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Kennett Square, PA 19348
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10 CFR 50.47(b)
10 CFR 50, Appendix E
10 CFR 50.54(q)
10 CFR 50.90
10 CFR 72.32
10 CFR 72.44(f)

CCEC-25-007

October 31, 2025

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Christopher M. Crane Clean Energy Center
Renewed Facility License No. DPR-50
NRC Docket No. 50-289

Three Mile Island Nuclear Station, Unit 2
Possession Only License No. DPR-73
NRC Docket No. 50-320

Subject: 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

References:
1. Constellation Energy Generation, LLC Press Release: Constellation to Launch Crane Clean Energy Center, Restoring Jobs and Carbon-Free Power to The Grid"[1] dated September 20, 2024

2. Letter from David M. Gullott (Constellation Energy Generation, LLC) to U.S. Nuclear Regulatory Commission, “Regulatory Path to Reauthorize Power Operations” dated November 4, 2024 (ADAMS Accession No. ML24310A104)

[1] https://www.constellationenergy.com/newsroom/2024/Constellation-to-Launch-Crane-Clean-Energy-Center-Restoring-Jobs-and-Carbon-Free-Power-to-The-Grid.html

3. Letter from Michael P. Gallagher (Constellation Energy Generation, LLC[2]) to U.S. Nuclear Regulatory Commission, “Request for Exemptions from Portions of 10 CFR 50.47 and 10 CFR Part 50 Appendix E,” dated July 1, 2019 (ADAMS Accession No. ML19182A104)

Pursuant to 10 CFR 50.90, "Application for amendment of license or construction permit," Constellation Energy Generation, LLC (CEG) requests an amendment to Renewed Facility License Number DPR-50 for Christopher M. Crane Clean Energy Center (Crane). The proposed amendment would revise the site emergency plan (SEP) and Emergency Action Level (EAL) scheme for the operating facility. The proposed changes are being submitted to the U.S. Nuclear Regulatory Commission (NRC) for approval prior to implementation, as required under 10 CFR 50.54(q)(4), 10 CFR Part 50, Appendix E, Section IV.B.2, and 10 CFR 72.44(f).

On November 4, 2024, CEG submitted a letter (Reference 1) to the NRC proposing a regulatory path to reauthorize power operations at Crane consistent with IMC 2562, “Light-Water Reactor Inspection Program for Restart of Reactor Facilities Following Permanent Cessation of Power Operations.” The regulatory pathway letter provides a discussion of the steps CEG contemplates for obtaining NRC authorization for resumption of power operations. The licensing actions required to return to the Operating Reactor Licensing Basis (ORLB), as described in Reference 2, include an Exemption Request from 10 CFR 50.82(a)(2) and three individual submittals to (1) restore the Crane Operating License and Technical Specifications, (2) restore the Crane Physical Security Plan (PSP) in accordance with 10 CFR 73, and (3) restore the Crane Emergency Preparedness Program in accordance with 10 CFR 50.47.

This proposed amendment, if approved, will support implementation of the site emergency plan (SEP) and Emergency Action Level (EAL) scheme for the operating facility as communicated in Reference 2.

Additionally, by letter dated July 1, 2019 (Reference 3), pursuant to 10 CFR 50.12, “Specific Exemptions.” CEG 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 Crane[3]. The exemption allowed Crane to reduce emergency planning requirements consistent with the permanently defueled condition of the station.

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[2] At that time, CEG was named “Exelon Generation Company, LLC.” NRC approved the indirect transfer of licenses associated with Exelon Generation Company’s spinoff from Exelon Corporation on November 16, 2021. This included changing the name of Exelon Generation Company, LLC to Constellation Energy Generation, LLC, while remaining the same legal entity and licensed owner and operator of Three Mile Island, Unit 1. While some actions referred to in this document were submitted under the name “Exelon” or “Exelon Generation Company,” for clarity, CEG or Constellation will be used as the name of the licensee.

[3] At that time, Crane was named “Three Mile Island Nuclear Station, Unit 1.” NRC approved Amendment No. 306 to the Renewed Facility License to reflect the name change to “Christopher M. Crane Clean Energy Center” on May 13, 2025.

With this submittal, CEG is requesting rescission of the exemption requested in Reference 3.

CEG requests notification of the completed safety evaluation for the proposed amendment by November 30, 2026, with final approval and rescission of the associated exemption coincident with NRC approval of the aforementioned 10 CFR 50.82(a)(2) exemption request. Upon approval, CEG will implement the amendment within 60 days of issuance.

Three Mile Island, Unit 2 (TMI-2), has a Possession Only License and is in a non-operational status. CEG currently maintains the emergency planning responsibilities for TMI-2, which is owned by TMI-2 Solutions. This License Amendment Request (LAR) does not impact CEG's ability to maintain these responsibilities.

Attachment 1 provides a summary of proposed regulatory commitments.

If you have any questions, please contact Joseph DeBoer, at 267-533-5575 or Joseph.DeBoer@Constellation.com.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 31st day of October 2025.

Respectfully,

Moore, Dennis M

Digitally signed by Moore, Dennis M
Date: 2025.10.30 10:08:31 -04'00'

Dennis M. Moore
Senior Manager Licensing
Constellation Energy Generation, LLC

Attachment 1: Summary of Regulatory Commitments

Attachment 2: Evaluation of Proposed Changes: License Amendment Request for Approval of Changes to Emergency Plan Staffing Requirements and restoration of Operating Emergency Plan (with Enclosures)

cc: w/ Attachments
NRC Regional Administrator, Region I
NRC Director, NRR – DORL
NRC Deputy Director, NRR – DORL
NRC Project Manager, NRR – DORL – Christopher M. Crane Clean Energy Center
NRC Project Manager, NMSS – Christopher M. Crane Clean Energy Center

Director, Bureau of Radiation Protection - PA Department of Environmental Resources
Chairman, Board of County Commissioners of Dauphin County
Chairman, Board of Supervisors of Londonderry Township

ATTACHMENT 1

Summary of Regulatory Commitments

Crane Clean Energy Center
Renewed Facility License No. DPR-50

ATTACHMMENT 1

Summary of Regulatory Commitments

The following table identifies commitments made in this document. (Any other actions discussed in the submittal represent intended or planned actions. They are described to the NRC for the NRC's information and are not regulatory commitments.)

COMMITMENT	COMMITTED DATE	COMMITMENT TYPE	
		One-Time Action (Yes/No)	Programmatic (Yes/No)
Constellation will conduct an Evaluated Exercise at Crane, currently scheduled for the first quarter of 2027, to demonstrate that no loss of EP function will result due to the proposed changes in the ERO and to demonstrate reasonable assurance that the Crane ERO can protect the public in the event of a radiological emergency. The exercise will include each of the Emergency Response Facilities described in the Emergency Plan (i.e., MCR (Simulator), TSC, OSC, EOF and JIC).	Prior to implementation of approved license amendment.	Yes	No

ATTACHMENT 2

Evaluation of Proposed Changes

Crane Clean Energy Center
Renewed Facility License No. DPR-50

ATTACHMENT 2: EVALUATION OF PROPOSED CHANGES

License Amendment Request
Crane Clean Energy Center
Renewed Facility Operating License Nos. DPR-50
NRC Docket Nos. 50-289 and 72-20

Subject: License Amendment Request for Approval of Changes to Emergency Plan Staffing Requirements, Restoration of Operating Emergency Plan, and Exemption Rescission

Supporting Attachments

- Enclosure 1A – Markup: CRANE CLEAN ENERGY CENTER (CRANE) RADIOLOGICAL EMERGENCY PLAN (EP-CR-1000 Revision 1)
- Enclosure 1B – Markup: RADIOLOGICAL EMERGENCY PLAN ANNEX FOR CRANE CLEAN ENERGY CENTER (CRANE) (EP-AA-1009 Revision 33)
- Enclosure 1C – Markup: EMERGENCY ACTION LEVELS FOR CRANE CLEAN ENERGY CENTER (EP-AA-1009 Addendum 3 Revision 3)
- Enclosure 2A – Clean Copy: CRANE CLEAN ENERGY CENTER (CRANE) RADIOLOGICAL EMERGENCY PLAN (EP-CR-1000 Revision 1)
- Enclosure 2B – Clean Copy: RADIOLOGICAL EMERGENCY PLAN ANNEX FOR CRANE CLEAN ENERGY CENTER (CRANE) (EP-AA-1009 Revision 33)
- Enclosure 2C – Clean Copy: EMERGENCY ACTION LEVELS FOR CRANE CLEAN ENERGY CENTER (EP-AA-1009 Addendum 3 Revision 3)

1.0 SUMMARY DESCRIPTION

1.1 10 CFR 50.47(b) and 10 CFR 50, Appendix E established emergency planning standards that require: 1) adequate staffing; 2) satisfactory performance of key functional areas and critical tasks; and 3) timely augmentation of the response capability.

Constellation Energy Generation, LLC (CEG) is requesting NRC approval of a proposed revision to the Crane Clean Energy Center (Crane) Radiological Emergency Preparedness Plan and Emergency Action Level (EAL) scheme to support the operational unit. The proposed changes would restore Emergency Response Organization (ERO) positions previously described in the Three Mile Island[1] (TMI) Emergency Plan with some changes to align with NUREG-0654/FEMA-REP-1, Revision 2 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants".

The proposed changes will also relocate the identified Full Augmentation ERO specified in the Constellation Nuclear Radiological Emergency Plan Annex for Crane Clean Energy Center (Crane), EP-AA-1009, to Emergency Preparedness Implementing Procedures (EPIPs).

The proposed changes have been reviewed against the requirements of 10 CFR 50.47, "Emergency plans." paragraph (b), 10 CFR 50 Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," and other applicable emergency preparedness NRC documents. An evaluation of the proposed changes pursuant to 10 CFR 50.54, "Conditions of licenses." paragraph (q), "Emergency plans." determined that prior NRC approval is required.

As discussed in section 2.5 below, CEG will conduct an evaluated Emergency Preparedness (EP) Exercise to demonstrate reasonable assurance that sufficient staffing capabilities will remain, and no loss of EP function will result due to the proposed changes in the ERO staffing.

1.2 Request to rescind exemption from portions of 10 CFR 50.47 and 10 CFR Part 50 Appendix E:

By letter dated July 1, 2019 (ADAMS Accession Number ML19182A104), CEG[2] requested, and subsequently received, exemption from portions of 10 CFR 50.47(b), 10 CFR 50.47(c)(2), and 10 CFR 50 Appendix E for Crane. The exemption allowed Crane to reduce emergency planning requirements consistent with the permanently defueled condition of the station.

---

[1] At that time, Crane was named “Three Mile Island Nuclear Station, Unit 1.” NRC approved Amendment No. 306 to the Renewed Facility License to reflect the name change to “Christopher M. Crane Clean Energy Center” on May 13, 2025. While some actions, or events referred to in this document occurred under the name “Three Mile Island Nuclear Station, Unit 1 or TMI-1,” for clarity, “Crane” will be used as the name of the facility unless referring to the title of previous documents or plans.

[2] At that time, CEG was named “Exelon Generation Company, LLC.” NRC approved the indirect transfer of licenses associated with Exelon Generation Company’s spinoff from Exelon Corporation on November 16, 2021. This included changing the name of Exelon Generation Company, LLC to Constellation Energy Generation, LLC, while remaining the same legal entity and licensed owner and operator of Three Mile Island, Unit 1. While some actions referred to in this document were submitted under the name “Exelon” or “Exelon Generation Company,” for clarity, CEG or Constellation will be used as the name of the licensee unless referring to the title of previous documents or plans.

With this submittal, CEG is requesting to rescind that exemption.

2.0 DETAILED DESCRIPTION

2.1 Proposed Changes

2.1.1 Change Overview

The content and format of the minimum staffing requirements, previously documented in EP-CR-1000 Revision 0, Table CRANE B-1, "Minimum Staffing Requirements for CRANE," are being revised to align with NUREG-0654, Revision 2. This table is being relocated to Appendix 5 of EP-CR-1000 as Table 5-1. The proposed changes will result in a change to some designated Minimum Staff responders and the relocation of the Full Augmentation staff from the Emergency Plan to Emergency Plan Implementing Procedures (EPIPs), consistent with NUREG-0654, Revision 2.

A markup of the proposed changes is provided in Enclosures 1A, 1B, and 1C to this attachment. A clean copy of the proposed Emergency Plan is provided in Enclosures 2A, 2B, and 2C of this attachment.

2.1.2 On-Shift ERO Revision Summary

The Crane on-shift staff will align with NUREG-0654, Revision 2. The specific changes to align minimum staffing requirements of the Crane Emergency Plan with NUREG-0654, Revision 2 for the on-shift ERO are illustrated in Table 2-1 and described in detail in Section 3 of this document.

An on-shift staffing analysis (OSA) utilizing the methodology in NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," was performed and concluded that the proposed changes did not result in conflicting duties for on-shift ERO personnel.

Table 2-1: Crane ERO On-Shift Staff

EP Function NUREG-0654, Revision 2	Previous On-Shift Staff Positions	Proposed On-Shift Staff Positions
Command and Control	(1) Shift Emergency Director	(1) Shift Emergency Director
Communications	(1) Shift Communicator	(1) Shift Communicator
Radiation Protection	(2) RP Technician	(2) Radiation Protection Personnel

EP Function NUREG-0654, Revision 2	Previous On-Shift Staff Positions	Proposed On-Shift Staff Positions
Dose Assessment Projections	Shift Dose Assessor (Collateral duty)	(1) Shift Dose Assessor (Collateral duty)
Emergency Classifications	N/A	(1) Emergency Classification Advisor (Collateral Duty)
Engineering	(1) Shift Technical Advisor (STA) (Collateral Duty)	(1) Core/Thermal Hydraulics Engineer - STA (Collateral Duty)
Security	Per the Security Plan	Security Staffing per the site-specific security plan
Fire Fighting/Fire Brigade	Fire Brigade & Lead	N/A
First Aid / Rescue Operations	(5) Fire Brigade members (Collateral Duty)	N/A
Radiation Accident Assessment (Chemistry/Radio Chemistry)	(1) Shift Chemistry Technician	N/A
Supervision of RP	N/A	(1) Shift Emergency Director

In addition to the above, the following changes are being proposed:

- The Shift Chemistry Technician is removed from the On-Shift staff as described in Section 3.2.3 of this LAR.
- First Aid and Rescue EP Function is removed from the On-Shift ERO table, consistent with NUREG-0654, Revision 2. (See Section 3.2.14 of this LAR.)
- Reference to Fire Brigade personnel will be removed. This Function will be controlled per the Fire Protection Program Report consistent with NUREG-0654, Revision 2.

2.1.3 Minimum Staffing

The Crane Minimum Staff ERO is revised to be consistent with NUREG-0654, Revision 2, as illustrated in Table 2-2 with the following exceptions:

- **Technical Support Center (TSC) Dose Assessor:** CEG will not maintain a Dose Assessor in the Crane TSC. This is acceptable as the Emergency Operations Facility (EOF) is activated at a lower classification level than required by NUREG-0654, Revision 2 for escalating events. The TSC Dose Assessor is not considered necessary since the EOF is activated within 60 minutes of an Alert or higher Emergency Classification Level (ECL) and will include an EOF Dose Assessment Coordinator as Minimum Staff.

  The NRC previously approved an equivalent change for Limerick and Peach Bottom as documented in the Safety Evaluation for License Amendments 235 and 198 for Limerick Units 1 and 2 respectively and Amendments 325 and 328 for Peach Bottom Units 2 and 3 respectively (ADAMS Accession Number ML19078A018, Dated May 24, 2019).

