



April 24, 2013

PG&E Letter DCL-13-040

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, MD 20852

10 CFR 50.54(f)

Docket No. 50-275, OL-DPR-80
Docket No. 50-323, OL-DPR-82
Diablo Canyon Units 1 and 2
Response to March 12, 2012, NRC 10 CFR 50.54(f) Request for Information
Regarding Recommendation 9.3, Phase 1 Staffing Assessment

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
2. PG&E Letter DCL-12-048, "60-Day Response to 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," dated May 9, 2012
3. PG&E Letter DCL-12-061, "Pacific Gas and Electric Company's Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Emergency Preparedness Aspects of Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated June 7, 2012

Dear Commissioners and Staff:

On March 12, 2012, the Nuclear Regulatory Commission staff issued Reference 1. Enclosure 5 of Reference 1 contains specific Requested Information and Required Responses associated with Near-Term Task Force Recommendation 9.3 for Emergency Preparedness Staffing.



In accordance with Reference 1, Enclosure 5, Staffing, Pacific Gas and Electric Company (PG&E) submitted its alternative course of action for providing the requested information in Reference 2. The alternative course of action included revised due dates and the basis for Staffing Requests 1, 2, and 6. In accordance with Reference 2, PG&E submitted Reference 3, which provided its response to Staffing Requests 3, 4, and 5.

Enclosure 1 of this letter provides PG&E's Phase 1 Staffing Assessment.

PG&E's response to Staffing Requests 1, 2, and 6 are provided in Enclosure 2.

PG&E is making regulatory commitments (as defined by NEI 99-04) in Enclosure 3 of this letter. This letter includes no revisions to existing regulatory commitments.

If you have any questions, or require additional information, please contact Mr. Terence L. Grebel at (805) 545-4160.

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

Executed on April 24, 2013.

Sincerely,

Barry S. Allen
Site Vice President

ckf6/SAPN 50465913

Enclosures

cc: Diablo Distribution
cc:/enc: Thomas R. Hipschman, NRC, Senior Resident Inspector
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Diablo Canyon Power Plant Phase 1 Staffing Assessment

1 Introduction

Enclosure 5 of the 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, requests Pacific Gas and Electric Company (PG&E) to provide an assessment of the onsite and augmented Diablo Canyon Power Plant (DCPP) staff needed to respond to a large scale natural event meeting the conditions described in the 50.54(f) letter. PG&E Letter DCL-12-048, dated May 9, 2012, responded to the 50.54(f) letter and provided an NRC-accepted alternate course of action. The alternate course of action committed PG&E to conduct the onsite and augmented staffing assessment by March 29, 2013, and to provide the following by April 30, 2013: (a) an on-shift and augmented staffing assessment considering all requested functions except those related to Near-Term Task Force Recommendation 4.2 (Phase 1 Staffing Assessment); (b) a schedule of the time needed to implement those changes associated with the Phase 1 Staffing Assessment; and (c) changes associated with the Phase 1 Staffing Assessment that have been made or will be made to the DCPP Emergency Plan (E-Plan) regarding the on-shift or augmented staffing changes necessary to respond to a loss of all alternating current (ac) power, multi-unit event, including any new or revised agreements with the offsite resource providers (e.g., staffing, equipment, transportation, etc.). This report provides the results of the PG&E Phase 1 Staffing Assessment (Assessment), which was completed on March 28, 2013.

Current staffing levels were assessed to determine the staff required to fill all necessary positions in order to respond to a dual-unit, beyond-design-basis external event (BDBEE), which results in an extended loss of ac power (ELAP) and impeded access to the site. The Assessment includes the numbers and composition of the augmented response personnel required to implement mitigation strategies and repair actions intended to maintain or restore functions of core cooling, containment, and spent fuel pool (SFP) cooling functions for both units. The Assessment considered applicable actions from current DCPP procedures and the Institute of Nuclear Power (INPO) Event Reports (IER) related to Fukushima actions at the time of the Assessment.

2 Executive Summary

1. The minimum on-shift staffing, as defined in the DCPPE-Plan, is sufficient to support the implementation of current DCPPE procedures simultaneously for Units 1 and 2 with no collateral duties as required by the E-Plan.
2. DCPPE has the staffing needed to support an expanded response capability for a BDBEE as defined in NEI 12-01.
3. Procedures will need to be enhanced to integrate the expanded response and transportation capabilities.
4. Permanent alternate facilities for the technical support center (TSC) and operational support center (OSC) will be established to support expanded emergency response organization (ERO) operations.
5. Drill and exercise programs will be evaluated and enhanced, as required, once future NRC guidance is provided regarding demonstration criteria for dual unit events or expanded ERO activities.

3 Assessment Methodology

3.1 On-shift Staffing Analysis Process

A multi-discipline team using current DCPPE procedures conducted the Assessment to analyze the performance of tasks assigned to the minimum on-shift staff. The DCPPE E-Plan specified the minimum on-shift task. Task areas analyzed include:

- event mitigation (emergency operating procedures (EOP))
- radiation protection (RP) and chemistry technician functions (DCPPE RP and chemistry procedures)
- emergency preparedness functions (NUREG-0654 Table B-1/ISG-01)

Existing strategies that respond to an ELAP affecting both Units 1 and 2 were used in the Assessment. The Assessment addressed the abilities of the on-shift staff to perform required emergency response functions that may be degraded prior to the delayed arrival of the augmented ERO.

3.2 Expanded ERO Analysis Process

The expanded ERO analysis was conducted using the guidelines in NEI 12-01, which provides recommended staffing considerations to assess the performance of unit-specific accident assessment and mitigation functions. PG&E assessed the ability of the current ERO staff to perform expanded ERO functions.

4 Assumptions

The Assessment assumptions were based on the guidance provided in NEI 12-01 and NEI 10-05.

4.1 NEI 12-01 Assumptions

1. A large-scale external event occurs that results in:
 - all onsite units affected
 - extended loss of ac power
 - impeded access to the units
2. Initially, all onsite reactors are operating at full power and are successfully shut down.
3. A hostile action directed at the affected site does not occur 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).
 - b) Post event time: 6 to 24 hours – Limited site access. Individuals may access the site by walking, personal vehicle or via alternate transportation resources that are available to deliver equipment, supplies and large numbers of personnel.
 - 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 site E-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.
6. The assessment should consider the applicable actions from the station blackout (SBO) coping strategies in place at the time of the assessment. Such actions may include the shedding of nonessential battery loads, use of portable generators or batteries, opening room and cabinet doors, water/coolant conservation or makeup using portable equipment, etc. These actions do not include those associated with cross-tying ac power sources or electrical distribution busses between units since, as stated in assumption number 1; all onsite units are experiencing an ELAP.

Following the accident at Fukushima Daiichi, INPO issued three IERs requiring the assessment and implementation of a range of actions intended to improve the capabilities for responding to a BDBEE and an ELAP, including events that impact the cooling of spent fuel. The assessments performed in response to the NRC letter should include consideration of those IER improvements actions already implemented at the time of the assessment (e.g., incorporated into plant procedures).

