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PNP 2015-036

May 19, 2015

U. S. Nuclear Regulatory Commission  
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**SUBJECT:** Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 9.3, Emergency Preparedness – Staffing, Requested Information Items 1, 2, and 6 – Phase 2 Staffing Assessment

Palisades Nuclear Plant  
Docket 50-255  
Renewed Facility Operating License No. DPR-20

- REFERENCES:**
1. NRC letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012 (ADAMS Accession Package No. ML12056A046).
  2. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2012-034, *Entergy Nuclear Operations, Inc. 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments*, dated May 11, 2012 (ADAMS Accession No. ML12135A289)
  3. Nuclear Energy Institute (NEI) 12-01, Revision 0, *Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities*, dated May 2012 (ADAMS Accession No. ML12125A412)
  4. NRC letter to NEI, *U. S. Nuclear Regulatory Commission Review of NEI 12-01, "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications Capabilities, Revision 0, dated May 2012,"* dated May 15, 2012 (ADAMS Accession No. ML12131A043)

5. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2012-050, *90-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments*, dated June 8, 2012 (ADAMS Accession No. ML12163A546)
6. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2014-034, *Change of Commitments in Entergy Nuclear Operations, Inc. 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments*, dated March 27, 2014

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued a 50.54(f) letter to all power reactor licensees and holders of construction permits in active or deferred status (Reference 1). Enclosure 5 of Reference 1 contains the specific Requested Actions, Requested Information, and Required Response associated with Near-Term Task Force (NTTF) Recommendation 9.3 for Emergency Preparedness - Staffing.

On May 11, 2012, in accordance with Reference 1, Enclosure 5, Entergy Nuclear Operations, Inc. (ENO) submitted an alternative course of action for performing the requested actions and providing the requested information (Reference 2). Attachment 1 of Reference 2 described the alternative course of action and schedule for responding to the Emergency Preparedness - Staffing, Requested Information items 1, 2, and 6.

On June 8, 2012, ENO responded to the Emergency Preparedness - Staffing, Requested Information items 3, 4, and 5 (Reference 5).

On March 27, 2014, ENO submitted a change to the schedule for responding to the information requested in Reference 2 (Reference 6).

Attachment 1 to this letter provides responses to the following information requests in accordance with References 2 and 6:

- Reference 1, Enclosure 5, Staffing, Requested Information Item 1
- Reference 1, Enclosure 5, Staffing, Requested Information Item 2
- Reference 1, Enclosure 5, Staffing, Requested Information Item 6

Attachment 2 to this letter provides the ENO Palisades Nuclear Plant (PNP) Phase 2 Staffing Assessment. The ENO PNP Phase 2 Staffing Assessment follows the assessment process methodology described in NEI 12-01 (Reference 3) which was endorsed by the NRC in Reference 4.

Summary of Commitments

This letter contains no new or revised commitments. It documents completion of the following four commitments made in Reference 6:

Provide onsite and augmented staffing assessment considering functions related to NTTF Recommendation 4.2 by May 19, 2015.

Conduct the onsite and augmented staffing assessment considering functions related to NTTF Recommendation 4.2 by April 19, 2015.

Provide a schedule of the time needed to implement changes associated with the Phase 2 staffing assessment by May 19, 2015.

Identify changes that have been made or will be made to the emergency plan regarding the on-shift or augmented staffing changes associated with the Phase 2 staffing assessment by May 19, 2015.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 19, 2015.

Sincerely,



ajv/jse

- Attachments:
1. Responses to the Near-Term Task Force Recommendation 9.3 for Emergency Preparedness - Staffing, Requested Information Items 1, 2, and 6
  2. Entergy Nuclear Operations, Inc. Palisades Nuclear Plant NEI 12-01 Phase 2 Staffing Assessment

cc: Director of Office of Nuclear Regulation  
Administrator, Region III, USNRC  
Project Manager, Palisades, USNRC  
Resident Inspector, Palisades, USNRC

**Attachment 1**

**Responses to the Near-Term Task Force Recommendation 9.3 for Emergency  
Preparedness - Staffing, Requested Information Items 1, 2, and 6**

## **Responses to the Near-Term Task Force Recommendation 9.3 for Emergency Preparedness - Staffing, Requested Information Items 1, 2, and 6**

*Responses to the Near-Term Task Force Recommendation 9.3 for Emergency Preparedness - Staffing, Requested Information items 1, 2, and 6 are provided below:*

### *Requested Information Item 1*

*Provide an assessment of the onsite and augmented staff needed to respond to a large scale natural event meeting the conditions described in the Discussion section of Reference 1, Enclosure 5, Staffing.*

#### Entergy Nuclear Operations, Inc. (ENO) Response

Attachment 2 to this letter provides the “Entergy Nuclear Operations, Inc. Palisades Nuclear Plant Phase 2 Staffing Assessment” conducted in accordance with References 2 and 6, and Nuclear Energy Institute (NEI) 12-01. A detailed timeline was developed based on a tabletop discussion and review of the on-shift response to the postulated beyond-design-basis external event (BDBEE) extended loss of alternating current (AC) power (ELAP). On-shift and augmented staff response was determined based upon the tabletop team members’ review of applicable plant procedures and draft diverse and flexible strategies (FLEX) guidance for the strategies identified at the time of the assessment. The focus of the timeline was to identify all onsite resources that would be required to execute each task to implement the initial and transition phase FLEX mitigating strategies and the Palisades Nuclear Plant (PNP) emergency plan.

The tables describing the required minimum staffing, task implementation timelines and NEI 10-05 modified staffing analysis tables for PNP are included in Attachment 2.

The Phase 2 Staffing Assessment concluded that the PNP current minimum shift staffing is sufficient to execute all required initial and transition phase tasks actions, as well as the emergency plan functions, without the assignment of collateral duties that would adversely affect the ability to execute the emergency plan functions. Any changes to this conclusion resulting from revisions to strategies or implementation guidance would be documented in the Final Overall Integrated Plan.

### *Requested Information Item 1 (continued)*

*This assessment should include a discussion of the onsite and augmented staff available to implement the strategies as discussed in the emergency plan and/or described in plant operating procedures. The following functions are requested to be assessed:*

## **Responses to the Near-Term Task Force Recommendation 9.3 for Emergency Preparedness - Staffing, Requested Information Items 1, 2, and 6**

*(1a) How onsite staff will move back-up equipment (e.g., pumps, generators) from alternate onsite storage facilities to repair locations at each reactor as described in the order regarding the NRC NTTF Recommendation 4.2.*

### ENO Response

Portable FLEX equipment stored in the FLEX storage buildings is planned to be trailer-mounted or on wheels for ease of deployment. Dedicated vehicles are planned to be utilized for deploying FLEX equipment from the storage location to the staging areas on site. These vehicles would also be used for debris removal.

A FLEX support guideline would be implemented to clear debris from trailer paths to allow for moving and setup of FLEX portable equipment.

*(1b) It is requested that consideration be given to the major functional areas of NUREG-0654, Table B-1, such as plant operations and assessment of operational aspects, emergency direction and control, notification/communication, radiological accident assessment, and support of operational accident assessment, as appropriate.*

### ENO Response

The Minimum Staffing Table shown in Section 4.0 of the phase 2 assessment report in Attachment 2 provides a table showing the on-shift staff responsible for each of the major functional areas of NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Table B-1, following the BDBEE.