  > **From ML19078A018:** *"The revised NUREG-0654 Table B-1 recommends one dose assessment position to be staffed at the TSC within 60 minutes of the declaration of an alert or higher ECL, and another dose assessment position to be staffed at the EOF within 60 minutes of the declaration of a site area emergency or general emergency. Currently, the licensee staffs one dose assessment position at the EOF within 60 minutes of the declaration of an alert or higher ECL, and does not staff a dose assessment position at the TSC. The licensee did not propose any changes for this function. The EOF dose assessment coordinator will perform duties that include actions to perform dose assessments/projections and provide input to the applicable PAR decision-maker. Since the EOF is mobilized simultaneously with the respective station's TSC, and responsibility for dose assessment is transferred directly from the MCR to the EOF, the licensee stated, and the NRC staff agrees, that staffing of the dose assessment position in the TSC is redundant.*
  >
  > *The NRC staff reviewed the licensee's proposed changes to the dose assessment and projections function and found them acceptable based on the information discussed above. With the proposed changes, the licensee's emergency plans will be generally consistent with the revised NUREG-0654 Table B-1. Where the proposed changes differed from the revised NUREG-0654 Table B-1, the staff found that the licensee provided adequate justification for those differences. Based on this review, the NRC staff has determined that the Limerick and Peach Bottom emergency plans will continue to meet the requirements of 10 CFR 50.47(b)(2) and Section IV.A of Appendix E to 10 CFR Part 50, with respect to the timely and effective performance of radiological dose assessments and projections."*

- **EOF Information Technology (IT) Lead (Computer Specialist):** This position will be staffed within 90 minutes of an Alert rather than within 60 minutes of a Site Area Emergency.

  The NRC previously approved an equivalent change for Limerick and Peach Bottom as documented in the Safety Evaluation for License Amendments

235 and 198 for Limerick Units 1 and 2 respectively and Amendments 325 and 328 for Peach Bottom Units 2 and 3 respectively (ADAMS Accession Number ML19078A018, Dated May 24, 2019).

- **TSC Information Technology (IT) Lead (Computer Specialist):** Consistent with the CEG strategy for the TSC Dose Assessor, The TSC will not have an IT Lead staffed at 90 minutes as the EOF will have a Computer Specialist staffed within 90 minutes of an Alert or higher ECL.

  The NRC previously approved an equivalent change for Limerick and Peach Bottom as documented in the Safety Evaluation for License Amendments 235 and 198 for Limerick Units 1 and 2 respectively and Amendments 325 and 328 for Peach Bottom Units 2 and 3 respectively (ADAMS Accession Number ML19078A018, Dated May 24, 2019).

  > **From ML19078A018*:*** *"The licensee stated that an IT lead position is not needed as minimum staff for the TSC because of acceptable performance of digital equipment during drills and exercises and built-in redundancy of communication systems and digital emergency plan assets. The licensee stated that the EOF and TSC contain multiple computers and programs, which are used during training and periodically tested. If issues are identified during testing, they are promptly addressed. In addition, many computer issues can be addressed remotely by the IT helpdesk. If additional help is needed at the TSC, the EOF IT specialist will be available to support resolution of the issue because the EOF IT specialist is proposed to be staffed within 90 minutes from the declaration of an alert or higher ECL. The time for staffing the EOF IT specialist overlaps with the NUREG-0654 Table B-1 recommendation of staffing an IT lead at the TSC within 90 minutes of the declaration of an alert or higher ECL.*
  >
  > *Although there is a difference between the proposed staffing of the IT function and the revised NUREG-0654 Table B-1, the NRC staff determined that the licensee will still provide for an effective IT system through multiple IT resources. Therefore, the NRC staff concludes that the Limerick and Peach Bottom emergency plans will continue to meet the requirements of 10 CFR 50.47(b)(2) and Section IV.A of Appendix E to 10 CFR Part 50, with respect to the IT function."*

- **Onsite Field Monitoring Team**: The onsite Field Monitoring Team will not include a driver. Due to the configuration and size of the site within and around the Protected Area (PA), a vehicle will not be needed to traverse the site.

  The NRC previously approved an equivalent change for Limerick and Peach Bottom as documented in the Safety Evaluation for License Amendments 235 and 198 for Limerick Units 1 and 2 respectively and Amendments 325 and 328 for Peach Bottom Units 2 and 3 respectively (ADAMS Accession Number ML19078A018, Dated May 24, 2019).

From ML19078A018: *"The revised NUREG-0654 Table B-1 recommends one onsite FMT and two offsite FMTs as minimum staff. Each team would consist of a driver and one qualified individual (i.e., a field monitor) to assess the area for radiation and contamination. Each field monitor would also provide RP coverage for the team as directed by the TSC site RP coordinator or EOF RP manager. The field monitors for the offsite teams would also provide radioactive plume tracking. The onsite FMT and one offsite FMT are recommended to be staffed within 60 minutes from the declaration of an alert or higher ECL, and the second offsite team is recommended to be staffed within 90 minutes from the declaration of an alert or higher ECL. For Limerick and Peach Bottom, the licensee provided its analysis of the FMTs in Section 3.2.11 of LAR Enclosures 1 and 2.*

Currently, both Limerick and Peach Bottom have two RP personnel designated as minimum staff to perform onsite surveys. The licensee proposed to perform onsite field monitoring with just one onsite field monitor responsible for radiological monitoring of the site's protected area. The onsite field monitor will be staffed within 60 minutes from the declaration of an alert or higher ECL. The licensee stated that the onsite FMT will not be staffed if the radiological conditions jeopardize the safety of the FMT. The licensee stated that a driver for the onsite FMT is not needed due to the size and configuration of the protected areas for Limerick and Peach Bottom, as they are easily traversed without the use of a vehicle. The NRC staff finds that the licensee's proposal to have one onsite FMT consisting of one field monitor is acceptable because it is generally consistent with the revised NUREG-0654 Table B-1, and because the licensee has provided adequate justification for not including a driver as part of the onsite FMT.

[…]

The NRC staff reviewed the licensee's proposed changes to the FMTs and found them acceptable based on the information discussed above. With the proposed changes, the licensee's emergency plans will be generally consistent with the revised NUREG-0654 Table B-1. Where the proposed changes differed from the revised NUREG-0654 Table B-1, the staff found that the licensee provided adequate justification for those differences. Based on this review, the NRC staff has determined that the Limerick and Peach Bottom emergency plans will continue to meet the requirements of 10 CFR 50.47(b)(2) and Section IV.A of Appendix E to 10 CFR Part 50, with respect to FMTs."

- **EOF NRC Communicator:** CEG will not staff an NRC Communicator at the EOF. Instead, CEG will maintain the ENS communicator position in the TSC and the State/local communicator position in the EOF. Both positions will be staffed within 60 minutes of the declaration of an alert or higher ECL.

  The NRC previously approved an equivalent change for Limerick and Peach Bottom as documented in the Safety Evaluation for License Amendments

235 and 198 for Limerick Units 1 and 2 respectively and Amendments 325 and 328 for Peach Bottom Units 2 and 3 respectively (ADAMS Accession Number ML19078A018, Dated May 24, 2019).

From ML19078A018: *"Currently, the Limerick and Peach Bottom emergency plans identify two operators for on-shift communications (one for State/local communications and one for NRC communications via the ENS). The licensee proposed to reduce the on-shift communications function to one communicator. The NRC staff finds this proposed change acceptable because it is consistent with the revised NUREG-0654 Table B-1. Although the revised NUREG-0654 Table B-1 includes a note regarding collateral duties for the on-shift communicator, the licensee stated that this note is not needed since no collateral duties are assigned to its on-shift communicators.*

The revised NUREG-0654 Table B-1 recommends that, following the declaration of an alert or higher ECL, the TSC be staffed with two communicators within 60 minutes and an additional communicator, as needed, within 90 minutes. In addition, Table B-1 recommends the staffing of one communicator in the EOF within 60 minutes of declaring a site area emergency or general emergency. The licensee proposed to maintain the ENS communicator position in the TSC and the State/local communicator position in the EOF, and both positions will be staffed within 60 minutes of the declaration of an alert or higher ECL. Table B-1 states that a second communicator should be located in the TSC as part of minimum staffing for communicating with offsite response organizations. However, the licensee stated, and the NRC staff agrees, that locating the State/local communicator in the EOF is acceptable since the EOF will be activated simultaneously with the TSC at an alert or higher ECL. Continuity will not be lost in the transfer of communications with State and local response organizations. Thus, a TSC communicator to support communications with offsite response organizations is not needed. Communications with the NRC via the ENS circuit will remain in the TSC and not transfer to the EOF.

Currently, the EOF health physics network communicator, TSC director, and EOF director are identified as minimum staff in the Limerick and Peach Bottom emergency plans. The licensee is proposing to re-categorize these positions as full-augmentation staff, and they will be relocated to an EPIP. These positions are not designated as minimum staff positions in the revised NUREG-0654 Table B-1. A statement will be added to the staffing tables that additional communicators will be staffed in the TSC and EOF as needed. This will ensure that, if required, additional communicators can be augmented as necessary to support communications between Exelon and the NRC.

The licensee stated that the TSC director and EOF director do not directly perform actions necessary to accomplish emergency preparedness functions, but rather, support other personnel performing required functions and overall facility operations. The licensee stated that

> *these positions, as currently defined in its emergency plans, would not be considered as part of the ERO minimum staff needed to implement the emergency plans. Based on the information provided by the licensee, the NRC staff finds the re-categorization of the EOF health physics network communicator, TSC director, and EOF director as full-augmentation staff positions to be acceptable.*
>
> *The NRC staff reviewed the licensee's proposed changes to the communications function and found them acceptable based on the information discussed above. With the proposed changes, the licensee's emergency plans will be generally consistent with the revised NUREG-0654 Table B-1. Where the proposed changes differed from the revised NUREG-0654 Table B-1, the staff found that the licensee provided adequate justification for those differences. Based on this review, the NRC staff has determined that the Limerick and Peach Bottom emergency plans will continue to meet the requirements of 10 CFR 50.47(b)(2) and Section IV.A of Appendix E to 10 CFR Part 50, with respect to maintaining timely and effective communications with the NRC and offsite response organizations."*

The following ERO positions will be added to Crane's Emergency Plan as Minimum Staff consistent with NUREG-0654, Revision 2:

- TSC Security Coordinator
- EOF Computer Specialist (staffed at 90 minutes from an Alert)
- OSC RP Supervisor / Lead
- OSC Mechanical Maintenance Supervisor / Lead
- OSC Electrical Maintenance Supervisor / Lead
- OSC I&C Maintenance Supervisor / Lead

The following ERO support positions will no longer be considered Minimum Staff under the Crane Emergency Plan and will be designated as Full-Augmented ERO Staff. The Full-Augmented ERO Staff will be managed under EPIPs consistent with NUREG-0654, Revision 2.

- TSC Director
- TSC Maintenance Manager
- TSC Technical Manager
- EOF Director
- EOF Logistics Manager
- EOF Environmental Coordinator
- EOF Health Physics Network (HPN) Communicator
- OSC Chemistry Personnel

Additional Changes to Crane ERO Minimum Staff

- **RP Personnel:** The response time for the two required RP Personnel will be changed to include one (1) 60-minute responder and one (1) 90-minute responder consistent with NUREG-0654, Revision 2.

Table 2-2: Crane ERO Minimum Staff

Previous Minimum Staff Positions	**Proposed Minimum Staff Positions** (response times are 60 minutes unless otherwise noted)
Technical Support Center (TSC)	
Station Emergency Director	No Change
Operations Manager	Operations Manager (Emergency Classification Advisor)
ENS Communicator	No Change
Radiation Protection Manager	No Change
Core Thermal/Hydraulic Engineer	No Change
Mechanical Engineer	No Change
Electrical Engineer	No Change
Technical Manager	**Relocated** to EPIP as Full Augmentation
Maintenance Manager	**Relocated** to EPIP as Full Augmentation
TSC Director	**Relocated** to EPIP as Full Augmentation
(new)	**Added** Security Coordinator
SAMG Decision Maker (Collateral Duty)	Position removed from Staffing Table
SAMG Evaluators (Collateral Duty)	Position removed from Staffing Table
Emergency Operations Facility (EOF)	
Corporate Emergency Director	No Change
State / Local Communicator	No Change
Radiation Protection Manager	No Change
EOF Director	**Relocated** to EPIP as Full Augmentation
Environmental Coordinator	**Relocated** to EPIP as Full Augmentation
Logistics Manager	**Relocated** to EPIP as Full Augmentation
Dose Assessment Coordinator	No change
HPN Communicator	**Relocated** to EPIP as Full Augmentation
(new)	**Added** EOF Computer Specialist @ 90 min
Joint Information Center (JIC)	
Corporate Spokesperson	Corporate Spokesperson (@ 90 min.)
JIC Manager	JIC Director (@ 90 Min)
Public Information Director	Public Information Director (@ 90 min.)
Operations Support Center (OSC)	
OSC Director/ Repair Team Lead	No Change
RP Tech #1 (Onsite Surveys)	RP Personnel #1
RP Tech #2 (Onsite Surveys)	RP Personnel #2
Onsite Monitoring Team Member #1	No Change
Onsite Monitoring Team Member #2	**Changed to RP Personnel #3**
RP Personnel #1 (In-Plant Surveys)	RP Personnel #3
RP Personnel #2 (In-Plant Protective Actions)	RP Personnel #4 (@ 90 min.)
(New)	**Add** RP Personnel (@ 90 min)
Offsite Field Team #1 Personnel	No Change
Offsite Field Team #1 Driver	No Change
Offsite Field Team #2 Personnel	Offsite Field Team Personnel (@ 90 min.)
Offsite Field Team #2 Driver	Offsite Field Team Driver (@ 90 min.)
N/A	**Add** RP Personnel (@ 90 min.)
I&C Maintenance #1	No Change

Previous Minimum Staff Positions	**Proposed Minimum Staff Positions** (response times are 60 minutes unless otherwise noted)
Electrical Maintenance #1	No Change
Mechanical Maintenance #1	No Change
(New)	**Add** Group Lead - Elec. Maint @90 min
(New)	**Add** Group Lead - Mech Maint @90 min
(New)	**Add** Group Lead - I&C @90 min
(New)	**Add** Rad Protection Supv/Lead (@90 min.)
Chemistry Personnel	**Relocated** to EPIP as Full Augmentation

2.1.4 Full-Augmented Staff

The Crane Full-Augmented Staff will be described in the station EPIPs. The Crane Full-Augmented Staff will continue to be notified to respond at an Alert or higher ECL at the same time as the Minimum Staff personnel; however, the Full-Augmentation ERO response is not required to activate the Emergency Response Facility (ERF).

Table 2-3 Crane ERO Full-Augmentation Staff

Position	Disposition
Technical Support Center (TSC)	
State and Local Communicator	Position relocated to EPIP
HPN Communicator	Position relocated to EPIP
Operations Communicator	Position relocated to EPIP
Damage Control Communicator	Position relocated to EPIP
Technical Communicator	Position relocated to EPIP
Radiation Controls Coordinator	Position relocated to EPIP
Radiation Controls Engineer	Position relocated to EPIP
Security Coordinator	Position re-categorized as Min Staff
Logistics Coordinator	Position relocated to EPIP
Clerical Staff	Position relocated to EPIP
Emergency Operations Facility (EOF)	
ENS Communicator	Position relocated to EPIP
EOC Communicator	Position relocated to EPIP
State EOC Liaison	Position relocated to EPIP
Regulatory Liaison	Position relocated to EPIP
Dose Assessor	Position relocated to EPIP
Field Team Communicator	Position relocated to EPIP
Technical Support Manager	Position relocated to EPIP
Operations Advisor	Position relocated to EPIP
Operations Assistant	Position relocated to EPIP
Technical Advisor	Position relocated to EPIP
Security Coordinator	Position relocated to EPIP
Administrative Coordinator	Position relocated to EPIP

Position	Disposition
Clerical Staff	Position relocated to EPIP
Events Recorder	Position relocated to EPIP
Computer Specialist	Position re-categorized as Min Staff
Joint Information Center (JIC)	
Rad Protection Spokesperson	Position relocated to EPIP
Technical Spokesperson	Position relocated to EPIP
Media Monitoring Staff	Position relocated to EPIP
Rumor Control Staff	Position relocated to EPIP
JIC Coordinator	Position relocated to EPIP
Administrative Coordinator	Position relocated to EPIP
Events Recorder	Position relocated to EPIP
Clerical Support	Position relocated to EPIP
Access Control	Position relocated to EPIP
Operations Support Center (OSC)	
Damage Control Communicator	Position relocated to EPIP
Mechanical Maintenance	Position relocated to EPIP
Electrical Maintenance/I&C	Position relocated to EPIP
Assistant OSC Director	Position relocated to EPIP
Operations Lead and Support Personnel	Position relocated to EPIP
Clerical Staff	Position relocated to EPIP

2.2 Reason for the Proposed Changes

CEG will revise the current Independent Spent Fuel Storage Installation (ISFSI)-only Emergency Plan and emergency action level (EAL) scheme to reflect the Emergency Plan, ERO and EAL scheme necessary to support power operations at Crane. Additionally, the Emergency Plan is being revised to align with NUREG-0654, Revision 2. Revision 2 of NUREG-0654 reflects changes to NRC regulations and policies, as well as advances in technology and best practices that have occurred since NUREG-0654 was originally issued in November 1980.