Sites with existing strategies for responding to an ELAP affecting all onsite units should consider those actions in their assessment.

4.2 NEI 10-05 Assumptions

1. On-shift personnel can report to their assigned locations within timeframes sufficient to allow for performance of assigned actions.
2. The on-shift staff possesses the necessary radiation worker qualifications to obtain normal dosimetry and to enter radiologically-controlled areas (but not high, locked high or very high radiation areas) without the aid of an RP technician.
3. Personnel assigned to the major response area of plant operations and safe shutdown meet these requirements and guidance, and are able to satisfactorily perform the functions and tasks necessary to achieve and maintain safe shutdown.
4. The onsite security organization is able to satisfactorily perform all tasks related to site and protected area access controls under all event or accident conditions. Performance of this function is regularly analyzed through other station programs and will not be evaluated here, unless a

role or function from another major response area is assigned as a collateral duty.

5. Individuals holding the position of RP technician or chemistry technician are qualified to perform the range of tasks expected of their position.
6. 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 notification actions specifically called out in the assessment methodology; these actions must be assessed.
7. 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.
8. 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, 6 hours will be used as the time period for the conduct of the on-shift ERO response actions.

4.3 Other Assessment Assumptions

1. All equipment credited in current coping strategies remains available for use (e.g., a non-seismic water tank).
2. For purposes of assessing augmented staffing, it is assumed that the on-shift staff successfully performs all Initial Phase, and any required Transition Phase, coping actions.
3. Offsite facilities and staging areas are available.

4.4 Event Description

The event conditions, as described by the assumptions listed above, results in a Site Area Emergency Emergency Classification Level (ECL) based on Emergency Action Level (EAL) SS1.1. The ECL escalates to a General Emergency based on EAL SG1.1 once it has been determined that power cannot be restored before the coping time has been exceeded. This scenario would impact both Units 1 and 2, resulting in an ELAP.

Initial Conditions: Both units 100 percent power at equilibrium, middle of core life.

Abnormal Conditions: None

Scenario Events: An offsite electrical transient occurs resulting in a loss of all offsite power.

None of the emergency diesel generators (EDGs) can be synchronized to any Unit 1 (U1) or Unit 2 (U2) ac bus, resulting in a dual-unit ELAP.

One EDG on each unit is assumed to start but cannot be paralleled with any electrical bus.

Notes: This scenario constitutes a dual unit event.

The scenario is designed such that restoration of any ac power source is not possible.

4.5 Scope

1. Determine the ability of the on-shift staff to implement Initial Phase coping actions and, consistent with the site access assumption, any Transition Phase actions that must be performed prior to the end of the “no site access” time period for the Assessment.

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

Transition Phase – Implementation of strategies that involve the use of onsite portable equipment and consumables to extend the coping period, and prevent a loss of functions needed for core cooling, containment, and SFP cooling. Setup for these strategies should be performed prior to the end of the Initial Phase.

2. Evaluate the applicable actions from the SBO coping strategies in place at the time of the Assessment.
 - a) Such actions may include the shedding of nonessential battery loads, use of portable generators or batteries, opening room and cabinet doors, water/coolant conservation or makeup using portable equipment, etc.
 - b) These actions do not include those associated with cross-tying ac power sources or electrical distribution busses between Units since both Units are experiencing an ELAP.

Note: Following the accident at Fukushima Daiichi, INPO issued three IERs requiring the assessment and implementation of a range of actions intended to improve the capabilities for responding to a BDBEE and an ELAP, including events that impact the cooling of spent fuel.

- IER L1-11-1, Fukushima Daiichi Nuclear Station Fuel Damage Caused by Earthquake and Tsunami (including Supplement 1)
- IER L1-11-2, Fukushima Daiichi Nuclear Station Spent Fuel Pool Loss of Cooling and Makeup
- IER L1-11-4, Near-Term Actions to Address the Effects of an Extended Loss of All AC Power in Response to the Fukushima Daiichi Event.

3. Evaluate IER improvement actions already implemented at the time of the Assessment (e.g., incorporated into plant procedures).
4. Evaluate existing strategies for responding to an ELAP affecting both Units.
5. Evaluate 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 for the Assessment.
6. Determine the ability of the augmenting staff to implement Transition Phase coping strategies performed after the end of the “no site access” time period, which is consistent with the site access assumption.

4.6 Applicable IER Actions

PG&E’s response to IER-L1-11-1 did not require any new actions to be performed by the on-shift or augmenting ERO.

PG&E’s response to IER-L1-11-2 included two enhancements that affected actions to be performed by the on-shift ERO or augmenting ERO.

1. PG&E has procured a limited capacity portable back up SFP cooling system. Procedure OP AP-22, “Spent Fuel Pool Abnormalities,” has been revised to provide guidance on deploying the system.

PG&E will include these enhancements as part of the Phase 2 Staffing Assessment.

2. The SFP temperature high alarm occurs on loss of power. A note and a monitoring checklist have been added to OP AP-22 to have instrumentation and controls hook up a direct current (dc) powered local temperature indicator, with logging as required at least every 4 hours.

PG&E included this task as part of the Assessment.

PG&E's response to IER-L1-11-4 included five items that affected actions to be performed by the on-shift ERO or augmenting ERO.

1. Enhancements are being made to existing procedures to provide added assurance that portable ventilation will be deployed in a sufficiently timely manner to maintain acceptable environmental conditions in the inverter rooms and the control room (CR).

PG&E will include these enhancements as part of the Phase 2 Staffing Assessment.

2. Extended load shedding strategies are being developed to reduce power demand on station batteries.

PG&E will include the extended load shedding strategies as part of the Phase 2 Staffing Assessment.

3. Enhancements are being made to the extreme damage mitigation guidelines (EDMGs) for the use of locally installed and temporary instrumentation to monitor and control plant parameters.

PG&E will include the enhancements to EDMGs as part of the Phase 2 Staffing Assessment.

4. Gas-powered portable generators have been replaced with diesel-powered portable generators for CR and inverter ventilation coping strategies.

PG&E will include the use of diesel-powered generators as part of the Phase 2 Staffing Assessment.

5. Enhancements are being made to call out additional personnel to support placement and use of temporary coping equipment in the 8-hour period before battery depletion.

PG&E will include the enhancements to call out additional personnel as part of the Phase 2 Staffing Assessment.

4.7 Other Applicable Actions

PG&E Letter DCL-12-061, dated June 7, 2012, committed PG&E to revise DCPP procedures to include degraded communications capabilities, such that ERO members will automatically respond to their assigned facilities or a designated staging area when made aware of an area-wide disaster (e.g., loss-of-grid, natural or man-made disaster, etc.). These enhancements have been made to provide for self-activation of the augmenting ERO. Refer to Section 6.2.1.2 for the analysis of this area.

Additional communications systems with backup battery capacity and/or diesel generator (DG) power have been acquired to facilitate the communications needs for at least 24 hours under the assumed conditions for the event.

