



10 CFR 50.54(f)

April 26, 2013  
LR-N13-0083

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

Salem Generating Station, Units 1 and 2  
Renewed Facility Operating License Nos. DPR-70 and DPR-75  
NRC Docket Nos. 50-272 and 50-311

Subject: Salem Generating Station's Response to March 12, 2012, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, Enclosure 5, Recommendation 9.3, Emergency Preparedness – Staffing, Requested Information Items 1, 2, and 6 - Phase 1 Staffing Assessment

- References:
- (1) US Nuclear Regulatory Commission (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
  - (2) PSEG letter LR-N12-0143, "PSEG Nuclear LLC's 60-Day Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated May 10, 2012
  - (3) NEI 12-01, "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications Capabilities," Revision 0, dated May 2012
  - (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
  - (5) NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012

Background

On March 12, 2012, the NRC staff issued the Reference 1 request for information pursuant to 10 CFR 50.54(f), regarding the Near-Term Task Force (NTTF) review of insights from the Fukushima Dai-ichi accident. Enclosure 5 of Reference 1 contains the specific Requested Actions, Requested Information, and Required Response associated with Recommendation 9.3 for Emergency Preparedness - Staffing.

In accordance with Reference 1, Enclosure 5, PSEG Nuclear LLC (PSEG) submitted a 60-day response letter (Reference 2) to describe its course of action for performing the requested actions and providing the requested information. Consistent with the actions described in Reference 2, the Salem Generating Station (SGS) responses to the NTTF Recommendation 9.3: Emergency Preparedness – Staffing, Requested Information Items 1, 2, and 6, are provided herein for SGS Units 1 and 2.

PSEG's staffing assessment follows a two-phased approach for evaluating a beyond-design-basis, large scale external event, consistent with the guidance of NEI 12-01 (Reference 3) as endorsed by the NRC in Reference 4. Phase 1 of the assessment addresses the staffing levels that are needed to respond to a multi-unit, beyond-design-basis external event (BDBEE) that results in an extended loss of alternating current (AC) power and impeded access to the site, not including the staffing needed to implement actions that address NRC Order EA-12-049 (Reference 5). The Phase 2 assessment, with an estimated completion date of June 12, 2014 as provided in Reference 2, will address staffing to implement diverse and flexible coping strategies (FLEX) in response to the Reference 5 Order.

Enclosure 1 to this letter provides the Phase 1 staffing assessment report for SGS Units 1 and 2. This assessment concludes that the minimum complement of on-shift staff allowed by the current PSEG Emergency Plan is capable of responding to the Phase 1 scenario.

In accordance with Reference 2, Enclosure 1, this letter provides the response to the following information requests:

- 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

Requested Information Item 1

*It is requested that addressees 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 (Reference 1, Enclosure 5). 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:*

- *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 Near-Term Task Force (NTTF) Recommendation 4.2. 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.*

- *New staff or functions identified as a result of the assessment.*
- *Collateral duties (personnel not being prevented from timely performance of their assigned functions).*

#### Response to Requested Information Item 1

Enclosure 1 provides the requested Phase 1 staffing assessment, which concludes that on-shift staffing levels prescribed by the PSEG Emergency Plan are sufficient to support the SGS response to a multi-unit BDBEE that results in an extended loss of AC power and impeded access to the site. The enclosed assessment also includes a prioritization of augmented response capabilities during the period of limited site access. The response to the specific items included in Requested Information Item 1 is as follows:

- These actions will be addressed as part of the Phase 2 staffing assessment. Consistent with PSEG's course of action presented in Reference 2, and the two-phased approach to the staffing assessment described in NEI 12-01 (Reference 3), the Phase 1 staffing assessment did not include implementation of FLEX strategies in response to NTF Recommendation 4.2.
- The Phase 1 staffing assessment did not identify the need for new staff or functions. A prioritized list of augmented response personnel during the period of limited site access is provided in Section 9 of the enclosed staffing assessment. This list was developed based on a prioritization of the skill sets considered to be beneficial during the BDBEE scenario prescribed by NEI 12-01 (Reference 3).
- The staffing assessment determined that personnel were not prevented from timely performance of their functions due to collateral duties. There are no conflicts or overlaps in functions or tasks required to be performed by on-shift operations and support personnel during the initial six hour period with no site access.