2.3 Crane Emergency Plan Background

Crane is owned and operated by Constellation Energy Generation, LLC (CEG). The plant is an 870 Mwe, Babcock and Wilcox design pressurized water reactor and is located in an area of low population density approximately 12 miles southeast of Harrisburg, Pennsylvania.

The Crane Emergency Preparedness Plan consists of the Crane Clean Energy Center (Crane) Radiological Emergency Plan (EP-CR-1000) and a station specific Radiological Emergency Plan Annex (EP-AA-1009). 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. Planning efforts described in the Crane plan are modeled after the CEG Standardized Emergency Plan. The Crane 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.

The Crane Annex, EP-AA-1009, generally contains information that is unique to the station. The Annex and associated Addendums address site-specific criteria including:

- Emergency Action Levels (EALs) located in Addendum 3
- Facility geography and location for a full understanding and representation of the station's emergency response capabilities
- Plant specific facilities and equipment associated with the Emergency Preparedness Program

2.3.1 Three Mile Island Emergency Response Plan. In December 1980, the Nuclear Regulatory Commission Issued NUREG-0746, Emergency Preparedness Evaluation for Three Mile Island Unit 1 (TMI-1).

2.3.2 Exelon Nuclear Standardized Radiological Emergency Plan, Revision 14. In November 2002, the Three Mile Island Emergency Plan was incorporated into the Exelon Fleet Standardized Emergency Plan under EP-AA-1000.

2.3.3 Three Mile Island Station Radiological Emergency Plan, Revision 29. In February 2018, based on the announced closing of TMI-1, the Exelon Standardized Radiological Emergency Plan was revised to delink the Three Mile Island Station Emergency Plan from the Standardized Emergency Plan. The Three Mile Island Station Radiological Emergency Plan was contained in Station specific documents including EP-TM-1000, which replaced EP-AA-1000, and the station specific Annex, EP-AA-1009.

2.3.4 Changes to Emergency Plan for Post-Shutdown and Permanent Defueled Condition. In April 2019, the U.S. Nuclear Regulatory Commission (NRC) issued Amendment No. 296 which transitioned the TMI-1 Emergency Plan from that of an operating facility to that of a permanently shutdown facility.

2.3.5 Permanently Defueled Emergency Plan and Emergency Action Level Scheme Changes. In December 2020, the NRC issued Amendment No. 299 which transitioned the TMI-1 Emergency Plan from that of a shutdown plant to that of a permanently defueled facility.

2.3.6 Revision to the Three Mile Island (TMI) Station Emergency Plan (EP) and Emergency Action Level (EAL) Scheme to Reflect an [ISFSI]-Only Configuration. In April 2022, the NRC issued Amendment No. 303. At this point the station had exited the zirconium fire window, performed an ISFSI campaign, and transitioned to an ISFSI-Only Emergency Plan.

2.4 EOF Activation as discussed in the Crane Clean Energy Center Emergency Plan

NUREG-0654, Revision 2 establishes that the EOF activates within 60 minutes of a Site Area Emergency (SAE) or greater ECL. CEG has elected to activate the EOF within 60 minutes of an Alert or greater ECL. By activating the EOF at the Alert level, certain EP functions such as Dose Assessment or State/local communications can be established immediately following the Alert classification at the EOF and need not be duplicated at the TSC.

The turnover of Command and Control of EP functions will occur through a conference line between the Main Control Room (MCR), TSC, and EOF and may occur simultaneously if all facilities are available. In this manner, there will be no delay in transferring functions such as Emergency Action Level (EAL) classifications, State/local Notifications, Protective Action Recommendations (PARs), and Emergency Exposure Control from the MCR to the respective ERF (i.e., TSC or EOF).

2.5 ERO Performance Validation

As part of the implementation of these changes, confirmation of the capabilities of the final ERO personnel will be performed through an EP exercise to demonstrate that no loss of function will result due to the changes in the ERO. Additionally, the NRC and the Federal Emergency Management Agency (FEMA) will be evaluating the exercise to make the required “Reasonable Assurance” determination.

In support of this effort CEG makes the following commitment:

> “Constellation will conduct an Evaluated Exercise at Crane, currently scheduled for the first quarter of 2027, to demonstrate that no loss of EP function will result due to the proposed changes in the ERO and to demonstrate reasonable assurance that the Crane ERO can protect the public in the event of a radiological emergency. The exercise will include each of the Emergency Response Facilities described in the Emergency Plan (i.e., MCR (Simulator), TSC, OSC, EOF and JIC).”

This commitment shall be completed prior to the implementation of the approved license amendment.

2.6 On-Shift Staffing Analysis (OSA)

Regulatory Issue Summary (RIS) 2016-10, "License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation," states that an 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 (LAR). 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 support of this LAR, CEG performed an OSA per 10 CFR 50, Appendix E, Section IV.A.9. The results support the conclusions made in this LAR for on-shift staffing. CEG recognizes that the OSA comprises a select set of identified scenarios and should not be used as the sole basis for the conclusions in the technical evaluation supporting this amendment request.

2.7 Near Site Facility

As it relates to the need for CEG to establish a Near Site Facility, per 10 CFR 50, Appendix E, Section IV.E.8.b, Crane remains grandfathered under 10 CFR 50, Appendix E, Section IV.E.8.e due to both the intent of the regulations and continuity of the Crane operating license. The current requirement dates back to the NRC's revision to the regulations in 2011, (Final Rule, Enhancements to Emergency Preparedness Regulations, 72560, 72571, Nov. 23, 2011), which was aimed at enhancing emergency planning regulations without imposing undue burdens on previously approved facilities. With respect to licensee Emergency Operations Facilities (EOFs), the NRC "establish[ed] performance-based criteria for all EOFs based on requirements and conditions previously imposed by the Commission on these facilities." However, in an express acknowledgement that many EOFs had already been evaluated and approved, the NRC included a grandfathering clause in Appendix E for "an existing emergency operating facility." This provision exempted facilities approved as of December 23, 2011, from new siting requirements, thereby ensuring stability for facilities that had already demonstrated compliance with the underlying performance intent.

The Commission approved relocating the Crane EOF to the Coatesville facility as documented in Staff Requirements Memorandum (SRM) for SECY-03-0033, dated March 18, 2003. As such, the Crane EOF was grandfathered under Appendix E, Section IV.E.8.e, and the technical and regulatory basis for using the Coatesville facility as the Crane EOF is well documented and understood through the NRC's 2003 comprehensive review.

In 2019 the NRC granted an exemption from certain Emergency Preparedness (EP) requirements, including elimination of the Crane portion of the Coatesville EOF (ML20261H925). As stated in Section 1.2 of this LAR, CEG is requesting recission of this exemption. This decision underscores the commitment to restoring emergency response facilities to their state prior to the shutdown, ensuring comprehensive emergency preparedness. By requesting recission of the exemption, CEG reinforces its position that the existing EOF infrastructure, including the Coatesville facility, can fully support current operations without necessitating a new review of the previously existing, and currently NRC-approved, EOF.

The Coatesville facility continues to support the CEG Fleet as the EOF for Peach Bottom Atomic Power Station (PB) and Limerick Generating Station (LGS), with no significant changes to its infrastructure or capabilities. Following the Crane shutdown in 2019, the Coatesville facility has remained staffed and functional. Thus, it's qualification to serve as the Crane EOF remains intact, aligning seamlessly with CEG's emergency preparedness program.

Crane has maintained the same operating license after shutdown and during the

period of decommissioning between 2019 and 2024 but without the authority to load fuel or operate the reactor. As with the other licensing actions associated with the Crane restart, the overarching regulatory approach is to restore the facility to the operating licensing basis that existed at the time of shutdown by restoring the various parts of its licensing basis back to that state through exemptions, license amendments, and rescission of exemptions. The Coatesville EOF was never decommissioned and as stated above, continues to perform emergency response functions for other NRC-licensed sites. The proposed reactivation of the Crane Emergency Plan involves crediting the same pre-existing, NRC-approved EOF as it existed as part of that operating licensing basis, and does not establish a new, unreviewed EOF. For this reason, the provision in Section IV.E.8.e remains applicable.

3.0 TECHNICAL EVALUATION

3.1 Technical Advancements and Support

The following section discusses technical changes in plant systems, procedures, EP equipment/programs, and training, which have been implemented to improve the execution of ERO functions, ease Operator burden, and improve Augmented Staff efficiency. The following discussion describes the improvements implemented since the initial issuance of NUREG-0654.

This information is provided to support changes to the Crane Emergency Plan and ERO to align with NUREG-0654 Revision 2. Changes to the Crane plan which are not directly aligned with NUREG-0654 Revision 2 are discussed in detail with additional justification provided.

3.1.1 Plant Process Computer

The Plant Process Computer (PPC) system provides for the Safety Parameter Display System (SPDS) functions discussed below as well as data collection and processing, accounting, alarming, and logging functions. An auxiliary function of the PPC is to transmit plant data to remote locations, including the TSC and the EOF.

The PPC and the SPDS provide a concise display of critical plant variables to the Main Control Room (MCR) personnel to aid them in rapidly and reliably determining the safety status of the plant. The PPC and SPDS are operated during normal plant operations, as well as during abnormal and emergency conditions. Their principal purpose and function are to aid the MCR personnel during abnormal and emergency conditions in determining the safety status of the plant.

Parameters displayed by the PPC and SPDS are the quantitative and qualitative measures to indicate the accomplishment or maintenance of critical safety functions. Information needed to assess the status of the plant safety parameters is obtained by the measurement of key plant variables. The safety parameters utilized to assess the maintenance or accomplishment of the critical safety functions as required by NUREG-0737, Supplement 1, "Clarification of TMI Action Plan Requirements: Requirements for Emergency Response Capability," Section 4 are:

- Reactivity control
- Reactor core cooling and heat removal from the primary system
- Reactor coolant system integrity
- Radioactivity control
- Containment conditions

In general, the ranges of parameters monitored by the PPC and SPDS are identical to those ranges monitored by existing MCR instrumentation. Ranges displayed by the PPC/SPDS are adequate to cover plant responses analyzed in Updated Final Safety Analysis Report (UFSAR) Chapter 14, "Safety Analysis."

Benefits of the current level of computer capabilities include:

- Improved plant monitoring capability for emergency functions.
- Real-time plant data available through graphical displays.
- PPC functions available to any desktop computer throughout the plant's Emergency Response Facilities.
- Multiple graphical displays.

The PPC system replaced multiple older and obsolete systems with a single, microcomputer-based operating platform incorporating the PPC and the SPDS as well as the following:

- Process Computer System
- Meteorological Data Acquisition System
- Sequence of Events Recorder (SER)
- Radiation monitoring

By consolidating these systems onto a single platform, ERO personnel can quickly monitor all critical plant parameters from a single workstation. The following are some of the benefits of the PPC:

- The Emergency Director (ED) has improved plant monitoring capability to support the ED function.

- Data manipulation functions, such as plotting information graphically or recovering historical data, require fewer keystrokes and are more easily performed.

- The SER function has become a "real-time" user tool by making data immediately available rather than being only available via printer after the event.

- Much of the PPC functionality can be made available to any desktop computer through the plant’s site-wide intranet.

- The increased capabilities of PPC have enhanced timeliness of monitoring and assessing plant conditions.

Crane will also utilize a Digital Plant Viewer (DPV) system that permits personnel to view conditions in the plant where cameras are installed live-time prior to entry. The DPV also allows personnel to access live-time dose rate data in areas with installed Area Radiation Monitors (ARM). No RP Technician support is required to use DPV.

In aggregate, these improvements support the proposed change in ERO staffing by ensuring that major functions and tasks are completed more easily with less of a burden on the MCR staff. The CEG Fleet has demonstrated, since implementation of similar ERO changes in 2019, that these upgrades have significantly improved ERO response to events and supported the transition to ERO staffing aligned with NUREG-0654, Revision 2.

3.1.2 Dose Assessment

Radiological dose assessment has benefited from technological advances that make this function simpler and less time consuming. Prior to these enhancements, manual calculations of expected offsite exposure were necessary.

In January 1991 (Three Mile Island Emergency Plan, revision 3), MIDAS, a computer-based method for Dose Assessment, was implemented using methods for environmental dose calculations required by Federal Regulations. The system was a PC-based computer dose model and provided a means for immediate dose assessment.

In 2014, Unified Rascal Interface (URI), a Visual Basic.net program was implemented at the station. URI is a more efficient program utilizing menus and toolbars with the majority of inputs on a single screen making the program more user-friendly. The plant display systems have improved over the years, allowing access to more data points that are needed within dose assessment.

The overall improvements in technology and information availability over the years have enabled the ERO to assess plant conditions quickly and efficiently, and with less distraction. The computing power of modern computer processors allows for calculation of dose projections in seconds rather than minutes.

3.1.3 Automated Call-Out Systems

Enhancements in automated call-out and paging systems have resulted in streamlined processes for activation of the ERO. The ERO activation can occur through a Web-based or phone-based system to initiate rapid notification of ERO members in lieu of individual calls to fill the individual ERO positions included in the current Emergency Plan submittal for Crane. The system will include a primary activation system as well as back-up capability to ensure uninterrupted operation.

3.1.4 Procedural Improvements

a Emergency Operating Procedures (EOPs)

Since the original Emergency Plan approval, EOPs have been improved through industry initiatives. EOPs generally use a symptom-based approach

that demands less assessment and interpretation of plant conditions by the crew. In addition, the EOPs are better human factored, and have an improved layout allowing for more consistent implementation.

EOPs incorporate the benefits of new technology such as the PPC. The PPC system is capable of graphically displaying plant conditions to assist in EOP execution.

Abnormal Operating Procedures (AOPs) also contain directional steps for when a review of the classification procedure is required to determine potential classifiable conditions. This prompts the user to identify applicable EALs.

b Emergency Action Levels (EALs)

In 2017 Crane updated the EAL classification methodology to that published in NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors." The Crane EALs incorporate a structure that has simplified the classification process, including the use of a matrix of EAL initiating conditions that streamlines the process of evaluating EAL against plant conditions. In addition, the ISFSI EAL's have been revised into Revision 6 for Crane.

3.1.5 Training

a Operations Training

Training was used to strategically drive improved performance at Crane. Since NRC approval of the Three Mile Island Emergency Plan, the Systematic Approach to Training (SAT) has resulted in developing a task list for Operations personnel. The SAT process ensures training is conducted to industry-accepted standards and has led to accreditation of the Operations Training Programs by the Institute of Nuclear Power Operations (INPO) National Academy for Nuclear Training.

A dynamic simulator is routinely used during Operations training. "Out of the Box (OBE)" simulator evaluations that include emergency response scenarios are part of the requalification segment. Simulator scenarios are designed to be realistic and reflect a wide range of plant conditions, including emergency conditions. During the simulator evaluated sessions the MCR staff is taken from normal operations to accident conditions which require evaluation against Emergency Action Levels and may result in their declaration up to a General Emergency (GE). The Operations crew performs critical functions, such as classification, core damage assessment, accident mitigation, response prioritization, and communications without augmentation from additional responders. The proficiency of the MCR staff to perform these functions while maintaining situational awareness, without additional support, is assessed during evaluated simulator sessions.

The Licensed Operator Requalification Training (LORT) Program includes

licensed Operations crew performance evaluations that are to consider the scenario guidance attributes of INPO Operations Department Standing Instruction, ODSI-3, "Operations Department Guidance for Conducting Crew Performance Evaluations."

INPO ODSI-3 provides guidance for realistic integration of the emergency response function into crew performance evaluations. The purpose is to ensure that the additional challenges from Emergency Plan responsibilities are realistically represented in the crew performance evaluations. Representing the event as realistically as possible, which includes the additional challenges of Emergency Plan responsibilities, helps promote the situational awareness necessary during a real event.

b Shift Technical Advisor (STA) Training

The STA was originally trained as an advisor to the operating shift per NUREG-0737, "Clarification of TMI Action Plan Requirements." In 2014, additional guidelines were developed by INPO for the training of STAs. This is detailed in the INPO training standard, ACAD 14-002, "Guidelines for the Training and Qualification of the Shift Technical Advisor."