PG&E will include enhanced communications capabilities as part of the Phase 2 Staffing Assessment.

5 On-shift Staffing Analysis

5.1 Phase 1 Staffing Analysis Details

The Phase 1 on-shift staffing analysis was conducted in accordance with the guidance of NEI 12-01 and NEI 10-05. The Assessment analyzed the ability of the on-shift staff to perform the required emergency response functions that may be degraded or lost prior to the arrival of the augmented ERO.

The task analysis was conducted on January 30, 2013, using a tabletop procedural analysis and a simulator desktop run-through with DCPP subject matter experts and an outside consultant. Current DCPP procedures were utilized to determine if tasks had been sufficiently analyzed for performance by the minimum on-shift staff. The guidance and documentation in NEI 12-01 and NEI 10-05 were used to document a review of the on-shift staffing actions. The following provides a summary of the process that was utilized.

5.1.1 On-shift Staffing Analysis Methodology

The on-shift staffing analysis was conducted in accordance with the NEI 10-05 tables.

Attachment 2, Table 1, describes the on-shift positions for DCPP. This table provides the DCPP E-Plan reference for each position and a task matrix. The task matrix identifies associated tasks using the Table Number and Line Number in the Attachment 2 tables. Time motion studies were conducted to resolve any identified unanalyzed tasks or collateral duties.

Attachment 2, Table 2, describes the minimum operations crew necessary to implement EOPs or severe accident management guidelines (SAMGs), if applicable, in response to an ELAP.

Attachment 2, Table 3, describes the on-shift firefighting personnel as described in the DCPP E-Plan.

Attachment 2, Table 4, provides a timeline of tasks of the on-shift RP and chemistry technicians.

Attachment 2, Table 5, provides a listing of the DCPP E-Plan tasks identified in the tabletop procedural analysis.

5.1.2 Minimum On-shift Staffing Complement

Table 5.1-1 identifies the functional areas, major tasks, and emergency positions required to be on-shift as credited in the staffing analysis. The on-shift personnel complement includes the minimum required number and composition as described in the DCPP E-Plan and an additional work control lead operations responder added to the shift as a compensatory measure to address overlap in the Emergency Preparedness (EP) Rulemaking NEI 10-05 analysis report.

Table 5.1-1

Functional Area	Major Tasks	Emergency Positions	Analysis Shift Staffing
1. Plant operations and assessment of operational aspects ^(c)	CR staff	Shift Manager	1
		Unit Shift Foreman	2
		Licensed Operator	5
		Nuclear Operator	5
2. Emergency direction and control	Command and control	Shift Manager	1 ^(a)
3. Notification and communication	Licensee	Shift Foreman/RO	1 ^(a)
	Local/ State	Shift Foreman	1 ^(a)
	Federal	Shift Foreman/RO	1 ^(a)
4. Radiological assessment	Dose assessment	Work Control Shift Foreman	1
	In-plant surveys	C&RP Technician	1
	Chemistry	C&RP Technician	1
5. Plant system engineering, repair, and corrective actions	Technical support	Work Control Shift Forman	1
	Repair and corrective actions	Mechanical Maintenance (position filled by operations) Elect/I&C Maintenance (position filled by SCT ^(d))	1 ^(a) 2
6. In-plant protective actions	Radiation protection	C&RP Technician	2 ^(a)

Functional Area	Major Tasks	Emergency Positions	Analysis Shift Staffing
7. Fire fighting	--	Fire Department	5
8. First Aid and Rescue Ops	--	Industrial Fire Officers	2 ^(a)
9. Site access control and accountability	Security and accountability	Watch Commander Security Personnel	1 ^(b)
TOTAL:			25

- (a) May be filled by someone filling another position having functional qualifications.
- (b) Per DCPD Security Plan.
- (c) Per Technical Specification 5.2.2.f, one of the on-shift SROs (Shift Manager, Unit Shift Foreman or Work Control Shift Foreman) is required to meet the qualification requirements specified by the Commission Policy Statement on Engineering Expertise on Shift.
- (d) Shift Control Technician (SCT)

5.1.3 Initial Shift Staffing Locations

As described in the NEI 10-05 Assumption Number 1, on-shift personnel can report to their assigned response locations within timeframes sufficient to allow for performance of assigned locations. Table 5.1-2 provides the typical initial locations of the on-shift personnel:

Table 5.1-2

On-shift Personnel	Typical Initial Location
Shift Manager	CR
U1 Shift Foreman	CR
U2 Shift Foreman	CR
U1 Control Operator – (U1 RO)	CR
U2 Control Operator – (U2 RO)	CR
U1 Control Operator – BOP ^(a) (U1 BOPCO)	CR
U2 Control Operator – BOP (U2 BOPCO)	CR
Work Control Shift Foreman	Work control center
U1 Work Control Lead	Work control center
U2 Work Control Lead	Work control center
U1 Turbine Building Operator	Work control center

On-shift Personnel	Typical Initial Location
U2 Turbine Building Operator	Work control center
U1 Auxiliary Building Operator	Work control center
U2 Auxiliary Building Operator	Work control center
Intake Watch Operator	Work control center
C&RP Technician #1	85-ft radiologically controlled area access office
C&RP Technician #2	Chemistry office
Shift Control Technician #1	Instrument maintenance shop
Shift Control Technician #2	Instrument maintenance shop
Watch Commander	Secondary alarm station
Industrial Fire Officers (5)	Fire department building

(a) Balance of plant (BOP)

5.1.4 Tabletop Procedural Analysis of On-shift Staffing for Extended Loss of AC Power

A tabletop review of on-shift actions for an ELAP for both Units was performed using the guidance and documentation in NEI 10-05. The review team consisted of a senior reactor operator (SRO), two nuclear operators, RP technician, chemistry technician, EP coordinator, Fukushima project manager, Fukushima project engineer, and two EP specialists. This review included the identification of needed resources and the time required to complete identified actions for the first 6 hours of the ELAP.

Prior to conducting the tabletop review, all initial conditions and event assumptions were reviewed for basic understanding of the event. The SRO reviewed EOP and other operating procedure actions and identified them to the team. Other team members, such as the RP and chemistry technicians identified functions that would be required to support in-plant mitigation activities. All E-Plan functions were reviewed and assigned to the appropriate on-shift resources. Attachment 2, Table 1 identifies the resulting on-shift resources and their applicable actions.