*(1c) New staff or functions identified as a result of the assessment.*

### ENO Response

The assessment did not identify the need for additional on-shift staff or changes to the Emergency Response Organization (ERO) structure. The assessment did not identify any new functions.

*(1d) Collateral duties (personnel not being prevented from timely performance of their assigned functions).*

## Responses to the Near-Term Task Force Recommendation 9.3 for Emergency Preparedness - Staffing, Requested Information Items 1, 2, and 6

### ENO Response

The Phase 2 staffing assessment concluded that the current minimum on-shift staff is sufficient to support implementation of the FLEX mitigating strategies as well as the required emergency plan actions with no unacceptable collateral duties.

### Requested Information Item 2

*Provide an implementation schedule of the time needed to conduct the onsite and augmented staffing assessment. If any modifications are determined to be appropriate please include in the schedule the time to implement the changes associated with the Phase 2 staffing assessment.*

### ENO Response

Attachment 2 provides the Phase 2 PNP staffing assessment for a BDBEE. The Phase 2 onsite and augmented staffing assessment was completed on April 19, 2015. No modifications were identified in the Phase 2 assessment.

### Requested Information Item 6

*Identify changes associated with the Phase 2 staffing assessment that have been made or will be made to your emergency plan regarding the on-shift or augmented staffing changes necessary to respond to a loss of all AC power, multi-unit event, including any new or revised agreements with offsite resource providers (e.g., staffing, equipment, transportation, etc.).*

### ENO Response

PNP is a single-unit site. Responses to the questions are provided below:

**Staff:** The existing on-shift staff is sufficient to implement the Emergency Plan and ELAP strategies during the first six-hour “no site access” period. No changes to the Emergency Plan on-shift staffing have been identified.

**ERO:** The existing augmented ERO provides sufficient staffing to fill the 24-hour ERO positions. No changes to the Emergency Plan augmented ERO staffing have been identified.

**Agreements:** Further review in the Phase 2 assessment determined that no new or revised agreements are necessary.

## Responses to the Near-Term Task Force Recommendation 9.3 for Emergency Preparedness - Staffing, Requested Information Items 1, 2, and 6

Drills: NEI 12-01 states that a licensee should determine if any changes are necessary to documents describing the emergency response drill and exercise program. No changes to the PNP emergency plan drill and exercise program are being made; however, ENO is planning to incorporate requirements for drills and exercises involving a BDBEE scenario in accordance with the guidance and implementation schedule of NEI 13-06, "Enhancements to Emergency Response Capabilities for Beyond Design Basis Accidents and Events," when issued.

### References

1. NRC letter, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*, dated March 12, 2012 (ADAMS Accession No. ML12056A046).
2. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2012-034, *Entergy Nuclear Operations, Inc. 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments*, dated May 11, 2012 (ADAMS Accession No. ML12135A289)
3. Nuclear Energy Institute (NEI) 12-01, Revision 0, *Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities*, dated May 2012 (ADAMS Accession No. ML12125A412)
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7. NEI 12-01, "Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0.
8. NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0.



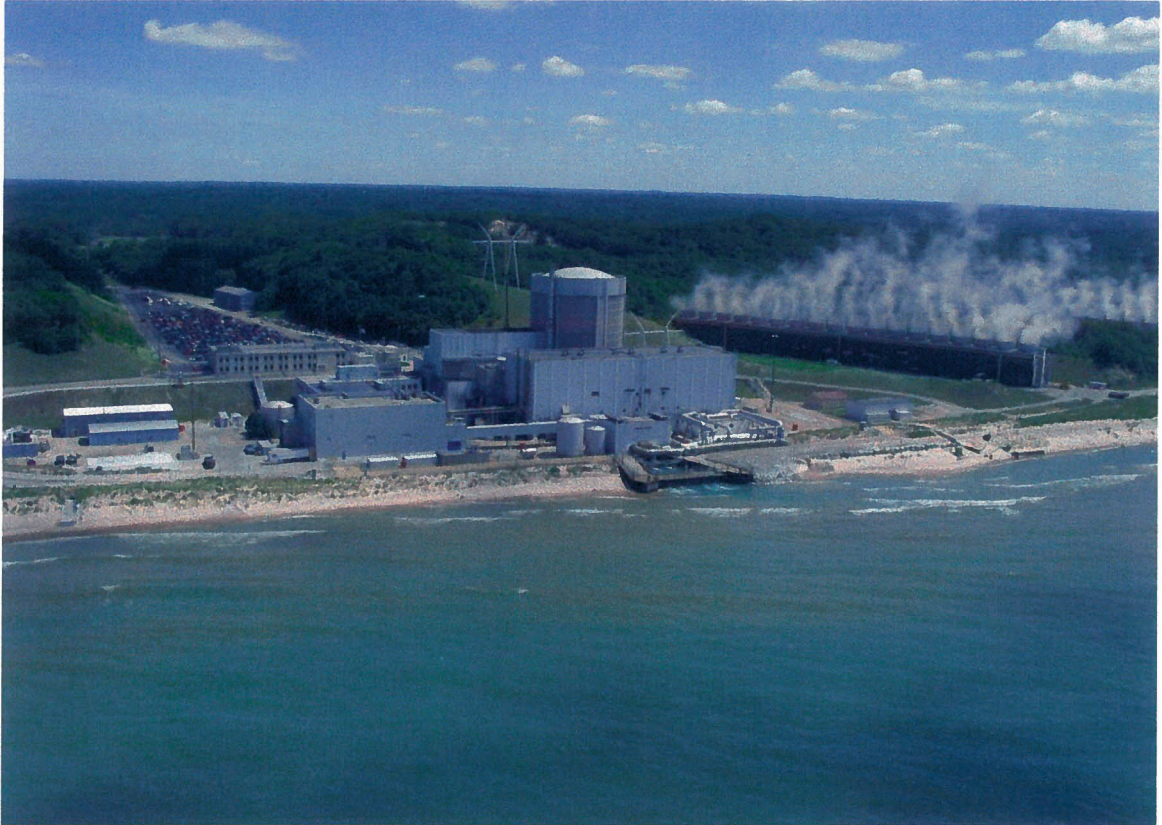
**Attachment 2**

**Entergy Nuclear Operations, Inc.**

**Palisades Nuclear Plant**

**NEI 12-01**

**Phase 2 Staffing Assessment**



**ENTERGY NUCLEAR OPERATIONS, INC.**

**PALISADES NUCLEAR PLANT**

**NEI 12-01 PHASE 2**

**STAFFING ASSESSMENT**

**April 19, 2015**

# Palisades Nuclear Plant Phase 2 Staffing Assessment

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### 1.0 EXECUTIVE SUMMARY

Beyond Design Basis External Events (BDBEE) are events initiated by natural phenomena that either exceed the protections provided by design basis features or involve natural phenomena within the design basis in combination with beyond design-basis failures leading to an extended loss of AC power (ELAP) and/or loss of ultimate heat sink (LUHS).