ACAD 14-002 guidelines describe the role of the STA. The STA performs independent assessments of plant operating conditions and provides technical support as appropriate for corrective actions, analysis of events and their effects, effectiveness of response(s) to emergent conditions, classifications of emergencies, protection of the public, and any other actions related to critical safety functions and plant safety during abnormal and emergency situations. The STA is available to contribute to the operating crew during normal plant conditions. Through routine monitoring of equipment and plant operations, the STA can identify and recommend preventive actions in order to mitigate the consequences of an accident.

3.1.6 Radiation Protection (RP) Improvements

There have been many improvements in RP since the Three Mile Island Emergency Plan was initially established.

The following provides a summation of the technology/tools associated with in-plant protective actions:

a Access Control

- Access to the Radiologically Controlled Area (RCA) is controlled electronically. The electronic access control system provides for the user to electronically sign Radiation Work Permits (RWPs) to self-authorize access to the RCA and self-issuance of required secondary dosimetry. Access to the RCA can now be controlled electronically, freeing up the RP staff for more critical functions.

b Personnel monitoring

- Personnel are issued Dosimetry of Legal Record (DLRs) that is continuously worn for constant monitoring. No RP support is needed to issue DLRs to on-shift emergency workers in the middle of an event.

- Secondary dosimeters are issued through the electronic access control system. The secondary dosimeters are self-reading, alarming electronic dosimeters that provide readout of accumulated dose and ambient dose rate. No RP Technician support is needed for issuance of electronic dosimeters.

- Automated whole-body monitors provide contamination monitoring. All radiation workers are qualified to use the automated whole-body monitors without RP Technician interface.

- In circumstances when the automated whole-body monitors are not available, handheld friskers are used for personnel contamination monitoring. All radiation workers are qualified to use the hand-held friskers without RP Technician interface.

c Dosimetry

- Personnel are issued DLRs that are continuously worn for constant monitoring.

- Secondary dosimeters are self-issued through the electronic access control system. The secondary dosimeters are self-reading, alarming electronic dosimeters that provide readout of accumulated dose and ambient dose rate. No RP Technician support is needed for issuance of electronic dosimeters.

- If a DLR is lost or damaged under emergency conditions, additional DLRs are staged for emergency issuance.

- If an electronic dosimeter is lost or damaged, additional electronic dosimeters are available.

d Area Radiation Monitors (ARMs) are also used and reviewed prior to dispatch of personnel into the plant. Crane has multiple ARMs throughout the plant.

Some RP Technician support functions associated with in-plant protective actions such as access control, personnel monitoring, dose assessment, and dosimetry now require less dedicated support time since they are covered by plant process enhancements (newer technology/tools).

These technology/tools use available equipment such as portal monitors, self-alarming dosimeters, and an automated access control point.

All onsite ERO members expected to be dispatched into the plant for evaluation, operations, or repair activities are Radiation Worker qualified and are trained in how to use the available tools.

3.1.7 Improvements Summary

The improvements to staffing, equipment, procedures, and training that have occurred since initial approval of the Three Mile Island Emergency Plan, have resulted in a significant increase in on-shift capabilities and knowledge. Based on these improvements, it is concluded that there would be no significant degradation or loss of any functional task as a result of the proposed changes in ERO staffing.

3.2 Functional Analysis

The following analysis evaluates the impact of implementing the changes in staffing on the ERO's ability to perform the major tasks for the major functional areas of the previous Three Mile Island Emergency Plan. The analysis demonstrates that no degradation or loss of function will occur as a result of the change.

3.2.1 EP Function: Command and Control (formerly Emergency Direction and Control)

The Command and Control function includes the following tasks as defined in NUREG-0654, Revision 2:

- Provide overall ERO command and control, until relieved.
- Approve EAL and/ or Protective Action Recommendation (PAR) classifications, until relieved.
- Authorize personnel dose extensions, until relieved.

This function is important for effective emergency response because adequate Command and Control enable the Crane ERO to effectively develop priorities for response planning and corrective action(s) and to provide a unified approach to the event response by providing a single individual with overall command and control authority. The function is staffed and maintained at all times and is assigned to the Operations Shift Manager (SM). The augmentation (relief) of this position is intended to relieve the SM of EP functions so that the SM can focus on the event response from an operations perspective. This is available within 60 minutes of an Alert ECL declaration, or greater and is a position staffed by the TSC Station ED. In addition, the EOF Corporate ED will take responsibility for those EP functions associated with PARs following activation of the EOF, also at the Alert or greater ECL.

a On-Shift Staff – The table below identifies the previous Three Mile Island ERO, proposed Crane ERO, and NUREG-0654, Revision 2 for this EP Function and proposed Emergency Plan ERO.

EP Function: Command and Control – On-shift		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) Shift Emergency Director	• (1) Shift Emergency Director	• (1) Operations Shift Manager

Emergency Plan Change Assessment

The Crane existing on-shift staffing table currently aligns with NUREG-0654, Revision 2.

NUREG-0654, Revision 2 Alignment

Crane will maintain the existing title for this EP Function. The Operations Shift Manager will be titled Shift Emergency Director at Crane.

b Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Command and Control – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) TSC Station Emergency Director • (1) EOF Corporate Emergency Director	• (1) TSC Station Emergency Director (at Alert or higher) • (1) EOF Corporate Emergency Director (at Alert or higher)	• (1) TSC Emergency Coordinator (at Alert or higher) • (1) EOF Emergency Director (at SAE or higher)

The proposed ERO staffing is consistent with NUREG-0654, Revision 2. There is one difference between the Crane's proposed Minimum Staff and NUREG-0654, Revision 2. Specifically, Crane will staff the EOF Corporate ED within 60 minutes of an Alert or higher ECL, while NUREG-0654 staffs the position within 60 minutes of a SAE or higher ECL. This difference expands the Crane's emergency response at the Alert ECL and will ensure that the EOF ERO will be immediately available should an Alert classification escalate to a SAE or GE ECL. Crane will maintain their previous titles for this EP Functions.

3.2.2 EP Function: Communications

The Communications function includes the following tasks as defined in NUREG-0654, Revision 2:

- Communicate EAL and PAR classifications to Offsite Response Organizations (OROs), including the NRC, until relieved.

This function is important for effective emergency response. The function ensures adequate communication onsite and offsite to successfully implement the emergency plans. Crane maintains the ability to staff this position at all times. This function is assigned to a pre-existing on-shift staff member as a collateral duty and has been assessed through an OSA, via 10 CFR 50, Appendix E, Section IV.A.9, to ensure that this EP Function can be performed when needed without any additional competing priorities.

The augmentation of this position is available within 60 minutes of an Alert ECL, or greater, and is intended to relieve the on-shift staff of this EP function. This function consists of two (2) ERO members to fulfill the communication needs (i.e., one (1) for the NRC and one (1) for State/local notification and status updates). Under the Crane Emergency Plan, additional Communicators can be called upon as needed, and at the discretion of the ED.

a On-Shift Staff – The table below identifies the current and proposed Emergency Plan On-shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Communications – On-shift		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) Shift Communicator	• (1) Shift Communicator	• (1) Communicator[1] [1] Other 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.

Emergency Plan Change Assessment

There are no changes between the previous Three Mile Island Emergency Plan staffing and the proposed changes to the Emergency Plan for the On-shift Communications function.

NUREG-0654, Revision 2 Alignment

Crane will keep the Shift Communication function consistent with NUREG-

0654, Revision 2. The Shift Communicator will perform NRC and State/local communications as needed until relieved.

There are no other deviations from NUREG-0654, Revision 2.

b Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Communications – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) TSC ENS Communicator • (1) EOF State/Local communicator • (1) TSC Director • (1) EOF Director • (1) HPN Communicator EOF	• (1) TSC ENS Communicator • (1) EOF State/Local Communicator (additional Communicators will be staffed as needed)	• (1) TSC Communicator (NRC) • (1) TSC Communicator (ORO) • (1) EOF Communicator at SAE ECL or greater As needed (one communicator staffed at TSC for NRC communications if needed)

Emergency Plan Change Assessment

Crane is proposing the Minimum Staff TSC ENS and EOF State/Local Communicator as previously described in the Three Mile Island Emergency Plan with no proposed changes to those positions. Additional Communicators will be staffed at the EOF or TSC as needed.

The following positions, identified as minimum staff under the current Crane Emergency Plan, are being re-categorized as Full-Augmented staff and will continue to be managed within an EPIP.

TSC Director – The TSC Director is identified as Minimum Staff in EP-CR-1000. The TSC Director will be re-categorized as Full Augmentation. Under the proposed Crane Emergency Plan, the TSC Director would not directly perform actions necessary to accomplish EP functions under NUREG-0654 but rather supports other personnel at the TSC. The position would not be considered as part of the minimum ERO needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented). The TSC Director performs support activities such as supervisory actions, validations, liaison,

assistance, and monitoring activities.

Specific responsibilities include:

- Activate the Facility. [reassigned to Station Emergency Director]
- Establish and maintain facility accountability.
- Manage the operation of the facility.
- Review and ensure facility displays are maintained current.
- Coordinate ERO shift relief rosters for the onsite facilities.
- Develop ERO shift relief rosters for the facility.
- Coordinate integration of the NRC Site Team.
- Arrange for logistics support.
- Ensure flow of information within and between the emergency response facilities.
- Provide input for facility briefs.
- Coordinate TSC relocation.

With the exception of Facility activation, these tasks are considered support activities and are not required to directly accomplish any NUREG-0654 identified functions. Tasks to activate the facility will be assigned to the Station Emergency Director. As such, the TSC Director position can be deleted from the Minimum Staff and maintained as a Full- Augmentation position. The TSC Director position and the listed responsibilities are being relocated to an EPIP.

EOF Director – The EOF Director is identified as Minimum Staff in EP-CR-1000. The EOF Director will be re-categorized as Full Augmentation. Under the Crane Emergency Plan, the EOF Director does not directly accomplish EP functions under NUREG-0654 but rather supports other personnel at the EOF. The position, as currently described in the Crane Emergency Plan, would not be considered as part of the absolute minimum ERO needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented). The EOF Director performs support activities such as coordination, assessment, monitoring, and assistance activities. Specific responsibilities include:

- Activate the Facility. [reassigned to Corporate Emergency Director]
- Manage the operation of the facility.

- Coordinate for continual shift staffing requirements as needed.
- Coordinate integration of the NRC site team.
- Prepare State/local notification forms and obtain Corporate ED approval to support the completion of timely offsite event notifications.
- Participate in the Inter-Facility briefing to communicate and obtain event and response information.
- Provide input for facility briefs.

With the exception of Facility activation, these tasks are considered support activities and are not required to directly accomplish any of NUREG-0654, Revision 2 identified functions. Tasks to activate the facility will be assigned to the Corporate Emergency Director. As such, the EOF Director position can be deleted from the Minimum Staff and maintained as a Full Augmentation position. The EOF Director position and the listed responsibilities are being relocated to an EPIP.

EOF HPN Communicator - The EOF HPN Communicator identified in the current Emergency Plan will be removed and relocated to an EPIP. CEG is adding a statement to the staffing Table that additional communicators will be staffed as needed. This ensures that if required, additional NRC communicators can be augmented as necessary to support communications between CEG and the NRC.

NUREG-0654, Revision 2 Alignment

Crane will reestablish the ENS (NRC) Communicator and State/Local (ORO) Communicators consistent with NUREG-0654, Revision 2; however, the reporting location will differ. Specifically, the function will be maintained with one (1) ENS Communicator staffed at the TSC within 60 minutes to perform NRC communications and one (1) State/Local Communicator at the EOF within 60 minutes to perform the State/local notifications with the OROs.

NUREG-0654, Revision 2 designates the minimum staff ORO Communicator (State/Local) to be located at the TSC. For Crane, the State/Local Communicator is located in the EOF. This is considered acceptable because the Coatesville EOF is activated at the Alert or higher ECL. By establishing the EOF at the Alert level, the function would be available at the same time as if it were located in the TSC.

Additionally, NUREG-0654, Revision 2, identifies an EOF NRC Communicator to be staffed within 60 minutes of an SAE or higher ECL. CEG proposes crediting the TSC ENS Communicator to provide information to the NRC in conjunction with the expectation to staff additional communicators as needed.

3.2.3 EP Function: Radiation Protection (formerly Radiological Assessment / In Plant Protective Actions)

The RP function includes the following tasks as defined in NUREG-0654, Revision 2:

- Provide qualified radiation protection coverage for responders accessing potentially unknown radiological environments during emergency conditions.
- Provide in-plant surveys.
- Control dosimetry and radiologically controlled area access.

The ability to provide radiological expertise when the plant is experiencing an event with potential radiological consequences is crucial, due to the unknown radiological environment faced by emergency workers, particularly at the onset of the event.

This function will be staffed initially by two (2) qualified RP staff members on-shift per NUREG-0654, Revision 2. The augmentation of this function will occur in two (2) stages: 1) within 60 minutes of an Alert ECL or greater, three (3) additional qualified RP staff are available; and 2) within 90 minutes of an Alert ECL, or greater, an additional three (3) qualified RP staff are available. The 60-miunute responders as well as the 90-minute responders will be staffed in the OSC.

The EOF RP Manager supervising the FMTs at Crane will be responsible for directing the FMTs as well as providing direction for their safety from the radiological event.

In addition, the Chemistry/Radiochemistry function listed in Table B-1 to Revision 1 of NUREG-0654, will no longer be required as the need for immediate reactor coolant sampling will be reduced due to the variety of plant indications of fuel damage available at Crane.

Overall, the ERO functions assigned to qualified RP staff are more clearly defined in Table B-1 to NUREG-0654, Revision 2.

a On-Shift Staff – The table below identifies the current and proposed Emergency Plan On-Shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Radiation Protection – On-shift		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (2) Shift RP Technician • (1) Shift Chemistry Technician	• (2) Radiation Protection Personnel	• (2) Radiation Protection Personnel

Emergency Plan Change Assessment

Crane will maintain two (2) qualified RP personnel on-shift for this function. The proposed revision removes reference to the Chemistry Technician. The Chemistry/Radiochemistry function listed in Table B-1 to Revision 1 of NUREG-0654, will no longer be needed as the need for immediate reactor coolant sampling has been reduced due to the variety of available plant indications of fuel damage available at Crane. Early indications of fuel damage can be identified through Containment Radiation Monitors, Core Instrumentation, or Effluent Radiation Monitors, all of which are available in the MCR.

An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that the Chemistry major task is not required per Crane's procedures prior to augmentation. The OSA indicates that the primary responsibility of the on-shift Chemistry Technician is chemistry/radiochemistry sampling to identify fuel damage; however, no chemistry sampling tasks were noted as being time critical in any of the analyzed events.

NUREG-0654, Revision 2 Alignment

The proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2. Crane will maintain two (2) RP personnel on-shift to perform the RP functions and tasks for radiation protection coverage for responders, in-plant surveys, dosimetry, and radiologically controlled area access. There are no differences or deviations from NUREG-0654, Revision 2.

b Minimum Staff – The table below identifies the current and proposed Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Radiation Protection – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) RP Technician (In-Plant Surveys) • (3) RP Technicians (Radiation Protection) • (1) Chemistry Technician	• (3) Additional RP Personnel @ 60 minutes (OSC) • (3) Additional RP Personnel @ 90 minutes (OSC)	• Additional Radiation Protection Technicians @ 60 minutes (In addition to personnel on-shift) (3) (OSC) • Additional Radiation Protection Technicians @ 90 minutes (In addition to personnel on-shift and those responding within 60 min) (3) (OSC)

Emergency Plan Change Assessment

Previously, the TMI Emergency Plan designated four (4) Minimum Staff RP Personnel as required to support the EP Major Tasks of In-Plant Surveys and Radiation Protection at 60 minutes. Crane proposes to staff 3 RP Personnel at 60 minutes and 1 RP Personnel at 90 minutes and 2 additional Task Qualified ERO responders at 90 minutes.

