety.”

Section IV.I of Appendix E to 10 CFR Part 50 requires that “a range of protective actions to protect onsite personnel during hostile action must be developed to ensure the continued ability of the licensee to safely shut down the reactor and perform the functions of the licensee’s emergency plan.”

The requirements of 10 CFR 50.47(b)(10) and applicable requirements of Sections IV.2, IV.3, IV.B.1, and IV.I of Appendix E to 10 CFR Part 50 are addressed Section J, “Protective Response,” of the NextEra CEP with the proposed DAEC site-specific annex.

J.1 The means and time required to alert, notify, and provide a range of protective actions for onsite individuals and individuals who may be in areas controlled by the licensee (including members of the public) during a radiological incident are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra maintains procedures to provide for a range of protective actions for all areas controlled by the site. Protective actions have been developed for radiological incidents and to protect personnel during hostile actions directed at the site. Sitewide notifications and announcements are routinely made using the Public Address (PA) system. Personnel on site are notified of a declared emergency through the PA system.	N/A	The NextEra CEP describes the means and time required to alert, notify, and provide a range of protective actions for onsite individuals and individuals who may be in areas controlled by the licensee (including members of the public) during a radiological incident. These actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.1. No additional information is required in the DAEC Annex to meet this element.

Visitors within the Protected Area are escorted by badged individuals. The escort is responsible for controlling and directing their assigned visitors regarding actions required by any announcements and alarms. Security personnel are used, as available, to augment PA announcements and to check OCA areas for remaining individuals.		

J.1.a Provisions are made for evacuation of onsite non-essential personnel at an SAE or General Emergency (GE).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Site evacuation is required following a Site Area Emergency or General Emergency unless delayed due to safety issues. The sounding of an alarm over the public address system occurs for the initiation of site evacuation. When a site evacuation occurs, ERO and other essential personnel respond to their designated response facilities/areas. Non-essential personnel inside the Protected Area typically exit to the OCA by following normal Radiation Protection and Security processes and proceed to a designated assembly area. Further evacuation of non-essential personnel inside the OCA occurs as warranted for the particular site.	N/A	The NextEra CEP describes provisions for evacuation of onsite non-essential personnel at an Site Area or General Emergency. Similar actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.1.a. No additional information is required in the DAEC Annex to meet this element.

A process is in place to perform a rapid evacuation of the Protected Area without onsite monitoring and OCA assembly if conditions warrant. Monitoring in this instance is performed at an offsite location.		

J.2 Provisions are made and coordinated with appropriate offsite entities for evacuation routes and transportation for onsite individuals to a suitable offsite location. Selection of location considers the potential for inclement weather, high traffic density, and potential radiological conditions. Alternate location(s) and route(s) are identified.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Designated offsite locations for site evacuees, and the process to use them, have been identified through coordination with local emergency management personnel. The site evacuation process takes into consideration meteorological and radiological data, weather and other travel hazards. On-site personnel will evacuate the site when directed. Site evacuation routes and evacuation locations are contained in the site annexes.	The South access road (Power Plant Road) and the North access road (McClintock Road) may be used to depart from the site, and evacuation from the 10-mile EPZ will be by way of evacuation routes identified in the ETE. (See Figure J.-1, DAEC Site Evacuation Routes.) Evacuated personnel may be required to assemble at the Palo Community Center, Palo, Iowa or the Benton County Emergency Worker Monitoring and Decontamination Station located in Vinton, Iowa depending on environmental conditions.	The NextEra CEP in conjunction with the DAEC Annex describe provisions with appropriate offsite entities for evacuation routes and transportation for onsite individuals to a suitable offsite location. Arrangements for inclement weather, high traffic density, and potential radiological conditions are considered. Alternate locations and routes are identified. Similar actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.2.

J.3 Provisions for radiological monitoring and decontamination, if necessary, of personnel evacuated from the NPP site are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Personnel evacuating are monitored for contamination, and, if possible and necessary, decontaminated before leaving the site. If conditions do not allow for decontamination of personnel on-site, they will be directed to designated offsite reception center(s) for radiological monitoring and decontamination, if required.	N/A	The NextEra CEP describes provisions for radiological monitoring and decontamination, if necessary, of personnel evacuated from the site. These actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.3. No additional information is required in the DAEC Annex to meet this element.

J.4 The capability to account for all individuals inside the NPP Protected Area following declaration of an SAE or GE is described. The names of missing individuals are ascertained within 30 minutes following the emergency declaration and accountability is maintained for the duration of the incident. This capability includes provisions for prompt accountability following events that may preclude completion within 30 minutes (e.g., hostile action).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The emergency alarm, together with the public address system, is used to alert and notify on-site personnel of the need for assembly at a Site Area or General Emergency classification level (or earlier at the discretion of the Emergency Director). ERO personnel report to their assigned emergency response facility.	N/A	The NextEra CEP describes the capability to account for all individuals inside the Protected Area following declaration of an SAE or GE including the names of missing individuals within 30 minutes following the emergency declaration. Accountability is maintained for the duration of the incident, including provisions for prompt accountability following events that may preclude completion within 30 minutes. These actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.4. No additional information is required in the DAEC Annex to meet this element.

Typically, accountability of personnel inside the Protected Area is completed within 30 minutes of event declaration. Following a hostile action event, the personnel accountability process is initiated following containment or cessation of the threat. Missing individual(s) will be identified by Security. Appropriate actions will be taken to locate missing individual(s). When necessary, search and rescue team(s) will be dispatched to locate and, if necessary, rescue missing individual(s). After initially completed, accountability will be maintained continuously throughout the emergency for personnel inside the Protected Area.		

J.5 Provisions are made for personal radiological protection for individuals arriving or remaining onsite during the incident.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Protective equipment and supplies are available to personnel remaining on site or arriving on site during the emergency to minimize the effects of radiological exposures or contamination in accordance with radiation protection procedures. Protective measures include the following: (1) Individual Respiratory Protection; (2) Individual Thyroid Protection; (3) Protective Clothing.	N/A	The NextEra CEP describes provisions for personal radiological protection for individuals arriving or remaining onsite during the incident. These actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.5. No additional information is required in the DAEC Annex to meet this element.

J.6 The basis and methodology are established for the development of PARs for the responsible OROs, including evacuation, sheltering, and, if appropriate, radioprotective drug use, for the plume exposure pathway EPZ. Current Federal guidance is used.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra sites have developed PARs, in accordance with agreements made with the state agencies, for the plume exposure pathway EPZ that include evacuation, sheltering, and recommendations for radioprotective Potassium Iodide use. The PAR strategy basis document is referenced in the site annexes.	The DAEC site specific PAR basis is documented in EP-PDA-154, DAEC Protective Action Recommendation (PAR) Technical Basis Manual.	The NextEra CEP in conjunction with the DAEC Annex PAR Technical Basis Manual describes the basis and methodology for the development of PARs for the responsible OROs, including evacuation, sheltering, and, if appropriate, radioprotective drug use, for the plume exposure pathway EPZ. Current Federal guidance is used. This methodology is performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.6.

J.7 A site-specific protective action strategy or decision-making process, informed by the ETE study, is coordinated between the licensee and OROs. Current Federal guidance is used.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra offsite protective action recommendation strategies, informed by the ETE report, have been developed using guidance provided in NUREG-0654/FEMA-REP-1, Supplement 3, Guidance for Protective Action Strategies, in coordination with the state and local agencies.	N/A	The NextEra CEP describes a site-specific protective action strategy or decision-making process, informed by the ETE study, that is coordinated between the licensee and OROs. Current Federal guidance is used. These actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.7. No additional information is required in the DAEC Annex to meet this element.

J.8 The latest ETEs are:

J.8.a Incorporated either by reference or in their entirety into the emergency plan.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The most recent ETEs are incorporated by reference into this emergency plan. Refer to the site annexes for specific reference to the ETE study.	The DAEC site specific ETE report is documented in EP-PDA-153, DAEC Evacuation Time Estimate Study.	The NextEra CEP, in conjunction with the DAEC Annex provides that the latest ETEs are incorporated by reference into the emergency plan. This statement is true for all NextEra nuclear sites including DAEC. This meets the intent of element J.8.a.

J.8.b Incorporated either by reference or as a summary of the latest ETE analysis into the emergency plan.

This element is not applicable to the licensee emergency plan.

J.9 PARs are provided, in a timely manner, directly to the designated ORO(s) responsible for making protective action decisions (PADs) within the plume exposure pathway EPZ.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Applicable plume exposure pathway EPZ PARs to evacuate and shelter are developed at the General Emergency classification level and provided to the ORO personnel responsible for making protective action decisions. PARs are communicated using the initial notification form and process. See Section E for a discussion of emergency notification.	N/A	The NextEra CEP assures that PARs are developed at the General Emergency classification and provided in a timely manner, directly to the designated OROs responsible for making protective action decisions within the plume exposure pathway EPZ. These actions are performed for all NextEra nuclear sites including DAEC. This meets the intent of element J.9. No additional information is required in the DAEC Annex to meet this element.

J.10 Plans include maps, charts, or other information that demonstrate the following for the plume exposure pathway EPZ:

J.10.a Evacuation routes, evacuation areas, reception centers in host areas, and shelter areas.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Details on evacuation routes, evacuation areas, reception centers in host areas, and shelter areas are provided in the site ETE report.	N/A	The NextEra CEP states that details on evacuation routes, evacuation areas, reception centers in host areas, and shelter areas are provided in the site ETE report. This statement applies to all NextEra nuclear sites including DAEC. The DAEC ETE report is provided to the NRC separately. This meets the intent of element J.10.a. No additional information is required in the DAEC Annex to meet this element.

J.10.b Population distribution around the NPP site by evacuation areas.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Details on population distribution around the NextEra sites, by evacuation areas, are provided in the site ETE report.	N/A	The NextEra CEP states that details on population distribution around the site by evacuation areas are provided in the ETE report. This statement applies to all NextEra nuclear sites including DAEC. The DAEC ETE report is provided to the NRC separately. This meets the intent of element J.10.b. No additional information is required in the DAEC Annex to meet this element.

J.11 A capability for implementing protective actions based on current Federal guidance is established. The process ensures coordinated implementation of PADs with all appropriate jurisdictions. The process for implementing protective actions for the plume exposure pathway EPZ is described and includes the following:

Elements 1J.11.a through J.11.g are not applicable to the licensee emergency plan.

J.12 Protective actions to be used for the ingestion exposure pathway EPZ are specified, including the methods for protecting the public from consumption of contaminated foodstuffs, and are based on current Federal guidance.

This element is not applicable to the licensee emergency plan.

J.13 The means for registering, monitoring, and decontaminating evacuees, service animals, pets, vehicles, and possessions at reception centers in host areas are described. The personnel and equipment available are capable of monitoring 20 percent of the plume exposure pathway EPZ population, including transients, assigned to each facility within a 12-hour period.

This element is not applicable to the licensee emergency plan.

J.14 General plans for the removal or continued exclusion of individuals from restricted areas are developed. Relocation plans include:

Elements J.14.a through J.14.f are not applicable to the licensee emergency plan.

Conclusion for Evaluation Criteria J

NextEra maintains procedures to provide for a range of protective actions for all areas controlled by the site. Protective actions have been developed for radiological incidents and to protect personnel during hostile actions directed at the site. Sitewide notifications and announcements are routinely made using the PA system. Personnel on site are notified of a declared emergency through the PA system. Visitors within the Protected Area are escorted by badged individuals. The escort is responsible for controlling and directing their assigned visitors regarding actions required by any announcements and alarms. Security personnel are used, as available, to augment PA announcements and to check the owner-controlled area (OCA) for remaining individuals.

When a site evacuation occurs, ERO and other essential personnel respond to their designated response facilities/areas. Non-essential personnel inside the protected area typically exit to the OCA by following normal RP and security processes and proceed to a designated assembly area. Further evacuation of non-essential personnel inside the OCA occurs as warranted for the site. Designated offsite locations for site evacuees, and the process to use them, have been identified through coordination with local emergency management personnel. The site evacuation process takes into consideration meteorological and radiological data, weather and other travel hazards. On-site personnel will evacuate the site when directed. Site evacuation routes and evacuation locations are contained in the site-specific annexes.

NextEra, in coordination with the site-specific OROs, developed site-specific protective action strategies, informed by the site-specific ETEs and based on the Federal guidance of NUREG0654/FEMA-REP-1, Supplement 3, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants: Guidance for Protective Action Strategies," November 2011 (ML113010596) and the EPA PAG Manual. The applicable plume exposure pathway EPZ PARs to evacuate, shelter, and take potassium iodide are developed at the General Emergency classification and provided to the ORO personnel responsible for making protective action decisions.

Each site-specific annex contains a description of the evacuation processes and identifies the site-specific ETE report.

NextEra has developed a range of protective actions for the plume exposure pathway EPZ for emergency workers and the public. Therefore, the planning standard of 10 CFR 50.47(b)(10) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria K: Radiological Exposure Control

NUREG-0654, Evaluation Criterion II.K, addresses planning standard 10 CFR 50.47(b)(11), which states:

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Sections IV.E.1 and IV.E.3 of Appendix E to 10 CFR Part 50 require “[e]quipment at the site for personnel monitoring,” and “[f]acilities and supplies at the site for decontamination of onsite individuals.”

The requirements of 10 CFR 50.47(b)(11) and applicable requirements of Sections IV.E.1 and IV.E.3 of Appendix E to 10 CFR Part 50 are addressed Section K, “Radiological Exposure Control,” of the NextEra CEP with the proposed DAEC site-specific annex.

K.1 The radiation protection controls for emergency workers to be implemented during emergencies are described. These controls address the following aspects:

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Approval is required if emergency workers are expected to receive dose in excess of 10 CFR 20 occupational dose limits. ALARA practices are utilized during emergencies as much as practical.	N/A	The NextEra CEP states that approval is required if emergency workers are expected to receive dose in excess of 10 CFR 20 occupational dose limits. ALARA practices are utilized during emergencies as much as practical. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1. No additional information is required in the DAEC Annex to meet this element.

K.1.a Onsite emergency exposure guidelines for emergency workers consistent with their assigned duties and current Federal guidance and the conditions under which the guidelines apply.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Onsite exposure guidelines for emergency workers, consistent with EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U.S. Environmental Protection Agency, May 1992, Table 2-2, "Guidance on Dose Limits for Workers Performing Emergency Services," have been established.	N/A	The NextEra CEP establishes onsite emergency exposure guidelines for emergency workers consistent with their assigned duties and current Federal guidance. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.a. No additional information is required in the DAEC Annex to meet this element.

K.1.b The capability to evaluate emergency worker dose (i.e., the sum of the effective dose equivalent and the committed effective dose equivalent) at the time of exposure when direct measurement is not feasible.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Emergency worker exposure is monitored at the time of exposure by the use of electronic dosimeters. If direct measurement of airborne concentrations is not available at time of exposure, workers will be provided respiratory protection, when feasible, and total exposures will be calculated after the fact using follow up survey data and whole body counting equipment.	N/A	The NextEra CEP discusses emergency worker dose monitoring and calculation at the time of exposure when direct measurement is not feasible. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.b. No additional information is required in the DAEC Annex to meet this element

K.1.c The capability to monitor and assess the radiation doses received by emergency workers for the duration of the incident.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Personnel dosimeters are issued to and worn by NextEra radiation worker qualified personnel who may be required to work in Radiological Controlled Areas in accordance with radiation protection procedures. Radiation protection personnel in the OSC and TSC have the responsibility to monitor and assess the radiation doses received by ERO personnel on a 24-hour per day basis throughout a declared event. Personnel dose records are documented and managed using a computerized system. Should this system not be readily accessible or available, personnel dose is manually recorded. Dosimeters are available and will be provided to offsite agency responders if they are required to enter a Radiological Controlled Area or are expected to receive a dose in excess of 100 mRem for the event.	N/A	The NextEra CEP discusses the capability to monitor and assess the radiation doses received by emergency workers for the duration of the incident. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.c. No additional information is required in the DAEC Annex to meet this element.

K.1.d The capability to implement onsite contamination control measures.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Radiation safety controls are established 24 hours per day to contain the spread of loose surface radioactive contamination. Contamination control limits are defined in radiation protection procedures. Personnel leaving the contaminated areas are monitored to ensure that they are not radioactively contaminated.	N/A	The NextEra CEP discusses the capability to implement onsite contamination control measures. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.d. No additional information is required in the DAEC Annex to meet this element.

K.1.e The capability to decontaminate emergency workers, equipment, and vehicles.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Personnel decontamination is performed using normal radiation protection procedures in on-site facilities. Personnel decontamination facility locations are described in the site annexes. Contamination on personnel will be removed in accordance with established radiation protection procedures. Equipment will be released for use outside of the contaminated areas only when radioactive contamination is within acceptable limits. All equipment must be checked for contamination before being taken from a known contaminated area. Equipment and material decontamination is performed using normal radiation protection procedures	Facilities and supplies for decontaminating personnel are available at the onsite decontamination center and the TSC/OSC.	The NextEra CEP and the DAEC Annex discusses the capability to decontaminate emergency workers, equipment, and vehicles. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.e.

K.1.f Appropriate radiation protection briefings for repair teams that are being dispatched into the plant, and FMTs being sent onsite and offsite, the scope of which is consistent with the expected risk to the team.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Emergency teams, including Field Monitoring Teams, that must enter areas where they might be expected to receive higher than normal doses will be briefed on the task assigned and appropriate protective measures.	N/A	The NextEra CEP discusses appropriate radiation protection briefings for repair teams being dispatched into the plant, and FMTs being sent onsite and offsite consistent with the expected risk to the team. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.f. No additional information is required in the DAEC Annex to meet this element.

K.1.g The process for NPP site access and dosimetry issuance to personnel from OROs arriving to assist with the onsite response.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The site access process into the protected area for local support organizations responding on site during an emergency is controlled by site security personnel. Non-NextEra emergency workers supporting on-site activities will be issued dosimetry and/or be monitored by radiation protection personnel when responding to areas where a radiation dose may be received.	N/A	The NextEra CEP discusses the process for site access and dosimetry issuance to personnel from OROs arriving to assist with the onsite response. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.1.g. No additional information is required in the DAEC Annex to meet this element.

K.2 Individual(s) who can authorize personnel to receive radiation doses in excess of the occupational dose limits in accordance with the minimum standards set forth in 10 CFR Part 20 or 29 CFR 1910.1096, as applicable to the organization, are identified by title/position. Such authorizations are documented.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Section B.2.a describes the responsibility for authorization of exposures to radiation in excess of 10 CFR 20 limits. Such authorizations are documented as part of the emergency exposure controls process provided in element K.1.c.	N/A	The NextEra CEP discusses the responsibility to authorize personnel to receive radiation doses in excess of the occupational dose limits in accordance with standards set forth in 10 CFR Part 20. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.2. No additional information is required in the DAEC Annex to meet this element.

K.2.a The process for allowing onsite volunteers to receive radiation exposures in the course of carrying out lifesaving and other emergency activities is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
All personnel dispatched into radiation areas or areas of unknown radiation levels are briefed on the task and environmental conditions and are provided appropriate monitoring and personnel protective equipment. Refer to element K.1.a for the description of activities and their exposure thresholds and considerations.	N/A	The NextEra CEP describes the process for allowing onsite personnel to receive radiation exposures in the course of carrying out lifesaving and other emergency activities. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element K.2.a. No additional information is required in the DAEC Annex to meet this element.

K.2.b The process for authorizing emergency workers to incur exposures that may result in doses in excess of the current Federal guidance is described.

This element is not applicable to the licensee emergency plan.

K.3 The capability to determine the doses received by emergency workers involved in any commercial NPP radiological incident is described. Each organization makes provisions for distribution of direct-reading dosimeters (DRDs) and permanent record dosimeters (PRDs).

Elements K.3 and K.3.a are not applicable to the licensee emergency plan.

K.4 Action levels for determining the need for decontamination are specified and the means for radiological decontamination are established for emergency workers and the general public, as well as equipment, vehicles, and personal possessions. The means for disposal of contaminated waste created by decontamination efforts are also established.

This element is not applicable to the licensee emergency plan.

Conclusion for Evaluation Criteria K

The onsite exposure guidelines for emergency workers used in the CEP are consistent with Table 2-2, "Guidance on Dose Limits for Workers Performing Emergency Services," of the EPA PAG Manual.

Emergency worker exposure is monitored at the time of exposure by the use of electronic dosimeters. If direct measurement of airborne concentrations is not available at time of exposure, workers will be provided respiratory protection, when feasible, and total exposures will be calculated after the fact using follow up survey data and whole-body counting equipment. Personnel dosimeters are issued to and worn by NextEra radiation worker-qualified personnel who may be required to work in Radiological Controlled Areas in accordance with RP procedures. RP personnel in the OSC and TSC have the responsibility to monitor and assess the radiation doses received by ERO personnel on a 24-hour per day basis throughout a declared event. Personnel dose records are documented and managed using a computerized system. Should this system not be readily accessible or available, personnel dose is manually recorded. Dosimeters are available and will be provided to offsite agency responders if they are required to enter a Radiological Controlled Area or are expected to receive a dose in excess of 100 mRem for the event.

The radiation safety controls are established 24 hours per day to contain the spread of loose surface radioactive contamination. Contamination control limits are defined in radiation protection procedures. Personnel leaving the contaminated areas are monitored to ensure that they are not radioactively contaminated. Personnel decontamination is performed using normal radiation protection procedures in on site facilities. Personnel decontamination facility locations are described in the site annexes. Contamination on personnel will be removed in accordance with established radiation protection procedures. Equipment will be released for use outside of the contaminated areas only when radioactive contamination is within acceptable limits. All equipment must be checked for contamination before being taken from a known contaminated area. Equipment and material decontamination is performed using normal radiation protection procedures.

The site access process into the Protected Area for local support organizations responding on site during an emergency is controlled by site security personnel. Non-NextEra emergency workers supporting on site activities will be issued dosimetry and/or be monitored by RP personnel when responding to areas where a radiation dose may be received.

All personnel dispatched into radiation areas or areas of unknown radiation levels are briefed on the task and environmental conditions and are provided appropriate monitoring and personnel protective equipment.

Each site-specific annex identifies the capability to decontaminate emergency workers, equipment, and vehicles,

t NextEra has established appropriate means for controlling radiological exposures for emergency workers in an emergency. Therefore, the planning standard of 10 CFR 50.47(b)(11) and applicable requirements of Section IV.E of Appendix E to 10 CFR Part 50 has been adequately addressed.

NUREG-0654 Evaluation Criteria L: Medical And Public Health Support

NUREG-0654, Evaluation Criterion II.L, addresses planning standard 10 CFR 50.47(b)(12), which states:

Arrangements are made for medical services for contaminated injured individuals.

Sections IV.E.4 and E.5 of Appendix E to 10 CFR Part 50, require provisions for “[f]acilities and medical supplies at the site for appropriate emergency first aid treatment,” and “[a]rrangements for medical service providers qualified to handle radiation emergencies onsite.”

Sections IV.E.6 of Appendix E to 10 CFR Part 50, requires that arrangements are made “for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary.”

The requirements of 10 CFR 50.47(b)(12) and applicable requirements of Sections IV.E.4, E.5, and E.6 of Appendix E to 10 CFR Part 50 are addressed in portions of Section L, “Medical and Public Health Support,” of the NextEra CEP with the proposed DAEC site-specific annex.

L.1. Arrangements are established with primary and backup hospitals (one hospital is located outside the plume exposure pathway EPZ) and medical services. These facilities have the capability for evaluation of radiation exposure and uptake. The persons providing these services are adequately trained and prepared to handle contaminated, injured emergency workers and members of the general public.

This element is not applicable to the licensee emergency plan.

L.2. Arrangements for the medical treatment of contaminated injured onsite personnel and those onsite personnel who have received significant radiation exposures and/or significant uptakes of radioactive material are described. These arrangements include the following components:

L.2.a An onsite first aid capability with adequate medical equipment and supplies.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
On-shift first aid personnel will provide first aid to individuals who are injured. Radiation protection personnel will provide contamination control support to potentially contaminated injured personnel. NextEra maintains first aid supplies and equipment for the treatment of injured or contaminated/injured persons. Descriptions of equipment and supplies, and radiological monitoring and decontamination equipment and supplies are in site procedures.	N/A	The NextEra CEP describes the onsite first aid capability with adequate medical equipment and supplies for the treatment of injured or contaminated/injured persons. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element L.2.a. No additional information is required in the DAEC Annex to meet this element.

L.2.b Primary and backup offsite medical facilities.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Arrangements have been made with local hospitals for the medical treatment of contaminated injured or over exposed personnel. These facilities and their services are available 24 hours per day. Offsite medical facilities used to treat contaminated injured personnel are described in the site annexes.	The primary and backup offsite medical facilities to treat contaminated, injured personnel from DAEC are: Primary - Mercy Medical Center located in Cedar Rapids. Backup - Mercy One Waterloo Medical Center located in Waterloo. These hospitals have agreed to accept and treat injured personnel. The medical procedures are designed to handle routine industrial injuries as well as situations involving radiation and/or contamination.	The NextEra CEP with the DAEC Annex describe primary and backup arrangements for the medical treatment of contaminated injured onsite personnel and those who have received significant radiation exposures and/or significant uptakes of radioactive materials. This applies to all NextEra nuclear sites including DAEC. This meets the intent of element L.2.b.

L.2.c Radiological controls capability, including the isolation of contamination, assessment of contamination levels, radiation exposure monitoring for medical facility staff, collection of contaminated waste, and decontamination of treatment areas.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra personnel are available to assist medical personnel with decontamination, radiation exposure monitoring, and contamination control. Radiological controls capability, including the isolation of contamination, assessment of contamination levels, radiation exposure monitoring for medical facility staff, collection of contaminated waste, and decontamination of treatment areas are described in hospital procedures.	N/A	The NextEra CEP describes provisions for personnel to assist medical personnel with decontamination, radiation exposure monitoring, contamination control, collection of contaminated waste, and decontamination of treatment areas. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element L.2.c. No additional information is required in the DAEC Annex to meet this element.

L.2.d Provisions to evaluate for radiological contamination either prior to transport to a medical facility or after arrival.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Injured personnel are evaluated for radiological contamination prior to transport to a medical facility per site procedures. If contamination monitoring is not possible due to the medical condition of the individual, contamination monitoring is performed as soon as possible following treatment at the medical facility.	N/A	The NextEra CEP describes provisions to evaluate for radiological contamination either prior to transport to a medical facility or after arrival. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element L.2.d. No additional information is required in the DAEC Annex to meet this element.

L.2.e Contact information for facilities capable of treating overexposure to radioactive material.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Radiation Emergency Assistance Center Training Site (REAC/TS) located at Oak Ridge, Tennessee, will respond to and/or provide advice and assistance to offsite medical facilities in the event of a severe radiation accident.	N/A	The NextEra CEP describes the Radiation Emergency Assistance Center Training Site (REAC/TS) located at Oak Ridge, Tennessee as providing advice and assistance to offsite medical facilities. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element L.2.e. No additional information is required in the DAEC Annex to meet this element.

L.3 Supplemental lists are developed that indicate the location of the closest public, private, and military hospitals and other emergency medical facilities within the state or contiguous states considered capable of providing medical support for any contaminated, injured individual.

This element is not applicable to the licensee emergency plan.

L.4 Each organization arranges for the transportation of contaminated, injured individuals and the means to control contamination while transporting victims of radiological incidents to medical support facilities and the decontamination of transport vehicle following use.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Injured personnel are evaluated for radiological contamination and packaged to control contamination prior to transport to a medical facility per radiation protection department procedures. NextEra personnel will assist with decontamination of transport vehicles if necessary. Transportation agreements for contaminated injured personnel are described in site annexes.	Hiawatha Ambulance Service is the primary provider for the transportation of contaminated, injured individuals. Area Ambulance Service may provide backup ambulance service to transport injured persons from DAEC. Each service has the means to control contamination while transporting victims.	The NextEra CEP and the DAEC Annex describe arrangements for the transportation of contaminated, injured individuals and the means to control contamination while transporting victims of radiological incidents to medical support facilities and the decontamination of transport vehicle following use. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element L.4.

Conclusion for Evaluation Criteria L

The NextEra CEP describes medical and public health support. The NextEra CEP states that on-shift first aid personnel will provide first aid to individuals who are injured. Radiation protection personnel will provide contamination control support to potentially contaminated injured personnel. NextEra maintains first aid supplies, and equipment for the treatment of injured or contaminated and injured persons. Descriptions of first aid equipment and supplies, and radiological monitoring and decontamination equipment and supplies are in site procedures. Arrangements have been made with local hospitals for the medical treatment of contaminated injured or overexposed personnel. These facilities and their services are available 24 hours per day. Primary and backup offsite medical facilities to treat contaminated injured personnel are described in the site-specific annexes. The Radiation Emergency Assistance Center Training Site (REAC/TS) located at Oak Ridge, Tennessee, will provide advice and assistance to offsite medical facilities in the event of a severe radiation accident.

Injured personnel are evaluated for radiological contamination and packaged to control contamination prior to transport to a medical facility per radiation protection department procedures. NextEra personnel will assist with decontamination of transport vehicles if necessary.

The proposed DAEC site-specific annex identifies the primary and backup offsite medical facilities to treat contaminated injured personnel, including arrangements for transportation of radiologically contaminated casualties

NextEra has established arrangements for medical services for contaminated injured individuals. Therefore, the planning standard of 10 CFR 50.47(b)(12) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria M: RECOVERY, REENTRY, AND POST-ACCIDENT OPERATIONS

NUREG-0654, Evaluation Criterion II.M, addresses planning standard 10 CFR 50.47(b)(13), which states:

General plans for recovery and reentry are developed.

Section IV.H of Appendix E to 10 CFR Part 50 requires a description of the “[c]riteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed.”

The requirements of 10 CFR 50.47(b)(13) and applicable requirements of Section IV.H of Appendix E to 10 CFR Part 50 are addressed in portions of Section M, “Recovery and Reentry Planning and Post-Accident Operations,” of the NextEra CEP.

M.1 General recovery, reentry, and return plans for radiological incidents are developed, as appropriate. These plans address reoccupancy, as appropriate. The plans should include:

M.1.a Provisions for allowing reentry into areas controlled by the licensee. Reentry planning includes evaluation of the controls necessary for reentry under post-incident conditions.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Reentry can occur during the plume or post-plume phase and refers to the temporary movement of people into an area of actual or potential hazard. Personnel who have been evacuated or relocated from a restricted area may be allowed to reenter under controlled conditions to perform additional emergency response activities. Reentry into the OCA will be based on site conditions. During or following a HAB incident, reentry criteria take into consideration site security and threat conditions.	N/A	The NextEra CEP describes provisions for allowing reentry into areas controlled by the licensee during the plume or post-plume phase. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element M.1.a. No additional information is required in the DAEC Annex to meet this element.

M.1.a Provisions for allowing reentry into areas controlled by the licensee. Reentry planning includes evaluation of the controls necessary for reentry under post-incident conditions.

This element is not applicable to the licensee emergency plan.

M.2 Individuals who will comprise the licensee's recovery organization are identified by title/ position. The recovery organization includes technical personnel with responsibilities to develop, evaluate, and direct recovery and reentry operations.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The recovery activities would be managed much like a normal outage, except that certain activities unique to the post-accident situation may be controlled by the recovery organization. The recovery organization would function as a matrix management organization to coordinate activities with the normal company organization. This organization may be located at the EOF or the site, as appropriate. The primary positions in the recovery organization are described as follows: Recovery Manager; Onsite Recovery Coordinator; Offsite Recovery Coordinator; Radiological Assessment Coordinator; Spokesperson.	N/A	The NextEra CEP discusses individuals, identified by title/position, who will comprise the licensee's recovery organization. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element M.2. No additional information is required in the DAEC Annex to meet this element.

M.3 The process for initiating recovery actions is described and includes the criteria for terminating the emergency.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Steps will be taken to terminate from the event, either directly or following a transition period (prior to entering a state of recovery operations). Usually, the Unusual Event and Alert classification levels will be directly terminated (no entry into recovery). Items that must be considered before terminating the emergency condition to either a normal or a recovery organization are as follows: Emergency Action Level criteria; Releases of radioactive materials to the environment; In-plant radiation levels; Plant stable and long term core cooling available; Containment integrity; Functionality and integrity of plant systems, facilities, power supplies, equipment, and instrumentation; Fire, flood, earthquake or similar hazardous emergency conditions; Security issues; Site access not limited for personnel and support services	N/A	The NextEra CEP describes the process for initiating recovery actions and includes the criteria for terminating the emergency. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element M.3. No additional information is required in the DAEC Annex to meet this element.

Decisions to relax protective actions for the public will be made by the appropriate state authorities. When transition from an emergency to a recovery phase is necessary, the Emergency Director will designate a Recovery Manager and develop a recovery organization. The Emergency Director will inform the ERO, OROs, and NRC upon exiting the state of emergency and either returning to normal organizational control or entering recovery.		

M.4 The process for initiating recovery actions is described and includes provisions to ensure continuity during transfer of responsibility between phases. The chain of command is established.

This element is not applicable to the licensee emergency plan.

M.5 The framework for relaxing protective actions and allowing for return are described. Prioritization is given to restoring access to vital services and facilities.

This element is not applicable to the licensee emergency plan.

M.6 The organization(s) responsible for developing and implementing cleanup operations offsite is identified.

This element is not applicable to the licensee emergency plan.

M.7 Provisions for developing and modifying sampling plans are established. Provisions for laboratory analysis of samples are included in the plan.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The recovery organization will coordinate NextEra environmental sampling activities with the state agencies. Refer to element C.4 for a description of laboratory capabilities.	N/A	The NextEra CEP discusses provisions for developing and modifying sampling plans with the state agencies. Provisions for laboratory analysis of samples are included in the plan by reference to element C.4. This information applies to all NextEra nuclear sites including DAEC. This meets the intent of element M.7. No additional information is required in the DAEC Annex to meet this element.

M.8 A method for periodically conducting radiological assessments of public exposure is established.

This element is not applicable to the licensee emergency plan.

Conclusion for Evaluation Criteria M

The NextEra CEP addresses general principles that serve as guides for developing a recovery plan. Reentry can occur during the plume or post-plume phase and refers to the temporary movement of people into an area of actual or potential hazard. Personnel who have been evacuated or relocated from a restricted area may be allowed to reenter under controlled conditions to perform additional emergency response activities. The recovery activities would be managed much like a normal outage, except that certain activities unique to the post-accident situation may be controlled by the recovery organization. The recovery organization would function as a matrix management organization to coordinate activities with the normal company organization. This organization may be located at the EOF or the site, as appropriate. The primary positions in the Recovery Organization are Recovery Manager, Onsite Recovery Coordinator, Offsite Recovery Coordinator, Radiological Assessment Coordinator (if needed), and the Spokesperson.

Steps will be taken to terminate the event, either directly or following a transition period (prior to entering a state of recovery operations). Usually, the Unusual Event and Alert classification levels will be directly terminated (no entry into recovery). Items that must be considered before terminating the emergency condition to either a normal or a recovery organization are as follows:

- Emergency Action Level criteria;
- Releases of radioactive materials to the environment;
- In-plant radiation levels;
- Plant stable and long term core cooling available;
- Containment integrity;

- Functionality and integrity of plant systems, facilities, power supplies, equipment, and instrumentation;
- Fire, flood, earthquake or similar hazardous emergency conditions;
- Security issues; and
- Site access not limited for personnel and support services.
-

When transition from an emergency to a recovery phase is necessary, the Emergency Director will designate a Recovery Manager and develop a recovery organization. The Emergency Director will inform the ERO, OROs, and NRC upon exiting the state of emergency and either returning to normal organizational control or entering recovery.

A complete description of NextEra's recovery, reentry, and post-accident operations is provided in the NextEra CEP and is not addressed in the site-specific annexes.

NextEra has developed general plans for recovery and reentry. Therefore, the planning standard of 10 CFR 50.47(b)(13) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria N: Exercises And Drills

NUREG-0654, Evaluation Criterion II.N, addresses planning standard 10 CFR 50.47(b)(14), which states:

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

Section IV.F of Appendix E to 10 CFR Part 50, requires a description of "[t]he program to provide for: (a) The training of employees and exercising, by periodic drills, of emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiological emergency."

The requirements of 10 CFR 50.47(b)(14) and applicable requirements of Section IV.F of Appendix E to 10 CFR Part 50 are addressed in portions of Section N, "Exercises and Drills," of the NextEra CEP.

N.1 Exercises and drills are conducted, observed, and critiqued/evaluated as set forth in NRC and FEMA regulations and guidance.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Exercise: Over the period of the exercise cycle, exercises will test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties. Exercises must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas (see N.4) of emergency response. State and local agencies within the plume exposure pathway EPZ are provided the opportunity to participate by invitation as described in element N.2.a. Drill: Drill types may be operational or discussion-based events (e.g., single ERF or tabletop drills). Drills may be a component of an exercise. During drills; activation of all of the ERFs is not required, supervised instruction is permitted, participants may be given the opportunity to resolve problems (success paths), and focus may be primarily on onsite training objectives. Drills may include evaluation of specific performance objectives or be conducted for non-evaluated training only.	N/A	The NextEra CEP describes provisions for exercises and drills to be conducted, observed, and critiqued/evaluated as set forth in NRC and FEMA regulations and guidance for all NextEra nuclear sites including DAEC. This meets the intent of element N.1. No additional information is required in the DAEC Annex to meet this element.

The ERO (not necessarily each ERO member) shall be provided the opportunity to develop and maintain key emergency response skills within the scope of their duties in drills and exercises during each exercise cycle.		

N.1.a The process to critique/evaluate exercises and drills is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Critiques of each drill and exercise will be held following each event to evaluate areas and identify issues. The critique is performed following the conclusion of a drill or exercise using preselected drill and exercise performance objectives. Provisions are made for federal and ORO representatives to observe and participate in drill and exercise critiques when present. A written report is prepared following a critique to document whether the objectives were successfully demonstrated. A remedial exercise is only required if the emergency plan is not satisfactorily tested during the biennial exercise such that NRC, in consultation with FEMA, cannot (1) find reasonable assurance that adequate protective measures would be taken during a radiological emergency, or (2) determine that the ERO has maintained key skills specific to emergency response.	N/A	The NextEra CEP describes the process to critique/evaluate exercises and drills. This description applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.1.a. No additional information is required in the DAEC Annex to meet this element.

N.1.b The process used to track findings and associated corrective actions identified by drill and exercise critiques/evaluations, including their assignment and completion, is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Failed performance objectives and other programmatic weaknesses are entered into the corrective action program (CAP).	N/A	The NextEra CEP describes the process used to track findings and associated corrective actions identified by drill and exercise critiques/evaluations, as the site corrective action program (CAP). This description applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.1.b. No additional information is required in the DAEC Annex to meet this element.

N.1.c A drill or exercise starts between 6:00 p.m. and 4:00 a.m. at least once every eight-year exercise cycle.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one off-hours drill or exercise within an eight-year exercise cycle. An off-hours drill or exercise is established as any time of day on a weekday holiday, or any time of day on a weekend day, or between the hours of 6:00 p.m. and 4:00 a.m. on a normal workday. The off-hours drill requirement may be satisfied by an actual event provided it meets the above off-hours criteria, and the objectives are evaluated and documented in a critique report for the augmentation of the ERO, the transfer of responsibilities, and facility activation.	N/A	The NextEra CEP states that an off hours drill or exercise will start between 6:00 p.m. and 4:00 a.m. on a normal workday (or on a weekend or holiday) at least once every eight-year exercise cycle. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.1.c. No additional information is required in the DAEC Annex to meet this element.

N.1.d A drill or exercise is unannounced at least once every eight-year exercise cycle.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one unannounced drill or exercise within an eight-year cycle. The unannounced drill requirement may be satisfied by an actual event provided objectives are evaluated and documented in a critique report for the augmentation of the ERO, the transfer of responsibilities, and facility activation.	N/A	The NextEra CEP states that a drill or exercise is unannounced at least once every eight-year exercise cycle. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.1.d. No additional information is required in the DAEC Annex to meet this element.

N.2 Exercises are designed to enable the response organizations' demonstration of the key skills and capabilities necessary to implement the emergency plan. The following two types of exercises are conducted at the frequency noted:

N.2.a Plume Exposure Pathway Exercises: Plume exposure pathway exercises are conducted biennially. These exercises include mobilization of licensee and state, local, and tribal government personnel and resources and implementation of emergency plans to demonstrate response capabilities within the plume exposure pathway EPZ.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct a plume exposure pathway exercise biennially. Specifically, the plume exposure pathway exercise is developed to provide the ERO with the opportunity to demonstrate proficiency in the principal functional areas of emergency response: Management and coordination of emergency response; Accident assessment; Event classification; Notification of the OROs; Assessment of the onsite and offsite impact of radiological release; PAR development (required only in exercises that include a GE); Protective action decision-making (onsite protective actions); Plant system repair and mitigative action implementation. ORO will be invited to participate in plume exposure pathway exercises. If an ORO chooses not to participate, their participation is not required, and it should be documented that they were given the opportunity to participate. Biennial plume exposure pathway exercise scenarios are submitted to the NRC under 10 CFR 50.4 at least 60 days before they are held.	N/A	The NextEra CEP commits to plume exposure pathway exercises conducted biennially. These exercises include mobilization of licensee and state, and local government personnel and resources and implementation of emergency plans to demonstrate response capabilities within the plume exposure pathway EPZ. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.2.a. No additional information is required in the DAEC Annex to meet this element.

N.2.b Ingestion Exposure Pathway Exercises: Ingestion exposure pathway exercises are conducted at least once every eight years. These exercises include mobilization of state, local, and tribal government personnel and resources and implementation of emergency plans to demonstrate response capabilities to a release of radioactive materials requiring post-plume phase protective actions within the ingestion exposure pathway EPZ.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra will assist in development and participate as requested in an ingestion exposure pathway exercise to support FEMA evaluation of ORO emergency plan response activities in this area. The scope, objectives and schedule will be coordinated with appropriate federal emergency organizations and OROs for exercises in which they participate.	N/A	The NextEra CEP commits to development assistance and participation as requested to support ingestion exposure pathway exercises conducted to support FEMA evaluation of ORO emergency plan response activities. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.2.b. No additional information is required in the DAEC Annex to meet this element.

N.3 Exercise Scenario Elements During each eight-year exercise cycle, biennial, evaluated exercise scenario content is varied to provide the opportunity to demonstrate the key skills and capabilities necessary to respond to the following scenario elements:

N.3.a Hostile Action-Based (HAB) Hostile action directed at the NPP site. This scenario element may be combined with either a radiological release scenario or a no/minimal radiological release scenario, but a no/minimal radiological release scenario should not be included in consecutive HAB exercises at an NPP site.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one HAB scenario in an exercise within an eight-year cycle. The HAB scenario will include either a radiological release scenario or no/minimal radiological release scenario, but HAB scenarios combined with a no/minimal radiological release scenario will not be used in consecutive HAB exercises.	N/A	The NextEra CEP commits to conducting at least one HAB scenario in an exercise within an eight-year cycle. The HAB scenario will include either a radiological release scenario or no/minimal radiological release scenario, but HAB scenarios combined with a no/minimal radiological release scenario will not be used in consecutive HAB exercises. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.3.a. No additional information is required in the DAEC Annex to meet this element.

N.3.b Rapid Escalation An initial classification of, or rapid escalation to, an SAE or GE.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one rapid escalation scenario in an exercise within an eight-year cycle. The rapid escalation scenario will begin with an initial declaration of, or rapid escalation to, the Site Area Emergency classification level while event response is performed from the Control Room.	N/A	The NextEra CEP commits to conducting at least one rapid escalation scenario to the Site Area Emergency classification in an exercise within an eight-year cycle. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.3.b. No additional information is required in the DAEC Annex to meet this element.

N.3.c No/Minimal Release of Radioactive Materials No release or an unplanned minimal release of radioactive material which does not require public protective actions. This scenario element is used only once during each eight-year exercise cycle.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one no/minimal radiological release scenario that does not require PARs in an exercise within an eight-year cycle.	N/A	The NextEra CEP commits to conducting at least one no/minimal radiological release scenario that does not require PARs in an exercise within an eight-year cycle. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.3.c. No additional information is required in the DAEC Annex to meet this element.

N.3.c.1 The licensee is required to demonstrate the ability to respond to a no/minimal radiological release scenario. State, local, and tribal government response organizations have the option, and are encouraged, to participate jointly in this demonstration. If the offsite organizations elect not to participate in the licensee's required minimal or no release exercise, the OROs will still be obligated to meet the exercise requirements as specified in 44 CFR 350.9.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
ORO's located within the plume exposure pathway EPZ are invited to participate in exercises with no/minimal radiological release scenarios. NextEra will support offsite agencies in meeting FEMA demonstration requirements when they elect to not participate in a required no/minimal release scenario that is included in an exercise.	N/A	The NextEra CEP commits to inviting OROs located within the plume exposure pathway EPZ to participate in exercises with no/minimal radiological release scenarios. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.3.c.1. No additional information is required in the DAEC Annex to meet this element.

N.3.c.2 When planning for a joint no/minimal radiological release exercise, affected state, local, and tribal jurisdictions, the licensee, and FEMA will identify offsite capabilities that may still need to be evaluated and agree upon appropriate alternative evaluation methods to satisfy FEMA's biennial criteria requirements. Alternative evaluation methods that could be considered during the extent of play negotiations include expansion of the exercise scenario, out of sequence activities, plan reviews, staff assistance visits or other means as described in FEMA guidance.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
FEMA will determine whether a no/minimal radiological release scenario is acceptable for use in a full or partial participation biennial exercise.	N/A	The NextEra CEP recognizes that FEMA will determine whether a no/minimal radiological release scenario is acceptable for use in a full or partial participation biennial exercise. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.3.c.2. No additional information is required in the DAEC Annex to meet this element.

N.3.d Resource Integration of offsite resources with onsite response.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one scenario that integrates offsite resources provided by local support organizations with onsite response in an exercise within an eight-year cycle. Demonstration of resource integration includes briefings, offsite response to the site, and coordination of worker protection, as appropriate to the scenario.	N/A	The NextEra CEP states that each site will conduct at least one scenario that integrates offsite resources provided by local support organizations with onsite response in an exercise within an eight-year cycle. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.3.d. No additional information is required in the DAEC Annex to meet this element.

N.3.e 10 CFR 50.155(b)(2) Strategies Demonstration of the use of equipment, procedures, and strategies developed in compliance with 10 CFR 50.155(b)(2).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct at least one scenario requiring demonstration of the ability to transition between procedures and select the strategy(ies) for preventing or mitigating fuel damage and limiting radiological releases, within an eight-year cycle. The MBDBE exercise scenario will be based in one of the site specific strategies used to mitigate spent fuel pool damage scenarios or one of the 7 strategies for PWRs used to mitigate reactor accidents and maintain containment. The MBDBE exercise may be conducted separately from the main exercise timeline and sequence of events. This includes the (simulated) deployment and use of equipment associated with these strategies. At a minimum, TSC and OSC ERO staff will participate in this portion of the exercise. Participation of Control Room, EOF, JIC , and offsite officials may be simulated.	DAEC will conduct a mitigation of beyond design basis event (MBDBE) scenario in an exercise within an eight-year cycle. The MBDBE scenario will be based on one of the site specific strategies used to mitigate spent fuel pool damage scenarios, or one of the 10 strategies for BWRs used to mitigate reactor accidents and maintain containment.	The NextEra CEP states that each site will conduct at least one scenario requiring demonstration of the ability to transition between procedures and select the strategy(ies) for preventing or mitigating fuel damage and limiting radiological releases, within an eight-year cycle. The DAEC Annex confirms this scenario requirement and addresses the BWR strategies. This meets the intent of element N.3.e. No additional information is required in the DAEC Annex to meet this element.

Methods to accomplish this demonstration are dependent upon the nature of the postulated initiating event, the plant response/accident sequence, and the ability of responders to select and implement mitigation/management strategies. These methods involve conducting any of the following: A demonstration of the transition from a controlling AOP or EOP into the Extensive Damage Mitigation Guidelines (EDMGs), FLEX support guidelines (FSGs), or Severe Accident Management Guidelines (SAMGs); a demonstration of the use of EDMGs; a demonstration of the use of FSGs; or a demonstration of the use of SAMGs.		

N.4 Drills are designed to enable an organization's demonstration and maintenance of key skills and capabilities necessary to fulfill functional roles. Drills include, but are not limited to, the following at their noted frequencies

N.4.a Emergency Medical Drills Emergency medical drills are conducted annually. These drills involve a simulated, contaminated individual and contain provisions for participation by support services agencies (i.e., ambulance and offsite medical treatment facility).

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct an onsite simulated medical drill once per calendar year. The scope of the emergency medical drill will include a simulated on-site injured and contaminated individual and medical/ first aid treatment, including contamination control.	N/A	The NextEra CEP states that each site will conduct an onsite simulated medical drill once per calendar year. The scope of the emergency medical drill will include a simulated on-site injured and contaminated individual and medical/ first aid treatment, including contamination control. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.a. No additional information is required in the DAEC Annex to meet this element.

N.4.b Medical Services Drills Medical services drills are conducted annually at each medical facility designated in the emergency plan. These drills involve a simulated, contaminated emergency worker and/or member of the general public and contain provisions for participation by support services agencies (i.e., ambulance and offsite medical treatment facility).

This element is not applicable to the licensee emergency plan.

N.4.c Laboratory Drills Laboratory drills are conducted biennially at each laboratory designated in the emergency plan. These drills involve demonstration of handling, documenting, provisions for record keeping, and analyzing air, soil, and food samples, as well as quality control and quality assurance processes. These drills also involve an assessment of the laboratory's capacity to handle daily and weekly samples and the volume of samples that can be processed daily or weekly.

This element is not applicable to the licensee emergency plan.

N.4.d Environmental Monitoring Drills Environmental monitoring drills are conducted annually. These drills include direct radiation measurements in the environment, collection and analysis of all sample media (e.g., water, vegetation, soil, and air), and provisions for record keeping.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct an environmental monitoring drill once per calendar year. The scope of the environmental monitoring drill will include performance objectives for direct radiation measurements in the environment, collection and analysis of sample media (e.g., water, vegetation, soil, and air), communications, and record keeping.	N/A	The NextEra CEP states that each site will conduct an environmental monitoring drill once per calendar year matching the scope of the element. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.d. No additional information is required in the DAEC Annex to meet this element.

N.4.e Ingestion Pathway and Post-Plume Phase Drills Ingestion pathway and post-plume phase drills are conducted biennially. These drills involve sample plan development, analysis of lab results from samples, assessment of the impact on food and agricultural products, protective decisions for relocation, and food/crop embargos.

This element is not applicable to the licensee emergency plan.

N.4.f Communications Drills Communications amongst and between emergency response organizations, including those at the state, local, and Federal level, the FMTs, and nuclear facility within both the plume and ingestion exposure pathway EPZs, are tested at the frequencies determined in evaluation criterion F.3. Communications drills include the aspect of understanding the content of messages and can be done in conjunction with the testing described in evaluation criterion F.3.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct communications drills once per calendar year. Communications tests described in element F.3 can be performed as drills provided they include the aspect of understanding the content of messages.	N/A	The NextEra CEP states that each site will conduct communications drills once per calendar year. Communications tests described in element F.3 can be performed as drills if they meet the element. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.f. No additional information is required in the DAEC Annex to meet this element.

N.4.g Post-Accident Sampling Drills Post-accident sampling drills are conducted annually. These drills address capabilities including analysis of liquid and containment atmosphere samples with simulated elevated radiation levels. This criterion is not applicable if the NPP unit(s) does (do) not have licensing basis requirements for post-accident sampling.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Refer to site annexes for the Post-Accident Sampling Drill requirements.	Not applicable: DAEC has received NRC approval for the elimination of post-accident sample system (PASS) requirements from technical specifications (Amendment 252). In accordance with the DAEC site-specific NRC safety evaluation, contingency plans have been developed for obtaining and analyzing highly radioactive samples. However, these contingency plans do not have to be carried out in emergency plan drills or exercises.	Not applicable.

N.4.h Off-Hours Report-In Drills Off-hours report-in drills are conducted biennially and are unannounced.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct an off-hours unannounced ERO report-in drill at least once within an eight-year cycle. The scope of the off-hours unannounced ERO report-in drill will require actual response to the assigned facility. The Off-Hours Report-In Drill requirement may be satisfied by an actual event provided objectives are evaluated and documented in a critique report.	N/A	The NextEra CEP states that each site will conduct an off-hours unannounced ERO report-in drill at least once within an eight-year cycle. The scope of the off-hours unannounced ERO

		report-in drill will require actual response to the assigned facility. The Off-Hours Report-In Drill requirement may be satisfied by an actual event provided objectives are evaluated and documented in a critique report. Completion of an element N.4.h off-hours unannounced ERO report-in drill satisfies the requirements of the off-hours unannounced ERO call-in drill in this element. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.h. No additional information is required in the DAEC Annex to meet this element.

N.4.i Off-Hours Call-In Drills Off-hours call-in drills are conducted quarterly, such that each ERO member's normally expected response time is assessed at least biennially based on call-in drill responses or an alternate means for determining response time. Some drills are unannounced.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The NextEra ERO notification is an all-call process. Each NextEra site will conduct an off-hours unannounced ERO call-in drill biennially to verify each minimum staffing ERO position meets the required Table B-1 response time. The scope of the off-hours unannounced ERO call-in drill will require collection of the ERO notification system report which documents response within the required time. Completion of an element N.4.h off-hours unannounced ERO report-in drill satisfies the requirements of the off-hours unannounced ERO call-in drill in this element. The Off-Hours Call-In Drill requirement may be satisfied by an actual event provided the objectives are evaluated and documented in a critique report.	N/A	The NextEra CEP states that each site will conduct an off-hours unannounced ERO call-in drill biennially to verify each minimum staffing ERO position meets the required Table B-1 response time. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.i. No additional information is required in the DAEC Annex to meet this element.

N.4.j Onsite Personnel Protective Action Drills: Onsite personnel protective action drills are conducted during every eight-year exercise cycle. These drills demonstrate the NPP site's ability to implement and coordinate protective actions for onsite personnel during hostile action.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct a protective action drill within an eight-year cycle.	N/A	The NextEra CEP states that each site will conduct a protective action drill within an eight-year cycle. This drill will demonstrate the ability to implement and coordinate protective actions for

The scope of the protective action drill will demonstrate the ability to implement and coordinate protective actions for onsite personnel during a hostile action using one or more of the following: Warning personnel in the OCA outside the protected area; Evacuation of personnel from target buildings, including security personnel; Site evacuation by opening (while continuing to defend) security gates (demonstrated through discussion/table-top); Dispersal of licensed operators; Sheltering of personnel in structures away from potential site targets; Arrangements for accounting for personnel after the attack.		onsite personnel during a hostile action. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.j. No additional information is required in the DAEC Annex to meet this element.

N.4.k Aircraft Threat/Attack Response Drills: Aircraft threat/attack response drills are conducted during every eight-year exercise cycle. These drills demonstrate the use of procedures and protective measures developed for responding to hostile action involving an aircraft threat or attack.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct an aircraft threat/attack response drill at least once within an eight-year cycle. This drill may be combined with the beyond design basis demonstration in element N.3.e.	N/A	The NextEra CEP states that each site will conduct an aircraft threat/attack response drill at least once within an eight-year cycle. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.k. No additional information is required in the DAEC Annex to meet this element.

N.4.l Minimum Staffing Drills: An ERO minimum staffing (no participation of non-minimum augmenting ERO personnel) drill is conducted at least once during every eight-year exercise cycle.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Each NextEra site will conduct a minimum staffing drill at least once within an eight-year cycle. A minimum staffing response drill requires facility activation, full transfer of responsibilities from the Control Room, and demonstration of event assessment and response activities.	N/A	The NextEra CEP states that each site will conduct a minimum staffing drill at least once within an eight-year cycle. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element N.4.I. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria N

An exercise tests the integrated capability and a major portion of the elements of the emergency plans and organizations. Over the period of the exercise cycle, exercises will test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties.

Following exercises and drills, a critique is conducted to evaluate areas and identify issues with performance, response procedures, and facility and equipment adequacy. Provisions are made for federal and ORO representatives to observe and participate in drill and exercise critiques when present. NextEra will conduct a plume exposure pathway exercise biennially. Specifically, the plume exposure pathway exercise is developed to provide the ERO with the opportunity to demonstrate proficiency in key skills necessary to implement the principal functional areas of emergency response (those which test the adequacy of timing and content of implementing procedures, test equipment and communications networks, and ensure that the ERO personnel are familiar with their duties). State, and local OROs are invited to participate in performance enhancement program (PEP) exercises. Additionally, the NextEra CEP provides a description of the types of exercises and drills, as well as a description of the various required scenario elements to be conducted within the eight-year exercise cycle.

A complete description of NextEra's exercises and drills program is provided in the NextEra CEP. DAEC previously received a license amendment for relief from the Technical Specification requirements for the Post-Accident Sampling system,

NextEra will conduct periodic exercises to evaluate major portions of emergency response capabilities, conduct periodic drills to develop and maintain key skills, and adequately correct deficiencies identified as a result of exercises or drills. Therefore, the planning standard of 10 CFR 50.47(b)(14) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria O: Radiological Emergency Response Training

NUREG-0654, Evaluation Criterion II.O, addresses planning standard 10 CFR 50.47(b)(15), which states:

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Section IV.F(1) of Appendix E to 10 CFR Part 50 requires in part, a description of “[t]he program to provide for: (a) The training of employees and exercising, by periodic drills, of emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiological emergency.”

The requirements of 10 CFR 50.47(b)(15) and applicable requirements of Section IV.F of Appendix E to 10 CFR Part 50 are addressed in portions of Section O, “Radiological Emergency Response Training,” of the NextEra CEP.

O.1 Each organization ensures the training of emergency responders and other appropriate individuals with an operational role is described in the emergency plan. Initial training and at least annual retraining are provided.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Initial training and annual continuing training is conducted to ensure ERO personnel are properly qualified to their specific position. Categories of ERO personnel requiring training	N/A	The NextEra CEP ensures the training of emergency responders and other individuals with an operational role as described in the emergency plan. Initial training and at least annual retraining are provided. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element O.1. No additional information is required in the DAEC Annex to meet this element.

include: 1. Emergency Directors (includes the aspect of classification, notification and PARs); 2. Accident Assessment; 3. ERO Field Monitoring Team Technicians receive initial training for the tasks they will be expected to perform during an emergency. The following general topics will be included in the training: Equipment and equipment checks; Communications; Plume tracking techniques; Personnel monitoring; Emergency exposure criteria; Locations and use of radiological emergency equipment. 4. Repair and Damage Control Teams; 5. Security; 6. Fire Brigade 7. First Aid.		

O.1.a Site-specific emergency response training is developed and conducted for those offsite organizations that may be called upon to provide onsite assistance in the event of an emergency.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
NextEra offers emergency response training annually to local support organizations. Training includes basic radiation protection, the notification process for their organization, and their organization's expected role. The offered training for local support organizations who will enter the site also includes the general site layout, site access procedures, and the identity (by position and title) of the onsite individual who will control their support activities.	N/A	The NextEra CEP offers emergency response training annually to local support organizations. That includes basic radiation protection, the notification process for their organization, and their organization's expected role. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element O.1.a. No additional information is required in the DAEC Annex to meet this element.

O.2 The ERO training program consists of learning objectives that are used to develop and maintain key skills. This includes a systematic analysis of jobs and tasks to be performed from which learning objectives are derived.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The ERO training program is developed and evaluated based on position-specific responsibilities/tasks using Systems Approach to Training (SAT) principles, when applicable	N/A	The NextEra CEP provides details of a ERO training program that is developed and evaluated based on position-specific responsibilities/tasks using Systems Approach to Training (SAT) principles. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element O.2. No additional information is required in the DAEC Annex to meet this element.

O.2.a The ERO training program is reviewed at least annually and revised as necessary.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Changes to the training program are identified from trainee feedback and by critique items captured during drills and incorporated per the principles of the SAT process.	N/A	The NextEra CEP provides that changes to the training program are identified from trainee feedback and by critique items captured during drills and incorporated per the principles of the SAT process. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element O.2.a. No additional information is required in the DAEC Annex to meet this element.

O.2.b Training sessions that provide performance opportunities to develop, maintain, or demonstrate key skills are critiqued in order to identify weak or deficient areas that need correction.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
All individuals participating in the ERO training program are given the opportunity to provide feedback of training sessions. Any weak or deficient areas identified and corrected.	N/A	The NextEra CEP provides that all individuals participating in the ERO training program are given the opportunity to provide feedback of training sessions. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element O.2.b. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria O

Initial training and annual retraining will be conducted for members of the ERO and offered annually to local support organizations. Training includes basic radiation protection, the notification process for their organization, and their organization's expected role. The offered training for local support organizations who will enter the site also includes the general site layout, site access procedures, and the identity (by position and title) of the onsite individual who will control their support activities.