#### 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.*

#### Response to Requested Information Item 2

The Phase 2 assessment will be completed in accordance with the schedule provided in Reference 2. The Phase 1 staffing assessment (Enclosure 1) did not identify any required modifications. Section 4 of Enclosure 1 identifies potential enhancements which are being tracked via PSEG's corrective action program.

Requested Information Item 6

*Identify changes 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, multiunit event, including any new or revised agreements with offsite resource providers (e.g., staffing, equipment, transportation, etc.).*

Response to Requested Information Item 6

The Phase 1 staffing assessment provided in Enclosure 1 did not identify any changes to the Emergency Plan requirements for on-shift staffing, augmented staffing, or agreements with offsite resource providers.

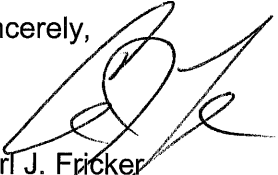
There are no new regulatory commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact Mrs. Emily Bauer at 856-339-1023.

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

Executed on 4/26/2013  
(Date)

Sincerely,

  
Carl J. Fricker  
Site Vice President  
Salem Generating Station

Enclosure 1: Salem Generating Station Units 1 and 2 NEI 12-01 Phase 1 Staffing Assessment Report

cc: Mr. E. Leeds, Director of Office of Nuclear Reactor Regulation  
Mr. W. Dean, Administrator, Region I, NRC  
Mr. J. Whited, Project Manager, NRC  
NRC Senior Resident Inspector, Salem  
Mr. P. Mulligan, Manager IV, NJBNE  
Salem Commitment Tracking Coordinator  
PSEG Corporate Commitment Tracking Coordinator

# **Salem Generating Station Units 1 and 2**



## **NEI 12-01 PHASE 1 STAFFING ASSESSMENT REPORT**

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## **1. Introduction**

This report documents the Phase 1 staffing assessment for Salem Generating Station (SGS) Units 1 and 2. This report is in response to the Nuclear Regulatory Commission's (NRC's) March 12, 2012, request for information pursuant to 10 CFR 50.54(f) regarding the Near-Term Task Force (NTTF) review of insights from the Fukushima Dai-ichi accident (Reference 1). Enclosure 5 of Reference 1 requests licensees to assess the staffing levels necessary to respond to a multi-unit, beyond-design-basis external event (BDBEE) that results in an extended loss of alternating current (AC) power and impeded access to the site. In its letter to the Nuclear Energy Institute (NEI) dated May 15, 2012 (Reference 2), the NRC staff endorsed the use of NEI 12-01 (Reference 3) as an acceptable means of conducting the requested staffing assessment. The NRC-endorsed guidance of NEI 12-01 describes a two-phased approach to the staffing assessment. The SGS Phase 1 assessment described herein addresses the staffing levels needed to respond to a multi-unit BDBEE using existing station blackout (SBO) response strategies. The SGS Phase 2 assessment, which will be completed in accordance with the schedule provided in PSEG's 60-day response letter (Reference 4), will include an assessment of the staffing needed to implement diverse and flexible coping strategies (FLEX) in response to NRC Order EA-12-049 (Reference 5). The SGS Phase 1 staffing assessment was conducted using NEI 12-01, NEI 10-05, and NRC Interim Staff Guidance NSIR/DPR ISG-01 (References 3, 6, and 7, respectively). PSEG's Hope Creek Generating Station (HCGS) is a single-unit plant that is co-located with SGS Units 1 and 2. A HCGS Phase 1 staffing assessment was performed separately and supports this SGS Phase 1 staffing assessment.

## **2. NEI 12-01 Phase 1 Staffing Assessment Overview**

Phase 1 of the NEI 12-01 On-Shift Staffing Analysis (OSA) assesses a BDBEE resulting in an extended loss of AC power scenario and impeded site access, using the minimum staffing in the Emergency Plan. Existing strategies for responding to an extended loss of AC power affecting both SGS units were evaluated during the OSA. Although the current Emergency Plan includes provisions for personnel from HCGS to support the response to an emergency event at SGS, no HCGS resources were used in this SGS Phase 1 assessment. The staffing assessment addressed the ability of the on-shift staff to perform emergency response functions during the initial phase of the event, prior to the arrival of the augmented Emergency Response Organization (ERO) that is delayed due to the limited site access assumed in the analysis.