Note for the purposes of this table, except as discussed below, RP Personnel consists of persons with an ANSI qualification. This includes RP Technicians or qualified RP Staff members. This is consistent with the guidance provided in NUREG-0654/FEMA-REP-1, Section II.B, “Emergency Response Organization.” The two additional Task Qualified personnel will be under the direction and supervision of an RP Lead Technician.

The proposed revision will also remove the one (1) Minimum Staff Chemistry personnel. The Chemistry/Radiochemistry function listed in Table B-1 to Revision 1 of NUREG-0654, is no longer needed as the need for immediate reactor coolant sampling has been reduced due to the variety of available plant indications of fuel damage available at Crane. Early indications of fuel damage can be identified through Containment Radiation Monitors, Core Instrumentation, or Effluent Radiation Monitors, all of which are available in the MCR. If reactor sampling is desired, Chemistry Technicians are on staff at Crane and would be called in as necessary to support the event.

NUREG-0654, Revision 2 Alignment

Crane proposes to staff three (3) RP Personnel at 60 minutes and three (3) additional qualified responders at 90 minutes consisting of one (1) RP Personnel and two (2) additional Task Qualified ERO responders. As discussed above, the ERO responders for the RP Function described in the

Crane Emergency Plan provide for the acceptable response to emergency conditions.

3.2.4 EP Function: Supervision of Radiation Protection Staff and Site Radiation Protection

Supervision of RP staff and Site RP Functions include the following tasks as defined in NUREG-0654, Revision 2:

- Evaluate and assess plant and offsite radiological data in the development of onsite protective actions and offsite PARs, until relieved.
- Recommend onsite protective actions and offsite PARs to the applicable decision-maker, until relieved.
- Direct all radiation protection activities, including Field Monitoring Team (FMT) direction, until relieved.
- Provide relevant information to applicable communicators who are communicating offsite PARs to OROs, until relieved.

This function is important for effective emergency response to a radiological event because the management of RP resources, the expertise in radiation and radiological consequences, and the ability to evaluate an event as it evolves, is crucial to support the ED.

This position will also be responsible for the direction and protection of FMTs.

The augmentation of this function will be available within 60 minutes of an Alert ECL, or greater, and is staffed in the TSC. Also, for Crane, at the Alert ECL or greater, an EOF RP Manager position will be staffed. Note that this position will be primarily tasked with providing the applicable command and control position (i.e., Corporate ED) relevant expertise on radiological events. This will increase the Crane emergency response at the Alert ECL and will ensure EOF ERO will be immediately available should an Alert classification escalate to a SAE or GE.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan On-Shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Supervision of Radiation Protection Staff and Site Radiation Protection – On-shift		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• None	• Shift Emergency Director	• Operations Shift Manager

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan did not specifically identify this Function on-shift. To align with NUREG-0654, Revision 2, the Function is being added and assigned to the Shift ED. The tasks identified above align with current responsibilities for the Shift ED. An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that the major tasks under this Function identified above can be performed when needed without any additional competing priorities.

NUREG-0654, Revision 2 Alignment

Crane will utilize the Shift ED on-shift to perform the "Supervision of Radiation Protection Staff" function until relieved by the Augmented Staff. There are no differences or deviations from NUREG-0654, Revision 2. The proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Supervision of Radiation Protection Staff and Site Radiation Protection – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) TSC Radiation Protection Manager • (1) EOF Radiation Protection Manager	• (1) TSC Radiation Protection Manager • (1) EOF Radiation Protection Manager	• (1) TSC Site Radiation Protection Coordinator • (1) EOF Radiation Protection Manager @ SAE ECL or greater

Emergency Plan Change Assessment

Crane will staff both the TSC RP Manager and the EOF RP Manager at 60 minutes from an Alert ECL consistent with previous Emergency Plan commitments. There are no changes proposed to the proposed Emergency Plan for this Function.

NUREG-0654, Revision 2 Alignment

The TSC RP Manager will perform site related duties which include actions to recommend onsite protective actions, to direct all radiation protection activities at the site, and to evaluate and assess plant radiological data in the

development of onsite protective actions. The TSC RP Manager will also provide relevant information to applicable communicators who are communicating offsite PARs to OROs.

The EOF RP Manager will perform duties which include actions to support evaluation of offsite radiological data in the development of onsite protective actions and offsite PARs, and to direct FMTs at the Alert ECL, or greater.

Crane's staffing of this Function is different than NUREG-0654, Revision 2, in that Crane staffs both the TSC RP Manager and the EOF RP Manager at 60 minutes from an Alert ECL. NUREG-0654, Revision 2 does not staff the EOF RP Manager until the SAE declaration.

This will increase the Crane emergency response at the Alert ECL and will ensure that the EOF RP Manager will be immediately available should an Alert classification escalate to a SAE or GE ECL.

The proposed ERO staffing activates the EOF earlier than NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

3.2.5 EP Function: Dose Assessments/Projections

The Dose Assessments/Projections function includes the following tasks as defined in NUREG-0654, Revision 2:

- Perform dose assessments/projections and provide input to applicable PAR decision-makers, until relieved.

This function is important for effective emergency response to a radiological event because timely dose assessments/projections ensure accurate and timely PARs can be developed, when necessary. Crane will maintain the ability to staff this position at all times. This function will be assigned to a pre-existing on-shift staff member as a collateral duty. An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function can be performed when needed without any additional competing priorities.

The augmentation of this function will be available within 60 minutes of an Alert ECL, or greater, and is staffed in the EOF.

Maintaining the ability to perform dose assessments/projections at all times ensures that the consequences of a radiological event, to the public, are effectively mitigated by providing timely dose related information to the Station ED (TSC) or Corporate ED (EOF) depending on which position is in command and control. As a result, this position (Function) will be available on-shift and in the EOF depending on the ECL declared.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan on-shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Dose Assessments/Projections – On-shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
(Performed as a collateral duty by the Shift Chemistry Technician)	• Shift Dose Assessor[1] [1]Other 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.	• Dose Assessment / Projections Staff[1] [1]Other 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

Emergency Plan Change Assessment

The Shift Dose Assessment Function will be annotated as being performed by the on-shift Chemistry Technician as a collateral duty in EP-CR-1000. Crane utilized the on-shift Chemistry Technician to perform the Dose Assessment Function prior to augmentation of the ERO. The Crane Emergency Plan will be revised to annotate the Dose Assessment Function as the collateral duty and annotated with note (1) "Other 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." The use of the on-shift RP Technician to perform Dose Assessment is assessed through an OSA, via 10 CFR 50, Appendix E, Section IV.A.9, to ensure that this EP Function can be performed when needed without any additional competing priorities.

NUREG-0654, Revision 2 Alignment

Crane will maintain a Shift Dose Assessor on-shift to perform dose assessments/projections and provide input to applicable PAR decision-maker functions. This function will be performed by available qualified personnel (e.g., the on-shift RP Technician). Additionally, an OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that the Dose Assessment function on shift can be performed by one of the two (2) RP staff on shift without any additional competing priorities. The proposed ERO staffing for this Function is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Dose Assessments/Projections – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
(1) EOF Dose Assessment Coordinator	• (1) EOF Dose Assessment Coordinator	• TSC (1) Dose Assessment/ Projection Staff • EOF (1) Dose Assessment / Projection Staff @ SAE or greater

Emergency Plan Change Assessment

The previous emergency plan staffed one (1) Dose Assessment position at the EOF as Minimum Staff. The proposed revision to the Crane Emergency Plan maintains that requirement for one (1) Dose Assessment staff to be activated within 60 minutes of an Alert ECL or greater. There are no changes, other than position title, proposed for this EP Function.

NUREG-0654, Revision 2 Alignment

The Crane proposed ERO staffing for the Dose Assessment Function is different than that in NUREG-0654, Revision 2. Specifically, NUREG-0654, Revision 2 provides for one (1) Dose Assessment position to be staffed at the TSC within 60 minutes of an Alert ECL or higher. A second Dose Assessor is staffed at the EOF within 60 minutes of an SAE ECL or higher. Crane proposes to staff one (1) EOF Dose Assessor at 60 minutes from an Alert ECL or higher.

NUREG-0654, Revision 2 was developed based on the premise that TSC is activated at the Alert ECL or higher and the EOF is activated at the SAE ECL or higher. While the Dose Assessment function falls more in line with the EOF responsibilities, it will not be activated within NUREG-0654, Revision 2 until a SAE ECL or higher. In order to provide early relief of the on-shift Dose Assessment function for Alert ECLs, NUREG-0654, Revision 2 provides for a TSC Dose Assessor, which will be available at the Alert ECL.

For Crane, the EOF is staffed within 60 minutes of an Alert ECL or higher, making it unnecessary to staff the redundant TSC Dose Assessor. The EOF Dose Assessment Coordinator will perform duties which include actions to perform dose assessments/projections and provide input to applicable PAR decision-makers at the Alert ECL, or greater.

3.2.6 EP Function: Emergency Classifications

The Emergency Classifications Function includes the following task as defined in

NUREG-0654, Revision 2:

- Evaluate plant conditions and recommend emergency classifications, until relieved.

This function is important to ensure a prompt and effective emergency response. Because the impetus for implementing the Emergency Plan is the determination of an EAL at the correct ECL, having this ability maintained at all times is essential. This function will be assigned to a pre-existing on-shift staff member as a collateral duty. An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities. The augmentation of this function will be available within 60 minutes of an Alert ECL, or greater, and is staffed in the TSC.

Maintaining the ability to perform this function at all times ensures that ECL decisions, and as applicable, the PAR decisions, are timely and accurate as these decisions have a direct relationship to public health and safety from the consequences of a radiological event. This function works in coordination with the ED in command and control, and as a result is available on-shift and in the TSC.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan On-Shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Emergency Classifications – On-shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• None specified	• (1) Emergency Classification Advisor Other 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.	• (1) Emergency Classification Advisor Other 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.

<u>Emergency Plan Change Assessment</u>

The previous Three Mile Island Emergency Plan did not specify a separate Emergency Classification Function for the On-shift Staff. CEG proposes to revise the Crane Emergency Plan, EP-CR-1000, Figure 5-1 to align with NUREG-0654, Revision 2. This function will be assigned to a pre-existing on-shift staff member as a collateral duty (e.g., STA). The STA will have the

experience and training to fill this position and the responsibilities for monitoring plant operation are consistent with the EP position responsibilities. The STA will be trained in EAL classification and is available in the MCR to evaluate plant conditions and recommend emergency classifications as described in NUREG-0654, Revision 2.

The STA's responsibilities are defined in Operations Procedure OP-AA-101-111, "Roles and Responsibilities of On-Shift Personnel." The procedure requires that the STA maintains a sufficient level of independence commensurate with station conditions to act as an advisor to the Shift Manager during abnormal and emergency conditions. During abnormal and emergency conditions the procedure states the STA is responsible for performing an independent assessment and diagnosis of station conditions and provides recommendations to the operating team. This assessment shall include monitoring critical parameters and challenges to radioactive release barriers. The STA is also responsible for performing an independent assessment of Emergency Plan classification (as time permits) and should not cause a delay in making the event classification within the required time limit.

This practice has been demonstrated and evaluated in Operations Training Program and EP Drills and Exercises. Additionally, the STAs role as an Emergency Classification Advisor is assessed in the OSA under 10 CFR 50, Appendix E, Section IV.A.9.

NUREG-0654, Revision 2 Alignment

Crane will maintain an Emergency Classification Advisor on-shift to evaluate plant conditions and recommend emergency classifications. There are no differences or deviations from NUREG-0654, Revision 2.

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Emergency Classifications – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• TSC (1) Operations Manager	• TSC (1) Operations Manager	• TSC (1) Emergency Classification Advisor

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan did not specifically identify a

Classification Advisor. Crane proposes utilizing the Operations Manager to support EAL Classification. Crane proposes to revise the Emergency Plan to include the Emergency Classification Function and assign the TSC Operations Manager to support and advise the non-delegable responsibility of EAL Classification. The Operations Manager under the Emergency Plan has the necessary background, experience, and training to fill this position.

NUREG-0654, Revision 2 Alignment

Crane will staff a TSC Operations Manager in 60 minutes to evaluate plant conditions and recommend emergency classifications. The proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

3.2.7 EP Function: Engineering

The Engineering function includes the following tasks as defined in NUREG-0654, Revision 2:

- Provide engineering coverage related to the specific discipline of the assigned engineer, until relieved. Specifically:

  An engineer to monitor and evaluate changing core/thermal hydraulic issues is important to effective emergency response because monitoring and evaluating core conditions, or thermal hydraulic conditions of the reactor coolant system, can support timely corrective action(s), ECL declarations, and subsequent PARs. Radiological events from a power reactor come from damage to an operating reactor core, or the systems used to cool the core, and engineering expertise in this area can greatly benefit the licensee's response.

  This function will be assigned to a pre-existing on-shift staff member as a collateral duty. An OSA under 10 CFR 50, Appendix E, Section IV.A.9 was performed to ensure that this EP function is performed when needed without any additional competing priorities. The augmentation of this function is available within 60 minutes of an Alert ECL or greater and is staffed in the TSC.

  An engineer to provide expertise in Electrical/ I&C systems and equipment supports the evaluation of these systems/equipment and supports the development of repair plans if necessary. The augmentation (support) of this function will be available within 60 minutes of an Alert ECL, or greater, and is staffed in the TSC.

  An engineer to provide expertise in mechanical systems and equipment supports the evaluation of these systems/equipment and supports the development of repair plans if necessary. The augmentation (support) of this function will be available within 60 minutes of an Alert ECL, or greater, and is staffed in the TSC.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan On-Shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Engineering – On-shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) STA	• (1) Core/Thermal Hydraulics Engineer - STA Other 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.	• (1) Core/Thermal Hydraulics Engineer Other 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.

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan utilized the STA to satisfy the on-shift responsibilities for the Plant System Engineering, Repair, and Corrective Actions Function (Major Tasks: Technical Support/Accident Analysis).

Under NUREG-0654, Revision 2, the EP Engineering function is included as an on-shift function. The Crane Emergency Plan will be revised to identify the Engineering Function as a collateral duty satisfied by the STA on-shift. Under CEG procedure OP-AA-101-111, “Roles and Responsibilities of On-Shift Personnel”, the STA is responsible for performing an independent assessment and diagnosis of station conditions and provides recommendations to the operating team. This assessment shall include monitoring critical parameters and challenges to radioactive release barriers. The STA is also responsible for monitoring Critical Safety Function Status per the EOPs.

NUREG-0654, Revision 2 Alignment

Crane will maintain the STA on-shift to perform the Core/Thermal Hydraulics Engineer function as a collateral duty. There are no differences or deviations from NUREG-0654, Revision 2 and the proposed changes to the Crane’s Emergency Plan.

b Minimum Staff – The table below identifies the previous Three Mile Island and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Engineering – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) Core Thermal/Hydraulic Engineer • (1) Mechanical Engineer • (1) Electrical Engineer • (1) TSC Technical Manager • (1) SAMG Decision Maker (May be provided by other personnel assigned other functions.) • (2) SAMG Evaluators (May be provided by other personnel assigned other functions)	• (1) Core / Thermal Hydraulics Engineer • (1) Mechanical Engineer • (1) Electrical / Instrumentation & Controls Engineer	• (1) Core / Thermal Hydraulic Engineer • (1) Mechanical Engineer • (1) Electrical / Instrumentation and Control (I&C) Engineer

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan identified a Minimum Staff of one (1) Core Thermal/Hydraulic Engineers, one (1) Mechanical Engineer and one (1) Electrical Engineer, consistent with NUREG-0654, Revision 2. These positions will continue as Minimum Staff in the proposed Crane Emergency Plan. Note that the TSC Operations Manager will be retained as Minimum Staff but will be relocated to the Emergency Classifications Function (reference step 3.2.6).

The following positions, previously identified as Minimum Staff under the Three Mile Island Emergency Plan, will be re-categorized as Full-Augmented Staff and managed within an EPIP.