The ERO training program is developed and evaluated based on position-specific responsibilities/tasks using Systems Approach to Training (SAT) principles, when applicable. Changes to the training program are identified from trainee feedback and by critique items captured during drills and incorporated per the principles of the SAT process. All individuals participating in the ERO training program are given the opportunity to provide feedback of training sessions. Any weak or deficient areas identified and corrected.

A complete description of NextEra's radiological emergency response training is provided in the NextEra CEP and is not addressed in the site-specific annexes.

NextEra has established radiological emergency response training for those who may be called on to assist in an emergency. Therefore, the planning standard of 10 CFR 50.47(b)(15) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

NUREG-0654 Evaluation Criteria P: Responsibility For The Planning Effort: Development, Periodic Review, And Distribution Of Emergency Plans

NUREG-0654, Evaluation Criterion II.P, addresses planning standard 10 CFR 50.47(b)(16), which states:

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Section IV.G of Appendix E to 10 CFR Part 50, requires a description of the “[p]rovisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date.”

The requirements of 10 CFR 50.47(b)(16) and applicable requirements of Section IV.G of Appendix E to 10 CFR Part 50 are addressed in Section P, “Responsibility for the Preparedness Effort,” of the NextEra CEP with the proposed DAEC site-specific annex.

P.1 The training program, including initial training and periodic retraining, of individuals responsible for the planning effort is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Initial EP program training for new EP staff members is performed and documented. Continuing training for EP staff members is performed periodically through job related opportunities (such as courses, workshops, information exchange meetings with other licensees, conferences held by industry and government agencies, etc.) to maintain current knowledge of the overall planning effort or to enhance working knowledge of plant operations.	N/A	The NextEra CEP provides initial training for new EP staff members and is documented. Continuing training for EP staff members is performed periodically through job related opportunities. This activity applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.1. No additional information is required in the DAEC Annex to meet this element.

P.2 The individual with the overall authority and responsibility for radiological emergency response planning is identified by title/position.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The Chief Nuclear Officer has overall authority and responsibility for the NextEra CEP.	N/A	The NextEra CEP states that the Chief Nuclear Officer has the overall authority and responsibility for the NextEra CEP. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.2. No additional information is required in the DAEC Annex to meet this element.

P.3 The individual(s) with the responsibility for the development, maintenance, review, updating, and distribution of emergency plans, as well as the coordination of these plans with other response organizations, is identified by title/position.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The site Regulatory Affairs Managers are responsible for the development, maintenance, review, and updating of the emergency plan, as well as the coordination of the plan with other response organizations.	N/A	The NextEra CEP states that the site Regulatory Affairs Managers are responsible for the development, maintenance, review, and updating of the emergency plan, as well as the coordination of the plan with other response organizations. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.3. No additional information is required in the DAEC Annex to meet this element.

P.4 The process for reviewing annually, and updating as necessary, the emergency plan, implementing procedures, maps, charts, and agreements is described. The process includes a method for recording changes made to the documents and, when appropriate, how those changes are retained.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The formal emergency plan and the emergency plan implementing procedures will be reviewed on an annual basis and updated if necessary. Any changes to regulations, issues identified by drills and exercises, assessments and audits, or other updates will be evaluated and incorporated into the emergency plan if warranted. Letters of Agreement will be reviewed and verified on an annual basis, and updated if warranted. Changes will be processed in accordance with 10 CFR 50.54(q) requirements and NextEra document control/records management procedures.	N/A	The NextEra CEP states that the formal emergency plan and the emergency plan implementing procedures for each site will be reviewed on an annual basis and updated if necessary. Letters of Agreement are also reviewed and updated annually as needed. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.4. No additional information is required in the DAEC Annex to meet this element.

P.5 Provisions for distributing the emergency plan and implementing procedures to all organizations and appropriate individuals with responsibility for implementation of the plan/procedures is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Revised copies of the emergency plan are posted and distributed in accordance with NextEra records management system procedures. Changes to the emergency plan are submitted to the NRC in accordance with 10 CFR 50.4.	N/A	The NextEra CEP states that revised copies of the emergency plan are posted and distributed in accordance with NextEra records management system procedures. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.5. No additional information is required in the DAEC Annex to meet this element.

P.6 A listing of annexes, appendices, and supporting plans and their originating agency is included in the emergency plan.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Emergency plans developed by other agencies that support the NextEra CEP include the following: • Department of Homeland Security National Response Framework • U.S. Nuclear Regulatory Commission Incident Response Plan Refer to the CEP Introduction Section for a listing of emergency plan extension documents (documents that are considered part of the emergency plan but are maintained separately). Plans for organizations that support individual sites are listed in the site annexes.	The primary external emergency plans specific to the support of DAEC include the following: • State of Iowa Radiological Emergency Response Plan • Benton County Radiological Emergency Response Plan • Linn County Radiological Emergency Response Plan	The NextEra CEP along with the DAEC Annex provide a listing of annexes, appendices, and supporting plans and their originating agency is included in the emergency plan. This meets the intent of element P.6.

P.7 An appendix containing a listing by title of the procedures required to maintain and implement the emergency plan is included. The listing includes the section(s) of the emergency plan to be implemented by each procedure.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Table P.7-1 provides a listing, by title, of the common response and maintenance procedures required to implement the emergency plan, and the section(s) of the emergency plan to be implemented by each procedure. A listing, by title, of the site-specific response and maintenance procedures required to implement the emergency plan is provided in the site annexes.	Table P.7-1 provides a listing of the DAEC site-specific procedures required to maintain and implement the emergency plan, and the section(s) of the emergency plan implemented by each procedure.	The NextEra CEP along with the DAEC Annex provide a listing by title of the procedures required to maintain and implement the emergency plan and the section(s) of the emergency plan to be implemented by each procedure. This meets the intent of element P.7.

P.8 A table of contents and a cross-reference index to each of the NUREG-0654/FEMA-REP-1, Rev. 2 evaluation criteria are included. The evaluation criteria that do not apply are identified.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The NextEra emergency plan contains a specific table of contents. The emergency plan paragraphs are numbered corresponding to the NUREG-0654/FEMA-REP-1 R2 evaluation criteria. Evaluation criteria which do not apply to utilities are listed and identified.	N/A	The NextEra CEP contains a specific table of contents. The emergency plan paragraphs are numbered corresponding to the NUREG-0654/FEMA-REP-1 R2 evaluation criteria. Evaluation criteria which do not apply to utilities are listed and identified. These statements apply to all NextEra nuclear sites including DAEC. This meets the intent of element P.8. No additional information is required in the DAEC Annex to meet this element.

P.9 Provisions for addressing the requirements of 10 CFR 50.54(t) are described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Emergency preparedness program elements are reviewed by persons that have no direct responsibility for the implementation of the emergency preparedness program, in accordance with 10 CFR 50.54(t).	N/A	The NextEra CEP states that emergency preparedness program elements are reviewed by persons that have no direct responsibility for the implementation of the emergency preparedness program, in accordance with 10 CFR 50.54(t). This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.9. No additional information is required in the DAEC Annex to meet this element.

P.10 The administrative process for the periodic review and updating of contact information identified in the emergency plan and implementing procedures is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The NextEra emergency communications directory contains select contact numbers for ORO and support organizations identified in the emergency plan and implementing procedures. The ERO call-out system contains comprehensive ERO contact information. NextEra ERO contact information is verified semi-annually and updated as needed. Facility and support contact information in the emergency communications directory is verified annually and updated as needed.	N/A	The NextEra CEP provides an administrative process for the periodic review and updating of contact information identified in the emergency plan and implementing procedures. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.10. No additional information is required in the DAEC Annex to meet this element.

P.11 The process for entering EP program-related issues that could reduce the effectiveness of the emergency plan into the site-wide corrective action program is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
The NextEra corrective action program is used to capture all events that do not meet program regulations, requirements, standards, or are otherwise conditions adverse to quality.	N/A	The NextEra CEP describes the process for capturing all events that could reduce the effectiveness of the plan in the corrective action program (CAP). This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.11. No additional information is required in the DAEC Annex to meet this element.

P.12 The process to evaluate changes in plant configuration for their impact on the effectiveness of the emergency plan is described.

<u>NextEra CEP</u>	<u>DAEC Annex</u>	<u>Assessment</u>
Changes in plant configuration are evaluated for their impact on the effectiveness of the emergency plan through the plant modification or license compliance review processes specified in change procedures and, if required, the 10 CFR 50.54(q) change evaluation process.	N/A	The NextEra CEP describes the process to evaluate changes in plant configuration for their impact on the effectiveness of the emergency plan. This statement applies to all NextEra nuclear sites including DAEC. This meets the intent of element P.12. No additional information is required in the DAEC Annex to meet this element.

Conclusion for Evaluation Criteria P

Initial EP program training for new EP staff members is performed and documented. Continuing training for EP staff members is performed periodically through job related opportunities (such as courses, workshops, information exchange meetings with other licensees, conferences held by industry and government agencies, etc.) to maintain current knowledge of the overall planning effort or to enhance working knowledge of plant operations. The NextEra Chief Nuclear Officer has overall authority and responsibility for the NextEra Emergency Plan. The site Regulatory Affairs Managers are responsible for the development, maintenance, review, and updating of the emergency plan and site-specific annexes, as well as the coordination of the plan with other response organizations. The formal emergency plan and the emergency plan implementing procedures will be reviewed on an annual basis and updated if necessary. Any changes to regulations, issues identified by drills and exercises, assessments and audits, or other updates will be evaluated and incorporated into the emergency plan if warranted. LOAs will be reviewed and verified on an annual basis and updated if warranted. Emergency plan changes will be processed in accordance with 10 CFR 50.54(q) requirements and NextEra document control/records management procedures.

An independent review of the emergency plan will be conducted in accordance with the requirements of 10 CFR 50.54(t)(2).

A listing of emergency plan extension documents is included in the Introduction section of the NextEra CEP. Section A.1.a of the NextEra CEP lists external organizations having an operational role in supporting the NextEra CEP. Table P.7-1, "Emergency Plan Implementing Procedures," provides a listing, by title, of the common response and maintenance procedures required to implement the emergency plan, and the section(s) of the emergency plan to be implemented by each procedure. A listing, by title, of the site-specific response and maintenance procedures required to implement the emergency plan is provided in the site annexes. The NextEra CEP contains a specific table of contents, and the NextEra CEP and site-specific annexes are numbered corresponding to NUREG-0654 evaluation criteria.

The NextEra emergency communications directory contains select contact numbers for ORO and support organizations identified in the emergency plan and implementing procedures. The ERO call-out system contains comprehensive ERO contact information. NextEra ERO contact information is verified semi-annually and updated as needed. Facility and support contact information in the emergency communications directory is verified annually and updated as needed.

The NextEra corrective action program is used to capture all events that do not meet program regulations, requirements, standards, or are otherwise conditions adverse to quality. Changes in plant configuration are evaluated for their impact on the effectiveness of the emergency plan through the plant modification or license compliance review processes specified in change procedures and, if required, the 10 CFR 50.54(q) change evaluation process.

Each site-specific annex lists the primary external emergency plans specific to support that site. Additionally, table P.7-1 in each site-specific annex provides a listing of the site-specific procedures required to maintain and implement the emergency plan following the CEP and site-specific annex approval.

NextEra has identified the responsibilities for plan development/review, for distribution of emergency plans, and that planners are properly trained. Therefore, the planning standard of 10 CFR 50.47(b)(16) and applicable requirements of Appendix E to 10 CFR Part 50 have been adequately addressed.

Enclosure 2

NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER

L-2026-008

LICENSE AMENDMENT REQUEST (TSCR-195)

NEXTERA FLEET COMMON EMERGENCY PLAN

(101 pages follow)



NUCLEAR FLEET

PROGRAM DESCRIPTION

NON-SAFETY RELATED
INFORMATION USE

Program No.

EP-AA-100

Revision No.

6

Title:

NextEra Common Emergency Plan

Responsible Department: REGULATORY AFFAIRS

Special Considerations:

Revision	Approved By	Approval Date	TYPE	PROCEDURE
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REVISION SUMMARY	
Rev. No.	Description
6	Incorporated PCR 02521075 to remove statement from Section N.1.
5	Incorporated PCR 02516481 for Common Emergency Plan implementation.

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INTRODUCTION

The NextEra Common Emergency Plan provides the means to protect the health and safety of the general public, persons temporarily visiting or assigned to nuclear power plants operated by NextEra Energy Point Beach, LLC, NextEra Energy Seabrook, LLC, and Florida Power & Light Company (collectively “NextEra”), and plant employees. NextEra operates the Point Beach, Seabrook Station, Saint Lucie, and Turkey Point nuclear plants.

The NextEra emergency preparedness program is based upon the requirements of 10 CFR 50.47 and 10 CFR 50 Appendix E, and the guidelines of the U.S. Nuclear Regulatory Commission (NRC) as established in NUREG-0654/FEMA-REP-1, Revision 2.

The NextEra emergency plan and site annexes are formatted using the outline numbering style of NUREG-0654 R2 to explicitly align with the 10 CFR 50.47(b) planning standards, the requirements of 10 CFR 50 Appendix E, and the elements of NUREG-0654 R2. That formatting provides a direct cross-reference to the elements of NUREG-0654 R2.

The formal NextEra emergency plan for each NextEra site consists of the following program and bases documents:

- NextEra Common Emergency Plan – The NextEra common emergency plan identifies and describes the methods for responding to emergencies and maintaining emergency preparedness. Planning efforts common to all NextEra power reactor sites are encompassed within the NextEra common emergency plan.
- Site Emergency Plan Annex – The site emergency plan annexes contain information and guidance that is unique to the site. The site annexes are subject to the same review and audit requirements as the common emergency plan.
- Site Emergency Action Level (EAL) Technical Basis Document (TBD) – The EAL TBD establishes the classification scheme used to declare emergencies. The EAL TBD documents references and inputs used to determine values or events that would result in declaration of an emergency. The EAL TBD fulfills requirements of 10 CFR 50 Appendix E.IV.B.1.
- Site On-Shift Staffing Analysis – The on-shift staffing analysis documents that the minimum shift crew can perform the actions required by Emergency Operating Procedures (EOP) and the emergency plan, without task overlap or overburden, prior to Emergency Response Organization (ERO) augmentation. The on-shift staffing analysis fulfills requirements of 10 CFR 50 Appendix E.IV.A.9.
- Site Evacuation Time Estimate (ETE) Study – The ETE study defines the plume exposure (~10 mile) Emergency Planning Zone (EPZ). It documents the population within defined areas of the EPZ and establishes evacuation routes and ETEs for different scenarios for those populations. The ETE study fulfills requirements of 10 CFR 50 Appendix E.IV paragraphs 2-7.
- Site Protective Action Recommendation (PAR) Technical Basis Manual (TBM) – The PAR TBM document the bases used to develop site-specific protective action recommendation procedures. The PAR TBM fulfills requirements of 10 CFR 50 Appendix E.IV paragraph 3.

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- Site Alert and Notification System (ANS) Design Report – The ANS design report is the FEMA-approved document that contains the specific design, testing, and maintenance of the system. The ANS design report fulfills requirements of 10 CFR 50 Appendix E.IV.D.3.

Except for the NextEra Common Emergency Plan, the above documents are maintained and revised separately but as part of the site emergency plan.

Any changes made that may affect or alter the emergency plan program or bases documents described above will be evaluated and made using the change process in 10 CFR 50.54(q) and Regulatory Guide 1.219.

There are supporting and complementing emergency plans, including those of federal agencies; the states of Florida, New Hampshire, Wisconsin, and Massachusetts; and local government agencies that support the NextEra sites. These plans contain coordinated emergency response and preparedness instructions for declared emergencies. Each plan has been prepared and is maintained by its respective organization and is coordinated as appropriate with the other plans.

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A: Assignment of Responsibility

Primary responsibilities for emergency response by the nuclear facility licensee, and by state and local organizations within the EPZs have been assigned, the emergency responsibilities of the various supporting organization have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

Regulatory References: 10 CFR 50.47(b)(1); 44 CFR 350.5(a)(1);
10 CFR Part 50 Appendix E.IV.A

A.1	The federal, state, local, tribal, licensee, and other private sector organizations that comprise the overall response for the EPZs are identified.

Element A.1.a.1 below provides a summary of NextEra response organization responsibilities as they relate to the overall concept of operations for event response. A detailed description of the NextEra Emergency Response Organization (ERO) is contained in Section B.

The elements below identify the federal, Offsite Response Organizations (OROs), and other organizations that encompass the overall response organization for an event at a NextEra site.

A.1.a	The organizations having an operational role specify their concept of operations and relationship to the total effort.

1. NextEra

Emergencies are initially declared and responded to by the on-shift staff under the direction of the Shift Manager. Augmentation of the shift ERO is required at the Alert emergency classification level or higher, and discretionary at the Unusual Event emergency classification level. The ERO has the capability to expand or contract to meet the needs of the emergency.

When the emergency response facilities are staffed the augmenting ERO relieves the on-shift personnel of emergency response functions not directly associated with unit operations. NextEra overall responsibilities for event response are as follows:

- Recognize, classify and declare an emergency.
- Notify appropriate NextEra personnel, federal, and OROs.
- Request additional support from federal, ORO, and private organizations.
- Establish and maintain effective communications with onsite and offsite entities.
- Continuously assess the consequences of the accident, and periodically communicate response status and assessment information to the appropriate groups and authorities.
- Take protective actions onsite and recommend protective actions to offsite authorities.
- Monitor and control radiation exposure of personnel responding during an emergency.
- In conjunction with OROs, provide emergency information to the media and public through periodic media briefings and media statements.

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2. Federal Organizations

Control, responsibility and interface of federal organizations is governed by the National Response Framework (NRF) and the Nuclear/Radiological Incident Annex to the NRF when they are called to respond to an event at a nuclear power plant. The NRC acts as the lead federal agency with regard to technical matters during a nuclear incident, including providing radiological assistance.

3. Offsite Response Organizations

The NextEra ERO coordinates response actions with OROs. Interface between the site and the OROs is governed by their respective emergency plans, which are developed and maintained in coordination with the NextEra emergency plan. OROs are described in the site annexes.

A.1.b	Each organization's emergency plan illustrates these interrelationships in a block diagram.

Refer to Section B.4 for the interrelationships between the NextEra ERO, federal response organizations, and the OROs.

A.1.c	Each organization identifies the individual, by title/position, who will be in charge of the emergency response.

The title of the individual who will be in charge of the emergency response is provided in Elements B.2 and B.2.a.

A.2	References to the applicable acts, codes, or statutes that provide the legal basis for emergency response-related authorities, including those that delegate responsibility and authority to state, local, and tribal governments are included. Each emergency plan indicates who may declare a "State of Emergency" and the powers that ensue.

This element is not applicable to the licensee emergency plan.

A.3	Each organization specifies the key individual(s), by title/position, responsible for the following functions, applicable to their organizations: command and control, alerting and notification, communications, public information, accident assessment, public health and sanitation, social services, fire and rescue, traffic control, emergency medical services, law enforcement, transportation, protective response (including authority to request federal assistance and to initiate other protective actions), and radiological exposure control.

Refer to Element B.1.a and Table B-1 for a list of key individuals responsible for command and control, alerting and notification, communications, public information, accident assessment, protective response (including authority to request federal assistance and to initiate other protective actions), and radiological exposure control.

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A.4

Written agreements with the support organizations having an emergency response role within the EPZs are included. The agreements describe the concept of operations, emergency measures to be provided, mutually acceptable criteria for their implementation, and arrangements for exchange of information.

Assistance will be provided, as necessary, by federal response organizations and OROs that are mandated by charter, regulation or law to protect public health and safety. Federal response organizations and OROs cooperate with NextEra and have developed radiological emergency plans and procedures in an integrated manner. Additional support agreements (Letter of Agreement – LOA/Memorandum of Understanding – MOUs) are not required with these agencies.

Support agreements are necessary when an organization or individual is expected to provide assistance to NextEra and is not required otherwise to do so. To that extent, LOAs have been developed between NextEra and several entities to provide emergency response support and services consistent with this plan.

Specifically, the agreement minimum content includes the following:

- A description of the concept of operations, meaning the mutually accepted criteria for implementation.
- When the support will be provided (as a minimum, the agreement states that the support provider will offer its services during an emergency at the affected site(s), including during a Hostile Action).
- Identification of the support to be provided.
- Arrangements for exchange of information during event support.

A contract/purchase order with a private contractor is considered acceptable in lieu of a LOA for the specified duration of the contract. The current signature copies of applicable LOAs and contracts are listed in the site annexes and are maintained locally on file.

A.5

Each principal response organization is capable of continuous operations for a protracted period. The principal response organization specifies the individual, by title/position, who is responsible for ensuring continuity of resources (technical, administrative, and material).

NextEra maintains a depth to the ERO that is capable of providing continuous (24 hour/day) operation throughout a declared emergency by providing relief of the on-shift and augmenting ERO positions by qualified individuals. The shift rotation and ERO staffing for protracted ERO operations is designated by the Emergency Director.

The Emergency Director is the individual responsible for assuring continuity of resources (technical, administrative, and material) within the ERO.

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B: Emergency Response Organization

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

Regulatory References: 10 CFR 50.47(b)(2); 44 CFR 350.5(a)(2);
10 CFR Part 50, Appendix E.IV.A

B.1	The emergency plan specifies how the requirements of 10 CFR 50.47(b)(2) and the applicable sections of Appendix E to 10 CFR Part 50 are met.

1. 10 CFR 50.47(b)(2) Compliance

In December of 2019, the NRC issued NUREG-0654 R2, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants. The scope of NUREG-0654 R2 states "NPP applicants and licensees may voluntarily use the guidance in this document to demonstrate compliance with the underlying NRC regulations." The NextEra emergency plan and site annexes are based on the criteria provided in NUREG-0654 R2 as approved by the NRC.

2. 10 CFR 50 Appendix E Compliance

Refer to the 10 CFR 50 Appendix E.IV.A cross-reference in Appendix 3 of this emergency plan.

B.1.a	The site-specific emergency response organization (ERO) is developed. Note that while other site programs, such as operations, fire response, rescue and first aid, and security, may be controlled via other licensing documents, it is only when these personnel are assigned EP functions that they become part of this regulatory standard. Consideration is given to ensure that EP functions are not assigned to individuals who may have difficulties performing their EP function(s) simultaneously with their other assigned (non-EP) duties. Appendix E to 10 CFR Part 50 requires licensees to perform an on-shift staffing analysis to ensure on-shift staff can support the EP functions assigned, as well as other assigned duties.

A description of the normal site operating organization is contained in each sites' UFSAR.

The requirements for on-shift operations staff, security force staff, and fire brigade/first aid staff are controlled by Technical Specifications and other licensing and administrative documents. Positions from these departments are described in the emergency plan only when assigned an emergency preparedness function that is performed during an emergency.

Site specific on-shift staffing analysis reports are developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05. The site specific on-shift staffing analysis reports are maintained as part of the site emergency plans and are referenced in the site annexes.

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The on-shift ERO and minimum augmenting ERO is composed of the following positions, which are assigned responsibilities within the following functions (organized by facility):

1. Control Room (CR)

A. Shift Manager

- Organizational Interface and Coordination
- Command and Control
- Facility/Group Management and Supervision
- Contact and Use of External Support Services
- Use of Medical, Fire and Law Enforcement Support
- NRC Notification and Communications
- Event Classification
- ERO Notification
- State and Local Event Notification
- ERF Communications
- Accident Detection and Assessment
- Effluent Release and Dose Assessment
- OSC Team Priorities, Dispatch and Control
- Site Assembly and Accountability
- Site Evacuation
- ERO Radiological Protection
- Offsite Protective Action Recommendations
- Emergency Exposure
- First Aid
- Event Termination

B. Radiation Protection Technician

- Radiological Monitoring Activities
- ERO Radiological Protection
- Emergency Exposure
- Contamination Control Measures
- On-site radiological monitoring

C. Security Shift Supervisor

- Organizational Interface and Coordination
- Use of Medical, Fire and Law Enforcement Support
- NRC Notification and Communications
- Site Assembly and Accountability

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- Site Evacuation

D. Shift Technical Advisor (STA)

Note – Assigned as a collateral duty in accordance with Technical Specification.

- Accident Detection and Assessment
- Core Damage Assessment

E. Shift Communicator

Note – Assigned as a collateral duty to an on-shift position (EP Operator) other than the RPT. The EP Operator is not assigned to the fire brigade, plant operations during off-normal conditions, or the concurrent performance of ERO functions.

- NRC Notification and Communications
- State and Local Event Notification and Communications
- OSC Team Priorities, Dispatch and Control

F. Shift Dose Assessor

Note – Assigned as a collateral duty to an on-shift position (EP Operator) other than the RPT. The EP Operator is not assigned to the fire brigade, plant operations during off-normal conditions, or the concurrent performance of ERO functions.

- Effluent Release and Dose Assessment

2. Technical Support Center (TSC)

A. Site Emergency Director

- Organizational Interface and Coordination
- Federal Assistance
- Continuous Emergency Response Operations
- Command and Control
- Facility/Group Management and Supervision
- Contact and Use of External Support Services
- Integration of Offsite Agency Personnel in the ERF
- NRC Notification and Communications
- Event Classification
- State and Local Event Notification
- ERF Communications
- Facility Activation
- Backup and Alternative Facilities
- Accident Detection and Assessment
- OSC Team Priorities, Dispatch and Control
- Site Assembly and Accountability

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• Site Evacuation • ERO Radiological Protection • Offsite Protective Action Recommendations • Emergency Exposure • Event Termination • Recovery B. <u>TSC Classification Advisor</u> • Facility/Group Management and Supervision • Event Classification • State and Local Event Notification • ERF Communications • Facility Activation • Facility Operation • Accident Detection and Assessment • ERO Radiological Protection • Offsite Protective Action Recommendations C. <u>Reactor Engineer – Remote position</u> • Facility Operation • Accident Detection and Assessment • Core Damage Assessment D. <u>Electrical/I&C Engineer – Remote position</u> • Facility Operation • Accident Detection and Assessment E. <u>Mechanical Engineer – Remote position</u> • Facility Operation • Accident Detection and Assessment F. <u>ORO Communicator</u> • State and Local Event Notification • ERF Communications G. <u>ENS Communicator</u> • NRC Notification and Communications • ERF Communications		

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H. TSC Radiation Protection Coordinator

- Facility/Group Management and Supervision
- Contact and Use of External Support Services
- Event Classification
- State and Local Event Notification
- ERF Communications
- Facility Activation
- Facility Operation
- Backup and Alternative Facilities
- Accident Detection and Assessment
- Effluent Release and Dose Assessment
- OSC Team Priorities, Dispatch and Control
- Site Evacuation
- ERO Radiological Protection
- Offsite Protective Action Recommendations
- Emergency Exposure
- Contamination Control Measures
- Decontamination
- Recovery

3. Operations Support Center (OSC)

A. Lead OSC Supervisor

- Facility/Group Management and Supervision
- ERF Communications
- Facility Activation
- Facility Operation
- Backup and Alternative Facilities
- OSC Team Priorities, Dispatch and Control
- Site Evacuation
- First Aid
- Recovery

B. Fix-It-Now (FIN) Supervisor

- Facility/Group Management and Supervision
- Contact and Use of External Support Services
- Facility Activation
- Backup and Alternative Facilities

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- Accident Detection and Assessment
- OSC Team Priorities, Dispatch and Control
- Site Assembly and Accountability

C. Radiation Protection Supervisor (position not required if TSC and OSC are co-located)

- Facility/Group Management and Supervision
- Contact and Use of External Support Services
- Facility Activation
- Backup and Alternative Facilities
- Accident Detection and Assessment
- OSC Team Priorities, Dispatch and Control
- Site Assembly and Accountability
- Site Evacuation
- ERO Radiological Protection
- Radiation Protection Briefings

D. Maintenance (Mechanical, Electrical and I&C)

- OSC Team Priorities, Dispatch and Control

E. Radiation Protection Technician

- Radiological Monitoring Activities
- OSC Team Priorities, Dispatch and Control
- ERO Radiological Protection
- Emergency Exposure
- Contamination Control Measures
- Decontamination
- Radiation Protection Briefings

4. Emergency Operations Facility (EOF)

A. EOF Manager

- Organizational Interface and Coordination
- Continuous Emergency Response Operations
- Facility/Group Management and Supervision
- Contact and Use of External Support Services
- Integration of Offsite Agency Personnel in the ERF
- Dispatch and Control of Offsite EOC Liaisons
- ERF Communications

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- Facility Activation
- Facility Operation
- Site Evacuation
- Recovery

B. EOF Radiation Protection Coordinator

- Facility/Group Management and Supervision
- Integration and Use of the Radiological Laboratory
- Facility Operation
- Accident Detection and Assessment
- Effluent Release and Dose Assessment
- Radiological Monitoring Activities
- Offsite Protective Action Recommendations
- Radiation Protection Briefings
- Post-Accident Environmental Sampling

C. Field Monitoring Team Technician

- Facility Activation
- Radiological Monitoring Activities

D. Field Monitoring Team Driver

- Facility Activation
- Radiological Monitoring Activities

E. EOF Dose Assessor

- NRC Notification and Communications
- ERF Communication
- Facility Activation
- Facility Operation
- Effluent Release and Dose Assessment
- Offsite Protective Action Recommendations

F. Remote Dose Assessor – Remote position supervised by EOF RP Coordinator

- Effluent Release and Dose Assessment
- Offsite Protective Action Recommendations

5. Joint Information System (JIS) / Joint Information Center (JIC)

NextEra Corporate Communications and key business units maintain a staff to operate a Joint Information System.

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Refer to Sections H.5 and G for JIC/JIS details.

A. Site JIS Manager

- Facility/Group Management and Supervision
- Integration of Offsite Agency Personnel in the ERF
- ERF Communications
- Media Briefings
- Facility Activation

B. Site JIS Coordinator

- Media Briefings
- Accommodation of News Media Personnel
- Facility Activation
- Facility Operation

C. Remote JIS Manager– Remote interface position to the corporate JIS

- Facility/Group Management and Supervision
- ERF Communications
- Media Statements
- Media Briefings
- Accommodation of News Media Personnel
- Media Monitoring
- Rumor Control

B.1.b

The remote emergency response organization (ERO) positions are defined. Resources necessary to perform the functions and tasks assigned to the remote response positions, as well as a backup capability, are described.

The NextEra ERO includes remote response positions. Remote response positions are not required to physically manipulate plant equipment or take other physical actions at the site. Remote response positions are provided the resources to collaborate with ERO personnel in their assigned emergency facility. These resources provide;

- the ability to communication audio/visually between emergency facility and the remote responder.
- the ability to access procedures, information and data.
- the ability to share screens/documents.

ERO members responding remotely to an emergency are capable of performing all functions and tasks assigned to their position, including support provided to other ERO members, as described in the emergency plan and implementing procedures.

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Remote ERO Responders can perform the assigned functions anywhere power and internet connectivity is available.

These positions support the on-shift staff prior to activation of the TSC and EOF.

1. Remote Responders Assigned to the TSC (refer to Section B.1.a.2)

The Reactor Engineer, Electrical/I&C Engineer, and Mechanical Engineer ERO minimum staff positions are remote responders assigned to the TSC.

2. Remote Responders Assigned to the EOF (refer to Section B.1.a.4)

The Remote Dose Assessor ERO minimum staff position is assigned to the EOF.

B.2	An individual is designated as the on-shift emergency coordinator (individual title may vary) who has the authority and responsibility to immediately and unilaterally initiate any emergency response measures, including approving protective action recommendations (PARs) to be disseminated to authorities responsible for implementing offsite emergency response measures.

The Emergency Director ERO position has overall command and control of a declared emergency at a NextEra site.

The Shift Manager is the individual who is on-shift at all times and assumes the role of Emergency Director upon emergency declaration. As Emergency Director, the Shift Manager has the authority and responsibility to immediately and unilaterally initiate any emergency actions, including providing protective action recommendations (PARs) to authorities responsible for implementing offsite emergency measures,

The Shift Manager maintains overall command and control until relieved.

The remote positions (refer to Section B.1.b) report to the Shift Manager until their associated response facility is activated.

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B.2.a	The functional responsibilities assigned to the ERO are established and the responsibilities that may not be delegated to other members of the ERO are clearly specified in the emergency plan.

The Site Emergency Director will relieve the Shift Manager of overall Command and Control and the other key functions listed in Table B-1 at an Alert or higher emergency classification level.

Non-delegable responsibilities include the following:

- Event declaration
- ORO and NRC Notification
- PARs for the general public
- Emergency Exposure (Dose limits and KI)

Approving departures from license conditions per 10 CFR 50.54(x) transition from the Shift Manager to the Site Emergency Director upon transfer of command and control.

B.3	A table is developed depicting the site-specific on-shift staffing plan, as well as the ERO staffing augmentation plan.

The ERO is composed of on-shift personnel located at the site at all times, and augmenting personnel (responding to their assigned emergency facility or remotely).

Refer to Table B-1 for the on-shift and augmenting ERO staffing plan.

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Table B-1: On-Shift and Augmenting ERO Staffing Plan

Function	On-Shift	TSC/OSC/JIS/Remote		EOF/JIC ^(e) /JIS/ Remote
		Alert – 60 min.	Alert – 90 min.	Alert – 90 min.
Command and Control - Provide overall ERO command and control - Approve ECLs and PARs - Authorize personnel dose extensions	(1) Shift Manager	(1) Site Emergency Director – TSC ^(g)		Not applicable
Facility Management Facility/Group Management and Supervision	Not applicable	Not applicable	Not applicable	(1) EOF Manager–EOF
Emergency Classifications Evaluate plant conditions and recommend ECLs	Shift Manager ^(a)	Site Emergency Director – TSC ^(g)	(1) TSC Classification Advisor–TSC	Not applicable
Communications Communicate ECLs and PARs to OROs, including the NRC	Shift Communicator ^{(a)(j)}	Shift Communicator ^{(a)(h)}	(1) ORO Communicator–TSC (1) ENS Communicator–TSC	Not applicable
Supervision of RP Staff and Site Radiation Protection - Evaluate and assess plant and offsite rad data in the development of onsite protective actions and offsite PARs - Recommend onsite protective actions and offsite PARs - Direct all RP activities including FMTs - Provide information to personnel communicating offsite PARs to OROs	Shift Manager ^(a)	(1) RP Supervisor – TSC/OSC ^(g)	TSC RP Coordinator–TSC	(1) EOF RP Coordinator–EOF
Dose Assessments/ Projections Perform dose assessments and projections and provide input to PAR decision-maker	(1) Shift Dose Assessor ^{(a)(h)}	(1) Remote Dose Assessor–Remote	Not applicable	(1) EOF Dose Assessor–EOF

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Function	On-Shift	TSC/OSC/JIS/Remote		EOF/JIC ^(e) /JIS/ Remote
		Alert – 60 min.	Alert – 90 min.	Alert – 90 min.
Radiation Protection - Provide RP coverage for accessing unknown radiological environments - Control dosimetry and RCA access - Provide in-plant surveys	Note: If a site has committed to a different staffing requirement in their individual annex for this function, this function is not applicable to that site. Note (k) is applicable for all sites.			
	(2) RP Technician	(3) RP Technician – OSC ^(k)	(3) RP Technician – OSC	Not applicable
Field Monitoring Teams^(b) Provide environmental surveys (inside and outside the Protected Area)	Not applicable	RP Technician - OSC ^(k)	Not applicable	(2) FMT Technician (2) FMT Driver
Engineering Provide engineering coverage related to the specific discipline of the assigned engineer	STA ^(a)	(1) Reactor Engineer–Remote (1) Electrical/I&C Engineer–Remote (1) Mechanical Engineer–Remote	Not applicable	Not applicable
Supervision of Repair Team Activities Direct in-plant event response and repair activities	Not applicable	(1) FIN Supervisor–OSC RP Supervisor – TSC/OSC	(1) Lead OSC Supervisor–OSC RP Supervisor - OSC ⁽ⁱ⁾	Not applicable
Repair Team Activities Provide support for event mitigation and equipment repair	Not applicable	(l)	(1) Mechanic–OSC (1) Electrician–OSC (1) I&C Technician–OSC	Not applicable
Security Coordinate security related activities	(1) Security Shift Supervisor Security staff ^(c)	Not applicable	Not applicable	Not applicable
Media Information Manage and coordinate media information related to the event	Not applicable	JIS staff ^(d) –Remote	Not applicable	(1) Site JIS Manager–JIC (1) Site JIS Coordinator–JIC (1) Remote JIS Manager–Remote
Information Technology (IT) Ensure IT equipment is operable.	(f)	(f)	(f)	(f)

(a) Assigned as a collateral function.

(b) FMTs operate as directed by the RP Supervisor (TSC/OSC) prior to EOF activation and as directed by the EOF RP Coordinator after EOF activation.

(c) Per the site-specific security plan.

(d) JIS per NextEra Communications Emergency Response Plan. Does not need to be performed in the JIC, but the JIS function needs to be established at this point.

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(e) ERO staffing of the JIC is concurrent with other ERFs (although facility activation is coordinated with the ORO public information personnel and has no time requirement).

(f) IT personnel monitor critical digital assets remotely and respond any time an issue is identified.

(g) Site Emergency Director (TSC), RP Supervisor, and FIN Supervisor (OSC) are interim 60-minute response positions. RP Supervisor could be TSC RP Coordinator or OSC RP Supervisor. Interim response positions assist the on-shift staff and remote responders (Engineers and Dose Assessor), but do not accept functions/responsibilities until the positions' facility (TSC or OSC) is activated.

(h) EP Operator performs the Shift Dose Assessor duties and assumes Shift Communications after being relieved by the Remote Dose Assessor. EP Operator is assigned to an on-shift position other than the RPT. The EP Operator is not assigned to the fire brigade, plant operations during off-normal conditions, or the concurrent performance of ERO functions.

(i) If TSC and OSC are co-located, RP Supervisor (OSC) is not a minimum staffing position.

(j) Shift Manager performs the initial ORO, ERO and NRC notifications.

(k) Protected area FMT function is performed by RP technician responding under "Radiation Protection" function as a collateral duty.

(l) Repair Activities include minor maintenance performed by on-shift operations staff (collateral duty) and development of troubleshooting/repair plans created by on-shift operations staff (collateral duty), Engineers (remote) and FIN Supervisor (OSC). FIN Supervisor performs or assists Operators on urgent/high priority repair activities.

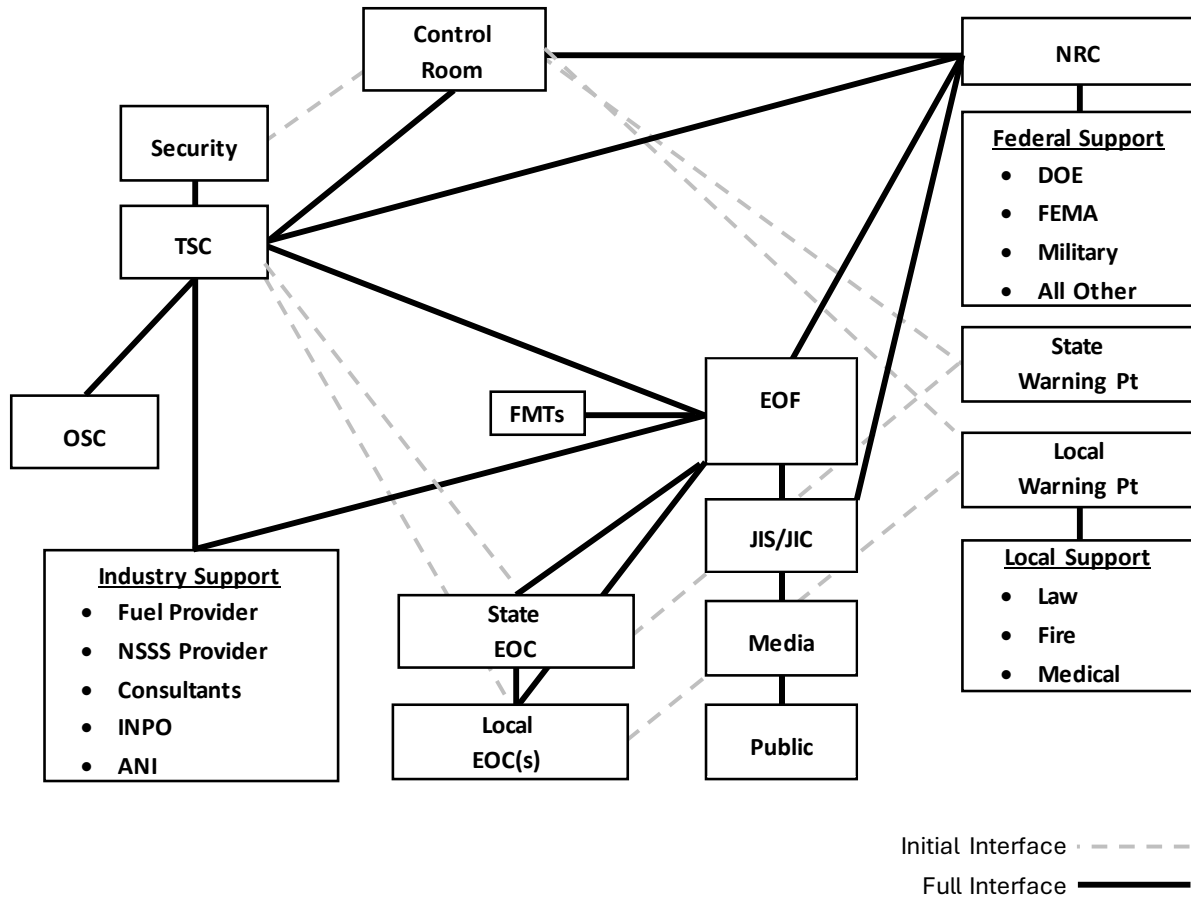
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B.4

The interfaces between and among the licensee functional areas of emergency activity, local services support, and state, local, and tribal government organizations are identified. The information includes all licensee emergency response facilities. A block diagram is preferred for ease of use, but not required.

Figure B.4 identifies the interfaces between NextEra ERFs, NRC, OROs, and local support organizations.

Figure B.4: Interrelationship of Emergency Response Organizations



Note: Communication from the TSC, Control Room and EOF to the Local EOC(s) is not applicable for Seabrook Station.

Dependent upon the emergency, a near or on-site Incident Command Post (ICP) may be established in coordination with local support organizations. The ICP will interface with the site security, and NextEra response facilities. Based on the event, NextEra provides the appropriate liaison (Security, Operations or Radiation Protection) to the ICP.

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B.5	The external organizations, including contractors, that may be requested to provide technical assistance to and augmentation of the ERO, as applicable, are specified.

1. Institute of Nuclear Power Operations (INPO)

INPO has an emergency response plan that enables it to provide the assistance in locating sources of emergency personnel, equipment, and operational analysis.

2. Other External (non-NextEra) Support Organizations

Other external (non-NextEra) support organizations are not used to provide additional personnel for positions on the NextEra ERO or to perform an operational role. Other external (non-NextEra) support organizations that may be requested to provide technical assistance are described in the site annexes.

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C: Emergency Response Support and Resources

Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate state and local staff at the licensee's EOF have been made, and other organizations capable of augmenting the planned response have been identified.

Regulatory References: 10 CFR 50.47(b)(3); 44 CFR 350.5(a)(3);
10 CFR Part 50, Appendix E, Sec. IV.E

C.1	Emergency response support and resources provided to the licensee's EOF, as agreed upon, are described.

The EOF contains dedicated work areas and logistics resources for federal and, depending on the site, state response personnel. Federal and state personnel respond to the EOF in accordance with their emergency response plans and procedures.

C.2	Provisions made for additional emergency response support and resources are described and include the following:

C.2.a	The individual(s), by title/position, authorized to request emergency response support and resources from responding organizations.

The individual authorized to request assistance and resources from responding organizations is the Emergency Director.

Refer to Element B.2.a for greater detail regarding command & control.

C.2.b	(1) Each organization from which emergency response support and/or resources may be requested, (2) the circumstance(s) in which the emergency response support and/or resources would be required, (3) the process for requesting needed emergency response support and/or resources, (4) categories of capabilities and/or resources expected to be provided, (5) when the expected emergency response support and/or resources would be available once requested, and (6) how integration would occur.

Refer to Elements A.1.a and A.4 for the description and details of the provisions made for additional assistance and resources.

C.2.c	Coordination of NPP site access and support for external organizations that have agreed to provide requested emergency response support and resources.

Site access is controlled at all times by the Security organization in accordance with the site security plan and procedures. The Security organization is responsible for coordination with external organizations when site access is needed for non-badged response personnel at an Alert or higher emergency classification level.

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C.2.d

Agreements between licensees and local agencies for law enforcement, medical and ambulance services, fire, hospital support, and other support.

Local support organizations may be called to assist onsite for events requiring firefighting, medical, or law enforcement. Immediate assistance with firefighting, medical, and law enforcement at the sites is initiated using pre-established site-specific communications systems.

Agreements have been formally developed and documented through memorandums of understanding (MOUs), contracts, and/or letters of agreement (LOAs).

Refer to Element A.4 for details on agreements.

C.3

The capability of each principal organization to coordinate with other principal organizations leading the incident response is described.

Coordination of response actions and exchange of information among Emergency Directors from appropriate response organizations is provided via pre-designated communication links between NextEra, the NRC, and ORO EOCs.

C.4

Radiological laboratories, their general capabilities, and expected availability to provide radiological monitoring analysis services that can be used in an emergency are described. Plans to augment the identified radiological laboratories are described.

NextEra has radiological laboratories located at each site. The site laboratories are the central point for receipt and analysis of onsite samples and includes equipment for chemical and radiological analyses. The laboratories provide analyses of samples from plant systems. Environmental monitoring sample analysis is also performed on-site or arrangements are made with off-site facilities.

Site specific details for the radiological laboratories are described in the site annexes.

C.5

Arrangements are described for integrating the licensee's response with the NRC Headquarters and regional incident response centers and, when dispatched, the NRC's site response team.

The Site Emergency Director in the TSC and the EOF Manager are the initial primary contact positions for the NRC site response team personnel sent to those facilities.

Consistent with 10 CFR 50 Appendix E, areas within the EOF and TSC are established for NRC site response teams that include:

- Space for members of an NRC site team.
- Space for conducting briefings with emergency response personnel.
- Communication with other NextEra and offsite emergency response facilities.
- Access to plant data and radiological information.
- Access to office equipment and supplies.

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C.5.a

The activation process for the NRC's emergency response data system (ERDS) during an emergency is described.

When an emergency occurs, ERO personnel will ensure ERDS operation as soon as possible but not later than one hour after an alert or higher emergency classification level is declared, in accordance with 10 CFR 50.72(a)(4).

C.5.b

Provisions to continuously maintain open communications lines with the NRC, when requested, are described.

The ERO is capable of maintaining continuous communications with the NRC. When requested, open communication lines will be staffed by knowledgeable personnel to ensure efficient and effective information flow.

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D: Emergency Classification System

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and state and county response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Regulatory References: 10 CFR 50.47(b)(4); 44 CFR 350.5(a)(4);
10 CFR Part 50 Appendix E.IV.B and C

D.1	A standard emergency classification and action level scheme is established and maintained. The scheme provides detailed EALs for each of the four ECLs in Section IV.C.1 of Appendix E to 10 CFR Part 50.

NextEra has established and maintains a standard emergency classification and emergency action level scheme. The EAL Technical Basis Document is referenced in the site annexes. The spectrum of postulated emergency events is categorized into the following four (4) emergency classification levels (ECLs):

- Unusual Event
- Alert
- Site Area Emergency
- General Emergency

The four ECLs are described as follows:

1. Unusual Event (UE)

Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

2. Alert

Events are in progress, or have occurred, which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of hostile action. Any releases are expected to be small fractions of the EPA Protective Action Guideline exposure levels.

3. Site Area Emergency (SAE)

Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or hostile action that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

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4. General Emergency (GE)

Events are in progress or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or hostile actions that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

D.1.a

The EALs are developed using guidance provided or endorsed by the NRC that is applicable to the reactor design.

Emergency Action Levels (EALs) at NextEra sites have been developed in accordance with NRC endorsed guidance. This guidance and the NextEra site EAL schemes have been approved by the NRC.

If the entire EAL scheme is to be changed, then the new EAL scheme will be submitted to the NRC for approval prior to implementation.

D.1.b

The initial emergency classification and action level scheme is discussed and agreed to by the licensee and OROs, and approved by the NRC. Thereafter, the scheme is reviewed with OROs on an annual basis.

The NRC approved NextEra EAL schemes have been agreed to by the OROs associated with the site.

The current EAL scheme is reviewed with the sites' respective OROs on an annual basis.

D.2

The capability to assess, classify, and declare the emergency condition within 15 minutes after the availability of indications to NPP operators that an EAL has been met or exceeded is described.

NextEra has and maintains the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL threshold has been met or exceeded. Details for classification timeliness criteria are documented in the site specific EAL Technical Bases Document.

D.3

A summary of emergency response measures to be taken for each ECL is provided. The detailed emergency response measures are described in implementing procedures.

NextEra maintains procedures that include immediate actions to be taken that are consistent with any declared ECL.

Emergency Operating Procedures provide instructions to Control Room personnel to assist in mitigating the consequences of a broad range of accidents and multiple equipment failures. These procedures are based on guidelines developed by the owners' groups.

Emergency plan implementing procedures provide instructions to ERO personnel for response activities primarily associated with assessment, classification, notification and protective actions. Other functions such as communications, termination and recovery are also addressed.

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A summary of response actions taken at each ECL is as follows:

1. Unusual Event (UE)
 - Initial and follow-up event notification to the OROs and NRC.
 - Notification of ERO personnel. This is an information only notification and does not require activation of emergency facilities or response organizations. Any Emergency Response Facility (ERF) may be activated at the discretion of the Emergency Director.
2. Alert
 - Initial and follow-up event notification to the OROs and NRC.
 - Augmentation of the shift ERO (refer to Element A.1.a) by activating the Technical Support Center, Operations Support Center and Emergency Operations Facility.
 - The Joint Information System shall be established at this ECL, with Joint Information Center activation determined in coordination with the offsite agencies.
 - If a release is occurring, monitoring teams are available for dispatch and offsite dose projections are developed.
3. Site Area Emergency
 - Initial and follow-up event notification to the OROs and NRC.
 - Augmentation of the shift ERO by activating the TSC, OSC and EOF if not previously performed.
 - The Joint Information System is in operation or Joint Information Center is staffed by NextEra ERO (JIC activation determined in coordination with the offsite agencies).
 - Implementation of onsite protective actions (refer to Section J).
 - If a release is occurring, monitoring teams are available for dispatch and offsite dose projections are developed.
 - Offsite precautionary actions may be recommended under certain conditions (as required by site specific OROs).
4. General Emergency
 - Initial and follow-up event notification to the OROs and NRC.
 - Augmentation of the shift ERO by activating the TSC, OSC and EOF if not previously performed.
 - The Joint Information System is in operation or Joint Information Center is staffed by NextEra ERO (JIC activation determined in coordination with the offsite agencies).
 - Implementation of onsite protective actions (refer to Section J) if not previously performed.
 - If a release is occurring, monitoring teams are available for dispatch and offsite dose projections are developed.
 - Offsite protective action recommendations are communicated to the OROs and NRC.

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D.4	Emergency response measures based on the ECL declared by the licensee and applicable offsite conditions are described.

This element is not applicable to the licensee emergency plan.

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E: Notification Methods and Procedures

Procedures have been established for notification, by the licensee, of state and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway EPZ have been established.

Regulatory References: 10 CFR 50.47(b)(5); 44 CFR 350.5(a)(5);
10 CFR Part 50 Appendix E.IV.A, C, D and E

E.1	The mutually agreeable process for direct and prompt notification of response organizations, aligned with the emergency classification and action level scheme, is described.

1. ERO Notification

The Emergency Director will direct or perform notification of the ERO for all emergency classification levels. ERO personnel report to their assigned emergency response facilities as directed. In the event of a security threat, personnel may be instructed to respond to alternative facilities, or seek cover if on-site.

The means for alerting and notifying ERO members are described in Element F.1.c.

2. ORO Event Notification

NextEra, in cooperation with the OROs, has established mutually agreeable content, methods and procedures for notification of OROs. When an ECL is initially declared, or upgraded, or changes are made to PARs, a notification to the OROs is made within 15 minutes.

Receipt location of notification messages is site specific. ORO notification locations are described in the site annexes.

3. NRC Event Notification

NextEra will notify the NRC using ENS as soon as possible after notification of the OROs, and not later than 60 minutes after event declaration.

An accelerated call to the NRC will be made immediately after notification of local law enforcement agencies (LLEAs), or within about 15 minutes of the recognition of the security-based threat (discovery of an imminent threat or attack against the site), to ensure the NRC is notified of safeguards events. The information provided in the accelerated NRC notification will be limited to the following:

- Site name.
- ECL if determined prior to the accelerated notification.
- Nature of the threat and the attack status.

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E.1.a	Provisions for notification of response organizations are established, including the means for verification of messages.

The provisions for notification of response organizations are described above in Element E.1.

Notifications to OROs include a means of verification or authentication within the automated system or by providing call back verification phone numbers.

E.1.b	The capability to notify responsible OROs within 15 minutes and the NRC within 60 minutes is described.

The capability to notify offsite response organizations and the NRC within the required time periods is described above in Element E.1.

E.2	The alert and notification systems (ANSs) used to alert and notify the general public within the plume exposure pathway EPZ and methods of activation are described. This description includes the administrative and physical means, the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ, and the organizations or titles/positions responsible for activating the system.

NextEra ANS used to alert and notify the general public within the plume exposure pathway EPZ is described as follows. Detailed information is maintained in the ANS design report for each site as listed in the site-specific annexes to the Common Emergency Plan.

General Description: The ANS is designed to provide an alerting signal to essentially 100% of the population on an area wide basis throughout the 10-mile EPZ. The OROs provide an informational or instructional message to the population via various methods as approved by FEMA.

If the primary alerting signal fails, back-up systems are described in the site-specific annexes and ANS design report.

Activation of the ANS requires procedures and relationships between both NextEra and the OROs. Prompt alerting and notification of the public within the plume exposure pathway EPZ is the obligation of state and county government or other responsible authority.

ANS is tested on a periodic basis (Element F.3) as described in the station's ANS design report.

E.3	The licensee, in conjunction with state, local, and tribal organizations, establishes the contents of the initial and follow-up emergency notifications to be sent from the NPP.

NextEra sites and OROs have established the content of the initial notification message to be used during an emergency. Minimum content of the initial notification will include the following:

- The site's name
- Time of event

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- The ECL
- Protective Action Recommendation (PAR)
- Whether a release is taking place

In conjunction with OROs, NextEra sites have established the content of the follow-up messages, which will include additional information regarding event conditions and response actions.

E.4	Each organization establishes the contents of the initial and follow-up messages to the public including, as applicable, instructions for protective actions.

This element is not applicable to the licensee emergency plan.

E.5	Provisions are made to provide timely supplemental information periodically throughout the radiological incident to inform the public.

ORO procedures provide for initial and follow-up messages to the public including instructions for protective actions, if required. NextEra will assist with establishment appropriate instructions and message content when requested by the ORO.

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F: Emergency Communications

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Regulatory References: 10 CFR 50.47(b)(6); 44 CFR 350.5(a)(6);
10 CFR Part 50, Appendix E.IV.E

F.1	Each principal response organization establishes redundant means of communication and addresses the following provisions:

F.1.a	Continuous capability for notification to, and activation of, the emergency response network, including a minimum of two independent communication links.

Each site maintains communications systems that are designed to facilitate normal and emergency communication. Refer to the UFSARs for descriptions of the primary site communications systems.

Provisions exist for continuous capability of communications with OROs and the NRC. Systems available for internal and external communications include:

- Telephone Systems
- Public Address System
- Radio Communications
- Cellular Telephones
- Satellite Telephones
- Local and Wide Area Networks
- Data Systems

Cellular and satellite telephones provide communications capability should the main telephone systems lose power.

Site specific communications system beyond the above are described in the site annexes.

F.1.b	Communication with applicable organizations to include a description of the methods that may be used when contacting each organization.

The methods for notification of response organizations are described in Elements E.1 and F.1.a.

F.1.c	Systems for alerting or activating emergency personnel in each response organization.

Personnel within the Protected Area are notified of the emergency classification via the public address system. The sounding of alarms and announcement of the emergency classification and other pertinent data relating to the emergency classification are made over the public address system.

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Notification of personnel located onsite, but outside the Protected Area, is accomplished through PA system announcements, administrative controls, and by Security personnel.

NextEra sites use an automated ERO notification system to notify ERO members of a declared emergency. Multiple redundancies are incorporated such that activation of the system can be performed by computer or from any phone system, and operation can take place from more than one location.

F.2	Systems for coordinated communication methods for applicable fixed and mobile medical support facilities are described.

Communications methods have been coordinated with medical facilities (ambulance and hospital). Site specific communications systems used for hospital and ambulance coordination are described in the site annexes.

F.3	The testing method and periodicity for each communication system used for the functions identified in evaluation criteria E.2, F.1, and F.2 are described.

Communication systems testing is accomplished in accordance with Table F-1.

Table F-1: Communication System Testing Requirements

Communication System	Testing Requirement
ORO Notification System	Monthly ^(a)
NRC FTS (ENS) Network	Monthly ^(b)
ERDS	Verify Transmission Quarterly
ERO Notification System	Per Elements N.4.h and N.4.i
Field Monitoring Teams Communication	Annually ^(a)
Telephone System	Frequent Use ^(c)
Station Radio System	Frequent Use ^(c)
Station PA System	Frequent Use ^(c)
ANS	per site specific ANS Design Report

(a) Test credit may be given by successful use in a drill.

(b) NRC ENS in the Control Room is Frequent Use. TSC and EOF require monthly testing.

(c) Communication systems that are listed with a testing frequency of "Frequent Use" indicate that the associated equipment is normally used at a sufficient high regularity, such that separate additional testing is not needed.

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G: Public Education and Information

Emergency planning information is made available to the public on a periodic basis and includes information on how they will be notified and what actions they may be asked to take (e.g., listening to a local broadcast station, remaining indoors, etc.). Information will also be provided to the news media to include principal points of contact to receive information (including the physical location(s)) and information about the coordinated dissemination of information from all agencies engaged in the response.

Regulatory References: 10 CFR 50.47(b)(7); 44 CFR 350.5(a)(7);
10 CFR Part 50, Appendix E.IV.D and F

G.1	Provisions are made for a coordinated annual dissemination of information to the public within the plume exposure pathway EPZ, including transient populations and those with access and functional needs, regarding how they will be notified and what actions should be taken. The information is disseminated using multiple methods, to include non-English translations per current Federal guidance.

NextEra, in coordination with OROs, updates and distributes site related emergency planning information annually to residents living within the plume-exposure pathway emergency planning zone (EPZ). Information disseminated to the public is in the form of printed or electronic materials. Public information for the transient population is also provided.

Annual distribution of safety information which contains educational information on emergency preparedness, sheltering, ANS, radiation, and telephone numbers of agencies to contact for more information.

Information for residents with special needs and non-English translations is incorporated per current federal guidance.

G.2	Methods, consistent with JIS concepts, are established for coordinating and disseminating information to the public and media. Plans include the physical location(s) for interacting with the media.

NextEra Corporate Communications and business unit personnel maintain programs and processes for the coordination and dissemination of information to the public and media using JIS concepts. Specifically, the process provides a structure and system for developing and delivering coordinated interagency messages; developing, recommending, and executing public information plans and strategies; advising decision makers concerning public affairs issues that could affect a response effort; and controlling rumors and inaccurate information that could undermine public confidence in the emergency response effort.

Physical locations for interacting with the media are maintained at the corporate headquarters and locally near each site. Specific site locations are described in the site annexes Element H.5.

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G.3

Organizations designate news media points of contact and a spokesperson(s) with access to necessary information.

A spokesperson is designated as the primary point of contact for NextEra and is responsible for the consistency of the information released by the utility. The spokesperson may select individuals to address the public on behalf of NextEra as their respective expertise is needed. This position is not designated as an ERO position.

G.3.a

Arrangements are made for the timely exchange of information among the designated spokespersons representing the entities involved in incident response.

Arrangements are made for the exchange of information among the designated spokespersons that use various means and technologies as agreed upon by the particular agencies. NextEra will provide information and updates to the ORO and federal public information officers (PIOs) to address the emergency, including plant conditions and associated response actions.

OROs address public response and actions in accordance with their respective plans.