Using the methodology of (Nuclear Energy Institute) NEI 12-01, Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities, this report presents the results of an assessment of the capability of the Palisades Nuclear Plant (PNP) on-shift staff and augmented Emergency Response Organization (ERO) to respond to a BDBEE. The assumptions for the NEI 12-01 Phase 2 scenario postulate that the BDBEE involves a large-scale external event that results in:

- an extended loss of AC power
- an extended loss of access to the ultimate heat sink
- impact on the unit (unit is operating at full power at the time of the event unless procedurally directed to shutdown)
- impeded access to the unit by off-site responders as follows:
  - (1) 0 to 6 Hours Post Event – No site access.
  - (2) 6 to 24 Hours Post Event – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation capabilities (e.g., private resource providers or public sector support).
  - (3) 24 Hours Post Event – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies and large numbers of personnel.

To conduct the on-shift portion of the assessment, a team of subject matter experts from Operations, Radiation Protection, Security, Training, Emergency Planning, Chemistry, and the FLEX Project Team performed a tabletop in February, 2015. The participants reviewed the assumptions and applied procedural guidance, including applicable draft FLEX Support Guidelines (FSGs) and FLEX Implementation Guidelines (FIGs) for coping with a BDBEE using minimum on-shift staffing. Particular attention was given to the sequence and timing of each procedural step, its duration, and the on-shift individual performing the step to account for both the task and the estimated time to prepare for and perform the task.

The Phase 2 Staffing Assessment concluded that the current minimum on-shift staffing as defined in the Palisades Site Emergency Plan (SEP) is sufficient to support the implementation of the mitigating strategies (FLEX strategies) as well as the required SEP actions, with no unacceptable collateral tasks assigned to the on-shift personnel during the first 6 hours. The assessment concluded that the on-shift staffing, with assistance from augmented staff, is capable of implementing the FLEX strategies necessary after the 6 hour period within the constraints. It was concluded that the Emergency response function would not be degraded or lost.

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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### 2.0 INTRODUCTION

The Nuclear Regulatory Commission (NRC) issued a Letter to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, dated March 12, 2012, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident*. Information requests related to Emergency Preparedness were contained in Enclosure 5 of the §50.54(f) letter. Enclosure 5 contained two requested actions; one involving performance of a staffing assessment and the other a communications assessment. The communications assessment is independent of the staffing assessment and not included as part of this report. The Phase 2 staffing assessment addresses Requested Information Items 1, 2, and 6 of NTTF Recommendation 9.3. The actions for the staffing assessment are summarized as follows:

*It is requested that addressees assess their current staffing levels and determine the appropriate staff to fill all necessary positions for responding to a multi-unit event during a beyond design basis natural event and determine if any enhancements are appropriate given the considerations of Near-Term Task Force (NTTF) Recommendation 9.3.*

A two-phased approach was established by the industry to respond to the information requests contained in the §50.54(f) letter associated with staffing. Additionally, NEI developed a technical report (NEI 12-01, *Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities*) that includes the recommended criteria for use in performing the staffing assessment for a BDBEE.

**Note** – Use of the term ELAP throughout this report also assumes a loss of the ultimate heat sink as part of the event. The use of the terms Phases 1, 2, and 3 refers to Initial Phase, Transition Phase and Final Phase respectively as referenced in the Mitigating Strategies Order and NRC JLD-ISG-2012-1.

### 3.0 SCOPE OF THE ELAP ERO STAFFING ASSESSMENT

All sites with one or more operating units are required to perform a Phase 2 staffing assessment no later than 4 months prior to beginning of the second refueling outage (as used within the context of NRC Order EA-12-049). The Phase 2 assessment considers the staffing necessary to implement actions that address functions related to Fukushima NTTF Recommendation 4.2.

Single unit sites should provide the requested information as it pertains to an Extended Loss of all AC Power, and impeded access to the site.

The PNP staffing assessment was performed per the guidance of NEI 12-01 with a required submittal date no later than May 19, 2015. The assessment performed the following:

- Evaluated the ability of the on-shift staff to implement Initial Phase coping actions and, consistent with the site access assumption, evaluated Transition Phase actions that must be performed prior to the end of the “no site access” time period.
  - Initial Phase – Implementation of strategies that generally rely upon installed plant equipment.

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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- Transition Phase – Implementation of strategies that involve the use of on-site portable equipment and consumables to extend the coping period, and prevent a loss of functions needed for core cooling, containment, and spent fuel pool makeup. Setup for these strategies may be performed prior to the end of the Initial Phase as determined by procedure.
- Evaluated the ability of the on-shift staff to implement the Station Blackout (SBO) coping strategies before ELAP is declared.
- Evaluated the EOPs, FSGs, and FIGs for responding to an ELAP. (Note: Draft EOPs, FSGs, and FIGs revised for FLEX implementation, were used for this assessment).
- Evaluated whether the ability of the on-shift staff to perform any required emergency response functions would be degraded or lost prior to the arrival of the augmented ERO.
- Consistent with the site access assumption, evaluated the ability of the on-shift staff and augmented staff to implement Transition Phase coping strategies performed after the end of the “no site access” time period.

The staffing level determined as a result of the Phase 2 assessment will be verified and validated in the process used to reasonably assure required tasks, manual actions and decisions for FLEX strategies are feasible and may be executed within the constraints identified in the Overall Integrated Plan (OIP) or order EA 12-049. Validation will be performed at a date after the submittal of the staffing assessment per NEI guidance “FLEX Beyond Design Basis Validation Process”.

#### 4.0 EMERGENCY PLAN MINIMUM ON-SHIFT STAFFING

The SEP establishes the licensing basis for the on-shift staffing complement as determined by the staffing assessment performed as part of the overall Emergency Preparedness rulemaking published in November of 2011. Only personnel required to be on shift are credited in the staffing for the initial 6 hours of the event. The following table indicates the on-shift personnel necessary to perform Initial Phase plant operations and the required emergency planning functions.

<b>Minimum Staffing Table</b>		
<b>Position</b>	<b>NUREG-0654 Functional Area/Tasks</b>	<b>On-Shift Staffing</b>
Shift Manager (SM)	Emergency Direction and Control / Assessment of Operational Aspects	1
Control Room Supervisor (CRS)	Plant Operations/Safe Shutdown Assessment of Operational Aspects	1
Shift Technical Advisor / Shift Engineer (SE)	Plant System Engineering / Technical Support	1
Nuclear Control Operator (NCO)	Plant Operations/Safe Shutdown / Assessment of Operational Aspects	2
Nuclear Plant Operator (NPO)	Plant Operations/Safe Shutdown / Fire Brigade / Corrective Actions	6
Communicator	Communications / Notifications	1
Chemistry	Chemistry / Radiochemistry	1

## Palisades Nuclear Plant Phase 2 Staffing Assessment

Minimum Staffing Table		
Position	NUREG-0654 Functional Area/Tasks	On-Shift Staffing
Radiation Protection (RP)	Radiological Assessment / Onsite and In-plant Surveys	2
Security	Access Control and Accountability	Per Security Plan

Emergency plan tasks of firefighting, first aid and rescue operations are provided by personnel assigned other functions as allowed by NUREG-0654 Table B-1 and NEI 10-05. For the purpose of this staffing assessment, it is assumed firefighting, first aid and rescue are not required. The SM provides emergency direction and control of plant operations and assessment of operational aspects.