The following DCPD procedures were referenced during the tabletop review:

1. EOP E-0, Unit 1, "Reactor Trip or Safety Injection," Revision 43
2. EOP E-0, Unit 2, "Reactor Trip or Safety Injection," Revision 34
3. EOP ECA-0.0, Unit 1, "Loss of All Vital AC Power," Revision 28

4. EOP ECA-0.0, Unit 2, "Loss of All Vital AC Power," Revision 22
5. EOP ECA 0.3, Unit 1, "Restore 4kV Buses," Revision 17
6. EOP ECA 0.3, Unit 2, "Restore 4kV Buses," Revision 14
7. EP G-1, Units 1 and 2, "Emergency Classification and Emergency Plan Activation," Revision 43
8. EP G-2, Units 1 and 2, "Interim Emergency Response Organization," Revision 41
9. EP G-3, Units 1 and 2, "Emergency Notification of Off-Site Agencies," Revision 54 B
10. EP G-4, Units 1 and 2, "Assembly and Accountability," Revision 26
11. EP G-5, Units 1 and 2, "Evacuation of Non-Essential Site Personnel," Revision 14
12. EP R-2, Units 1 and 2, "Release of Airborne Radioactive Materials Initial Assessment," Revision 29
13. EP RB-4, Units 1 and 2, "Access to and Establishment of Controlled Areas Under Emergency Conditions," Revision 5
14. OP AP-22, Units 1 and 2, "Spent Fuel Pool Abnormalities," Revision 25
15. OP J-4:CIII, Unit 1, "Generator Hydrogen- Remove From Service," Revision 27
16. OP J-4:CIII, Unit 2 Generator Hydrogen- Remove From Service," Revision 18
17. OP1.DC37, Units 1 and 2, "Plant Logs," Revision 48
18. RCP D-310, Units 1 & 2, "RCA Access Control," Revision 24
19. RCP D-500, Units 1 and 2, "Routine and Job Coverage Surveys," Revision 37
20. CAP E-1, Units 1 and 2, "Primary Systems Sampling," Revision 49
21. CAP E-6, Units 1 and 2, "Secondary System Sampling," Revision 12

22. SP 602, Units 1 and, "Compensatory Measures (SGI)," Revision 22
23. SP 603, Units 1 and, "Security During Operational Emergencies," Revision 16
24. SP 608, Units 1 and 2, "Security During Loss of Alarm Annunciation System (SGI)," Revision 11

5.2 On-shift Staffing Analysis Summary

The current on-shift staffing was found to be adequate.

At the time of this Assessment, one IER response action had been implemented that involved tasks to be performed by the on-shift staff. These tasks were assessed as part of the ELAP task analysis. None of the implemented responses to INPO IERs had an impact on the augmented or expanded ERO staffing. Refer to Section 4.6 for descriptions of applicable IER related procedure tasks.

5.2.1 On-shift Staffing Task Analysis Results

Refer to Attachment 1 of Enclosure 1, NEI 10-05, Table 5, "Controlling Method Correlations," for additional documentation of the EP task-related performance measures.

Refer to Attachment 2 of Enclosure 1, NEI 10-05, Appendix B, "On-shift Staffing Analysis Results Tables," for additional documentation of the on-shift staffing task analysis.

Refer to Attachment 3 of Enclosure 1, NEI 10-05, Appendix D and E, "On-Shift Staffing Analysis Results Tables," for additional documentation of the on-shift staffing time motion study results.

5.2.1.1 Non-Validated Task Assessment

The on-shift staffing assessment identified three tasks that were not required by current training programs. NEI 10-05 considers these activities to be non-validated tasks. These non-validated tasks were analyzed and validated by a time motion study to justify that the on-shift personnel would be able to complete all assigned tasks. The three non-validated tasks are listed below:

- a) The task performed by the U2 Auxiliary Building Operator to locally monitor U1/U2 SFP level.

A time motion study was conducted and the results confirmed that the non-validated task to locally monitor the U1/U2 SFP levels could be performed by the U2 Auxiliary Building Operator without overlap with his or her other assigned tasks and within the expected time.

- b) The task performed by the Intake Watch Operator to open CR, battery charger/inverter rooms, solid state protection system (SSPS) rooms, cable spreading room, and turbine driven auxiliary feedwater (TDAFW) pump room doors.

A time motion study was conducted and the results confirmed that the non-validated task to open the CR, battery charger/inverter rooms, SSPS rooms, cable spreading room, and TDAFW pump room doors could be performed by the Intake Watch Operator without overlap with his or her other assigned tasks and within the expected time.

- c) The tasks performed by the SCTs to install a temporary SFP temperature instrument and monitor the reading.

The only task assigned to the SCTs is to install a SFP temperature instrument and monitor the reading at least every 4 hours. The implementing procedure does not specify a required timeframe for the installation of the instrumentation. However, an instrument and control technician has conservatively estimated that it would take two personnel (one for each unit) 4 hours to install the instrument and monitor the reading. The DCPD licensing basis for SFP meets its safety function by allowing the SFP to boil. For the highest heat load scenario, SFP boiling will occur at approximately 6 hours. Should the bulk boiling of the SFP occur prior to deployment of SFP makeup equipment, personal protective equipment is available that will allow deployment of equipment in a high temperature and humidity environment.

5.2.1.2 Potential Task Overlap Assessment

NEI 10-05 assumes that personnel assigned to the major response area of plant operations and safe shutdown are able to satisfactorily perform the design basis functions and tasks necessary to achieve and maintain safe shutdown for the period prior to ERO augmentation. This assumption does not apply for the NEI 12-01 study because existing SBO coping strategies include actions that presuppose that the augmented ERO would otherwise be available to perform them; therefore, it is required to have the collective performance of those tasks analyzed and validated by a time motion study.

The results of the task analysis determined that the following on-shift positions could experience task overlap and therefore met the requirements for a time motion study:

1. The U1 work control lead performs tasks (5/9) *Perform State/local notifications* and (5/16) *Track U1 personnel*. A time motion study was required to analyze and validate that operations personnel would be able to perform EP and operations tasks in accordance with Table 3.1 of NEI 10-05.

Corrective action from the DCPD NEI 10-05 on-shift staffing study included the addition of a second work control lead (WCL) to the shift to eliminate potential task overlap of notification performance. With the addition of the second WCL, the U1 WCL tasks would now be performed sequentially. No overlap occurred during the time motion study analysis of the tasks for this position.

2. The U2 WCL performs tasks (5/6) *ERO notification*, (5/10) *Complete NRC event notification form* and (5/17) *Track U2 personnel*. A time motion study was required to analyze and validate that operations personnel would be able to perform EP and operations tasks in accordance with Table 3.1 of NEI 10-05.

Corrective action from the DCPD NEI 10-05 on-shift staffing study included the addition of this WCL to the shift to eliminate potential notification task overlap for the U1 WCL. A CR assistant or nuclear operator will fill this position to provide communications for future events. No overlap occurred during the time motion study analysis of the tasks for this position.

3. The U1 Turbine Building Operator was directed to perform EOP and coping tasks during the extended loss of all power (2/11.A – *Locally start U1 DGs* and 2/11.B – *Throttle (auxiliary feedwater (AFW) to U1/U2 steam generators (SGs))*).

The tasks performed by the U1 Turbine Building Operator to locally start U1 DGs and throttle AFW to U1/U2 SGs were documented through time motion study walkthrough as sequential. No task overlap occurred for these tasks for this position.

4. The U2 Turbine Building Operator was directed to perform EOP and coping tasks during the extended loss of all power (2/13.A – *Locally start U2 DGs*, 2/13.B – *Locally close U2 DG output breaker*, 2/13.C – *Strip U1/U2 dc bus loads*, and 2/13.D – *Purge U1/U2 main generators*).