The following minimum on-shift personnel staffing table reflects staffing levels consistent with PSEG Nuclear LLC Emergency Plan, Figure 3-1, and was used for performance of this Phase 1 staffing assessment:

PSEG Nuclear LLC Emergency Plan, Rev 28 On-Shift Staffing Emergency Response Organization	
Position	On-Shift
Shift Manager (SM)	1
Control Room Supervisor (SRO) <sup>1</sup>	2
Field Supervisor/Initial Operations Support Center (OSC) Coordinator	1
Shift Technical Advisor (STA)	1
Reactor Operator (RO)	2
Plant Operator (RO)	2
Control Room Communicator <sup>2</sup>	2
Equipment Operator (NLO)	5
Radwaste Operator <sup>3</sup> (NLO)	1
Radiation Protection (RP) Technician <sup>4</sup>	4
Chemistry Technician <sup>5</sup>	2
Shift Maintenance Supervisor	1
I&C Technician <sup>8</sup>	2
Shift Electrician <sup>8</sup>	2
Total:	28
Fire Department <sup>6</sup>	5
Rescue Operations/First Aid <sup>7</sup>	2
Security	Security plan

<sup>1</sup> One Unit Supervisor assigned to each unit.

<sup>2</sup> Two Control Room Communicators for offsite notifications which typically includes one additional RO and one additional Equipment Operator.

<sup>3</sup> This position is staffed by a dedicated Equipment Operator.

<sup>4</sup> Two RP Technicians per station. This assessment assumes the two SGS technicians are available, and did not use HCGS technicians to support SGS.

<sup>5</sup> One Chemistry Technician per station, for a total of two, provides chemistry sampling support. This assessment assumes the SGS technician is available, and did not use the HCGS technician to support SGS.

<sup>6</sup> Fire Department is a separate department. The Fire Department consists of one Fire Department Leader and four Fire Department Members.

<sup>7</sup> Rescue Operations/First Aid is a collateral duty of the Fire Department.

<sup>8</sup> One Instrumentation and Control (I&C) Technician and one Shift Electrician per station. This assessment assumes the SGS I&C Technician and Shift Electrician are available, and did not use HCGS personnel to support SGS.



### **3. NEI 12-01 Phase 1 Staffing Assessment Results**

The on-shift and augmented staffing levels prescribed by Section 3 of the Emergency Plan (Reference 8) are sufficient to support the SGS response to a multi-unit SBO event with impeded site access, consistent with the NEI 12-01 (Reference 3) assumptions for the Phase 1 staffing assessment. No HCGS resources were used for the Phase 1 SGS staffing assessment. No conflicts or overlaps in functions or tasks required to be performed by on-shift operations and support personnel were identified during the initial six-hour period with no site access; personnel were not prevented from timely performance of their functions due to collateral duties. The initial phase of SGS response to a SBO includes use of the SBO air compressor and SBO diesel in accordance with emergency operating procedure EOP-LOPA-1, as indicated on Attachment 1, Table 2A.

The tabletop procedural analysis performed in support of this staffing assessment determined that the minimum on-shift staff as shown in Attachment 1, Table 1 can perform the actions required by operating and Emergency Plan procedures in the initial six-hour period. Use of the SBO air compressor and the SBO diesel fell within those procedures. Plant conditions did not require implementation of any other strategies that involve the use of portable equipment and consumables during the six hour period of the Phase 1 analysis (i.e., there are no transition phase actions per Section 3.1 of NEI 12-01). Response to the multi-unit SBO did not require entry into any severe accident management guideline (SAMG).

The PSEG Emergency Plan includes sharing of resources between Salem and Hope Creek (RP Technicians, Chemistry Technicians, and Fire Department). SGS staffing was determined to be adequate to respond to the Phase 1 scenario without the use of HCGS resources.

Augmented staff were prioritized for response during the limited site access period (6 to 24 hours post-event), as shown in Section 9.