### 5.0 PHASE 2 STAFFING ASSESSMENT FOR BDBEE/ELAP

#### 5.1 On-shift Staff Responsibilities

Responsibilities of the on-shift staff shown in Section 4 are assumed as follows for the purpose of the tabletop conducted for this assessment:

- SM assumed the Emergency Director (ED) function.
- Communicator was available to perform off-site notifications.
- The CRS, 2 NCOs and 6 NPOs were available to perform plant operations to establish and maintain core cooling, spent fuel pool makeup, and containment integrity as directed by the CRS using EOPs, FSGs, and FIGs.
- Two RP Technicians and one Chemistry Technician were available to perform their emergency plan function and other tasks as directed by the SM.
  - The Chemistry Technician was responsible for the task of dose assessment should a release occur. Otherwise, the Chemistry Technician was available to perform tasks as directed by the SM. Chemistry samples and analysis could not be performed due to loss of power.
  - The two RP Technicians were available to perform job support, in-plant surveys, and onsite surveys as directed by the Shift Manager. The RP technicians could be called upon for the task when needed; otherwise, they were available to perform tasks as directed by the SM.
- Since the emergency diesel generators were assumed to be unavailable for the event, limited time was spent attempting to troubleshoot /repair.
- Existing strategies do not anticipate the use of security officers to perform duties unrelated to their assigned security roles. Tasks performed by security officers in response to FLEX actions are consistent with their normal duties such as monitoring and controlling site access, providing site access for FLEX equipment staging, and providing compensating measures for vital area doors that may need to remain open to facilitate room environmental conditions or staging and operation of FLEX equipment.

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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- It was assumed that the Emergency Director and Communicator functions and responsibilities remained in the Control Room for the duration of this assessment. It is recognized, however, that the augmented ERO would be expected to arrive on-site or at their designated off-site facilities and assume these functions from the Control Room as soon as possible.

### 5.2 Methodology

- The Phase 2 staffing assessment response functions related to NTF Recommendation 4.2 must be based on the actions delineated in the procedures and guidelines developed in response to the Order to ensure accurate results. Once the site specific actions associated with the FLEX implementation response strategies are defined (i.e., down to the procedure or guideline step level), the staffing needed to perform these actions can be assessed with the necessary level of accuracy.
- Draft EOP, FSG and FIG documents were used during the conduct of the Phase 2 staffing assessment and the development of this report.
- A tabletop assessment was used to determine what plant actions and emergency plan implementation actions were required based on procedures during an ELAP. In cases where multiple tasks were assigned to an individual, the team evaluated timing of the tasks to ensure that they could be performed by the individual in series within any specified time constraints. A team consisting of personnel from Operations, Radiation Protection, Security, Training, Emergency Planning, Chemistry, and the FLEX Project Team completed the assessment of the on-shift staff's response to the event.
- The guidance of NEI 10-05 was used to determine if the number and composition of the on-shift staff is sufficient to implement the Emergency Plan, Initial Phase actions and, with assistance from augmented staff, implement Transition Phase mitigation strategies and repair or corrective actions intended to maintain or restore the functions of core cooling, containment integrity, and spent fuel pool cooling.
- The guidance of NEI 10-05 was used but the tables were modified to include tasks to implement the FLEX strategies.
- Due to the lead time before Phase 3, it was assumed that offsite equipment would arrive on site and appropriate staff would be available to receive, stage, and operate the equipment. Therefore, the staffing assessment did not consider Phase 3 FLEX strategies.

### 5.3 NEI 12-01 General Assumptions and Limitations

- A large-scale external event occurs that results in:
  - onsite unit affected
  - extended loss of AC power with simultaneous LUHS
  - impeded access to unit
- Initially, the reactor was operating at full power and was successfully shut down.
- A Hostile Action directed at the affected site does not occur during the period that the site is responding to the event.
- The event impedes site access as follows:
  - Post event time: 0 to 6 hours – No site access. This duration reflects the time necessary to clear road way obstructions, use different travel routes, mobilize alternate transportation capabilities, etc.



## Palisades Nuclear Plant Phase 2 Staffing Assessment

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- Post event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation capabilities.
- Post event time: 24 hours – Improved site access. Site access is restored to a near-normal status and/or augmented transportation resources are available to deliver equipment, supplies, and large numbers of personnel.

### 5.4 Other Assumptions for Staffing Assessment

- The result of the beyond-design-basis event may place the plant in a condition where it cannot comply with certain Technical Specifications and/or with its Security Plan, and as such, may warrant invocation of 10 CFR 50.54(x) and/or 10 CFR 73.55(p).
- For purposes of assessing augmented staffing, it is assumed that the on-shift staff successfully performs all Initial Phase and any necessary Transition Phase coping actions during the 0-6 hour period. It is assumed an adequate number of augmented ERO members arrive on site between 6 hours and 24 hours to assist the on-shift staff to successfully implement the appropriate FLEX strategies and FSGs.

*Initial Phase – Implementation of strategies that generally rely upon installed plant equipment.*

*Transition Phase – Implementation of strategies that involve the use of portable equipment and consumables to extend the coping period, and maintain or restore the functions of core cooling, containment integrity, and spent fuel pool cooling.*

- On-shift personnel are limited to the minimum complement allowed by the site emergency plan (i.e., the minimum required number for each required position). This would typically be the on-shift complement present during a backshift, weekend, or holiday.
- Off-site emergency response facilities and staging areas are available, including those located within the 25 mile telecommunications blackout range.

### 5.5 NEI 12-06 Staffing Assumptions

- The FLEX strategies documented in the event sequence analysis assume:
  - No independent, concurrent events
  - All personnel onsite are available to support site response
  - The reactor is initially operating at power, unless site has procedural direction to shut down due to the impending event.

### 5.6 NEI 10-05 Applicable Assumptions to Support Methodology

- On-Shift personnel can report to their assigned response locations within timeframes sufficient to allow for performance of assigned actions.
- The on-shift staff possesses the necessary Radiation Worker qualifications to obtain normal dosimetry and to enter Radiologically Controlled Areas (but not high, locked high or very high radiation areas unless allowed by procedure or the SEP) without the aid of a Radiation Protection Technician.
- Performance of site and protected area access control function is regularly analyzed through other station programs and will not be evaluated here, unless a role or function from the major response area is assigned as a collateral duty.

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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- The task of making a simple and brief communication has minimal impact on the ability to perform other assigned functions/tasks, and is therefore an acceptable collateral duty for all positions. Examples include making a plant page announcement or placing a call for assistance to an offsite resource such as local law enforcement. This assumption does not apply to emergency notification to an Offsite Response Organization (ORO) or the NRC.
- The task of performing a peer check has minimal impact on the ability to perform other assigned functions/tasks, and is therefore an acceptable collateral duty for all positions. Examples include performing a peer check on a recommended emergency classification or notification form for transmittal to offsite authorities.
- The analyzed event occurs during off-normal work hours at a time when augmented ERO responders are not at the site (e.g., during a backshift, weekend or holiday).

### 5.7 Severe Accident Management Guideline (SAMG)

- It was concluded in the Phase 2 Staffing Assessment that the on shift staff and augmented ERO would not be called upon to perform SAMG activities for the event analyzed for this report.

### 5.8 Assessment of the INITIAL PHASE Coping Strategies and Capability

- The Phase 2 staffing assessment for the Initial Phase actions during the first 6-hours concluded there were no task overlaps for the activities assigned to the on-shift staff and the ability of the on-shift staff to perform any required emergency response functions were not degraded or lost. Refer to Attachment 1, Phase 2 Staffing Assessment NEI 10-05 Tabletop Data and Attachment 2, PNP FLEX Implementation Timelines.