G.4

Organizations establish coordinated arrangements for identifying and addressing public inquiries and inaccurate information.

NextEra personnel coordinate with ORO and federal PIOs via the JIS, or in a JIC when activated, to identify and address public inquiries and inaccurate information.

Public information personnel monitor media and public sources for misleading or erroneous information and to address inquiries. Rumors and misinformation are collected and provided to the appropriate individual or agency PIO. The PIOs assess and discuss the rumors and misinformation to coordinate responses.

ORO and federal PIOs address misinformation relating to offsite conditions, including protective action directives. NextEra spokespersons address misinformation regarding station/utility rumors. Rumors and incorrect information are addressed in media statements and at news conferences as appropriate.

G.5

Organizations conduct programs to acquaint news media with the emergency plans at least annually.

The news media will be provided materials to acquaint them with emergency planning effort at the NextEra specific site(s) annually.

Typical content includes site information, information concerning radiation, emergency planning, and points of contact for release of information to the media during an emergency.

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H: Emergency Facilities and Equipment

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

Regulatory References: 10 CFR 50.47(b)(8); 44 CFR 350.5(a)(8);
10 CFR Part 50, Appendix E.IV.E

H.1

A TSC is established, using current Federal guidance, from which NPP conditions are evaluated and mitigative actions are developed.

The Technical Support Center (TSC) provides a dedicated location for management and technical support to operations personnel and to relieve the operations staff of emergency response actions and communications not related to plant system manipulations.

The TSC is activated when minimum staffing requirements are met, key systems and equipment are verified operational, and the ERO personnel are prepared to perform their functions. When activated, the TSC's primary functions include:

- Provide ERO command & control
- Continued evaluation of event conditions
- Develop and issue offsite protective actions recommendations
- Provide ORO event notifications
- Provide ENS communications with the NRC
- Display and trend plant data
- Develop response priorities and mitigative actions
- Coordination of site emergency response actions
- Provide engineering support

The TSC is a permanent facility in a well-engineered structure in accordance with standard building codes.

The TSC is sized to accommodate ERO responders and NRC representatives.

Personnel in the TSCs are protected from radiological hazards, including direct radiation and airborne contaminants under accident conditions, with radiological habitability standards similar to the Control Room. To ensure adequate radiological protection, radiation monitoring equipment is located in the TSCs, or periodic radiation surveys are conducted. These systems indicate radiation dose rates while in use. In addition, potassium iodide (KI) is available to TSC personnel for use.

The facility has the capability to supply and display technical information for use by technical and designated management personnel in support of reactor operations and Control Room functions during emergency and recovery operations.

The TSCs normal power is from onsite power and backup power is supplied from emergency power source.

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Each TSC provides communications to the Control Room, OSC, EOF, Corporate Headquarters, NRC, and OROs.

The TSCs have access to drawings and other records, including general arrangement diagrams, piping and instrumentation diagrams (P&IDs), electrical schematics and plant procedures as either electronic or paper documents.

Site specific details of the TSC are described in the site annexes.

H.2	An OSC is established, using current Federal guidance, from which repair team activities are planned and teams are dispatched to implement actions.

The Operations Support Center (OSC) provides a dedicated location for coordinating and planning event response activities and for staging personnel and equipment. The OSC is sized to accommodate ERO responders.

The OSC is activated when minimum staffing requirements are met, key systems and equipment are verified operational, and the ERO personnel are prepared to perform their functions. When activated, the OSC's primary functions include:

- Provide staging area for maintenance, operations, RP, and other support personnel.
- Provide for briefing, dispatch, and coordination of emergency response teams.

Dosimetry (dose of legal record and self-reading capable of monitoring emergency radiation exposure), respiratory protection, radiation survey equipment, and RWPs are available to OSC personnel. In the event of a personnel contamination, decontamination will be performed in the area normally designated for this purpose.

Radiation and contamination levels in and around the OSC are assessed during emergencies.

Each OSC provides communications to the Control Room, TSC, and emergency response teams.

The OSCs have access to drawings and other records, including general arrangement diagrams, piping and instrumentation diagrams (P&IDs), electrical schematics and plant procedures as either electronic or paper documents.

Site specific details of the primary and backup OSC are described in the site annexes.

H.3	An EOF is established, using current Federal guidance, as the primary base of emergency operations for the licensee during a radiological incident. The EOF facilitates the management and coordination of the overall emergency response, including the sharing of information with Federal, state, local, and tribal government authorities.

The Emergency Operations Facility (EOF) provides a dedicated location for support of the site event response activities.

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The EOF is activated when minimum staffing requirements are met, key systems and equipment are verified operational, and the ERO personnel are prepared to perform their functions. When activated, the EOF's primary functions include: • Coordinate emergency response activities with federal, state, and local authorities. • Coordinate support activities performed by personnel brought in to assist NextEra personnel. • Perform offsite dose assessment and field monitoring activities. • Development of dose based offsite protective actions recommendations. • Coordination of radiological and environmental assessment activities with offsite agencies. • Communicate with the NRC HPN line. • Coordinate corporate support. • Support site acquisition of external assistance (technical, craft, admin, etc.). • Support site acquisition of equipment, supply, and logistic resources. The EOF is a permanent facility in a well-engineered structure in accordance with standard building codes. The EOFs are sized to accommodate ERO responders and NRC, FEMA, and state representatives. Because the EOF is located outside the plume exposure EPZ for all NextEra sites, specialized ventilation systems and radiological monitoring are not required. The EOF ventilation system is consistent in design with standard building codes. The EOFs have the capability for the acquisition, display, and evaluation of unit, radiological and meteorological conditions necessary to perform accident assessment and determine protective measures. Each EOF provides communications to the Control Room, TSC, field monitoring teams, NRC, and OROs. The EOFs have access to drawings and other records, including general arrangement diagrams, piping and instrumentation diagrams (P&IDs), electrical schematics and plant procedures as either electronic or paper documents. The EOFs provides working areas for Federal, State and local response personnel. Including conference areas with white boards, separate briefing/debriefing areas, telephones, ERO telephone contact lists, access to the internet, necessary office supplies and photocopier access, and access to plant radiological information. Normal power to the EOFs is from a reliable offsite source. Alternate temporary locations for the Emergency Operations Facility may be designated by the EOF Manager if a natural disaster or other (non-radiological) external event significantly affects the operational capability of the facility.		

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Site specific details of the EOF are described in the site annexes.

H.3.a	For an EOF that is located more than 25 miles away from the NPP site, provisions are made for locating NRC and offsite responders closer to the NPP site.

This element does not apply as the NextEra EOFs are not located more than 25 miles from the sites.

H.4	An alternative facility (or facilities) is established, using currently provided and/or endorsed guidance, which would be accessible even if the NPP site is under threat of or experiencing hostile action.

An alternative facility provides a location for the staging of ERO personnel in the event of a Security or Hostile Action threat for each NextEra site. The alternative facility may also serve as an evacuation location for TSC and OSC personnel should those facilities become uninhabitable.

The alternative facility can communicate with the Control Room, site security, and EOF. The functions of offsite notification and PARs can be performed from the Alternative Facility. Emergency response team planning and preparation can be performed from the Alternative Facility.

Remote Engineering ERO is available to perform engineering assessments for both primary and alternate facilities.

Site specific details of the alternative facilities are described in the site annexes.

H.5	A JIC is established, and its location is identified, to coordinate communication from Federal, state, local, and tribal government authorities and licensee personnel with the public and media.

A near-site JIC (outside the 10 mile EPZ) is established for each site. ERO staffing of the JIC is concurrent with other ERFs, although facility activation is coordinated with the joint offsite agencies and has no time requirement.

When activated the JIC functions as a physical location for interacting with the media and for coordination between NextEra, federal and ORO PIOs regarding communications information to the public and the media.

NextEra provides space and equipment at their corporate facility to provide coordination of public information response activities with site and corporate JIS/JIC personnel.

Site specific details of the JICs are described in the site annexes.

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H.6	Each organization establishes an emergency operations center (EOC) for use in directing and controlling response functions. For an EOC located within the plume exposure pathway EPZ, an alternate EOC or location outside the plume exposure pathway EPZ is identified to continue response functions in the event of an evacuation.

This element is not applicable to the licensee emergency plan.

H.7	Onsite monitoring systems used to initiate emergency response measures in accordance with the emergency classification scheme, as well as those to be used for conducting assessment, are identified. Monitoring systems consist of geophysical phenomena monitors, including meteorological, hydrologic, and seismic instrumentation; radiation monitors and sampling equipment; plant process monitors; and fire, toxic gas, and combustion products detectors.

NextEra sites have installed instrumentation for seismic monitoring, radiation monitoring, hydrologic monitoring, meteorological monitoring, and fire/ toxic gas/combustion products detectors in accordance with site Current Licensing Basis (CLB) documents.

1. Meteorological Monitoring

Each NextEra site has a permanent on site meteorological monitoring station for the acquisition and recording of wind speed, wind direction, and stability class for use in offsite dose projection. Meteorological information is displayed in the Control Room, TSC, and EOF. Refer to the UFSARs for descriptions of the meteorological monitoring systems.

2. Hydrologic Monitoring

Each NextEra site has hydrological monitors that support the acquisition of data used for event recognition and declaration. Refer to the UFSARs for descriptions of the hydrologic monitoring systems.

3. Seismic Monitoring

Each NextEra site has a seismic monitoring system that supports the acquisition of data used for event recognition and declaration. Refer to the UFSARs for descriptions of the seismic monitoring system.

4. Process and Area Radiation Monitors

Process Radiation Monitors (PRMs) measure radioactive noble gas, iodine, and particulate concentrations in gaseous effluent pathways and gross radioactivity in other gaseous and fluid streams, and are used for event recognition and declaration.

Area Radiation Monitors (ARMs) measure in-plant dose rates and allow in-plant dose rate determinations to be made remotely. This information may be used to aid in the determination of plant area accessibility for the protective action function.

Refer to the UFSARs for descriptions of the PRM and ARM systems.

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5. Portable Radiation Monitors

Portable radiation monitoring equipment is available for uses such as area monitoring, sampling, personnel surveys, and continued accident assessment.

6. Sampling Systems

Liquid and gaseous sampling systems, consisting of normal sampling systems and panels located throughout the unit(s) at each site, are used for event recognition and declaration. Refer to the UFSARs for descriptions the sites sampling systems.

7. Fire Detection Systems

The fire detection system, consisting primarily of fire/smoke detectors, control panel units, and annunciator panels, are used for event recognition and declaration. The fire detection equipment, alarms, and suppression equipment are described in detail in the UFSAR and in the sites' Fire Hazard Analysis Report.

H.8	Provisions are made to acquire data from offsite monitoring and analysis equipment, including data on geophysical phenomena (e.g., meteorological, hydrologic, and seismic monitors) and radiological data (e.g., from FMTs, environmental dosimeters, and laboratory analyses).

1. Meteorological Monitoring

Weather forecasts and certain meteorological data is available from the National Weather Service.

2. Seismic Monitoring

Seismic information from offsite sources can be obtained from the National Earthquake Information Center. The USGS is the contact agency to obtain information about a seismic event.

3. Hydrologic Monitoring

Hydrologic information is available from the National Weather Service.

4. Radiological Environmental Monitoring

Offsite programs and processes are developed within the Radiological Environmental Monitoring Program (REMP) as described in the Offsite Dose Calculation Manual (ODCM) at each site. The Radiological Environmental Monitoring Program includes:

Fixed continuous air samplers

Routine sampling of water, vegetation, consumable products

A dose monitoring network

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The locations of the normal onsite and offsite environmental monitoring stations are described in the ODCM. Additional predetermined emergency offsite monitoring locations are contained in procedures.

Site specific details of the radiological environmental assessment program are provided in the site specific ODCMs.

5. Laboratory facilities, fixed or mobile

Refer to Element C.4 for details on facilities for counting and analyzing samples.

H.9	Organizations directly responsible for offsite radiological monitoring provide for radiological monitoring equipment. This includes equipment that is located or stored near the NPP site, as well as additional equipment that may be brought to the site.

Each NextEra site maintains a supply of equipment, either at the site or the near-site EOF, for two Field Monitoring Teams assigned to perform onsite and offsite radiological monitoring and sampling functions.

Federal, industry and private entities can be contacted to coordinate additional materiel and personnel resources for offsite radiological monitoring.

H.10	Instrumentation is provided to obtain current meteorological information. Additional provisions are made to obtain representative meteorological information from other sources as needed by the NPP's radiological assessment models for site-specific characterization of plume dispersion and transport. Meteorological information is provided to the control room, TSC, EOF (or backup EOF), and NRC (via ERDS).

Refer to Element H.7.1 for a description of the onsite meteorological monitoring capabilities.

Refer to Element H.8.1 for a description of the offsite meteorological monitoring capabilities.

Site meteorological information is available on workstations in the Control Room(s), TSC, EOF, and to remote dose assessors.

ERDS provides the NRC with selected meteorological data points on a near real-time basis.

Meteorological inputs for the sites' dose assessment model are provided by ERF plant parameter display systems that obtain data from the site meteorological towers. Input parameters include wind speed, wind direction and stability class.

H.11	Provisions are made to ensure that emergency equipment and supplies are tested, maintained, and available in sufficient quantities, to include reserves and replacements, when needed. This includes:

NextEra emergency equipment and kits are inventoried to verify adequate supplies and materials, and to inspect condition semi-annually and following each use.

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Emergency use equipment and instruments are operationally checked semi-annually during the inventory, and prior to use if needed as specified in procedures.

Sufficient reserves of instruments and equipment are maintained to replace those removed from service for calibration or repair.

H.11.a	Identification of the organization(s) responsible for the testing and maintenance of emergency equipment.

NextEra personnel are responsible for oversight of maintenance and testing of emergency equipment.

H.11.b	Calibration and operational checks of emergency equipment per national standards or the manufacturer's instructions, whichever is more frequent.

Requirements to calibrate emergency equipment and instruments are specified in site procedures.

H.12	Emergency kits are identified by general category. Contents and quantity of each emergency kit are specified in the emergency plan or other document(s) referenced in the emergency plan.

Emergency kits are assembled for radiation protection, field monitoring, first aid or other emergency use needs based on location and availability at each site.

Details of emergency kit contents and locations are contained in site procedures used to maintain facilities and equipment.

H.13	Each organization identifies the location(s) for the receipt and analysis of field monitoring data and coordination of sample media and identifies the organization(s) responsible for assessing radiological data.

The site radiological laboratory is the primary location for receipt of field monitoring team samples. The EOF RP Coordinator is responsible for direction and coordination of field monitoring sample analyses, and for assessing the radiological data obtained from the Field Monitoring Teams.

Sampling and analysis equipment are available (see Element C.4) for quantitative activity determination of liquid and air samples, and qualitative activity determination of terrestrial samples.

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I: Accident Assessment

Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Regulatory References: 10 CFR 50.47(b)(9); 44 CFR 350.5(a)(9);
10 CFR Part 50, Appendix E.IV.A, B and E

I.1	Capabilities for performing radiological assessment for all reactor core and spent fuel pool sources, individually and collectively, including response to events occurring simultaneously at all units on the NPP site, are described. These capabilities include:

I.1.a	Methods for determining the magnitude and isotopic composition of an ongoing release of radioactive material through waterborne or airborne release pathways, or estimating these parameters for a potential release.

The magnitude of a release of radioactive material to the environment is primarily identified directly by effluent monitors. Survey and sample analysis may also be used to determine the magnitude of a release. Indirect means such as core damage estimates and release pathway assumptions may be used to estimate the magnitude of a release of radioactive material.

The isotopic composition of a release of radioactive material to the environment may be determined by; (1) effluent gaseous monitors, (2) survey and sample analysis, or (3) source term estimates based on core damage and release pathway assumptions.

Dose assessment model methods are capable of estimating source term and magnitude of gaseous releases from effluent monitors or plant parameter data and release rate projections.

I.1.b	A radiological assessment model for airborne releases that provides estimates of offsite radiation exposures and contamination levels using a dispersion model that is representative of the plant release points, topographical features, and meteorological regimes at the NPP site.

NextEra uses site specific versions of the Unified RASCAL Interface (URI) off-site dose projection computer model. The underlying dose assessment model in URI is the NRC RASCAL 4 model, based on the methods and equations documented in NUREG-1940.

The URI model provides off-site radiological dose and dose rate estimates based on near real time or hypothetical inputs. Projected dose is based on EPA-400-R92-001 dose conversion factors and provided as; (1) the total effective dose equivalent, or TEDE (the sum of the effective dose equivalent from immersion, 4 days of ground deposition, and the committed effective dose equivalent from inhalation), and (2) the committed dose equivalent to the thyroid (CDE thyroid).

URI dose projection results are given for various locations from the site boundary to 10 miles. URI is capable of providing dose assessment results for multiple release points from the site.

URI dose projection results and field monitoring readings are used in assessing radiological EALs and PARs.

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I.1.c	A capability to coordinate and implement in-field radiological assessments by FMTs and/or sampling teams and to assess the data obtained.

Environmental surveys inside and outside the protected area are performed by Field Monitoring Team members under the direction of the EOF RP Coordinator.

Field monitoring teams are directed to track and evaluate a radioactive plume by monitoring radiation levels and by obtaining and analyzing air samples. Field monitoring surveys and sampling may be performed at pre-identified locations or other geographic locations within the EPZ determined during the event. Samples taken by the offsite monitoring teams will be evaluated further by one of the available laboratory facilities described in Element C.4.

I.2	Methods for assessing contamination of drinking water through liquid release pathways or deposition of airborne materials for NPP sites located on or near bodies of water from which public drinking water is drawn.

This element is not applicable to the licensee emergency plan.

I.3	The capability and responsibility for monitoring the following parameters, which provide input to radiological assessments during an emergency, are described: 1. Status of reactor fuel (e.g., no fuel damage, technical specification activity, clad failure, core melt.). 2. Status of containment integrity. 3. Leakage of radioactive material from plant systems, structures and components. 4. Status of engineered safety features used to mitigate the release of radioactive material to the environment (e.g., filters, containment spray, etc.). 5. Onset and duration of an actual release of radioactive material to the environment, or estimating these parameter for a potential release.

The ERO monitors plant parameters using information provided by plant data transmittal systems to assess the status of reactor fuel using core damage assessment procedures.

The ERO monitors plant data systems to evaluate the status of containment integrity, systems used to mitigate the release of radioactive material to the environment and to identify leakage of radioactive material from plant systems, structures, and components.

Effluent and process monitors are used to determine the onset and duration of an actual or potential release of radioactive material to the environment.

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I.4	The methods and responsibility for determining the source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are described.	
Source term present in reactor coolant, containment atmosphere, and spent fuel pool area atmosphere are estimated using effluent, process and area radiation monitor readings, comparison of plant conditions against design basis event scenarios, sample analysis and environmental survey results, and plant parameter indications as inputs into the dose assessment and core damage assessment processes.		
I.4.a	The contingency arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere and sump, and spent fuel pool storage area are described.	
Each NextEra site has arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere and sump, and spent fuel pool.		
Site specific arrangements to obtain and analyze highly radioactive samples are described in the site annexes.		
I.5	The organizations responsible for FMT activities, and necessary resources, are identified.	
NextEra is responsible for NextEra field monitoring team activities.		
NextEra field monitoring team activities are coordinated with environmental monitoring efforts performed by ORO field monitoring teams.		
I.6	Each organization, where appropriate, provides methods, equipment, and expertise to make timely assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including development of post-plume PARs for comparison to current Federal guidance.	
NextEra sites use an industry recognized dose assessment model to make timely assessments of the actual or potential magnitude and locations of any radiological hazards through gaseous release pathways. Dose assessment results and field monitoring readings assist in evaluating appropriate ECLs based on radiological EALs, and for developing any related PARs.		
The actual or potential magnitude of liquid radiological releases with regard to the ECLs are determined by liquid effluent monitors, direct area surveys, or sample analyses.		
With regard to the ingestion pathway, field monitoring teams are used to obtain liquid effluent samples from radioactive liquid releases. Sample results are used in conjunction with Offsite Dose Calculation Manual (ODCM) methods to estimate potential ingestion exposure in support of EAL determination. Also, liquid release monitoring activities are coordinated and sample results shared with ORO agency personnel to assist their determination in intermediate phase protective actions.		

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I.7	The capability to detect and measure radioiodine concentrations in air in the plume exposure pathway EPZ as low as 1E-7 $\mu\text{Ci/cc}$ (microcuries per cubic centimeter) under field conditions is described. The sample collection process takes into account the sample flow rate, collection efficiency of the sample media used to collect the sample, duration of the sample, counter efficiency, and background radiation, including interference from the presence of noble gases.

NextEra field monitoring equipment has the capability to detect and measure airborne radioiodine concentrations as low as 1E-7 $\mu\text{Ci/cc}$ in the presence of noble gases. Air samples will be taken with portable air sampling equipped with a Silver Zeolite or equivalent cartridge and particulate filter. Interference from the presence of noble gas and background radiation is minimized by ensuring that monitoring teams move to areas of low background prior to analyzing the sample cartridge.

Air sample results can be estimated in the field through the use of portable monitors. The samples can be subsequently analyzed for greater precision by the laboratory facilities described in Element C.4.

I.8	A means is established for relating the various measured parameters (e.g., exposure rates, contamination levels, and air activity levels) to dose or dose rates. Provisions are made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with current federal guidance. In addition, provisions are established to validate dose projections with field data and compare projections with other organizations also calculating dose projections. The detailed provisions are described in implementing procedures.

NextEra field monitoring teams will track the plume from any radiological release by monitoring radiation levels and by obtaining and analyzing air samples. Field monitoring team environmental survey and air sample results are compared with dose assessment results to validate or adjust projections. Additionally, field monitoring results can be input into the dose assessment model to develop projections at different locations.

I.9	Arrangements to locate and track the airborne radioactive plume are made using available resources, which includes federal, state, and tribal governments, and/or licensee resources. Provisions are made to characterize the plume including taking peak plume measurements. Identification of the plume, includes determining a measurement that is high enough to be reasonably above background radiation readings and sufficient enough to indicate submersion within the plume.

NextEra maintains equipment for the utility field monitoring teams. Methods to monitor a radioactive plume include establishing peak centerline values and immersion areas. Monitoring strategies may include the traversing of plumes when road networks and exposure rate permit. Additionally, local field sampling and monitoring points are specified to support pre-positioning of teams or use in comparison with dose projection results.

Data from the NextEra field monitoring teams is compared to data provided by state field monitoring teams that may be dispatched into the area. Data collected before state field monitoring teams are in the field is made available to state dose assessment personnel.

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I.10

Organizations directly responsible for radiological monitoring, analysis, and dose projections describe the capability for coordinating monitoring efforts, tracking and trending data, and sharing analytical results with other organizations performing radiological assessment functions.

NextEra EOF dose assessment personnel coordinate field monitoring team radiological monitoring activities and compare dose projection results with ORO and NRC representatives.

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J: Protective Response

A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. ETEs have been developed by applicants and licensees. Licensees shall update the ETEs on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

Regulatory References: 10 CFR 50.47(b)(10); 44 CFR 350.5(a)(10);
10 CFR Part 50, Appendix E.IV.2-6, E and I

J.1	The means and time required to alert, notify, and provide a range of protective actions for onsite individuals and individuals who may be in areas controlled by the licensee (including members of the public) during a radiological incident are described.

NextEra maintains procedures to provide for a range of protective actions for all areas controlled by the site. Protective actions have been developed for radiological incidents and to protect personnel during hostile actions directed at the site.

Sitewide notifications and announcements are routinely made using the Public Address (PA) system. Personnel on site are notified of a declared emergency through the PA system.

Visitors within the Protected Area are escorted by badged individuals. The escort is responsible for controlling and directing their assigned visitors regarding actions required by any announcements and alarms.

Security personnel are used, as available, to augment PA announcements and to check OCA areas for remaining individuals.

J.1.a	Provisions are made for evacuation of onsite non-essential personnel at an SAE/General Emergency (GE).

Site evacuation is required following a Site Area Emergency or General Emergency unless delayed due to safety issues. The sounding of an alarm over the public address system occurs for the initiation of site evacuation.

When a site evacuation occurs, ERO and other essential personnel respond to their designated response facilities/areas. Non-essential personnel inside the Protected Area typically exit to the OCA by following normal RP and Security processes and proceed to a designated assembly area. Further evacuation of non-essential personnel inside the OCA occurs as warranted for the particular site.

A process is in place to perform a rapid evacuation of the Protected Area without onsite monitoring and OCA assembly if conditions warrant. Monitoring in this instance is performed at an offsite location.

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J.2	Provisions are made and coordinated with appropriate offsite entities for evacuation routes and transportation for onsite individuals to a suitable offsite location. Selection of location considers the potential for inclement weather, high traffic density, and potential radiological conditions. Alternate location(s) and route(s) are identified.

Designated offsite locations for site evacuees, and the process to use them, have been identified through coordination with local emergency management personnel.

The site evacuation process takes into consideration meteorological and radiological data, weather and other travel hazards.

On-site personnel will evacuate the site when directed. Site evacuation routes and evacuation locations are contained in the site annexes.

J.3	Provisions for radiological monitoring and decontamination, if necessary, of personnel evacuated from the NPP site are described.

Personnel evacuating are monitored for contamination, and, if possible and necessary, decontaminated before leaving the site. If conditions do not allow for decontamination of personnel on-site, they will be directed to designated offsite reception center(s) for radiological monitoring and decontamination, if required.

J.4	The capability to account for all individuals inside the NPP Protected Area following declaration of an SAE or GE is described. The names of missing individuals are ascertained within 30 minutes following the emergency declaration and accountability is maintained for the duration of the incident. This capability includes provisions for prompt accountability following events that may preclude completion within 30 minutes (e.g., hostile action).

The emergency alarm, together with the public address system, is used to alert and notify on-site personnel of the need for assembly at a Site Area or General Emergency classification level (or earlier at the discretion of the Emergency Director).

ERO personnel report to their assigned emergency response facility.

Typically, accountability of personnel inside the Protected Area is completed within 30 minutes of event declaration. Following a hostile action event, the personnel accountability process is initiated following containment or cessation of the threat. Missing individual(s) will be identified by Security. Appropriate actions will be taken to locate missing individual(s). When necessary, search and rescue team(s) will be dispatched to locate and, if necessary, rescue missing individual(s).

After initially completed, accountability will be maintained continuously throughout the emergency for personnel inside the Protected Area.

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J.5	Provisions are made for personal radiological protection for individuals arriving or remaining onsite during the incident.

Protective equipment and supplies are available to personnel remaining on site or arriving on site during the emergency to minimize the effects of radiological exposures or contamination in accordance with radiation protection procedures. Protective measures include the following:

1. Individual Respiratory Protection

Respiratory protection equipment is used by qualified personnel when called for by exposure control procedures. The radiological use respiratory protection program is maintained by RP.

Self-contained breathing apparatus is used in areas that are deficient in oxygen or when fighting fires. Self-contained breathing apparatus are available with other firefighting equipment for use by the site fire brigade.

2. Individual Thyroid Protection

Efforts are made to utilize respiratory protective equipment to minimize ingestion and/or inhalation of radionuclides and to maintain internal exposure below the limits specified in 10 CFR 20, Appendix B. However, if an emergency involves the accidental or potential ingestion or inhalation of radioactive iodine, Potassium Iodide tablets (KI) are maintained and available for distribution.

The administration of potassium iodide (KI) to NextEra and vendor personnel may be used to mitigate the consequences of inhalation of radioiodine during an emergency. The process for administration of radioprotective drugs is described in implementing procedures.

3. Protective Clothing

Protective clothing will be issued when needed to limit personal contamination and minimize the spread of contamination.

J.6	The basis and methodology are established for the development of PARs for the responsible OROs, including evacuation, sheltering, and, if appropriate, radioprotective drug use, for the plume exposure pathway EPZ. Current Federal guidance is used.

NextEra sites have developed PARs, in accordance with agreements made with the state agencies, for the plume exposure pathway EPZ that include evacuation, sheltering, and recommendations for radioprotective Potassium Iodide use based on the following:

- NUREG-0654/FEMA-REP-1, Supplement 3, Guidance for Protective Action Strategies, November 2011
- EPA-400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, May 1992
- Guidance for Industry, KI in Radiation Emergencies, Questions and Answers, FDA, December 2002

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- Potassium Iodide as a Thyroidal Blocking Agent in Radiation Emergencies, FDA Guidance, November 2011

PARs for the general public will be based on plant conditions and/or offsite dose assessment results.

PARs beyond the 10-mile EPZ will be developed on an "ad hoc basis" from projected or measured dose in excess of EPA PAGs. Because dose projection accuracy is limited by distance, actual field measurements are used to corroborate projections before issuing PARs in areas outside the 10-mile EPZ.

The PAR strategy basis document is referenced in the site annexes.

J.7	A site-specific protective action strategy or decision-making process, informed by the ETE study, is coordinated between the licensee and OROs. Current Federal guidance is used.

NextEra offsite protective action recommendation strategies, informed by the ETE report, have been developed using guidance provided in NUREG-0654/FEMA-REP-1, Supplement 3, Guidance for Protective Action Strategies, in coordination with the state and local agencies.

J.8	The latest ETEs are:

J.8.a	Incorporated either by reference or in their entirety into the emergency plan.

The most recent ETEs are incorporated by reference into this emergency plan. Refer to the site annexes for specific reference to the ETE study.

Updated ETE studies will be submitted to the NRC under 10 CFR 50.4 no later than 365 days after NextEra determines that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to state and county governmental authorities for use in developing offsite protective action strategies.

During the years between decennial censuses NextEra will estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and state/county government population data, if available. NextEra will maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and will submit these estimates to the NRC with any updated ETE report.

The criteria that require a full update to the site ETE study is as follows:

1. The availability of the most recent decennial census data from the U.S. Census Bureau;
OR
2. If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected emergency response planning areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the currently NRC approved or updated ETE.

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J.8.b

Incorporated either by reference or as a summary of the latest ETE analysis into the emergency plan.

This element is not applicable to the licensee emergency plan.

J.9

PARs are provided, in a timely manner, directly to the designated ORO(s) responsible for making protective action decisions (PADs) within the plume exposure pathway EPZ.

Applicable plume exposure pathway EPZ PARs of evacuate and shelter are developed at the General Emergency classification level and provided to the ORO personnel responsible for making protective action decisions.

PARs are communicated using the initial notification form and process. See Section E for a discussion of emergency notification.

J.10

Plans include maps, charts, or other information that demonstrate the following for the plume exposure pathway EPZ:

J.10.a

Evacuation routes, evacuation areas, reception centers in host areas, and shelter areas.

Details on evacuation routes, evacuation areas, reception centers in host areas, and shelter areas are provided in the site ETE report.

J.10.b

Population distribution around the NPP site by evacuation areas.

Details on population distribution around the NextEra sites, by evacuation areas, are provided in the site ETE report.

J.11

A capability for implementing protective actions based on current Federal guidance is established. The process ensures coordinated implementation of PADs with all appropriate jurisdictions. The process for implementing protective actions for the plume exposure pathway EPZ is described and includes the following:

J.11.a

Means for identifying and protecting residents who would have difficulty in implementing protective actions without assistance. This includes those with access and functional needs, transportation-dependent residents, those in special facilities, and those in correctional facilities. These means include notification, support, and assistance in implementing protective actions where appropriate.

This element is not applicable to the licensee emergency plan.

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J.11.b	The decision-making methodologies for use of radioprotective drugs and the provisions for administration to the general public, emergency workers, and institutionalized persons within the plume exposure pathway EPZ. This includes the means of determining quantities, maintaining and managing supplies, communicating recommendations, and distributing.	
This element is not applicable to the licensee emergency plan.		
J.11.c	Means of evacuation informed by the updated ETes. The evacuation routes and transportation resources to be utilized are described and include projected traffic capacities of evacuation routes and implementation of traffic control schemes during evacuation.	
This element is not applicable to the licensee emergency plan.		
J.11.d	The locations of pre-identified reception centers beyond the boundaries of the plume exposure pathway EPZ, organizations responsible for managing reception centers, arrangements for handling service animals and pets, and provisions for radiological monitoring/decontamination.	
This element is not applicable to the licensee emergency plan.		
J.11.e	Means for the initial and ongoing control of access to evacuated areas and organizational responsibilities for such control, including identifying pre-selected control points.	
This element is not applicable to the licensee emergency plan.		
J.11.f	Identification of and means for dealing with potential impediments to the use of evacuation routes (e.g., seasonal impassability of roads) and contingency measures. The resources available to clear impediments and responsibility for re-routing traffic, as necessary, are described.	
This element is not applicable to the licensee emergency plan.		
J.11.g	Identification of and means to implement precautionary protective actions (e.g., actions taken at an SAE).	
This element is not applicable to the licensee emergency plan.		
J.12	Protective actions to be used for the ingestion exposure pathway EPZ are specified, including the methods for protecting the public from consumption of contaminated foodstuffs, and are based on current Federal guidance.	
This element is not applicable to the licensee emergency plan.		

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J.13

The means for registering, monitoring, and decontaminating evacuees, service animals, pets, vehicles, and possessions at reception centers in host areas are described. The personnel and equipment available are capable of monitoring 20 percent of the plume exposure pathway EPZ population, including transients, assigned to each facility within a 12-hour period.

This element is not applicable to the licensee emergency plan.

J.14

General plans for the removal or continued exclusion of individuals from restricted areas are developed. Relocation plans include:

J.14.a

Process for implementing current federal guidance for relocation.

This element is not applicable to the licensee emergency plan.

J.14.b

Means to identify and determine the boundaries of relocation areas, including a buffer zone.

This element is not applicable to the licensee emergency plan.

J.14.c

Prioritization of relocation based on projected dose to an individual and the timeframe for relocation.

This element is not applicable to the licensee emergency plan.

J.14.d

Control of access to and egress from relocation areas and security provisions for evacuated areas.

This element is not applicable to the licensee emergency plan.

J.14.e

Contamination control during relocation.

This element is not applicable to the licensee emergency plan.

J.14.f

Means for coordinating and providing assistance during relocation.

This element is not applicable to the licensee emergency plan.

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K: Radiological Exposure Control

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Regulatory References: 10 CFR 50.47(b)(11); 44 CFR 350.5(a)(11);
10 CFR Part 50, Appendix E.IV.E

K.1	The radiation protection controls for emergency workers to be implemented during emergencies are described. These controls address the following aspects:

Approval is required if emergency workers are expected to receive dose in excess of 10 CFR 20 occupational dose limits. ALARA practices are utilized during emergencies as much as practical.

K.1.a	Onsite emergency exposure guidelines for emergency workers consistent with their assigned duties and current Federal guidance and the conditions under which the guidelines apply.

Onsite exposure guidelines for emergency workers, consistent with EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, U.S. Environmental Protection Agency, May 1992, Table 2-2, "Guidance on Dose Limits for Workers Performing Emergency Services," have been established as follows:

TEDE Limit (Rem) Activity

5	All activities during the emergency.
10	Protecting valuable property when lower dose is not practicable.
25	Lifesaving or protection of large populations when lower dose is not practical per EPA-400-R-92-001.
Greater Than 25	Lifesaving or protection of large populations, only if individuals receiving exposure is a volunteer, and fully aware of risks involved.

NOTES

- Emergency exposure limits are exclusive of current occupational exposure.
- Only one emergency exposure is allowed per lifetime.
- Dose to lens of the eye is limited to three times listed value.
- Dose to other organs, including skin and body extremities, is limited to ten times listed value.

K.1.b	The capability to evaluate emergency worker dose (i.e., the sum of the effective dose equivalent and the committed effective dose equivalent) at the time of exposure when direct measurement is not feasible.

Emergency worker exposure is monitored at the time of exposure by the use of electronic dosimeters. If direct measurement of airborne concentrations is not available at time of exposure, workers will be provided respiratory protection, when feasible, and total exposures will be calculated after the fact using follow up survey data and whole body counting equipment.

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K.1.c

The capability to monitor and assess the radiation doses received by emergency workers for the duration of the incident.

Personnel dosimeters are issued to and worn by NextEra radiation worker qualified personnel who may be required to work in Radiological Controlled Areas in accordance with radiation protection procedures.

Radiation protection personnel in the OSC and TSC have the responsibility to monitor and assess the radiation doses received by ERO personnel on a 24-hour per day basis throughout a declared event.

Personnel dose records are documented and managed using a computerized system. Should this system not be readily accessible or available, personnel dose is manually recorded.

Dosimeters are available and will be provided to offsite agency responders if they are required to enter a Radiological Controlled Area or are expected to receive a dose in excess of 100 mRem for the event.

K.1.d

The capability to implement onsite contamination control measures.

Radiation safety controls are established 24 hours per day to contain the spread of loose surface radioactive contamination. Contamination control limits are defined in radiation protection procedures. Personnel leaving the contaminated areas are monitored to ensure that they are not radioactively contaminated.

K.1.e

The capability to decontaminate emergency workers, equipment, and vehicles.

Personnel decontamination is performed using normal radiation protection procedures in on-site facilities. Personnel decontamination facility locations are described in the site annexes.

Contamination on personnel will be removed in accordance with established radiation protection procedures.

Equipment will be released for use outside of the contaminated areas only when radioactive contamination is within acceptable limits. All equipment must be checked for contamination before being taken from a known contaminated area. Equipment and material decontamination is performed using normal radiation protection procedures.

K.1.f

Appropriate radiation protection briefings for repair teams that are being dispatched into the plant, and FMTs being sent onsite and offsite, the scope of which is consistent with the expected risk to the team.

Emergency teams, including Field Monitoring Teams, that must enter areas where they might be expected to receive higher than normal doses will be briefed on the task assigned and appropriate protective measures.

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K.1.g

The process for NPP site access and dosimetry issuance to personnel from OROs arriving to assist with the onsite response.

The site access process into the protected area for local support organizations responding on site during an emergency is controlled by site security personnel. Non-NextEra emergency workers supporting on-site activities will be issued dosimetry and/or be monitored by radiation protection personnel when responding to areas where a radiation dose may be received.

K.2

Individual(s) who can authorize personnel to receive radiation doses in excess of the occupational dose limits in accordance with the minimum standards set forth in 10 CFR Part 20 or 29 CFR 1910.1096, as applicable to the organization, are identified by title/position. Such authorizations are documented.

Section B.2.a describes the responsibility for authorization of exposures to radiation in excess of 10 CFR 20 limits. Such authorizations are documented as part of the emergency exposure controls process provided in Element K.1.c.

K.2.a

The process for allowing onsite volunteers to receive radiation exposures in the course of carrying out lifesaving and other emergency activities is described.

All personnel dispatched into radiation areas or areas of unknown radiation levels are briefed on the task and environmental conditions and are provided appropriate monitoring and personnel protective equipment.

Refer to Element K.1.a for the description of activities and their exposure thresholds and considerations.

K.2.b

The process for authorizing emergency workers to incur exposures that may result in doses in excess of the current Federal guidance is described.

This element is not applicable to the licensee emergency plan.

K.3

The capability to determine the doses received by emergency workers involved in any commercial NPP radiological incident is described. Each organization makes provisions for distribution of direct-reading dosimeters (DRDs) and permanent record dosimeters (PRDs).

This element is not applicable to the licensee emergency plan.

K.3.a

Provisions to ensure that DRDs are read at designated intervals and dose records are maintained for emergency workers are described.

This element is not applicable to the licensee emergency plan.

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K.4	Action levels for determining the need for decontamination are specified and the means for radiological decontamination are established for emergency workers and the general public, as well as equipment, vehicles, and personal possessions. The means for disposal of contaminated waste created by decontamination efforts are also established.

This element is not applicable to the licensee emergency plan.

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L: Medical and Public Health Support

Arrangements are made for medical services for contaminated injured individuals.

Regulatory Reference: 10 CFR 50.47(b)(12); 44 CFR 350.5(a)(12);
10 CFR Part 50, Appendix E.IV.E

L.1	Arrangements are established with primary and backup hospitals (one hospital is located outside the plume exposure pathway EPZ) and medical services. These facilities have the capability for evaluation of radiation exposure and uptake. The persons providing these services are adequately trained and prepared to handle contaminated, injured emergency workers and members of the general public.

This element is not applicable to the licensee emergency plan.

L.2	Arrangements for the medical treatment of contaminated injured onsite personnel and those onsite personnel who have received significant radiation exposures and/or significant uptakes of radioactive material are described. These arrangements include the following components:

L.2.a	An onsite first aid capability with adequate medical equipment and supplies.

On-shift first aid personnel will provide first aid to individuals who are injured. Radiation protection personnel will provide contamination control support to potentially contaminated injured personnel.

NextEra maintains first aid supplies, and equipment for the treatment of injured or contaminated/injured persons. Descriptions of equipment and supplies, and radiological monitoring and decontamination equipment and supplies are in site procedures.

L.2.b	Primary and backup offsite medical facilities.

Arrangements have been made with local hospitals for the medical treatment of contaminated injured or over exposed personnel. These facilities and their services are available 24 hours per day.

Offsite medical facilities used to treat contaminated injured personnel are described in the site annexes.

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L.2.c	Radiological controls capability, including the isolation of contamination, assessment of contamination levels, radiation exposure monitoring for medical facility staff, collection of contaminated waste, and decontamination of treatment areas.

NextEra personnel are available to assist medical personnel with decontamination, radiation exposure monitoring, and contamination control.

Radiological controls capability, including the isolation of contamination, assessment of contamination levels, radiation exposure monitoring for medical facility staff, collection of contaminated waste, and decontamination of treatment areas are described in hospital procedures.

L.2.d	Provisions to evaluate for radiological contamination either prior to transport to a medical facility or after arrival.

Injured personnel are evaluated for radiological contamination prior to transport to a medical facility per site procedures. If contamination monitoring is not possible due to the medical condition of the individual, contamination monitoring is performed as soon as possible following treatment at the medical facility.

L.2.e	Contact information for facilities capable of treating overexposure to radioactive material.

The Radiation Emergency Assistance Center Training Site (REAC/TS) located at Oak Ridge, Tennessee, will respond to and/or provide advice and assistance to offsite medical facilities in the event of a severe radiation accident.

L.3	Supplemental lists are developed that indicate the location of the closest public, private, and military hospitals and other emergency medical facilities within the state or contiguous states considered capable of providing medical support for any contaminated, injured individual.

This element is not applicable to the licensee emergency plan.

L.4	Each organization arranges for the transportation of contaminated, injured individuals and the means to control contamination while transporting victims of radiological incidents to medical support facilities and the decontamination of transport vehicle following use.

Injured personnel are evaluated for radiological contamination and packaged to control contamination prior to transport to a medical facility per radiation protection department procedures. NextEra personnel will assist with decontamination of transport vehicles if necessary.

Transportation agreements for contaminated injured personnel are described in site annexes.

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M: Recovery, Reentry, and Post-Accident Operations

General plans for recovery and reentry are developed.

Regulatory Reference: 10 CFR 50.47(b)(13); 44 CFR 350.5(a)(13);
10 CFR Part 50, Appendix E.IV.H

M.1	General recovery, reentry, and return plans for radiological incidents are developed, as appropriate. These plans address reoccupancy, as appropriate. The plans should include:

M.1.a	Provisions for allowing reentry into areas controlled by the licensee. Reentry planning includes evaluation of the controls necessary for reentry under post-incident conditions.

Reentry can occur during the plume or post-plume phase and refers to the temporary movement of people into an area of actual or potential hazard. Personnel who have been evacuated or relocated from a restricted area may be allowed to reenter under controlled conditions to perform additional emergency response activities.

Reentry into the OCA will be based on site conditions. During or following a HAB incident, reentry criteria take into consideration site security and threat conditions.

M.1.b	Provisions for reentry into restricted areas, including exposure and contamination control, as appropriate. A method for coordinating and implementing decisions regarding temporary reentry into restricted areas is addressed.

This element is not applicable to the licensee emergency plan.

M.2	Individuals who will comprise the licensee's recovery organization are identified by title/ position. The recovery organization includes technical personnel with responsibilities to develop, evaluate, and direct recovery and reentry operations.

The recovery activities would be managed much like a normal outage, except that certain activities unique to the post-accident situation may be controlled by the recovery organization. The recovery organization would function as a matrix management organization to coordinate activities with the normal company organization. This organization may be located at the EOF or the site, as appropriate.

The primary positions in the recovery organization are described as follows:

- Recovery Manager – Overall management of recovery activities. High level coordination with offsite agencies.
- Onsite Recovery Coordinator – Directs the onsite recovery activities.
- Offsite Recovery Coordinator – Directs interface with offsite agencies during the recovery.
- Radiological Assessment Coordinator (if needed) – Coordinates radiological and environmental assessment with offsite agencies. Coordinates offsite radwaste management and decontamination activities.

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- Spokesperson – Directs the public information program during the recovery phase.

M.3	The process for initiating recovery actions is described and includes the criteria for terminating the emergency.

Steps will be taken to terminate from the event, either directly or following a transition period (prior to entering a state of recovery operations). Usually, the Unusual Event and Alert classification levels will be directly terminated (no entry into recovery).

Items that must be considered before terminating the emergency condition to either a normal or a recovery organization are as follows:

- Emergency Action Level criteria
- Releases of radioactive materials to the environment
- In-plant radiation levels
- Plant stable and long term core cooling available
- Containment integrity
- Functionality and integrity of plant systems, facilities, power supplies, equipment, and instrumentation
- Fire, flood, earthquake or similar hazardous emergency conditions
- Security issues
- Site access not limited for personnel and support services

Decisions to relax protective actions for the public will be made by the appropriate state authorities.

When transition from an emergency to a recovery phase is necessary, the Emergency Director will designate a Recovery Manager and develop a recovery organization.

The Emergency Director will inform the ERO, OROs, and NRC upon exiting the state of emergency and either returning to normal organizational control or entering recovery.

M.4	The process for initiating recovery actions is described and includes provisions to ensure continuity during transfer of responsibility between phases. The chain of command is established.

This element is not applicable to the licensee emergency plan.

M.5	The framework for relaxing protective actions and allowing for return are described. Prioritization is given to restoring access to vital services and facilities.

This element is not applicable to the licensee emergency plan.

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M.6	The organization(s) responsible for developing and implementing cleanup operations offsite is identified.

This element is not applicable to the licensee emergency plan.

M.7	Provisions for developing and modifying sampling plans are established. Provisions for laboratory analysis of samples are included in the plan.

The recovery organization will coordinate NextEra environmental sampling activities with the state agencies. Refer to Element C.4 for a description of laboratory capabilities.

M.8	A method for periodically conducting radiological assessments of public exposure is established.

This element is not applicable to the licensee emergency plan.

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N: Exercises and Drills

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

Regulatory References: 10 CFR 50.47(b)(14); 44 CFR 350.5(a)(14);
10 CFR Part 50, Appendix E.IV.F

N.1	Exercises and drills are conducted, observed, and critiqued/evaluated as set forth in NRC and FEMA regulations and guidance.

1. Exercise: An exercise is an event that tests the integrated capability and a major portion of the elements of the emergency plans and organizations.
 - Over the period of the exercise cycle, exercises will test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties.
 - Exercises must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas (see N.4) of emergency response.
 - State and local agencies within the plume exposure pathway EPZ are provided the opportunity to participate by invitation as described in Element N.2.a.
2. Drill: A drill is aimed at testing, developing and maintaining skills in one or more emergency plan functions.
 - Drill types may be operational or discussion-based events (e.g., single ERF or tabletop drills). Drills may be a component of an exercise.
 - During drills; activation of all of the ERFs is not required, supervised instruction is permitted, participants may be given the opportunity to resolve problems (success paths), and focus may be primarily on onsite training objectives. Drills may include evaluation of specific performance objectives or be conducted for non-evaluated training only.

The ERO (not necessarily each ERO member) shall be provided the opportunity to develop and maintain key emergency response skills within the scope of their duties in drills and exercises during each exercise cycle.

N.1.a	The process to critique/evaluate exercises and drills is described.

Critiques of each drill and exercise will be held following each event to evaluate areas and identify issues. The critique is performed following the conclusion of a drill or exercise using preselected drill and exercise performance objectives.

Provisions are made for federal and ORO representatives to observe and participate in drill and exercise critiques when present.

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A written report is prepared following a critique to document whether the objectives were successfully demonstrated.

A remedial exercise is only required if the emergency plan is not satisfactorily tested during the biennial exercise such that NRC, in consultation with FEMA, cannot (1) find reasonable assurance that adequate protective measures would be taken during a radiological emergency, or (2) determine that the ERO has maintained key skills specific to emergency response.

N.1.b	The process used to track findings and associated corrective actions identified by drill and exercise critiques/evaluations, including their assignment and completion, is described.

Failed performance objectives and other programmatic weaknesses are entered into the corrective action program (CAP).

N.1.c	A drill or exercise starts between 6:00 p.m. and 4:00 a.m. at least once every eight-year exercise cycle.

Each NextEra site will conduct at least one off-hours drill or exercise within an eight-year exercise cycle.

An off-hours drill or exercise is established as any time of day on a weekday holiday, or any time of day on a weekend day, or between the hours of 6:00 p.m. and 4:00 a.m. on a normal workday.

The off-hours drill requirement may be satisfied by an actual event provided it meets the above off-hours criteria and the objectives are evaluated and documented in a critique report for the augmentation of the ERO, the transfer of responsibilities, and facility activation.

N.1.d	A drill or exercise is unannounced at least once every eight-year exercise cycle.

Each NextEra site will conduct at least one unannounced drill or exercise within an eight-year cycle.

The unannounced drill requirement may be satisfied by an actual event provided objectives are evaluated and documented in a critique report for the augmentation of the ERO, the transfer of responsibilities, and facility activation.

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N.2	Exercises are designed to enable the response organizations' demonstration of the key skills and capabilities necessary to implement the emergency plan. The following two types of exercises are conducted at the frequency noted:

N.2.a	<u>Plume Exposure Pathway Exercises</u> Plume exposure pathway exercises are conducted biennially. These exercises include mobilization of licensee and state, local, and tribal government personnel and resources and implementation of emergency plans to demonstrate response capabilities within the plume exposure pathway EPZ.

Each NextEra site will conduct a plume exposure pathway exercise biennially. Specifically, the plume exposure pathway exercise is developed to provide the ERO with the opportunity to demonstrate proficiency in the principal functional areas of emergency response:

- Management and coordination of emergency response
- Accident assessment
- Event classification
- Notification of the OROs
- Assessment of the onsite and offsite impact of radiological release
- PAR development (required only in exercises that include a GE)
- Protective action decision-making (onsite protective actions)
- Plant system repair and mitigative action implementation

ORO will be invited to participate in plume exposure pathway exercises. If an ORO chooses not to participate, their participation is not required and it should be documented that they were given the opportunity to participate.

Biennial plume exposure pathway exercise scenarios are submitted to the NRC under 10 CFR 50.4 at least 60 days before they are held.

N.2.b	<u>Ingestion Exposure Pathway Exercises</u> Ingestion exposure pathway exercises are conducted at least once every eight years. These exercises include mobilization of state, local, and tribal government personnel and resources and implementation of emergency plans to demonstrate response capabilities to a release of radioactive materials requiring post-plume phase protective actions within the ingestion exposure pathway EPZ.

NextEra will assist in development and participate as requested in an ingestion exposure pathway exercise to support FEMA evaluation of ORO emergency plan response activities in this area.

The scope, objectives and schedule will be coordinated with appropriate federal emergency organizations and OROs for exercises in which they participate.

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N.3	<u>Exercise Scenario Elements</u> During each eight-year exercise cycle, biennial, evaluated exercise scenario content is varied to provide the opportunity to demonstrate the key skills and capabilities necessary to respond to the following scenario elements:

N.3.a	<u>Hostile Action-Based (HAB)</u> Hostile action directed at the NPP site. This scenario element may be combined with either a radiological release scenario or a no/minimal radiological release scenario, but a no/minimal radiological release scenario should not be included in consecutive HAB exercises at an NPP site.

Each NextEra site will conduct at least one HAB scenario in an exercise within an eight-year cycle.

The HAB scenario will include either a radiological release scenario or no/minimal radiological release scenario, but HAB scenarios combined with a no/minimal radiological release scenario will not be used in consecutive HAB exercises.

N.3.b	<u>Rapid Escalation</u> An initial classification of, or rapid escalation to, an SAE or GE.

Each NextEra site will conduct at least one rapid escalation scenario in an exercise within an eight-year cycle.

The rapid escalation scenario will begin with an initial declaration of, or rapid escalation to, the Site Area Emergency classification level while event response is performed from the Control Room.

N.3.c	<u>No/Minimal Release of Radioactive Materials</u> No release or an unplanned minimal release of radioactive material which does not require public protective actions. This scenario element is used only once during each eight-year exercise cycle.

Each NextEra site will conduct at least one no/minimal radiological release scenario that does not require PARs in an exercise within an eight-year cycle.

N.3.c.1	The licensee is required to demonstrate the ability to respond to a no/minimal radiological release scenario. State, local, and tribal government response organizations have the option, and are encouraged, to participate jointly in this demonstration. If the offsite organizations elect not to participate in the licensee's required minimal or no release exercise, the OROs will still be obligated to meet the exercise requirements as specified in 44 CFR 350.9.

ORO located within the plume exposure pathway EPZ are invited to participate in exercises with no/minimal radiological release scenarios.

NextEra will support offsite agencies in meeting FEMA demonstration requirements when they elect to not participate in a required no/minimal release scenario that is included in an exercise.

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N.3.c.2

When planning for a joint no/minimal radiological release exercise, affected state, local, and tribal jurisdictions, the licensee, and FEMA will identify offsite capabilities that may still need to be evaluated and agree upon appropriate alternative evaluation methods to satisfy FEMA's biennial criteria requirements. Alternative evaluation methods that could be considered during the extent of play negotiations include expansion of the exercise scenario, out of sequence activities, plan reviews, staff assistance visits or other means as described in FEMA guidance.

FEMA will determine whether a no/minimal radiological release scenario is acceptable for use in a full or partial participation biennial exercise.

N.3.d

Resource Integration Integration of offsite resources with onsite response.

Each NextEra site will conduct at least one scenario that integrates offsite resources provided by local support organizations with onsite response in an exercise within an eight-year cycle.

Demonstration of resource integration includes briefings, offsite response to the site, and coordination of worker protection, as appropriate to the scenario.

N.3.e

10 CFR 50.155(b)(2) Strategies Demonstration of the use of equipment, procedures, and strategies developed in compliance with 10 CFR 50.155(b)(2).

Each NextEra site will conduct at least one scenario requiring demonstration of the ability to transition between procedures and select the strategy(ies) for preventing or mitigating fuel damage and limiting radiological releases, within an eight-year cycle.

The MBDBE exercise scenario will be based in one of the site specific strategies used to mitigate spent fuel pool damage scenarios or one of the 7 strategies for PWRs used to mitigate reactor accidents and maintain containment.

The MBDBE exercise may be conducted separately from the main exercise timeline and sequence of events. This includes the (simulated) deployment and use of equipment associated with these strategies. At a minimum, TSC and OSC ERO staff will participate in this portion of the exercise. Participation of Control Room, EOF, JIC ERO, and offsite officials may be simulated.

Methods to accomplish this demonstration are dependent upon the nature of the postulated initiating event, the plant response/accident sequence, and the ability of responders to select and implement mitigation/management strategies. These methods involve conducting any of the following:

- A demonstration of the transition from a controlling AOP or EOP into the Extensive Damage Mitigation Guidelines (EDMGs), FLEX support guidelines (FSGs), or Severe Accident Management Guidelines (SAMGs).
- A demonstration of the use of EDMGs.
- A demonstration of the use of FSGs.
- A demonstration of the use of SAMGs.

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N.4	Drills are designed to enable an organization's demonstration and maintenance of key skills and capabilities necessary to fulfill functional roles. Drills include, but are not limited to, the following at their noted frequencies:

N.4.a	<u>Emergency Medical Drills</u> Emergency medical drills are conducted annually. These drills involve a simulated, contaminated individual and contain provisions for participation by support services agencies (i.e., ambulance and offsite medical treatment facility).

Each NextEra site will conduct an onsite simulated medical drill once per calendar year.

The scope of the emergency medical drill will include a simulated on-site injured and contaminated individual and medical/ first aid treatment, including contamination control.

N.4.b	<u>Medical Services Drills</u> Medical services drills are conducted annually at each medical facility designated in the emergency plan. These drills involve a simulated, contaminated emergency worker and/or member of the general public and contain provisions for participation by support services agencies (i.e., ambulance and offsite medical treatment facility).

This element is not applicable to the licensee emergency plan.

N.4.c	<u>Laboratory Drills</u> Laboratory drills are conducted biennially at each laboratory designated in the emergency plan. These drills involve demonstration of handling, documenting, provisions for record keeping, and analyzing air, soil, and food samples, as well as quality control and quality assurance processes. These drills also involve an assessment of the laboratory's capacity to handle daily and weekly samples and the volume of samples that can be processed daily or weekly.

This element is not applicable to the licensee emergency plan.

N.4.d	<u>Environmental Monitoring Drills</u> Environmental monitoring drills are conducted annually. These drills include direct radiation measurements in the environment, collection and analysis of all sample media (e.g., water, vegetation, soil, and air), and provisions for record keeping.

Each NextEra site will conduct an environmental monitoring drill once per calendar year.

The scope of the environmental monitoring drill will include performance objectives for direct radiation measurements in the environment, collection and analysis of sample media (e.g., water, vegetation, soil, and air), communications, and record keeping.

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N.4.e	<u>Ingestion Pathway and Post-Plume Phase Drills</u> Ingestion pathway and post-plume phase drills are conducted biennially. These drills involve sample plan development, analysis of lab results from samples, assessment of the impact on food and agricultural products, protective decisions for relocation, and food/crop embargos.

This element is not applicable to the licensee emergency plan.

N.4.f	<u>Communications Drills</u> Communications amongst and between emergency response organizations, including those at the state, local, and Federal level, the FMTs, and nuclear facility within both the plume and ingestion exposure pathway EPZs, are tested at the frequencies determined in evaluation criterion F.3. Communications drills include the aspect of understanding the content of messages and can be done in conjunction with the testing described in evaluation criterion F.3.

Each NextEra site will conduct communications drills once per calendar year.

Communications tests described in Element F.3 can be performed as drills provided they include the aspect of understanding the content of messages.

N.4.g	<u>Post-Accident Sampling Drills</u> Post-accident sampling drills are conducted annually. These drills address capabilities including analysis of liquid and containment atmosphere samples with simulated elevated radiation levels. This criterion is not applicable if the NPP unit(s) does (do) not have licensing basis requirements for post-accident sampling.

Refer to site annexes for the Post-Accident Sampling Drill requirements.

N.4.h	<u>Off-Hours Report-In Drills</u> Off-hours report-in drills are conducted biennially and are unannounced.

Each NextEra site will conduct an off-hours unannounced ERO report-in drill at least once within an eight-year cycle.

The scope of the off-hours unannounced ERO report-in drill will require actual response to the assigned facility.

The Off-Hours Report-In Drill requirement may be satisfied by an actual event provided objectives are evaluated and documented in a critique report.

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N.4.i

Off-Hours Call-In Drills Off-hours call-in drills are conducted quarterly, such that each ERO member's normally expected response time is assessed at least biennially based on call-in drill responses or an alternate means for determining response time. Some drills are unannounced.

The NextEra ERO notification is an all-call process. Each NextEra site will conduct an off-hours unannounced ERO call-in drill biennially to verify each minimum staffing ERO position meets the required Table B-1 response time.

The scope of the off-hours unannounced ERO call-in drill will require collection of the ERO notification system report which documents response within the required time.

Completion of an Element N.4.h off-hours unannounced ERO report-in drill satisfies the requirements of the off-hours unannounced ERO call-in drill in this element.

The Off-Hours Call-In Drill requirement may be satisfied by an actual event provided the objectives are evaluated and documented in a critique report.

N.4.j

Onsite Personnel Protective Action Drills Onsite personnel protective action drills are conducted during every eight-year exercise cycle. These drills demonstrate the NPP site's ability to implement and coordinate protective actions for onsite personnel during hostile action.

Each NextEra site will conduct a protective action drill within an eight-year cycle.

The scope of the protective action drill will demonstrate the ability to implement and coordinate protective actions for onsite personnel during a hostile action using one or more of the following:

- Warning personnel in the OCA outside the protected area
- Evacuation of personnel from target buildings, including security personnel
- Site evacuation by opening (while continuing to defend) security gates (demonstrated through discussion/table-top)
- Dispersal of licensed operators
- Sheltering of personnel in structures away from potential site targets
- Arrangements for accounting for personnel after the attack

N.4.k

Aircraft Threat/Attack Response Drills Aircraft threat/attack response drills are conducted during every eight-year exercise cycle. These drills demonstrate the use of procedures and protective measures developed for responding to hostile action involving an aircraft threat or attack.