The U2 Turbine Building Operator task assignments for the ELAP event are the same as the tasks assignments performed in the DCPN NEI 10-05 SBO event. Time motion study results for the ELAP event were taken from DCPN NEI 10-05 SBO time motion study results. No task overlap occurred during the time motion study of the activities for this position.

5. The U1 Auxiliary Building Operator was directed to perform EOP and coping tasks during the extended loss of all power (2/12.A – *Isolate U1 reactor coolant pump (RCP) seal leakoff* and 2/12.B – *Throttle AFW to U1/U2 SGs*).

The tasks performed by the U1 Auxiliary Building Operator to isolate U1 RCP seal leakoff and throttle AFW to U1/U2 SGs were documented through a time motion study walkthrough as sequential. No task overlap occurred for this position.

6. The U2 Auxiliary Building Operator was directed to perform EOP and coping tasks during the extended loss of all power (2/14.A – *Isolate U2 RCP seal leakoff* and 2/14.B – *Locally monitor U1/U2 SFP level*).

The tasks performed by the U2 Auxiliary Building Operator to isolate U2 RCP seal leakoff and locally monitor U1/U2 SFP level were documented through job performance measures and time motion study walkthrough as sequential. No task overlap occurred for these tasks for this position.

7. The Intake Watch Operator was directed to perform EOP and coping tasks during the extended loss of all power (2/15.A – *Open U1/U2 containment fan cooler unit (CFCU) breakers*, 2/15.B – *Break U1/U2 condenser vacuum*, 2/15.C – *Isolate U1/U2 hotwells*, 2/15.D – *Strip U1 dc bus loads* and 2/15.E – *Open CR, battery charger/inverter rooms, SSPS rooms, cable spreading room, and TDAFW Pump room doors*).

The tasks performed by the intake watch operator to open U1/U2 CFCU breakers, break U1/U2 condenser vacuum, isolate U1/U2 hotwells, strip U1 dc bus loads and open doors for ventilation were documented through job performance measures and time motion study walkthrough as sequential. A time motion study was conducted and the results confirmed that the task to isolate the hotwells could be performed by the Intake Watch Operator. No task overlap occurred for these tasks for this position.

The Security Watch Commander performed security contingency plan and EP tasks (personnel accountability) during the event. A representative of the security department analyzed the tasks assigned to the Security Watch Commander for potential overlap. It was concluded that performance of the EP tasks did not cause an overlap with its security force tasks. Security program commitments are identified in the DCPD Physical Security Plan and are not specifically documented in this analysis due to their security-sensitive nature. DCPD security was not tasked with the performance of any U1 or U2 SBO coping strategy activity.

6 Expanded ERO Response Analysis

6.1 Expanded ERO Response Analysis Process Details

For purposes of assessing augmented and expanded ERO staffing, it was assumed that the on-shift staff successfully performs all Initial Phase, and any required Transition Phase coping actions in accordance with NEI 12-01.

This section of the Assessment documents the ability of the augmenting ERO to implement Transition Phase coping strategies performed after the end of the 6-hour "no site access" time period.

6.1.1 Expanded ERO Response Analysis Methodology

The expanded ERO assessment was conducted in accordance with NEI 12-01, which provides recommended staffing considerations to verify the performance of unit-specific accident assessment and mitigation functions. PG&E utilized the NEI 12-01 recommended considerations and did not use an alternative approach. No additional ERO functions or resources were identified beyond those detailed in NEI 12-01 Table 3.1 that would be required following a BDBEE at DCPD.

The capability of the current ERO staffing at DCPD to perform these expanded ERO functions was assessed as described below:

1. Number and composition of personnel required to perform the expanded ERO response functions of Table 6.2-1 was determined by performing the following:
 - a) Current ERO rosters and qualification information were obtained and entered into Table 6.1-1.

b) SAMG assessment performed to identify the two strategies for each Unit that require the greatest number of staff to implement within time periods compatible with successful performance and the corresponding number and composition of staff to implement them.

2. Work areas for the expanded ERO were identified and analyzed for habitability.
3. Transportation and access to the site, was assessed to reasonably ensure that the expanded ERO arrive onsite by the 6th hour of the event.
4. Position specific guidance was assessed in accordance with NEI 12-01.

6.1.2 Current Augmented ERO Staffing Complement and Response Capability

The DCPPE ERO consisted of four fully staffed teams. Staffing resources for assessment of the expanded ERO were provided by the depth of personnel filling the existing augmenting ERO positions. Table 6.1-1 documents the augmenting ERO staffing requirements (minimum and full staffing) from E-Plan Table 5.1B. The qualified personnel were taken from the DCPPE ERO rosters emergency planning information consolidation report dated February 6, 2013.

Table 6.1-1

Assigned Major Function/Task	ERO Title	# per Team	# Qualified
Minimum Augmented ERO Staffing			
Emergency direction and control (command and control)	Site Emergency Coordinator	1	5
	Emergency Director	1	4
Emergency direction and control (facility control)	EOF Director	1	6
Notification / communication (emergency communications)	Communications Coordinator	1	4
	Agency/ENS Communicator	1	6
Notification / communication (governmental)	Offsite Communicator	1	4
Radiological assessment (dose assessment)	Radiological Manager	1	6
	Dose Assessor	1	5
Radiological assessment (offsite surveys)	Field Monitoring Team	4	36 ^(a)
Radiological assessment (onsite surveys)	Field Monitoring Team	2	
Radiological assessment (in-plant surveys)	C&RP Technician	2	
In-plant protective actions	C&RP Technician	4	
Radiological assessment (RP supervisory)	Site RP Coordinator	1	5
Plant system engineering	Reactor Engineer	1	5
	Mechanical Engineer	1	5

Assigned Major Function/Task	ERO Title	# per Team	# Qualified
	Electrical Engineer	1	5
	Operations Advisor	1	5
Repair and corrective actions	Maintenance Advisor	1	4
	OSC Director	1	5
	Mechanical Coordinator	1	5
	Electrical Coordinator	1	9
	I&C Coordinator	1	8
Public information	Public Information Officer	1	9
Public information	JIC Director	1	4
Full Augmented ERO Staffing			
Emergency direction and control (facility control)	TSC Director	1	7
Notification / communication (emergency communications)	HPN Communicator	1	4
Notification / communication (plant status)	Communications Advisor	1	4
	OPs Communicator	1	5
	Engineering Liaison	2	11
Notification / communication (in-plant team control)	Team Coordinator	1	5
Notification / communication (governmental)	Advisor to the County	1	4
	Govt Relations Coordinator	1	8
Radiological assessment (dose assessment)	Dose Assessment Coordinator	1	5
	UDAC Meteorologist	1	5
Radiological assessment (offsite survey)	FMT Coordinator	1	3
	FMT Communicator	1	4
	Offsite Emergency Lab Analyst	1	4
Radiological assessment (chemistry)	Chemistry Coordinator	1	4
Radiological assessment (RP supervisory)	Radiological Advisor	1	5
Plant system engineering	Engineering Advisor	1	4
	Radiological Data Processor	1	6
	PPC Operator (Operator)	1	36 ^(B)
Repair and corrective actions	Operations Coordinator	1	4
Site access and accountability	Security Advisor	1	4
Resource allocation and administration (Logistics)	Administrative Advisor	1	5
	Security	1	8
Resource allocation and administration (administration)	ED Admin Assistant	1	5
	SEC Admin Assistant	1	4
	Clerical Staff / UDAC Clerk	3/1	16
Public information (media interface)	Company Spokesperson	1	6
	News Media Liaison – Corp	1	4
	News Media Liaison – Site	1	6
Public information (information development)	Tech Advisor – OPs	1	6
	Tech Advisor – HP	1	6
	News Writer	1	4
	Assistant Public Information Officer (PIO)	1	5
Public information (facility operation and control)	JIC Security	1	8
	JIC Clerk	1	8