### 5.9 Assessment of TRANSITION PHASE Coping Strategies and Capability

- On-shift Staff Transition Phase Coping Actions (Hours 0 – 6)

The Transition Phase requires providing sufficient, portable, on-site equipment and consumables to maintain or restore functions until they can be accomplished with resources brought from off site. Actions include:

- (1) DC Load Shed (EOP-3.0); DC Deep Load Shed (FSG-4)
  - (2) Debris removal from the path to retrieve FLEX equipment from the selected storage location to the staging areas (FSG-5)
  - (3) Deploy FLEX DG and cables from the selected storage location to the staging area and connect DG in preparation for re-powering battery chargers and electrical buses (FIG-1, FSG-4, and FSG-5)
  - (4) Deploy FLEX Pump and hoses from the selected storage location to the staging area and connect in preparation for providing water to the steam generators, PCS make-up, and SFP make-up (FSG-5, FIG-2, FIG-3, and FIG-4)
  - (5) Establish Fuel Handling Building Ventilation (FIG-8)
- Augmented ERO and On-shift Staff Transition Phase Coping Actions

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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The following tasks are assumed to be performed by the on-shift and augmented staff, if available, after the 6 hour no access period as shown in Attachment 2.

- (1) Energize electrical buses and battery chargers (FIG-1 and FSG-4)
- (2) Complete deployment of and connection of hoses and initiate SFP makeup and cooling (FIG-3)
- (3) Initiate low pressure feedwater for steam generator make-up (FIG-4)
- (4) Initiate Long Term Inventory Control (FSG-1)
- (5) Provide backup control air for atmospheric dump valves (FIG-9)
- (6) Refuel FLEX equipment (FIG-10)
- (7) Establish battery room ventilation (FIG-8)
- (8) Batch boron additions as needed for PCS Inventory control (FIG-5)

### 6.0 AUGMENTED ERO

#### 6.1 ERO Response

- The methods to notify and augment the ERO was identified in Entergy Nuclear Operations, Inc.(ENO) letter to the NRC dated June 8, 2012, 90-Day Response to the March 12, 2012 Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments (PNP Letter PNP 2012-050).
- The ERO is trained to report to their assigned emergency response facilities when made aware of an area wide loss of electrical grid that results in degraded communications capability. If access to the assigned facilities is not possible, personnel should report to the pre-established alternate offsite facilities.

#### 6.2 Site Access for Augmented ERO

- The methods of site access for the augmented ERO was identified in an ENO letter to the NRC dated June 8, 2012, 90-Day Response to the March 12, 2012 Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments (PNP Letter PNP 2012-050).
- Various types of transport to PNP are applicable including: walking, personal vehicle, helicopter, and watercraft.
- PNP has designated the Emergency Operations Facility, located in downtown Benton Harbor and approximately 16 miles south-southwest from the Plant, as the staging area if impediments prevent site access. Additionally, pursuant to Michigan Public Act 390 of 1976, known as the Michigan Emergency Management Act, the Michigan State Police Emergency Management Homeland Security Division (MSP/EMHSD) is required by state law to provide support, consistent with competing priorities, to PNP in the event of a large-scale natural disaster that inhibits site access. MSP/EMHSD is the central coordinating agency for mutual aid in Michigan for all state, local and federal resources. Should MSP/EMHSD be unable to provide support, the Michigan National Guard will assist in all areas except the removal of down power lines. This support may include enabling plant emergency responders to gain access to the nuclear plant site by clearing roads, or coordinating air or water transportation as needed.

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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### 7.0 PHASE 2 STAFFING ASSESSMENT CONCLUSION

#### 7.1 Staffing Level

This assessment concluded that the current minimum on-shift staffing as defined in the SEP is sufficient to support the implementation of the ELAP strategies, as well as the required SEP actions, with no unacceptable collateral duties. The staffing assessment did not identify the need for additional on-shift staff.

The non-licensed operators performed tasks in series when necessary and were able to timely perform all assigned functions. The operators performed actions to ensure core cooling, containment integrity, and spent fuel pool cooling. The performance of coping strategies does not impact the ability of the on-shift staff to perform any required emergency response function. Emergency response functions will not be degraded or lost prior to the arrival of the augmented ERO.

The SEP will not be changed as a result of the shift staffing assessment. No interim actions have been taken or are planned as a result of this assessment.

#### 7.2 Task Analysis Results

Refer to Attachment 1, Phase 2 Staffing Assessment NEI 1-05 Tabletop Data, and Attachment 2, PNP FLEX Implementation Timelines, for the analysis of on-shift staffing tasks.

- The task analysis did not identify any unassigned tasks.
- The task analysis did not identify any task overlaps that were performed by the on-shift staff.
- The time to perform the task was best estimate of the assessment team based on operating experience.

#### 7.3 Time Motion Study (TMS) Results

Collateral tasks were not identified, therefore a time motion study was not required. Refer to Attachment 2, PNP FLEX Implementation Timelines, for the on-shift staffing task timing and sequence analysis results.

#### 7.4 Augmented ERO Assessment Results

The existing ERO is sufficient to fill the augmented ERO positions and assist the on-shift staff response to a BDBEE. PNP has four ERO teams that have been trained to respond to the site. No changes to the SEP augmented ERO staffing have been identified.

## Palisades Nuclear Plant Phase 2 Staffing Assessment

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### 8.0 REFERENCES

- 8.1 NEI 12-01, Rev 0, *Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities*
- 8.2 NEI 10-05, Rev 0, *Assessment of On-Shift Emergency Response Organization Staffing and Capabilities*
- 8.3 NSIR DPR-ISG-01, *Interim Staff Guidance – Emergency Planning for Nuclear Power Plants*
- 8.4 NRC Letter to All Power Reactor Licensees and Holders of Construction Permits in Active or Deferred Status, dated March 12, 2012, *Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident.*
- 8.5 NRC Order Number EA-12-049, dated March 12, 2012, Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events
- 8.6 ENO letter (Palisades Letter PNP 2012-034) to the NRC dated May 11, 2012, *Entergy Nuclear Operations, Inc. 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments (ML12135A289)*
- 8.7 ENO Letter (Palisades Letter PNP 2012-050) to the NRC dated June 8, 2012, *90-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments (ML12163A546)*
- 8.8 ENO Letter (Palisades Letter PNP 2014-034) to the NRC dated March 27, 2014, *Change of Commitments in Entergy Nuclear Operations, Inc. 60-Day Response to the March 12, 2012, Information Request, Action Plan for Completing Emergency Communication and Staffing Assessments.*
- 8.9 NRC Interim Staff Guidance JLD-ISG-2012-01, Rev. 0, dated August 29, 2012, Compliance with Order EA-12-049, Order Modifying Strategies for Beyond-Design-Basis External Events
- 8.10 NEI 12-06 Rev. 0, August 2012, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide*
- 8.11 EC-0000046464, PNP FLEX Strategy Development
- 8.12 Palisades Site Emergency Plan

### 9.0. ATTACHMENTS

- ATTACHMENT 1 PHASE 2 STAFFING ASSESSMENT NEI 10-05 TABLETOP DATA
- ATTACHMENT 2 PNP FLEX IMPLEMENTATION TIMELINES

# Palisades Nuclear Plant Phase 2 Staffing Assessment Attachment 1

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Attachment 1

Phase 2 Staffing Assessment NEI 10-05 Tabletop Data

## Note

NEI-10-05 Tables are modified to include the Emergency Plan and FLEX implementation tasks.