Each NextEra site will conduct an aircraft threat/attack response drill at least once within an eight-year cycle.

This drill may be combined with the beyond design basis demonstration in Element N.3.e.

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N.4.I

Minimum Staffing Drills An ERO minimum staffing (no participation of non-minimum augmenting ERO personnel) drill is conducted at least once during every eight-year exercise cycle

Each NextEra site will conduct a minimum staffing drill at least once within an eight-year cycle.

A minimum staffing response drill requires facility activation, full transfer of responsibilities from the Control Room, and demonstration of event assessment and response activities.

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O: Radiological Emergency Response Training

Radiological emergency response training is provided to those who may be called on to assist in an emergency.

Regulatory References: 10 CFR 50.47(b)(15); 44 CFR 350.5(a)(15);
10 CFR Part 50, Appendix E.IV.F

O.1	Each organization ensures the training of emergency responders and other appropriate individuals with an operational role is described in the emergency plan. Initial training and at least annual retraining are provided.

Initial training and annual continuing training is conducted to ensure ERO personnel are properly qualified to their specific position. Categories of ERO personnel requiring training include:

1. Emergency Directors (includes the aspect of classification, notification and PARs)
2. Accident Assessment
3. ERO Field Monitoring Team Technicians receive initial training for the tasks they will be expected to perform during an emergency. The following general topics will be included in the training:
 - Equipment and equipment checks
 - Communications
 - Plume tracking techniques
 - Personnel monitoring
 - Emergency exposure criteria
 - Locations and use of radiological emergency equipment
4. Repair and Damage Control Teams
 - a. Operations, maintenance (including OSC FIN Supervisor), chemistry and radiation protection personnel who would be assigned to repair and damage control teams are trained as part of their normal job-specific duties to respond to both normal and abnormal plant conditions and work under direction of an ERO supervisor in the OSC.
5. Security
 - a. Security personnel receive emergency plan training as part of their normal job specific training.
 - b. Security personnel assigned a specific ERO position receive training on emergency plan related tasks.
6. Fire Brigade – Refer to the site fire protection program.
7. First Aid – Personnel assigned as first aid responders maintain qualifications equivalent to Red Cross Standard First Aid techniques.

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O.1.a

Site-specific emergency response training is developed and conducted for those offsite organizations that may be called upon to provide onsite assistance in the event of an emergency.

NextEra offers emergency response training annually to local support organizations. Training includes basic radiation protection, the notification process for their organization, and their organization's expected role.

The offered training for local support organizations who will enter the site also includes the general site layout, site access procedures, and the identity (by position and title) of the onsite individual who will control their support activities.

O.2

The ERO training program consists of learning objectives that are used to develop and maintain key skills. This includes a systematic analysis of jobs and tasks to be performed from which learning objectives are derived.

The ERO training program is developed and evaluated based on position-specific responsibilities/tasks using Systems Approach to Training (SAT) principles, when applicable.

O.2.a

The ERO training program is reviewed at least annually and revised as necessary.

Changes to the training program are identified from trainee feedback and by critique items captured during drills and incorporated per the principles of the SAT process.

O.2.b

Training sessions that provide performance opportunities to develop, maintain, or demonstrate key skills are critiqued in order to identify weak or deficient areas that need correction.

All individuals participating in the ERO training program are given the opportunity to provide feedback of training sessions. Any weak or deficient areas identified and corrected.

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P: Responsibility for the Planning Effort

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Regulatory References: 10 CFR 50.47(b)(16); 44 CFR 350.5(a)(16);
10 CFR Part 50, Appendix E.IV.B and G

P.1	The training program, including initial training and periodic retraining, of individuals responsible for the planning effort is described.

Initial EP program training for new EP staff members is performed and documented.

Continuing training for EP staff members is performed periodically through job related opportunities (such as courses, workshops, information exchange meetings with other licensees, conferences held by industry and government agencies, etc.) to maintain current knowledge of the overall planning effort or to enhance working knowledge of plant operations.

P.2	The individual with the overall authority and responsibility for radiological emergency response planning is identified by title/position.

The Chief Nuclear Officer has the overall authority and responsibility for the NextEra Common Emergency Plan.

P.3	The individual(s) with the responsibility for the development, maintenance, review, updating, and distribution of emergency plans, as well as the coordination of these plans with other response organizations, is identified by title/position.

The site Regulatory Affairs Managers are responsible for the development, maintenance, review, and updating of the emergency plan, as well as the coordination of the plan with other response organizations.

P.4	The process for reviewing annually, and updating as necessary, the emergency plan, implementing procedures, maps, charts, and agreements is described. The process includes a method for recording changes made to the documents and, when appropriate, how those changes are retained.

The formal emergency plan (as defined in the introduction section) and the emergency plan implementing procedures (as defined in Section P.7) will be reviewed on an annual basis and updated if necessary. Any changes to regulations, issues identified by drills and exercises, assessments and audits, or other updates will be evaluated and incorporated into the emergency plan if warranted.

Letters of Agreement will be reviewed and verified on an annual basis, and updated if warranted.

Changes will be processed in accordance with 10 CFR 50.54(q) requirements and NextEra document control/records management procedures.

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P.5

Provisions for distributing the emergency plan and implementing procedures to all organizations and appropriate individuals with responsibility for implementation of the plan/procedures is described.

Revised copies of the emergency plan are posted and distributed in accordance with NextEra records management system procedures.

Changes to the emergency plan are submitted to the NRC in accordance with 10 CFR 50.4.

P.6

A listing of annexes, appendices, and supporting plans and their originating agency is included in the emergency plan.

Refer to Introduction Section for a listing of emergency plan extension documents (documents that are considered part of the emergency plan but are maintained separately).

Emergency plans developed by other agencies that support the NextEra Common Emergency Plan include the following:

- Department of Homeland Security National Response Framework
- U.S. Nuclear Regulatory Commission Incident Response Plan

Plans for organizations that support individual sites are listed in the site annexes.

P.7

An appendix containing a listing by title of the procedures required to maintain and implement the emergency plan is included. The listing includes the section(s) of the emergency plan to be implemented by each procedure.

Table P.7-1 provides a listing, by title, of the common response and maintenance procedures required to implement the emergency plan, and the section(s) of the emergency plan to be implemented by each procedure.

A listing, by title, of the site-specific response and maintenance procedures required to implement the emergency plan is provided in the site annexes.

P.8

A table of contents and a cross-reference index to each of the NUREG-0654/FEMA-REP-1, Rev. 2 evaluation criteria are included. The evaluation criteria that do not apply are identified.

The NextEra emergency plan contains a specific table of contents. The emergency plan paragraphs are numbered corresponding to the NUREG-0654/FEMA-REP-1 R2 evaluation criteria. Evaluation criteria which do not apply to utilities are listed and identified.

P.9

Provisions for addressing the requirements of 10 CFR 50.54(t) are described.

Emergency preparedness program elements are reviewed by persons that have no direct responsibility for the implementation of the emergency preparedness program, in accordance with 10 CFR 50.54(t).

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P.10	The administrative process for the periodic review and updating of contact information identified in the emergency plan and implementing procedures is described.

The NextEra emergency communications directory contains select contact numbers for ORO and support organizations identified in the emergency plan and implementing procedures. The ERO call-out system contains comprehensive ERO contact information.

NextEra ERO contact information is verified semi-annually and updated as needed.

Facility and support contact information in the emergency communications directory is verified annually and updated as needed.

P.11	The process for entering EP program-related issues that could reduce the effectiveness of the emergency plan into the site-wide corrective action program is described.

The NextEra corrective action program is used to capture all events that do not meet program regulations, requirements, standards, or are otherwise conditions adverse to quality.

P.12	The process to evaluate changes in plant configuration for their impact on the effectiveness of the emergency plan is described.

Changes in plant configuration are evaluated for their impact on the effectiveness of the emergency plan through the plant modification or license compliance review processes specified in change procedures and, if required, the 10 CFR 50.54(q) change evaluation process.

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Table P.7-1: Emergency Plan Implementing Procedures

Document ID	Document title	Plan Sections Implemented
EP-AA-EPIP-01	ERO Responses	A, B
EP-AA-EPIP-02	Emergency Notifications	E
EP-AA-EPIP-03	Dose Assessment	I
EP-AA-EPIP-04	Emergency Exposure	J, K
EP-AA-EPIP-05	Termination and Recovery	M
EP-AA-EPIP-06	Core Damage	I
EP-AA-EPAP-01	Emergency Preparedness Program Administration	C,F,H,L,O,P
EP-AA-EPAP-02	Evaluation of Changes to the Emergency Plan Supporting Documents and Equipment (10CFR50.54(Q))	P
EP-AA-EPAP-06	Emergency Preparedness Drills and Exercises	N

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Appendix 1 Definitions

Accident: any unforeseen, or unintentional occurrence or mishap resulting in, or potentially resulting in, physical injury or injury due to radiation exposure or excessive exposure to radioactive materials.

Activated: an emergency response facility is declared activated when minimum staffing requirements are met, key systems and equipment are verified operational, and the ERO personnel are prepared to perform their functions.

Annual: For drills and exercise periodicity, annual is once per calendar year. For training and qualification periodicity and work products, annual is every 12 months not to exceed 15 months.

Concept of Operations: delineation of an organization's roles and responsibilities and how the organization will function to accomplish those responsibilities.

Dosimeter: an instrument used to measure and record radiation doses or dose rates.

Emergency Operations Center (EOC): a facility that is the primary base of emergency operations for an ORO in a radiological incident.

Emergency Planning Zone (EPZ): a geographic area surrounding a commercial NPP for which emergency planning is needed to ensure that prompt and effective actions can be taken by OROs to protect public health and safety in the event of a radiological incident. The plume exposure pathway EPZ is approximately 10 miles in radius, while the ingestion exposure pathway EPZ has a radius of approximately 50 miles.

Emergency Response Data System (ERDS): a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides for the automated transmission of a limited data set of selected plant parameters.

Emergency Response Organization (ERO): the personnel assigned to perform tasks and activities associated with implementation of a licensee's emergency plan for coping with radiological incidents.

Evacuation Time Estimate (ETE): a calculation of the time it would take to evacuate the public within the plume exposure pathway EPZ under emergency conditions.

Evaluation: the process of observing drill or exercise performance to identify strengths and opportunities for improvement in an entity's emergency preparedness and response capabilities.

Field Monitoring Team (FMT): a group used to detect and monitor radiation in the environment.

Ingestion Exposure Pathway: the principal exposure from this pathway would be from ingestion of contaminated water or foods, such as milk or fresh vegetables.

Ingestion Exposure Pathway Emergency Planning Zone: a geographic area, approximately 50 miles in radius surrounding a commercial NPP.

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Appendix 1 Definitions

Letter of Agreement (LOA): a document executed between two or more parties outlining specific arrangements relating to the accomplishment of an action. Letters of agreement may cover personnel, equipment, or other types of emergency support, and may take the form of letters, contracts, purchase orders, or other procurement mechanisms.

Memorandum of Understanding (MOU): a document which details the respective authorities and responsibilities of the signatory organizations for specified radiological emergency response planning, preparedness, or response.

Offsite Response Organization (ORO): state, tribal, or local governmental organization that is responsible for carrying out emergency response functions during a radiological emergency.

Offsite: the area outside the Protected Area.

Onsite: the area inside the Protected Area.

Owner Controlled Area (OCA): That portion of company property surrounding and including the station which is subject to limited access and control as deemed appropriate.

Planning Standard (PS): one of the 16 emergency preparedness planning standards established in 10 CFR 50.47(b) that the emergency plan must meet and which are supported by the corresponding sections of 10 CFR 50 Appendix E.

Plume Exposure Pathway: a term describing the means by which whole body radiation exposure occurs as a result of immersion in a gaseous release of radioactive material. The principal exposure sources from this pathway are: (a) whole body external exposure to gamma radiation from the plume and from deposited materials, and (b) inhalation exposure from the passing radioactive plume. The duration of principal potential exposures could range in length from 30 minutes to days.

Plume Exposure Pathway Emergency Planning Zone: a geographic area approximately 10 miles in radius surrounding a commercial NPP.

Post-Plume Phase: includes response activities that occur after a release has been terminated. Also known as the "Environmental Phase".

Potassium Iodide (KI): a prophylactic compound containing a stable (i.e., non-radioactive) form of iodine that can be used effectively to block the uptake of radioactive iodine by the thyroid gland in a human being.

Protected Area: the area (within the Owner Controlled Area) occupied by the nuclear unit(s) and associated equipment and facilities enclosed within the security perimeter fence. The area within which accountability of personnel is maintained in an emergency when required.

Protective Action Guide (PAG): The projected dose to an individual, resulting from a radiological incident at which a specific protective action to reduce or avoid that dose is warranted.

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Appendix 1 Definitions

Protective Action Recommendation (PAR): a formal advisement from a NPP licensee to state and/or county government officials, or from state officials to other offsite officials, concerning emergency measures that should be taken to protect the public from exposure to radiation.

Radioprotective Drug: a chemical compound or substance serving to protect or aid in protecting against the injurious effects of radiation.

Reasonable Assurance: a determination that ORO and utility plans and preparedness are adequate to protect public health and safety in the emergency planning areas of commercial NPPs.

Reception Center: a pre-designated facility located outside the plume exposure pathway EPZ at which the evacuated public can register; receive radiation monitoring and decontamination; receive assistance in contacting others; receive directions to congregate care centers; reunite with others; and receive general information. It generally refers to a facility where monitoring, decontamination, and registration of evacuees are conducted. A reception center is also referred to as a registration center or public registration and decontamination center.

Site Boundary: the line beyond which the land or property is not owned or controlled by the licensee.

Thyroid Committed Dose Equivalent (CDE): the dose to the thyroid that will be received from an intake of radioactive material by an individual during the 50-year period following the intake (10 CFR 20.1003).

Total Effective Dose Equivalent (TEDE): the sum of the deep dose equivalent (for external exposures) and committed effective dose equivalent (for internal exposures).

Transient Population: persons who do not permanently reside in the plume exposure pathway EPZ, but may be present during an emergency.

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Appendix 2 Abbreviations and Acronyms

AOP	Abnormal Operating Procedures
ANSI	American Nuclear Standards Institute
CFR	Code of Federal Regulations
CR	Control Room
DLR	Dosimeter of Legal Record (synonymous with TLD)
DRD	Direct-reading Dosimeter
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
ENS	Emergency Notification System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EP	Emergency Preparedness
EPA	Environmental Protection Agency
EPZ	Emergency Planning Zone
ERDS	Emergency Response Data System
ERF	Emergency Response Facility
ERO	Emergency Response Organization
ETE	Evacuation Time Estimate
FEMA	Federal Emergency Management Agency
FLEX	Diverse and Flexible Coping Strategies
FMT	Field Monitoring Team
GE	General Emergency
HAB	Hostile Action-Based
HPN	Health Physics Network
I&C	Instrumentation and Control
ICP	Incident Command Post
IT	Information Technology
JIC	Joint Information Center
JIS	Joint Information System
KI	Potassium Iodide
LLEA	Local Law Enforcement Agency
LOA	Letter of Agreement
MOU	Memorandum of Understanding
NEI	Nuclear Energy Institute
NPP	Nuclear Power Plant
NRC	Nuclear Regulatory Commission
OCA	Owner Controlled Area
ORO	Offsite Response Organization

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Appendix 2 Abbreviations and Acronyms

OSC	Operations Support Center
PAD	Protective Action Decision
PAG	Protective Action Guide
PAR	Protective Action Recommendation
HAB	Hostile Action-Based
REP	Radiological Emergency Preparedness
RWP	Radiation Work Permit
SAE	Site Area Emergency
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter (synonymous with DLR)
TSC	Technical Support Center
UE	Unusual Event

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Appendix 3 10 CFR 50 Appendix E.IV Cross-Reference

1. The applicant's emergency plans shall contain, but not necessarily be limited to, information needed to demonstrate compliance with the elements set forth below, i.e., organization for coping with radiological emergencies, assessment actions, activation of emergency organization, notification procedures, emergency facilities and equipment, training, maintaining emergency preparedness, recovery, and onsite protective actions during hostile action.

Regulatory Criteria

E-Plan

2. This nuclear power reactor license applicant shall also provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations, using the most recent U.S. Census Bureau data as of the date the applicant submits its application to the NRC. J.8
3. Nuclear power reactor licensees shall use NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations and shall provide the ETEs and ETE updates to State and local governmental authorities for use in developing offsite protective action strategies. J.8

and shall provide the ETEs and ETE updates to State and local governmental authorities for use in developing offsite protective action strategies. J.7
4. Within 365 days of the later of the date of the availability of the most recent decennial census data from the U.S. Census Bureau or December 23, 2011, nuclear power reactor licensees shall develop an ETE analysis using this decennial data and submit it under § 50.4 to the NRC. These licensees shall submit this ETE analysis to the NRC at least 180 days before using it to form protective action recommendations and providing it to state and local governmental authorities for use in developing offsite protective action strategies. J.8.a
5. During the years between decennial censuses, nuclear power reactor licensees shall estimate EPZ permanent resident population changes once a year, but no later than 365 days from the date of the previous estimate, using the most recent U.S. Census Bureau annual resident population estimate and state/local government population data, if available. These licensees shall maintain these estimates so that they are available for NRC inspection during the period between decennial censuses and shall submit these estimates to the NRC with any updated ETE analysis. J.8.a
6. If at any time during the decennial period, the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ to increase by 25 percent or 30 minutes, whichever is less, from the nuclear power reactor licensee's currently NRC approved or updated ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase. J.8.a

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
The licensee shall submit the updated ETE analysis to the NRC under § 50.4 no later than 365 days after the licensee's determination that the criteria for updating the ETE have been met and at least 180 days before using it to form protective action recommendations and providing it to state and local governmental authorities for use in developing offsite protective action strategies.	J.8.a
7. After an applicant for a combined license under part 52 of this chapter receives its license, the licensee shall conduct at least one review of any changes in the population of its EPZ at least 365 days prior to its scheduled fuel load. The licensee shall estimate EPZ permanent resident population changes using the most recent U.S. Census Bureau annual resident population estimate and state/local government population data, if available. If the EPZ permanent resident population increases such that it causes the longest ETE value for the 2-mile zone or 5-mile zone, including all affected Emergency Response Planning Areas, or for the entire 10-mile EPZ, to increase by 25 percent or 30 minutes, whichever is less, from the licensee's currently approved ETE, the licensee shall update the ETE analysis to reflect the impact of that population increase. The licensee shall submit the updated ETE analysis to the NRC for review under § 50.4 of this chapter no later than 365 days before the licensee's scheduled fuel load.	N/A

10 CFR 50 Appendix E.IV.A – Organization

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 and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:

<u>Regulatory Criteria</u>	<u>E-Plan</u>
1. A description of the normal plant operating organization.	B.1.a
2. A description of the onsite ERO with a detailed discussion of:	
a. Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;	B.1.a B.2 B.2.a
b. Plant staff emergency assignments;	B.1.a
c. Authorities, responsibilities, and duties of an onsite emergency coordinator who shall be in charge of the exchange of information with offsite authorities responsible for coordinating and implementing offsite emergency measures.	B.1.a B.2 B.2.a
3. A description, by position and function to be performed, of the licensee's headquarters personnel who will be sent to the plant site to augment the onsite emergency organization.	N/A

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
4. Identification, by position and function to be performed, of persons within the licensee organization who will be responsible for making offsite dose projections, and a description of how these projections will be made and the results transmitted to state and local authorities, NRC, and other appropriate governmental entities.	B.1.a I.6 E.3 I.10
5. Identification, by position and function to be performed, of other employees of the licensee with special qualifications for coping with emergency conditions that may arise. Other persons with special qualifications, such as consultants, who are not employees of the licensee and who may be called upon for assistance for emergencies shall also be identified. The special qualifications of these persons shall be described.	B.1.a B.5
6. A description of the local offsite services to be provided in support of the licensee's emergency organization.	A.1.a (5)
7. By June 23, 2014, identification of, and a description of the assistance expected from, appropriate state, local, and federal agencies with responsibilities for coping with emergencies, including hostile action at the site. For purposes of this appendix, "hostile action" is defined as an act directed toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force.	A.4
8. Identification of the state and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.	A.1.a.3
9. By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.	B.1.a

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10 CFR 50 Appendix E.IV.B – Assessment Actions

<u>Regulatory Criteria</u>	<u>E-Plan</u>
1. The means to be used for determining the magnitude of, and for continually assessing the impact of, the release of radioactive materials shall be described, including emergency action levels that are to be used as criteria for determining the need for notification and participation of local and state agencies, the Commission, and other federal agencies, and the emergency action levels that are to be used for determining when and what type of protective measures should be considered within and outside the site boundary to protect health and safety.	I.4 I.4.a I.6
The emergency action levels shall be based on in-plant conditions and instrumentation in addition to onsite and offsite monitoring. By June 20, 2012, for nuclear power reactor licensees, these action levels must include hostile action that may adversely affect the nuclear power plant.	D.1.a
The initial emergency action levels shall be discussed and agreed on by the applicant or licensee and state and local governmental authorities, and approved by the NRC.	D.1.b
Thereafter, emergency action levels shall be reviewed with the state and local governmental authorities on an annual basis.	D.1.b
2. A licensee desiring to change its entire emergency action level scheme shall submit an application for an amendment to its license and receive NRC approval before implementing the change.	D.1.a
Licensees shall follow the change process in § 50.54(q) for all other emergency action level changes.	P.4

10 CFR 50, Appendix E.IV.C – Activation of Emergency Organization

<u>Regulatory Criteria</u>	<u>E-Plan</u>
1. The entire spectrum of emergency conditions that involve the alerting or activating of progressively larger segments of the total emergency organization shall be described.	D.1 D.3
The communication steps to be taken to alert or activate emergency personnel under each class of emergency shall be described.	E.1.1
Emergency action levels (based not only on onsite and offsite radiation monitoring information but also on readings from a number of sensors that indicate a potential emergency, such as the pressure in containment and the response of the Emergency Core Cooling System) for notification of offsite agencies shall be described.	D.1
The existence, but not the details, of a message authentication scheme shall be noted for such agencies.	E.1.a

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
The emergency classes defined shall include: (1) Notification of unusual events, (2) alert, (3) site area emergency, and (4) general emergency. These classes are further discussed in NUREG-0654/FEMA-REP-1.	D.1
2. By June 20, 2012, nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level.	D.2
Licensees shall not construe these criteria as a grace period to attempt to restore plant conditions to avoid declaring an emergency action due to an emergency action level that has been exceeded.	Site EAL TBD
Licensees shall not construe these criteria as preventing implementation of response actions deemed by the licensee to be necessary to protect public health and safety provided that any delay in declaration does not deny the state and local authorities the opportunity to implement measures necessary to protect the public health and safety.	Site EAL TBD

10 CFR 50, Appendix E.IV.D – Notification Procedures

<u>Regulatory Criteria</u>	<u>E-Plan</u>
1. Administrative and physical means for notifying local, state, and federal officials and agencies and agreements reached with these officials and agencies for the prompt notification of the public and for public evacuation or other protective measures, should they become necessary, shall be described. This description shall include identification of the appropriate officials, by title and agency, of the state and local government agencies within the EPZs.	E.2
2. Provisions shall be described for yearly dissemination to the public within the plume exposure pathway EPZ of basic emergency planning information, such as the methods and times required for public notification and the protective actions planned if an accident occurs, general information as to the nature and effects of radiation, and a listing of local broadcast stations that will be used for dissemination of information during an emergency.	G.1
Signs or other measures shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an accident occurs.	G.1
3. A licensee shall have the capability to notify responsible state and local governmental agencies within 15 minutes after declaring an emergency.	E.1.b

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
The licensee shall demonstrate that the appropriate governmental authorities have the capability to make a public alerting and notification decision promptly on being informed by the licensee of an emergency condition.	E.2
Prior to initial operation greater than 5 percent of rated thermal power of the first reactor at a site, each nuclear power reactor licensee shall demonstrate that administrative and physical means have been established for alerting and providing prompt instructions to the public within the plume exposure pathway EPZ.	N/A
The design objective of the prompt public alert and notification system shall be to have the capability to essentially complete the initial alerting and initiate notification of the public within the plume exposure pathway EPZ within about 15 minutes. The use of this alerting and notification capability will range from immediate alerting and notification of the public (within 15 minutes of the time that state and local officials are notified that a situation exists requiring urgent action) to the more likely events where there is substantial time available for the appropriate governmental authorities to make a judgment whether or not to activate the public alert and notification system.	E.2
The alerting and notification capability shall additionally include administrative and physical means for a backup method of public alerting and notification capable of being used in the event the primary method of alerting and notification is unavailable during an emergency to alert or notify all or portions of the plume exposure pathway EPZ population. The backup method shall have the capability to alert and notify the public within the plume exposure pathway EPZ, but does not need to meet the 15-minute design objective for the primary prompt public alert and notification system.	E.2
When there is a decision to activate the alert and notification system, the appropriate governmental authorities will determine whether to activate the entire alert and notification system simultaneously or in a graduated or staged manner. The responsibility for activating such a public alert and notification system shall remain with the appropriate governmental authorities.	N/A

10 CFR 50, Appendix E.IV.E – Emergency Facilities and Equipment

Adequate provisions shall be made and described for emergency facilities and equipment, including:

<u>Regulatory Criteria</u>	<u>E-Plan</u>
1. Equipment at the site for personnel monitoring;	K.1.b K.1.c
2. Equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment;	I.6 I.7 I.8 H.7

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
3. Facilities and supplies at the site for decontamination of onsite individuals;	J.3 K.1.e
4. Facilities and medical supplies at the site for appropriate emergency first aid treatment;	L.2.a
5. Arrangements for medical service providers qualified to handle radiological emergencies onsite;	L.2.b
6. Arrangements for transportation of contaminated injured individuals from the site to specifically identified treatment facilities outside the site boundary;	L.4
7. Arrangements for treatment of individuals injured in support of licensed activities on the site at treatment facilities outside the site boundary;	L.2.b
8.a (i) A licensee onsite technical support center and an emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency;	H.1 H.3
8.a (ii) For nuclear power reactor licensees, a licensee onsite operational support center;	H.2
8.b For a nuclear power reactor licensee's EOF required by paragraph 8.a of this section, either a facility located between 10 miles and 25 miles of the nuclear power reactor site(s), or a primary facility located less than 10 miles from the nuclear power reactor site(s) and a backup facility located between 10 miles and 25 miles of the nuclear power reactor site(s). An EOF may serve more than one nuclear power reactor site. A licensee desiring to locate an EOF more than 25 miles from a nuclear power reactor site shall request prior Commission approval by submitting an application for an amendment to its license.	H.3
For an EOF located more than 25 miles from a nuclear power reactor site, provisions must be made for locating NRC and offsite responders closer to the nuclear power reactor site so that NRC and offsite responders can interact face-to-face with emergency response personnel entering and leaving the nuclear power reactor site. Provisions for locating NRC and offsite responders closer to a nuclear power reactor site that is more than 25 miles from the EOF must include the following:	H.3.a
(1) Space for members of an NRC site team and federal, state, and local responders;	C.5
(2) Additional space for conducting briefings with emergency response personnel;	C.5
(3) Communication with other licensee and offsite emergency response facilities;	C.5

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
(4) Access to plant data and radiological information; and	C.5
(5) Access to copying equipment and office supplies;	C.5
8.c By June 20, 2012, for a nuclear power reactor licensee's EOF required by paragraph 8.a of this section, a facility having the following capabilities:	
(1) The capability for obtaining and displaying plant data and radiological information for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves;	H.3
(2) The capability to analyze plant technical information and provide technical briefings on event conditions and prognosis to licensee and offsite response organizations for each reactor at a nuclear power reactor site and for each nuclear power reactor site that the facility serves; and	H.3
(3) The capability to support response to events occurring simultaneously at more than one nuclear power reactor site if the emergency operations facility serves more than one site; and	H.3
8.d For nuclear power reactor licensees, an alternative facility (or facilities) that would be accessible even if the site is under threat of or experiencing hostile action, to function as a staging area for augmentation of emergency response staff and collectively having the following characteristics:	H.4
• the capability for communication with the EOF, Control Room, and plant security;	H.4
• the capability to perform offsite notifications;	H.4
• and the capability for engineering assessment activities, including damage control team planning and preparation, for use when onsite emergency facilities cannot be safely accessed during hostile action.	H.3.b H.4
The requirements in this paragraph 8.d must be implemented no later than December 23, 2014, with the exception of the capability for staging emergency response organization personnel at the alternative facility (or facilities) and the capability for communications with the emergency operations facility, Control Room, and plant security, which must be implemented no later than June 20, 2012.	N/A
8.e A licensee shall not be subject to the requirements of paragraph 8.b of this section for an existing EOF approved as of December 23, 2011.	N/A

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
9. At least one onsite and one offsite communications system; each system shall have a backup power source.	F.1.a
All communication plans shall have arrangements for emergencies, including titles and alternates for those in charge at both ends of the communication links and the primary and backup means of communication. Where consistent with the function of the governmental agency, these arrangements will include:	E.1
a. Provision for communications with contiguous state/local governments within the plume exposure pathway EPZ.	E.1 F.1.a
Such communications shall be tested monthly.	F.3
b. Provision for communications with federal emergency response organizations.	E.1 F.1.a
Such communications systems shall be tested annually.	F.3
c. Provision for communications among the nuclear power reactor control room, the onsite TSC, and the EOF; and among the nuclear facility, the principal state and local emergency operations centers, and the field assessment teams.	F.1
Such communications systems shall be tested annually.	F.3
d. Provisions for communications by the licensee with NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor control room, the onsite TSC, and the EOF.	E.1 F.1
Such communications shall be tested monthly.	F.3

10 CFR 50, Appendix E.IV.F – Training

<u>Regulatory Criteria</u>	<u>E-Plan</u>
1. The program to provide for:	
(a) The training of employees and exercising, by periodic drills, of emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and	N.4 O.1
(b) The participation in the training and drills by other persons whose assistance may be needed in the event of a radiological emergency shall be described.	N.4.a O.1.a
This shall include a description of specialized initial training and periodic retraining programs to be provided to each of the following categories of emergency personnel:	O.1

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
i. Directors and/or coordinators of the plant emergency organization;	O.1 (1)
ii. Personnel responsible for accident assessment, including control room shift personnel;	O.1 (2)
iii. Radiological monitoring teams;	O.1 (3)
iv. Fire control teams (fire brigades);	O.1 (6)
v. Repair and damage control teams;	O.1 (4)
vi. First aid and rescue teams;	O.1 (7)
vii. Medical support personnel;	O.1 (6) O.1.a
viii. Licensee's headquarters support personnel;	N/A
ix. Security personnel.	O.1 (5)
In addition, a radiological orientation training program shall be made available to local services personnel; e.g., local emergency services/Civil Defense, local law enforcement personnel, local news media persons.	O.1.a G.5
2. The plan shall describe provisions for the conduct of emergency preparedness exercises as follows: Exercises shall test the adequacy of timing and content of implementing procedures and methods, test emergency equipment and communications networks, test the public alert and notification system, and ensure that emergency organization personnel are familiar with their duties.	N.1
2.a A full participation exercise which tests as much of the licensee, state, and local emergency plans as is reasonably achievable without mandatory public participation shall be conducted for each site at which a power reactor is located.	N.2.a
Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in a full participation exercise required by this paragraph 2.a.	N.2.a

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
(i) For an operating license issued under this part, this exercise must be conducted within 2 years before the issuance of the first operating license for full power (one authorizing operation above 5 percent of rated thermal power) of the first reactor and shall include participation by each state and local government within the plume exposure pathway EPZ and each state within the ingestion exposure pathway EPZ. If the full participation exercise is conducted more than 1 year prior to issuance of an operating licensee for full power, an exercise which tests the licensee's onsite emergency plans must be conducted within one year before issuance of an operating license for full power. This exercise need not have state or local government participation.	N/A
(ii) For a combined license issued under part 52 of this chapter, this exercise must be conducted within two years of the scheduled date for initial loading of fuel. If the first full participation exercise is conducted more than one year before the scheduled date for initial loading of fuel, an exercise which tests the licensee's onsite emergency plans must be conducted within one year before the scheduled date for initial loading of fuel. This exercise need not have state or local government participation. If FEMA identifies one or more deficiencies in the state of offsite emergency preparedness as the result of the first full participation exercise, or if the Commission finds that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, the provisions of § 50.54(gg) apply.	N/A
(iii) For a combined license issued under part 52 of this chapter, if the applicant currently has an operating reactor at the site, an exercise, either full or partial participation, shall be conducted for each subsequent reactor constructed on the site. This exercise may be incorporated in the exercise requirements of Sections IV.F.2.b. and c. in this appendix. If FEMA identifies one or more deficiencies in the state of offsite emergency preparedness as the result of this exercise for the new reactor, or if the Commission finds that the state of emergency preparedness does not provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, the provisions of § 50.54(gg) apply.	N/A
2.b Each licensee at each site shall conduct a subsequent exercise of its onsite emergency plan every 2 years.	N.2.a
Nuclear power reactor licensees shall submit exercise scenarios under § 50.4 at least 60 days before use in an exercise required by this paragraph 2.b.	N.2.a
The exercise may be included in the full participation biennial exercise required by paragraph 2.c. of this section.	N.2.a

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
In addition, the licensee shall take actions necessary to ensure that adequate emergency response capabilities are maintained during the interval between biennial exercises by conducting drills, including at least one drill involving a combination of some of the principal functional areas of the licensee's onsite emergency response capabilities. The principal functional areas of emergency response include activities such as management and coordination of emergency response, accident assessment, event classification, notification of offsite authorities, assessment of the onsite and offsite impact of radiological releases, protective action recommendation development, protective action decision making, plant system repair and mitigative action implementation. During these drills, activation of all of the licensee's emergency response facilities (TSC, OSC, and the EOF) would not be necessary, licensees would have the opportunity to consider accident management strategies, supervised instruction would be permitted, operating staff in all participating facilities would have the opportunity to resolve problems (success paths) rather than have controllers intervene, and the drills may focus on the onsite exercise training objectives.	N.4
2.c Offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the radiological response plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every two years and shall, at least, partially participate in other offsite plan exercises in this period.	N.2.a
If two different licensees each have licensed facilities located either on the same site or on adjacent, contiguous sites, and share most of the elements defining co-located licensees, then each licensee shall:	N/A
(1) Conduct an exercise biennially of its onsite emergency plan;	N/A
(2) Participate quadrennially in an offsite biennial full or partial participation exercise;	N/A
(3) Conduct emergency preparedness activities and interactions in the years between its participation in the offsite full or partial participation exercise with offsite authorities, to test and maintain interface among the affected state and local authorities and the licensee. Co-located licensees shall also participate in emergency preparedness activities and interaction with offsite authorities for the period between exercises;	N/A
(4) Conduct a hostile action exercise of its onsite emergency plan in each exercise cycle; and	N/A
(5) Participate in an offsite biennial full or partial participation hostile action exercise in alternating exercise cycles.	N/A

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
2.d Each state with responsibility for nuclear power reactor emergency preparedness should fully participate in the ingestion pathway portion of exercises at least once every exercise cycle. In states with more than one nuclear power reactor plume exposure pathway EPZ, the state should rotate this participation from site to site.	N/A
Each state with responsibility for nuclear power reactor emergency preparedness should fully participate in a hostile action exercise at least once every cycle and should fully participate in one hostile action exercise by December 31, 2015. States with more than one nuclear power reactor plume exposure pathway EPZ should rotate this participation from site to site.	N/A
2.e Licensees shall enable any state or local government located within the plume exposure pathway EPZ to participate in the licensee's drills when requested by such State or local government.	N.1
2.f Remedial exercises will be required if the emergency plan is not satisfactorily tested during the biennial exercise, such that NRC, in consultation with FEMA, cannot (1) find reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency or (2) determine that the Emergency Response Organization (ERO) has maintained key skills specific to emergency response. The extent of state and local participation in remedial exercises must be sufficient to show that appropriate corrective measures have been taken regarding the elements of the plan not properly tested in the previous exercises.	N.1.a
2.g All exercises, drills, and training that provide performance opportunities to develop, maintain, or demonstrate key skills must provide for formal critiques in order to identify weak or deficient areas that need correction.	N.1
Any weaknesses or deficiencies that are identified in a critique of exercises, drills, or training must be corrected.	N.1.b
2.h The participation of state and local governments in an emergency exercise is not required to the extent that the applicant has identified those governments as refusing to participate further in emergency planning activities, pursuant to § 50.47(c)(1). In such cases, an exercise shall be held with the applicant or licensee and such governmental entities as elect to participate in the emergency planning process.	N.2.a
2.i Licensees shall use drill and exercise scenarios that provide reasonable assurance that anticipatory responses will not result from preconditioning of participants. Such scenarios for nuclear power reactor licensees must include a wide spectrum of radiological releases and events, including hostile action. Exercise and drill scenarios as appropriate must emphasize coordination among onsite and offsite response organizations.	N.3 N.4

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<u>Regulatory Criteria</u>	<u>E-Plan</u>
2.j(i) The exercises conducted under paragraph 2 of this section by nuclear power reactor licensees must provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to implement the principal functional areas of emergency response identified in paragraph 2.b of this section.	N.1 N.2.a
j(ii) Each exercise must provide the opportunity for the ERO to demonstrate key skills specific to emergency response duties in the control room, TSC, OSC, EOF, and JIC.	N.1
j(iii) In each 8-calendar-year exercise cycle, nuclear power reactor licensees shall vary the content of scenarios during exercises conducted under paragraph 2 of this section to provide the opportunity for the ERO to demonstrate proficiency in the key skills necessary to respond to the following scenario elements:	N.3
(1) hostile action directed at the plant site,	N.3.a
(2) No radiological release or an unplanned minimal radiological release that does not require public protective actions;	N.3.c
(3) An initial classification of or rapid escalation to a Site Area Emergency or General Emergency;	N.3.b
(4) Implementation of strategies, procedures, and guidance developed under §50.155(b)(2); and	N.3.e
(5) Integration of offsite resources with onsite response.	N.3.d
j(iv) The licensee shall maintain a record of exercises conducted during each 8-year exercise cycle that documents the content of scenarios used to comply with the requirements of section IV.F.2.j of this appendix.	N.3
j(v) Each licensee shall conduct a hostile action exercise for each of its sites no later than December 31, 2015.	N/A
j(vi) The first 8-year exercise cycle for a site will begin in the calendar year in which the first hostile action exercise is conducted. For a site licensed under 10 CFR part 52, the first 8-year exercise cycle begins in the calendar year of the initial exercise required by section IV.F.2.a of this appendix.	N/A

10 CFR 50, Appendix E.IV.G – Maintaining Emergency Preparedness

<u>Regulatory Criteria</u>	<u>E-Plan</u>
Provisions to be employed to ensure that the emergency plan, its implementing procedures, and emergency equipment and supplies are maintained up to date shall be described.	P.4 P.9 P.10 P.11 P.12

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Appendix 3 10 CFR 50 Appendix E.IV Cross-Reference

10 CFR 50, Appendix E Section IV.H – Recovery

Regulatory Criteria

E-Plan

Criteria to be used to determine when, following an accident, reentry of the facility would be appropriate or when operation could be resumed shall be described.

M.1

10 CFR 50, Appendix E.IV.I – Onsite Protective Actions During Hostile Action

Regulatory Criteria

E-Plan

By June 20, 2012, for nuclear power reactor licensees, a range of protective actions to protect onsite personnel during hostile action must be developed to ensure the continued ability of the licensee to safely shut down the reactor and perform the functions of the licensee's emergency plan.

J.1

Enclosure 3

NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER

L-2026-008

LICENSE AMENDMENT REQUEST (TSCR-195)

DAEC EMERGENCY PLAN ANNEX

(19 pages follow)



NUCLEAR FLEET

PROGRAM DESCRIPTION
NON-SAFETY RELATED
INFORMATION USE

Program No.

EP-PDA-150

Revision No.

0

Title:

DAEC EMERGENCY PLAN ANNEX

Responsible Department: REGULATORY AFFAIRS

Special Considerations:

Revision	Approved By	Approval Date	TYPE	PROCEDURE
0			DATE	
			DOCT	PROGRAM
			DOCN	EP-PDA-150
			SYS	
			STATUS	DRAFT
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			# OF PAGES	20

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INTRODUCTION

This Duane Arnold (DAEC) Emergency Plan Annex supplements the NextEra Common Emergency Plan by providing site specific information unique to the station. It is subject to the same change and audit requirements as the NextEra Common Emergency Plan.

DAEC is a one-unit boiling water nuclear power plant located on an approximately 500 acre site in Linn County, Iowa, approximately eight miles from the City of Cedar Rapids, and 2.5 miles northeast of the town of Palo, Iowa. NextEra Energy Duane Arnold, LLC (NEDA) currently owns a 70% interest in DAEC, Central Iowa Power Cooperative (CIPCO) owns a 20% interest in DAEC, and Corn Belt Power Cooperative (Corn Belt) owns a 10% interest in DAEC. NEDA, CIPCO, and Corn Belt have executed definitive agreements under which NEDA will acquire the interests of CIPCO and Corn Belt in DAEC. Upon receiving regulatory approvals and closing, NEDA will own 100% of DAEC.

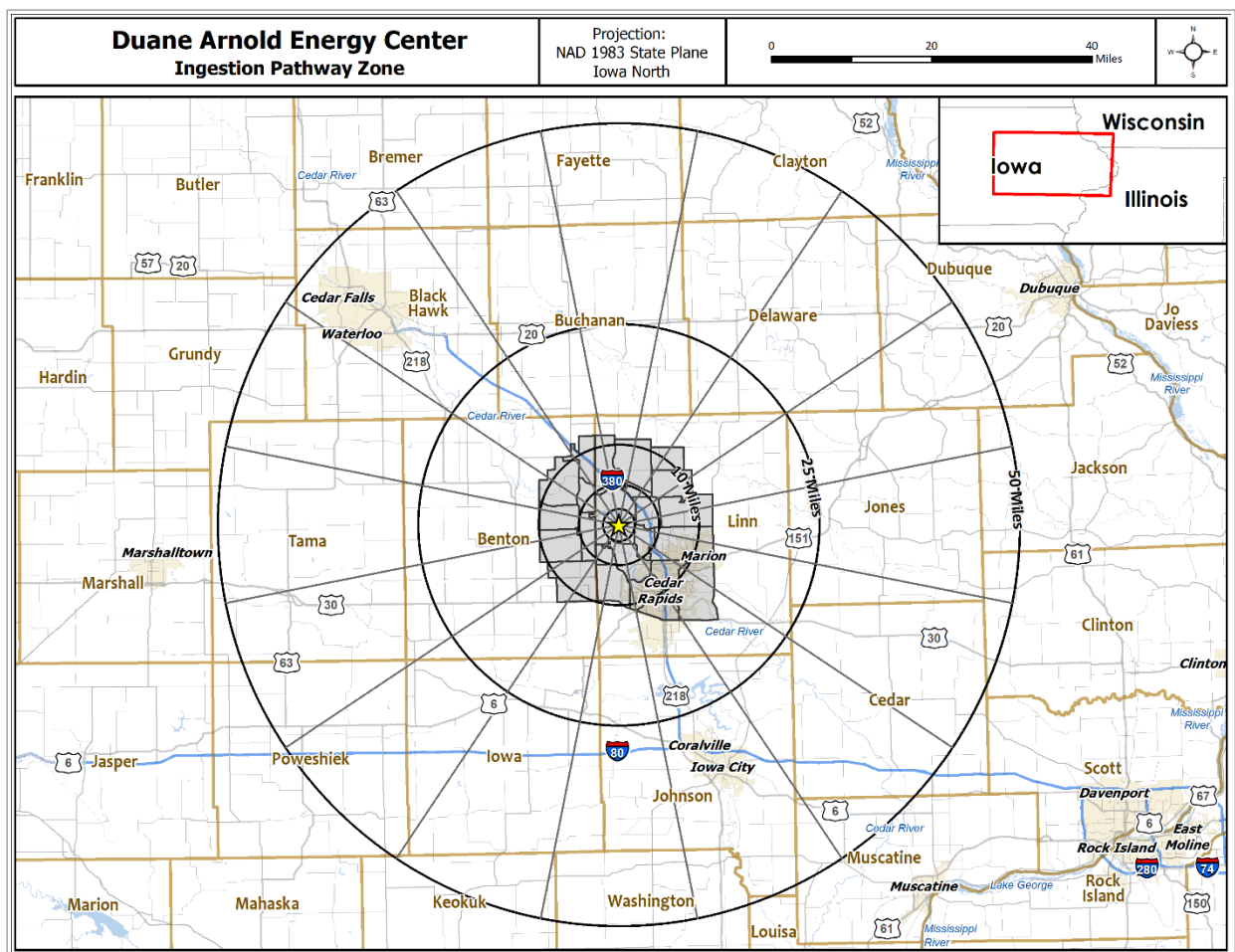
This document matches the structure of the NextEra Common Emergency Plan in following the format of NUREG-0654. It only contains the guidance elements that have site specific information therefore the numbering may not always be sequential.

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Emergency Planning for the DAEC station is performed within the following two Emergency Planning Zones (EPZ):

Plume Exposure Pathway EPZ – The DAEC Plume Exposure EPZ approximates a 10-mile radius around the plant site and is described and illustrated in the station's Evacuation Time Estimate Study report.

Ingestion Pathway EPZ – The DAEC Ingestion Pathway EPZ approximates a 50-mile radius around the plant site as illustrated below.



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A: Assignment of Responsibility

Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the EPZs have been assigned, the emergency responsibilities of the various supporting organization have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.

Regulatory References: 10 CFR 50.47(b)(1); 44 CFR 350.5(a)(1);
10 CFR Part 50, Appendix E.IV.A

A.1.a

The organizations having an operational role specify their concept of operations and relationship to the total effort.

1. Offsite Response Organization (OROs)

The principal state agencies having planning and implementation responsibilities for emergencies for DAEC are:

a. Iowa Department of Homeland Security and Emergency Management (HSEM)

HSEM coordinates overall State response to a radiological incident and facilitates Federal assistance and aid. Also coordinates public information and outreach.

b. Iowa Department of Health and Human Services - Bureau of Radiological Health

The Bureau of Radiological Health is responsible for dose assessment and exposure risk determination in a radiological event. In addition, the Bureau develops sampling plans, public protective action recommendations, and long-term radiological monitoring plans.

c. Iowa Department of Public Safety - Iowa State Patrol

The Iowa State Patrol in cooperation with local law enforcement ensures safety of roadways during evacuations and controlling access into evacuated areas.

d. Iowa Department of Agriculture and Land Stewardship

The Department of Agriculture and Land Stewardship conducts the quarantine/embargo of agricultural products following a radiological event. This department also assists in radiological sampling activities and coordinates farmer outreach.

e. Iowa Department of Natural Resources

The Department of Natural Resources assists with radiological sampling activities, locates surface water supplies, and coordinates removal of game animals, birds and fish during radiological events.

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f. Iowa Department of Inspections, Appeals and Licensing The Department of Inspections, Appeals and Licensing prevents distribution of radiologically contaminated food by commercial sector and determines needs of evacuated healthcare facility residents. g. Iowa State Hygienic Laboratory (ISHL) ISHL is responsible for radiological and environmental sampling. ISHL also coordinates radiological emergency response teams and provides radiological laboratory support and analysis. h. Iowa State University Extension Service The Iowa State University Extension Service provides notification of and outreach to farming community in the event of a radiological emergency. The counties with emergency service departments and other agencies interrelated to these local governments within the 10-mile EPZ (plume exposure pathway) of DAEC are: • Benton County • Linn County Under the provisions of the Iowa Code Chapter 29C, Emergency Management and Security, and the Benton and Linn County Emergency Government Ordinances, authorities of both counties have the responsibility and authority to coordinate offsite emergency activities in the event of a radiological incident. Each county has prepared a County Emergency Operations Plan to carry out this responsibility which is applicable to emergencies at DAEC. The Linn County Emergency Management Coordinator and the Benton County Emergency Management Coordinator oversee their respective county emergency response plans which outline the County and Municipal response organization and procedures to implement concepts contained in the plans. Information specific to the agencies/organizations which fulfill an emergency response role for Linn and Benton Counties can be found in the respective county emergency response plans. The Linn and Benton Counties will coordinate their respective County's response and will accept response requests for the DAEC. Refer to the County Radiological Emergency Response Plans for details on the county concept of operations.		

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The counties within the 50-mile EPZ (ingestion exposure pathway) of DAEC are:

Benton	Clinton	Jackson	Muscatine
Black Hawk	Delaware	Johnson	Poweshiek
Bremer	Dubuque	Jones	Tama
Buchanan	Fayette	Keokuk	Washington
Cedar	Grundy	Linn	
Clayton	Iowa	Louisa	

A.4

Written agreements with the support organizations having an emergency response role within the EPZs are included. The agreements describe the concept of operations, emergency measures to be provided, mutually acceptable criteria for their implementation, and arrangements for exchange of information.

Site specific letters of agreement (LOAs) or memorandums of understanding (MOUs), are maintained by DAEC with the following organizations:

- Benton County Emergency Management Agency
- Benton County Sheriff's Department
- Linn County Emergency Management Agency
- Linn County Sheriff's Department
- Iowa Homeland Security – Emergency Management
- Mercy Medical Center
- Mercy One Waterloo Medical Center
- Palo Fire Department
- Hiawatha Ambulance Service
- Area Ambulance Service
- Palo Community Center
- Institute for Nuclear Power Operations
- Bechtel Power Corporation
- General Electric

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B: Onsite Emergency Organization

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

Regulatory References: 10 CFR 50.47(b)(2); 44 CFR 350.5(a)(2);
10 CFR Part 50, Appendix E.IV.A

B.1.a	The site-specific emergency response organization (ERO) is developed. Note that while other site programs, such as operations, fire response, rescue and first aid, and security, may be controlled via other licensing documents, it is only when these personnel are assigned EP functions that they become part of this regulatory standard. Consideration is given to ensure that EP functions are not assigned to individuals who may have difficulties performing their EP function(s) simultaneously with their other assigned (non-EP) duties. Appendix E to 10 CFR Part 50 requires licensees to perform an on-shift staffing analysis to ensure on-shift staff can support the EP functions assigned, as well as other assigned duties.

The DAEC on-shift staffing analysis report has been developed in accordance with 10 CFR 50 Appendix E.IV.A.9 and NEI 10-05.

The DAEC TSC and OSC are co-located facilities, therefore the Radiation Protection Supervisor (OSC) is not a required minimum ERO staff position.

Refer to EP-PDA-152, DAEC On-Shift Staffing Analysis.

B.5	The external organizations, including contractors, that may be requested to provide technical assistance to and augmentation of the ERO, as applicable, are specified.

2. Other External Non-NextEra Support Organizations

A. General Electric (GE) (the NSSS vendor for DAEC): Upon request, GE will provide emergency technical assistance, including equipment and/or services, in support of DAEC in the unlikely event of an emergency.

B. Bechtel Power Corporation (the architect-engineer for DAEC): Upon request, Bechtel will provide technical assistance to DAEC.

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C: Emergency Response Support and Resources

Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate state and local staff at the licensee's EOF have been made, and other organizations capable of augmenting the planned response have been identified.

Regulatory References: 10 CFR 50.47(b)(3); 44 CFR 350.5(a)(3); 10 CFR Part 50, Appendix E, Sec. IV.E

C.4	Radiological laboratories, their general capabilities, and expected availability to provide radiological monitoring analysis services that can be used in an emergency are described. Plans to augment the identified radiological laboratories are described.

The station's main chemistry laboratory is located in the Control Building. The back-up chemistry laboratory is located at the Point Beach Nuclear Station.

The Iowa State Hygienic Laboratory (SHL) offers a wide range of radiological testing services. These services include testing environmental samples from nuclear power facilities.

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D: Emergency Classification System

A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.

Regulatory References: 10 CFR 50.47(b)(4); 44 CFR 350.5(a)(4);
10 CFR Part 50 Appendix E.IV.B and C

D.1	A standard emergency classification and action level scheme is established and maintained. The scheme provides detailed EALs for each of the four ECLs in Section IV.C.1 of Appendix E to 10 CFR Part 50.

The DAEC Emergency Action Level (EAL) scheme is documented in EP-PDA-151, DAEC EAL Technical Basis Manual.

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E: Notification Methods and Procedures

Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.

Regulatory References: 10 CFR 50.47(b)(5); 44 CFR 350.5(a)(5);
10 CFR Part 50 Appendix E.IV.A, C, D and E

E.1	The mutually agreeable process for direct and prompt notification of response organizations, aligned with the emergency classification and action level scheme, is described.

2. ORO Notification

The following state and county 24/7 warning points are notified of a declared emergency at DAEC:

- State of Iowa
- Benton County
- Linn County

E.2	The alert and notification systems (ANS) used to alert and notify the general public within the plume exposure pathway EPZ, and methods of activation are described. This description includes the administrative and physical means, the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ, and the organizations or titles/positions responsible for activating the system.

Primary Alert and Notification System (ANS): IPAWS-WEA and IPAWS-EAS.

Backup ANS: Alert Iowa (Mass Notification System)

Benton and Linn County are responsible for coordination of activation and operability of the primary and backup ANS.

Detailed information on the FEMA approved system used to alert and notify the general public is maintained in EP-PDA-155 DAEC Alert and Notification System Design Report.

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F: Emergency Communications

Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.

Regulatory References: 10 CFR 50.47(b)(6); 44 CFR 350.5(a)(6);
10 CFR Part 50, Appendix E.IV.E

F.1

Each principal response organization establishes redundant means of communication and addresses the following provisions:

F.1.a

Continuous capability for notification to, and activation of, the emergency response network, including a minimum of two independent communication links.

The telephone system is operated and maintained by the local telephone company and connects with the public telephone system via the DAEC PBX.

A LAN/Internet system with satellite backup connects the Linn County EOC and Sheriff's office, the Benton County EOC and Sheriff's office, the State of Iowa EOC, the EOF, the TSC, the Simulator, and the Control Room into a private telephone network referred to as the DAEC All-Call.

A fixed cell phone system connects the DAEC Control Room and TSC with the Shellsburg cell tower via exterior antenna. This phone system has a UPS power supply in the event of a loss of power. A Control Room satellite phone system connects the DAEC Control Room to a communications satellite. This phone system provides redundancy from the other DAEC phone systems.

The EOF has available:

- (i) Dedicated circuits to the NRC on the Federal Telecommunications system FTS-2001,
- (ii) PBX connectivity to DAEC through dedicated circuitry provided by a local and regional provider,
- (iii) An All-Call System that provides a communication path between the Control Room, TSC, Simulator, EOF, Iowa Homeland Security and Emergency Management Division, Benton County and Linn County Emergency Operations Centers, Benton County and Linn County Sheriff 911 Dispatch Centers via LAN/Internet with satellite backup capabilities.

The NRC ENS and NRC HPN telephones are both installed in DAEC emergency facilities. Both telephones are connected to the Federal Telephone System (FTS-2001). The NRC ENS telephones are located in the Control Room, TSC, and EOF which gives those facilities the capability to contact NRC Headquarters in Rockville, MD. The NRC HPN telephones are located in the TSC and EOF and can be used to call regional NRC offices, the NRC Headquarters, or other sites within the region.

F.2

Systems for coordinated communication methods for applicable fixed and mobile medical support facilities are described.

DAEC uses the 911 emergency dispatch system to call out medical support facilities. The 911 dispatcher communicates with fixed and mobile facilities as necessary to coordinate response.

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H: Emergency Facilities and Equipment

Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

Regulatory References: 10 CFR 50.47(b)(8); 44 CFR 350.5(a)(8);
10 CFR Part 50, Appendix E.IV.E

H.1	A TSC is established, using current Federal guidance, from which NPP conditions are evaluated and mitigative actions are developed.

DAEC site specific TSC details:

- The TSC is located in a facility adjacent to the DAEC Administration Building.
- The TSC has appropriate shielding and its own emergency ventilation system.
- The DAEC Control Room is designated as the backup TSC.

H.2	An OSC is established, using current Federal guidance, from which repair team activities are planned and teams are dispatched to implement actions.

DAEC site specific OSC details:

- The OSC is co-located with the TSC.
- If the OSC is unavailable, the backup OSC is located at the Palo Community Center.

H.3	An EOF is established, using current Federal guidance, as the primary base of emergency operations for the licensee during a radiological incident. The EOF facilitates the management and coordination of the overall emergency response, including the sharing of information with Federal, state, local, and tribal government authorities.

DAEC site specific EOF details:

The Emergency Operations Facility (EOF) is located at [TBD].

H.4	An alternative facility (or facilities) is established, using currently provided and/or endorsed guidance, which would be accessible even if the NPP site is under threat of or experiencing hostile action.

The alternate TSC is at the EOF. The alternate OSC is at the Palo Community Center.

H.5	A JIC is established, and its location is identified, to coordinate communication from Federal, state, local, and tribal government authorities and licensee personnel with the public and media.

The Joint Information Center (JIC) is located at [TBD].

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I: Accident Assessment

Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.

Regulatory References: 10 CFR 50.47(b)(9); 44 CFR 350.5(a)(9);
10 CFR Part 50, Appendix E. IV. A, B and E

I.4.a	The contingency arrangements to obtain and analyze highly radioactive samples from the reactor coolant system, containment atmosphere and sump, and spent fuel pool storage area are described.

Changes have been made to reflect the NRC approved License Amendment Request received from the NRC via letter dated 08/08/2003 (ML031750871). The NRC issued Amendment No. 252 that deletes TS Section 5.5.3, "Post Accident Sampling System (PASS)," and thereby eliminates the requirements to have and maintain the Post-Accident Sampling System at DAEC. The amendment also addresses related changes to TS 5.5.2, "Primary Coolant Sources Outside Containment."

Chemistry procedures describe post-accident contingency plans for obtaining highly radioactive Reactor Coolant, Containment Atmosphere, and Spent Fuel Pool samples.

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J: Protective Response

A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Evacuation time estimates have been developed by applicants and licensees. Licensees shall update the evacuation time estimates on a periodic basis. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.

Regulatory References: 10 CFR 50.47(b)(10); 44 CFR 350.5(a)(10);
10 CFR Part 50, Appendix E.IV.E and I

J.2	Provisions are made and coordinated with appropriate offsite entities for evacuation routes and transportation for onsite individuals to a suitable offsite location. Selection of location considers the potential for inclement weather, high traffic density, and potential radiological conditions. Alternate location(s) and route(s) are identified.

The South access road (Power Plant Road) and the North access road (McClintock Road) may be used to depart from the site, and evacuation from the 10-mile EPZ will be by way of evacuation routes identified in the ETE. (See Figure J.-1, DAEC Site Evacuation Routes.)

Evacuated site personnel may be required to assemble at the Palo Community Center, Palo, Iowa or the Benton County Emergency Worker Monitoring and Decontamination Station located in Vinton, Iowa depending on environmental conditions.

J.6	The basis and methodology are established for the development of PARs for the responsible OROs, including evacuation, sheltering, and, if appropriate, radioprotective drug use, for the plume exposure pathway EPZ. Current Federal guidance is used.

The DAEC site specific PAR basis is documented in EP-PDA-154, DAEC Protective Action Recommendation (PAR) Technical Basis Manual.

J.8	The latest ETEs are:

J.8.a	Incorporated either by reference or in their entirety into the emergency plan.

The DAEC site specific ETE report is documented in EP-PDA-153, DAEC Evacuation Time Estimate Study.

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**FIGURE J-1
SITE EVACUATION ROUTES**



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K: Radiological Exposure Control

Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.

Regulatory References: 10 CFR 50.47(b)(11), 10 CFR Part 50, Appendix E.IV.E

K.1	The radiation protection controls for emergency workers to be implemented during emergencies are described. These controls address the following aspects:

K.1.e	The capability to decontaminate emergency workers, equipment, and vehicles.

Facilities and supplies for decontaminating personnel are available at the onsite decontamination center and the TSC/OSC.

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L: Medical and Public Health Support

Arrangements are made for medical services for contaminated injured individuals.

Regulatory Reference: 10 CFR 50.47(b)(12); 10 CFR Part 50, Appendix E.IV.E

L.2	Arrangements for the medical treatment of contaminated injured onsite personnel and those onsite personnel who have received significant radiation exposures and/or significant uptakes of radioactive material are described. These arrangements include the following components:

L.2.b	Primary and backup offsite medical facilities.

The primary and backup offsite medical facilities to treat contaminated, injured personnel from DAEC are:

Primary - Mercy Medical Center located in Cedar Rapids.

Backup – Mercy One Waterloo Medical Center located in Waterloo.

These hospitals have agreed to accept and treat injured personnel. The medical procedures are designed to handle routine industrial injuries as well as situations involving radiation and/or contamination.