TSC Technical Manager – Under the previous Three Mile Island Emergency Plan, the TSC Technical Manager did not directly perform actions necessary to accomplish EP functions under NUREG-0654, Revision 2, but rather supported other personnel at the TSC. The position, as currently defined in the Crane Emergency Plan, will not be considered as part of the minimum ERO needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively

implemented). The TSC Technical Manager performs support activities such as supervisory actions, evaluations, coordination, assistance, and monitoring activities). Specific responsibilities include:

- Manage the activities of the TSC engineering / technical staff.
- Ensure additional personnel and/or equipment is arranged for, as necessary.
- Provide engineering support for accident detection and assessment.
- Develop mitigative strategies based on assessment of the event.
- Analyze and develop extreme measures actions (SAMGs, EDMGs, §50.54(x) or suspend security controls).
- Provide input for facility briefs.

Each of these tasks above are considered support activities and are not required to directly accomplish any of NUREG-0654, Revision 2 identified functions. As such, the TSC Technical Manager position can be deleted from the Minimum Staff and maintained as a Full-Augmentation position. The TSC Technical Manager position and the listed responsibilities are being relocated to an EPIP.

SAMG Decision Maker / SAMG Evaluators – In 1985, the NRC issued its Policy Statement on Severe Reactor Accidents Regarding Future Designs and Existing Plants (50 FR 32138). In mid-1988, the NRC staff formulated a program plan for the integration and closure of severe accident issues. NEI 91-04, *"Severe Accident Issue Closure Guidelines,"* provides guidelines on the closure of the severe accident issues on a plant specific basis.

CEG implemented Severe Accident Management Guidelines (SAMG) for accidents based on the Policy Statement and NEI 91-04. CEG developed guidance for use by ERO personnel in assessing plant damage, planning, and prioritizing response actions, and implementing strategies that delineate actions inside and outside the MCR. Strategies and guidance were interfaced with the EOPs and Emergency Plans.

Pursuant to this guidance and CEG procedures, when plant conditions warrant entry into SAMG conditions, the Station ED or another qualified individual (e.g., Operations Manager) would assume the role of decision-maker. The Technical Manager and/or another qualified individual(s) would assume the role of Evaluator, and the MCR staff would assume the role of Implementers.

Under the Crane Emergency Plan, the TSC SAMG Decision-Maker and SAMG Evaluators do not directly perform actions necessary to accomplish EP functions under the NUREG-0654, Revision 2 guidance. The positions, as proposed in the Crane Emergency Plan, will not be considered as part of

the minimum ERO staff needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented).

As such, the TSC SAMG Decision-Maker and SAMG Evaluators positions will be deleted from the Minimum Staff Table.

NUREG-0654, Revision 2 Alignment

Crane will staff a Core Thermal/Hydraulic Engineer, a Mechanical Engineer, and an Electrical Engineer/ Instrumentation & Controls Engineer at 60 minutes to provide engineering coverage related to their specific discipline. The TSC SAMG Decision-Maker and SAMG Evaluator positions, as well as the TSC Technical Manager position, are not identified in the NUREG-0654, Revision 2 guidance. The proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

3.2.8 EP Function: Security

The Crane Security Force is controlled and maintained by an NRC-approved Physical Security Plan (PSP) and is not reflected in the Emergency Plan. CEG separately submitted the Crane PSP to the NRC for review and approval. However, the establishment of a Security position in the TSC is advantageous to ensure effective coordination between the security force and the ERO, particularly for events where offsite resources are necessary as well as for security related events and site personnel accountability. The augmentation (support) of this function will be available within 60 minutes of an Alert ECL, or greater, and will be staffed by Security personnel in the TSC to coordinate security-related activities with that of the ERO.

The command and control staff of the TSC will respond within 60 minutes of an Alert ECL, or greater, to ensure that the ED has access to the resources and expertise of the site staff in order to develop response plans for a wide spectrum of events.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan On-Shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Security – On-shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• Per the Station Security Plan	• Security staffing per the site-specific security plan	• Security staffing per the site-specific security plan

Emergency Plan Change Assessment

There are no changes between the previous Three Mile Island Emergency Plan staffing and the proposed changes for the Crane Emergency Plan for the on-shift Security function.

NUREG-0654, Revision 2 Alignment

There are no differences or deviations from NUREG-0654, Revision 2. The proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Security – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• Per the Station Security Plan	• (1) TSC Security Coordinator	• (1) TSC Security Liaison

Emergency Plan Change Assessment

Crane is revising the Emergency Plan to re-categorize the Full Augmentation TSC Security Coordinator position as Minimum Staff. The addition of Minimum Staff position will ensure timely and effective coordination between the security force and the ERO, particularly for events where offsite resources are necessary as well as for security related events and site personnel accountability.

NUREG-0654, Revision 2 Alignment

Crane will staff a TSC Security Coordinator at 60 minutes to be a liaison to the Security Force. There are no differences or deviations from NUREG-0654, Revision 2. The proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

3.2.9 EP Function: Repair Team Activities

The NRC has determined that, from an EP perspective, the ability to get Emergency Core Cooling System (ECCS) equipment operational was the primary basis for necessitating maintenance expertise while on-shift. The Crane ECCS are designed to be redundant and diverse such that common mode failures are very unlikely. From the Crane UFSAR:

Engineered safeguards are those systems and components designed to function under accident conditions to prevent or minimize the severity of an accident or to mitigate the consequences of an accident. Thus, if reactor coolant is lost, the engineered safeguards act to provide emergency cooling inventory to ensure structural integrity of the core, to maintain the integrity of the Reactor Building, and to reduce the fission products expelled to the Reactor Building. Because of their importance in ensuring the health and safety of the general public in the vicinity of the site, special precautions are taken to assure high quality in the components and in system design to assure reliable operation. Separate and independent engineered safeguards are provided for Crane.

The engineered safeguards include provisions for:

a. *High pressure injection by the Makeup and Purification System.*

b. *Low pressure injection by the Decay Heat Removal System.*

c. *Core flooding by the Core Flooding System.*

d. *Reactor Building cooling by the Reactor Building Emergency Cooling System.*

e. *Reactor Building cooling and pressure reduction by the Reactor Building Spray System.*

f. *The removal of fission products in the Reactor Building atmosphere by the Reactor Building Spray system.*

g. *Reactor Building isolation by the Containment Isolation System.*

As a result of the redundant and diverse design, there is no need to accommodate maintenance functionality on-shift. Nevertheless, a minimum number of Maintenance personnel will be assigned to respond to an event as part of the ERO, with more personnel available on an as-needed basis depending on the event.

The augmentation (support) of the Electrical and Mechanical positions will occur within 60 minutes of an Alert ECL, (or greater), and will be staffed in the OSC. The augmentation (support) of the I&C position will occur within 90 minutes of an Alert ECL, or greater, and will be staffed in the OSC. The OSC will be the ERF associated with maintenance tasks, as directed by the Command and Control staff in the TSC.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan On-Shift ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Repair Team Activities – On-shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) Mechanical Maintenance (OSC) • (1) Electrical Maintenance/I&C (OSC)	• Not Applicable	• Not Applicable

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan identified personnel filling the EP Function of Repair Team Activities On-Shift. For the On-Shift crew, this function is no longer identified as an EP Function under NUREG-0654, Revision 2 and therefore, the personnel resources are no longer listed in the Emergency Plan.

b Minimum Staff – The table below identifies the previous Three Mile Island and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Repair Team Activities – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) Mechanical Maintenance (OSC) • (1) Electrical Maintenance (OSC) • (1) I&C Maintenance (OSC)	• (1) OSC Mechanical Maintenance Technician • (1) OSC Electrical Maintenance Technician • (1) OSC I&C Technician @ 90 minutes Additional Mechanical and Electrical Maintenance Technicians - As needed.	• (1) Mechanic (OSC) • (1) Electrician (OSC) • (1) I&C Technician @ 90 minutes (OSC) • Additional Mechanical and Electrical Maintenance Technicians - As needed.

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan provided for one (1) Mechanical Maintenance technician, one (1) Electrical Maintenance Technician, one (1) I&C Maintenance technician at 60 minutes. The proposed Crane Emergency Plan specifies that additional technicians would be called as needed depending on the nature of the emergency repairs needed. CEG has a proven Work Management program that has demonstrated the ability to respond to emergent work activity issues during off hours, weekends, and holidays. In an emergency situation, the Minimum Staff OSC responders from each Maintenance discipline would be available to assess the required work activities, begin preparation activities, and request the needed support in a timely manner. The proposed staffing is consistent with NUREG-0654, Revision 2 and provides the necessary personnel to respond to emergency conditions.

NUREG-0654, Revision 2 Alignment

Crane will staff one (1) Mechanical and one (1) Electrical Maintenance Technician at 60 minutes to perform the maintenance activities from the OSC to respond to the emergency condition. An I&C Technician will respond within 90 minutes consistent with NUREG-0654, Revision 2. Depending on the need, additional Maintenance Technicians will be called in to support the OSC activities. There are no differences or deviations from NUREG-0654, Revision 2.

3.2.10 EP Function: Supervision of Repair Team Activities

The ability to effectively supervise repair team personnel during emergency response is important. The augmentation (support) of these functions is as follows:

- A Lead OSC Supervisor (OSC Director) is staffed within 60 minutes of an Alert (or greater) ECL and is staffed in the OSC.
- An Electrical Supervisor/Lead, a Mechanical Supervisor/Lead, an I&C Supervisor/Lead, and an RP Supervisor/Lead is staffed within 90 minutes of an SAE (or greater) ECL and is staffed in the OSC.
- The OSC Director can effectively manage the Maintenance resources for the additional 30 minutes prior to the specific craft (Mechanical, Electrical, or I&C) responding, as demonstrated through drills and exercises.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Supervision of Repair Team Activities – On-Shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• OSC Director/Repair Team Lead	Not Applicable	• Not Applicable

b Minimum Staff – The table below identifies the previous and proposed Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Supervision of Repair Team Activities – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) OSC Director/Repair Team Lead • (1) Maintenance Manager (TSC)	• (1) OSC Director/Repair Team Lead • (1) Electrical Maintenance Supervisor/Lead @ 90 mins (OSC) • (1) Mechanical Maintenance Supervisor/Lead @ 90 mins (OSC) • (1) I&C Supervisor/Lead @ 90 mins (OSC) • (1) RP Supervisor/Lead @ 90 mins (OSC)	• (1) Lead OSC Supervisor • (1) Electrical Supervisor @ 90 mins • (1) Mechanical Supervisor @ 90 mins • (1) I&C Supervisor @ 90 mins • (1) Radiation Protection Supervisor @ 90 mins

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan identified the Supervisory positions of OSC Director/Repair Team Lead and TSC Maintenance Manager. The OSC Director effectively manages the Maintenance resources upon activation of the facility.

CEG is proposing to add four (4) Minimum Staff positions to the OSC to be staffed at 90 minutes. These include an Electrical Maintenance Supervisor/Lead Technician, a Mechanical Maintenance Supervisor/Lead

Technician, I&C Supervisor/Lead Technician, and an RP Supervisor/Lead Technician. The proposed addition of four (4) supervisor positions will enhance the ERO response by putting in place effective supervision repair team personnel early in the emergency response.

TSC Maintenance Manager - The TSC Maintenance Manager will be re-categorized from Minimum Staff to Full-Augmentation Staff. Under the Crane Emergency Plan, the TSC Maintenance Manager responsibilities will not include directly performing actions necessary to accomplish EP functions under NUREG-0654, Revision 2, but rather will support other personnel at the TSC. The position, as currently defined in the Emergency Plan, would not be considered as part of the absolute minimum ERO needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented). The TSC Maintenance Manager performs support activities such as supervisory actions, validations, coordination, and assistance activities). Specific responsibilities will include:

- Direct the total onsite maintenance and equipment restoration effort.
- Coordinate repair and OSC team task information between the TSC and OSC.
- Determine adequacy of OSC staffing.
- Provide input for facility briefs.

Each of these tasks above are considered support activities and are not required to directly accomplish any of NUREG-0654, Revision 2 identified functions. As such, the TSC Maintenance Manager position will be deleted from the Minimum Staff and maintained as a Full-Augmentation position. The TSC Maintenance Manager position and the listed responsibilities will be relocated to an EPIP.

NUREG-0654, Revision 2 Alignment

The previous OSC repair team lead was on-shift staff to oversee the activation of the OSC facility and the maintenance craft as they arrived. To better align with NUREG-0654, Revision 2 staffing an OSA was performed to analyze on-shift ERO positions. It was determined that there was not a need for on-shift supervision of repair team activities that could not be accomplished via a collateral function of the operators. The Mechanical, Electrical, I&C, and RP Supervisors/Lead Technicians will staff within 90 minutes to support coordination and supervision of repair team activities.

Crane proposes one difference from NUREG-0654, Revision 2. Specifically, Crane proposes to allow a Maintenance or RP Lead Technician to fill the supervisory role at 90 minutes. Under the CEG Maintenance and RP programs, Lead Technicians are qualified, experienced craft technicians who successfully demonstrate the day-to-day leadership of the technician work

force and act as lead on back shifts. Duties and responsibilities include training and development of other employees in performing preventive maintenance and routine equipment service activities. Basic qualifications for a Lead Technician include demonstrated reliability and responsibility and the ability to make quick and effective technical decisions, as well as demonstrated situational leadership, and environmental and safety stewardship. The experience and qualifications of Crane's Lead Technicians satisfy the requirements and the needs of the OSC for the Supervision of Repair Team Activities EP Function.

Other than the difference discussed above, the proposed ERO staffing is consistent with NUREG-0654, Revision 2. The assigned major tasks are aligned with those stated in NUREG-0654, Revision 2.

3.2.11 EP Function: Field Monitoring Teams (FMTs)

The ability to locate, monitor, and track a radioactive plume is important to ensure appropriate protective measures are taken in response to a radiological event. The ability to staff these teams before they may be needed (i.e., before a radiological release) greatly enhances the ability to provide timely and accurate PARs.

The augmentation (support) for these teams is as follows:

Onsite Field Monitoring

An Onsite Field Monitoring Individual will be staffed to monitor radiation. This onsite position is responsible for radiological monitoring of the site's Protected Area (PA). This Onsite Field Monitor will be staffed within 60 minutes of an Alert ECL, or greater.

The Onsite Field Monitor will be qualified to assess radiation and contamination levels but may not necessarily be an ANSI-qualified RP Technician since the person would be under the direct supervision of RP Supervisor/Lead Technician. Note, the Onsite Field Monitor would not be staffed if the radiological conditions jeopardize the safety of the Onsite Field Monitor.

Offsite Field Monitoring

An Offsite FMT will be staffed, consisting of a Monitor and a driver, within 60 minutes of an Alert ECL, or greater. This Offsite FMT will be responsible for locating, monitoring, and tracking a radioactive plume, as well as obtaining environmental samples as necessary (e.g., air, water, vegetation, etc.). The Monitor will be qualified to assess radiation and contamination levels but may not be an ANSI-qualified RP Technician as long as the FMT is under the direct supervision of senior staff in the TSC or EOF.

A second Offsite FMT is staffed, consisting of a Monitor and a driver, within 90 minutes of an Alert ECL, or greater. This Offsite FMT is also responsible for locating, monitoring, and tracking a radioactive plume, as well as obtaining environmental samples (e.g., air, water, vegetation, etc.). The Monitor is qualified to assess

radiation and contamination levels but need not be an ANSI-qualified RP technician as long as the FMT is under the direct supervision of senior staff in the TSC or EOF.

a On-Shift Staff – There are no on-shift staff assigned to this EP Function at Crane.

EP Function: Field Monitoring Teams – On-Shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• Not Applicable	Not Applicable	Not Applicable

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Field Monitoring Teams – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (2) Onsite Monitoring Team Personnel • (4) Offsite Field Team Personnel • (1) EOF Environmental Coordinator	• (1) Onsite Monitoring Individual • Offsite Field Monitoring Team A (1 Qualified Individual and 1 Driver) • Offsite Field Monitoring Team B @ 90 mins (1 Qualified Individual and 1 Driver)	• Onsite Field Monitoring Team (1 Qualified Individual and 1 Driver) • Offsite Field Monitoring Team A (1 Qualified Individual and 1 Driver) • Offsite Field Monitoring Team B @ 90 mins (1 Qualified Individual and 1 Driver)

Emergency Plan Change Assessment

Onsite Field Monitoring - The previous Three Mile Island Emergency Plan designated two (2) RP personnel as Minimum Staff for the EP function of Onsite Surveys. The proposed changes to the Crane Emergency Plan designate one (1) task qualified person for onsite surveys. The number of task qualified personnel for this function is consistent with NUREG-0654, Revision 2. At CEG stations, the onsite Field Monitor is responsible only for monitoring the PA. The size of the station's PA allows traverse in minutes, and a designated driver would not be required to perform this function. The

monitoring equipment is hand-held and does not require two (2) personnel for transport or operation. The Owner Controlled Area (OCA) has an infrastructure that supports vehicular traffic and will be monitored by the Offsite FMTs. This is the current CEG process and has been demonstrated successfully through drills and exercises at CEG stations.