1. Accident Summary:
  - A large-scale external event occurs that results in:
    - The unit is affected
    - Extended loss of AC power (ELAP) and access to Ultimate Heat Sink (LUHS)
    - Impeded access to the unit
  - Initially, the reactor is operating at full power and is successfully shut down.
  - The event results in a Site Area Emergency based on EAL SS1.1. The event is upgraded to a General Emergency SG1.1 once it has been determined that power cannot be restored before the station blackout coping time will be exceeded.
  - The most limiting hazard for on-shift staffing resources was used for the assessment. On-shift personnel respond as shown in Attachment 2.
2. Accident Specific Assumptions:
  - Attachment 2 assumptions include:
    - SM/CRS are expected to use available staff to provide periodic relief (if needed) for individuals working in extreme environmental conditions or under high physical stress conditions (Ex., work in high heat areas, staging cables and hoses, etc.).
    - Estimated task times include expected pre-job and safety briefings
  - Assumptions are identified in Section 5.0 of this document.
3. Procedures Reviewed for Accident Response Include:
  - EI-1, Emergency Classification and Actions
  - EI-3, Communication and Notification
  - EI-12.1, Personnel Accountability and Assembly
  - EI-2.2, E Emergency Staff Augmentation
  - EI-6.13, Protective Action Recommendations for Offsite Populations
  - SEP SUPP 1, Site Emergency Plan Supplement 1 – EAL Wall Charts
  - EOP-1.0, Standard Post-Trip Actions
  - EOP-3.0, Station Blackout Recovery
  - FSG-1, Long Term Inventory Control
  - FSG-3, Low Pressure Feedwater
  - FSG-4, ELAP DC Bus Load Shed And Management
  - FSG-5, Initial Assessment and FLEX Equipment Staging
  - FSG-11, Alternate SFP Makeup and Cooling
  - FSG-100, BDBEE ELAP Emergency Response
  - FSG-101, BDBEE / EP Communications

## **Palisades Nuclear Plant Phase 2 Staffing Assessment Attachment 1**

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- FIG-1, FLEX Generator Staging and Operation
- FIG-2, FLEX Pump Staging and Operation
- FIG-3, Alternate SFP Makeup and Cooling
- FIG-4, Low Pressure Feedwater Alignment
- FIG-7, FLEX PCS Injection
- FIG-8, Alternate Ventilation
- FIG-9, FLEX Air Compressor Staging and Operation
- FIG-10, Fuel Oil Transfer

**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 1**

**NOTE: NEI 10-05 Tables 1-5 shown here are modified to include Emergency Plan and FLEX implementation tasks**

**NEI 10-05 TABLES**

<b>PNP TABLE 1 – ON-SHIFT POSITIONS Single Unit ELAP/LUHS</b>				
<b>Line #</b>	<b>On-shift Position</b>	<b>Role in Table # / Line #</b>	<b>Unanalyzed Task?</b>	<b>Collateral Tasks? (See Attachment 2 for Task sequence &amp; timeline)</b>
1	SM	T2/L1 T5/L1 T5/L2 T5/L3 T5/L5 T5/L8	No	No
2	CRS	T2/L2	No	No
3	SE	T2/L3	No	No
4	NCO #1	T2/L4	No	No
5	NCO #2	T2/L5	No	No
6	NPO #1	T2/L6	No	No
7	NPO #2	T2/L7	No	No
8	NPO #3	T2/L8	No	No
9	NPO #4	T2/L9	No	No
10	NPO #5	T2/L10	No	No
11	NPO #6	T2/L11	No	No
12	Communicator	T5/L6 T5/L9 T5/L13	No	No
13	Chemistry	T2a/L12	No	No
14	RP #1	T2a/L13	No	No (Refer to Attachment 2)
15	RP #2	T2a/L14	No	No (Refer to Attachment 2)
	Security	T5/L15	No	No



**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 1**

<b>PNP TABLE 2 - PLANT OPERATIONS &amp; SAFE SHUTDOWN</b>			
<b>Single Unit ELAP/LUHS</b>			
Minimum Operations Crew Necessary to Implement EOPs, SAMGs, FSGs or FIGs as Applicable			
Line #	Generic Title/Role	On-Shift Position * (Note 1)	Task Analysis Controlling Method (Note 2)
1	Shift Manager	SM	Licensed Operator Training Program
2	Unit Supervisor	CRS	Licensed Operator Training Program
3	Shift Technical Advisor / Shift Engineer	SE	Licensed Operator Training Program
4	Nuclear Control Operator #1	NCO #1	Licensed Operator Training Program
5	Nuclear Control Operator #2	NCO #2	Licensed Operator Training Program
6	Nuclear Plant Operator #1	NPO #1	Non-Licensed Operator Training Program
7	Nuclear Plant Operator #2	NPO #2	Non-Licensed Operator Training Program
8	Nuclear Plant Operator #3	NPO #3	Non-Licensed Operator Training Program
9	Nuclear Plant Operator #4	NPO #4	Non-Licensed Operator Training Program
10	Nuclear Plant Operator #5	NPO #5	Non-Licensed Operator Training Program
11	Nuclear Plant Operator #6	NPO #6	Non-Licensed Operator Training Program

\*The Communicator NPO does not perform EOP, SAMG, FSG or FIG procedures and is not shown in Table 2.

**Note 1:** During a BDBEE that results in an ELAP/LUHS, these positions are expected to be available to implement or assist in the implementation of FLEX strategies using FLEX Support Guidelines (FSG) and FLEX Implementation Guideline (FIG) under the direction of the Control Room Supervisor and oversight by the Shift Manager.

**Note 2:** Each position will receive as a minimum, the INPO initiated NANTEL Generic Basic FLEX Initial Course (CBT-ERTD-FLEX-INITIAL). Shift Managers, Control Room Supervisors, Shift Technical Advisors/Shift Engineers, and Licensed Operators will also receive the NANTEL Generic Advanced FLEX Training Course (CBT-ERTD-FLEX-ADVANCED) as specified in EN-TQ-110-01, Fleet E-Plan Training Course Summary. All training was developed using the Systematic Approach to Training (SAT) process in addition to other FLEX training. The controlling method put in place when FLEX is implemented will follow the guidance recommended by the industry.

**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 1**

<b>PNP Table 2a Other on-shift staff available to perform (or assist Operators) FLEX related tasks (not safe shutdown)</b>			
<b>Line #</b>	<b>Generic Title/Role</b>	<b>On-Shift Position (Note 1)</b>	<b>Task Analysis Controlling Method (Note2)</b>
12	Chemistry	Chemistry	N/A
13	Radiation Protection #1	RP #1	N/A
14	Radiation Protection #2	RP #2	N/A

**Note 1:** During a BDBEE that results in an ELAP/LUHS, these positions are expected to be utilized to assist in the implementation of FLEX strategies using FSGs under the instructions of Operations as necessary.