L.4	Each organization arranges for the transportation of contaminated, injured individuals and the means to control contamination while transporting victims of radiological incidents to medical support facilities and the decontamination of transport vehicle following use.

Hiawatha Ambulance Service is the primary provider for the transportation of contaminated, injured individuals. Area Ambulance Service may provide backup ambulance service to transport contaminated injured persons from DAEC. Each service has the means to control contamination while transporting victims.

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N: Exercises and Drills

Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.

Regulatory References: 10 CFR 50.47(b)(14); 44 CFR 350.5(a)(14);
10 CFR Part 50, Appendix E.IV.F

N.3.e	<u>10 CFR 50.155(b)(2) Strategies</u> Demonstration of the use of equipment, procedures, and strategies developed in compliance with 10 CFR 50.155(b)(2).

DAEC will conduct a mitigation of beyond design basis event (MBDBE) scenario in an exercise within an eight-year cycle.

The MBDBE scenario will be based on one of the site specific strategies used to mitigate spent fuel pool damage scenarios, or one of the 10 strategies for BWRs used to mitigate reactor accidents and maintain containment. The scenario will require demonstration of the ability to transition between procedures and select the strategy(ies) for preventing or mitigating fuel damage and limiting radiological releases.

N.4.g	<u>Post-Accident Sampling Drills</u> Post-accident sampling drills are conducted annually. These drills address capabilities including analysis of liquid and containment atmosphere samples with simulated elevated radiation levels. This criterion is not applicable if the NPP unit(s) does (do) not have licensing basis requirements for post-accident sampling.

Not applicable: DAEC has received NRC approval for the elimination of post-accident sample system (PASS) requirements from technical specifications. In accordance with their site-specific NRC safety evaluation, contingency plans have been developed for obtaining and analyzing highly radioactive samples; however, these contingency plans do not have to be carried out in emergency plan drills or exercises.

Refer to site annex element I.4.a for reference to the PASS elimination safety evaluation.

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P: Responsibility for the Planning Effort

Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.

Regulatory References: 10 CFR 50.47(b)(16); 10 CFR Part 50, Appendix E.IV.B and G

P.6	A listing of annexes, appendices, and supporting plans and their originating agency is included in the emergency plan.

The primary external emergency plans specific to the support of DAEC include the following:

- State of Iowa Radiological Emergency Response Plan
- Benton County Radiological Emergency Response Plan
- Linn County Radiological Emergency Response Plan

P.7	An appendix containing a listing by title of the procedures required to maintain and implement the emergency plan is included. The listing includes the section(s) of the emergency plan to be implemented by each procedure.

Table P.7-1 provides a listing of the DAEC site-specific procedures required to maintain and implement the emergency plan, and the section(s) of the emergency plan implemented by each procedure.

Table P.7-1: DAEC Emergency Plan Response and Administrative Procedures

Document ID	Document Title	Plan Sections Implemented
EP-PDA-151	DAEC EAL Technical Basis Document	D
EP-PDA-152	DAEC On-Shift Staffing Analysis	B
EP-PDA-153	DAEC Evacuation Time Estimate Study.	J
EP-PDA-154	Protective Action Recommendation (PAR) Technical Basis Manual	J
EP-PDA-155	DAEC Alert and Notification System Design Report	E

Enclosure 4

NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER

L-2026-008

LICENSE AMENDMENT REQUEST (TSCR-195)

EMERGENCY ACTION LEVEL TECHNICAL BASES

(126 pages follow)

	NUCLEAR FLEET PROGRAM DESCRIPTION NON-SAFETY RELATED INFORMATION USE		Program No. EP-PDA-151	
			Revision No. 0	
Title: DAEC EAL TECHNICAL BASIS DOCUMENT				
Responsible Department: REGULATORY AFFAIRS				
Special Considerations:				
Revision	Approved By	Approval Date	TYPE	
0			DATE	
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			DOCN	EP-PDA-151
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			STATUS	DRAFT
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1. BASIS FOR EMERGENCY ACTION LEVELS

1.1 OPERATING REACTORS

Title 10, Code of Federal Regulations (CFR), Energy, contains the U.S. Nuclear Regulatory Commission (NRC) regulations that apply to nuclear power facilities. Several of these regulations govern various aspects of an emergency classification scheme. A review of the relevant sections listed below will aid the reader in understanding the key terminology provided in Section 3.0 of this document.

- 10 CFR § 50.47(A)(1)(I)
- 10 CFR § 50.47(B)(4)
- 10 CFR § 50.54(Q)
- 10 CFR § 50.72(A)
- 10 CFR § 50, APPENDIX E, IV.B, ASSESSMENT ACTIONS
- 10 CFR § 50, APPENDIX E, IV.C, ACTIVATION OF EMERGENCY ORGANIZATION

The above regulations are supplemented by various regulatory guidance documents. Three documents of particular relevance to NEI 99-01 are:

NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants*, October 1980. [Refer to Appendix 1, *Emergency Action Level Guidelines for Nuclear Power Plants*]

NUREG-1022, *Event Reporting Guidelines 10 CFR § 50.72 and § 50.73*

Regulatory Guide 1.101, *Emergency Response Planning and Preparedness for Nuclear Power Reactors*

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1.2 INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

Selected guidance in NEI 99-01 is applicable to licensees electing to use their 10 CFR 50 emergency plan to fulfill the requirements of 10 CFR 72.32 for a stand-alone ISFSI. The emergency classification levels applicable to an ISFSI are consistent with the requirements of 10 CFR 50 and the guidance in NUREG 0654/FEMA-REP-1. The initiating conditions germane to a 10 CFR 72.32 emergency plan (as described in NUREG-1567) are subsumed within the classification scheme for a 10 CFR 50.47 emergency plan.

The generic ICs and EALs for an ISFSI are presented in Section 8, ISFSI ICs/EALs. IC E-HU1 covers the spectrum of credible natural and man-made events included within the scope of an ISFSI design. This IC is not applicable to installations or facilities that may process and/or repackage spent fuel (e.g., a Monitored Retrievable Storage Facility or an ISFSI at a spent fuel processing facility). In addition, appropriate aspects of IC HU1 and IC HA1 should also be included to address a HOSTILE ACTION directed against an ISFSI.

The analysis of potential onsite and offsite consequences of accidental releases associated with the operation of an ISFSI is contained in NUREG-1140, *A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees*. NUREG-1140 concluded that the postulated worst-case accident involving an ISFSI has insignificant consequences to public health and safety. This evaluation shows that the maximum offsite dose to a member of the public due to an accidental release of radioactive materials would not exceed 1 rem Effective Dose Equivalent.

Regarding the above information, the expectations for an offsite response to an Alert classified under a 10 CFR 72.32 emergency plan are generally consistent with those for a Notification of Unusual Event in a 10 CFR 50.47 emergency plan (e.g., to provide assistance if requested). Also, the licensee's Emergency Response Organization (ERO) required for 10 CFR 72.32 emergency plan is different than that prescribed for a 10 CFR 50.47 emergency plan (e.g., no emergency technical support function).

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1.3 NRC ORDER EA-12-051

The Fukushima Daiichi accident of March 11, 2012, was the result of a tsunami that exceeded the plant's design basis and flooded the site's emergency electrical power supplies and distribution systems. This caused an extended loss of power that severely compromised the key safety functions of core cooling and containment integrity, and ultimately led to core damage in three reactors. While the loss of power also impaired the spent fuel pool cooling function, sufficient water inventory was maintained in the pools to preclude fuel damage from the loss of cooling.

Following a review of the Fukushima Daiichi accident, the NRC concluded that several measures were necessary to ensure adequate protection of public health and safety under the provisions of the backfit rule, 10 CFR 50.109(a)(4)(ii). Among them was to provide each spent fuel pool with reliable level instrumentation to significantly enhance the ability of key decision-makers to allocate resources effectively following a beyond design basis event. To this end, the NRC issued Order EA-12-051, *Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation*, on March 12, 2012, to all US nuclear plants with an operating license, construction permit, or combined construction and operating license.

NRC Order EA-12-051 states, in part, "All licensees ... shall have a reliable indication of the water level in associated spent fuel storage pools capable of supporting identification of the following pool water level conditions by trained personnel: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred." To this end, all licensees must provide:

- A primary and back-up level instrument that will monitor water level from the normal level to the top of the used fuel rack in the pool;
- A display in an area accessible following a severe event; and
- Independent electrical power to each instrument channel and provide an alternate remote power connection capability.

NEI 12-02, *Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation,"* provides guidance for complying with NRC Order EA-12-051.

NEI 99-01, Revision 6, includes three EALs that reflect the availability of the enhanced spent fuel pool level instrumentation associated with NRC Order EA-12-051. These EALs are included within ICs RA2, RS2, and RG2.

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2. KEY TERMINOLOGY USED IN DAEC EAL SCHEME

There are several key terms that appear throughout the EAL methodology. These terms are introduced in this section to support understanding of subsequent material. As an aid to the reader, the following table is provided as an overview to illustrate the relationship of the terms to each other.

Emergency Classification Level			
Unusual Event	Alert	SAE	GE
↓	↓	↓	↓
Initiating Condition	Initiating Condition	Initiating Condition	Initiating Condition
↓	↓	↓	↓
Emergency Action Level (1) • Operating Mode Applicability • Notes • Basis	Emergency Action Level (1) • Operating Mode Applicability • Notes • Basis	Emergency Action Level (1) • Operating Mode Applicability • Notes • Basis	Emergency Action Level (1) • Operating Mode Applicability • Notes • Basis
(1) - When making an emergency classification, the Emergency Director must consider all information having a bearing on the proper assessment of an Initiating Condition. This includes the Emergency Action Level (EAL) plus the associated Operating Mode Applicability, Notes and the informing Basis information. In the Recognition Category F matrices, EALs are referred to as Fission Product Barrier Thresholds; the thresholds serve the same function as an EAL.			

2.1 EMERGENCY CLASSIFICATION LEVEL (ECL)

One of a set of names or titles established by the US Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The emergency classification levels, in ascending order of severity, are:

- Notification of Unusual Event (NOUE)
- Alert
- Site Area Emergency (SAE)
- General Emergency (GE)

2.1.1 NOTIFICATION OF UNUSUAL EVENT (NOUE)

Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of SAFETY SYSTEMS occurs.

Purpose: The purpose of this classification is to ensure that the first step in future response has been carried out, to bring the operations staff to a state of readiness, and to provide systematic handling of unusual event information and decision-making.

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2.1.2 ALERT

Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels.

Purpose: The purpose of this classification is to ensure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required, and provide offsite authorities current information on plant status and parameters.

2.1.3 SITE AREA EMERGENCY

Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

Purpose: The purpose of the Site Area Emergency declaration is to ensure that emergency response centers are staffed, to assure that monitoring teams are dispatched, to assure that personnel required for evacuation of near-site areas are at duty stations if the situation becomes more serious, to provide consultation with offsite authorities, and to provide updates to the public through government authorities.

2.1.4 GENERAL EMERGENCY (GE)

Events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Purpose: The purpose of the General Emergency declaration is to initiate predetermined protective actions for the public, to provide continuous assessment of information from the licensee and offsite organizational measurements, to initiate additional measures as indicated by actual or potential releases, to provide consultation with offsite authorities, and to provide updates for the public through government authorities.

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2.2 INITIATING CONDITION (IC)

An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences.

Discussion: An IC describes an event or condition, the severity or consequences of which meets the definition of an emergency classification level. An IC can be expressed as a continuous, measurable parameter (e.g., RCS leakage), an event (e.g., an earthquake) or the status of one or more fission product barriers (e.g., loss of the RCS barrier).

Appendix 1 of NUREG-0654 does not contain example Emergency Action Levels (EALs) for each ECL, but rather Initiating Conditions (i.e., plant conditions that indicate that a radiological emergency, or events that could lead to a radiological emergency, has occurred). NUREG-0654 states that the Initiating Conditions form the basis for establishment by a licensee of the specific plant instrumentation readings (as applicable) which, if exceeded, would initiate the emergency classification. Thus, it is the specific instrument readings that would be the EALs.

2.3 EMERGENCY ACTION LEVEL (EAL)

A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

Discussion: EAL statements may utilize a variety of criteria including instrument readings and status indications; observable events; results of calculations and analyses; entry into particular procedures; and the occurrence of natural phenomena.

2.4 FISSION PRODUCT BARRIER THRESHOLD

A pre-determined, site-specific, observable threshold indicating the loss or potential loss of a fission product barrier.

Discussion: Fission product barrier thresholds represent threats to the defense in depth design concept that precludes the release of radioactive fission products to the environment. This concept relies on multiple physical barriers, any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The primary fission product barriers are:

- Fuel Clad
- Reactor Coolant System (RCS)
- Containment

Upon determination that one or more fission product barrier thresholds have been exceeded, the combination of barrier loss and/or potential loss thresholds is compared to the fission product barrier IC/EAL criteria to determine the appropriate ECL. In some accident sequences, the ICs and EALs presented in the Abnormal Radiation Levels/ Radiological Effluent (R) Recognition Category will be exceeded at the same time, or shortly after, the loss of one or more fission product barriers. This redundancy is intentional as the former ICs address radioactivity releases that result in certain offsite doses from whatever cause, including events that might not be fully encompassed by fission product barriers (e.g., spent fuel pool accidents, design containment leakage following a LOCA, etc.).

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3. DESIGN OF THE DAEC EMERGENCY CLASSIFICATION SCHEME

3.1 ASSIGNMENT OF EMERGENCY CLASSIFICATION LEVELS (ECLs)

An effective emergency classification scheme must incorporate a realistic and accurate assessment of risk, both to plant workers and the public. There are obvious health and safety risks in underestimating the potential or actual threat from an event or condition; however, there are also risks in overestimating the threat as well (e.g., harm that may occur during an evacuation). The DAEC emergency classification scheme attempts to strike an appropriate balance between reasonably anticipated event or condition consequences, potential accident trajectories, and risk avoidance or minimization.

There are a range of “non-emergency events” reported to the US Nuclear Regulatory Commission (NRC) staff in accordance with the requirements of 10 CFR 50.72. Guidance concerning these reporting requirements, and example events, are provided in NUREG-1022. Certain events reportable under the provisions of 10 CFR 50.72 may also require the declaration of an emergency.

In order to align each Initiating Conditions (IC) with the appropriate ECL, it was necessary to determine the attributes of each ECL. The goal of this process is to answer the question, “What events or conditions should be placed under each ECL?” The following sources provided information and context for the development of ECL attributes.

- Assessments of the effects and consequences of different types of events and conditions
- DAEC abnormal and emergency operating procedure setpoints and transition criteria
- DAEC Technical Specification limits and controls
- Offsite Dose Assessment Manual (ODAM) radiological release limits
- Review of selected Updated Final Safety Analysis Report (UFSAR) accident analyses
- Environmental Protection Agency (EPA) Protective Action Guidelines (PAGs)
- NUREG 0654, Appendix 1, *Emergency Action Level Guidelines for Nuclear Power Plants*
- Industry Operating Experience
- Input from DAEC subject matter experts

The following ECL attributes are used to aid in the development of ICs and Emergency Action Levels (EALs). The attributes may be useful in briefing and training settings (e.g., helping an Emergency Director understand why a particular condition is classified as an Alert).

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3.1.1 NOTIFICATION OF UNUSUAL EVENT (NOUE)

A Notification of Unusual Event, as defined in Section 2.1.1, includes but is not limited to an event or condition that involves:

- (A) A precursor to a more significant event or condition.
- (B) A minor loss of control of radioactive materials or the ability to control radiation levels within the plant.
- (C) A consequence otherwise significant enough to warrant notification to local, State and Federal authorities.

3.1.2 ALERT

An Alert, as defined in Section 2.1.2, includes but is not limited to an event or condition that involves:

- (A) A loss or potential loss of either the fuel clad or Reactor Coolant System (RCS) fission product barrier.
- (B) An event or condition that significantly reduces the margin to a loss or potential loss of the fuel clad or RCS fission product barrier.
- (C) A significant loss of control of radioactive materials resulting in an inability to control radiation levels within the plant, or a release of radioactive materials to the environment that could result in doses greater than 1% of an EPA PAG at or beyond the site boundary.
- (D) A HOSTILE ACTION occurring within the OWNER CONTROLLED AREA, including those directed at an Independent Spent Fuel Storage Installation (ISFSI).

3.1.3 SITE AREA EMERGENCY (SAE)

A Site Area Emergency, as defined in Section 2.1.3, includes but is not limited to an event or condition that involves:

- (A) A loss or potential loss of any two fission product barriers - fuel clad, RCS and/or containment.
- (B) A precursor event or condition that may lead to the loss or potential loss of multiple fission product barriers within a relatively short period of time. Precursor events and conditions of this type include those that challenge the monitoring and/or control of multiple SAFETY SYSTEMS.
- (C) A release of radioactive materials to the environment that could result in doses greater than 10% of an EPA PAG at or beyond the site boundary.
- (D) A HOSTILE ACTION occurring within the plant PROTECTED AREA.

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3.1.4 GENERAL EMERGENCY (GE)

A General Emergency, as defined in Section 2.1.4, includes but is not limited to an event or condition that involves:

- (A) Loss of any two fission product barriers AND loss or potential loss of the third barrier - fuel clad, RCS and/or containment.
- (B) A precursor event or condition that, unmitigated, may lead to a loss of all three fission product barriers. Precursor events and conditions of this type include those that lead directly to core damage and loss of containment integrity.
- (C) A release of radioactive materials to the environment that could result in doses greater than an EPA PAG at or beyond the site boundary.
- (D) A HOSTILE ACTION resulting in the loss of key safety functions (reactivity control, core cooling/RPV water level or RCS heat removal) or damage to spent fuel.

3.1.5 RISK-INFORMED INSIGHTS

Emergency preparedness is a defense-in-depth measure that is independent of the assessed risk from any particular accident sequence; however, the development of an effective emergency classification scheme can benefit from a review of risk-based assessment results. To that end, the development and assignment of certain ICs and EALs also considered insights from several site-specific probabilistic safety assessments. Some generic insights from this review included:

1. Accident sequences involving a prolonged loss of all AC power are significant contributors to core damage frequency at many Boiling Water Reactors (BWRs). For this reason, a loss of all AC power for greater than 15 minutes, with the plant at or above Hot Shutdown, was assigned an ECL of Site Area Emergency. Precursor events to a loss of all AC power were also included as an Unusual Event and an Alert.

A station blackout coping analyses performed in response to 10 CFR 50.63 and Regulatory Guide 1.155, *Station Blackout*, may be used to determine a time-based criterion to demarcate between a Site Area Emergency and a General Emergency. The time dimension is critical to a properly anticipatory emergency declaration since the goal is to maximize the time available for State and local officials to develop and implement offsite protective actions.

2. For severe core damage events, uncertainties exist in phenomena important to accident progressions leading to containment failure. Because of these uncertainties, predicting the status of containment integrity may be difficult under severe accident conditions. This is why maintaining containment integrity alone following sequences leading to severe core damage is an insufficient basis for not escalating to a General Emergency.
3. PSAs indicated that leading contributors to latent fatalities were sequences involving a containment bypass, a large Loss of Coolant Accident (LOCA) with early containment failure, a Station Blackout lasting longer than the DAEC coping period, and a reactor coolant pump seal failure. The generic EAL methodology needs to be sufficiently rigorous to address these sequences in a timely fashion.

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3.2 TYPES OF INITIATING CONDITIONS AND EMERGENCY ACTION LEVELS

The NEI 99-01 methodology makes use of symptom-based, barrier-based and event-based ICs and EALs. Each type is discussed below.

Symptom-based ICs and EALs are parameters or conditions that are measurable over some range using plant instrumentation (e.g., core temperature, reactor coolant level, radiological effluent, etc.). When one or more of these parameters or conditions are off-normal, reactor operators will implement procedures to identify the probable cause(s) and take corrective action.

Fission product barrier-based ICs and EALs are the subset of symptom-based EALs that refer specifically to the level of challenge to the principal barriers against the release of radioactive material from the reactor core to the environment. These barriers are the fuel cladding, the reactor coolant system pressure boundary, and the containment. The barrier-based ICs and EALs consider the level of challenge to each individual barrier - potentially lost and lost - and the total number of barriers under challenge.

Event-based ICs and EALs define a variety of specific occurrences that have potential or actual safety significance. These include the failure of an automatic reactor scram to shut down the reactor, natural phenomena (e.g., an earthquake), or man-made hazards such as a toxic gas release.

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3.3 DAEC-SPECIFIC ORGANIZATION AND PRESENTATION OF GENERIC INFORMATION

The scheme's generic information is organized by Recognition Category in the following order.

- R - Abnormal Radiation Levels / Radiological Effluent – Section 6
- C - Cold Shutdown / Refueling System Malfunction – Section 7
- E - Independent Spent Fuel Storage Installation (ISFSI) – Section 8
- F - Fission Product Barrier – Section 9
- H - Hazards and Other Conditions Affecting Plant Safety – Section 10
- S - System Malfunction – Section 11

Each Recognition Category section contains a matrix showing the ICs and their associated emergency classification levels.

The following information and guidance is provided for each IC:

ECL – the assigned emergency classification level for the IC.

Initiating Condition – provides a summary description of the emergency event or condition.

Operating Mode Applicability – Lists the modes during which the IC and associated EAL(s) are applicable (i.e., are to be used to classify events or conditions).

Emergency Action Level(s) – Provides examples of reports and indications that are considered to meet the intent of the IC.

For Recognition Category F, the fission product barrier thresholds are presented in tables and arranged by fission product barrier and the degree of barrier challenge (i.e., potential loss or loss). This presentation method shows the synergism among the thresholds, and supports accurate assessments.

Basis – Provides background information that explains the intent and application of the IC and EALs. In some cases, the basis also includes relevant source information and references.

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3.4 IC AND EAL MODE APPLICABILITY

The DAEC emergency classification scheme was developed recognizing that the applicability of ICs and EALs will vary with plant mode. For example, some symptom-based ICs and EALs can be assessed only during the power operations, startup, or hot standby/shutdown modes of operation when all fission product barriers are in place, and plant instrumentation and SAFETY SYSTEMS are fully operational. In the cold shutdown and refueling modes, different symptom-based ICs and EALs will come into play to reflect the opening of systems for routine maintenance, the unavailability of some SAFETY SYSTEM components and the use of alternate instrumentation.

The following table shows which Recognition Categories are applicable in each plant mode. The ICs and EALs for a given Recognition Category are applicable in the indicated modes.

MODE APPLICABILITY MATRIX

Mode	Recognition Category					
	R	C	E	F	H	S
Power Operations	X		X	X	X	X
Startup	X		X	X	X	X
Hot Shutdown	X		X	X	X	X
Cold Shutdown	X	X	X		X	
Refueling	X	X	X		X	
Defueled	X	X	X		X	

DAEC Operating Modes

Power Operations (1):	Mode Switch in Run
Startup (2):	Mode Switch in Startup/Hot Standby or Refuel (with all vessel head closure bolts fully tensioned)
Hot Shutdown (3):	Mode Switch in Shutdown, Average Reactor Coolant Temperature >212 °F (with all vessel head closure bolts fully tensioned)
Cold Shutdown (4):	Mode Switch in Shutdown, Average Reactor Coolant Temperature ≤ 212 °F (with all vessel head closure bolts fully tensioned)
Refueling (5):	Mode Switch in Shutdown or Refuel (with one or more vessel head closure bolts less than fully tensioned)

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4. DEVELOPMENT OF THE DAEC EMERGENCY CLASSIFICATION SCHEME

4.1 GENERAL DEVELOPMENT PROCESS

The DAEC ICs and EALs were developed to be unambiguous and readily assessable.

The IC is the fundamental event or condition requiring a declaration. The EAL(s) is the pre-determined threshold that defines when the IC is met.

Useful acronyms and abbreviations associated with the DAEC emergency classification scheme are presented in Appendix A, Acronyms and Abbreviations.

Many words or terms used in the DAEC emergency classification scheme have scheme-specific definitions. These words and terms are identified by being set in all capital letters (i.e., ALL CAPS). The definitions are presented in Appendix B, Definitions.

4.2 CRITICAL CHARACTERISTICS

When crafting the scheme, DAEC ensured that certain critical characteristics have been met. These critical characteristics are listed below.

- The ICs, EALs, Operating Mode Applicability criteria, Notes and Basis information are consistent with industry guidance; while the actual wording may be different, the classification intent is maintained. With respect to Recognition Category F, DAEC includes a user-aid to facilitate timely and accurate classification of fission product barrier losses and/or potential losses. The user-aid logic is consistent with the classification logic presented in Section 9.
- The ICs, EALs, Operating Mode Applicability criteria, Notes and Basis information are technically complete and accurate (i.e., they contain the information necessary to make a correct classification).
- EAL statements use objective criteria and observable values.
- ICs, EALs, Operating Mode Applicability and Note statements and formatting consider human factors and are user-friendly.
- The scheme facilitates upgrading and downgrading of the emergency classification where necessary.
- The scheme facilitates classification of multiple concurrent events or conditions.

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4.3 INSTRUMENTATION USED FOR EALs

DAEC incorporated instrumentation that is reliable and routinely maintained in accordance with site programs and procedures. Alarms referenced in EAL statements are those that are the most operationally significant for the described event or condition.

EAL setpoints are within the calibrated range of the referenced instrumentation and consider any automatic instrumentation functions that may impact accurate EAL assessment. In addition, EAL setpoint values do not use terms such as “off-scale low” or “off-scale high” since that type of reading may not be readily differentiated from an instrument failure.

4.4 EAL/THRESHOLD REFERENCES TO AOP AND EOP SETPOINTS/CRITERIA

Some of the criteria/values used in several EALs and fission product barrier thresholds are drawn from DAEC AOPs and EOPs. This approach is intended to maintain good alignment between operational diagnoses and emergency classification assessments. Appropriate administrative controls are in place to ensure that a subsequent change to an AOP or EOP is screened to determine if an evaluation pursuant to 10 CFR 50.54(q) is required.

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5. GUIDANCE ON USING THE DAEC EALs

5.1 GENERAL CONSIDERATIONS

When making an emergency classification, the Emergency Director must consider all information having a bearing on the proper assessment of an Initiating Condition (IC). This includes the Emergency Action Level (EAL) plus the associated Operating Mode Applicability, Notes and the informing Basis information. In the Recognition Category F matrices, EALs are referred to as Fission Product Barrier Thresholds; the thresholds serve the same function as an EAL.

NRC regulations require the licensee to establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and to promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level. The NRC staff has provided guidance on implementing this requirement in NSIR/DPR-ISG-01, Interim Staff Guidance, *Emergency Planning for Nuclear Power Plants*.

All emergency classification assessments should be based upon valid indications, reports or conditions. A valid indication, report, or condition, is one that has been verified through appropriate means such that there is no doubt regarding the indicator's operability, the condition's existence, or the report's accuracy. For example, validation could be accomplished through an instrument channel check, response on related or redundant indicators, or direct observation by plant personnel. The validation of indications should be completed in a manner that supports timely emergency declaration.

For ICs and EALs that have a stipulated time duration (e.g., 15 minutes, 30 minutes, etc.), the Emergency Director should not wait until the applicable time has elapsed but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time. If an ongoing radiological release is detected and the release start time is unknown, it should be assumed that the release duration specified in the IC/EAL has been exceeded, absent data to the contrary.

A planned work activity that results in an expected event or condition which meets or exceeds an EAL does not warrant an emergency declaration provided that 1) the activity proceeds as planned and 2) the plant remains within the limits imposed by the operating license. Such activities include planned work to test, manipulate, repair, maintain or modify a system or component. In these cases, the controls associated with the planning, preparation and execution of the work will ensure that compliance is maintained with all aspects of the operating license provided that the activity proceeds and concludes as expected. Events or conditions of this type may be subject to the reporting requirements of 10 CFR 50.72.

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The assessment of some EALs is based on the results of analyses that are necessary to ascertain whether a specific EAL threshold has been exceeded (e.g., dose assessments, chemistry sampling, RCS leak rate calculation, etc.); the EAL and/or the associated basis discussion will identify the necessary analysis. In these cases, the 15-minute declaration period starts with the availability of the analysis results that show the threshold to be exceeded (i.e., this is the time that the EAL information is first available). The NRC expects licensees to establish the capability to initiate and complete EAL-related analyses within a reasonable period of time (e.g., maintain the necessary expertise on-shift).

While the EALs have been developed to address a full spectrum of possible events and conditions which may warrant emergency classification, a provision for classification based on operator/management experience and judgment is still necessary. This scheme provides the Emergency Director with the ability to classify events and conditions based upon judgment using EALs that are consistent with the Emergency Classification Level (ECL) definitions (refer to Category H). The Emergency Director will need to determine if the effects or consequences of the event or condition reasonably meet or exceed a particular ECL definition. A similar provision is incorporated into the Fission Product Barrier Tables; judgment may be used to determine the status of a fission product barrier.

5.2 CLASSIFICATION METHODOLOGY

To make an emergency classification, the user will compare an event or condition (i.e., the relevant plant indications and reports) to an EAL(s) and determine if the EAL has been met or exceeded. The evaluation of an EAL(s) must be consistent with the related Operating Mode Applicability and Notes. If an EAL has been met or exceeded, then the IC is considered met and the associated ECL is declared in accordance with plant procedures.

When assessing an EAL that specifies a time duration for the off-normal condition, the “clock” for the EAL time duration runs concurrently with the emergency classification process “clock.” For a full discussion of this timing requirement, refer to NSIR/DPR-ISG-01.

5.3 CLASSIFICATION OF MULTIPLE EVENTS AND CONDITIONS

When multiple emergency events or conditions are present, the user will identify all met or exceeded EALs. The highest applicable ECL identified during this review is declared. Additionally, there is no “additive” effect from multiple EALs meeting the same ECL. For example:

If two Alert EALs are met, an Alert should be declared.

Related guidance concerning classification of rapidly escalating events or conditions is provided in Regulatory Issue Summary (RIS) 2007-02, *Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events*.

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5.4 CONSIDERATION OF MODE CHANGES DURING CLASSIFICATION

The mode in effect at the time that an event or condition occurred, and prior to any plant or operator response, is the mode that determines whether or not an IC is applicable. If an event or condition occurs, and results in a mode change before the emergency is declared, the emergency classification level is still based on the mode that existed at the time that the event or condition was initiated (and not when it was declared). Once a different mode is reached, any new event or condition, not related to the original event or condition, requiring emergency classification should be evaluated against the ICs and EALs applicable to the operating mode at the time of the new event or condition.

For events that occur in Cold Shutdown or Refueling, escalation is via EALs that are applicable in the Cold Shutdown or Refueling modes, even if Hot Shutdown (or a higher mode) is entered during the subsequent plant response. In particular, the fission product barrier EALs are applicable only to events that initiate in the Hot Shutdown mode or higher.

5.5 CLASSIFICATION OF IMMINENT CONDITIONS

Although EALs provide specific thresholds, the Emergency Director must remain alert to events or conditions that could lead to meeting or exceeding an EAL within a relatively short period of time (i.e., a change in the ECL is IMMINENT). If, in the judgment of the Emergency Director, meeting an EAL is IMMINENT, the emergency classification should be made as if the EAL has been met. While applicable to all emergency classification levels, this approach is particularly important at the higher emergency classification levels since it provides additional time for implementation of protective measures.

5.6 EMERGENCY CLASSIFICATION LEVEL UPGRADING AND DOWNGRADING

An ECL may be downgraded when the event or condition that meets the highest IC and EAL no longer exist, and other site-specific downgrading requirements are met. If downgrading the ECL is deemed appropriate, the new ECL would then be based on a lower applicable IC(s) and EAL(s). The ECL may also simply be terminated.

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The following approach to downgrading or terminating an ECL is recommended.

ECL	Action When Condition No Longer Exists
Unusual Event	Terminate the emergency in accordance with plant procedures.
Alert	Downgrade or terminate the emergency in accordance with plant procedures.
Site Area Emergency with no long-term plant damage	Downgrade or terminate the emergency in accordance with plant procedures.
Site Area Emergency with long-term plant damage	Terminate the emergency and enter recovery in accordance with plant procedures.
General Emergency	Terminate the emergency and enter recovery in accordance with plant procedures.

As noted above, guidance concerning classification of rapidly escalating events or conditions is provided in RIS 2007-02.

5.7 CLASSIFICATION OF SHORT-LIVED EVENTS

As discussed in Section 3.2, event-based ICs and EALs define a variety of specific occurrences that have potential or actual safety significance. By their nature, some of these events may be short-lived and, thus, over before the emergency classification assessment can be completed. If an event occurs that meets or exceeds an EAL, the associated ECL must be declared regardless of its continued presence at the time of declaration. Examples of such events include a failure of the reactor protection system to automatically scram the reactor followed by a successful manual scram or an earthquake.

5.8 CLASSIFICATION OF TRANSIENT CONDITIONS

Many of the ICs and/or EALs contained in this document employ time-based criteria. These criteria will require that the IC/EAL conditions be present for a defined period of time before an emergency declaration is warranted. In cases where no time-based criterion is specified, it is recognized that some transient conditions may cause an EAL to be met for a brief period of time (e.g., a few seconds to a few minutes). The following guidance should be applied to the classification of these conditions.

EAL momentarily met during expected plant response - In instances where an EAL is briefly met during an expected (normal) plant response, an emergency declaration is not warranted provided that associated systems and components are operating as expected, and operator actions are performed in accordance with procedures.

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EAL momentarily met but the condition is corrected prior to an emergency declaration – If an operator takes prompt manual action to address a condition, and the action is successful in correcting the condition prior to the emergency declaration, then the applicable EAL is not considered met and the associated emergency declaration is not required. For illustrative purposes, consider the following example.

An ATWS occurs and the auxiliary feedwater system fails to automatically start. Steam generator levels rapidly decrease and the plant enters an inadequate RCS heat removal condition (a potential loss of both the fuel clad and RCS barriers). If an operator manually starts the auxiliary feedwater system in accordance with an EOP step and clears the inadequate RCS heat removal condition prior to an emergency declaration, then the classification should be based on the ATWS only.

It is important to stress that the 15-minute emergency classification assessment period is not a “grace period” during which a classification may be delayed to allow the performance of a corrective action that would obviate the need to classify the event; emergency classification assessments must be deliberate and timely, with no undue delays. The provision discussed above addresses only those rapidly evolving situations where an operator is able to take a successful corrective action prior to the Emergency Director completing the review and steps necessary to make the emergency declaration. This provision is included to ensure that any public protective actions resulting from the emergency classification are truly warranted by the plant conditions.

5.9 AFTER-THE-FACT DISCOVERY OF AN EMERGENCY EVENT OR CONDITION

In some cases, an EAL may be met but the emergency classification was not made at the time of the event or condition. This situation can occur when personnel discover that an event or condition existed which met an EAL, but no emergency was declared, and the event or condition no longer exists at the time of discovery. This may be due to the event or condition not being recognized at the time or an error that was made in the emergency classification process.

In these cases, no emergency declaration is warranted; however, the guidance contained in NUREG-1022 is applicable. Specifically, the event should be reported to the NRC in accordance with 10 CFR 50.72 within one hour of the discovery of the undeclared event or condition. The licensee should also notify appropriate State and local agencies in accordance with the agreed upon arrangements.

5.10 RETRACTION OF AN EMERGENCY DECLARATION

Guidance on the retraction of an emergency declaration reported to the NRC is discussed in NUREG-1022.

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6. ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENT ICs/EALs

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ECL: Notification of Unusual Event

Initiating Condition: Release of gaseous or liquid radioactivity greater than 2 times the ODAM limits for 60 minutes or longer.

Operating Mode Applicability: All

Emergency Action Levels:

Notes:

- The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.
- If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.
- If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

RU1.1 Reading on **ANY** Table R-1 effluent radiation monitor greater than column "NOUE" for 60 minutes or longer:

Table R-1 - Effluent Monitor Classification Thresholds					
	Monitor	GE	SAE	Alert	NOUE
Gaseous	Reactor Building ventilation rad monitor (Kaman 3/4, 5/6, 7/8)	1.1E+00 uci/cc	1.1E-01 uci/cc	1.1E-02 uci/cc	8.0E-04 uci/cc
	Turbine Building ventilation rad monitor (Kaman 1/2)	1.4E+00 uci/cc	1.4E-01 uci/cc	1.4E-02 uci/cc	8.0E-04 uci/cc
	Offgas Stack rad monitor (Kaman 9/10)	4.5E+03 uci/cc	4.5E+02 uci/cc	4.5E+01 uci/cc	2.0E-01 uci/cc
	LLRPSF rad monitor (Kaman 12)	---	1.4E-01 uci/cc	1.4E-02 uci/cc	1.2E-03 uci/cc
Liquid	GSW rad monitor (RIS-4767)	---	---	1.7E+04 cps	1.5E+03 cps
	RHRWS & ESW rad monitor (RM-1997)	---	---	1.2E+04 cps	8.4E+02 cps
	RHRWS & ESW Rupture Disc rad monitor (RM-4268)	---	---	1.8E+04 cps	1.0E+03 cps

RU1.2 Reading on **ANY** effluent radiation monitor greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.

RU1.3 Sample analysis for a gaseous or liquid release indicates a concentration or release rate greater than 2 times the ODAM limits for 60 minutes or longer.

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Definitions:

None

Basis:

This IC addresses a potential decrease in the level of safety of the plant as indicated by a low-level radiological release that exceeds regulatory commitments for an extended period of time (e.g., an uncontrolled release). It includes any gaseous or liquid radiological release, monitored or unmonitored, including those for which a radioactivity discharge permit is normally prepared.

DAEC incorporates design features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, and to control and monitor intentional releases. The occurrence of an extended, uncontrolled radioactive release to the environment is indicative of degradation in these features and/or controls.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

Releases should not be prorated or averaged. For example, a release exceeding 4 times release limits for 30 minutes does not meet the EAL.

EAL RU1.1 - This EAL addresses normally occurring continuous radioactivity releases from monitored gaseous or liquid effluent pathways.

EAL RU1.2 - This EAL addresses radioactivity releases that cause effluent radiation monitor readings to exceed 2 times the limit established by a radioactivity discharge permit. This EAL will typically be associated with planned batch releases from non-continuous release pathways (e.g., radwaste, waste gas).

EAL RU1.3 - This EAL addresses uncontrolled gaseous or liquid releases that are detected by sample analysis or environmental surveys, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.).

Escalation of the emergency classification level would be via IC RA1.

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ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED loss of water level above irradiated fuel.

Operating Mode Applicability: All

Emergency Action Levels:

- RU2.1 a. UNPLANNED water level drop in the REFUELING PATHWAY as indicated by **ANY** of the following:
- Report to control room (visual observation)
 - Fuel pool level indication (LI-3413) less than 36 feet and lowering
 - WR GEMAC Floodup indication (LI-4541) coming on scale
- AND**
- b. UNPLANNED rise in area radiation levels as indicated by **ANY** of the following radiation monitors.
- Spent Fuel Pool Area, RI-9178
 - North Refuel Floor, RI-9163
 - New Fuel Vault Area, RI-9153
 - South Refuel Floor, RI-9164
 - NW Drywell Area Hi Range Rad Monitor, RIM-9184A
 - South Drywell Area Hi Range Rad Monitor, RIM-9184B

Definitions:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

REFUELING PATHWAY: The reactor refueling cavity, spent fuel pool and fuel transfer canal.

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Basis:

This IC addresses a decrease in water level above irradiated fuel sufficient to cause elevated radiation levels. This condition could be a precursor to a more serious event and is also indicative of a minor loss in the ability to control radiation levels within the plant. It is therefore a potential degradation in the level of safety of the plant.

A water level decrease will be primarily determined by indications from available level instrumentation. Other sources of level indications may include reports from plant personnel (e.g., from a refueling crew) or video camera observations. A significant drop in the water level may also cause an increase in the radiation levels of adjacent areas that can be detected by monitors in those locations.

The effects of planned evolutions should be considered. For example, a refueling bridge area radiation monitor reading may increase due to planned evolutions such as lifting of the reactor vessel head or movement of a fuel assembly. Note that this EAL is applicable only in cases where the elevated reading is due to an UNPLANNED loss of water level.

During preparation for reactor cavity flood up prior to entry into refuel mode, reactor vessel level instrument LI-4541 (WR GEMAC, FLOODUP) on control room panel 1C04 is placed in service by I&C personnel connecting a compensating air signal after the reference leg is disconnected from the reactor head. Normal refuel water level is above the top of the span of this flood up level indicator. A valid indication (e.g., not due to loss of compensating air signal or other instrument channel failure) of reactor cavity level coming on span for this instrument is used at DAEC as an indicator of uncontrolled reactor cavity level decrease.

DAEC Technical Specifications require a minimum of 36 feet of water in the spent fuel pool when moving irradiated fuel into the secondary containment. During refueling, the gates between the reactor cavity and the refueling cavity are removed and the spent fuel pool level indicator LI- 3413 is used to monitor refueling water level. Procedures require that a normal refueling water level be maintained at 37 feet 5 inches. A low level alarm actuates when spent fuel pool level drops below 37 feet 1 inch. Symptoms of inventory loss at DAEC include visual observation of decreasing water levels in reactor cavity or spent fuel storage pool, Reactor Building (RB) fuel storage pool radiation monitor or refueling area radiation monitor alarms, observation of a decreasing trend on the spent fuel pool water level indicator, and actuation of the spent fuel pool low water level alarm. To eliminate minor level perturbations from concern, DAEC uses LI-3413 indicated water level below 36 feet and lowering.

Increased radiation levels can be detected by the local area radiation monitors surrounding the spent fuel pool and refueling cavity areas. Applicable area radiation monitors are those listed in AOP 981.

A drop in water level above irradiated fuel within the reactor vessel may be classified in accordance Recognition Category C during the Cold Shutdown and Refueling modes.

Escalation of the emergency classification level would be via IC RA2.

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ECL: Alert

Initiating Condition: Release of gaseous or liquid radioactivity resulting in offsite dose greater than 10 mrem TEDE or 50 mrem thyroid CDE.

Operating Mode Applicability: All

Emergency Action Levels:

Notes:

- The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.
- If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.
- If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.
- The pre-calculated effluent monitor values presented in Table R-1 should only be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.

RA1.1 Reading on **ANY** Table R-1 effluent radiation monitor greater than column "Alert" for 15 minutes or longer:

Table R-1 - Effluent Monitor Classification Thresholds					
	Monitor	GE	SAE	Alert	NOUE
Gaseous	Reactor Building ventilation rad monitor (Kaman 3/4, 5/6, 7/8)	1.1E+00 uci/cc	1.1E-01 uci/cc	1.1E-02 uci/cc	8.0E-04 uci/cc
	Turbine Building ventilation rad monitor (Kaman 1/2)	1.4E+00 uci/cc	1.4E-01 uci/cc	1.4E-02 uci/cc	8.0E-04 uci/cc
	Offgas Stack rad monitor (Kaman 9/10)	4.5E+03 uci/cc	4.5E+02 uci/cc	4.5E+01 uci/cc	2.0E-01 uci/cc
	LLRPSF rad monitor (Kaman 12)	---	1.4E-01 uci/cc	1.4E-02 uci/cc	1.2E-03 uci/cc
Liquid	GSW rad monitor (RIS-4767)	---	---	1.7E+04 cps	1.5E+03 cps
	RHRSW & ESW rad monitor (RM-1997)	---	---	1.2E+04 cps	8.4E+02 cps
	RHRSW & ESW Rupture Disc rad monitor (RM-4268)	---	---	1.8E+04 cps	1.0E+03 cps

RA1.2 Dose assessment using actual meteorology indicates doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond SITE BOUNDARY. [Preferred]

RA1.3 Analysis of a liquid effluent sample indicates a concentration or release rate that would result in doses greater than 10 mrem TEDE or 50 mrem thyroid CDE at or beyond the SITE BOUNDARY for one hour of exposure.

RA1.4 Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:

- Closed window dose rates greater than 10 mR/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 50 mrem for one hour of inhalation.

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Definitions:

SITE BOUNDARY: That line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee.

Basis:

This IC addresses a release of gaseous or liquid radioactivity that results in projected or actual offsite doses greater than or equal to 1% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude represent an actual or potential substantial degradation of the level of safety of the plant as indicated by a radiological release that significantly exceeds regulatory limits (e.g., a significant uncontrolled release).

This IC is modified by a note that EAL RA1.1 is only assessed for emergency classification until a qualified dose assessor is performing assessments using dose projection software incorporating actual meteorological data and current radiological conditions.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 1% of the EPA PAG of 1,000 mrem while the 50 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.

Escalation of the emergency classification level would be via IC RS1.

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ECL: Alert

Initiating Condition: Significant lowering of water level above, or damage to, irradiated fuel.

Operating Mode Applicability: All

Emergency Action Levels:

RA2.1 Uncovering of irradiated fuel in the REFUELING PATHWAY.

RA2.2 Damage to irradiated fuel resulting in a release of radioactivity from the fuel as indicated by Hi Rad alarm for **ANY** of the following ARMs:

- Spent Fuel Pool Area, RI-9178
- North Refuel Floor, RI-9163
- New Fuel Vault Area, RI-9153
- South Refuel Floor, RI-9164

OR

Reading greater than 5 R/hr on **ANY** of the following radiation monitors (in Mode 5 only):

- NW Drywell Area Hi Range Rad Monitor, RIM-9184A
- South Drywell Area Hi Range Rad Monitor, RIM-9184B

RA2.3 Lowering of spent fuel pool level (LI-3414/LI-3415) to 25.17 feet.

Definitions:

REFUELING PATHWAY – The reactor refueling cavity, spent fuel pool and fuel transfer canal.

Basis:

This IC addresses events that have caused IMMINENT or actual damage to an irradiated fuel assembly, or a significant lowering of water level within the spent fuel pool. These events present radiological safety challenges to plant personnel and are precursors to a release of radioactivity to the environment. As such, they represent an actual or potential substantial degradation of the level of safety of the plant.

Expected radiation monitor alarm(s) during preplanned transfer of highly radioactive material through the affected areas are not considered valid alarms for the purpose of comparison to these EALs.

This IC applies to irradiated fuel that is licensed for dry storage up to the point that the loaded storage cask is sealed. Once sealed, damage to a loaded cask causing loss of the

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CONFINEMENT BOUNDARY is classified in accordance with IC E-HU1.

Escalation of the emergency would be based on either Recognition Category R or C ICs.

EAL RA2.1

This EAL escalates from RU2 in that the loss of level, in the affected portion of the REFUELING PATHWAY, is of sufficient magnitude to have resulted in uncover of irradiated fuel. Indications of irradiated fuel uncover may include direct or indirect visual observation (e.g., reports from personnel or camera images), as well as significant changes in water and radiation levels, or other plant parameters. Computational aids may also be used. Classification of an event using this EAL should be based on the totality of available indications, reports, and observations.

While an area radiation monitor could detect an increase in a dose rate due to a lowering of water level in some portion of the REFUELING PATHWAY, the reading may not be a reliable indication of whether or not the fuel is actually uncovered. To the degree possible, readings should be considered in combination with other available indications of inventory loss.

A drop in water level above irradiated fuel within the reactor vessel may be classified in accordance Recognition Category C during the Cold Shutdown and Refueling modes.

EAL RA2.2

This EAL addresses a release of radioactive material caused by mechanical damage to irradiated fuel. Damaging events may include the dropping, bumping or binding of an assembly, or dropping a heavy load onto an assembly. An alarm on these radiation monitors should be considered in conjunction with in-plant reports or observations of a potential fuel damaging event (e.g., a fuel handling accident).

Threshold values for the Drywell monitors are only applicable in Mode 5 since the calculated radiation levels from damage to irradiated fuel would be masked by the typical background levels on these monitors during plant operation, and mechanical damage to a fuel assembly in the vessel can only happen with the reactor head removed.

EAL RA2.3

Spent fuel pool water level at this value is within the lower end of the level range necessary to prevent significant dose consequences from direct gamma radiation to personnel performing operations in the vicinity of the spent fuel pool. This condition reflects a significant loss of spent fuel pool water inventory and thus it is also a precursor to a loss of the ability to adequately cool the irradiated fuel assemblies stored in the pool.

Escalation of the emergency classification level would be via ICs RS1 or RS2.

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ECL: Alert

Initiating Condition: Radiation levels that impede access to areas necessary for normal plant operation.

Operating Mode Applicability: All

Emergency Action Levels:

RA3.1 Dose rate greater than 15 mR/hr in **ANY** of the following areas:

- Control Room (RM-9162)
- Central Alarm Station (by survey)

Definitions:

None

Basis:

This IC addresses elevated radiation levels in certain plant rooms/areas sufficient to preclude or impede personnel from performing actions necessary to maintain normal plant operation, or to perform a normal plant cooldown and shutdown. As such, it represents an actual or potential substantial degradation of the level of safety of the plant. The Emergency Director should consider the cause of the increased radiation levels and determine if another IC may be applicable.

Escalation of the emergency classification level would be via Recognition Category R, C or F ICs.

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ECL: Site Area Emergency

Initiating Condition: Release of gaseous radioactivity resulting in offsite dose greater than 100 mrem TEDE or 500 mrem thyroid CDE.

Operating Mode Applicability: All

Emergency Action Levels:

Notes:

- The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.
- If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.
- If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.
- The pre-calculated effluent monitor values presented in Table R-1 should only be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.

RS1.1 Reading on **ANY** Table R-1 effluent radiation monitor greater than column "SAE" for 15 minutes or longer:

Table R-1 - Effluent Monitor Classification Thresholds					
	Monitor	GE	SAE	Alert	NOUE
Gaseous	Reactor Building ventilation rad monitor (Kaman 3/4, 5/6, 7/8)	1.1E+00 uci/cc	1.1E-01 uci/cc	1.1E-02 uci/cc	8.0E-04 uci/cc
	Turbine Building ventilation rad monitor (Kaman 1/2)	1.4E+00 uci/cc	1.4E-01 uci/cc	1.4E-02 uci/cc	8.0E-04 uci/cc
	Offgas Stack rad monitor (Kaman 9/10)	4.5E+03 uci/cc	4.5E+02 uci/cc	4.5E+01 uci/cc	2.0E-01 uci/cc
	LLRPSF rad monitor (Kaman 12)	---	1.4E-01 uci/cc	1.4E-02 uci/cc	1.2E-03 uci/cc
Liquid	GSW rad monitor (RIS-4767)	---	---	1.7E+04 cps	1.5E+03 cps
	RHRSW & ESW rad monitor (RM-1997)	---	---	1.2E+04 cps	8.4E+02 cps
	RHRSW & ESW Rupture Disc rad monitor (RM-4268)	---	---	1.8E+04 cps	1.0E+03 cps

RS1.2 Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the SITE BOUNDARY. [Preferred]

RS1.3 Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:

- Closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation.

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Definitions:

SITE BOUNDARY: That line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee.

Basis:

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to 10% of the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public.

This IC is modified by a note that EAL RS1.1 is only assessed for emergency classification until a qualified dose assessor is performing assessments using dose projection software incorporating actual meteorological data and current radiological conditions. However, if Kaman monitor readings are sustained for 15 minutes or longer and the required RASCAL dose assessments cannot be completed within this period, then the declaration can be made using Kaman readings PROVIDED the readings are not from an isolated flow path.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at 10% of the EPA PAG of 1,000 mrem while the 500 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. If Kaman readings are not valid, field survey results may be utilized to assess this IC using EAL RS1.3.

Escalation of the emergency classification level would be via IC RG1.

EAL TECHNICAL BASES DOCUMENT	EEP-PDA-151
RS2	Rev. PAGE 32 of 123

ECL: Site Area Emergency

Initiating Condition: Spent fuel pool level at 16.36 feet.

Operating Mode Applicability: All

Emergency Action Levels:

RS2.1 Lowering of spent fuel pool level (LI-3414/LI-3415) to 16.36 feet.

Definitions:

None

Basis:

This IC addresses a significant loss of spent fuel pool inventory control and makeup capability leading to IMMEDIATE fuel damage. This condition entails major failures of plant functions needed for protection of the public and thus warrant a Site Area Emergency declaration.

It is recognized that this IC would likely not be met until well after another Site Area Emergency IC was met; however, it is included to provide classification diversity.

Escalation of the emergency classification level would be via IC RG1 or RG2.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
RG1	Rev. PAGE 33 of 123

ECL: General Emergency

Initiating Condition: Release of gaseous radioactivity resulting in offsite dose greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE.

Operating Mode Applicability: All

Emergency Action Levels:

Notes:

- The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.
- If an ongoing release is detected and the release start time is unknown, assume that the release duration has exceeded the specified time limit.
- If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes.
- The pre-calculated effluent monitor values presented in Table R-1 should only be used for emergency classification assessments until the results from a dose assessment using actual meteorology are available.

RG1.1 Reading on **ANY** Table R-1 effluent radiation monitor greater than column "GE" for 15 minutes or longer:

Table R-1 - Effluent Monitor Classification Thresholds					
	Monitor	GE	SAE	Alert	NOUE
Gaseous	Reactor Building ventilation rad monitor (Kaman 3/4, 5/6, 7/8)	1.1E+00 uci/cc	1.1E-01 uci/cc	1.1E-02 uci/cc	8.0E-04 uci/cc
	Turbine Building ventilation rad monitor (Kaman 1/2)	1.4E+00 uci/cc	1.4E-01 uci/cc	1.4E-02 uci/cc	8.0E-04 uci/cc
	Offgas Stack rad monitor (Kaman 9/10)	4.5E+03 uci/cc	4.5E+02 uci/cc	4.5E+01 uci/cc	2.0E-01 uci/cc
	LLRPSF rad monitor (Kaman 12)	---	1.4E-01 uci/cc	1.4E-02 uci/cc	1.2E-03 uci/cc
Liquid	GSW rad monitor (RIS-4767)	---	---	1.7E+04 cps	1.5E+03 cps
	RHRSW & ESW rad monitor (RM-1997)	---	---	1.2E+04 cps	8.4E+02 cps
	RHRSW & ESW Rupture Disc rad monitor (RM-4268)	---	---	1.8E+04 cps	1.0E+03 cps

RG1.2 Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem thyroid CDE at or beyond the SITE BOUNDARY. [Preferred]

RG1.3 Field survey results indicate **EITHER** of the following at or beyond the SITE BOUNDARY:

- Closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer.
- Analyses of field survey samples indicate thyroid CDE greater than 5,000 mrem for one hour of inhalation.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
RG1	Rev. PAGE 34 of 123

Definitions:

SITE BOUNDARY: That line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee.

Basis:

This IC addresses a release of gaseous radioactivity that results in projected or actual offsite doses greater than or equal to the EPA Protective Action Guides (PAGs). It includes both monitored and un-monitored releases. Releases of this magnitude will require implementation of protective actions for the public.

This IC is modified by a note that EAL RG1.1 is only assessed for emergency classification until a qualified dose assessor is performing assessments using dose projection software incorporating actual meteorological data and current radiological conditions. However, if Kaman monitor readings are sustained for 15 minutes or longer and the required RASCAL dose assessments cannot be completed within this period, then the declaration can be made using Kaman readings PROVIDED the readings are not from an isolated flow path.

Radiological effluent EALs are also included to provide a basis for classifying events and conditions that cannot be readily or appropriately classified on the basis of plant conditions alone. The inclusion of both plant condition and radiological effluent EALs more fully addresses the spectrum of possible accident events and conditions.

The TEDE dose is set at the EPA PAG of 1,000 mrem while the 5,000 mrem thyroid CDE was established in consideration of the 1:5 ratio of the EPA PAG for TEDE and thyroid CDE.

Classification based on effluent monitor readings assumes that a release path to the environment is established. If the effluent flow past an effluent monitor is known to have stopped due to actions to isolate the release path, then the effluent monitor reading is no longer valid for classification purposes. If Kaman readings are not valid, field survey results may be utilized to assess this IC using EAL RG1.3.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
RG2	Rev. PAGE 35 of 123

ECL: General Emergency

Initiating Condition: Spent fuel pool level cannot be restored to at least 16.36 feet for 60 minutes or longer.

Operating Mode Applicability: All

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

RG2.1 Spent fuel pool level (LI-3414/LI-3415) cannot be restored to at least 16.36 feet for 60 minutes or longer.

Definitions:

None

Basis:

This IC addresses a significant loss of spent fuel pool inventory control and makeup capability leading to a prolonged uncover of spent fuel. This condition will lead to fuel damage and a radiological release to the environment.

It is recognized that this IC would likely not be met until well after another General Emergency IC was met; however, it is included to provide classification diversity.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
Cold Shutdown / Refueling System Malfunction ICS/EALS	Rev. PAGE 36 of 123

7. COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION ICS/EALS

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CU1	Rev. PAGE 37 of 123

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED loss of RPV inventory for 15 minutes or longer.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CU1.1 UNPLANNED loss of reactor coolant results in RPV level less than a required lower limit for 15 minutes or longer.

CU1.2 a. RPV level cannot be monitored.

AND

b. UNPLANNED level rise in Drywell/Reactor Building Equipment or Floor Drain sump, or Suppression Pool.

Definitions:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

Basis:

This IC addresses the inability to restore and maintain water level to a required minimum level (or the lower limit of a level band), or a loss of the ability to monitor RPV level concurrent with indications of coolant leakage. Either of these conditions is considered to be a potential degradation of the level of safety of the plant.

Refueling evolutions that decrease RCS water inventory are carefully planned and controlled. An UNPLANNED event that results in water level decreasing below a procedurally required limit warrants the declaration of an Unusual Event due to the reduced water inventory that is available to keep the core covered.

EAL CU1.1 recognizes that the minimum required RPV level can change several times during the course of a refueling outage as different plant configurations and system lineups are implemented. This EAL is met if the minimum level, specified for the current plant conditions, cannot be maintained for 15 minutes or longer. The minimum level is typically specified in the applicable operating procedure but may be specified in another controlling document.

The 15-minute threshold duration allows sufficient time for prompt operator actions to restore and maintain the expected water level. This criterion excludes transient conditions causing a brief lowering of water level.

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CU1	Rev. PAGE 38 of 123

EAL CU1.2 addresses a condition where all means to determine RPV level have been lost. If all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RCS inventory loss was occurring by observing sump and Suppression Pool level changes. The drywell floor and equipment drain sumps, reactor building equipment and floor drain sumps receive all liquid waste from floor and equipment drains inside the primary containment and reactor building. A rise in Suppression Pool water level may be indicative of valve misalignment or leakage in systems that discharge to the Torus. Sump and Suppression Pool level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

Continued loss of RCS inventory may result in escalation to the Alert emergency classification level via either IC CA1 or CA3.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CU2	Rev. 0 PAGE 39 of 123

ECL: Notification of Unusual Event

Initiating Condition: Loss of all but one AC power source to essential buses for 15 minutes or longer.

Operating Mode Applicability: 4, 5, Defueled

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that 15 minutes has been exceeded, or will likely be exceeded.

- CU2.1 a. AC power capability to 1A3 and 1A4 buses is reduced to a single power source for 15 minutes or longer.

AND

- b. Any additional single power source failure will result in loss of **ALL** AC power to SAFETY SYSTEMS.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC describes a significant degradation of offsite and onsite AC power sources such that any additional single failure would result in a loss of all AC power to SAFETY SYSTEMS. In this condition, the sole AC power source may be powering one, or more than one, train of safety-related equipment.

When in the cold shutdown, refueling, or defueled mode, this condition is not classified as an Alert because of the increased time available to restore another power source to service. Additional time is available due to the reduced core decay heat load, and the lower temperatures and pressures in various plant systems. Thus, when in these modes, this condition is considered to be a potential degradation of the level of safety of the plant.

An "AC power source" is a source recognized in AOPs and EOPs, and capable of supplying required power to an emergency bus. Some examples of this condition are presented below.

- A loss of all offsite power with a concurrent failure of all but one emergency power source (e.g., an onsite diesel generator).
- A loss of emergency power sources (e.g., onsite diesel generators) with a single train of essential buses being fed from an offsite power source.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of power.

The subsequent loss of the remaining single power source would escalate the event to an Alert in accordance with IC CA2.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CU3	Rev. 0 PAGE 40 of 123

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED increase in RCS temperature.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CU3.1 UNPLANNED increase in RCS temperature to greater than 212°F.

CU3.2 Loss of **ALL** RCS temperature and RPV level indication for 15 minutes or longer.

Definitions:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

CONTAINMENT CLOSURE: Procedurally defined actions taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. For DAEC, this is considered to be Secondary Containment as required by Technical Specifications.

Basis:

This IC addresses an UNPLANNED increase in RCS temperature above the Technical Specification cold shutdown temperature limit, or the inability to determine RCS temperature and level, represents a potential degradation of the level of safety of the plant. If the RCS is not intact and CONTAINMENT CLOSURE is not established during this event, the Emergency Director should also refer to IC CA3.

A momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit when the heat removal function is available does not warrant a classification.