Notes:

- (a) As of February 26, 2013, DCPD had 38 active qualified C&RP Technicians. Two C&RP technicians were accounted for as being on shift.
- (b) As of February 26, 2013, DCPD had 42 active qualified reactor operators (ROs). Six ROs were accounted for as being on-shift for this assessment.

6.2 Expanded ERO Assessment Summary

Sufficient augmenting ERO resources existed to fill the expanded ERO functions. Thus, the ability of the responding ERO members to implement Transition Phase coping strategies performed after the end of the “no site access” 6-hour time period had been assessed and determined to be adequate. Refer to Table 6.2-1 for additional documentation of the expanded ERO functional staffing resources.

6.2.1. Mobilization of Expanded Response Capability Staffing

6.2.1.1 Implementing Strategy for the Expanded ERO

The DCPD ERO augmentation process consists of an all call / all come expectation. When the ERO notification system is operable, all qualified ERO members will be contacted and expected to report if fit for duty. In the absence of the call out system, all ERO members have been trained to respond automatically following significant events.

The response of all ERO personnel provides sufficient resources to establish the expanded ERO for dual unit events and was the basis for the implementing strategy for the expanded ERO.

PG&E will evaluate and enhance procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 3.9, to integrate the expanded response and transportation capabilities.

6.2.1.2 Response Timeliness for the Expanded ERO

Procedure OM10.DC2, “Emergency Response Organization On-Call,” requires the ERO to report to assigned emergency response facilities if the ERO becomes aware of an area-wide disaster that may impact the safe operation of DCPD, and ERO pagers, cell phones and home phones are being challenged or not working.

DCPD ERO members had been trained on this new instruction.

PG&E will evaluate and enhance procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 3.9, to integrate the expanded response and transportation capabilities.

6.2.1.3 Site Access/Alternate Transportation Capability

PG&E Letter DCL-12-061, dated June 7, 2012, states that the following methods of access to the site are available:

- Roadway – The preferred route to access the site is south along the paved site access road. If the southern route is impassable or unsafe, access to the site is available via a dirt road through Montana de Oro State Park.
- Air – DCPD has access to helicopter companies for emergency transport of personnel to the site. Military helicopters may be available for emergency use. The closest military helicopter is at Vandenberg Air Force Base.
- Sea – PG&E owns and maintains two marine craft and a dock located at the site. These vessels may be used if available following a beyond design basis natural event to supplement air transport in the event road access is unavailable.

PG&E Letter DCL-12-061 stated that military helicopters were available at Vandenberg Air Force Base. PG&E recently identified that military helicopters are no longer located at Vandenberg Air Force Base. PG&E has contracts with helicopter companies in order to transport personnel to the site.

The San Luis Obispo County Emergency Operations Plan, Nuclear Power Plant Administrative Plan, Earthquake Plan, and Tsunami Plan document the elements and responsibilities for debris removal through the Public Works department, which is a key member of the operational phase in each of these plans. The Public Works department has resources and standard operating procedures in place to assist in performing debris removal to allow restoration of access to DCPD.

PG&E Letter DCL-13-007, dated February 27, 2013, specifies that debris removal will be initiated using onsite equipment to facilitate 6-hour plant access.

PG&E will evaluate and enhance procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 3.9, to integrate the expanded response and transportation capabilities.

6.2.1.4 Work Areas for Personnel Performing Expanded Response Functions

The current alternate TSC is located at the PG&E Broad Street Office, which is located approximately 13 miles from DCP. The current alternate OSC is located at the Energy Education Center, which is located approximately 8 miles from DCP. Both facilities have internet access to DCP's network and telephone capability. Additionally, the alternate OSC has RP instrumentation.

PG&E will establish emergency response facilities for TSC and OSC personnel to support operation of an expanded ERO. This will be completed as part of the new EP Rulemaking in accordance with 10 CFR 50, Appendix E.

6.2.2 Expanded ERO Response Analysis

6.2.2.1 Expanded Response Functions

For a BDBEE, PG&E would need to expand the augmented ERO in order to facilitate timely and effective performance of critical response functions.

The expanded ERO analysis was performed using the guidance of NEI 12-01, which provides recommended staffing considerations to be assessed in the Assessment. No additional ERO functions or resources were identified beyond those detailed in NEI 12-01, Table 3.1.

Table 6-2.1 below describes the DCP expanded response functions based upon the criteria listed in NEI 12-01, Table 3.1. Table 6.2-1 provides a comparison of the DCP expanded augmented ERO to NEI 12-01, Table 3.1. In addition, Table 6-2.1 identifies the ERO resources required to implement the expanded response versus those available from current ERO site staffing. It should be noted that this table considers expanded ERO staffing support for both Units based on a 12-hour shift.

Table 6.2-1

Function	Location	Key Roles and Staffing Considerations	DCPP Augmented ERO Position	# Required	# Available
Unit response coordination	TSC	<ul style="list-style-type: none"> • Overall cognizance of the activities related to implementation of repair and corrective actions, and implementation of Transition Phase coping and severe accident management (SAM) strategies for an assigned unit • One individual per unit; individuals should not be assigned other functions 	Site Emergency Coordinator	2	5
Operations coordination	TSC	<ul style="list-style-type: none"> • Provides coordination of operations staff and support for an assigned unit • One individual per unit; individuals should not be assigned other functions 	Operations Coordinator	2	4
Maintenance coordination	TSC or OSC	<ul style="list-style-type: none"> • Provides coordination of maintenance staff and support for an assigned unit • One individual per unit; individuals should not be assigned other functions 	Maintenance Advisor	2	4
Engineering coordination	TSC or EOF	<ul style="list-style-type: none"> • Provides coordination of engineering staff and support for an assigned unit • One individual per unit; individuals should not be assigned other functions 	Engineering Advisor	2	4
Engineering assessments	TSC or EOF	<ul style="list-style-type: none"> • One team for each unit to perform engineering assessments in support repair and corrective actions • Team composition (i.e., number and represented disciplines) as described in the E-Plan • Team may include personnel responsible for performing other functions for the same assigned unit 	Reactor Engineer Mechanical Engineer Electrical Engineer	2 2 2	5 5 5
Evaluation of SAM Strategies	TSC or EOF	<ul style="list-style-type: none"> • One team for each unit to evaluate selection of SAM strategies; team performs evaluations not done by CR personnel • Team composition (i.e., number and represented disciplines) as described in governing site programs, procedures and guidelines • Team may include personnel responsible for performing other functions for the same assigned unit 	Reactor Engineer Mechanical Engineer	2 2	5 5