Offsite Field Monitoring Teams - The Offsite FMTs at Crane previously consisted of two (2) Field Teams staffed at 60 minutes; each consisting of a driver and one (1) task qualified person. CEG proposes to change the Offsite FMTs to be consistent with NUREG-0654, Revision 2. Specifically, there would be two (2) FMTs, but one (1) FMT would staff at 60 minutes and one FMT would be staffed at 90 minutes. Additional time in the response is considered acceptable. Since both FMTs are expected to respond to an event and in order to better coordinate radioactive plume tracking action(s), allowing for additional time provides some flexibility in staffing this ERO function.

EOF Environmental Coordinator - The EOF Environmental Coordinator will be being re-categorized from Minimum Staff to Full-Augmentation Staff. Under the previous Emergency Plan, the EOF Environmental Coordinator did not directly perform actions necessary to accomplish EP functions under the NUREG-0654, Revision 2 guidance, but rather supported other personnel at the TSC. The position, as defined in the previous Emergency Plan, would not be considered as part of the minimum ERO needed to implement the Emergency Plan (i.e., if any position or function is not staffed then the Emergency Plan may not be effectively implemented). The EOF Environmental Coordinator will perform support activities such as coordination, communication, monitoring, and assistance activities. Specific responsibilities will include:

- Coordinate the transfer of control of the Field Monitoring Teams if initially under the direction of the TSC Radiological Controls Coordinator.

- Ensure communications are established with the TSC to obtain information on the accident conditions, meteorological conditions and estimates of radioactive material releases.

- Maintain cognizance of Field Monitoring Team exposure. When warranted, ask the Dose Assessment Coordinator to initiate an evaluation of the need for administering KI to CEG nuclear workers.

- Determine needs of the Dose Assessment Coordinator, the Dose Assessor, the HPN Communicator and the State Environs Communicator(s) for updates on Field Monitoring Team data and ensure distribution of new data to them in accordance with those needs. (task transferred to EOF RPM)

- Upon request, provide environmental data to Emergency Public Information personnel.

- Evaluate and coordinate additional equipment and personnel as

necessary from unaffected stations to augment and/or relieve station Field Monitoring Teams.

These tasks are considered support activities and are not required to directly accomplish any of the NUREG-0654, Revision 2 identified functions. As such, the EOF Environmental Coordinator position will be deleted from the Minimum Staff and maintained as a Full-Augmentation position. The EOF Environmental Coordinator position and the listed responsibilities will be relocated to an EPIP.

NUREG-0654, Revision 2 Alignment

The proposed ERO staffing for Onsite Field Monitoring is different than what is proposed in NUREG-0654, Revision 2. Specifically, Crane's Onsite Field Monitoring will not be staffed with a designated driver.

At CEG stations, the Onsite Field Monitor is responsible only for monitoring the area within the PA. The size of the Crane PA allows traverse on foot in minutes, and a designated driver would not be required to perform this function. The monitoring equipment is hand-held and does not require a vehicle for transport.

The Crane Owner Controlled Area (OCA) supports vehicular traffic. The Offsite FMTs are responsible for surveying the OCA. This has been demonstrated successfully through drills and exercises when Crane was operational and more recently at other CEG stations. The 60-minute and 90-minute Offsite FMTs will staff consistent with NUREG-0654, Revision 2. There are no differences or deviations from NUREG-0654, Revision 2 for the Offsite FMTs.

3.2.12 EP Function: Media Information

The Media Information function includes the following tasks:

- Manage and coordinate media information related to the event.

Media relations is an important part of effective emergency response and is consistent with the National Incident Management System (NIMS). Revision 1 of NUREG-0654 left the exact staffing composition flexible, with input from applicable OROs, and from the Federal Emergency Management Agency (FEMA).

The augmentation (support) of this function is defined for Crane to be that which is absolutely needed to support this function (i.e., without those positions this function could not occur).

Crane will be supported by the CEG Communications Department at all times. The Communications Department will respond to media inquiries initially for any ECL. The Communications Department will coordinate with CEG Management and ERFs to respond to media inquiries. Press releases will be issued as appropriate from the Communications Department.

The Crane Emergency Plan will be revised to describe the positions of Corporate Spokesperson, Public Information Director, and Joint Information Center (JIC) Director as those necessary to support the additional news media related tasks associated with the more significant classifications. These tasks include periodic press briefings, media engagement, and coordination with State and local Emergency Management Agencies (EMAs). These positions will be staffed within 90 minutes of an Alert ECL or higher,

a On-Shift Staff – There are no on-shift staff assigned to this EP Function; however, the CEG Communications Department will be available to address media inquiries 24 hours/day. This is consistent with NUREG-0654, Revision 2.

EP Function: Media Information – On-Shift Staff		
Previous Emergency Plan,	Proposed Emergency Plan	NUREG-0654, Revision 2
Not Applicable	Not Applicable	Not Applicable

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Media Information – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• (1) Corporate Spokesperson (Min Staffing time not specified) • (1) JIC Director (Min Staffing time not specified) • (1) Public Information Director (Min Staffing time not specified)	• (1) Corporate Spokesperson (established @ 90 min of an Alert or higher ECL) • (1) JIC Director (established @ 90 min of an Alert or higher ECL) • (1) Public Information Director (Does not need to be performed in the JIC, but needs to be established @ 90 min of an Alert or higher ECL)	• JIC/JIS staff to address media inquiries at the Alert ECL • Staff to perform JIC/JIS related tasks at SAE ECL or greater

Emergency Plan Change Assessment

The previous Emergency Plan identifies three (3) Minimum Staff positions to be staffed following an Alert ECL to address the Media Information EP Function. The positions report to the JIC. The positions consist of the Corporate Spokesperson Public Information Director, and JIC Director. The previous Emergency Plan, in contrast to other Minimum Staff positions, does not specify an activation time requirement. The proposed Crane Emergency Plan changes will maintain the three (3) JIC positions; however, the response time will be revised to activate within 90 minutes of an Alert (or greater) ECL. The revision to the Emergency Plan will add a specific facility activation time of 90 minutes from an Alert (or greater) ECL. The CEG Corporate Communications Department is capable of responding to and addressing events prior to the arrival of the JIC Minimum Staff within 90 minutes of an Alert (or greater) ECL.

NUREG-0654, Revision 2 Alignment

The proposed ERO staffing activates the JIC facility at a lower ECL than NUREG-0654, Revision 2. CEG proposes to activate the JIC facility within 90 minutes of an Alert ECL or higher. The 90-minute activation time provides for a larger population of candidates to fill the JIC minimum staff positions and is offset to some degree by the activation of the JIC at a lower ECL than stipulated in NUREG-0654, Revision 2. The CEG Communications Department will provide for the JIC functions until the JIC is activated and turnover of responsibility occurs.

Crane will staff a Corporate Spokesperson at the JIC to maintain Command and Control of the JIC and conduct periodic briefings with the media. The JIC Director will be staffed at the JIC to coordinate with the State, local and Federal agencies to maintain factual consistency of information conveyed. Crane will also staff a Public Information Director to oversee the issuance of news releases and media monitoring/rumor control. The Public Information Director function may be performed remotely by taking advantage of advancements in communication technology.

3.2.13 EP Function: Information Technology

The Information Technology (IT) function includes the following tasks:

- If Emergency Plan functions rely on computer-based equipment, provide IT support.

Technology advancements have led to significant enhancements in many areas of emergency response, such as communications, monitoring, displays, digital procedures, etc. Crane has assessed the use of technology as it is used to enhance the ability to protect the health and safety of the public with respect to EP.

a On-Shift Staff – There are no on-shift staff assigned to this EP Function; however, the CEG IT department maintains a 24 hour/day HELP Desk to assist users with IT related issues.

EP Function: Information Technology – On-Shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
Not Applicable	Not Applicable	Not Applicable

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO, as well as NUREG-0654, Revision 2 for this EP Function.

EP Function: Information Technology – Minimum Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2
• Not Applicable	• (1) EOF/JIC Computer Specialist (@ 90 min from Alert or higher) Other 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.	• (1) EOF/JIC/JIS IT Lead @ SAE ECL or greater Other 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. • (1) TSC IT Lead @ 90 mins Other 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.

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan does not identify IT positions as Minimum Staff. CEG maintained a Computer Specialist position at the EOF as a Full Augmentation position. Performance of digital equipment at the EOF has been shown to be acceptable during drills and exercises at this staffing level previously at Crane and throughout the fleet. With the built-in redundancy for communication systems and digital EP assets, CEG has not identified a need to staff an IT Lead as a Minimum Staff position at the TSC facility. The EOF Computer Specialist will be re-

categorized as Minimum Staff with a response time of 90 minutes from the Alert or higher ECL.

NUREG-0654, Revision 2 Alignment

Crane proposes to staff an IT Lead at the EOF as Minimum Staff; however, Crane proposes to staff the position within 90 minutes of an Alert or higher rather than 60 minutes of a Site Area Emergency. Crane does not propose to staff an IT Lead position as minimum staff at the TSC.

The Coatesville EOF and the Crane TSC contain multiple computers and programs in the facility which support EP functions. This includes Plant Parameter Display Systems, Core Damage Assessment, the Plant Process Computer, and Dose Assessment programs, as well as Web EOC, fax, and copy machines. Performance during drills and exercises indicates consistent and reliable performance of the digital assets in the facilities. The communications, dose assessment and core damage assessment equipment is periodically tested and issues, if any identified, are promptly addressed. The facilities and respective digital equipment are frequently used through administration of training for each team, as well as drills and Exercises. In addition, the IT Department maintains a Site IT Duty Person (SIDP) per procedure IT-AA-2001, “Information Technology Response to Emergent Issues Process”, for each station. During duty periods, the SIDP must be fit for duty, available, reachable by telephone and/ or cell phone at all times. The SIDP shall function as the single point of contact for site IT during the duty period. Requirements of the SIDP include the following:

- When contacted, must respond to all requests for emergent assistance, including conference calls.
- Manage the response to the emergent IT issues at the site. Primary role to coordinate recovery actions with Vendors and other support teams, as needed.
- Ensure that the appropriate priority and resources are assigned to address all emergent issues.
- Utilize SY-AA-102, “Constellation Fitness for Duty Program” for any required Call-Outs.

Additionally, CEG maintains an IT HELP Desk 24 hours per day, 7 days a week. Many computer issues can be addressed remotely with an IT specialist at the HELP Desk. If additional help is needed at the TSC, the EOF IT Specialist will be available to support resolution of the issue.

In addition, each of these EP related digital assets in the TSC and EOF were evaluated as part of implementation of the Cyber Security Rule, 10 CFR 73.54(b). Under NEI 13-10, "Cyber Security Control Assessments," EP Critical Digital Assets at the TSC and EOF have been assessed, and controls have been put in place to protect the assets against cyber-attack. In

conjunction with these controls, alternate administrative, non-digital, or adequately independent means will be put in place for performing each EP function, should the digital component or program fail for any reason. For example, both the Core Damage Assessment program and the Dose Assessment programs have a redundant, non-network laptop computer at their respective facility to maintain the EP function should the designated computer fail. ERO position procedures have written instructions for backup communication measures should the primary means fail. In the event of a failure of the Plant Process Computer, the Classification function can be maintained through the MCR.

Finally, performance of digital assets is monitored through either the Corrective Action Program or the EP Drill and Exercise critique process. Performance trends are monitored, and corrective actions are implemented as necessary.

3.2.14 EP Function: Resource Allocation and Administration

a On-Shift Staff – There was no on-shift staff assigned to this EP function; however, the CEG IT department maintains a 24 hour/day HELP Desk to assist users with IT related issues.

EP Function: Resource Allocation and Administration – On-Shift Staff		
Previous Emergency Plan	Proposed Emergency Plan	NUREG-0654, Revision 2 Guidance
N/A	N/A	N/A

b Minimum Staff – The table below identifies the previous and proposed Crane Emergency Plan ERO.

EP Function: Resource Allocation and Administration – Minimum Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) EOF Logistics Manager	• Manage positions under Emergency Plan Implementing Procedures (EPIP)

Emergency Plan Change Assessment

Logistics Manager - The Logistics Manager will be re-categorized from Minimum Staff to Full-Augmentation Staff. Under the previous Emergency Plan, the EOF Logistics Manager was not responsible for directly performing actions necessary to accomplish EP functions under NUREG-0654 guidance but rather for providing support to other personnel at the EOF. The position, as currently defined in the Emergency Plan, will not be considered as part of the minimum ERO needed to implement the emergency plan (i.e., if any position or function is not staffed then

the emergency plan may not be effectively implemented). The EOF Logistics Manager performs support activities such as monitoring, advising, validations, coordination, and assistance activities). Specific responsibilities include:

- Ensure contact is made and communications are maintained with appropriate non-CEG Nuclear personnel whose assistance may be required to terminate the emergency conditions and to expedite the recovery.
- Advise the EOF Director concerning the status of activities relating to governmental interfaces.
- Obtain support from Human Resources, the Comptroller's Office, the Legal Department, Accounting Department, and others as required.
- Coordinate with the Nuclear Duty Officer to maintain communications with ANI (American Nuclear Insurers) and INPO.
- Ensure that access to the EOF is limited to Emergency Responders and authorize admittance to non-CEG personnel.
- Implement the Constellation Nuclear Fitness for Duty Program.
- Ensure that NRC Site Team Representatives are directed to the Regulatory Liaison upon arrival at the EOF.
- Ensure that updates and information are provided to the EOC Liaisons and to offsite officials present in the EOF.
- Assist in obtaining and coordinating additional equipment/materials and /or technical expertise to support station requests, including CEG Corporate staff, unaffected stations, and vendor/contractors.
- Coordinate maintenance of EOF equipment as necessary.
- Ensure shift relief and continual staffing for the EOF.

Each of these tasks above are considered support activities and are not required to directly accomplish any of the NUREG-0654 identified functions. As such, the EOF Logistics Manager position can be deleted from the Minimum Staff and maintained as a Full-Augmentation position. The EOF Logistics Manager position and the listed responsibilities will be relocated to an EPIP.

<u>NUREG-0654, Revision 2 Alignment</u>

This Function is not addressed in the NUREG-0654, Revision 2, but supports ERO Staffing and is critical to effective emergency plan implementation.

3.2.15 EP Function: First Aid and Rescue Operations

The First Aid and Rescue Operations EP Function is no longer identified as an EP Function in NUREG-0654, Revision 2.

a On-Shift Staff – The table below identifies the previous and proposed Crane Emergency Plan on-shift ERO staff.

EP Function: First Aid and Rescue Operations – On-Shift Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (2) First Aid Team Personnel (collateral duty of Fire Brigade)	• Not Applicable

Emergency Plan Change Assessment

The previous Three Mile Island Emergency Plan identified personnel filling the EP Function of Rescue Operations and First Aid as collateral duties. First Aid is still maintained as part of NUREG-0654, Revision 2, under Section II.L, "Planning Standard for Medical and Public Health Support." Crane would utilize qualified individuals to satisfy this responsibility.

NUREG-0654, Revision 2 Alignment

Crane will continue to maintain qualified First Aid and Rescue personnel on shift; however, the personnel resources are no longer listed in the Emergency Plan consistent with NUREG-0654, Revision 2.

b Minimum Staff – No ERO resources were assigned to First Aid and Rescue Operations under the previous Three Mile Island Emergency Plan. Additionally, the First Aid and Rescue Operations EP Function does not exist in NUREG-0654, Revision 2. No revision to the Crane Emergency Plan is proposed.

3.3 Full-Augmentation Staff Assessment

The tables below identify the previous Three Mile Island Full Augmentation ERO for each of the EP Functions. These positions will be removed from the Emergency Plan and will either be relocated to an EPIP or designated as augmented staff, as annotated below.