EAL CU3.1 involves a loss of decay heat removal capability, or an addition of heat to the RCS in excess of that which can currently be removed, such that reactor coolant temperature cannot be maintained below the cold shutdown temperature limit specified in Technical Specifications. During this condition, there is no immediate threat of fuel damage because the core decay heat load has been reduced since the cessation of power operation.

During an outage, the level in the reactor vessel will normally be maintained above the reactor vessel flange. Refueling evolutions that lower water level below the reactor vessel flange are carefully planned and controlled. A loss of forced decay heat removal at reduced inventory may result in a rapid increase in reactor coolant temperature depending on the time after shutdown.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CU3	Rev. 0 PAGE 41 of 123

EAL CU3.2 reflects a condition where there has been a significant loss of instrumentation capability necessary to monitor RCS conditions and operators would be unable to monitor key parameters necessary to assure core decay heat removal. During this condition, there is no immediate threat of fuel damage because the core decay heat load has been reduced since the cessation of power operation.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of indication.

Escalation to Alert would be via IC CA1 based on an inventory loss or IC CA3 based on exceeding plant configuration-specific time criteria.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CU4	Rev. 0 PAGE 42 of 123

ECL: Notification of Unusual Event

Initiating Condition: Loss of Vital DC power for 15 minutes or longer.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CU4.1 Indicated voltage is less than 105 VDC on **BOTH** Div 1 and Div 2 125 VDC buses for 15 minutes or longer.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses a loss of Vital DC power which compromises the ability to monitor and control operable SAFETY SYSTEMS when the plant is in the cold shutdown or refueling mode. In these modes, the core decay heat load has been significantly reduced, and coolant system temperatures and pressures are lower; these conditions increase the time available to restore a vital DC bus to service. Thus, this condition is considered to be a potential degradation of the level of safety of the plant.

As used in this EAL, "required" means the Vital DC buses necessary to support operation of the in-service, or operable, train or trains of SAFETY SYSTEM equipment. For example, if Train A is out-of-service (inoperable) for scheduled outage maintenance work and Train B is in-service (operable), then a loss of Vital DC power affecting Train B would require the declaration of an Unusual Event. A loss of Vital DC power to Train A would not warrant an emergency classification.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Depending upon the event, escalation of the emergency classification level would be via IC CA1 or CA3, or an IC in Recognition Category R.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CU5	Rev. PAGE 43 of 123

ECL: Notification of Unusual Event

Initiating Condition: Loss of all onsite or offsite communications capabilities.

Operating Mode Applicability: 4, 5, Defueled

Emergency Action Levels:

CU5.1 Loss of **ALL** of the following onsite communication methods:

- Plant Operations Radio System
- In-Plant Phone System
- Plant Paging System (Gaitronics)

CU5.2 Loss of **ALL** of the following offsite response organization communications methods:

- DAEC All-Call phone
- All telephone lines (PBX and commercial)
- Cell Phones (including fixed cell phone system)
- Control Room fixed satellite phone system

CU5.3 Loss of **ALL** of the following NRC communications methods:

- FTS Phone system
- All telephone lines (PBX and commercial)
- Cell Phones (including fixed cell phone system)
- Control Room fixed satellite phone system

Basis:

This IC addresses a significant loss of on-site or offsite communications capabilities. While not a direct challenge to plant or personnel safety, this event warrants prompt notifications to offsite response organizations and the NRC.

This IC should be assessed only when extraordinary means are being utilized to make communications possible (e.g., use of non-plant, privately owned equipment, relaying of on-site information via individuals or multiple radio transmission points, individuals being sent to offsite locations, etc.).

EAL CU5.1 addresses a total loss of the communications methods used in support of routine plant operations.

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CU5	Rev. PAGE 44 of 123

EAL CU5.2 addresses a total loss of the communications methods used to notify all offsite response organizations of an emergency declaration. The offsite response organizations referred to here are the State of Iowa, Linn County, and Benton County.

EAL CU5.3 addresses a total loss of the communications methods used to notify the NRC of an emergency declaration.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CA1	Rev. 0 PAGE 45 of 123

ECL: Alert

Initiating Condition: Loss of RPV inventory.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CA1.1 Loss of RPV inventory as indicated by level less than 119.5 inches.

CA1.2 a. RPV level cannot be monitored for 15 minutes or longer

AND

b. UNPLANNED level rise in Drywell/Reactor Building Equipment or Floor Drain sump, or Suppression Pool due to a loss of RPV inventory.

Definitions:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

Basis:

This IC addresses conditions that are precursors to a loss of the ability to adequately cool irradiated fuel (i.e., a precursor to a challenge to the fuel clad barrier). This condition represents a potential substantial reduction in the level of plant safety.

For EAL CA1.1, a lowering of water level below 119.5 inches indicates that operator actions have not been successful in restoring and maintaining RPV water level. The heat-up rate of the coolant will increase as the available water inventory is reduced. A continuing decrease in water level will lead to core uncover.

Although related, EAL CA1.1 is concerned with the loss of RCS inventory and not the potential concurrent effects on systems needed for decay heat removal (e.g., loss of a Residual Heat Removal suction point). An increase in RCS temperature caused by a loss of decay heat removal capability is evaluated under IC CA3.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CA1	Rev. 0 PAGE 46 of 123

For EAL CA1.2, the inability to monitor RPV level may be caused by instrumentation and/or power failures, or water level dropping below the range of available instrumentation. If water level cannot be monitored, the operators would need to determine that RCS inventory loss was occurring by observing sump and Suppression Pool level changes. The drywell floor and equipment drain sumps, reactor building equipment and floor drain sumps receive all liquid waste from floor and equipment drains inside the primary containment and reactor building. A rise in Suppression Pool water level may be indicative of valve misalignment or leakage in systems that discharge to the Torus. Sump and Suppression Pool level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

The 15-minute duration for the loss of level indication was chosen because it is half of the EAL duration specified in IC CS1

If the RPV inventory level continues to lower, then escalation to Site Area Emergency would be via IC CS1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CA2	Rev. 0 PAGE 47 of 123

ECL: Alert

Initiating Condition: Loss of all offsite and all onsite AC power to essential buses for 15 minutes or longer.

Operating Mode Applicability: 4, 5, Defueled

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CA2.1 Loss of **ALL** offsite and **ALL** onsite AC Power to 1A3 and 1A4 buses for 15 minutes or longer.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink.

When in the cold shutdown, refueling, or defueled mode, this condition is not classified as a Site Area Emergency because of the increased time available to restore an emergency bus to service. Additional time is available due to the reduced core decay heat load, and the lower temperatures and pressures in various plant systems. Thus, when in these modes, this condition represents an actual or potential substantial degradation of the level of safety of the plant.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the emergency classification level would be via IC CS1 or RS1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CA3	Rev. PAGE 48 of 123

ECL: Alert

Initiating Condition: Inability to maintain the plant in cold shutdown.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CA3.1 UNPLANNED increase in RCS temperature to greater than 212°F for greater than the duration specified in Table C-2.

Table C-2 RCS Heat-up Duration Thresholds		
RCS Integrity	CONTAINMENT CLOSURE Status	Heat-up Duration
Intact	Not applicable	60 minutes*
Not intact	Established	20 minutes*
	Not Established	0 minutes
* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.		

CA3.2 UNPLANNED RCS pressure increase greater than 10 psig due to a loss of RCS cooling.

Definitions:

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

CONTAINMENT CLOSURE: Procedurally defined actions taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. For DAEC, this is considered to be Secondary Containment as required by Technical Specifications.

Basis:

This IC addresses conditions involving a loss of decay heat removal capability or an addition of heat to the RCS in excess of that which can currently be removed. Either condition represents an actual or potential substantial degradation of the level of safety of the plant.

A momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit when the heat removal function is available does not warrant a classification.

RCS integrity is intact when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., no freeze seals or nozzle dams).

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CA3	Rev. PAGE 49 of 123

The RCS Heat-up Duration Thresholds table addresses an increase in RCS temperature when CONTAINMENT CLOSURE is established but the RCS is not intact. The 20-minute criterion was included to allow time for operator action to address the temperature increase.

The RCS Heat-up Duration Thresholds table also addresses an increase in RCS temperature with the RCS intact. The status of CONTAINMENT CLOSURE is not crucial in this condition since the intact RCS is providing a high pressure barrier to a fission product release. The 60-minute time frame should allow sufficient time to address the temperature increase without a substantial degradation in plant safety.

Finally, in the case where there is an increase in RCS temperature, the RCS is not intact, and CONTAINMENT CLOSURE is not established, no heat-up duration is allowed (i.e., 0 minutes). This is because

- 1) the evaporated reactor coolant may be released directly into the Containment atmosphere and subsequently to the environment, and
- 2) there is reduced reactor coolant inventory above the top of irradiated fuel.

EAL CA3.2 provides a pressure-based indication of RCS heat-up.

Escalation of the emergency classification level would be via IC CS1 or RS1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CA6	Rev. PAGE 50 of 123

ECL: Alert

Initiating Condition: Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Notes:

- If the affected SAFETY SYSTEM train was already inoperable or out of service before the hazardous event occurred, then this emergency classification is not warranted.
- If the hazardous event only resulted in VISIBLE DAMAGE, with no indications of degraded performance to at least one train of a SAFETY SYSTEM, then this emergency classification is not warranted.

CA6.1 a. The occurrence of **ANY** of the Table C-3 hazardous events:

Table C-3 Hazardous Events
• Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • Other events with similar hazard characteristics as determined by the Shift Manager or Emergency Director

AND

- b. 1. Event damage has caused indications of degraded performance in one train of a SAFETY SYSTEM needed for the current operating mode.

AND

2. **EITHER** of the following:
- Event damage has caused indications of degraded performance to a second train of the SAFETY SYSTEM needed for the current operating mode,

OR

- The event has resulted in VISIBLE DAMAGE to the second train of a SAFETY SYSTEM needed for the current operating mode.

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CA6	Rev. PAGE 51 of 123

Definitions:

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction, or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

VISIBLE DAMAGE: Damage to a component or structure that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected component or structure. Damage resulting from an equipment failure and limited to the failed component (i.e., the failure did not cause damage to a structure or any other equipment) is not VISIBLE DAMAGE.

Basis:

This IC addresses a hazardous event that causes damage to SAFETY SYSTEMS needed for the current operating mode. In order to provide the appropriate context for consideration of an ALERT classification, the hazardous event must have caused indications of degraded SAFETY SYSTEM performance in one train, and there must be either indications of performance issues with the second SAFETY SYSTEM train or VISIBLE DAMAGE to the second train such that the potential exists for this second SAFETY SYSTEM train to have performance issues. In other words, in order for this EAL to be classified, the hazardous event must occur, at least one SAFETY SYSTEM train must have indications of degraded performance, and the second SAFETY SYSTEM train must have indications of degraded performance or VISIBLE DAMAGE such that the potential exists for performance issues. Note that this second SAFETY SYSTEM train is from the same SAFETY SYSTEM that has indications of degraded performance for criteria CA6.1.b.1 of this EAL; commercial nuclear power plants are designed to be able to support single system issues without compromising public health and safety from radiological events.

An event affecting a single-train SAFETY SYSTEM (i.e., there are indications of degraded performance and/or VISIBLE DAMAGE affecting the one train) would not be classified under CA6 because the two-train impact criteria that underlie the EALs and Bases would not be met. If an event affects a single-train SAFETY SYSTEM, then the emergency classification should be made based on plant parameters/symptoms meeting the EALs for another IC. Depending upon the circumstances, classification may also occur based on Shift Manager/Emergency Director judgement.

Indications of degraded performance addresses damage to a SAFETY SYSTEM train that is in service/operation since indications for it will be readily available. The indications of degraded performance should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

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VISIBLE DAMAGE addresses damage to a SAFETY SYSTEM train that is not in service/operation and that potentially could cause performance issues. Operators will make this determination based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage. This VISIBLE DAMAGE should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

Escalation of the emergency classification level would be via IC RS1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
CS1	Rev. PAGE 53 of 123

ECL: Site Area Emergency

Initiating Condition: Loss of RPV inventory affecting core decay heat removal capability.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CS1.1 a. CONTAINMENT CLOSURE not established.

AND

b. RPV level less than +64 inches

CS1.2 a. CONTAINMENT CLOSURE established.

AND

b. RPV level less than +15 inches

CS1.3 a. RPV level cannot be monitored for 30 minutes or longer.

AND

b. Core uncover is indicated by **EITHER** of the following:

- Drywell Monitor (RIM-9184A/B) reading greater than 5.0 R/hr
- UNPLANNED level rise in Drywell/Reactor Building Equipment or Floor Drain sump, or Suppression Pool of sufficient magnitude to indicate core uncover

Definitions:

CONTAINMENT CLOSURE: Procedurally defined actions taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. For DAEC, this is considered to be Secondary Containment as required by Technical Specifications.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

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Basis:

This IC addresses a significant and prolonged loss of RPV inventory control and makeup capability leading to IMMINENT fuel damage. The lost inventory may be due to a RCS component failure, a loss of configuration control or prolonged boiling of reactor coolant. These conditions entail major failures of plant functions needed for protection of the public and thus warrant a Site Area Emergency declaration.

Following an extended loss of core decay heat removal and inventory makeup, decay heat will cause reactor coolant boiling and a further reduction in reactor vessel level. If reactor vessel level cannot be restored, fuel damage is probable.

Outage/shutdown contingency plans typically provide for re-establishing or verifying CONTAINMENT CLOSURE following a loss of heat removal or RCS inventory control functions. The difference in the specified reactor vessel levels of EALs CS1.1.b and CS1.2.b reflect the fact that with CONTAINMENT CLOSURE established, there is a lower probability of a fission product release to the environment.

In the Cold Shutdown and Refueling Modes, LT/LI-4559, 4560, and 4561 (RX VESSEL NARROW RANGE LEVEL) instruments read up to 22" high due to hot calibrations. LI-4541 (WR GEMAC, FLOODUP) should be used in these Modes for comparison to EAL thresholds since it is calibrated cold and reads accurately. If normal means of RPV level indication are not available due to plant evolutions, redundant means of RPV level indication will be normally installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted.

In EAL CS1.3.a, the 30-minute criterion is tied to a readily recognizable event start time (i.e., the total loss of ability to monitor level), and allows sufficient time to monitor, assess and correlate reactor and plant conditions to determine if core uncover has actually occurred (i.e., to account for various accident progression and instrumentation uncertainties). It also allows sufficient time for performance of actions to terminate leakage, recover inventory control/makeup equipment and/or restore level monitoring.

The inability to monitor RPV level may be caused by instrumentation and/or power failures, or water level dropping below the range of available instrumentation. If water level cannot be monitored, operators may determine that an inventory loss is occurring by observing changes in sump and/or tank levels. Sump and/or tank level changes must be evaluated against other potential sources of water flow to ensure they are indicative of leakage from the RPV.

These EALs address concerns raised by Generic Letter 88-17, *Loss of Decay Heat Removal*; SECY 91-283, *Evaluation of Shutdown and Low Power Risk Issues*; NUREG-1449, *Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States*; and NUMARC 91-06, *Guidelines for Industry Actions to Assess Shutdown Management*.

Escalation of the emergency classification level would be via IC CG1 or RG1.

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ECL: General Emergency

Initiating Condition: Loss of RPV inventory affecting fuel clad integrity with containment challenged.

Operating Mode Applicability: 4, 5

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

CG1.1 a. RPV level less than +15 inches for 30 minutes or longer.

AND

b. **ANY** indication from the Secondary Containment Challenge Table C-1.

CG1.2 a. RPV level cannot be monitored for 30 minutes or longer.

AND

b. Core uncover is indicated by **EITHER** of the following:

- Drywell Monitor (RIM-9184A/B) reading greater than 5.0 R/hr.
- UNPLANNED level rise in Drywell/Reactor Building Equipment or Floor Drain sump, or Suppression Pool of sufficient magnitude to indicate core uncover.

AND

c. **ANY** indication from the Secondary Containment Challenge Table C-1.

Table C-1 Secondary Containment Challenge
• CONTAINMENT CLOSURE not established* • Drywell Hydrogen or Torus Hydrogen greater than 6% AND Drywell Oxygen or Torus Oxygen greater than 5% • UNPLANNED increase in containment pressure • Secondary containment radiation monitor above max safe operating limits (MSOL) of EOP 3, Table 6

* If CONTAINMENT CLOSURE is re-established prior to exceeding the 30 minute time limit, then declaration of a General Emergency is not required.

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Definitions:

CONTAINMENT CLOSURE: Procedurally defined actions taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. For DAEC, this is considered to be Secondary Containment as required by Technical Specifications.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

Basis:

This IC addresses the inability to restore and maintain reactor vessel level above the top of active fuel with containment challenged. This condition represents actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Following an extended loss of core decay heat removal and inventory makeup, decay heat will cause reactor coolant boiling and a further reduction in reactor vessel level. If reactor vessel level cannot be restored, fuel damage is probable.

With CONTAINMENT CLOSURE not established, there is a high potential for a direct and unmonitored release of radioactivity to the environment. If CONTAINMENT CLOSURE is re-established prior to exceeding the 30-minute time limit, then declaration of a General Emergency is not required.

The existence of an explosive mixture means, at a minimum, that the containment atmospheric hydrogen concentration is sufficient to support a hydrogen burn (i.e., at the lower deflagration limit). A hydrogen burn will raise containment pressure and could result in collateral equipment damage leading to a loss of containment integrity. It therefore represents a challenge to Containment integrity.

In the early stages of a core uncover event, it is unlikely that hydrogen buildup due to a core uncover could result in an explosive gas mixture in containment. If all installed hydrogen gas monitors are out-of-service during an event leading to fuel cladding damage, it may not be possible to obtain a containment hydrogen gas concentration reading as ambient conditions within the containment will preclude personnel access. During periods when installed containment hydrogen gas monitors are out-of-service, operators may use the other listed indications to assess whether or not containment is challenged.

In EAL CG1.2.a, the 30-minute criterion is tied to a readily recognizable event start time (i.e., the total loss of ability to monitor level), and allows sufficient time to monitor, assess and correlate reactor and plant conditions to determine if core uncover has actually occurred (i.e., to account for various accident progression and instrumentation uncertainties). It also allows sufficient time for performance of actions to terminate leakage, recover inventory control/makeup equipment and/or restore level monitoring.

For EAL CG1.2.b, the calculated radiation level on the Drywell Monitors (RIM-9184A/B) is without the reactor head in place. Calculated in radiation levels with the reactor head in place are below the normal variation in background readings of these monitors.

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The inability to monitor RPV level may be caused by instrumentation and/or power failures or water level dropping below the range of available instrumentation. If water level cannot be monitored, operators may determine that an inventory loss is occurring by observing changes in sump and/or tank levels. Sump and/or tank level changes must be evaluated against other potential sources of water flow to ensure they are indicative of leakage from the RPV.

For the Containment Challenge Table, Secondary Containment max safe operating (MSOL) limits from EOP 3 are defined as the highest parameter value at which neither: (1) equipment necessary for the safe shutdown of the plant will fail nor (2) personnel access necessary for the safe shutdown of the plant will be precluded.

These EALs address concerns raised by Generic Letter 88-17, *Loss of Decay Heat Removal*; SECY 91-283, *Evaluation of Shutdown and Low Power Risk Issues*; NUREG-1449, *Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States*; and NUMARC 91-06, *Guidelines for Industry Actions to Assess Shutdown Management*.

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8. INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) ICs/EALs

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E-HU1	Rev. PAGE 59 of 123

ECL: Notification of Unusual Event

Initiating Condition: Damage to a loaded cask CONFINEMENT BOUNDARY.

Operating Mode Applicability: All

Emergency Action Levels:

E-HU1.1 Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by a radiation reading greater than the values shown on Table E-1 on the spent fuel cask.

Table E-1 Cask Dose Rates Slab 1			
61BT DSC (HSM-01 through HSM-20)		61BTH Type 1 DSC (HSM-21 through HSM-30)	
3 feet from HSM Surface	800 mrem/hr	HSM Front Bird Screen	400 mrem/hr
Outside HSM Door – Centerline of DSC	200 mrem/hr	Outside HSM Door – Centerline of DSC	200 mrem/hr
End Shield Wall Exterior	40 mrem/hr	End Shield Wall Exterior	30 mrem/hr
Table E-1 Cask Dose Rates Slab 2			
61BTH Type 1 DSC in HSM-H (HSM-31 through HSM-60)			
HSM Front Bird Screen		4660 mrem/hr	
Outside HSM Door – Centerline of DSC		10 mrem/hr	
End Shield Wall Exterior		40 mrem/hr	

Definition:

CONFINEMENT BOUNDARY: The barrier(s) between spent fuel and the environment once the spent fuel is processed for dry storage.

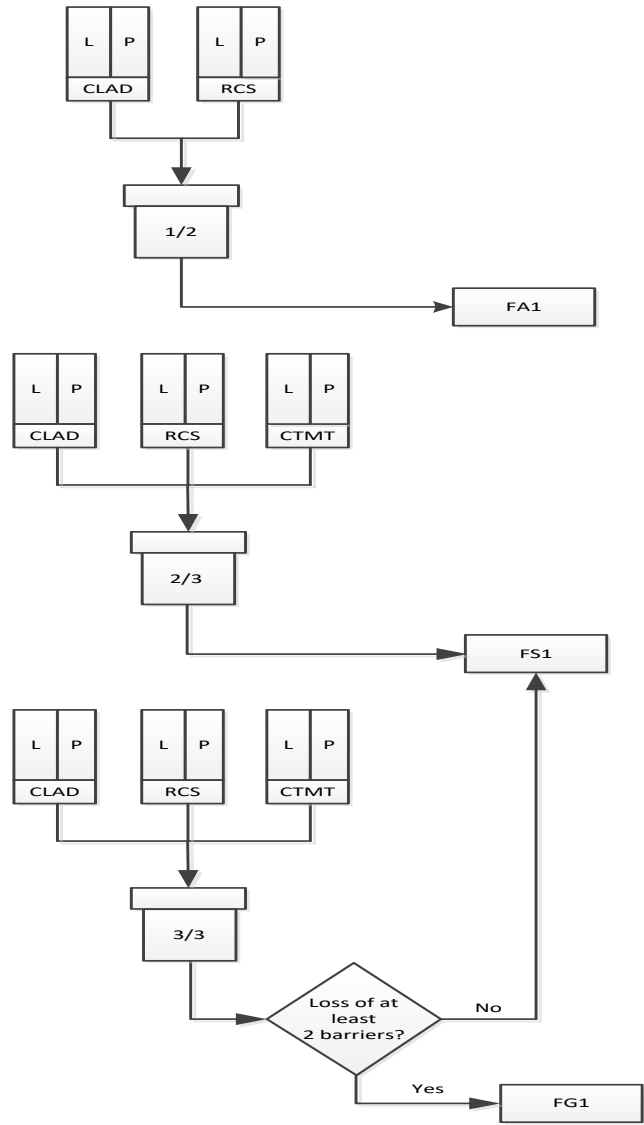
Basis:

This IC addresses an event that results in damage to the CONFINEMENT BOUNDARY of a storage cask containing spent fuel. It applies to irradiated fuel that is licensed for dry storage beginning at the point that the loaded storage cask is sealed. The issues of concern are the creation of a potential or actual release path to the environment, degradation of one or more fuel assemblies due to environmental factors, and configuration changes which could cause challenges in removing the cask or fuel from storage.

The existence of “damage” is determined by radiological survey. The technical specification multiple of “2 times”, which is also used in Recognition Category R IC RU1, is used here to distinguish between non-emergency and emergency conditions. The emphasis for this classification is the degradation in the level of safety of the spent fuel cask and not the magnitude of the associated dose or dose rate. It is recognized that in the case of extreme damage to a loaded cask, the fact that the “on-contact” dose rate limit is exceeded may be determined based on measurement of a dose rate at some distance from the cask.

Security-related events for ISFSIs are covered under ICs HU1 and HA1.

9. FISSION PRODUCT BARRIER ICs/EALs



EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
Table F-1: DAEC EAL Fission Product Barrier Table Thresholds for LOSS or POTENTIAL LOSS of Barriers	Rev. PAGE 61 of 123

FA1 ALERT ANY Loss OR ANY Potential Loss of EITHER the Fuel Clad OR RCS barrier.	FS1 SITE AREA EMERGENCY Loss OR Potential Loss of ANY two barriers.	FG1 GENERAL EMERGENCY Loss of ANY two barriers AND Loss OR Potential Loss of the third barrier
Operating Mode Applicability: 1, 2, 3	Operating Mode Applicability: 1, 2, 3	Operating Mode Applicability: 1, 2, 3

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	POTENTIAL LOSS	LOSS	POTENTIAL LOSS	LOSS	POTENTIAL LOSS
1. RCS Activity		1. Primary Containment Conditions		1. Primary Containment Conditions	
A. Coolant activity greater than 300 μ Ci/gm dose equivalent I-131.	Not Applicable	A. Primary containment pressure greater than 2 psig due to RCS leakage.	Not Applicable	A. UNPLANNED rapid drop in Drywell pressure following Drywell pressure rise OR B. Drywell pressure response not consistent with LOCA conditions. OR C. UNISOLABLE direct downstream pathway to the environment exists after primary containment isolation signal OR D. Intentional primary containment venting per EOPs	A. Torus pressure greater than 53 psig OR B. Drywell or Torus H ₂ cannot be determined to be less than 6% and Drywell OR Torus O ₂ cannot be determined to be less than 5% OR C. HCL (Graph 4 of EOP 2) exceeded.

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Table F-1: DAEC EAL Fission Product Barrier Table Thresholds for LOSS or POTENTIAL LOSS of Barriers	Rev. PAGE 62 of 123

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	POTENTIAL LOSS	LOSS	POTENTIAL LOSS	LOSS	POTENTIAL LOSS
2. RPV Water Level		2. RPV Water Level		2. RPV Water Level	
A. SAG entry is required	A. RPV water level cannot be restored and maintained above +15 inches OR cannot be determined.	A. RPV water level cannot be restored and maintained above +15 inches OR cannot be determined.	Not Applicable	Not Applicable	A. SAG entry is required
3. Not Applicable		3. RCS Leak Rate		3. Primary Containment Isolation Failure	
Not Applicable	Not Applicable	A. UNISOLABLE break in Main Steam, HPCI, Feedwater, RWCU, or RCIC as indicated by the failure of both isolation valves in ANY one line to close AND EITHER : - High MSL flow or steam tunnel temperature annunciators OR - Direct report of steam release OR B. Emergency RPV Depressurization required.	A. UNISOLABLE primary system leakage that results in exceeding the Max Normal Operating Limit (MNOL) of EOP 3, Table 6 for EITHER of the following: - Temperature OR - Radiation Level	A. UNISOLABLE primary system leakage that results in exceeding the Max Safe Operating Limit (MSOL) of EOP 3, Table 6 for EITHER of the following: - Temperature OR - Radiation Level	Not Applicable

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Table F-1: DAEC EAL Fission Product Barrier Table Thresholds for LOSS or POTENTIAL LOSS of Barriers	Rev. PAGE 63 of 123

Fuel Clad Barrier		RCS Barrier		Containment Barrier	
LOSS	POTENTIAL LOSS	LOSS	POTENTIAL LOSS	LOSS	POTENTIAL LOSS
4. Primary Containment Radiation		4. Primary Containment Radiation		4. Primary Containment Radiation	
A. Drywell Monitor (RIM-9184A/B) reading greater than 1250 R/hr. OR B. Torus Monitor (RIM-9185A/B) reading greater than 125 R/hr	Not Applicable	A. Drywell Monitor (RIM-9184A/B) reading greater than 5 R/hr after reactor shutdown	Not Applicable	Not Applicable	A. Drywell Monitor (RIM-9184A/B) reading greater than 5000 R/hr. OR B. Torus Monitor (RIM-9185A/B) reading greater than 500 R/hr
5. Other Indications		5. Other Indications		5. Other Indications	
A. Fuel damage assessment indicates at least 5% fuel clad damage.	Not Applicable	Not Applicable	Not Applicable	Not Applicable	A. Fuel damage assessment indicates at least 20% fuel clad damage.
6. Emergency Director Judgment		6. Emergency Director Judgment		6. Emergency Director Judgment	
A. ANY condition in the opinion of the Emergency Director that indicates Loss of the Fuel Clad Barrier.	A. ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.	A. ANY condition in the opinion of the Emergency Director that indicates Loss of the RCS Barrier.	A. ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the RCS Barrier.	A. ANY condition in the opinion of the Emergency Director that indicates Loss of the Containment Barrier.	A. ANY condition in the opinion of the Emergency Director that indicates Potential Loss of the Containment Barrier.

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Basis Information For DAEC EAL Fission Product Barrier Table F-1	Rev. PAGE 64 of 123

DAEC FUEL CLAD BARRIER THRESHOLDS:

The Fuel Clad barrier consists of the zircalloy or stainless steel fuel bundle tubes that contain the fuel pellets.

1. RCS Activity

Loss 1.A

This threshold indicates that RCS radioactivity concentration is greater than 300 $\mu\text{Ci/gm}$ dose equivalent I-131. Reactor coolant activity above this level is greater than that expected for iodine spikes. Since this condition indicates that a significant amount of fuel clad damage has occurred, it represents a loss of the Fuel Clad Barrier.

It is recognized that sample collection and analysis of reactor coolant with highly elevated activity levels could require several hours to complete. Nonetheless, a sample-related threshold is included as a backup to other indications.

There is no Potential Loss threshold associated with RCS Activity.

2. RPV Water Level

Loss 2.A

The Loss threshold represents any EOP requirement for entry into the Severe Accident Guidelines.

This is identified in the BWROG EPGs/SAGs when adequate core cooling cannot be assured.

Potential Loss 2.A

This water level corresponds to the top of the active fuel and is used in the EOPs to indicate a challenge to core cooling.

The RPV water level threshold is the same as RCS barrier Loss threshold 2.A. Thus, this threshold indicates a Potential Loss of the Fuel Clad barrier and a Loss of the RCS barrier that appropriately escalates the emergency classification level to a Site Area Emergency.

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Basis Information For DAEC EAL Fission Product Barrier Table F-1	Rev. PAGE 65 of 123

DAEC FUEL CLAD BARRIER THRESHOLDS (cont.):

This threshold is considered to be exceeded when, as specified in the EOPs, RPV water cannot be restored and maintained above the specified level following depressurization of the RPV (either manually, automatically or by failure of the RCS barrier) or when procedural guidance or a lack of low pressure RPV injection sources preclude Emergency RPV depressurization. EOPs allow the operator a wide choice of RPV injection sources to consider when restoring RPV water level to within prescribed limits. EOPs also specify depressurization of the RPV in order to facilitate RPV water level control with low-pressure injection sources. In some events, elevated RPV pressure may prevent restoration of RPV water level until pressure drops below the shutoff heads of available injection sources. Therefore, this Fuel Clad barrier Potential Loss is met only after either: 1) the RPV has been depressurized, or required emergency RPV depressurization has been attempted, giving the operator an opportunity to assess the capability of low-pressure injection sources to restore RPV water level or 2) no low pressure RPV injection systems are available, precluding RPV depressurization in an attempt to minimize loss of RPV inventory.

The term “cannot be restored and maintained above” means the value of RPV water level is not able to be brought above the specified limit (top of active fuel). The determination requires an evaluation of system performance and availability in relation to the RPV water level value and trend. A threshold prescribing declaration when a threshold value *cannot* be restored and maintained above a specified limit does not require immediate action simply because the current value is below the top of active fuel, but does not permit extended operation below the limit; the threshold must be considered reached as soon as it is apparent that the top of active fuel cannot be attained.

In high-power ATWS/failure to scram events, EOPs may direct the operator to deliberately lower RPV water level to the top of active fuel in order to reduce reactor power. RPV water level is then controlled between the top of active fuel and the Minimum Steam Cooling RPV Water Level (MSCRWL). Although such action is a challenge to core cooling and the Fuel Clad barrier, the immediate need to reduce reactor power is the higher priority. For such events, ICs SA6 or SS6 will dictate the need for emergency classification.

Since the loss of ability to determine if adequate core cooling is being provided presents a significant challenge to the fuel clad barrier, a potential loss of the fuel clad barrier is specified.

3. Not Applicable (included for numbering consistency between barrier tables)

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DAEC FUEL CLAD BARRIER THRESHOLDS (cont.):

4. Primary Containment Radiation

Loss 4.A and Loss 4.B

The Drywell and Torus radiation monitor readings correspond to an instantaneous release of all reactor coolant mass into the Drywell or Torus, assuming that reactor coolant activity corresponds to approximately 5% fuel clad damage. Since this condition indicates that a significant amount of fuel clad damage has occurred, it represents a loss of the Fuel Clad Barrier.

The radiation monitor readings in this threshold are higher than that specified for RCS Barrier Loss threshold 4.A since it indicates a loss of both the Fuel Clad Barrier and the RCS Barrier. Note that a combination of the two monitor readings appropriately escalates the emergency classification level to a Site Area Emergency.

There is no Potential Loss threshold associated with Primary Containment Radiation.

5. Other Indications

Loss 5.A

Results obtained from procedure PASAP 7.2, Fuel Damage Assessment, indicate at least 5% fuel clad damage.

There is no Potential Loss threshold associated with Other Indications.

6. Emergency Director Judgment

Loss 6.A

This threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad Barrier is lost.

Potential Loss 6.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Fuel Clad Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

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Basis Information For DAEC EAL Fission Product Barrier Table F-1	Rev. PAGE 67 of 123

DAEC RCS BARRIER THRESHOLDS:

The RCS Barrier is the reactor coolant system pressure boundary and includes the RPV and all reactor coolant system piping up to and including the isolation valves.

1. Primary Containment Conditions

Loss 1.A

2 psig is the drywell high pressure scram setpoint which indicates a LOCA by automatically initiating ECCS.

There is no Potential Loss threshold associated with Primary Containment Pressure.

2. RPV Water Level

Loss 2.A

+15 inches corresponds to the top of active fuel (TAF) and is used in the EOPs to indicate challenge to core cooling.

The RPV water level threshold is the same as Fuel Clad barrier Potential Loss threshold 2.A. Thus, this threshold indicates a Loss of the RCS barrier and Potential Loss of the Fuel Clad barrier and that appropriately escalates the emergency classification level to a Site Area Emergency.

This threshold is considered to be exceeded when, as specified in the EOPs, RPV water cannot be restored and maintained above the specified level following depressurization of the RPV (either manually, automatically or by failure of the RCS barrier) or when procedural guidance or a lack of low pressure RPV injection sources preclude Emergency RPV depressurization. EOPs allow the operator a wide choice of RPV injection sources to consider when restoring RPV water level to within prescribed limits. EOPs also specify depressurization of the RPV in order to facilitate RPV water level control with low-pressure injection sources. In some events, elevated RPV pressure may prevent restoration of RPV water level until pressure drops below the shutoff heads of available injection sources. Therefore, this RCS barrier Loss is met only after either: 1) the RPV has been depressurized, or required emergency RPV depressurization has been attempted, giving the operator an opportunity to assess the capability of low-pressure injection sources to restore RPV water level or 2) no low pressure RPV injection systems are available, precluding RPV depressurization in an attempt to minimize loss of RPV inventory.

The term, "cannot be restored and maintained above," means the value of RPV water level is not able to be brought above the specified limit (top of active fuel). The determination requires an evaluation of system performance and availability in relation to the RPV water level value and trend. A threshold prescribing declaration when a threshold value *cannot* be restored and maintained above a specified limit does not require immediate action simply because the current value is below the top of active fuel but does not permit extended operation beyond the limit; the threshold must be considered reached as soon as it is apparent that the top of active fuel cannot be attained.

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DAEC RCS BARRIER THRESHOLDS (cont.):

In high-power ATWS/failure to scram events, EOPs may direct the operator to deliberately lower RPV water level to the top of active fuel in order to reduce reactor power. RPV water level is then controlled between the top of active fuel and the Minimum Steam Cooling RPV Water Level (MSCRWL). Although such action is a challenge to core cooling and the Fuel Clad barrier, the immediate need to reduce reactor power is the higher priority. For such events, ICs SA5 or SS5 will dictate the need for emergency classification.

There is no RCS Potential Loss threshold associated with RPV Water Level.

3. RCS Leak Rate

Loss Threshold 3.A

Large high-energy lines that rupture outside primary containment can discharge significant amounts of inventory and jeopardize the pressure-retaining capability of the RCS until they are isolated. If it is determined that the ruptured line cannot be promptly isolated from the Control Room, the RCS barrier Loss threshold is met.

The first part of the "Failure of both isolation valves..." loss threshold describes a condition where one isolation valve is not fully closed when required AND the other isolation valve is also not fully closed when required. The second part of this threshold is met when the two isolation valve failures described previously create a pathway to the environment (no barriers exist to prevent an actual or potential release).

Loss Threshold 3.B

Emergency RPV Depressurization in accordance with the EOPs is indicative of a loss of the RCS barrier. If Emergency RPV Depressurization is performed, the plant operators are directed to open safety relief valves (SRVs) and keep them open. Even though the RCS is being vented into the suppression pool, a Loss of the RCS barrier exists due to the diminished effectiveness of the RCS to retain fission products within its boundary.

Potential Loss Threshold 3.A

Potential loss of RCS based on primary system leakage outside the primary containment is determined from EOP temperature or radiation Max Normal Operating values in areas such as main steam line tunnel, RCIC, HPCI, etc., which indicate a direct path from the RCS to areas outside primary containment.

A Max Normal Operating Limit (MNOL) value is the highest value of the identified parameter expected to occur during normal plant operating conditions with all directly associated support and control systems functioning properly.

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DAEC RCS BARRIER THRESHOLDS (cont.):

The indicators reaching the threshold barriers and confirmed to be caused by RCS leakage from a primary system warrant an Alert classification. A primary system is defined to be the pipes, valves, and other equipment which connect directly to the RPV such that a reduction in RPV pressure will effect a decrease in the steam or water being discharged through an unisolated break in the system.

An UNISOLABLE leak which is indicated by MNOL values escalates to a Site Area Emergency when combined with Containment Barrier Loss threshold 3.A (after a containment isolation) and a General Emergency when the Fuel Clad Barrier criteria is also exceeded.

4. Primary Containment Radiation

Loss 4.A

The Drywell monitor reading corresponds to an instantaneous release of all reactor coolant mass into the primary containment, assuming that reactor coolant activity equals Technical Specification allowable limits. This value is lower than that specified for Fuel Clad Barrier Loss threshold 4.A since it indicates a loss of the RCS Barrier only.

There is no Potential Loss threshold associated with Primary Containment Radiation.

5. Other Indications

There are no Loss or Potential Loss thresholds associated with Other Indications.

6. Emergency Director Judgment

Loss 6.A

This threshold addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost.

Potential Loss 6.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the RCS Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

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DAEC CONTAINMENT BARRIER THRESHOLDS:

The Primary Containment Barrier includes the drywell, the wetwell, their respective interconnecting paths, and other connections up to and including the outermost containment isolation valves. Containment Barrier thresholds are used as criteria for escalation of the ECL from Alert to a Site Area Emergency or a General Emergency.

1. Primary Containment Conditions

Loss 1.A and 1.B

Rapid UNPLANNED loss of drywell pressure (i.e., not attributable to drywell spray or condensation effects) following an initial pressure increase indicates a loss of drywell integrity. Drywell pressure should increase as a result of mass and energy release into the primary containment from a LOCA. Thus, drywell pressure not increasing under these conditions indicates a loss of primary containment integrity.

These thresholds rely on operator recognition of an unexpected response for the condition and therefore a specific value is not assigned. The unexpected (UNPLANNED) response is important because it is the indicator for a containment bypass condition.

Loss 1.C

The use of the modifier “direct” in defining the release path discriminates against release paths through interfacing liquid systems or minor release pathways, such as instrument lines, not protected by the Primary Containment Isolation System (PCIS).

The existence of a filter is not considered in the threshold assessment. Filters do not remove fission product noble gases. In addition, a filter could become ineffective due to iodine and/or particulate loading beyond design limits (i.e., retention ability has been exceeded) or water saturation from steam/high humidity in the release stream.

Following the leakage of RCS mass into primary containment and a rise in primary containment pressure, there may be minor radiological releases associated with allowable primary containment leakage through various penetrations or system components. Minor releases may also occur if a primary containment isolation valve(s) fails to close but the primary containment atmosphere escapes to an enclosed system. These releases do not constitute a loss or potential loss of primary containment but should be evaluated using the Recognition Category R ICs.

Loss 1.D

EOPs may direct primary containment isolation valve logic(s) to be intentionally bypassed, even if offsite radioactivity release rate limits will be exceeded. Under these conditions with a valid primary containment isolation signal, the containment should also be considered lost if primary containment venting is actually performed.

Intentional venting of primary containment for primary containment pressure or combustible gas control to the secondary containment and/or the environment is a Loss of the Containment. Venting for primary containment pressure control when not in an accident situation (e.g., to control pressure below the drywell high pressure scram setpoint) does not meet the threshold condition.

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DAEC CONTAINMENT BARRIER THRESHOLDS (cont.):

Potential Loss 1.A

The threshold pressure is the Torus internal design pressure. Structural acceptance testing demonstrates the capability of the primary containment to resist pressures greater than the internal design pressure. A pressure of this magnitude is greater than those expected to result from any design basis accident and, thus, represent a Potential Loss of the Containment barrier.

Potential Loss 1.B

If hydrogen concentration reaches or exceeds the lower flammability limit, as defined in plant EOPs, in an oxygen rich environment, a potentially explosive mixture exists. If the combustible mixture ignites inside the primary containment, loss of the Containment barrier could occur.

Potential Loss 1.C

The Heat Capacity Limit (HCL) is the highest suppression pool temperature from which Emergency RPV Depressurization will not raise:

- Suppression chamber temperature above the maximum temperature capability of the suppression chamber and equipment within the suppression chamber which may be required to operate when the RPV is pressurized,
OR
- Suppression chamber pressure above Primary Containment Pressure Limit A, while the rate of energy transfer from the RPV to the containment is greater than the capacity of the containment vent.

The HCL is a function of RPV pressure, suppression pool temperature and suppression pool water level. It is utilized to preclude failure of the containment and equipment in the containment necessary for the safe shutdown of the plant and therefore, the inability to maintain plant parameters below the limit constitutes a potential loss of containment.

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DAEC CONTAINMENT BARRIER THRESHOLDS (cont.):

2. RPV Water Level

There is no Loss threshold associated with RPV Water Level.

Potential Loss 2.A

The Potential Loss threshold is identical to the Fuel Clad Loss RPV Water Level threshold 2.A. The Potential Loss requirement for Primary Containment Flooding indicates adequate core cooling cannot be restored and maintained and that core damage is possible. BWR EPGs/SAGs specify the conditions that require primary containment flooding. When primary containment flooding is required, the EPGs are exited and SAGs are entered. Entry into SAGs is a logical escalation in response to the inability to restore and maintain adequate core cooling.

PRA studies indicate that the condition of this Potential Loss threshold could be a core melt sequence which, if not corrected, could lead to RPV failure and increased potential for primary containment failure. In conjunction with the RPV water level Loss thresholds in the Fuel Clad and RCS barrier columns, this threshold results in the declaration of a General Emergency.

3. Primary Containment Isolation Failure

These thresholds address incomplete containment isolation that allows an UNISOLABLE direct release to the environment.

Loss 3.A

The Max Safe Operating Limit (MSOL) for Temperature and Radiation Level are each the highest value of these parameters at which neither: (1) equipment necessary for the safe shutdown of the plant will fail, nor (2) personnel access necessary for the safe shutdown of the plant will be precluded. EOPs utilize these temperatures and radiation levels to establish conditions under which RPV depressurization is required.

The temperatures and radiation levels should be confirmed to be caused by RCS leakage from a primary system. A primary system is defined to be the pipes, valves, and other equipment which connect directly to the RPV such that a reduction in RPV pressure will effect a decrease in the steam or water being discharged through an unisolated break in the system.

In combination with RCS potential loss 3.A this threshold would result in a Site Area Emergency.

There is no Potential Loss threshold associated with RCS Leak Rate.

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Basis Information For DAEC EAL Fission Product Barrier Table F-1	Rev. PAGE 73 of 123

DAEC CONTAINMENT BARRIER THRESHOLDS (cont.):

4. Primary Containment Radiation

There is no Loss threshold associated with Primary Containment Radiation.

Potential Loss 4.A

The drywell radiation monitor reading corresponds to an instantaneous release of all reactor coolant mass into the drywell, assuming that 20% of the fuel cladding has failed. The radiation monitor reading for the torus corresponds to an instantaneous release of all reactor coolant mass directly into the torus, assuming that 20% of the fuel cladding has failed. This level of fuel clad failure is well above that used to determine the analogous Fuel Clad Barrier Loss and RCS Barrier Loss thresholds.

NUREG-1228, *Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents*, indicates the fuel clad failure must be greater than approximately 20% in order for there to be a major release of radioactivity requiring offsite protective actions. For this condition to exist, there must already have been a loss of the RCS Barrier and the Fuel Clad Barrier. It is therefore prudent to treat this condition as a potential loss of containment which would then escalate the emergency classification level to a General Emergency.

5. Other Indications

There is no Loss threshold associated with Other Indications

Potential Loss 5.A

Results obtained from procedure PASAP 7.2, Fuel Damage Assessment, indicate at least 25% fuel clad damage. PASAP 7.2 only shows whether fuel damage is greater than or less than 25%, thus this indication is not likely to be declared before containment barrier potential loss 4.A which indicates 20% fuel damage. However, this potential loss threshold adds an additional layer of diversity to the scheme.

6. Emergency Director Judgment

Loss 6.A

This threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Containment barrier is lost.

Potential Loss 6.A

This threshold addresses any other factors that may be used by the Emergency Director in determining whether the Containment Barrier is potentially lost. The Emergency Director should also consider whether or not to declare the barrier potentially lost in the event that barrier status cannot be monitored.

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Hazards And Other Conditions Affecting Plant Safety ICs/EALs	Rev. PAGE 75 of 123

**10. HAZARDS AND OTHER CONDITIONS AFFECTING PLANT
SAFETY ICs/EALs**

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HU1	Rev. PAGE 76 of 123

ECL: Notification of Unusual Event

Initiating Condition: Confirmed SECURITY CONDITION or threat.

Operating Mode Applicability: All

Emergency Action Levels:

- HU1.1 A SECURITY CONDITION that does not involve a HOSTILE ACTION as reported by DAEC Security Shift Supervision.
- HU1.2 Notification of a credible security threat directed at DAEC.
- HU1.3 A validated notification from the NRC providing information of an aircraft threat.

Definitions:

SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses events that pose a threat to plant personnel or SAFETY SYSTEM equipment, and thus represent a potential degradation in the level of plant safety. Security events which do not meet one of these EALs are adequately addressed by the requirements of 10 CFR 73.71 or 10 CFR 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under ICs HA1, HS1 and HG1.

Timely and accurate communications between DAEC Security Shift Supervision and the Control Room is essential for proper classification of a security-related event. Classification of these events will initiate appropriate threat-related notifications to plant personnel and offsite response organizations.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HU1	Rev. PAGE 77 of 123

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

EAL HU1.1 references DAEC Security Shift Supervision because these are the individuals trained to confirm that a security event is occurring or has occurred. Training on security event confirmation and classification is controlled due to the nature of Safeguards and 10 CFR § 2.390 information.

EAL HU1.2 addresses the receipt of a credible security threat. The credibility of the threat is assessed in accordance with Abnormal Operating Procedure (AOP) 914, Security Events.

EAL HU1.3 addresses the threat from the impact of an aircraft on the plant. The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may also be provided by NORAD through the NRC. Validation of the threat is performed in accordance with Abnormal Operating Procedure (AOP) 914, Security Events.

Emergency plans and implementing procedures are public documents; therefore, EALs do not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information is contained in the Security Plan.

Escalation of the emergency classification level would be via IC HA1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HU2	Rev. PAGE 78 of 123

ECL: Notification of Unusual Event

Initiating Condition: Seismic event greater than OBE levels.

Operating Mode Applicability: All

Emergency Action Levels:

HU2.1 Seismic event greater than Operating Basis Earthquake (OBE) as indicated by receipt of the Amber Operating Basis Earthquake Light and the wailing seismic alarm on 1C35.

Definitions:

DESIGN BASIS EARTHQUAKE (DBE): A DBE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

OPERATING BASIS EARTHQUAKE (OBE): An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

Basis:

This IC addresses a seismic event that results in accelerations at the plant site greater than those specified for an Operating Basis Earthquake (OBE). An earthquake greater than an OBE but less than a Design Basis Earthquake (DBE) should have no significant impact on safety-related systems, structures and components; however, some time may be required for the plant staff to ascertain the actual post-event condition of the plant (e.g., performs walk-downs and post-event inspections). Given the time necessary to perform walk-downs and inspections, and fully understand any impacts, this event represents a potential degradation of the level of safety of the plant.

Event verification with external sources should not be necessary during or following an OBE. Earthquakes of this magnitude should be readily felt by on-site personnel and recognized as a seismic event. The Shift Manager or Emergency Director may seek external verification if deemed appropriate (e.g., a call to the USGS, check internet news sources, etc.); however, the verification action must not preclude a timely emergency declaration.

OBE events are detected in accordance with AOP 901. The OBE is associated with a peak horizontal acceleration of ± 0.06 g.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA8.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HU3	Rev. PAGE 79 of 123

ECL: Notification of Unusual Event

Initiating Condition: Hazardous events

Operating Mode Applicability: All

Emergency Action Levels:

Note: EAL HU3.4 does not apply to routine traffic impediments such as fog, snow, ice, or vehicle breakdowns or accidents.

- HU3.1 A tornado strike within the PROTECTED AREA.
- HU3.2 Internal room or area flooding of a magnitude sufficient to require manual or automatic electrical isolation of a SAFETY SYSTEM component needed for the current operating mode.
- HU3.3 Movement of personnel within the PROTECTED AREA is impeded due to an offsite event involving hazardous materials (e.g., an offsite chemical spill or toxic gas release).
- HU3.4 A hazardous event that results in on-site conditions sufficient to prohibit the plant staff from accessing the site via personal vehicles.

Definitions:

PROTECTED AREA: The area under continuous access monitoring and control, and armed protection as described in the site Security Plan.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses hazardous events that are considered to represent a potential degradation of the level of safety of the plant.

EAL HU3.1 addresses a tornado striking (touching down) within the Protected Area.

EAL HU3.2 addresses flooding of a building room or area that results in operators isolating power to a SAFETY SYSTEM component due to water level or other wetting concerns. Classification is also required if the water level or related wetting causes an automatic isolation of a SAFETY SYSTEM component from its power source (e.g., a breaker or relay trip). To warrant classification, operability of the affected component must be required by Technical Specifications for the current operating mode.

EAL HU3.3 addresses a hazardous materials event originating at an offsite location and of sufficient magnitude to impede the movement of personnel within the PROTECTED AREA.

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EAL HU3.4 addresses a hazardous event that causes an on-site impediment to vehicle movement and significant enough to prohibit the plant staff from accessing the site using personal vehicles. Examples of such an event include site flooding caused by a hurricane, heavy rains, up-river water releases, dam failure, etc., or an on-site train derailment blocking the access road.

This EAL is not intended apply to routine impediments such as fog, snow, ice, or vehicle breakdowns or accidents, but rather to more significant conditions such as the Hurricane Andrew strike on Turkey Point in 1992, the flooding around the Cooper Station during the Midwest floods of 1993, or the flooding around Ft. Calhoun Station in 2011.

Escalation of the emergency classification level would be based on ICs in Recognition Categories R, F, S or C.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HU4	Rev. PAGE 81 of 123

ECL: Notification of Unusual Event

Initiating Condition: FIRE potentially degrading the level of safety of the plant.

Operating Mode Applicability: All

Emergency Action Levels:

Notes:

- The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

- HU4.1 a. A FIRE is **NOT** extinguished within 15-minutes of **ANY** of the following FIRE detection indications:
- Report from the field (i.e., visual observation)
 - Receipt of multiple (more than 1) fire alarms or indications
 - Field verification of a single fire alarm

AND

- b. The FIRE is located within **ANY** Table H-1 plant rooms or areas

- HU4.2 a. Receipt of a single fire alarm with no other indications of a FIRE.

AND

- b. The FIRE is located within **ANY** Table H-1 plant rooms or areas

AND

- c. The existence of a FIRE is not verified within 30-minutes of alarm receipt.

- HU4.3 A FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA not extinguished within 60-minutes of the initial report, alarm or indication.

- HU4.4 A FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA that requires firefighting support by an offsite fire response agency to extinguish.

Table H-1 Fire Areas
1G31 DG and Day Tank Rooms 1G21 DG and Day Tank Rooms - Battery Rooms - Essential Switchgear Rooms - Cable Spreading Room - Torus Room - Intake Structure - Pumphouse - Drywell - Torus - NE, NW, SE Corner Rooms - HPCI Room - RCIC Room - RHR Valve Room - North CRD Area - South CRD Area - CSTs - Control Building - Remote Shutdown Panel 1C388 Area - Panel 1C55/56 Area - SBGT Room

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Definitions:

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

PROTECTED AREA: The area under continuous access monitoring and control, and armed protection as described in the site Security Plan.

Basis:

This IC addresses the magnitude and extent of FIRES that may be indicative of a potential degradation of the level of safety of the plant.

EAL HU4.1

The intent of the 15-minute duration is to size the FIRE and to discriminate against small FIRES that are readily extinguished (e.g., smoldering waste paper basket). In addition to alarms, other indications of a FIRE could be a drop in fire main pressure, automatic activation of a suppression system, etc.

Upon receipt, operators will take prompt actions to confirm the validity of an initial fire alarm, indication, or report. For EAL assessment purposes, the emergency declaration clock starts at the time that the initial alarm, indication, or report was received, and not the time that a subsequent verification action was performed. Similarly, the fire duration clock also starts at the time of receipt of the initial alarm, indication or report.

EAL HU4.2

This EAL addresses receipt of a single fire alarm, and the existence of a FIRE is not verified (i.e., proved or disproved) within 30-minutes of the alarm. Upon receipt, operators will take prompt actions to confirm the validity of a single fire alarm. For EAL assessment purposes, the 30-minute clock starts at the time that the initial alarm was received, and not the time that a subsequent verification action was performed.

A single fire alarm, absent other indication(s) of a FIRE, may be indicative of equipment failure or a spurious activation, and not an actual FIRE. For this reason, additional time is allowed to verify the validity of the alarm. The 30-minute period is a reasonable amount of time to determine if an actual FIRE exists; however, after that time, and absent information to the contrary, it is assumed that an actual FIRE is in progress.

If an actual FIRE is verified by a report from the field, then EAL HU4.1 is immediately applicable, and the emergency must be declared if the FIRE is not extinguished within 15 minutes of the report. If the alarm is verified to be due to an equipment failure or a spurious activation, and this verification occurs within 30-minutes of the receipt of the alarm, then this EAL is not applicable and no emergency declaration is warranted.

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EAL HU4.3

In addition to a FIRE addressed by EAL HU4.1 or EAL HU4.2, a FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA not extinguished within 60-minutes may also potentially degrade the level of plant safety. This basis extends to a FIRE occurring within the PROTECTED AREA of an ISFSI located outside the plant PROTECTED AREA.

EAL HU4.4

If a FIRE within the plant PROTECTED AREA or ISFSI PROTECTED AREA is of sufficient size to require a response by an offsite firefighting agency (e.g., a local town Fire Department), then the level of plant safety is potentially degraded. The dispatch of an offsite firefighting agency to the site requires an emergency declaration only if it is needed to actively support firefighting efforts because the fire is beyond the capability of the Fire Brigade to extinguish. Declaration is not necessary if the agency resources are placed on stand-by, or supporting post-extinguishment recovery or investigation actions.

Basis-Related Requirements from Appendix R and NFPA-805

Criterion 3 of Appendix A to 10 CFR 50 states in part that "structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions."

The Nuclear Safety Goal ("NSG") in NFPA 805, Section 1.3.1 states, "The nuclear safety goal is to provide reasonable assurance that a fire during any operational mode and plant configuration will not prevent the plant from achieving and maintaining the fuel in a safe and stable condition."

When considering the effects of fire, those systems associated with achieving and maintaining safe shutdown conditions assume major importance because a safe shutdown success path, free of fire damage, must be available to meet the nuclear safety goals, objectives and performance criteria for a fire under any plant operational mode or configuration.

Because fire may affect safe shutdown systems and because the loss of function of systems used to mitigate the consequences of design basis accidents under post-fire conditions does not per se impact public safety, the need to limit fire damage to systems required to achieve and maintain safe shutdown conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of design basis accidents.

In addition, Appendix R to 10 CFR 50, requires, among other considerations, the use of 1-hour fire barriers for the enclosure of cable and equipment and associated non-safety circuits of one redundant train (G.2.c). Even though DAEC has adopted the alternate approach provided by NFPA-805 in lieu of the deterministic requirements of Appendix R, the 30-minutes to verify a single alarm as used in EAL HU4.2 is considered a reasonable amount of time to determine if an actual FIRE exists without presenting a challenge to the nuclear safety performance criteria.

Depending upon the plant mode at the time of the event, escalation of the emergency classification level would be via IC CA6 or SA8.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HU6	Rev. PAGE 84 of 123

ECL: Notification of Unusual Event

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a NOUE.

Operating Mode Applicability: All

Emergency Action Levels:

- HU6.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of SAFETY SYSTEMS occurs.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a NOUE.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HA1	Rev. PAGE 85 of 123

ECL: Alert

Initiating Condition: HOSTILE ACTION within the OWNER CONTROLLED AREA or airborne attack threat within 30 minutes.

Operating Mode Applicability: All

Emergency Action Levels:

- HA1.1 A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the DAEC Security Shift Supervision.
- HA1.2 A validated notification from NRC of an aircraft attack threat within 30 minutes of the site.

Definitions:

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

OWNER CONTROLLED AREA: The site property owned by or otherwise under the control of the licensee.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

Basis:

This IC addresses the occurrence of a HOSTILE ACTION within the OWNER CONTROLLED AREA or notification of an aircraft attack threat. This event will require rapid response and assistance due to the possibility of the attack progressing to the PROTECTED AREA, or the need to prepare the plant and staff for a potential aircraft impact.

Timely and accurate communications between DAEC Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

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As time and conditions allow, these events require a heightened state of readiness by the plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The Alert declaration will also heighten the awareness of Offsite Response Organizations, allowing them to be better prepared should it be necessary to consider further actions.

This IC does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc. Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR 73.71 or 10 CFR 50.72.

EAL HA1.1 is applicable for any HOSTILE ACTION occurring, or that has occurred, in the OWNER CONTROLLED AREA. This includes any action directed against the ISFSI which is located outside the plant PROTECTED AREA.

EAL HA1.2 addresses the threat from the impact of an aircraft on the plant, and the anticipated arrival time is within 30 minutes. The intent of this EAL is to ensure that threat-related notifications are made in a timely manner so that plant personnel and offsite response organizations are in a heightened state of readiness. This EAL is met when the threat-related information has been validated in accordance with Abnormal Operating Procedure (AOP) 914, Security Events.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an aircraft. The status and size of the plane may be provided by NORAD through the NRC.

In some cases, it may not be readily apparent if an aircraft impact within the OWNER CONTROLLED AREA was intentional (i.e., a HOSTILE ACTION). It is expected, although not certain, that notification by an appropriate Federal agency to the site would clarify this point. In this case, the appropriate federal agency is intended to be NORAD, FBI, FAA or NRC. The emergency declaration, including one based on other ICs/EALs, should not be unduly delayed while awaiting notification by a Federal agency.

Emergency plans and implementing procedures are public documents; therefore, EALs do not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information is contained in the Security Plan.

Escalation of the emergency classification level would be via IC HS1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HA5	Rev. PAGE 87 of 123

ECL: Alert

Initiating Condition: Control Room evacuation resulting in transfer of plant control to alternate locations.

Operating Mode Applicability: All

Emergency Action Level:

HA5.1 An event has resulted in plant control being transferred from the Control Room to the Remote Shutdown Panel (1C388).

Definitions:

None

Basis:

This IC addresses an evacuation of the Control Room that results in transfer of plant control to alternate locations outside the Control Room. The loss of the ability to control the plant from the Control Room is considered to be a potential substantial degradation in the level of plant safety.

Following a Control Room evacuation, control of the plant will be transferred to alternate shutdown locations. The necessity to control a plant shutdown from outside the Control Room, in addition to responding to the event that required the evacuation of the Control Room, will present challenges to plant operators and other on-shift personnel. Activation of the ERO and emergency response facilities will assist in responding to these challenges.