Function	Location	Key Roles and Staffing Considerations	DCPP Augmented ERO Position	# Required	# Available
Unit in-plant team coordination	OSC	<ul style="list-style-type: none"> Overall cognizance of onsite and in-plant teams performing or supporting repair and corrective actions for an assigned unit One individual per unit; individuals should not be assigned other functions 	OSC Director	2	5
Non-licensed operators (NLO)	OSC	<ul style="list-style-type: none"> Two individuals per unit to assist with implementation of repair and corrective actions Should not include members of the on-shift staff 	NLO	4	35 ^(a)
Mechanical maintenance repair and corrective action	OSC	<ul style="list-style-type: none"> Two individuals per unit to implement repair and corrective actions Staffing may include an on-shift individual (i.e., two individuals for a unit composed of one on-shift and one augmented) 	Mechanical Coordinator Mechanical Maintenance	2 2	5 72
Electrical maintenance repair and corrective action	OSC	<ul style="list-style-type: none"> Two individuals per unit to implement repair and corrective actions Staffing may include an on-shift individual (i.e., two individuals for a unit composed of one on-shift and one augmented) 	Electrical Coordinator Electrical Maintenance	2 2	9 51
I&C repair and corrective action	OSC	<ul style="list-style-type: none"> Two individuals per unit to implement repair and corrective actions Staffing may include an on-shift individual (i.e., two individuals for a unit composed of one on-shift and one augmented) 	I&C Coordinator I&C Maintenance	2 2	8 52
Implementation of SAM strategies	OSC	<ul style="list-style-type: none"> Number and composition of personnel capable of simultaneous implementation of any two SAM strategies at each unit Should not include personnel assigned to other functions (e.g., emergency repair and corrective actions); however, may include members of the on-shift staff and personnel responsible for implementation of Transition Phase coping strategies 	Nuclear Operator Mechanical Maintenance C&RP Technician	3 5 2	35 ^(a) 72 36

Notes:

(a) As of February 26, 2013, DCPD had 40 active qualified NLOs (9 additional NLOs are inactive). Five NLOs were accounted for as being on-shift.

As of February 26, 2013, DCPD had 42 active qualified SROs (1 additional SRO is inactive). Four SROs were accounted for as being on-shift.

As of February 26, 2013, DCPD had 42 active qualified ROs. Six ROs were accounted for as being on-shift for this assessment.

6.2.2.2 Position Specific ERO Response

1. Radiation Protection Technicians

The equation below was used to determine the required number of onsite RP technicians (on-shift plus augmented ERO RP technicians that perform onsite response functions) for DCPP:

$$RPT_T = RPT_{COP} + RPT_{RCA} + RPT_{NC}$$

Where:

RPT_T = Total required number of onsite RP Technicians.

RPT_{COP} = Number needed to support implementation of any two ELAP coping strategies per Unit. Determine this number by reviewing strategies for each unit.

RPT_{RCA} = Number needed for repair and corrective action (2 x the number of Units).

RPT_{NC} = Number of onsite RP technicians performing other emergency plan functions that would preclude them from performing job coverage for ELAP coping, repair or corrective action teams.

The DCPP RPT_{COP} number is based upon the coping strategies of the currently implemented EOPs which were evaluated during the task analysis and is documented in Attachment 2, Table 4. The Assessment procedures require two RP technicians to provide personnel monitoring and job coverage into radiation areas for personnel to perform the required actions.

The DCPP RPT_{RCA} number is four RP technicians.

The DCPP RPT_{NC} number is based upon E-Plan Table 5-1A, which requires two C&RP Technicians to perform in-plant surveys and chemistry sampling, which would preclude them from performing job coverage for ELAP coping, repair or corrective action teams.

$$8 (RPT_T) = 2 (RPT_{COP}) + 4 (RPT_{RCA}) + 2 (RPT_{NC})$$

Thus, the total required number of onsite RP technicians to be provided as part of the expanded ERO is 16, based on staffing needed to operate on 12-hour shifts.

Following a BDBEE, 36 C&RP technicians are available to support performance of assigned E-Plan functions and the expanded response capability (Refer to Table 6.1-1).

Provisions exist for obtaining additional RP technicians through industry agreement with INPO as part of the INPO Emergency Resources Manual documented by letter of agreement dated September 2009. No other arrangements have been made for additional RP technicians.

PG&E will evaluate and enhance procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 3.9, to integrate the expanded response and transportation capabilities.

2. Administrative Support Personnel

The administrative assistant and clerical support positions that assist the augmented ERO members are not assigned critical response tasks. Responsibilities for these positions are listed in the E-Plan, Section 5. Augmented ERO personnel, in their roles as an expanded ERO, are capable of performing their assigned tasks and responsibilities without requiring expanded administrative support. Current augmented staffing of the administrative assistant and clerical support positions is sufficient to support the expanded ERO.

The TSC Administrative Advisor is responsible for establishing 24-hour shift schedules for all emergency response facilities, which is considered a critical response task under the 10 CFR 50.47.b(1) planning standard function of continuous staffing and shift relief. It is appropriate for a single ERO position to be responsible for this task as it applies to the entire expanded ERO (not divided by unit) to ensure no overlap in personnel resources occurs in shift scheduling. The current augmented staffing of the TSC Administrative Advisor position is sufficient to support the expanded ERO.

3. SAMG Implementers

The assessment considered the number and qualifications of SAMG implementers required for simultaneous implementation of the two most task intensive SAMG strategies or an ELAP event on both units.

The most labor-intensive strategy was SAG-1, Low Head Injection into the Steam Generator.

Three other strategies involved equal numbers of personnel resources required to perform actions outside the CR.

- SAG-5, Minimize Containment Leakage by System Isolation
- SAG-8, Flood Containment by RWST Drain Down
- SCG-1, Mitigate Fission Product Release by System Isolation

Implementation of the SAG-1 strategy requires the following personnel resources:

Implementer	#	Function
Nuclear operator	1 ^(a)	Direct actions to establish makeup lineup in the auxiliary building
Mechanical maintenance	5 ^(a)	Perform actions to establish makeup lineup in the auxiliary building

^(a) This represents the total number of individuals used to establish makeup to the fire water system. Each Unit can be provided makeup from this source.

Implementation of either the SAG-5, SAG-8 or SCG-1 strategies all require the same personnel resources, as the following identifies:

Implementer	# per unit	Function
Nuclear operator	1	Perform local valve operations
C&RP technician	1	Provide radiological protection job coverage

These two limiting strategies, implemented simultaneously, would require the following personnel resources:

- three nuclear operators
- five mechanical maintenance
- two C&RP technicians

6.2.3 Activating the Expanded Response Capability

DCPP's E-Plan instructs the emergency response facility directors to determine the ERO resources needed for a large scale natural event.