**Note 2:** The controlling method put in place when FLEX is implemented will follow the guidance recommended by the industry.

<b>PNP TABLE 3 – FIREFIGHTING* Single Unit ELAP/LUHS</b>		
<b>Line #</b>	<b>Performed by</b>	<b>Task Analysis Controlling Method</b>
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A
5	N/A	N/A

\*Fire Brigade (No firefighting tasks are included in this accident.).

Staff filling fire brigade positions are shown in the minimum staffing table in Section 4.0.

**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 1**

<b>PNP TABLE 4 – RADIATION PROTECTION AND CHEMISTRY Single-Unit ELAP/LUHS</b>																		
L I N E	Position Performing Function / Task	Performance Time Period After Station Blackout (hours)*																
		0- .5	.5- 1.0	1.0- 2.0	2.0- 3.0	3.0- 4.0	4.0- 5.0	5.0- 6.0	6.0- 7.0	7.0- 8.0	8.0- 9.0	9.0- 10.0	10.0- 11.0	11.0- 12.0	12.0- 13.0	13.0- 14.0	14.0- 15.0	15.0- 16.0- 24.0
1	In-Plant Survey: RP #1 & #2	As directed by SM* (See Attachment 2 of this report)																
2	In-Plant Survey: RP #1 & #2	As directed by SM* (See Attachment 2 of this report)																
3	Personnel Monitoring:																	
4	Job Coverage: FLEX equipment setup	As directed by SM* (See Attachment 2 of this report)																
5	Offsite Rad Assessment: (See Table 5- Chem)																	
6	Other site specific RP																	
7	Chemistry Function task	As directed by SM*																

\*The team determined there are no time sensitive RP or Chemistry tasks and that task performance is directed and prioritized by the Shift Manager. The time RP or Chemistry is directed to perform a task and the amount of time taken to complete tasks are estimated. No Chemistry samples are taken due to the loss of power to the equipment necessary to analyze samples. No fuel damage or release is anticipated since core cooling, containment integrity, and spent fuel pool cooling are maintained. RP and Chemistry are available to assist with staging and setup of FLEX equipment when not performing dose assessment, surveys, or job support.

**PNP TABLE 5 – EMERGENCY PLAN IMPLEMENTATION**  
**Single Unit ELAP/LUHS**

<b>Line#</b>	<b>Function / Task</b>	<b>On-Shift Position</b>	<b>Task Analysis Controlling Method</b>
1	Declare the emergency classification level (ECL)	SM	Emergency Planning Training Program / EP Drills
2	Approve Offsite Protective Action Recommendations	SM	Emergency Planning Training Program / EP Drills
3	Approve content of State/local notifications	SM	Emergency Planning Training Program
4	Approve extension to allowable dose	N/A	N/A
5	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM	Licensed Operator Training Program / Emergency Planning Training Program
6	ERO notification	Communicator	Emergency Planning Training Program
7	Abbreviated NRC notification for DBT event	N/A	N/A
8	Complete State/local notification form	SM	Emergency Planning Training Program
9	Perform State/local notifications	Communicator	Emergency Planning Training Program
10	Complete NRC event notification form	(Note 1)	N/A
11	Activate ERDS	(Note 2)	N/A
12	Offsite radiological assessment	(Note 3)	Emergency Planning Training Program
13	Perform NRC notifications	Communicator	Emergency Planning Training Program
14	Perform other site-specific event notifications (e.g., Duty Plant Manager, INPO, ANI, etc.)	(Note 4)	N/A
15	Personnel Accountability	Security	Security Training Program / EP Drills

Note 1: NRC Event notification required due to the declaration of an Emergency Classification in accordance with 10 CFR50.72 is made verbally to the NRC. A written event notification form is not generated by on-shift staff for this notification. Formal written notifications to the NRC as may be required by 10 CFR 50.72 resulting from this event may be generated by the augmented staff.

Note 2: If ERDS capability is lost, critical information would be communicated directly to the NRC over other communication paths, such as satellite phones.

Note 3: Chemistry will report to the Control Room to assist the SM/ED as directed and be available for offsite radiological assessment if needed. A significant release is not anticipated since core cooling, spent fuel pool makeup and containment integrity are maintained during the 24 hour period. If no significant release is expected, the SM is expected to direct Chemistry to assist with other tasks.

Note 4: The SM will not make these communications. The Duty Plant Manager will report to the site or the staging area and make these communications.

## Palisades Nuclear Plant Phase 2 Staffing Assessment Attachment 2

### ATTACHMENT 2: PNP FLEX IMPLEMENTATION TIMELINES

#### Timeline

**It is assumed on-shift staff will be augmented and/or relieved after +6 hours as personnel are able to access the site. The relief staff will continue the tasks for the job position as shown. The intent of this table is to identify the job position, tasks, and estimated timeline to complete the Emergency Plan, initial phase and transition phase tasks and to demonstrate that no collateral duties have an adverse impact on implementing the Emergency Plan or FLEX strategies.**

JOB POSITION	TIME	TASK	Collateral Duty?
Shift Manager	(1) T = 0 – 15 min (2) T= 15- 30 min (3) T = 1 hr. (4) T = 1 – 1.5 hr. (5) T = 0 – until EOF is operational	(1) Assess event and declare SAE; EI-1, SEP Suppl (2) Approve Notification Message Form and direct communicator to make notifications / Direct SAE evacuation & accountability; EI-3, EI-12.1 (3) Declare ELAP / Declare GE / Develop PAR; EOP 3.0, EI-1, SEP Supp. 1, EI-6.13 (4) Approve Notification Message Form and direct communicator to make notifications / Call SAFER / Direct Security to enable FLEX equipment access / ED responsibilities; EI-3, FSG-100 (5) Perform oversight and ED responsibilities	No
Control Room Supervisor	(1) T = 0 – 1 hr. (2) T = 1 hr. - duration	(1) Direct immediate plant actions; EOP-3 (2) Direct and coordinate EOP / ELAP actions: FSGs	No
Shift Technical Advisor / Shift Engineer	(1) T = 0 – until mode 4	(1) Technical Support / Plant monitoring and assessment including performance of safety function checks; EOP-1, EOP-3	No
NCO #1	(1) T = 0 – 0.5 hr. (2) T = 2 - 5 hr. (3) T = 7 – 8 hr. (4) T = 0.5 – duration	(1) Immediate plant actions including reactor trip response / Isolate controlled bleed-off; EOP-1, EOP-3 (2) Perform PCS Cooldown; EOP-3 (3) Coordinate Steam Generator makeup; FIG-4 (4) Plant monitoring	No
NCO #2	(1) T = 0 – 1 hr. (2) T = 4 – 6 hr. (3) T = 7 – 8 hr. (4) T = 10 – 11hr. (5) T = 0.5 – duration	(1) Immediate plant actions including reactor trip response / Coordinate alignment of gravity feed from T-81 to T-2; EOP-1, EOP-3 (2) Perform FLEX generator breaker alignment; FIG-1 (3) Coordinate PCS makeup through installed charging pumps; FSG-1 (4) Coordinate SFP fill / spray; FIG-1 (5) Plant monitoring	No