Escalation of the emergency classification level would be via IC HS5.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HA6	Rev. PAGE 88 of 123

ECL: Alert

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Level:

- HA6.1 Other conditions exist which, in the judgment of the Emergency Director, indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Definitions:

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for an Alert.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HS1	Rev. PAGE 89 of 123

ECL: Site Area Emergency

Initiating Condition: HOSTILE ACTION within the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Levels:

HS1.1 A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the DAEC Security Shift Supervision.

Definitions:

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE FORCE: One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

PROTECTED AREA: The area under continuous access monitoring and control, and armed protection as described in the site Security Plan.

Basis:

This IC addresses the occurrence of a HOSTILE ACTION within the PROTECTED AREA. This event will require rapid response and assistance due to the possibility for damage to plant equipment.

Timely and accurate communications between DAEC Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

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As time and conditions allow, these events require a heightened state of readiness by the plant staff and implementation of onsite protective measures (e.g., evacuation, dispersal or sheltering). The Site Area Emergency declaration will mobilize offsite response organization resources and have them available to develop and implement public protective actions in the unlikely event that the attack is successful in impairing multiple safety functions.

This IC does not apply to a HOSTILE ACTION directed at the ISFSI PROTECTED AREA which is located outside the plant PROTECTED AREA; such an attack should be assessed using IC HA1. It also does not apply to incidents that are accidental events, acts of civil disobedience, or otherwise are not a HOSTILE ACTION perpetrated by a HOSTILE FORCE. Examples include the crash of a small aircraft, shots from hunters, physical disputes between employees, etc. Reporting of these types of events is adequately addressed by other EALs, or the requirements of 10 CFR 73.71 or 10 CFR 50.72.

Emergency plans and implementing procedures are public documents; therefore, EALs do not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information is contained in the Security Plan.

Escalation of the emergency classification level would be via IC HG1.

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HS5	Rev. PAGE 91 of 123

ECL: Site Area Emergency

Initiating Condition: Inability to control a key safety function from outside the Control Room.

Operating Mode Applicability: All

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

HS5.1 a. An event has resulted in plant control being transferred from the Control Room to the Remote Shutdown Panel (1C388).

AND

b. Control of **ANY** of the following key safety functions is not reestablished within 20 minutes.

- Reactivity control
- RPV water level
- RCS heat removal

Definitions:

None

Basis:

This IC addresses an evacuation of the Control Room that results in transfer of plant control to alternate locations, and the control of a key safety function cannot be reestablished in a timely manner. The failure to gain control of a key safety function following a transfer of plant control to alternate locations is a precursor to a challenge to one or more fission product barriers within a relatively short period of time.

The determination of whether or not “control” is established at the Remote Shutdown Panel (1C388) is based on Emergency Director judgment. The Emergency Director is expected to make a reasonable, informed judgment within 20 minutes whether or not the operating staff has control of key safety functions from the remote safe shutdown location(s).

AOP 915, “Shutdown Outside Control Room” provides the following CAUTION – *“For Control Room evacuation as the result of a fire, transfer of control at panels 1C388, 1C389, 1C390, 1C391, and 1C392 is required to be completed within 20 minutes.”*

Escalation of the emergency classification level would be via IC FG1 or CG1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HS6	Rev. PAGE 92 of 123

ECL: Site Area Emergency

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a Site Area Emergency.

Operating Mode Applicability: All

Emergency Action Level:

- HS6.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts, (1) toward site personnel or equipment that could lead to the likely failure of or, (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Definitions:

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a Site Area Emergency.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HG1	Rev. PAGE 93 of 123

ECL: General Emergency

Initiating Condition: HOSTILE ACTION resulting in loss of physical control of the facility.

Operating Mode Applicability: All

Emergency Action Level:

HG1.1 a. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the DAEC Security Shift Supervision.

AND

b. **EITHER** of the following has occurred:

1. **ANY** of the following safety functions cannot be controlled or maintained.

- Reactivity control
- RPV water level
- RCS heat removal

OR

2. Damage to spent fuel has occurred or is IMMINENT.

Definitions:

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE FORCE: One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

PROTECTED AREA: The area under continuous access monitoring and control, and armed protection as described in the site Security Plan.

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Basis:

This IC addresses an event in which a HOSTILE FORCE has taken physical control of the facility to the extent that the plant staff can no longer operate equipment necessary to maintain key safety functions. It also addresses a HOSTILE ACTION leading to a loss of physical control that results in actual or IMMINENT damage to spent fuel due to 1) damage to a spent fuel pool cooling system (e.g., pumps, heat exchangers, controls, etc.) or, 2) loss of spent fuel pool integrity such that sufficient water level cannot be maintained.

Timely and accurate communications between the DAEC Security Shift Supervision and the Control Room is essential for proper classification of a security-related event.

Security plans and terminology are based on the guidance provided by NEI 03-12, *Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan [and Independent Spent Fuel Storage Installation Security Program]*.

Emergency plans and implementing procedures are public documents; therefore, EALs do not incorporate Security-sensitive information. This includes information that may be advantageous to a potential adversary, such as the particulars concerning a specific threat or threat location. Security-sensitive information is contained in the Security Plan.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
HG6	Rev. PAGE 95 of 123

ECL: General Emergency

Initiating Condition: Other conditions exist which in the judgment of the Emergency Director warrant declaration of a General Emergency.

Operating Mode Applicability: All

Emergency Action Level:

- HG6.1 Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite for more than the immediate site area.

Definitions:

HOSTILE ACTION: An act toward DAEC or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

Basis:

This IC addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency classification level description for a General Emergency.

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System Malfunction ICs/EALs	Rev. PAGE 96 of 123

11. SYSTEM MALFUNCTION ICs/EALs

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SU1	Rev. PAGE 97 of 123

ECL: Notification of Unusual Event

Initiating Condition: Loss of ALL offsite AC power capability to essential buses for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

SU1.1 Loss of **ALL** offsite AC power capability to 1A3 **AND** 1A4 buses for 15 minutes or longer.

Definitions:

None

Basis:

This IC addresses a prolonged loss of offsite power. The loss of offsite power sources renders the plant more vulnerable to a complete loss of power to AC essential buses. This condition represents a potential reduction in the level of safety of the plant.

The intent of this EAL is to declare a Notification of Unusual Event when offsite power has been lost and both of the emergency diesel generators have successfully started and energized their respective 4 kv essential bus.

For emergency classification purposes, “capability” means that an offsite AC power source(s) is available to the essential buses, whether or not the buses are powered from it.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of offsite power.

Escalation of the emergency classification level would be via IC SA1.

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SU3	Rev. PAGE 98 of 123

ECL: Notification of Unusual Event

Initiating Condition: UNPLANNED loss of Control Room indications for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

SU3.1 An UNPLANNED event results in the inability to monitor one or more of the Table S-1 parameters from within the Control Room for 15 minutes or longer.

Table S-1 Safety System Parameters
• Reactor power • RPV Water Level • RPV Pressure • Primary Containment Pressure • Suppression Pool Level • Suppression Pool Temperature

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

Basis:

This IC addresses the difficulty associated with monitoring normal plant conditions without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. This condition is a precursor to a more significant event and represents a potential degradation in the level of safety of the plant.

As used in this EAL, an “inability to monitor” means that values for one or more of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room sources for the given parameter(s). For example, the reactor power level cannot be determined from any analog, digital and recorder source within the Control Room.

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An event involving a loss of plant indications, annunciators and/or display systems is evaluated in accordance with 10 CFR 50.72 (and associated guidance in NUREG-1022) to determine if an NRC event report is required. The event would be reported if it significantly impaired the capability to perform emergency assessments. In particular, emergency assessments necessary to implement abnormal operating procedures, emergency operating procedures, and emergency plan implementing procedures addressing emergency classification, accident assessment, or protective action decision-making.

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, RPV level and RCS heat removal. The loss of the ability to determine one or more of these parameters from within the Control Room is considered to be more significant than simply a reportable condition. In addition, if all indication sources for one or more of the listed parameters are lost, then the ability to determine the values of other SAFETY SYSTEM parameters may be impacted as well. For example, if the value for RPV water level cannot be determined from the indications and recorders on a main control board, the SPDS or the plant computer, the availability of other parameter values may be compromised as well.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of indication.

Escalation of the emergency classification level would be via IC SA3.

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SU4	Rev. PAGE 100 of 123

ECL: Notification of Unusual Event

Initiating Condition: Reactor coolant activity greater than Technical Specification allowable limits.

Operating Mode Applicability: 1, 2, 3

Emergency Action Levels:

SU4.1 Pretreatment Offgas System (RM-4104) Hi-Hi Radiation Alarm.

SU4.2 Sample analysis indicates that reactor coolant specific activity is greater than 2.0 $\mu\text{Ci/gm}$ dose equivalent I-131 for 12 hours or longer.

Definitions:

None

Basis:

This IC addresses a reactor coolant activity value that exceeds an allowable limit specified in Technical Specifications. This condition is a precursor to a more significant event and represents a potential degradation of the level of safety of the plant.

For EAL SU4.1, RM-4104 Hi-Hi Radiation Alarm has been chosen because it is operationally significant, is readily recognizable by the Control Room Operations Staff, and is set at a level corresponding to noble gas release rate, after 30-minute delay and decay of 1 Ci/sec.

For EAL SU4.2, coolant samples exceeding the 2.0 $\mu\text{Ci/gm}$ dose equivalent I-131 concentration require prompt action by DAEC Technical Specifications and are representative of minor fuel cladding degradation.

Escalation of the emergency classification level would be via ICs FA1 or the Recognition Category R ICs.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SU5	Rev. PAGE 101 of 123

ECL: Notification of Unusual Event

Initiating Condition: RCS leakage for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Levels:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

- SU5.1 RCS unidentified or pressure boundary leakage greater than 10 gpm for 15 minutes or longer.
- SU5.2 RCS identified leakage greater than 25 gpm for 15 minutes or longer.
- SU5.3 Leakage from the RCS to a location outside containment greater than 25 gpm for 15 minutes or longer.

Definitions:

UNISOLABLE: An open or breached system line that cannot be isolated, remotely or locally.

Basis:

This IC addresses RCS leakage which may be a precursor to a more significant event. In this case, RCS leakage has been detected and operators, following applicable procedures, have been unable to promptly isolate the leak. This condition is considered to be a potential degradation of the level of safety of the plant.

EAL SU5.1 and EAL SU5.2 are focused on a loss of mass from the RCS due to "unidentified leakage", "pressure boundary leakage" or "identified leakage" (as these leakage types are defined in the plant Technical Specifications).

EAL SU5.3 addresses a RCS mass loss caused by an UNISOLABLE leak through an interfacing system. These EALs thus apply to leakage into the containment, a secondary-side system) or a location outside of containment.

The leak rate values for each EAL were selected because they are usually observable with normal Control Room indications. Lesser values typically require time-consuming calculations to determine (e.g., a mass balance calculation). EAL SU5.1 uses a lower value that reflects the greater significance of unidentified or pressure boundary leakage.

The release of mass from the RCS due to the as-designed/expected operation of a relief valve does not warrant an emergency classification. A stuck-open Safety Relief Valve (SRV) or SRV leakage is not considered either identified or unidentified leakage by Technical Specifications and, therefore, is not applicable to this EAL.

The 15-minute threshold duration allows sufficient time for prompt operator actions to isolate the leakage, if possible.

Escalation of the emergency classification level would be via ICs of Recognition Category R or F.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SU6	Rev. PAGE 102 of 123

ECL: Notification of Unusual Event

Initiating Condition: Automatic or manual scram fails to shutdown the reactor.

Operating Mode Applicability: 1, 2

Emergency Action Levels:

Note: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

SU6.1 a. An automatic scram did not shutdown the reactor.

AND

- b. **ANY** of the following manual actions taken at 1C05 are successful in lowering reactor power below 5% power
- Manual Scram Pushbuttons
 - Mode Switch to Shutdown
 - Alternate Rod Insertion (ARI)

SU6.2 a. A manual scram did not shutdown the reactor.

AND

- b. **EITHER** of the following:
1. **ANY** of the following subsequent manual actions taken at 1C05 are successful in lowering reactor power below 5% power
 - Manual Scram Pushbuttons
 - Mode Switch to Shutdown
 - Alternate Rod Insertion (ARI)
 - OR**
 2. A subsequent automatic scram is successful in shutting down the reactor.

Definitions:

None

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor scram that results in a reactor shutdown, and either a subsequent operator manual action taken at the reactor control consoles or an automatic scram is successful in shutting down the reactor. This event is a precursor to a more significant condition and thus represents a potential degradation of the level of safety of the plant.

Following the failure on an automatic reactor scram, operators will promptly initiate manual actions at the reactor control console to shutdown the reactor (e.g., initiate a manual reactor scram quickly fall to a level within the capabilities of the plant's decay heat removal systems.

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If an initial manual reactor scram is unsuccessful, operators will promptly take manual action at another location(s) on the reactor control console to shutdown the reactor (e.g., initiate a manual reactor scram using a different switch). Depending upon several factors, the initial or subsequent effort to manually scram the reactor, or a concurrent plant condition, may lead to the generation of an automatic reactor scram signal. If a subsequent manual or automatic scram is successful in shutting down the reactor, core heat generation will quickly fall to a level within the capabilities of the plant's decay heat removal systems.

A manual action at the reactor control console is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor scram). This action does not include manually driving in control rods or implementation of boron injection strategies. Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be "at the reactor control console".

Taking the Reactor Mode Switch to SHUTDOWN is considered to be a manual scram action.

The plant response to the failure of an automatic or manual reactor scram will vary based upon several factors including the reactor power level prior to the event, availability of the condenser, performance of mitigation equipment and actions, other concurrent plant conditions, etc. If subsequent operator manual actions taken at the reactor control consoles are also unsuccessful in shutting down the reactor, then the emergency classification level will escalate to an Alert via IC SA6. Depending upon the plant response, escalation is also possible via IC FA1. Absent the plant conditions needed to meet either IC SA6 or FA1, an Unusual Event declaration is appropriate for this event.

The reactor should be considered shutdown when it is producing less heat than the maximum decay heat load for which the SAFETY SYSTEMS are designed (typically 3 to 5% power).

Should a reactor scram signal be generated as a result of plant work (e.g., RPS setpoint testing), the following classification guidance should be applied.

- If the signal causes a plant transient that should have included an automatic reactor scram and the RPS fails to automatically shutdown the reactor, then this IC and the EALs are applicable, and should be evaluated.
- If the signal does not cause a plant transient and the scram failure is determined through other means (e.g., assessment of test results), then this IC and the EALs are not applicable and no classification is warranted.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SU7	Rev. PAGE 104 of 123

ECL: Notification of Unusual Event

Initiating Condition: Loss of ALL onsite or offsite communications capabilities.

Operating Mode Applicability: 1, 2, 3

Emergency Action Levels:

SU7.1 Loss of **ALL** of the following onsite communication methods:

- Plant Operations Radio System
- In-Plant Phone System
- Plant Paging System (Gaitronics)

SU7.2 Loss of **ALL** of the following offsite response organization communications methods:

- DAEC All-Call phone
- All telephone lines (PBX and commercial)
- Cell Phones (including fixed cell phone system)
- Control Room fixed satellite phone system

SU7.3 Loss of **ALL** of the following NRC communications methods:

- FTS Phone system
- All telephone lines (PBX and commercial)
- Cell Phones (including fixed cell phone system)
- Control Room fixed satellite phone system

Basis:

This IC addresses a significant loss of on-site or offsite communications capabilities. While not a direct challenge to plant or personnel safety, this event warrants prompt notifications to offsite response organizations and the NRC.

This IC should be assessed only when extraordinary means are being utilized to make communications possible (e.g., use of non-plant, privately owned equipment, relaying of on-site information via individuals or multiple radio transmission points, individuals being sent to offsite locations, etc.).

EAL SU7.1 addresses a total loss of the communications methods used in support of routine plant operations.

EAL SU7.2 addresses a total loss of the communications methods used to notify all offsite response organizations of an emergency declaration. The offsite response organizations referred to here are the State of Iowa, Linn County, and Benton County.

EAL SU7.3 addresses a total loss of the communications methods used to notify the NRC of an emergency declaration.

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SA1	Rev. PAGE 105 of 123

ECL: Alert

Initiating Condition: Loss of ALL but one AC power source to essential buses for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

- SA1.1 a. AC power capability to 1A3 and 1A4 buses is reduced to a single power source for 15 minutes or longer.

AND

- b. **ANY** additional single power source failure will result in a loss of **ALL** AC power to SAFETY SYSTEMS.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC describes a significant degradation of offsite and onsite AC power sources such that any additional single failure would result in a loss of all AC power to SAFETY SYSTEMS. In this condition, the sole AC power source may be powering one, or more than one, train of safety-related equipment. This IC provides an escalation path from IC SU1.

An “AC power source” is a source recognized in AOPs and EOPs, and capable of supplying required power to an emergency bus. Some examples of this condition are presented below.

- A loss of all offsite power with a concurrent failure of all but one emergency power source (e.g., an onsite diesel generator).
- A loss of emergency power sources (e.g., onsite diesel generators) with a single train of essential buses being fed from an offsite power source.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of power.

Escalation of the emergency classification level would be via IC SS1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SA3	Rev. PAGE 106 of 123

ECL: Alert

Initiating Condition: UNPLANNED loss of Control Room indications for 15 minutes or longer with a significant transient in progress.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

- SA3.1 a. An UNPLANNED event results in the inability to monitor one or more Table S-1 parameters from within the Control Room for 15 minutes or longer.

Table S-1 Safety System Parameters

- Reactor power
- RPV Water Level
- RPV Pressure
- Primary Containment Pressure
- Suppression Pool Level
- Suppression Pool Temperature

AND

- b. **ANY** of the Table S-2 transient events are in progress.

Table S-2 Significant Transients

- Automatic or manual runback greater than 25% thermal reactor power
- Electrical load rejection greater than 25% full electrical load
- Reactor scram
- ECCS actuation
- Thermal power oscillations greater than 10%

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Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

Basis:

This IC addresses the difficulty associated with monitoring rapidly changing plant conditions during a transient without the ability to obtain SAFETY SYSTEM parameters from within the Control Room. During this condition, the margin to a potential fission product barrier challenge is reduced. It thus represents a potential substantial degradation in the level of safety of the plant.

As used in this EAL, an “inability to monitor” means that values for one or more of the listed parameters cannot be determined from within the Control Room. This situation would require a loss of all of the Control Room sources for the given parameter(s). For example, the reactor power level cannot be determined from any analog, digital and recorder source within the Control Room.

An event involving a loss of plant indications, annunciators and/or display systems is evaluated in accordance with 10 CFR 50.72 (and associated guidance in NUREG-1022) to determine if an NRC event report is required. The event would be reported if it significantly impaired the capability to perform emergency assessments. In particular, emergency assessments necessary to implement abnormal operating procedures, emergency operating procedures, and emergency plan implementing procedures addressing emergency classification, accident assessment, or protective action decision-making.

This EAL is focused on a selected subset of plant parameters associated with the key safety functions of reactivity control, RPV level and RCS heat removal. The loss of the ability to determine one or more of these parameters from within the Control Room is considered to be more significant than simply a reportable condition. In addition, if all indication sources for one or more of the listed parameters are lost, then the ability to determine the values of other SAFETY SYSTEM parameters may be impacted as well. For example, if the value for RPV water level cannot be determined from the indications and recorders on a main control board, the SPDS or the plant computer, the availability of other parameter values may be compromised as well.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of indication.

Escalation of the emergency classification level would be via ICs FS1 or IC RS1.

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SA6	Rev. PAGE 108 of 123

ECL: Alert

Initiating Condition: Automatic or manual scram fails to shutdown the reactor, and subsequent manual actions taken at the reactor control consoles are not successful in shutting down the reactor.

Operating Mode Applicability: 1, 2

Note: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Emergency Action Level:

SA6.1 a. An automatic or manual scram did not shutdown the reactor.

AND

- b. **ALL** of the following manual actions taken at 1C05 are not successful in lowering reactor power below 5% power
- Manual Scram Pushbuttons
 - Mode Switch to Shutdown
 - Alternate Rod Insertion (ARI)

Definitions:

None

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor scram that results in a reactor shutdown, and subsequent operator manual actions taken at the reactor control consoles to shutdown the reactor are also unsuccessful. This condition represents an actual or potential substantial degradation of the level of safety of the plant. An emergency declaration is required even if the reactor is subsequently shutdown by an action taken away from the reactor control consoles since this event entails a significant failure of the RPS.

A manual action at the reactor control consoles is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor scram. This action does not include manually driving in control rods or implementation of boron injection strategies. If this action(s) is unsuccessful, operators would immediately pursue additional manual actions at locations away from the reactor control consoles (e.g., locally opening breakers). Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be “at the reactor control consoles.”

Taking the Reactor Mode Switch to SHUTDOWN is considered to be a manual scram action.

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The plant response to the failure of an automatic or manual reactor scram will vary based upon several factors including the reactor power level prior to the event, availability of the condenser, performance of mitigation equipment and actions, other concurrent plant conditions, etc. If the failure to shutdown the reactor is prolonged enough to cause a challenge to the RPV water level or RCS heat removal safety functions, the emergency classification level will escalate to a Site Area Emergency via IC SS6. Depending upon plant responses and symptoms, escalation is also possible via IC FS1. Absent the plant conditions needed to meet either IC SS6 or FS1, an Alert declaration is appropriate for this event.

It is recognized that plant responses or symptoms may also require an Alert declaration in accordance with the Recognition Category F ICs; however, this IC and EAL are included to ensure a timely emergency declaration.

The reactor should be considered shutdown when it is producing less heat than the maximum decay heat load for which the SAFETY SYSTEMS are designed (typically 3 to 5% power).

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SA8	Rev. PAGE 110 of 123

ECL: Alert

Initiating Condition: Hazardous event affecting a SAFETY SYSTEM needed for the current operating mode.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Notes:

- If the affected SAFETY SYSTEM train was already inoperable or out of service before the hazardous event occurred, then this emergency classification is not warranted.
- If the hazardous event only resulted in VISIBLE DAMAGE, with no indications of degraded performance to at least one train of the SAFETY SYSTEM, then this emergency classification is not warranted.

SA8.1 a. The occurrence of **ANY** of the Table S-3 hazardous events:

Table S-3 Hazardous Events
• Seismic event (earthquake) • Internal or external flooding event • High winds or tornado strike • FIRE • EXPLOSION • Other events with similar hazard characteristics as determined by the Shift Manager or Emergency Director

AND

- b. 1. Event damage has caused indications of degraded performance in one train of a SAFETY SYSTEM needed for the current operating mode.

AND

2. **EITHER** of the following:
- Event damage has caused indications of degraded performance to a second train of the SAFETY SYSTEM needed for the current operating mode,

OR

- The event has resulted in VISIBLE DAMAGE to the second train of a SAFETY SYSTEM needed for the current operating mode.

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Definitions:

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

VISIBLE DAMAGE: Damage to a component or structure that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected component or structure. Damage resulting from an equipment failure and limited to the failed component (i.e., the failure did not cause damage to a structure or any other equipment) is not VISIBLE DAMAGE.

Basis:

This IC addresses a hazardous event that causes damage to SAFETY SYSTEMS needed for the current operating mode. In order to provide the appropriate context for consideration of an ALERT classification, the hazardous event must have caused indications of degraded SAFETY SYSTEM performance in one train, and there must be either indications of performance issues with the second SAFETY SYSTEM train or VISIBLE DAMAGE to the second train such that the potential exists for this second SAFETY SYSTEM train to have performance issues. In other words, in order for this EAL to be classified, the hazardous event must occur, at least one SAFETY SYSTEM train must have indications of degraded performance, and the second SAFETY SYSTEM train must have indications of degraded performance or VISIBLE DAMAGE such that the potential exists for performance issues. Note that this second SAFETY SYSTEM train is from the same SAFETY SYSTEM that has indications of degraded performance for criteria SA8.1.b.1 of this EAL; commercial nuclear power plants are designed to be able to support single system issues without compromising public health and safety from radiological events.

An event affecting a single-train SAFETY SYSTEM (i.e., there are indications of degraded performance and/or VISIBLE DAMAGE affecting the one train) would not be classified under SA8 because the two-train impact criteria that underlie the EALs and Bases would not be met. If an event affects a single-train SAFETY SYSTEM, then the emergency classification should be made based on plant parameters/symptoms meeting the EALs for another IC. Depending upon the circumstances, classification may also occur based on Shift Manager/Emergency Director judgement.

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Indications of degraded performance addresses damage to a SAFETY SYSTEM train that is in service/operation since indications for it will be readily available. The indications of degraded performance should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

VISIBLE DAMAGE addresses damage to a SAFETY SYSTEM train that is not in service/operation and that potentially could cause performance issues. Operators will make this determination based on the totality of available event and damage report information. This is intended to be a brief assessment not requiring lengthy analysis or quantification of the damage. This VISIBLE DAMAGE should be significant enough to cause concern regarding the operability or reliability of the SAFETY SYSTEM train.

Escalation of the emergency classification level would be via IC FS1 or RS1.

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ECL: Site Area Emergency

Initiating Condition: Loss of ALL offsite and ALL onsite AC power to essential buses for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

SS1.1 Loss of **ALL** offsite and **ALL** onsite AC power to 1A3 and 1A4 buses for 15 minutes or longer.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses a total loss of AC power that compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. In addition, fission product barrier monitoring capabilities may be degraded under these conditions.

This IC represents a condition that involves actual or likely major failures of plant functions needed for the protection of the public.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the emergency classification level would be via ICs RG1, FG1 or SG1.

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SS2	Rev. PAGE 114 of 123

ECL: Site Area Emergency

Initiating Condition: Loss of ALL Vital DC power for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

SS2.1 Indicated voltage is less than 105 VDC on **BOTH** Div 1 and Div 2 125 VDC buses for 15 minutes or longer.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses a loss of Vital DC power which compromises the ability to monitor and control SAFETY SYSTEMS. In modes above Cold Shutdown, this condition involves a major failure of plant functions needed for the protection of the public.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Escalation of the emergency classification level would be via ICs RG1, FG1 or SG2.

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SS6	Rev. PAGE 115 of 123

ECL: Site Area Emergency

Initiating Condition: Inability to shutdown the reactor causing a challenge to RPV water level or RCS heat removal.

Operating Mode Applicability: 1, 2

Note: A manual action is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core, and does not include manually driving in control rods or implementation of boron injection strategies.

Emergency Action Levels:

SS6.1 a. An automatic or manual scram did not shutdown the reactor.

AND

b. **ALL** of the following manual actions taken at 1C05 are not successful in lowering reactor power below 5% power:

- Manual Scram Pushbuttons
- Mode Switch to Shutdown
- Alternate Rod Insertion (ARI)

AND

c. **EITHER** of the following conditions exist:

- RPV level cannot be restored and maintained above -25 inches.

OR

- HCL (Graph 4 of EOP 2) exceeded.

Definitions:

None

Basis:

This IC addresses a failure of the RPS to initiate or complete an automatic or manual reactor scram that results in a reactor shutdown, all subsequent operator actions to manually shutdown the reactor are unsuccessful, and continued power generation is challenging the capability to adequately remove heat from the core and/or the RCS. This condition will lead to fuel damage if additional mitigation actions are unsuccessful and thus warrants the declaration of a Site Area Emergency.

A manual action at the reactor control consoles is any operator action, or set of actions, which causes the control rods to be rapidly inserted into the core (e.g., initiating a manual reactor scram. This action does not include manually driving in control rods or implementation of boron injection strategies. If this action(s) is unsuccessful, operators would immediately pursue additional manual actions at locations away from the reactor control consoles (e.g., locally opening breakers). Actions taken at back-panels or other locations within the Control Room, or any location outside the Control Room, are not considered to be "at the reactor control consoles."

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Taking the Reactor Mode Switch to SHUTDOWN is considered to be a manual scram action.

In some instances, the emergency classification resulting from this IC/EAL may be higher than that resulting from an assessment of the plant responses and symptoms against the Recognition Category F ICs/EALs. This is appropriate in that the Recognition Category F ICs/EALs do not address the additional threat posed by a failure to shutdown the reactor. The inclusion of this IC and EAL ensures the timely declaration of a Site Area Emergency in response to prolonged failure to shutdown the reactor.

The reactor should be considered shutdown when it is producing less heat than the maximum decay heat load for which the SAFETY SYSTEMS are designed (typically 3 to 5% power).

Escalation of the emergency classification level would be via IC RG1 or FG1.

EAL TECHNICAL BASES DOCUMENT	EP-PDA-151
SG1	Rev. PAGE 117 of 123

ECL: General Emergency

Initiating Condition: Prolonged loss of ALL offsite and ALL onsite AC power to essential buses.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

- SG1.1 a. Loss of **ALL** offsite and **ALL** onsite AC power to 1A3 and 1A4 buses.
- AND**
- b. **EITHER** of the following:
- Restoration of at least one AC essential bus in less than 4 hours is not likely.
 - OR**
 - RPV level cannot be restored and maintained above -25 inches.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses a prolonged loss of all power sources to AC essential buses. A loss of all AC power compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. A prolonged loss of these buses will lead to a loss of one or more fission product barriers. In addition, fission product barrier monitoring capabilities may be degraded under these conditions.

The EAL should require declaration of a General Emergency prior to meeting the thresholds for IC FG1. This will allow additional time for implementation of offsite protective actions.

Escalation of the emergency classification from Site Area Emergency will occur if it is projected that power cannot be restored to at least one AC essential bus by the end of the 4 hour station blackout coping period. Beyond this time, plant responses and event trajectory are subject to greater uncertainty, and there is an increased likelihood of challenges to multiple fission product barriers.

The estimate for restoring at least one essential bus should be based on a realistic appraisal of the situation. Mitigation actions with a low probability of success should not be used as a basis for delaying a classification upgrade. The goal is to maximize the time available to prepare for, and implement, protective actions for the public.

The EAL will also require a General Emergency declaration if the loss of AC power results in parameters that indicate an inability to adequately remove decay heat from the core.

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SG2	Rev. PAGE 118 of 123

ECL: General Emergency

Initiating Condition: Loss of ALL AC and Vital DC power sources for 15 minutes or longer.

Operating Mode Applicability: 1, 2, 3

Emergency Action Level:

Note: The Emergency Director should declare the event promptly upon determining that the applicable time has been exceeded, or will likely be exceeded.

SG2.1 a. Loss of **ALL** offsite and **ALL** onsite AC power to 1A3 and 1A4 buses for 15 minutes or longer.

AND

b. Indicated voltage is less than 105 VDC on **BOTH** Div 1 and Div 2 125 VDC buses for 15 minutes or longer.

Definitions:

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

Basis:

This IC addresses a concurrent and prolonged loss of both AC and Vital DC power. A loss of all AC power compromises the performance of all SAFETY SYSTEMS requiring electric power including those necessary for emergency core cooling, containment heat removal/pressure control, spent fuel heat removal and the ultimate heat sink. A loss of Vital DC power compromises the ability to monitor and control SAFETY SYSTEMS. A sustained loss of both AC and DC power will lead to multiple challenges to fission product barriers.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. The 15-minute emergency declaration clock begins at the point when both EAL thresholds are met.

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APPENDIX A – ACRONYMS AND ABBREVIATIONS

AC.....	Alternating Current
AOP	Abnormal Operating Procedure
ATWS	Anticipated Transient Without Scram
BWR	Boiling Water Reactor
CDE	Committed Dose Equivalent
CFR	Code of Federal Regulations
CNMT	Containment
DC	Direct Current
EAL.....	Emergency Action Level
ECCS.....	Emergency Core Cooling System
ECL.....	Emergency Classification Level
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EPA	Environmental Protection Agency
EPG	Emergency Procedure Guideline
FEMA.....	Federal Emergency Management Agency
GE	General Emergency
HCL	Heat Capacity Limit
HPCI.....	High Pressure Coolant Injection
IC	Initiating Condition
ID	Inside Diameter
ISFSI.....	Independent Spent Fuel Storage Installation
Keff	Effective Neutron Multiplication Factor
LCO	Limiting Condition of Operation
LOCA.....	Loss of Coolant Accident
mR, mRem, mrem, mREM	milli-Roentgen Equivalent Man
MW	Megawatt
NEI.....	Nuclear Energy Institute
NRC.....	Nuclear Regulatory Commission
NORAD.....	North American Aerospace Defense Command
NOUE	Notification Of Unusual Event
NUMARC ¹	Nuclear Management and Resources Council
OBE	Operating Basis Earthquake
OCA.....	Owner Controlled Area
ODAM.....	Offsite Dose Assessment Manual
PA.....	Protected Area
PAG	Protective Action Guideline
PRA/PSA	Probabilistic Risk Assessment / Probabilistic Safety Assessment
PWR	Pressurized Water Reactor
PSIG	Pounds per Square Inch Gauge
R.....	Roentgen
RCIC.....	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
Rem, rem, REM	Roentgen Equivalent Man

¹ NUMARC was a predecessor organization of the Nuclear Energy Institute (NEI).

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RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
RWCU	Reactor Water Cleanup
SCBA.....	Self-Contained Breathing Apparatus
SPDS.....	Safety Parameter Display System
TEDE	Total Effective Dose Equivalent
TAF.....	Top of Active Fuel
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report

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APPENDIX B – DEFINITIONS

The following definitions are taken from Title 10, Code of Federal Regulations, and related regulatory guidance documents.

Alert: Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA PAG exposure levels.

General Emergency: Events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA PAG exposure levels offsite for more than the immediate site area.

Notification of Unusual Event (NOUE): Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of SAFETY SYSTEMS occurs.

Site Area Emergency: Events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; 1) toward site personnel or equipment that could lead to the likely failure of or; 2) that prevent effective access to, equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA PAG exposure levels beyond the site boundary.

The following are key terms necessary for overall understanding the DAEC emergency classification scheme.

Emergency Action Level (EAL): A pre-determined, site-specific, observable threshold for an Initiating Condition that, when met or exceeded, places the plant in a given emergency classification level.

Emergency Classification Level (ECL): One of a set of names or titles established by the US Nuclear Regulatory Commission (NRC) for grouping off-normal events or conditions according to (1) potential or actual effects or consequences, and (2) resulting onsite and offsite response actions. The emergency classification levels, in ascending order of severity, are:

- Notification of Unusual Event (NOUE)
- Alert
- Site Area Emergency (SAE)
- General Emergency (GE)

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Fission Product Barrier Threshold: A pre-determined, site-specific, observable threshold indicating the loss or potential loss of a fission product barrier.

Initiating Condition (IC): An event or condition that aligns with the definition of one of the four emergency classification levels by virtue of the potential or actual effects or consequences.

Selected terms used in Initiating Condition and Emergency Action Level statements are set in all capital letters (e.g., ALL CAPS). These words are defined terms that have specific meanings as used in this document. The definitions of these terms are provided below.

CONFINEMENT BOUNDARY: The barrier(s) between spent fuel and the environment once the spent fuel is processed for dry storage. This corresponds to the pressure boundary for the Dry Shielded Canister (DSC) shell (including the inner bottom cover plate) base metal and associated confinement boundary welds.

CONTAINMENT CLOSURE: Procedurally defined actions taken to secure containment and its associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions. For DAEC, this is considered to be Secondary Containment as required by Technical Specifications.

DESIGN BASIS EARTHQUAKE (DBE): A DBE is vibratory ground motion for which certain (generally, safety-related) structures, systems, and components must be designed to remain functional.

EXPLOSION: A rapid, violent and catastrophic failure of a piece of equipment due to combustion, chemical reaction or overpressurization. A release of steam (from high energy lines or components) or an electrical component failure (caused by short circuits, grounding, arcing, etc.) should not automatically be considered an explosion. Such events may require a post-event inspection to determine if the attributes of an explosion are present.

FIRE: Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE ACTION: An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidate the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, PROJECTILES, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the owner controlled area).

HOSTILE FORCE: One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

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IMMINENT: The trajectory of events or conditions is such that an EAL will be met within a relatively short period of time regardless of mitigation or corrective actions.

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI): A complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.

OPERATING BASIS EARTHQUAKE (OBE): An OBE is vibratory ground motion for which those features of a nuclear power plant necessary for continued operation without undue risk to the health and safety of the public will remain functional.

OWNER CONTROLLED AREA: This term is typically taken to mean the site property owned by or otherwise under the control of the licensee.

PROJECTILE: An object directed toward a nuclear power plant that could cause concern for its continued operability, reliability, or personnel safety.

PROTECTED AREA: The area under continuous access monitoring and control, and armed protection as described in the site Security Plan.

REFUELING PATHWAY: Includes all the cavities, tubes, canals and pools through which irradiated fuel may be moved, but not including the reactor vessel.

SAFETY SYSTEM: A system required for safe plant operation, cooling down the plant and/or placing it in the cold shutdown condition, including the ECCS. These systems are classified as safety-related.

SECURITY CONDITION: Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

SITE BOUNDARY: That line beyond which the land is neither owned, nor leased, nor otherwise controlled by the Company. UFSAR Figure 1.2-1 identifies the DAEC SITE BOUNDARY.

UNISOLABLE: An open or breached system line that cannot be isolated, remotely or locally.

UNPLANNED: A parameter change or an event that is not 1) the result of an intended evolution or 2) an expected plant response to a transient. The cause of the parameter change or event may be known or unknown.

VISIBLE DAMAGE: Damage to a component or structure that is readily observable without measurements, testing, or analysis. The visual impact of the damage is sufficient to cause concern regarding the operability or reliability of the affected component or structure. Damage resulting from an equipment failure and limited to the failed component (i.e., the failure did not cause damage to a structure or any other equipment) is not VISIBLE DAMAGE.

Enclosure 5

NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER

L-2026-008

LICENSE AMENDMENT REQUEST (TSCR-195)

ON SHIFT STAFFING STUDY

(76 pages follow)



NUCLEAR FLEET

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NON-SAFETY RELATED
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DAEC ONSHIFT STAFFING ANALYSIS

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1 **INTRODUCTION**

1.1 **On-Shift Staffing Analysis Regulatory Basis and Guidance**

The requirements for an on-shift emergency response organization are provided in 10 CFR 50.47(b)(2) and 10 CFR 50 Appendix E.

§50.47(b) states, in part, the following:

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times...

§50 Appendix E.IV, Content of Emergency Plans, subsection A states:

The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's ERO and the means for notification of such individuals in the event of an emergency.

§50 Appendix E.IV subsection A.9 states:

By December 24, 2012, for nuclear power reactor licensees, a detailed analysis demonstrating that on-shift personnel assigned emergency plan implementation functions are not assigned responsibilities that would prevent the timely performance of their assigned functions as specified in the emergency plan.

Regulatory Guide 1.101, Rev.7 describes the previous endorsement of NEI 10-05 as a resource for performing on-shift staffing studies.

1.2 **On-Shift Staffing Analysis Summary Results**

1.2.1 **Performance Validation**

The task analysis did not identify non-validated tasks that were performed by the on-shift positions (refer to Section 4 and Attachment 1 for additional details).

1.2.2 **Potential Task Overlaps**

The task analysis did identify potential task overlaps in the events that were analyzed (refer to Section 4.3 and Attachment 2 for additional details).

1.2.3 **Overlap Resulting in Overburden**

The task timing study resolved the potential task overlaps in the events that were analyzed. Emergency response tasks were performed sequentially with other tasks such that no overlap or overburden occurred (refer to Section 5 and Attachment 2 for additional details).

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2 ON-SHIFT STAFFING COMPLEMENT

2.1 On-Shift Staffing Required by administrative procedures / Technical Specification / SSD / Fire Protection Plan

Shift Staffing for all programs controlling shift staffing are shown below. Their inclusion here does not imply that they are part of the emergency plan unless specifically stated.

Position	Tech Specs	Common Emergency Plan Table B-1	Fire Protection Plan Design Document	Control room evac AOP	NFPA 805 program	FLEX Program design document	Security Plan
Shift Manager	X ¹	X	X	X		X	X
Operating Supervisor	X ²	X	X	X		X	
STA	C ³	C ⁴ (Shift ECA if staffed) (per TS)					
Reactor Control Operator (RO1)	X	(per TS)		X	X	X	
Reactor Control Operator (RO2)	X	(per TS)		X	X	X	
Reactor Control Operator (RO3)				X	X	X	
Nuclear Station Plant Equip Operator AO1		X (EP Operator)			X		
Nuclear Station Plant Equip Operator AO2		X (EP Operator)			X		
Fire Brigade Lead AO3		(EP Operator)	X				
AO4/ FB1		(EP Operator)	X				
FB2			X				
FB3			X				
FB4			X				
RP Technician 1		X					

¹ As part of 2 SRO per shift

² As part of 2 SRO per shift

³ If Shift Manager is not qualified STA, required position. If SM is a qualified STA, the SM may perform STA function as collateral duty

⁴ If Shift Manager is not qualified STA, required position. If SM is a qualified STA, the SM may perform STA function as collateral duty

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Position	Tech Specs	Common Emergency Plan Table B-1	Fire Protection Plan Design Document	Control room evac AOP	NFPA 805 program	FLEX Program design document	Security Plan
RP Technician 2		X					
Security Shift Supervisor		X					X
Security Officers						X	X

Total: 2 SRO licenses
 3 RO licenses
 4 Non licensed Operators, all qualified EP Operator
 3 Additional qualified fire brigade members
 2 ANSI 3.1 Senior RP Technicians
 14 Total (15 if SM is not STA qualified)

2.2 On-Shift ERO Staffing Complement Used in the Analysis

The NextEra Common Emergency Plan, Table B-1, documents the on-shift emergency response licensing basis as follows:

Functional Area	Emergency Positions	Shift Staffing
1. Command and Control	Shift Manager	1
2. Emergency Classifications	Shift Manager	1 ^(a)
3. Communication	Shift Communicator	1 ^(a)
4. Rad Supervision	Shift Manager	1 ^(a)
4. Dose Assessments/Projections	Dose Assessor	1 ^(a)
5. Radiological Protection	RP Technician	2
6. Engineering	STA	1 ^(a)
7. Security	Security Shift Supervisor Security staff	1 ^(b)
Total		4

(a) Assigned as a collateral duty.

(b) Per the site security plan.

Collateral Duty Assignments

Shift Technical Advisor (STA)

SM or other qualified STA is assigned STA

Emergency Classification Advisor (ECA)

Emergency Plan designates SM as ECA as a collateral duty. The Operating Supervisors and STAs will be trained in and perform ECA functions if available.

Shift Communicator

The Shift Manager or ECA performs the initial notifications using ERNIE. A qualified shift individual designated as the Emergency Plan Operator (EPO) assumes the Communicator duties if not performing Dose Assessment duties.

Supervisor RP Activities

SM is Supervisor of RP Activities

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Shift Dose Assessor A qualified shift individual (EPO) is assigned Shift Dose Assessor (separate qualification). The Remote Dose Assessor becomes available within 60 minutes of ERO notification. Shift Reactor Engineer Individual assigned STA is Shift Reactor Engineer		
3	<u>EVENTS</u>	
3.1	<u>List of Potential Events to be Analyzed</u>	
Note: NEI 10-05 requires at least one DBA scenario resulting in a General Emergency with offsite radiological doses that exceed the EPA PAGs and necessitate PARs. Selection of Design Basis Accident (DBA) events for this analysis is based upon the following guidance given in NEI 10-05 Section 2.8: • A postulated DBA is often referred to in individual FSARs as “Condition IV events,” or “limiting faults,” and will generally include analyses of the radiological consequences of the postulated accident. Staffing analyses performed pursuant to 10 CFR Part 50, Appendix E, Section IV.A.9 should consider the postulated DBAs (Condition IV events) analyzed in the licensee’s FSAR. • Some DBAs may be analyzed in several cases, each case reflecting different initial assumptions affecting radiological consequences (e.g., RCS activity, leak rates, etc.). For example, an analysis may contain a conservative case (e.g., a bounding case with parameters at Technical Specification allowable limits) and a realistic case (e.g., using typically expected parameters reflecting sound operational decision-making). The staffing analysis for that particular DBA may use the radiological consequences associated with the realistic case. • If the site’s FSAR presents multiple analyses of a postulated accident type reflecting different initiating event severities (e.g., a LOCA analyzed in both a small-break and a large break case), the one resulting in the highest emergency classification should be used for the staffing analysis. If the conditions of similar postulated accidents would result in the same emergency classification, select the case that causes the most severe radiological consequences. Should neither criterion differentiate between the available cases, the licensee may choose the case to be used for a staffing analysis. • In cases where a DBA analysis includes a radiological release, and the starting point of the release is not clearly defined, the staffing analysis may assume that the release begins 15-minutes after the initiating event. Licensees are free to use a starting point of less than 15 minutes if desired. Elapsed times of greater than 15-minutes may also be used; however, a documented basis for the selected time should be developed and appended to the staffing analysis. Several other events scenarios must be considered but may not be required.		

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- Station blackouts are beyond the plant's design basis and may not need to be addressed in the staffing analysis. The blackout coping analyses performed by licensees pursuant to 10 CFR 50.63 establish blackout coping times that exceed the required on-shift staff augmentation time. - Since the control room fire scenario leading to evacuation and remote shutdown may adequately address the considerations involved with an Appendix R "safe shutdown" fire, licensees may not need to consider this scenario in the staffing analysis. - Severe accident management guidelines (SAMGs) are implemented by licensee staff in the plant's TSC rather than the control room staff, who implement the plant abnormal and emergency operating procedures. As such, they also may not need to be addressed in the staffing analysis. 3.1.1 <u>Review of DAEC UFSAR Chapter 15 reveals the following accidents with significant consequences or identified as Condition IV events:</u> - Loss of Coolant Accident – Reactor Recirculation Pipe Breaks - UFSAR 15.2.1.1 - Loss of Coolant Accident – Core Spray Line Break - UFSAR 15.2.1.2 - Loss of Coolant Accident – Feedwater Line Break - UFSAR 15.2.1.3 - Loss of Coolant Accident – Main Steam Line Break Inside Containment - UFSAR 15.2.1.4 - Loss of Coolant Accident – Main Steam Line Break Outside Containment - UFSAR 15.2.1.5 - Instrument Line Break - UFSAR 15.2.2 - Recirculation Pump Seizure - UFSAR 15.2.3 - Control Rod Drop Accident - UFSAR 15.2.4 - Fuel Handling Accident - UFSAR 15.2.5 - ATWS – MSIV Closure - UFSAR 15.3.1.1 - ATWS – PRFO - UFSAR 15.3.1.2 - ATWS – LOOP - UFSAR 15.3.1.3 - ATWS – IORV - UFSAR 15.3.1.4 3.1.2 <u>Additionally, the following events are analyzed per NEI 10-05</u> - Design Basis Threat (DBT) - NFPA 805 – CR Fire - Probable Aircraft Threat (PAT) - Station Blackout (SBO) 3.2 <u>Scenario Conditions and Disposition of Events</u> The events listed above were evaluated in accordance with guidance selection criteria stated above and with the DAEC Emergency Action Level (EAL) technical bases manual to determine whether they met the requirements for analysis and the conditions for classification. The results of the event evaluations are listed below. 3.2.1 <u>Design Basis Threat (DBT)</u> A hostile action-based event is analyzed as a Design Basis Threat in this analysis.		

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Licensees may assume that the hostile threat is neutralized with no adverse consequences for plant safety. However, licensees should ensure that sufficient staff is available to simultaneously implement both the emergency plan and the security plan in a DBT environment to include, as a minimum, the potential for restricted movement of site personnel. Further, Licensees must have the capability to augment the on-shift staff within a short time after the declaration of an emergency.

This event results in a Site Area Emergency ECL based on EAL HS1.1.

This event is analyzed further in this report.

3.2.2 Loss of Coolant Accident – Reactor Recirculation Pipe Breaks - UFSAR 15.2.1.1

Event Description

Loss-of-Coolant Accidents (LOCA) are those postulated events that are a result of a non-mechanistic rupture of any pipe attached to the Reactor Pressure Vessel (RPV), up to, and including the double-ended guillotine break of the largest pipe in the Reactor Recirculation System, as required by 10 CFR 50.46 and 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 35. The latter, being the most challenging to the plant systems and fission product barriers, is generally referred to as the Design Basis Accident (DBA) LOCA (DBA-LOCA). Because the Reactor Recirculation System piping is both the largest in size and attached at the lowest elevation to the RPV, i.e., below the top of the fuel, this category of piping represents the biggest challenge to the Emergency Core Cooling Systems (ECCS) and fission product barriers. Hence, the LOCA analyses focus on breaks in this piping.

Coincident with the initiation of the break, a complete Loss of-Offsite Power (LOOP) is assumed to occur, in accordance with GDC 35. Reactor coolant begins to exit the vessel rapidly into the Drywell at the critical mass flux and reactor vessel water level begins to drop, as does the reactor pressure. The reactor is assumed to scram immediately. The Emergency Diesel Generators (EDGs) start on the LOOP condition, and all loads are stripped off the Essential AC busses. The non-Essential busses are lost, leading to a loss of Feedwater and a Reactor Recirculation Pump coast down. As the RPV level reaches the various level setpoints, ECCS systems are actuated (a conservative assumption to delay injection), Vessel isolation signals are generated (Containment isolations are discussed in the Containment Response below), and Low Pressure Coolant Injection (LPCI) loop select logic actuates to determine which recirculation loop is broken and closes the recirculation pump discharge valve in the non-broken loop (the pump discharge bypass valve is conservatively assumed to remain open). If the plant had previously been operating in single loop recirculation mode, loop select logic would trip the running recirculation pump and effect a short time delay to allow it to coast down prior to its selecting the “broken” recirculation loop. The reactor level continues to drop and uncovers the fuel, which begins to heat up. High Pressure Coolant Injection (HPCI) starts, but before it can come up to speed and inject to the RPV, reactor pressure has decreased below its operational range, and it isolates. Once the EDGs are up to speed, its output breaker closes in on the Essential AC busses, and the low pressure ECCS pumps (and other essential loads) are sequenced onto the busses, the pumps start and their minimum flow bypass valves open. The Automatic Depressurization System (ADS) actuation logic initiates on lowering RPV level and ECCS pumps running, but because

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the RPV depressurizes through the break prior to the ADS 2 minute time delay expiring, the valves never actually open. Once the reactor pressure decreases to their respective permissive setpoints, the injection valves for Core Spray and LPCI (based upon the "chosen" loop by loop select logic), open and allow injection to begin to the RPV. The injection refills the lower vessel plenum area and the water level inside the core shroud rises and terminates the fuel heat up. Water level is maintained at the top of the jet pumps and long-term recovery mode is entered.

Radiological Consequences

Total Calculated Dose from DBA LOCA with alternate source term
Control Room – 4.094 Rem TEDE
TSC – 3.976 Rem TEDE
Exclusion Area Boundary – 0.247 Rem TEDE
Low Population Zone – 0.626 Rem TEDE

This event results in an Alert ECL based on EAL FA1.

This event is analyzed further in this report.

3.2.3 Loss of Coolant Accident – Core Spray Line Break - UFSAR 15.2.1.2

Event Description

This event is initiated by an instantaneous, non-mechanistic, double ended, guillotine break of the Core Spray piping at the nozzle on the RPV. Coincident with the initiation of the break, a complete Loss of-Offsite Power (LOOP) is assumed to occur and there is a loss of Division II of 125 VDC control power, in accordance with GDC 35. Reactor coolant begins to exit the vessel rapidly into the Drywell at the critical mass flux and reactor vessel water level begins to drop, as does the reactor pressure. The reactor is assumed to scram immediately.

This is bounded by LB LOCA. UFSAR 15.2.1.1 constitutes the limiting radiological event for onsite personnel. However, the CRDA (UFSAR Section 15.2.4) is more limiting for dose to the public.

This event results in a Site Area Emergency ECL based on EAL FS1.

This event is not analyzed further in this report.

3.2.4 Loss of Coolant Accident – Feedwater Line Break - UFSAR 15.2.1.3

Event Description

This event is initiated by an instantaneous, non-mechanistic, double ended, guillotine break of the Feedwater piping at the nozzle on the RPV. Coincident with the initiation of the break, a complete Loss of-Offsite Power (LOOP) is assumed to occur and there is a loss of Division II of 125 VDC control power. Reactor coolant begins to exit the vessel rapidly into the Drywell at the critical mass flux and reactor vessel water level begins to drop, as does the reactor pressure. The reactor is assumed to scram immediately.

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This is bounded by LB LOCA. UFSAR 15.2.1.1 constitutes the limiting radiological event for onsite personnel. However, the CRDA (UFSAR Section 15.2.4) is more limiting for dose to the public.

This event results in an Alert ECL based on EAL FA1.

This event is not analyzed further in this report.

3.2.5 Loss of Coolant Accident – Main Steam Line Break Inside Containment - UFSAR 15.2.1.4

Event Description

This event is initiated by an instantaneous, non-mechanistic, double ended, guillotine break of the MSL piping at the nozzle on the RPV. Coincident with the initiation of the break, a complete Loss of-Offsite Power (LOOP) is assumed to occur and there is a loss of Division II of 125 VDC control power. Reactor coolant begins to exit the vessel rapidly into the Drywell at the critical mass flux and reactor vessel water level begins to drop, as does the reactor pressure. The reactor is assumed to scram immediately.

This is bounded by LB LOCA. UFSAR 15.2.1.1 constitutes the limiting radiological event for onsite personnel. However, the CRDA (UFSAR Section 15.2.4) is more limiting for dose to the public.

This event results in a Site Area Emergency ECL based on EAL FS1.

This event is not analyzed further in this report.

3.2.6 Loss of Coolant Accident – Main Steam Line Break Outside Containment - UFSAR 15.2.1.5

Event Description

This event is initiated by an instantaneous, non-mechanistic, double ended, guillotine break of the MSL piping inside the Turbine Building, i.e., downstream of the outboard Main Steamline Isolation Valve (MSIV). Coincident with the initiation of the break, a complete Loss of-Offsite Power (LOOP) is assumed to occur and there is a loss of Division II of 125 VDC control power. The reactor is assumed to scram immediately. The non-Essential busses are lost, leading to a loss of Feedwater and a Reactor Recirculation Pump coast down. Reactor coolant begins to exit the vessel rapidly at the critical mass flux through the venturi in the broken MSL. The MSIVs received a trip signal on the high steam flow condition in the broken MSL and close at the maximum stroke time. The initial pressure decrease is terminated due to the vessel isolation and the decay heat causes the reactor pressure to increase and the Safety/Relief Valves (SRVs) lift and arm Low-Low Set (LLS) Logic, which cycles to control reactor pressure.

This is bounded by LB LOCA. UFSAR 15.2.1.1 constitutes the limiting radiological event for onsite personnel. However, the CRDA (UFSAR Section 15.2.4) is more limiting for dose to the public.

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This event results in a Site Area Emergency ECL based on EAL FS1. This event is <u>not</u> analyzed further in this report. 3.2.7 <u>Instrument Line Break - UFSAR 15.2.2</u> <u>Event Description</u> The impact of this event on the Reactor and Fuel is bound by the evaluation of Small Breaks in the Recirculation System piping in UFSAR Section 15.2.1.1. Per UFSAR 15.2.2 this is a non-limiting Accident. This event results in an Alert ECL based on EAL SA3.1, assuming additional conditions of the EAL are present. This event is <u>not</u> analyzed further in this report. 3.2.8 <u>Recirculation Pump Seizure - UFSAR 15.2.3</u> <u>Event Description</u> The recirculation pump seizure assumes instantaneous stoppage of the pump motor shaft of the operating recirculation pump while operating in Single Loop Operation (SLO). While this event is considered to be an Accident, based upon its probability of occurrence, it uses the more conservative acceptance criterion of the Safety Limit MCPR (SLMCPR) that is used in the evaluation of Abnormal Operational Transients. This event does not result in an emergency declaration. This event is <u>not</u> analyzed further in this report. 3.2.9 <u>Control Rod Drop Accident - UFSAR 15.2.4</u> <u>Event Description</u> A control blade becomes decoupled from its control rod drive mechanism, and sticks inside the core at the fully inserted position, such that it does not follow its drive when withdrawn from the core. Later in the startup sequence, when this stuck control rod is at its maximum possible control rod worth, breaks free and drops at its maximum velocity, causing a prompt, supercritical reactivity event. The plant design basis Control Rod Drop Accident (CRDA) involves the rapid removal of a high worth control rod resulting in a reactivity excursion that encompasses the consequences of any other postulated CRDA. <u>Radiological Consequences</u> Total Dose		

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Control Room – 0.51 Rem TEDE
TSC – 0.58 Rem TEDE
Exclusion Area Boundary – 3.03 Rem TEDE
Low Population Zone – 1.36 Rem TEDE

This event results in a General Emergency ECL based on EAL RG1.2.

This event is analyzed further in this report.

3.2.10 Fuel Handling Accident - UFSAR 15.2.5

Event Description

An irradiated fuel assembly and the last segment of the refueling mast becomes separated from the rest of the refueling mast during in-vessel fuel movement and drop onto the top of the core from the maximum possible height.

Per NRC response to FAQ 2013-08, nuclear power plant licensees need not consider a fuel handling event in their on-shift staffing analysis.

This event results in an Alert ECL based on EAL RA2.2.

This event is not analyzed further in this report.

3.2.11 ATWS – MSIV Closure - UFSAR 15.3.1.1

Event Description

This is a Special Event for demonstrating acceptable plant response to a specified set of Anticipated Operational Occurrences, but with the added requirement that the Reactor Protection System and/or Control Rod Drive system fails in such a way that the scram function is disabled, so-called “Anticipated Transients without Scram (ATWS).”

The event is initiated by a spurious trip that causes all the MSIVs to rapidly close with failure of the control rods to scram. The plant is operating at 100% power, when a non-mechanistic failure causes the MSIVs to begin to fast close. However, there is a failure in the Reactor Protection System (RPS) and/or Control Rod Drive (CRD) System that prevents the control rods from inserting (i.e., does not scram). The power increases quickly from the collapsing of the voids in the core from the pressure increase due to the closure of the MSIVs. Reactor pressure increases and SRVs lift to relieve the pressure. The pressure reaches the ATWS-RPT setpoint, which trips the reactor recirculation pumps and they begin to coast down. The pressure rise is sufficiently large that the Spring Safety Valves (SSVs) also open momentarily. Low-low set logic cycles the SRVs to control reactor pressure. The SRVs discharge steam, corresponding to the power level, to the suppression pool. The added heat causes the pool temperature to increase. The Operators respond to the event, using the Emergency Operating Procedures (EOPs). Operator actions include: starting suppression pool cooling to control pool temperatures; adjusting vessel level to control power; and starting the Standby Liquid Control System (SLCS) pumps to inject boron into the vessel.

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This event results in an Alert ECL based on EAL SA6.1.

This event is analyzed further in this report.

3.2.12 ATWS – PRFO - UFSAR 15.3.1.2

Event Description

A failure of either the primary or back-up pressure regulator occurs at rated conditions, sending a signal to the turbine control and turbine bypass valves to open to the maximum combined flow limit setpoint, with failure of the control rods to scram.

This event is bounded by event described in section 3.2.11, ATWS – MSIV Closure.

This event results in an Alert ECL based on EAL SA6.1.

This event is not analyzed further in this report.

3.2.13 ATWS – LOOP - UFSAR 15.3.1.3

Event Description

A Loss-of-Offsite Power (LOOP) occurs with failure of the control rods to scram.

This event is bounded by event described in section 3.2.11, ATWS – MSIV Closure.

This event results in an Alert ECL based on EAL SA6.1.

This event is not analyzed further in this report.

3.2.14 ATWS – IORV - UFSAR 15.3.1.4

Event Description

A spurious and spontaneous opening of a single Safety/Relief Valve (S/RV) occurs with failure of the control rods to scram.

This event is bounded by event described in section 3.2.11, ATWS – MSIV Closure.

This event results in an Alert ECL based on EAL SA6.1.

This event is not analyzed further in this report.

3.2.15 Station Blackout (SBO) - UFSAR 15.3.2

Event Description

This is a Special Event for demonstrating acceptable plant response to a loss of all offsite AC power, coupled with the failure of the on-site AC power sources (i.e., the Emergency Diesel Generators (EDGs)) to start and/or load, a so-called “Station Blackout” event. It should be noted that no single failure of equipment or Operator error

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can lead to a complete failure of both the on-site and off-site AC sources. Also noteworthy, is that credit may be taken for non-safety-related equipment and Operator actions (within the first 10 minutes) in responding to these events, provided there are written procedures and training to implement them.

This event results in a Site Area Emergency ECL based on EAL SS1.1.

This event is analyzed further in this report.

3.2.16 NFPA 805 – CR Fire

Event Description

Within the spectrum of analyzed fire events, it is expected that a control room fire and evacuation will be the limiting scenario, i.e., it will require the greatest number of response actions on the part of the control room staff. When the control room is abandoned, the facility is shut down using the alternative shutdown capability (ASC). Shutdown is accomplished using designated ASC equipment to accomplish core spray and residual heat removal powered by a standby diesel generator. There are detailed procedures and associated training on shutting down the reactor after MCR abandonment.