EP Function: Notifications and Communication – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) State and Local Communicator (TSC) • (1) ENS Communicator (EOF) • (1) HPN Communicator (TSC) • (2) Ops Communicator (CR/TSC) • (3) Damage Control Communicator (CR/TSC/OSC) • (1) Technical Communicator (TSC) • (1) EOC Communicator (EOF) • (1) State EOC Liaison (PEMA) • (1) Regulatory Liaison (EOF)	• Manage positions under Emergency Plan Implementing Procedures (EPIP)

EP Function: Radiological Accident Assessment and Support of Operational Accident Assessment – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) Dose Assessors (EOF) • (1) Radiation Controls Coordinator (TSC) • (1) Field Team Communicator (EOF) • Field Team Personnel (Personnel numbers depend on the type and extent of the emergency.) • RP Technicians or equivalent (Personnel numbers depend on the type and extent of the emergency.) • Chemistry Personnel (Personnel numbers depend on the type and extent of the emergency.)	• Manage positions under Emergency Plan Implementing Procedures (EPIP)

EP Function: Plant System Engineering, Repair and Corrective Actions – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) Radiation Controls Engineer (TSC) • Mechanical Maintenance (OSC) (Personnel numbers depend on the type and extent of the emergency.) • Electrical Maintenance/I&C (Personnel numbers depend on the type and extent of the emergency.) • Assistant OSC Director • Ops Lead and Support Personnel (OSC) • (1) Technical Support Manager (EOF) • (1) Operations Advisor (EOF) • (1) Operations Assistant (EOF)	• Manage positions under Emergency Plan Implementing Procedures (EPIP)

EP Function: First Aid and Rescue Operations – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• First Aid and Rescue Operations (Personnel numbers depend on the type and extent of the emergency.)	• Manage positions under Emergency Plan Implementing Procedures (EPIP)

EP Function: Site Access Control and Personnel Accountability – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) Security Coordinator (TSC) • (1) Security Coordinator (EOF)	• TSC Security Coordinator changed to Minimum Staff • Manage position under Emergency Plan Implementing Procedures (EPIP)

EP Function: Resource Allocation and Administration Support – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) Logistics Coordinator (TSC) • (1) Administrative Coordinator (TSC) • Clerical Staff (TSC/OSC/EOF) • (1) Events Recorder (EOF) • (1) Computer Specialist (EOF)	• Manage positions under Emergency Plan Implementing Procedures (EPIP) • EOF/JIC Computer Specialist changed to Minimum Staff

EP Function: Media Information – Full-Augmentation Staff	
Previous Emergency Plan	Proposed Emergency Plan
• (1) Rad Protection Spokesperson • (1) Technical Spokesperson • (1) News Writer • (1) Media Monitoring Staff (Personnel numbers depend on the type and extent of the emergency.) • (1) Rumor Control Staff (Personnel numbers depend on the type and extent of the emergency.) • (1) JIC Coordinator • (1) Administrative Coordinator • (1) Events Recorder • Clerical Support (Personnel numbers depend on the type and extent of the emergency.) • (1) Access Control	• Manage positions under Emergency Plan Implementing Procedures (EPIP)

Neither NUREG-0654, Revision 1 or NUREG-0654, Revision 2 discuss Full Augmentation positions under Table B-1. In NUREG-0654, Revision 2, Table B-1, Note iii addresses the required minimum staffing as compared to other staff not

critical to the effective Emergency Plan implementation. Note iii states:

> *iii. 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 describe the minimum ERO staffing plan, while supporting implementing procedures can describe any other staff response desired by the licensee as long as this 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 intent of this note is to emphasize the distinction between ERO minimum staffing and ERO members who serve in a supporting capacity.

The Crane Emergency Plan describes the Minimum Staff ERO that is the minimum needed to effectively implement the station's Emergency Plan (i.e., if any position or function is not staffed, then the Emergency Plan cannot be effectively implemented). Crane utilizes additional Full Augmentation ERO Staff that are trained, qualified, and available to ensure all available licensee resources are used when a radiological emergency occurs and to provide for staff relief on a 24-hour / 7-day a week extended basis. The Full Augmentation Staff performs support functions such as intra-facility communications, organization liaisons, and expert advisors. This description of the additional Full Augmentation ERO Staff will be relocated from the Crane Emergency Plan to an EPIP.

The Crane Emergency Plan will be effectively implemented utilizing the Minimum Staff positions. However, most Full-Augmentation Staff will still be assigned ERO teams, be expected to maintain Fitness-for-Duty during duty weeks and be notified to respond to their ERF at the Alert or higher ECL. Their presence will not be required, however, to activate the respective ERFs.

3.4 Other Changes to the Emergency Plan

3.4.1 Command and Control Turnover

The previous Three Mile Island Radiological Emergency Plan, EP-CR-1000, Part II, Sections B.3 and B.4, will be revised to reflect the changes to the Command and Control turnover description. With the proposed changes in ERO, the description of the turnover process will be revised to more clearly describe the transfer of non-delegable duties for PARs and State/local notifications directly from the MCR to the EOF. The Command and Control turnover of responsibilities will continue to occur between the MCR, TSC, and EOF concurrently on a bridge-line without delay.

Existing requirements and capabilities under the Emergency Plan will not be deleted or reduced as part of this revision and as such, the station Emergency Plan will continue to meet regulatory requirements.

3.4.2 Alert and Notification System (ANS)

The previous operational Emergency Plan utilized sirens as the primary method to notify the public in the event of a radiological emergency at Crane. Since the transition to an ISFSI only Emergency Plan the sirens were decommissioned and removed from the EPZ. CEG has elected to embrace a new method for the primary Alert and Notification System to alert and disseminate information regarding an emergency at Crane: 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), to radio and television via the Emergency Alert System (IPAWS-EAS), and on 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, local, tribal, and territorial 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 Crane 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 is described in the ANS Design Report.

Capabilities to notify the public are fully maintained as part of this change. As such, the station Emergency Plan will continue to 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.

3.4.3 EAL’s incorporated ISFSI EAL’s

CEG proposes to reinstate the version of the Three Mile Island EAL scheme that was in effect just prior to the 10 CFR 50.82(a)(1) certifications in 2019. The EAL scheme is based on the guidance in NEI 99-01, Revision 6. Since the shutdown in 2019, Crane has since received approval for a set of EAL’s utilizing NEI 99-01, Revision 6 methodology associated with radiological events at the ISFSI. The proposed changes will combine the operational EAL’s and the ISFSI EAL’s into a single operational EAL scheme.

3.5 Impact of Proposed Changes on State Emergency Plan

3.5.1 Potential Impact of ERO Changes on Offsite Emergency Response Organizational

Interfaces

On June 27, 2025, CEG held a meeting with representatives of the Pennsylvania Emergency Management Agency (PEMA) and the Pennsylvania Bureau of Radiation Protection (BRP) to discuss the proposed changes to Crane's Emergency Plan and to ensure the revision had no adverse impact on the ability of State and local response organizations to effectively implement their FEMA-approved RERP plans. CEG subsequently provided a draft copy of this LAR to representatives from both PEMA and BRP. BRP provided information via electronic mail dated September 22, 2025, and PEMA provided information via electronic mail dated September 24, 2025, stating that based on their initial review, neither organization had any concerns with the proposed changes at this time.

4.0 REGULATORY EVALUATION

4.1 APPLICABLE REGULATORY REQUIREMENTS

The proposed change has been evaluated to determine whether applicable regulations and requirements continue to be met.

4.1.1 Section 50.47, "Emergency plans," of Title 10 of the Code of Federal Regulations (10 CFR) sets forth the U.S. Nuclear Regulatory Commission's (NRC) Emergency Plan requirements for nuclear power plant facilities. The regulation in 10 CFR 50.47(a)(1)(i) states, in part:

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

4.1.2 Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Planning Standard (2) of this section requires that:

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.

4.1.3 Section IV.A of 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," 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 emergency organization and the means for notification of such individuals in the event of an emergency. Specifically, the following shall be included:

1 A description of the normal plant operating organization.

2 A description of the onsite emergency response organization (ERO) with a detailed discussion of:

a. Authorities, responsibilities, and duties of the individual(s) who will take charge during an emergency;

b. Plant staff emergency assignments;

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.

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.

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.

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.

6 A description of the local offsite services to be provided in support of the licensee's emergency organization.

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.

8 Identification of the State and/or local officials responsible for planning for, ordering, and controlling appropriate protective actions, including evacuations when necessary.

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.

4.1.4 Revision 1 to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," dated November 1980, was intended to aid licensees, applicants for licenses, or State and local emergency response organizations in the development of their Radiological Emergency Response Plans. The NRC endorsed this document for use in this effort via Revision 2 to Regulatory Guide (RG) 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," dated October 1981. RG 1.101 allowed for licensees to submit alternatives to the guidance provided in NUREG-0654/FEMA-REP-1 for staff review and approval if necessary.

4.1.5 Section II.B of NUREG-0654/FEMA-REP-1, Revision 1, states, in part:

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.

4.1.6 Evaluation Criteria 5 of Section II.B of NUREG-0654/FEMA-REP-1, Revision 1, states, in part:

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

4.1.7 10 CFR 50.54(q) establishes requirements that all holders of a nuclear power reactor operating license must follow and maintain in effect emergency plans which meet the planning standards in 10 CFR 50.47(b) and the requirements in 10 CFR 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities." 10 CFR 50.47 of 10 CFR, "Emergency plans," sets forth emergency plan requirements for nuclear power plant facilities.

4.1.8 NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," provides guidance and acceptance criteria to provide a basis for NRC licensees, State and local governments to develop radiological emergency plans and improve emergency preparedness.

4.1.9 NUREG-0654/FEMA-REP-1, Revision 2 "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear

Power Plants," provides an acceptance criteria to provide a basis for NRC licensees, State and local governments to develop radiological emergency plans and improve emergency preparedness.

4.1.10 Regulatory Guide 1.219, "Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors," provides guidance related to emergency preparedness and specifically to making changes to emergency response plans.

4.1.11 NRC Regulatory Issue Summary (RIS) 2005-02, Revision 1, "Clarifying the Process for Making Emergency Plan Changes," which provides guidance to (1) clarify the meaning of a "decrease in effectiveness," as stated in 10 CFR 50.54(q); (2) clarify the process for evaluating proposed changes to emergency plans; (3) provide a method for evaluating proposed changes to emergency plans; and (4) provide clarifying guidance on the appropriate content and format of applications submitted to the NRC for approval prior to implementation.

4.1.12 NSIR/DPR-ISG-01, "Interim Staff Guidance, Emergency Planning for Nuclear Power Plants," provides guidance for addressing emergency planning requirements for nuclear power plants. This guidance is based on changes to Emergency preparedness regulations 10 CFR 50.47 and 10 CFR 50 Appendix E, which were published in the Federal Register (FR) on November 23, 2011 (i.e., reference 76FR 72560). The guidance should be used by licensees and applicants for implementing changes to onsite EP programs based on the revised emergency preparedness requirements and by NRC for reviewing the adequacy of the revised onsite emergency preparedness programs.

CEG has evaluated the proposed changes against the applicable regulatory requirements and guidance criteria. The proposed Emergency Plan changes continue to assure that regulatory requirements and emergency planning standards associated with emergency response are met.

4.2 PRECEDENT

As documented in Table 4-1 below, the CEG fleet transitioned to the staffing requirements of the revised NUREG-0654, Table B-1 guidance as described in NRC Letter to NEI, “Alternative Guidance for Licensee Emergency Response Organizations” Dated June 12, 2018 (ADAMS Accession Number ML18022A352). This guidance would eventually be incorporated into NURG-0654, Revision 2, which sets out applicable guidance for this proposed action.

Table 4-1

Station	**Amendment**	**Issue Date**	**ADAMS Accession Number**
Calvert Cliffs U1 (DPR-53)	331	September 13, 2019	ML19204A063
Calvert Cliffs U2 (DPR-69)	309		
FitzPatrick (DPR-59)	328		
Nine Mile Point U1 (DPR-63)	238		

Station	**Amendment**	**Issue Date**	**ADAMS Accession Number**
Nine Mile Point U2 (NPF-69)	177		
Limerick U1 (NPF-39)	235	May 24, 2019	ML19078A018
Limerick U2 (NPF-85)	198		
Peach Bottom U2 (DPR-44)	325		
Peach Bottom U3 (DPR-56)	328		
Braidwood U1 (NPF-72)	201	March 21, 2019	ML19036A586
Braidwood U2 (NPF-77)	201		
Byron U1 (NPF-37)	206		
Byron U2 (NPF-66)	206		
Clinton (NPF-62)	223		
Dresden U2 (DPR-19)	261		
Dresden U3 (DPR-25)	254		
LaSalle U1 (NPF-11)	236		
LaSalle U2 (NPF-18)	222		
Quad Cities U1 (DPR-29)	274		
Quad Cities U2 (DPR-30)	269		

4.3 NO SIGNIFICANT HAZARDS CONSIDERATION

In accordance with 10 CFR 50.90, "Application for amendment of license, construction permit, or early site permit," CEG requests amendments to the Renewed Facility License for the Crane Clean Energy Center, DPR-50.

The requested amendment to the license support changes to the Crane Clean Energy Center Emergency Plan based upon completion of a supporting evaluation of onsite Emergency Response Organization (ERO) staffing. The proposed changes will align Crane's minimum staff ERO with the staffing outline in NUREG-0654 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. CEG has evaluated the proposed changes to the previous Three Mile Island Emergency Plan and to the proposed Crane Clean Energy Center Emergency Plan and determined that the changes do not involve a Significant Hazards Consideration. In support of this determination, an evaluation of each of the three (3) standards, set forth in 10 CFR 50.92, "Issuance of amendment," is provided below.

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

Response: **No.**

The proposed changes to the Crane Emergency Plan 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 do not alter or prevent the ability of the onsite ERO to perform their intended functions to mitigate the consequences of an accident or event. The proposed changes remove ERO positions no longer credited or considered necessary in support of Emergency Plan implementation and restore functions to support an Operating power reactor.

Therefore, the proposed changes to the Crane Emergency Plan do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2 Does the proposed amendment 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 remove ERO positions no longer credited or considered necessary in support of Emergency Plan implementation and return the Emergency Plan to a status to support power operation.

Therefore, the proposed changes to the Crane Emergency Plan do not create the possibility of a new or different kind of accident from any accident previously evaluated.

3 Does the proposed amendment 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 ERO staffing.

The proposed changes are associated with the Crane Emergency Plan staffing and do not impact operation of the plant or its response to transients or accidents. The proposed changes do not affect the Technical Specifications. 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 to the Emergency Plan will continue to provide the necessary onsite ERO response staff.

Therefore, the proposed changes to the Crane Emergency Plan 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 CONSIDERATION

Furthermore, a detailed environmental evaluation of restart activities, including this proposed amendment, will be provided in an Environmental Report that is expected to be submitted to the NRC during the fourth calendar quarter of 2025 (4Q25).

6.0 REFERENCES

6.1 NSIR/DPR-ISG-01, *"Interim Staff Guidance, Emergency Planning for Nuclear Power Plants,"* Revision 0, November 2011.

6.2 NEI 10-05, Revision 0, *"Assessment of On-Shift Emergency Response Organization Staffing and Capabilities,"* dated June 2011.

6.3 NUREG-0654/FEMA-REP-1, *"Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,"* Revision 1, U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency, Washington, DC, November 1980.

6.4 10 CFR 50.47, *"Emergency plans."*

6.5 10 CFR 50, Appendix E, *"Emergency Planning and Preparedness for Production and Utilization Facilities."*

6.6 Regulatory Issue Summary 2005-02, Revision 1, *"Clarifying the Process for Making Emergency Plan Changes,"* dated April 19, 2011.

6.7 Regulatory Guide 1.219, *"Guidance on Making Changes to Emergency Plans for Nuclear Power Reactors,"* dated November 2011.

6.8 Crane Clean Energy Center, Updated Final Safety Analysis Report (UFSAR).

6.9 Letter from NRC to NEI, “Alternative Guidance for Licensee Emergency Response Organizations,” June 12, 2018.

6.10 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, U.S. Nuclear Regulatory Commission and Federal Emergency Management Agency, Washington, DC, December 2019.