### **4. NEI 12-01 Phase 1 Enhancements**

During the tabletop procedural analysis, enhancements to existing procedures and processes were identified that could be implemented to improve the current capabilities to respond to a BDBEE. This Phase 1 staffing assessment did not assume implementation of these enhancements. The enhancements, which have been entered into the PSEG Corrective Action Program under order 70138668, are as follows:

- Implement process improvements related to augmenting on-shift personnel with resources that possess specific skill sets (e.g., Electricians, Mechanics, etc.) in addition to the ERO personnel, during a period of limited site access. This enhancement will consider the expanded response activation criteria in Section 3.8 of NEI 12-01 (Reference 3), and is discussed in Section 9 of this staffing assessment.
- Operating procedures S1(2).OP-SO.500-0125(Q), "SBO Diesel - Vital Battery Chargers," are currently written for charging one 28V bus and three 125V buses. Consider expanding procedural flexibility to include steps for charging two 28V buses and two 125V buses.

## 5. Compensatory Actions

No compensatory actions to procedures or processes were identified as being required to support the assessment of on-shift positions, as summarized in Attachment 1, Table 1.

## 6. Phase 1 Staffing Assessment Details

The OSA tabletop review for SGS was conducted on February 6, 2013, using the guidance of NEI 12-01 (Reference 3) and NEI 10-05 (Reference 6). The OSA was conducted in the Emergency Operations Facility (EOF), which enabled ready access to procedures and other support documents. Subject matter experts and an outside consultant were assembled to provide analysis support.

The following personnel were present to complete the staffing assessment:

<b>Personnel (Position/Title)</b>	<b>Number</b>	<b>Organization/Department</b>
Senior Reactor Operator (SRO)	1	Operations
NEO	1	Operations
NCO	1	Operations
Radiation Protection Technician	1	RP
EP Manager	1	EP
Corporate Functional Area Manager - Security	1	Security
Risk Management Engineer	1	Engineering
Electrical Engineer	1	Engineering
Fukushima Response	1	Fukushima Team
EP Specialist	3	EP Consulting, LLC

The staffing assessment was conducted using a tabletop procedural analysis of the on-shift actions performed for both units to address an extended SBO with SGS procedures to determine if tasks have been sufficiently analyzed for performance by the minimum on-shift staff. This tabletop procedural analysis included the identification of needed resources and the time required to complete identified actions for the first six hours. The following provides a summary of the process that was used. Attachment 1 contains the tables that are referenced herein.

Each on-shift position from the PSEG Nuclear LLC Emergency Plan, Figure 3-1 was entered in , Table 1. For position titles with more than one position holder, a unique sequential number was assigned to each position (e.g. RO1, RO2 etc.). The Emergency Plan reference containing the requirement for the position to be on-shift was then entered into column 3 of Table 1. Using only the on-shift positions entered in Table 1, the following additional Attachment 1 tables were completed by entering the shift position that fills the described role, or performs the specific function or tasks:

- Table 2 - Plant Operations & Safe Shutdown
- Table 2A – Procedural Task Timing
- Table 3 – Firefighting (not applicable for this event analysis)
- Table 4 – Radiation Protection & Chemistry
- Table 5 - Emergency Plan Implementation

The OSA was conducted by first reviewing the event initial conditions. This review provided the team with a basic understanding of the postulated event conditions and resulting emergency classifications. The SRO reviewed Emergency Operating Procedure (EOP), Abnormal Operating Procedure (AOP), and other operating procedure actions and communicated the actions to the team. Specific site procedures referenced during assessment of this postulated event are provided in Table 2A.

Specific resources needed to perform initial event response actions were identified from the EOP, AOP, or other operations procedures and documented using the guidance in NEI 12-01 and the NEI 10-05 documentation process.

Following completion of each of the above tables, each on-shift position assigned to the associated table was referenced on Table 1, column 4, "Role in Table#/Line#." Table 1, column 5 identifies whether the associated task required compensatory actions. The SGS Phase 1 staffing assessment did not identify any required compensatory actions.

## **7. Assumptions**

The extended loss of AC power event was evaluated using the on-shift staff consistent with current Emergency Plan staffing levels (Reference 8), with the following assumptions, consistent with NEI 12-01 (Reference 3) and applicable assumptions from NEI 10-05 (Reference 6).