This event results in an Alert ECL based on EAL HA6.1.

This event is analyzed further in this report.

3.2.17 Aircraft probable threat event

Event Description

With respect to the DBT analysis, the mitigative strategies and response procedure requirements for potential or actual aircraft attacks are located in 10 CFR 50.54(hh).

Section 50.54(hh) requires licensees to cope with potential aircraft attacks by developing specific procedures that describe the pre-identified actions licensees intend to take upon notification of such an attack. These preparatory actions serve to maximize the response to a potential aircraft attack while demonstrating systematic onsite and offsite planning, coordination, communication, and testing. Guidance for implementing this requirement is found in RG 1.214, "Response Strategies for Potential Aircraft Threats."

This event includes all emergency response actions taken prior to impact in accordance with RG 1.214 for an aircraft threat that is greater than 5 minutes, but less than 30 minutes, from the site, including the dispersal of the fire brigade away from target areas. These actions should generally reflect those in Regulatory Guide 1.214, and others required by the emergency plan.

This event results in an Alert ECL based on EAL HA1.2.

This event is analyzed further in this report.

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3.3 NEI 10-05 Appendix A Table, Analyzed Events and Accidents

Analysis #	Event Summary Description	Plant Mode	Reference	ECL	Analysis Required?
1	Design Basis Threat (DBT)	All	None	Site Area Emergency	Yes
2	Loss of Coolant Accident – Reactor Recirculation Pipe Breaks	1	UFSAR 15.2.1.1	Alert	Yes
3	Loss of Coolant Accident – Core Spray Line Break	1	UFSAR 15.2.1.2	Site Area Emergency	No
4	Loss of Coolant Accident – Feedwater Line Break	1	UFSAR 15.2.1.3	Alert	No - Note 1
5	Loss of Coolant Accident – Main Steam Line Break Inside Containment	1	UFSAR 15.2.1.4	Site Area Emergency	No – Note 1
6	Loss of Coolant Accident – Main Steam Line Break Outside Containment	1	UFSAR 15.2.1.5	Site Area Emergency	No – Note 1
7	Instrument Line Break	1	UFSAR 15.2.2	Alert	No – Note 2
8	Recirculation Pump Seizure	1	UFSAR 15.2.3	None	No – Note 1
9	Control Rod Drop Accident	2	UFSAR 15.2.4	General Emergency	Yes
10	Fuel Handling Accident	5	UFSAR 15.2.5	Alert	No – Note 3
11	ATWS – MSIV Closure	1	UFSAR 15.3.1.1	Alert	Yes
12	ATWS – PRFO	1	UFSAR 15.3.1.2	Alert	No – Note 4
13	ATWS – LOOP	1	UFSAR 15.3.1.3	Alert	No – Note 4
14	ATWS – IORV	1	UFSAR 15.3.1.4	Alert	No – Note 4
15	Station Blackout (SBO)	1	UFSAR 15.3.2	Site Area Emergency	Yes
16	NFPA 805 – CR Fire	1	None	Alert	Yes
17	Aircraft probable threat event.	All	None	Alert	Yes

Notes:

Note 1 – Bounded by LB LOCA per UFSAR 15.2.1.1 “Limiting Event The LOCA with Design Basis Radiological Releases constitutes the limiting radiological event for onsite personnel. However, the CRDA (Section 15.2.4) is more limiting for dose to the public.

Note 2 – Per UFSAR 15.2.2 this is a non-limiting Accident.

Note 3 - Analysis not required per FAQ 2013-008,

Note 4 – Bounded by Event #11, ATWS – MSIV Closure.

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3.4 **General Assumptions and Limitations**

1. On-shift personnel can report to their assigned response locations within timeframes sufficient to allow for performance of assigned actions. The following are the typical locations of the on-shift personnel:
 - Shift Manager (SM)..... Shift Manager Office
 - Control Room Supervisor (SRO)..... Control Room
 - Shift Technical Advisor, if staffed (STA) Control Room
 - Control Room Operator (RO1) Control Room
 - Control Room Operator (RO2) Control Room
 - Control Room Operator (RO3) Control Room
 - Auxiliary Operator – (NSPEO1/AO1) Operations Shop
 - Auxiliary Operator – (NSPEO2/AO2)..... Operations Shop
 - Auxiliary Operator – (FBL/AO3) Operations Shop
 - Auxiliary Operator – (FBL1/AO4) Operations Shop
 - Auxiliary Operator – (FBM2/AO5) Operations Shop
 - FB Member 3 – (FBM3) Security Breakroom
 - FB Member 4 – (FBM4) Operations Shop
 - Radiation Protection Technician (RP1) RP Checkpoint
 - Radiation Protection Technician (RP2) RP Checkpoint
 - Security Shift Supervisor (SSS) CAS/SAS
2. The on-shift staff possesses the necessary Radiation Worker qualifications to obtain normal dosimetry and to enter Radiologically Controlled Areas (but not high, locked high or very high radiation areas) without the aid of a Radiation Protection Technician .
3. The task of making a simple and brief communication has minimal impact on the ability to perform other assigned functions/tasks and is therefore an acceptable collateral duty for all positions. Examples include making a plant page announcement or placing a call for assistance to an offsite resource such as local law enforcement. This assumption does not apply to emergency notification to an Offsite Response Organization (ORO) or the NRC.
4. The task of performing a peer check has minimal impact on the ability to perform other assigned functions/tasks and is therefore an acceptable collateral duty for all positions. Examples include performing a peer check on a recommended emergency classification or notification form for transmittal to offsite authorities.
5. The analyzed events occur during off-normal work hours at a time when augmented ERO responders are not at the site (e.g., during a backshift, weekend or holiday). While ERO augmentation commitments are in accordance with the NRC approved emergency plan, for purposes of this analysis 120 minutes will be used as the time period for the conduct of on-shift ERO response actions without support of additional personnel.

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6. EP Operator can be staffed by anyone with the qualification; listed as a non-licensed operator for convenience. EP operator performs two functions: shift communicator and dose assessment.

3.5 Procedures Used for Event Task Analysis

	Analysis Event 1 DBT	Analysis Event 2 LOCA	Analysis Event 9 CRDA	Analysis Event 11 ATWS	Analysis Event 15 SBO	Analysis Event 16 NFPA	Analysis Event 17 PAT
EP-AA-OPSCK-SM, Shift Manager Checklist	X	X	X	X	X	X	X
EP-AA-OPSCK-ECA, Emer Class Advisor Checklist	X	X	X	X	X	X	
EP-AA-OPSCK-EPO, Emer Plan Operator Checklist	X	X	X	X	X		
EP-AA-OPSCK-SEC, Security Shift Supervisor Checklist	X	X	X	X	X	X	X
EP-PDA-ERODI-002, DAEC PAR Determination			X				
EP-AA-EROFM-009, Public Address Announcements	X	X	X	X		X	X
EP-AA-EPIP-02, Emergency Notifications	X	X	X	X	X	X	X
EP-AA-EPIP-03, Dose Assessment	X	X	X	X			
AOP-914M Security Event	X						X
EOP-1 RPV Control		X	X	X	X		
EOP-2 Primary Containment Control		X		X			
IPOI-5 Reactor Scram		X	X				
IPOI-4 Shutdown		X					
AOP-358 Loss of RPS AC Power		X					
AOP 255.2 Power/Reactivity Abnormal Change			X				
AOP 672.2 Offgas Radiation Reactor Coolant High Act.			X				
EOP-4 Radioactive Release Control			X				
ED, Emergency RPV Depressurization			X				
ATWS – RPV Control				X			
HPIC/RCIC High Temp Isolation Defeat 18					X		
AOP-301.1 Station Blackout					X		
AOP-913 Fire						X	

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	Analysis Event 1 DBT	Analysis Event 2 LOCA	Analysis Event 9 CRDA	Analysis Event 11 ATWS	Analysis Event 15 SBO	Analysis Event 16 NFPA	Analysis Event 17 PAT
AOP 915 Shutdown outside of the Control Room						X	

4 **ON-SHIFT STAFFING TASK ANALYSIS**

Refer to Attachment 2, NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables, for additional documentation of the on-shift staffing task analysis results.

4.1 **Security Related Tasks**

The DAEC Security Department analyzed the EP tasks assigned to security personnel for potential overlap (Personnel Accountability and security related tasks). It was concluded that performance of the EP task did not cause an overlap with their security related tasks. Security program commitments are identified in the Site Security Plan and are not specifically documented in this analysis due to their security-sensitive nature.

4.2 **Performance Validation (Task Qualifications)**

Note: Per NEI 10-05, a validated task is one that has a controlling method (i.e., a program or process) by which the capability to perform the task has been analyzed, such as within the Operations Training Program or the EP Drill Program.

NEI 10-05 Table 5 – Emergency Plan Implementation task analysis controlling methods are correlated with the site specific JPM and performance objective references in Attachment 1.

The task analysis did not identify non-validated tasks performed by the on-shift positions.

4.3 **Potential Task Overlap Requiring Time Motion Study**

1. NEI 10-05 Task 6, ERO Notification, requires a TMS when performed by the SM or any other position listed in Table 2.
2. NEI 10-05 Task 9, Perform State and Local Notifications, requires a TMS when performed by the SM or any other position listed in Table 2.
3. NEI 10-05 Task 13, Perform NRC notifications, requires a TMS when performed by the SM or any other position listed in Table 2.
5. NEI 10-05 Task 14, Perform Other Site-Specific Event Notifications, requires a TMS when performed by the SM or any other position listed in Table 2.

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5 **ON-SHIFT STAFFING TIME MOTION STUDY**

Refer to Attachment 2, NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables, for additional documentation of the on-shift staffing task timing results.

1. NEI 10-05 Task 6, ERO Notification
NEI 10-05 Task 9, Perform State and Local Notifications
NEI 10-05 Task 14, Perform Other Site-Specific Event Notifications

The NextEra ERO notification system uses an automated computer application Emergency Response Notification for Incidents and Events (ERNIE) that performs the key EP tasks of ERO notification, State & Local Notifications, and Other Site-Specific Event Notifications (Corporate Duty Officer, ANI, and INPO). Activation of the system is instantaneous upon completion of the offsite notification form. Afterwards for the next several minutes, the system is only periodically monitored while notification receipt is acknowledged by the recipients.

Operation of this system was demonstrated following the task assessment tabletop scenarios. Task time was verified to take approximately 3 minutes from initiation (completion of State & Local Notification Form). Initiation of the automated computer application and follow-up monitoring has minimal impact on the ability to perform other assigned functions/tasks and did not overlap other non-EP tasks.

2. NEI 10-05 Task 13, Perform NRC Notifications

As indicated by the time study of shift personnel actions, the Shift Manager and the Shift Technical Advisor performed the task of NRC Notifications during periods where no EOP actions were required of them. ERNIE performs the initial notification via email with a follow up phone call by the SM/STA to NRC headquarters in accordance with 10CFR 50.72. If an open line is requested, the SM/STA will perform until relieved by the EP operator. The Shift Manager is provided a wireless headset to allow for freedom of motion to maintain oversight of the operating crew, while still providing information to the NRC as needed.

No overlap or overburden was identified by the Shift Manager and the Shift Technical Advisor positions performing the task of NRC Notifications in the time studies for the affected events.

If a release is in progress, the EP operator performs dose assessment over all other tasks. When relieved by the Remote Dose Assessor by 60 minutes of ERO activation, the EP operator will shift to performing as the open line with the NRC following initial communication with ERNIE and the SM/STA performing the initial phone call to NRC headquarters in accordance with 10CFR 50.72. If no release is in progress, the EP operator will shift to maintaining the open line immediately upon request.

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6 **LIST OF REFERENCES**

- 6.1. All procedures listed in section 3.5
- 6.2. Nextera Energy Common Emergency Plan, Revision 6
- 6.3. Regulatory Guide 1.214, Response Strategies for Potential Aircraft Threats, R1
- 6.4. NEI 10-05, Assessment of On-Shift Emergency Response Organization Staffing and Capabilities, R0
- 6.5. DAEC UFSAR Chapter 15.0, Safety Analysis
- 6.6. FAQ 2013-08 (ML14017A284)

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Attachment 1: NEI 10-05 Table 5 Controlling Method Correlation

Line	Function/Task	EP Drill Program Task Analysis Controlling Method
1.	Declare the Emergency Classification Level (ECL)	NUC EPR JFG SSMD Shift Manager (DAEC) D.1.1 CR SM 008
2.	Approve Offsite Protective Action Recommendations	NUC EPR JFG SSMD Shift Manager (DAEC) J.4.2 CR SM 025
3.	Approve content of State/local notifications	NUC EPR JFG SSMD Shift Manager (DAEC) E.2.1 CR SM 011
4.	Approve extension to allowable dose limits	NUC EPR JFG SSMD Shift Manager (DAEC) EP Performance Objective 11.1
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	NUC EPR JFG SSMD Shift Manager (DAEC) EP Performance Objective 5.2
6.	ERO notification	NUC EPR JFG SSMD Shift Manager (DAEC) EP Performance Objective 5.2
7.	Abbreviated NRC notification for DBT event	NUC EPR JFG SSMD Shift Manager (DAEC) C.5.1 CR SM 007
8.	Complete State/local notification form	NUC EPR JFG SSMD Shift Manager (DAEC) E.2.1 CR SM 011
9.	Perform State/local notifications	NUC EPR JFG SSMD Shift Manager (DAEC) E.2.1 CR SM 011
10.	Complete NRC event notification form	NUC EPR JFG SSMD Shift Manager (DAEC) C.5.1 CR SM 007
11.	Activate ERDS	N/A ERDS is continuously active at DAEC. NUC EPR JFG SEO Shift EP Operator C.5.4 EPOP005 (confirm operation of ERDS)
12.	Offsite radiological assessment	NUC EPR JFG SEO Shift EP Operator I.2.1, CRDA002, EPOP001
13.	Perform NRC notifications	NUC EPR JFG SSMD Shift Manager (DAEC) C.5.1 CR SM 007 NUC EPR JFG SEO Shift EP Operator C.5.2, CRDA004, EPOP004
14.	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	NUC EPR JFG SSMD Shift Manager (DAEC) J.2.1 CR SM 022, B.4.6 CR SM 005
15.	Personnel accountability	NUC EPR JFG SSMD Shift Manager (DAEC) J.1.1 CR SM 020, J.1.1 CR SM 021

Note: NUC EPR JFG SSMD Shift Manager (DAEC) under development, used PBNP Shift Manager as a template for this task analysis. Tasks are the same in the emergency plan for all sites, JFG is specialized for certain ERO roles.

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

Event #1 Design Basis Threat

Initial Conditions:

Time: Saturday @ 0230

Unit @ 100% Power: RCS @ NOT and NOP

Sequence of Events:

0235 Adversary force assaults DAEC and attempts to breach the protected area fence
Security engages adversaries and notifies Shift Manager

0240 Security informs Shift Manager that PA has been breached

0245 Security informs Shift Manager that adversaries have been neutralized

No injuries to site personnel

No fires or collateral damage to plant equipment

No adverse consequences to plant safety

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

TABLE 1 – On-Shift Positions

Event #1 – Design Basis Threat

Line	On-shift Position	Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T1/L1 T5/L1 T5/L2 T5/L3 T5/L4 T5/L5 T5/L6 T5/L8 T5/L10 T5/L11 T5/L12	No	No
2.	Control Room Supervisor (SRO)	T1/L2 T1/L5	No	No
3.	Shift Technical Advisor (STA)	NA	NA	NA
4.	Reactor Operator 1 (RO1)	T1/L2 T1/L4 T1/L5 T1/L6	No	No
5.	Reactor Operator 2 (RO2)	T1/L2 T1/L6	No	No
6.	Reactor Operator 3 (RO3)	T1/L3	No	No
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/EPO)	NA	NA	NA
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	NA	NA	NA
9.	Fire Brigade Lead (AO3/EPO)	NA	NA	NA
10.	Fire Brigade Member (FBM1/EPO)	NA	NA	NA
11.	Fire Brigade Member (FBM2)	NA	NA	NA
12.	Fire Brigade Member (FBM3)	NA	NA	NA
13.	Fire Brigade Member (FBM4)	NA	NA	NA
14.	RP Technician 1	NA	NA	NA
15.	RP Technician 2	NA	NA	NA

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

Line	On-shift Position	Table # / Line#	Unanalyzed Task?	TMS Required?
16.	CAS/SAS Operator (SEC1)	T5/L12 T5/L13	No	No

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

TABLE 2 – Plant Operations & Safe Shutdown

Event #1 – Design Basis Threat

Minimum Operations Crew

Line	On-Shift Position	Task Description	Controlling Method
1.	Shift Manager (SM)	Plant and Crew Oversight / STA Tasks	Ops Training Program
2.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
3.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
4.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
5.	Nuclear Station Plant Equip Operator (NSPEO1)	Perform In-Plant Operations	Ops Training Program

Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
6.	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Event #1 – Design Basis Threat

Line	Performed By	Task Description	Controlling Method
1.	N/A	N/A	N/A
2.	N/A	N/A	N/A
3.	N/A	N/A	N/A
4.	N/A	N/A	N/A
5.	N/A	N/A	N/A

Notes: Fire Brigade Members are in Duck & Cover – no actions

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TABLE 4 – Radiation Protection

Event #1 – Design Basis Threat

#	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)											
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	110-120
1.	In-Plant Survey On-Shift Position:												
2.	On-Site Survey On-Shift Position:												
3.	Personnel Monitoring On-Shift Position:												
4.	Job Coverage On-Shift Position:												

Notes: RP personnel are in Duck & Cover – no actions.

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

TABLE 5 – Emergency Plan Implementation

Event #1 – Design Basis Threat

Line	Function/Task	On-Shift Position	Controlling Method
1.	Declare the Emergency	Shift Manager (SM)	Ops Training Program EP Drill Program
2.	ERO notification	SM/Shift Technical Advisor (STA)	Ops Training Program EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA	Ops Training Program EP Drill Program
4.	Abbreviated NRC notification for DBT event	SM	Ops Training Program EP Drill Program
5.	Complete ERNIE State/local notification form	SM	Ops Training Program EP Drill Program
6.	Approve State/local notifications	SM	Ops Training Program EP Drill Program
7.	Approve Offsite PARs	N/A	Ops Training Program EP Drill Program
8.	Perform ERNIE State/local notifications	SM/STA	Ops Training Program EP Drill Program
9.	Dose Assessment	N/A	
10.	Complete ERNIE NRC event notification form	SM/ STA	Ops Training Program EP Drill Program
11.	Perform NRC notifications ^{Note 1}	SM	Ops Training Program EP Drill Program
12.	Perform other site-specific event notifications	SEC1 SM	Ops Training Program EP Drill Program Security Training Program
13.	Personnel accountability ^{Note 2}	SEC1	Security Training Program EP Drill Program
14.	Approve extension to allowable dose limits	N/A	

Notes: EAL – Site Area Emergency - HS1.1. Personnel Accountability completed when safe to do so.

Note 1 – Shift Manager establishes and maintains constant communications with the NRC for Security events, utilizing portable headset.

Note 2 – Personnel Accountability completed when safe to do so

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

Table 5 - E-Plan Implementation

Event #1 - Design Basis Threat

Function/Task	Position	Time from Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM	X	X																
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA	X																	
Abbreviated NRC notification for DBT event	SM	X																	
Complete State/local notification form	SM/STA			X															
Approve State/local notifications	SM				X														
Approve Offsite PARs	NA																		
Perform State/local notifications	SM/STA				X														
Dose Assessment	NA																		
Complete NRC event notification form	SM/STA					X													
Perform NRC Notifications	SM/STA						X	X	X	X	X	X	X						
Other Site Specific Event Notifications	SM SEC1	X																	
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: Note 1 – Shift Manager establishes and maintains constant communications with the NRC for Security events, utilizing portable headset. Relieved by Interim Response Team Site Emergency Director at 1 hour
Note 2 – Personnel Accountability completed when safe to do so.

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

Event #2 Loss of Coolant Accident – Reactor Recirculation Pipe Breaks

Initial Conditions:

Time: Friday @ 0230

Unit @ 100% Power; RCS @ NOT and NOP

Sequence of Events:

0230 Large Break LOCA occurs – Recirc Line Break (suction side)

Loss of Normal AC power occurs coincident with break

Loss of HPCI occurs due to partial loss of Division II 125 VDC power to HPCI pump, following ECCS equipment is available:

B CS Pump

B and D RHR (LPCI) Pumps

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

TABLE 1 – On-Shift Positions

Event #2 – Loss of Coolant Accident – Reactor Recirculation Pipe Breaks

Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T5/L1 T5/L2 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L11 T5/L12	No	Yes
2.	Control Room Supervisor (SRO)	T1/L1 T1/L2 T1/L3 T1/L4	No	No
3.	Shift Technical Advisor (STA)	See SM	NA	NA
4.	Reactor Operator 1 (RO1)	T1/L1 T1/L4	No	No
5.	Reactor Operator 2 (RO2)	T1/L1 T1/L2 T1/L3 T1/L5 T1/L6	No	No
6.	Reactor Operator 3 (RO3)	T1/L7	No	No
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/ EPO)	T1/L6 T1/L7	No	No
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	T1/L5 T1/L6	No	No
9.	Fire Brigade Lead (AO3/EPO)	T4/L6	No	No
10.	Fire Brigade Member (FBM1/EPO)	NA	NA	NA
11.	Fire Brigade Member (FBM2)	NA	NA	NA
12.	Fire Brigade Member (FBM3)	NA	NA	NA
13.	Fire Brigade Member (FBM4)	NA	NA	NA
14.	RP Technician 1	T4/L1	No	No
15.	RP Technician 2	NA	NA	NA

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Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
16.	CAS/SAS Operator (SEC1)	T5/L13	No	No

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

TABLE 2 – Plant Operations & Safe Shutdown

Event #2 – Loss of Coolant Accident – Reactor Recirculation Pipe Breaks

Line	On-Shift Position	Task Description	Controlling Method
1.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
2.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
3.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
4.	Control Room Operator 3 (RO3)	Perform Control Room Operations	Ops Training Program
5.	Nuclear Station Plant Equip Operator (NSPEO1)	Perform In-Plant Operations	Ops Training Program
6.	Nuclear Station Plant Equip Operator (NSPEO2)	Perform In-Plant Operations	Ops Training Program

Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
1.	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Event #2 – Loss of Coolant Accident – Reactor Recirculation Pipe Breaks

Line	Performed By	Task Description	Controlling Method
1.	N/A	N/A	N/A
2.	N/A	N/A	N/A
3.	N/A	N/A	N/A
4.	N/A	N/A	N/A
5.	N/A	N/A	N/A

Notes: Fire Brigade response not required for this event.

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TABLE 4 – Radiation Protection

Event #2 – Loss of Coolant Accident – Reactor Recirculation Pipe Breaks

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-120
1.	In-Plant Survey On-Shift Position: RP1	X	X	X	X	X	X	X	X	X	X	X							
2.	Out of Plant Survey On-Shift Position:																		
3.	Out of Plant Survey On-Shift Position:																		
4.	Personnel Monitoring On-Shift Position:																		
5.	Job Coverage On-Shift Position:																		
6.	Other Site-Specific RP – Describe: On-Shift Position:																		

Notes:

Notes: RP1 reviews ARM data on data system – intermittent. Relieved by RPT augmentation at 60 minutes
EPO relieved at 60 minutes by Remote Dose Assessor, shifts to NRC communications until relived by TSC.

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TABLE 5 – Emergency Plan Implementation

Event #2 – Loss of Coolant Accident – Reactor Recirculation Pipe Breaks

Line	Function/Task	On-Shift Position	Controlling Method
1.	Declare the Emergency	Shift Manager (SM)	Ops Training Program EP Drill Program
2.	ERO notification	STA/SM	Ops Training Program EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	STA/SM	Ops Training Program EP Drill Program
4.	Abbreviated NRC notification for DBT event	NA	
5.	Complete State/local notification form	STA/SM	Ops Training Program EP Drill Program
6.	Approve State/local notifications	STA/SM	Ops Training Program EP Drill Program
7.	Approve Offsite PARs	N/A	Ops Training Program EP Drill Program
8.	Perform State/local notifications	STA/SM	Ops Training Program EP Drill Program
9.	Dose Assessment	EPO	Ops Training Program EP Drill Program
10.	Complete NRC event notification form	SM/STA	Ops Training Program EP Drill Program
11.	Perform NRC notifications	SM/STA EPO	Ops Training Program EP Drill Program
12.	Perform other site-specific event notifications (on site protective actions)	STA/SM	Ops Training Program EP Drill Program
13.	Personnel accountability	SEC1	Security Training Program Ops Training Program EP Drill Program
14.	Approve extension to allowable dose limits	N/A	Ops Training Program EP Drill Program

Notes:

Notes: EAL – Alert – FA1

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TABLE 5A – Emergency Plan Implementation **Event #2 – Loss of Coolant Accident – Reactor Recirculation Pipe Breaks**

		Time from Event Initiation (minutes)																	
Function/Task	Position	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM	X	X																
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA			X															
Abbreviated NRC notification for DBT event	NA																		
Complete State/local notification form	SM/STA			X	X														
Approve State/local notifications	SM				X	X													
Approve Offsite PARs	NA																		
Perform State/local notifications	SM/STA				X	X													
Dose Assessment	NA																		
Complete NRC event notification form	SM/STA						X												
Perform NRC Notifications	EPO							X	X	X	X	X	X						
Other Site Specific Event Notifications	NA																		
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: EP Operator takes over open line responsibilities

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

Event #9 - Control Rod Drop Accident

Initial Conditions:

Time: Wednesday @ 2100

Unit 100% Power; RCS @ NOT and NOP

Sequence of Events:

2100 Mechanical failure causes central Control Rod to drop

2102 SBGT start

Valid TB ventilation KAMAN 2 reading > 6.0E-1 uCu/cc due to initial release prior to MSIV closure and steam line break outside containment.

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Attachment 2: NEI 10-05 Appendix B On-Shift Staffing Analysis Results Tables

TABLE 1 – On-Shift Positions

Event #9 - Control Rod Drop Accident

Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T5/L1 T5/L2 T5/L3 T5/L5 T5/L6 T5/L7 T5/L8 T5/L10 T5/L11 T5/L13 T5/L15	No	Yes
2.	Control Room Supervisor (SRO)	T1/L 1 T1/L 2 T1/L 5 T1/L 6 T1/L 7 T1/L 8 T1/L 9	No	No
3.	Shift Technical Advisor (STA)	See SM	No	No
4.	Reactor Operator 1 (RO1)	T1/L 1 T1/L 6 T1/L 7 T1/L 8 T1/L 9	No	No
5.	Reactor Operator 2 (RO2)	T1/L 2 T1/L 3 T1/L 4 T1/L 5 T1/L 8 T1/L 9	No	No
6.	Reactor Operator 3 (RO3)	NA	NA	NA
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/ EPO)	NA	NA	NA
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	NA	NA	NA
9.	Fire Brigade Lead (AO3/EPO)	T5/L9	No	No

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Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
10.	Fire Brigade Member (FBM1/EPO)	NA	NA	NA
11.	Fire Brigade Member (FBM2)	NA	NA	NA
12.	Fire Brigade Member (FBM3)	NA	NA	NA
13.	Fire Brigade Member (FBM4)	NA	NA	NA
14.	RP Technician 1	T4/L1	No	No
15.	RP Technician 2	NA	NA	NA
16.	CAS/SAS Operator (SEC1)	T5/L14	No	No

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TABLE 2 – Plant Operations & Safe Shutdown

Event #9 - Control Rod Drop Accident

Minimum Operations Crew

Line	On-Shift Position	Task Description	Controlling Method
1.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
2.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
3.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
4.	Control Room Operator 3 (RO3)	Perform Control Room Operations	Ops Training Program
5.	Nuclear Station Plant Equip Operator (NSPEO1)	Perform In-Plant Operations	Ops Training Program
6.	Nuclear Station Plant Equip Operator (NSPEO2)	Perform In-Plant Operations	Ops Training Program

Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
1	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Event #9 - Control Rod Drop Accident

Line	Performed By	Task Description	Controlling Method
1.	N/A	N/A	N/A
2.	N/A	N/A	N/A
3.	N/A	N/A	N/A
4.	N/A	N/A	N/A
5.	N/A	N/A	N/A

Notes: Fire Brigade response not required for this event.

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TABLE 4 – Radiation Protection

Event #9 - Control Rod Drop Accident

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-120
7.	In-Plant Survey On-Shift Position: RP1	X	X	X	X	X	X	X	X	X	X	X							
8.	Out of Plant Survey On-Shift Position:																		
9.	Out of Plant Survey On-Shift Position:																		
10.	Personnel Monitoring On-Shift Position:																		
11.	Job Coverage On-Shift Position:																		
12.	Other Site-Specific RP – Describe: On-Shift Position:																		

Notes:

Notes: RP1 reviews ARM data on data system – intermittent. Relieved by RPT augmentation at 60 minutes

EPO relieved at 60 minutes by Remote Dose Assessor, shifts to NRC communications until relieved by TSC.

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Table 5 - Emergency Plan Implementation

Event #9 - Control Rod Drop Accident

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1.	Declare the Emergency	SM	EP/Ops Training and EP Drill Program
2.	ERO notification	SM/STA	EP/Ops Training and EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA	EP/Ops Training and EP Drill Program
4.	Abbreviated NRC notification for DBT event	N/A	EP/Ops Training and EP Drill Program
5.	Complete State/local notification form	SM/STA	EP/Ops Training and EP Drill Program
6.	Approve State/local notifications	SM	EP/Ops Training and EP Drill Program
7.	Approve Offsite PARs	SM	EP/Ops Training and EP Drill Program
8.	Perform State/local notifications	SM/STA	EP/Ops Training and EP Drill Program
9.	Dose Assessment	EPO	Chemistry Training and EP Drill Program
10.	Complete NRC event notification form	SM/STA	EP Training and EP Drill Program
11.	Perform NRC notifications	SM/STA EPO	EP/Ops Training and EP Drill Program
12.	Activate ERDS	NA	EP/Ops Training and EP Drill Program
13.	Perform other site-specific event notifications	SM/STA	EP/Ops Training and EP Drill Program
14.	Personnel accountability	SEC1	EP/Ops Training and EP Drill Program
15.	Approve extension to allowable dose limits	SM	EP/Ops Training and EP Drill Program

Notes: EAL – General Emergency - RG1.2

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TABLE 5A – Emergency Plan Implementation

Event #9 - Control Rod Drop Accident

Function/Task	Position	Time from Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM	X	X					X	X										
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA			X															
Abbreviated NRC notification for DBT event	NA																		
Complete State/local notification form	SM/STA			X						X									
Approve State/local notifications	SM				X	X					X								
Approve Offsite PARs	NA										X								
Perform State/local notifications	SM/STA				X	X					X								
Dose Assessment	EPO			X	X	X	X	X	X	X	X	X							
Complete NRC event notification form	SM/STA						X					X							
Perform NRC Notifications	EPO												X	X	X				
Other Site Specific Event Notifications	NA																		
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: EP Operator relieved by Remote dose assessor at 1 hour, takes over NRC open line duties until relieved by TSC NRC Communicator.
This assumes FS1 initial classification then escalation based on dose assessment results for RG1.2

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Event #11 ATWS – MSIV Closure

Initial Conditions:

Time: Wednesday @ 2100
Unit 100% Power; RCS @ NOT and NOP

Sequence of Events:

2100 Mechanical failure causes MSIVs to fast close
RPS and CRD System fail to initiate SCRAM
Reactor Recirc Pumps trip and coast down (ATWS-RPT setpoint)

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Tasks and Timing Table

Event #11 - ATWS – MSIV Closure

Procedure Step/Actions			Performance Time (mins) After Procedure Implementation																			
Proc/Step	Task	Assigned Resource	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+		
EOP 1, RPV Control																						
Continuous Re-check	Transition to ATWS	SRO	X																			
ATWS- RPV Control																						
/-1	Lockout ADS	SRO RO2	X																			
/Q-1 through /Q-8	Power control	SRO RO1	X (Intermittent)																			
/L-1 through /L-6	Level control	SRO RO1	X (Intermittent)																			
/Q-6	Rod Insertion Procedures	SRO RO2 NSPEO1	X																			
	RIP 103.4	NSPEO2			X																	
/P-4	Establish alternate pressure control	SRO RO2			X																	
EOP 2, Primary Containment Control																						
T/T-3	Maximize Torus cooling	SRO RO2	X																			
ATWS- RPV Control (Continued)																						
/L-8	Restore RPV water level to normal	SRO RO1							X													
/P-6	Initiate cooldown	SRO RO2 STA												X								

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TABLE 1 – On-Shift Positions

Event #11 - ATWS – MSIV Closure

Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T5/L1 T5/L2 T5/L3 T5/L5 T5/L6 T5/L8 T5/L10 T5/L11	No	Yes
2.	Control Room Supervisor (SRO)	T1/L 1 T1/L 2 T1/L 3 T1/L 4 T1/L 5 T1/L 7 T1/L 8 T1/L 9 T1/L 10	No	No
3.	Shift Technical Advisor (STA)	See SM	NA	NA
4.	Reactor Operator 1 (RO1)	T1/L 3 T1/L 4 T1/L 9	No	No
5.	Reactor Operator 2 (RO2)	T1/L 2 T1/L 5 T1/L 7 T1/L 8	No	No
6.	Reactor Operator 3 (RO3)	NA	NA	NA
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/ EPO)	T1/L 5	No	No
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	T1/L 6	No	No
9.	Fire Brigade Lead (AO3/EPO)	T5/L 9 T5/L 11	No	No
10.	Fire Brigade Member (FBM1/EPO)	NA	NA	NA
11.	Fire Brigade Member (FBM2)	NA	NA	NA
12.	Fire Brigade Member (FBM3)	NA	NA	NA
13.	Fire Brigade Member (FBM4)	NA	NA	NA

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Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
14.	RP Technician 1	T4/L 1	No	No
15.	RP Technician 2	NA	NA	NA
16.	CAS/SAS Operator (SEC1)	T5/L 14	No	No

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TABLE 2 – Plant Operations & Safe Shutdown

Event #11 - ATWS – MSIV Closure

Minimum Operations Crew

Line	On-Shift Position	Task Description	Controlling Method
1.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
2.	Shift Technical Advisor (STA)	Engineering/STA Tasks	Ops Training Program
3.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
4.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
5.	Nuclear Station Plant Equip Operator (NSPEO1)	Perform In-Plant Operations	Ops Training Program
6.	Nuclear Station Plant Equip Operator (NSPEO2)	Perform In-Plant Operations	Ops Training Program

Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
1	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Event #11 - ATWS – MSIV Closure

Line	Performed By	Task Description	Controlling Method
1.	N/A	N/A	N/A
2.	N/A	N/A	N/A
3.	N/A	N/A	N/A
4.	N/A	N/A	N/A
5.	N/A	N/A	N/A

Notes: Fire Brigade response not required for this event.

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TABLE 4 – Radiation Protection

Event #11 - ATWS – MSIV Closure

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-120
1.	In-Plant Survey On-Shift Position: RP1	X	X	X	X	X	X	X	X	X	X	X							
2.	Out of Plant Survey On-Shift Position:																		
3.	Out of Plant Survey On-Shift Position:																		
4.	Personnel Monitoring On-Shift Position:																		
5.	Job Coverage On-Shift Position:																		
6.	Other Site-Specific RP – Describe: On-Shift Position:																		

Notes:

Notes: RP1 reviews ARM data on data system – intermittent. Relieved by RPT augmentation at 60 minutes
EPO relieved at 60 minutes by Remote Dose Assessor, shifts to NRC communications until relieved by TSC.

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TABLE 5 – Emergency Plan Implementation

Event #11 - ATWS – MSIV Closure

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1.	Declare the Emergency	SM	EP/Ops Training and EP Drill Program
2.	ERO notification	SM/STA	EP/Ops Training and EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA	EP/Ops Training and EP Drill Program
4.	Abbreviated NRC notification for DBT event	N/A	EP/Ops Training and EP Drill Program
5.	Complete State/local notification form	SM/STA	EP/Ops Training and EP Drill Program
6.	Approve State/local notifications	SM	EP/Ops Training and EP Drill Program
7.	Approve Offsite PARs	NA	EP/Ops Training and EP Drill Program
8.	Perform State/local notifications	SM/STA	EP/Ops Training and EP Drill Program
9.	Dose Assessment	EPO	Chemistry and EP Drill Program
10.	Complete NRC event notification form	SM/STA	EP Training and EP Drill Program
11.	Perform NRC notifications	SM/STA EOP	EP/Ops Training and EP Drill Program
12.	Activate ERDS	NA	EP/Ops Training and EP Drill Program
13.	Perform other site-specific event notifications	NA	EP/Ops Training and EP Drill Program
14.	Personnel accountability	SEC1	EP/Ops Training and EP Drill Program
15.	Approve extension to allowable dose limits	NA	EP/Ops Training and EP Drill Program

Notes:

EAL – Site Area Emergency – SA6.1 (no assumption that HCTL is exceeded)

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Table 5A - E-Plan Implementation Timeline/Event:

Event #11 - ATWS – MSIV Closure

Function/Task	Position	Time from Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM	X	X																
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM/STA			X															
Abbreviated NRC notification for DBT event	NA																		
Complete State/local notification form	SM/STA			X															
Approve State/local notifications	SM				X														
Approve Offsite PARs	NA																		
Perform State/local notifications	SM/STA					X													
Dose Assessment	EPO				X	X	X	X	X	X	X	X							
Complete NRC event notification form	SM/STA						X	X	X										
Perform NRC Notifications	SM/STA EPO									X	X	X	X	X	X				
Other Site Specific Event Notifications	NA																		
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: EP Operator performs dose assessment until relieved by Remote Dose Assessor at 60 minutes. Assumes open line responsibilities following SM/STA initial notification to NRC.

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Event #15 - Station Blackout

Initial Conditions:

Time: Sunday @ 0100

Weather: Thunderstorms with heavy rain; 0.5" recorded in last 15 minutes

Unit @ 100% Power; RCS @ NOT and NOP

Sequence of Events:

0110 Lightning strike affects offsite power grid resulting in loss of Off-site power
Main Turbine trips resulting in Rx Trip
EDGs fail to start and load to essential buses – no AC power is available

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TABLE 1 – On-Shift Positions

Event #15 - Station Blackout

Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T5/L1 T5/L2 T5/L5 T5/L6 T5/L8 T5/L10	No	Yes
2.	Control Room Supervisor (SRO)	T1/L 1 T1/L 2 T1/L 3	No	No
3.	Shift Technical Advisor (STA)	See SM	NA	NA
4.	Reactor Operator 1 (RO1)	T1/L 1 T1/L 2	No	No
5.	Reactor Operator 2 (RO2)	T1/L 3 T1/L 4	No	No
6.	Reactor Operator 3 (RO3)	T1/L 9 T1/L 10	No	No
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/ EPO)	T1/L 5 T1/L 6	No	No
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	T1/L 7 T1/L 8 T1/L 11	No	No
9.	Fire Brigade Lead (AO3/EPO)	N/A	No	No
10.	Fire Brigade Member (FBM1/EPO)	T1/L 12	No	No
11.	Fire Brigade Member (FBM2/EPO)	T5/L 11	No	No
12.	Fire Brigade Member (FBM3)	T5/L 3	No	No
13.	Fire Brigade Member (FBM4)	NA	NA	NA
14.	RP Technician 1	T4/L 1	No	No
15.	RP Technician 2	NA	NA	NA
16.	CAS/SAS Operator (SEC1)	T5/L 14	No	No
Notes:				

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TABLE 2 – Plant Operations & Safe Shutdown

Event #15 - Station Blackout

Line	On-Shift Position	Task Description	Controlling Method
1.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
2.	Shift Technical Advisor (STA)	Engineering/STA Tasks	Ops Training Program
3.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
4.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
5.	Control Room Operator 3 (RO3)	Perform Control Room Operations	Ops Training Program
6.	Nuclear Station Plant Equip Operator (NSPEO1/AO1)	Perform In-Plant Operations	Ops Training Program
7.	Nuclear Station Plant Equip Operator (NSPEO2/AO2)	Perform In-Plant Operations	Ops Training Program
8.	Fire Brigade Lead (FBM1)	Perform In-Plant Operations	N/A

Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
1	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Line	Performed By	Task Description	Controlling Method
1.	N/A	N/A	N/A
2.	N/A	N/A	N/A
3.	N/A	N/A	N/A
4.	N/A	N/A	N/A
5.	N/A	N/A	N/A

Notes: Fire Brigade response not required for this event.

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TABLE 4 – Radiation Protection

Event #15 - Station Blackout

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-120
1.	In-Plant Survey On-Shift Position: RP1	X	X	X	X	X	X	X	X	X	X	X							
2.	Out of Plant Survey On-Shift Position:																		
3.	Out of Plant Survey On-Shift Position:																		
4.	Personnel Monitoring On-Shift Position:																		
5.	Job Coverage On-Shift Position:																		
6.	Other Site-Specific RP – Describe: On-Shift Position:																		

Notes:

Notes: RP1 reviews ARM data on data system – intermittent. Relieved by RPT augmentation at 60 minutes
No release assumed in a SBO event, no dose assessment needed

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TABLE 2 – Plant Operations & Safe Shutdown

Event #15 - Station Blackout

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1.	Declare the Emergency	SM	EP/Ops Training and EP Drill Program
2.	ERO notification	SM/STA	EP/Ops Training and EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SEC/FBM2	EP/Ops Training and EP Drill Program
4.	Abbreviated NRC notification for DBT event	N/A	EP/Ops Training and EP Drill Program
5.	Complete State/local notification form	SM/STA	EP/Ops Training and EP Drill Program
6.	Approve State/local notifications	SM	EP/Ops Training and EP Drill Program
7.	Approve Offsite PARs	NA	EP/Ops Training and EP Drill Program
8.	Perform State/local notifications	SM/STA	EP/Ops Training and EP Drill Program
9.	Dose Assessment	NA	EP/Ops Training and EP Drill Program
10.	Complete NRC event notification form	SM/STA	EP Training and EP Drill Program
11.	Perform NRC notifications	SM EPO	EP/Ops Training and EP Drill Program
12.	Activate ERDS	N/A	EP/Ops Training and EP Drill Program
13.	Perform other site-specific event notifications	SM SC	EP/Ops Training and EP Drill Program
14.	Personnel accountability	SEC1	EP/Ops Training and EP Drill Program
15.	Approve extension to allowable dose limits	NA	EP/Ops Training and EP Drill Program

Notes:

EAL – Site Area Emergency – SS1.1. ERDS has no power due to SBO, FBM2 and SEC1 will patrol PA to inform personnel of emergency due to power outage.

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Table 5A - E-Plan Implementation

Event #15 - Station Blackout

		Time from Event Initiation (minutes)																	
Function/Task	Position	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM	X	X																
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	FBM3 SEC			X	X	X	X	X	X	X	X								
Abbreviated NRC notification for DBT event	NA																		
Complete State/local notification form	SM/STA			X															
Approve State/local notifications	SM				X														
Approve Offsite PARs	NA																		
Perform State/local notifications	SM/STA					X													
Dose Assessment	NA																		
Complete NRC event notification form	SM/STA						X	X	X										
Perform NRC Notifications	SM/STA EPO									X	X	X	X	X	X				
Other Site Specific Event Notifications	NA																		
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: EP Operator assumes open line responsibilities following SM/STA initial notification to NRC. Laptops in control room powered by batteries and network has UPS to allow ERNIE notifications. SEC/FBM3 will patrol protected area informing personnel of the event in progress.

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Event #16 - NFPA 805 – CR Fire

Initial Conditions:

Time: Wednesday @ 0430

Unit @ 100% - NOT and NOP

Sequence of Events:

0430 Fire breaks out in control room requiring evacuation
Loss of offsite power occurs
Rx SCRAM

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Tasks and Timing Table

Event #16 - NFPA 805

Procedure Step/Actions			Performance Time (mins) After Procedure Implementation																	
Proc/Step	Task	Assigned Resource	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
AOP 913, Fire																				
Step 3	Fire response	FB	X																	
AOP 915, Shutdown Outside Control Room																				
Step 1	Manual Scram	RO1	X																	
Note before Step 4	Evacuate to TSC	EPO	X																	
Steps 5-8	Establish Remote Shutdown Capability	SM ^{Note 1} SRO RO1 RO2	X																	
	Transfer satellite panel	NSPEO1		X																
Step 7 Atts. 6 & 7	Start EDG	NSPEO1		X																
	Transfer Satellite Panels	NSPEO2		X																
Step 12	Operate plant equipment from RSS	SRO RO1 RO2 NSPEO1 NSPEO2					X													

Note 1: SM reports to the Remote Shutdown Panel (RSDP) to provide oversight. SM is able to perform Emergency Plan functions from this location.

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TABLE 1 – On-Shift Positions

Event #19 - NFPA 805

Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T1/L 4 T5/L1 T5/L2 T5/L5 T5/L6 T5/L8 T5/L10 T5/L11	No	Yes
2.	Control Room Supervisor (SRO)	T1/L 4 T1/L 8	No	No
3.	Shift Technical Advisor (STA)	See SM	NA	NA
4.	Reactor Operator 1 (RO1)	T1/L 2 T1/L 4 T1/L 8 T5/L 3	No	No
5.	Reactor Operator 2 (RO2)	T1/L 4 T1/L 8	No	No
6.	Reactor Operator 3 (RO3)	NA	NA	N/A
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/ EPO)	T1/L 5 T1/L 6 T1/L 8	No	No
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	T1/L 7 T1/L 8	No	No
9.	Fire Brigade Lead (AO3/EPO)	T1/ L1	No	No
10.	Fire Brigade Member (FBM1/EPO)	T1/ L1	No	No
11.	Fire Brigade Member (FBM2)	T1/ L1	No	No
12.	Fire Brigade Member (FBM3)	T1/ L1	No	No
13.	Fire Brigade Member (FBM4)	T1/ L1	No	No
14.	RP Technician 1	T4/L 1	No	No
15.	RP Technician 2	NA	NA	NA
16.	CAS/SAS Operator (SEC1)	T5/ L14	No	No

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TABLE 2 – Plant Operations & Safe Shutdown

Event #16 - NFPA 805

Line	On-Shift Position	Task Description	Controlling Method
1.	Operations Shift Manager (SM)	Plant and Crew Oversight	Ops Training Program
2.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
3.	Shift Technical Advisor (STA)	Engineering/STA Tasks	Ops Training Program
4.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
5.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
6.	Control Room Operator (RO3/FBL)	Perform Control Room Operations	Ops Training Program
7.	Nuclear Station Plant Equip Operator (NSPEO1)	Perform In-Plant Operations	Ops Training Program
8.	Nuclear Station Plant Equip Operator (NSPEO2)	Perform In-Plant Operations	Ops Training Program

Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
1	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Event #16 - NFPA 805

Line	Performed By	Task Description	Controlling Method
1.	Fire Brigade Leader (FBL)	Fire Brigade Leader	Fire Brigade Training
2.	Auxiliary Operator (FBM1)	Fire Brigade Member	Fire Brigade Training
3.	Fire Brigade Member (FBM2)	Fire Brigade Member	Fire Brigade Training
4.	Fire Brigade Member (FBM3)	Fire Brigade Member	Fire Brigade Training
5.	Fire Brigade Member (FBM4)	Fire Brigade Member	Fire Brigade Training

Notes: Fire Brigade activated at start of event (0-5 minutes)

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TABLE 4 – Radiation Protection

Event #16 - NFPA 805

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (minutes)																	
		0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-85	85-120
1.	In-Plant Survey On-Shift Position: RP1	X	X	X	X	X	X	X	X	X	X	X							
2.	Out of Plant Survey On-Shift Position:																		
3.	Out of Plant Survey On-Shift Position:																		
4.	Personnel Monitoring On-Shift Position:																		
5.	Job Coverage On-Shift Position:																		
6.	Other Site-Specific RP – Describe: On-Shift Position:																		

Notes:

Notes: RP1 reviews ARM data on data system – intermittent. Relieved by RPT augmentation at 60 minutes

EPO relieved at 60 minutes by Remote Dose Assessor, shifts to NRC communications until relieved by TSC. No release assumed during NFPA 805 emergencies.

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TABLE 5 – Emergency Plan Implementation

Event #16 - NFPA 805

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1.	Declare the Emergency	SM	EP/Ops Training and EP Drill Program
2.	ERO notification	SM	EP/Ops Training and EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	RO1	EP/Ops Training and EP Drill Program
4.	Abbreviated NRC notification for DBT event	N/A	EP/Ops Training and EP Drill Program
5.	Complete State/local notification form	SM	EP/Ops Training and EP Drill Program
6.	Approve State/local notifications	SM	EP/Ops Training and EP Drill Program
7.	Approve Offsite PARs	NA	EP/Ops Training and EP Drill Program
8.	Perform State/local notifications	SM	EP/Ops Training and EP Drill Program
9.	Dose Assessment	EPO	EP Training and EP Drill Program
10.	Complete NRC event notification form	STA	EP Training and EP Drill Program
11.	Perform NRC notifications	SM/STA EOP	EP/Ops Training and EP Drill Program
12.	Activate ERDS	NA	EP/Ops Training and EP Drill Program
13.	Perform other site-specific event notifications	N/A	EP/Ops Training and EP Drill Program
14.	Personnel accountability	SEC1	EP/Ops Training and EP Drill Program
15.	Approve extension to allowable dose limits	SM	EP/Ops Training and EP Drill Program

Notes: EAL – Alert – HA5.1. ECA report to TSC to perform notifications during event

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Table 5A - E-Plan Implementation

Event #16 - NFPA 805

		Time from Event Initiation (minutes)																	
Function/Task	Position	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM		X	X															
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	RO1	X																	
Abbreviated NRC notification for DBT event	NA																		
Complete State/local notification form	SM/STA			X															
Approve State/local notifications	SM				X														
Approve Offsite PARs	NA																		
Perform State/local notifications	SM/STA					X													
Dose Assessment	NA																		
Complete NRC event notification form	SM/STA						X	X	X										
Perform NRC Notifications	SM/STA									X	X	X							
Other Site Specific Event Notifications	NA																		
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: All EP Operators are performing fire fighting duties and response actions. SM/STA will maintain open line with NRC until relieved by the Interim Response Team Site Emergency Director.

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Event #17 - Aircraft Probable Threat

Initial Conditions:

Time: Wednesday @ 0300

Unit @ 100% Power; RCS @ NOT and NOP

Sequence of Events:

0300 NRC notifies DAEC control room of confirmed aircraft threat
Target of Interest (TOI) is 25 minutes from DAEC
Probable threat - > 5 minutes < 30 minutes

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TABLE 1 – On-Shift Positions

Event #17 - Aircraft Probable Threat

Line	On-shift Position	Role in Table # / Line#	Unanalyzed Task?	TMS Required?
1.	Shift Manager (SM)	T1/L 1 T5/L1 T5/L2 T5/L5 T5/L6 T5/L8 T5/L10 T5/L11	No	Yes
2.	Control Room Supervisor (SRO)	T1/L 3 T1/L 5	No	No
3.	Shift Technical Advisor (STA)	See SM	NA	NA
4.	Reactor Operator 1 (RO1)	T1/L 3 T1/L 4 T1/L 5 T5/L 3	No	No
5.	Reactor Operator 2 (RO2)	T1/L3 T1/L5 T1/L8	No	No
6.	Reactor Operator 3 (RO3)	NA	NA	NA
7.	Nuclear Station Plant Equip Operator (NSPEO1) (AO1/ EPO)	T1/L6 T1/L7	No	No
8.	Nuclear Station Plant Equip Operator (NSPEO2) (AO2/EPO)	T1/L6	No	No
9.	Fire Brigade Lead (AO3/EPO)	T1/L6	No	No
10.	Fire Brigade Member (FBM1/EPO)	T5/L11	No	No
11.	Fire Brigade Member (FBM2)	NA	NA	NA
12.	Fire Brigade Member (FBM3)	NA	NA	NA
13.	Fire Brigade Member (FBM4)	NA	NA	NA
14.	RP Technician 1	NA	NA	NA
15.	RP Technician 2	NA	NA	NA
16.	CAS/SAS Operator (SEC1)	T1/L2 T5/L13 T5/L14	No	No

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TABLE 2 – Plant Operations & Safe Shutdown

Event #17 - Aircraft Probable Threat

Line	On-Shift Position	Task Description	Controlling Method
1.	Shift Manager (SM)	Plant and Crew Oversight	Ops Training Program
2.	Control Room Supervisor (SRO)	Direct Unit Operations	Ops Training Program
3.	Control Room Operator 1 (RO1)	Perform Control Room Operations	Ops Training Program
4.	Control Room Operator 2 (RO2)	Perform Control Room Operations	Ops Training Program
5.	Nuclear Station Plant Equip Operator 1 (NSPEO1)	Perform In-Plant Operations	Ops Training Program
6.	Nuclear Station Plant Equip Operator 2 (NSPEO2)	Perform In-Plant Operations	Ops Training Program
7.	Auxiliary Operator (FBM1)	Perform In-Plant Operations	Ops Training Program
Notes: See Tasks and Timing Table for AOP/IPOI/EOP actions			

Other (non-Operations) Personnel

Line	On-Shift Position	Task Description	Controlling Method
8.	CAS/SAS Operator (SEC1)	CAS/SAS Operator	Security/EP Training

TABLE 3 – Firefighting

Event #17 - Aircraft Probable Threat

Line	Performed By	Task Description	Controlling Method
1.	Fire Brigade Leader (FBL)	Fire Brigade Response	Fire Brigade Training
2.	Auxiliary Operator (FBM1)	Fire Brigade Response	Fire Brigade Training
3.	Fire Brigade Member (FBM2)	Fire Brigade Response	Fire Brigade Training
4.	Fire Brigade Member (FBM3)	Fire Brigade Response	Fire Brigade Training
5.	Fire Brigade Member (FBM4)	Fire Brigade Response	Fire Brigade Training

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TABLE 4 – Radiation Protection

Event #17 - Aircraft Probable Threat

Line	Position Performing Function/Task	Performance Time Period After Event Initiation (minutes)																	
		0- 5	5- 10	10- 15	15- 20	20- 25	25- 30	30- 35	35- 40	40- 45	45- 50	50- 55	55- 60	60- 65	65- 70	70- 75	75- 80	80- 85	85- 120
1.	In-Plant Survey On-Shift Position: RP1																		
2.	On-Site Survey On-Shift Position:																		
3.	Personnel Monitoring On-Shift Position:																		
4.	Job Coverage On-Shift Position:																		
5.	Other Site-Specific RP – Describe: On-Shift Position:																		

Notes: RP personnel relocated IAW AOP 914

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Table 5 – Emergency Plan Implementation

Event #17 - Aircraft Probable Threat

Line	Function/Task	On-Shift Position	Task Analysis Controlling Method
1.	Declare the Emergency	SM	EP/Ops Training and EP Drill Program
2.	ERO notification	SM/STA	EP/Ops Training and EP Drill Program
3.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	RO1	EP/Ops Training and EP Drill Program
4.	Abbreviated NRC notification for DBT event	NA	EP/Ops Training and EP Drill Program
5.	Complete State/local notification form	SM/STA	EP/Ops Training and EP Drill Program
6.	Approve State/local notifications	SM	EP/Ops Training and EP Drill Program
7.	Approve Offsite PARs	N/A	EP/Ops Training and EP Drill Program
8.	Perform State/local notifications	SM/STA	EP/Ops Training and EP Drill Program
9.	Dose Assessment	N/A	EP/Ops Training and EP Drill Program
10.	Complete NRC event notification form	SM/STA	EP Training and EP Drill Program
11.	Perform NRC notifications	SM/STA EPO	EP/Ops Training and EP Drill Program
12.	Activate ERDS	NA	EP/Ops Training and EP Drill Program
13.	Perform other site-specific event notifications	SEC1	EP/Ops Training and EP Drill Program
14.	Personnel accountability	SEC1	EP/Ops Training and EP Drill Program
15.	Approve extension to allowable dose limits	N/A	EP/Ops Training and EP Drill Program

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Table 5A - E-Plan Implementation Timeline

Event #17 - Aircraft Probable Threat

		Time from Event Initiation (minutes)																	
Function/Task	Position	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-90	90-100	100-110	110-120	120+
Declare the Emergency	SM		X	X															
ERO notification	SM/STA			X															
Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	RO1	X																	
Abbreviated NRC notification for DBT event	NA																		
Complete State/local notification form	SM/STA			X															
Approve State/local notifications	SM				X														
Approve Offsite PARs	NA																		
Perform State/local notifications	SM/STA					X													
Dose Assessment	NA																		
Complete NRC event notification form	SM/STA						X	X	X										
Perform NRC Notifications	EPO									X	X	X							
Other Site Specific Event Notifications	SEC1	X																	
Personnel Accountability	SEC1			X	X	X	X	X											
Approve Dose Extension	NA																		

Notes: EP operator available to perform NRC open line duties if requested by NRC. Assumption that NRC informs site so no need for rapid notification for threat.

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END OF DOCUMENT

Enclosure 6

NEXTERA ENERGY DUANE ARNOLD, LLC
DUANE ARNOLD ENERGY CENTER

L-2026-008

LICENSE AMENDMENT REQUEST (TSCR-195)

OFFSITE RESPONSE ORGANIZATION SUPPORT LETTERS

(3 pages follow)

NextEra Energy – Duane Arnold Emergency Plan Acknowledgment

The LINN COUNTY EMERGENCY MANAGEMENT AGENCY is aware of NextEra Energy's intent to resume power at the Duane Arnold Energy Center (DAEC).

LINN COUNTY EMERGENCY MANAGEMENT AGENCY acknowledges that:

- it is aware of NextEra Energy's plans to restart DAEC;
- it is engaged in discussions with DAEC personnel regarding the onsite and offsite emergency planning efforts necessary to meet emergency planning requirements should NextEra Energy restart DAEC; and
- it intends to participate in planning efforts that support meeting NUREG 0654 criteria for the restart, including any required field demonstrations.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of DAEC are still in development and will be clearly established in a properly executed and binding letter of agreement that will be documented in the DAEC Site Emergency Plan associated with DAEC resuming power operations.

BS Ovorak

Print Name (AGENCY REPRESENTATIVE)



Signature

01/12/26
Date

Coordinator

Title



NextEra Energy – Duane Arnold Emergency Plan Acknowledgment

IOWA HOMELAND SECURITY AND EMERGENCY MANAGEMENT is aware of NextEra Energy's intent to resume power at the Duane Arnold Energy Center (DAEC).

IOWA HOMELAND SECURITY AND EMERGENCY MANAGEMENT acknowledges that:

- it is aware of NextEra Energy's plans to restart DAEC;
- it is engaged in discussions with DAEC personnel regarding the onsite and offsite emergency planning efforts necessary to meet emergency planning requirements should NextEra Energy restart DAEC; and
- it intends to participate in planning efforts that support meeting NUREG 0654 criteria for the restart, including any required field demonstrations.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of DAEC are still in development and will be clearly established in a properly executed and binding letter of agreement that will be documented in the DAEC Site Emergency Plan associated with DAEC resuming power operations.

__Kayla Beckerdite__

Print Name (AGENCY REPRESENTATIVE)

A handwritten signature in black ink that reads "Kayla B" with a stylized flourish at the end.

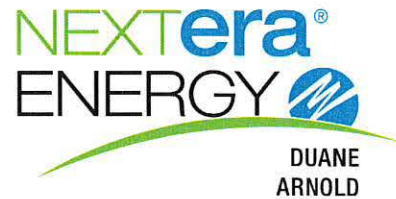
Signature

__1/22/2026__

Date

__REP Program Manager__

Title



NextEra Energy – Duane Arnold Emergency Plan Acknowledgment

The BENTON COUNTY EMERGENCY MANAGEMENT AGENCY is aware of NextEra Energy's intent to resume power at the Duane Arnold Energy Center (DAEC).

BENTON COUNTY EMERGENCY MANAGEMENT AGENCY acknowledges that:

- It is aware of NextEra Energy's plans to restart DAEC.
- It is engaged in discussions with DAEC personnel regarding the onsite and offsite emergency planning efforts necessary to meet emergency planning requirements should NextEra Energy restart DAEC; and
- It intends to participate in planning efforts that support meeting NUREG 0654 criteria for the restart, including any required field demonstrations.

It is my understanding that the specific nature of arrangements in support of emergency preparedness for operation of DAEC is still in development and will be clearly established in a properly executed and binding letter of agreement that will be documented in the DAEC Site Emergency Plan associated with DAEC resuming power operations.

Dean VRBA

Print Name (AGENCY REPRESENTATIVE)

[Signature]

Signature

01-13-26

Date

EMA COORDINATOR

Title