**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 2**

JOB POSITION	TIME	TASK	Collateral Duty?
NPO #1	(1) T = 0 – 0.5 hr. (2) T = 1 – 2 hr. (3) T = 2 – 4 hr. (4) T = 4 – 6 hr. (5) T = 6 – 7 hr. (6) T = 7 - duration	(1) SBO Load shed (15 min.); EOP-3 (2) Conduct debris removal assessment / setup portable lighting at FLEX bldg. (as needed); FSG-5 (3) Support movement of FLEX equipment to staging areas; FIG-1, FIG-2 (4) Layout and connect FLEX generator cables; FIG-1 (5) Start FLEX generator and energize electrical buses / Energize battery chargers; FIG-1, FSG-4 (6) Monitor FLEX generator operation; FIG-1	No
NPO #2	(1) T = 0 – 0.5 hr. (2) T = 0.5 – 1 hr. (3) T = 1 – 2 hr. (4) T = 2 – 3 hr. (5) T = 3 – 4 hr. (6) T = 4 – 6 hr. (7) T = 6 – 7 hr. (8) T = 7 – 8 hr. (9) T = 8 - duration	(1) Reports to CR. Available for plant response actions (2) Perform Supplement 28 actions; EOP-3 (3) Obtain safety gear needed to access SFP roof hatch; FIG-8 (4) Establish FHB ventilation; FIG-8 (5) Layout and connect SFP spray - makeup hoses (SFP area only); FIG-3 (6) Layout and connect feedwater hoses for FLEX pump; FIG-4 (7) Connect FLEX pump and manifold; FIG-2 (8) Start FLEX pump and vent lines; FIG-2 (9) Monitor FLEX pump operation; FIG-2	No
NPO #3	(1) T = 0 – 0.5 hr. (2) T = 0.5 – 1 hr. (3) T = 1 – 3 hr. (4) T = 3 – 4 hr. (5) T = 4 – 6 hr. (6) T = 6 – 7 hr. (7) T = 7 - duration	(1) Reports to CR. Available for plant response actions (2) Perform Supplement 28 actions; EOP-3 (3) Conduct debris removal assessment and perform debris removal; FSG-5, FSG-100 (4) Layout and connect SFP spray- makeup hoses (SFP area only); FIG-3 (5) Layout and connect feedwater hoses for FLEX pump; FIG-4 (6) Connect FLEX pump and manifold; FIG-2 (7) Support steam generator makeup; FIG-4	No
NPO #4	(1) T = 0 – 0.5 hr. (2) T = 0.5 – 1 hr. (3) T = 1 – 3 hr. (4) T = 4 – 6 hr. (5) T = 7 – 8 hr. (6) T = 12 - duration.	(1) Reports to CR. Available for plant response actions (2) Perform Supplement 28 actions; EOP-3 (3) Conduct debris removal assessment and perform debris removal; FSG-5, FSG-100 (4) Layout and connect feedwater hoses for FLEX pump; FIG-4 (5) Support initial lineup and start of installed charging pump for PCS makeup; FSG-1 (6) Begin and be available to support boron batching operations as required for PCS inventory control. (FIG-5)	No

**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 2**

<b>JOB POSITION</b>	<b>TIME</b>	<b>TASK</b>	<b>Collateral Duty?</b>
NPO #5	(1) T = 0 – 1 hr. (2) T = 1 – 2 hr. (3) T = 4 – 6 hr. (4) T = 6 – 8 hr. (5) T = 8 – 11 hr. (6) T = 11 - duration	(1) Investigates EDGs failure to start (2) Perform electrical deep load shed; FSG-4 (3) Layout and connect FLEX generator cables; FIG-1 (4) Stage, hookup and start FLEX air compressor; FIG-9 (5) Layout and connect SFP hoses (stairwell to pump) / Commence spray-makeup as needed; FIG-3 (6) Support SFP spray – makeup as needed	No
NPO #6	(1) T = 0 – 1 hr. (2) T = 1 – 2 hr. (3) T = 3 – 4 hr. (4) T = 4 – 6 hr. (5) T = 6 – 7 hr. (6) T = 7 – 8 hr. (7) T = 8 – 11 hr. (8) T = 12 - duration	(1) Align gravity feed from T-81 to T-2; EOP-3 (2) Valve-in nitrogen bank 9; EOP-3 (3) Layout and connect SFP spray–makeup hoses (SFP area only); FIG-3 (4) Layout and connect feedwater hoses for FLEX pump; FIG-4 (5) Connect FLEX generator and energize electrical buses / Energize battery chargers; FIG-1, FSG-4 (6) Establish battery room ventilation; FIG-8 (7) Layout and connect SFP spray-makeup hoses (stairwell to pump); FIG-3 (8) Begin and be available to support boron batching operations as required for PCS inventory control. (FIG-5)	No
Communicator	(1) T = 0 – 0.5 hr. (2) T = 0.5 – 1 hr. (3) T = 1 - duration	(1) Performs off-site notifications for SAE declaration; EI-3 (2) Performs off-site notifications for GE declaration; EI-3 (3) Performs periodic off-site notifications and communications as needed	
Chemistry Technician	(1) T = 0 – 1 hr. (2) T = 1 – 2 hr. (3) T = 2 – 4 hr. (4) T = 4 – 6 hr. (5) T = 6 – 8 hr.	(1) Report to CR to be available for dose assessment if needed (2) Support debris removal assessment / Setup portable lighting at FLEX building (as needed); FSG-5 (3) Support movement of FLEX equipment to staging areas; FIG-1, FIG-2 (4) Support layout and connection of FLEX generator cables; FIG-1 (5) Support staging and hookup of FLEX air compressor; FIG-9	No
RP #1	(1) T = 0 – 1 hr. (2) T = 2 – 3 hr. (3) T = 3 – 4 hr. (4) T = 4 – 6 hr. (5) T = 7 – 8 hr.	(1) Lock and revise posting for select Auxiliary and Ctmt. Building doors; W-RSD-H-018 / Stage monitoring equipment for personnel contamination monitoring (2) Support establishing FHB ventilation; FIG-8 (3) Support layout and connection of SFP spray-makeup hoses (SFP area only); FIG-3 (4) Support layout and connection of feedwater hoses for FLEX pump ; FIG-4 (5) Support establishing battery room ventilation; FIG-8	No

**Palisades Nuclear Plant Phase 2 Staffing Assessment  
Attachment 2**

<b>JOB POSITION</b>	<b>TIME</b>	<b>TASK</b>	<b>Collateral Duty?</b>
RP #2	(1) T = 0 - duration	(1) Available for in-plant and on-site surveys and job coverage as needed and directed by the SM	No
Security	(2) T = 0 – duration (3) T = 1 – 2 hr.	(2) Access control and onsite personnel accountability (3) Initiate security actions to open FLEX equipment access paths	No
(2) Augmented Staff	(1) T = 8 – 10 hr. (2) T = 10 - duration	(1) Obtain fuel transfer trailer, set-up transfer pumps, and commence FLEX refueling strategy per FIG-10 (2) Implement FLEX equipment refuel strategy; FIG-10	No
(2) Augmented Staff	(1) T = 8 – 11 hr. (2) T = 11 – 15 hr. (3) T = 17- 20 hr.	(1) Support layout and connection of SFP spray-makeup hoses (stairwell to pump); FIG-3 (2) Perform follow-up debris clearing of site access road (as needed); FSG-5, FSG-100 (3) Setup communications generators and equipment; FSG-101.	No