### **NEI 12-01 – Assumptions for Staffing Assessment:**

1. A large-scale external event occurs that results in:
  - all on-site units affected
  - extended loss of AC power
  - impeded access to the units
2. Initially, all on-site reactors are operating at full power and are successfully shut down.
3. No Hostile Action is directed at the affected site during the period that the site is responding to the event.
4. The event impedes site access as follows:
  - A. Post-event time: 6 hours – No site access. This duration reflects the time necessary to clear roadway obstructions, use different travel routes, mobilize alternate transportation capabilities (e.g., private resource providers or public sector support), etc.
  - B. Post-event time: 6 to 24 hours – 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).
  - C. 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. On-shift personnel are limited to the minimum complement allowed by the Emergency Plan (i.e., the minimum required number for each required position).
6. The Phase 1 staffing assessment uses the applicable actions from the SBO coping strategies in place at the time of the assessment.

7. The Phase 1 staffing assessment includes the INPO IER improvement actions already implemented at the time of the assessment.

NEI 10-05 - Assumptions for Staffing Assessment:

8. On-shift personnel can report to their assigned response locations within timeframes sufficient to allow for performance of assigned actions.
9. The on-shift personnel possess the necessary radiation worker qualifications to obtain normal dosimetry and to enter radiologically controlled areas (but not high, locked high or very high radiation areas) without the aid of a Radiation Protection Technician.
10. Personnel assigned to the major response area of plant operations and safe shutdown meet the requirements and guidance established by NRC regulations and are able to satisfactorily perform the functions and tasks necessary to achieve and maintain safe shutdown. Staff performance within this major response area is not evaluated as part of this staffing assessment, unless a role/function/task from another major response area is assigned as a collateral duty.
11. On-site security organization: Performance of this function is regularly analyzed through other station programs and is evaluated here when a role or function from another major response area is assigned as a collateral duty.
12. Individuals holding the position of Radiation Protection Technician or Chemistry Technician are qualified to perform the range of tasks expected of their position.
13. 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. This assumption does not apply to emergency notification to an Offsite Response Organization (ORO) or the NRC.
14. 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.
15. The analyzed events occur during off-normal work hours at a time when augmented ERO responders are not at the site (e.g., during a backshift, weekend or holiday). For purposes of this analysis, and consistent with NEI 12-01 assumption 4, 360 minutes (6 hours) will be used as the time period for the conduct of on-shift ERO response actions.

Plant Specific Assumptions:

16. Equipment credited in current coping strategies remains available for use.

Assumptions 17, 18 and 19 are consistent with the capabilities of installed plant equipment as described in the SGS overall integrated plan for FLEX implementation (Reference 9).

17. Auxiliary feedwater (AFW) supply from each SGS unit's auxiliary feedwater storage tank (AFST) is adequate for 12 hours of turbine-driven AFW pump operation.
18. Vital station batteries' rated capacity is sufficient for four hours duration at calculated loading levels including load shedding activities.
19. Spent Fuel Pool Actions are unnecessary during the initial six-hour Phase 1 staffing assessment period.

## 8. Security Considerations

Existing coping strategies do not anticipate the use of Security Officers to perform duties unrelated to their assigned roles. Security Officers will perform functions within their current roles such as monitoring and controlling site access and providing compensating measures for any vital area doors that may need to remain open to maintain room environmental conditions.

## 9. Expanded Response Capability

PSEG assumes that augmented ERO resources will be available at six hours post-event time. This is reasonable based on ERO notification protocols and the various methods available to restore site access.

Regarding notification of the augmented staff; procedure EP-AA-120-1007, Maintenance of Emergency Response Organization, provides the following direction:

“All ERO Responders, when aware of a major loss or degradation of the electrical grid having the potential to negatively impact ERO notification methods, (i.e., the pager system, cellular telephones or home telephones) are expected to **ENSURE** their home and family are safe, then immediately **REPORT** to the EOF. ERO personnel traveling to the EOF should drive cautiously as unexpected road hazards may be encountered. ERO Responder safety is of primary concern in fulfilling the obligation to protect the health and safety of the public and plant employees.”

Upon arrival at the EOF, personnel will be dispatched to the station as needed to augment the on-shift ERO. Regarding site access, the analysis assumed transportation by helicopter or boat or van with a maximum capacity of 10 people per transportation occurrence from a designated staging location.

PSEG maintains a robust on-site ERO that includes maintenance, radiation protection, chemistry and fire department personnel as members of the on-shift ERO. The focus of an “expanded response capability” at PSEG will be to enhance the performance of unit-specific accident assessment and mitigation functions. The suggested criteria for activation of expanded response capability in Section 3.8 of NEI 12-01 (Reference 3) are as follows:

- “Loss of ALL offsite and ALL on-site power sources to AC emergency busses at more than 1 unit, OR
- Plant parameters or conditions require implementation of SAM strategies for more than 1 unit.”

Although the Phase 1 staffing assessment confirmed the adequacy of on-shift staffing, PSEG plans to enhance its current procedures and processes and implement expanded response capability with consideration of the above NEI 12-01 criteria. However, given that the total range of effects to the site as a result of a BDBEE cannot be fully anticipated, the Emergency Coordinator, Shift Manager, and other ERO personnel will also maintain a flexible response strategy for determining which additional ERO functions are needed and how many resources to apply. The Emergency Coordinator will retain the ability to allocate unit-specific ERO functions and resources based on priorities at hand, given the challenges presented to the site following a BDBEE. This enhancement has been entered into the PSEG Corrective Action Program as discussed in Section 4.

Table 3.1 of NEI 12-01 lists the emergency response functions identified by the NEI Beyond Design Basis Event Response Staffing Study Task Force as meeting these requirements for Phase 1 of the staffing assessment.

The expanded response ERO functions in Table 3.1 of NEI 12-01 are:

➤ Unit Response Coordination	Technical Support Center (TSC)
➤ Unit Response Coordination	TSC
➤ Operations Coordination	TSC
➤ Maintenance Coordination	TSC or OSC
➤ Engineering Coordination	TSC or EOF
➤ Engineering Assessments	TSC or EOF
➤ Evaluation of SAMG strategies	TSC or EOF
➤ Unit In-Plant Team Coordination	OSC
➤ Non-Licensed Operators	OSC
➤ Mechanical Maintenance Repair and Corrective Action	OSC
➤ Electrical Maintenance Repair and Corrective Action	OSC
➤ I & C Repair and Corrective Action	OSC
➤ Implementation of SAM Strategies	OSC
➤ Evaluation of Transition Phase Coping Strategies	TSC or EOF
➤ Implementation of Transition Phase Coping Strategies	OSC

PSEG has reviewed the expanded response functions and has concluded that, between the on-shift ERO staffing and the augmented ERO staffing, all functions are adequately addressed in accordance with our approved Emergency Plan.

The PSEG assessment team continued the evaluation to determine prioritization of additional augmented response capabilities during the period of limited site access (6 to 24 hours post-event). Augmented staffing (above the Emergency Plan augmentation) was prioritized during the limited site access period to include trained personnel that possessed the desired skill sets that were considered to be beneficial to PSEG's response to the BDBEE scenario.

The highest priority for response and support staff included:

- 1 Electrical Maintenance Supervisor
- 2 Electricians
- 2 Mechanics
- 2 ROs
- 2 EOs
- 1 Mechanical Maintenance Supervisor

The second priority for response and support staff included:

- 1 Site Services Supervisor – refuel diesels
- 2 Site Services – refuel diesels
- 1 Stock Handler – parts and delivery
- 2 Electricians – restore power
- 2 Mechanics
- 2 I&C Technician – restore power

The next priority was determined to be shift relief.

## **10. References**

1. US Nuclear Regulatory Commission (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
2. 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
3. NEI 12-01, "Guideline for Assessing Beyond-Design-Basis Accident Response Staffing and Communications Capabilities," Revision 0, dated May 2012
4. PSEG letter LR-N12-0143, "PSEG Nuclear LLC's 60-Day Response to NRC Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," dated May 10, 2012
5. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012
6. NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities." Revision 0, dated June 2011
7. NSIR/DPR ISG-01, "Interim Staff Guidance - Emergency Planning for Nuclear Power Plants," Revision 0, dated November 2011
8. PSEG Nuclear LLC Emergency Plan, Section 3
9. PSEG letter LR-N13-0034, "PSEG Nuclear LLC's Overall Integrated Plan for the Salem Generating Station in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 28, 2013

## **Attachment 1**

### **Staffing Assessment Tables**



## On-Shift Staffing Analysis for the Salem Generating Station

TABLE 1 – On-Shift Positions				
Line	On-shift Position	Emergency Plan Reference	Role in Table#/Line#	Compensatory Actions Required?
1.	Shift Manager (SM)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L1 T5/L1 T5/L3 T5/L5 T5/L6 T5/L7 T5/L9 T5/13	No
2.	Control Room Supervisor (SRO1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L2	No
3.	Control Room Supervisor (SRO2)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L3	No
4.	STAWork Control Supervisor (STA)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L4	No
5.	Reactor Operator (RO1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L5	No
6.	Reactor Operator (RO2)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L6	No
7.	Plant Operator (PO1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L7 T5/L	No
8.	Plant Operator (PO2)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L8	No
9.	Control Room Communicator RO3	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L9 T5/L8 T5/L12	No
10.	Control Room Communicator (EO7)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L10 T5/L8	No
11.	Equipment Operator (NLO) (EO1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L11	No
12.	Equipment Operator (NLO) (EO2)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/12	No
13.	Equipment Operator (NLO) (EO3)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/13	No

### On-Shift Staffing Analysis for the Salem Generating Station

**TABLE 1 – On-Shift Positions**

Line	On-shift Position	Emergency Plan Reference	Role in Table#/Line#	Compensatory Actions Required?
14.	Equipment Operator (NLO) (EO4)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/14	No
15.	Equipment Operator (NLO) (EO5)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L15	No
16.	Radwaste Operator EO6	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L16	No
17.	Shift Maintenance Supervisor (MS1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L17	No
18.	Scheduled I&C Technician (IC1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/18	No
19.	Shift Electrician (SE1)	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T2/L19	No
20.	RP Technician	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T4/L1	No
21.	RP Technician	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T4/L3	No
22.	Central Alarm Station Operator	PSEG Nuclear LLC Emergency Plan, Rev 28, Figure 3-1	T5/14	No

## On-Shift Staffing Analysis for the Salem Generating Station

TABLE 2 - Plant Operations & Safe Shutdown			
Note: See Table 2A for EOP/AB actions			
Line	Generic Title/Role	On-Shift Position	Task Performance Validation
<i>Two Units - Minimum Operations Crew Necessary to Implement EOP, ABs, or SAMGs if applicable</i>			
1.	Shift Manager (SM)	Shift Manager	Operator Training
2.	Control Room Supervisor (SRO1) <sup>1</sup>	Unit Supervisor	Operator Training
3.	Control Room Supervisor (SRO2) <sup>1</sup>	Unit Supervisor	Operator Training
4.	STA	Shift Technical Advisor	Operator Training
5.	Reactor Operator (RO1)	Reactor Operator	Operator Training
6.	Reactor Operator (RO2)	Reactor Operator	Operator Training
7.	Plant Operator (PO1)	Plant Operator	Operator Training
8.	Plant Operator (PO2)	Plant Operator	Operator Training
9.	Control Room Communicator RO3	Reactor Operator	Operator Training
10.	Control Room Communicator (EO7)	Non Licensed Operator	Operator Training
11.	Equipment Operator (NLO) (EO1)	Non Licensed Operator	Operator Training
12.	Equipment Operator (NLO) (EO2)	Non Licensed Operator	Operator Training
13.	Equipment Operator (NLO) (EO3)	Non Licensed Operator	Operator Training
14.	Equipment Operator (NLO) (EO4)	Non Licensed Operator	Operator Training
15.	Equipment Operator (NLO) (EO5)	Non Licensed Operator	Operator Training
16.	Radwaste Operator <sup>3</sup> EO6	Non Licensed Operator	Operator Training
<i>Other (non-Operations) Personnel Necessary to Implement ABs and EOPs, or SAMGs if applicable</i>			
17.	Maintenance Supervisor	12 hour Maintenance Supervisor	Maintenance Training
18.	I&C Technician	I&C craft	Maintenance Training
19.	Shift Electrician	Electrical craft	Maintenance Training

## On-Shift Staffing Analysis for the Salem Generating Station

[illegible]

## On-Shift Staffing Analysis for the Salem Generating Station

Procedure Step/Actions			Performance Time (mins) After Procedure Implementation														
Proc/Step	Task	Re-source	0-10	10-20	20-30	30-40	40-50	50-60	60-75	75-90	90-105	105-120	120-150	150-180	180-240	240-300	300-360
	chargers																
EOP-LOPA-1, step 15	Send EOs to the non-operating 6 D/Gs	EO5 EO6 I/C1 SE1															
EOP-LOPA-1, step 18	Open 1/2 SJ1 or 2 and close 1/2 CV40 or 41	EO1 EO2															
EOP-LOPA-1, step 19	Close 1/2 SW26	EO3															
EOP-LOPA-1, step 23	1/2 Close containment isolation valves	EO3 EO4															
EOP-LOPA-1, step 24	1/2 Remove Control Power to MDAFP	EO1 EO2															
EOP-LOPA-1, step 25	Restore Off-site power IAW AB-Loop-1 (JET)	EO3 EO4															
	Trouble-shoot JET	I/C1 SE1															
EOP-LOPA-1, step 27	1/2 close seal injection valves	EO1 EO2															
EOP-LOPA-1,	Maintain S/G levels	PO1															

## On-Shift Staffing Analysis for the Salem Generating Station

**TABLE 2A – Procedural Task Timing**

Procedure Step/Actions			Performance Time (mins) After Procedure Implementation														
Proc/Step	Task	Re-source	0-10	10-20	20-30	30-40	40-50	50-60	60-75	75-90	90-105	105-120	120-150	150-180	180-240	240-300	300-360
step 34		PO2															
EOP-LOPA-1, step 35	1/2 shed nonessential loads	EO5 EO6								X							
EOP-LOPA-1, step 37&38	1/2 depressurize S/G	SRO1 SRO2 PO1 PO2								X							
Heat sink is maintained based on EOP actions, so there is no SAMG entry required.																	

**Notes:** Did not use Chemistry Technician or Site Protection Department (Fire Department) personnel

## On-Shift Staffing Analysis for the Salem Generating Station

TABLE 3 – Firefighting		
Line	Performed By	Task Analysis Controlling Method
1.	Not required by scenario	N/A
2.	Not required by scenario	N/A
3.	Not required by scenario	N/A
4.	Not required by scenario	N/A
5.	Not required by scenario	N/A

# On-Shift Staffing Analysis for the Salem Generating Station

**TABLE 4 – Radiation Protection & Chemistry**

Line	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)														
		0-10	10-20	20-30	30-40	40-50	50-60	60-75	75-90	90-105	105-120	120-150	150-180	180-240	240-300	300-360
1.	In-Plant Survey - On-Shift Position: RP1		X													
2.	Out of Plant Survey On-Shift Position:															
3.	Personnel Monitoring On-Shift Position: RP2		X (Control Point Coverage)													
4.	Chemistry function/task #1 – Describe: On-Shift Position: Chem Tech N/A *															
5.	Offsite Radiological Assessment On-Shift Position: N/A *															
6.	Other Site-Specific RP – Describe: On-Shift Position: N/A *															
7.	Chemistry function/task #2 – Describe: On-Shift Position: Chem Tech N/A *															

\* The Phase 1 scenario did not result the use of this on-shift position.



## On-Shift Staffing Analysis for the Salem Generating Station

**TABLE 5 – Emergency Plan Implementation**

<b>Line</b>	<b>Function/Task</b>	<b>On-Shift Position</b>
1.	Declare the Emergency Classification Level (ECL)	SM
2.	Approve Offsite Protective Action Recommendations	SM
3.	Approve content of State/local notifications	SM
4.	Approve extension to allowable dose limits	SM (Not Required)
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	SM
6.	ERO notification	SM
7.	Complete State/local notification form	SM
8.	Perform State/local notifications	EO7 RO3
9.	Complete NRC event notification form	SM
10.	Activate ERDS	RO3
11.	Offsite radiological assessment	Not Available
12.	Perform NRC notifications	EO7
13.	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	EO7 RO3
14.	Personnel accountability	SM and Security