PG&E will evaluate and enhance procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 3.9, to integrate the expanded response and transportation capabilities.

7 Programmatic Controls

7.1 Emergency Response Drill and Exercise Program

NEI 12-01 states that a licensee should determine if any changes are necessary to documents describing the emergency response drill and exercise program. In particular, standard objectives and extent-of-play may need to be revised to clarify the expected demonstration of functions that are dependent upon the type of scenario event or accident (i.e., within or beyond design basis, and number of affected units). For example, functions associated with an expanded response capability would not be demonstrated during a drill or exercise that involved a design basis accident affecting only one unit.

Evaluation objectives or demonstration criteria for dual unit events or expanded ERO activities are not included in current DCCP drill and exercise procedures.

PG&E will evaluate its drill and exercise program and make any necessary changes once future NRC guidance is received regarding demonstration criteria for dual unit events or expanded ERO activities.

7.2 Training

No new ERO tasks or functions have been identified to implement the expanded response capability. PG&E has a sufficient number of qualified ERO personnel to implement the expanded response; qualification of additional personnel is not required.

8 On-site Staff's Ability to Move Back-up Equipment

On March 12, 2012, the NRC issued the *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*. It requested licensees perform the following assessment:

“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 NTTF Recommendation 4.2. It is requested that consideration be given to the major functional areas of NUREG-0654, Table 8-1, 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.”

PG&E will perform this assessment as a part of the Phase 2 Staffing Assessment as described in PG&E Letter DCL-12-048, dated May 9, 2012.

9 **References**

1. NEI 10-05, “Assessment of On-Shift Emergency Response Organization Staffing and Capabilities,” Revision 0
2. NEI 12-01, “Guideline for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities,” Revision 0
3. PG&E Letter DCL-12-061, “Pacific Gas and Electric Company's Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Emergency Preparedness Aspects of Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident”,” dated June 7, 2012
4. PG&E Letter DCL-13-007, “Pacific Gas and Electric Company’s Overall Integrated Plan 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 27, 2013
5. EPD-500, “Basic Radiological Emergency Plan Training,” Revision 14A
6. Diablo Canyon Emergency Plan Section 5, Revision 4.14
7. EOP E-0, Unit 1, “Reactor Trip or Safety Injection,” Revision 43
8. EOP E-0, Unit 2, “Reactor Trip or Safety Injection,” Revision 34
9. EOP ECA-0.0, Unit 1, “Reactor Trip or Safety Injection,” Revision 29
10. EOP ECA-0.0, Unit 2, “Reactor Trip or Safety Injection,” Revision 23
11. EOP ECA-0.3, Unit 1, “Restore 4kV Buses,” Revision 17

12. EOP ECA-0.3, Unit 2, "Restore 4kV Buses," Revision 14
13. EP G-1, Units 1 & 2, "Emergency Classification and Emergency Plan Activation," Revision 43
14. EP G-2, Units 1 & 2, "Interim Emergency Response Organization," Revision 41
15. EP G-3, Units 1 & 2, "Emergency Notification of Off-Site Agencies," Revision 54 B
16. EP G-4, Units 1 & 2, "Assembly and Accountability," Revision 26
17. EP G-5, Units 1 & 2, "Evacuation of Non-Essential Site Personnel," Revision 14
18. EP R-2, Units 1 & 2, "Release of Airborne Radioactive Materials Initial Assessment," Revision 29
19. EP RB-4, Units 1 & 2, "Access to and Establishment of Controlled Areas Under Emergency Conditions," Revision 5
20. OP J-4:CIII, Unit 1, "Generator Hydrogen- Remove From Service," Revision 27
21. OP J-4:CIII, Unit 2, "Generator Hydrogen- Remove From Service," Revision 18
22. OP1.DC37, Units 1 & 2, "Plant Logs," Revision 48
23. RCP D-310, Units 1 & 2, "RCA Access Control," Revision 24
24. RCP D-500, Units 1 & 2, "Routine and Job Coverage Surveys," Revision 36
25. CAP E-1, Units 1 & 2, "Primary Systems Sampling," Revision 49
26. CAP E-6, Units 1 & 2, "Secondary System Sampling," Revision 12
27. SP 602, Units 1 & 2, "Compensatory Measures (SGI)," Revision 22
28. SP 603, Units 1 & 2, "Security During Operational Emergencies," Revision 16
29. SP 608, Units 1 & 2, "Security During Loss of Alarm Annunciation System (SGI)," Revision 11

Attachment 1 NEI 10-05, Table 5, "Controlling Method Correlations"		
Line	Function/Task	Operations Training Program and EP Drill Program Task Analysis Controlling Methods
1.	Declare the ECL	EPD 710J-10 thru 42: Classification and Notification D.1.1.1 The correct EAL associated with a parameter or symptom was recognized. D.1.1.2 The correct event classification level was formally declared within 15 minutes.
2.	Approve offsite protective action recommendations (PARs)	J.4.1.1 Dose based PARs were developed using plant, radiological, and meteorological inputs. J.4.1.2 Plant/event based PARs were approved within 15 minutes of a general emergency declaration.
3.	Approve content of State/local notifications	EPD 710J-10 thru 42: Classification and Notification E.2.1.2 The emergency notification form (ENF) was approved prior to transmittal.
4.	Approve extension to allowable dose limits	K.1.1.1 Emergency dose limits were evaluated prior to the personnel performing tasks in radiation areas. K.1.1.2 Allowed emergency dose limits were determined and verified against requirements (protect vital equipment, save lives, etc.). K.1.1.3 Emergency dose limits for personnel were approved by the Shift Manager (SM)/ Site Emergency Coordinator (SEC)/ Emergency Director (ED).
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	B.2.2.1 Focus was maintained on emergency response risk significant activities, health and safety, and event management priorities. B.2.2.2 The SM/SEC/ED directed actions for event declaration, notification, PAR determination, emergency exposure and KI authorization. B.2.2.3 Onsite and offsite priorities were established, communicated, executed, and revised as warranted. B.2.2.4 Announcements were made in the facility when significant events occurred. B.2.2.6 The SM/SEC/ED established maintained and controlled external communications, resource allocation and support of onsite and offsite activities.
6.	ERO notification	EPD 452J: Activate the voice automated notification system (VANS) E.1.1.2 The VANS was activated within 10 minutes of the event declaration to notify the ERO.

Attachment 1 NEI 10-05, Table 5, "Controlling Method Correlations"		
Line	Function/Task	Operations Training Program and EP Drill Program Task Analysis Controlling Methods
7.	Abbreviated NRC notification for design basis threat (DBT) event	E.3.3 Demonstrate the ability to perform the abbreviated NRC notification for DBT event.
8.	Complete State/local notification form	E.2.1.1 Key ENF information (drill/exercise performance (DEP) required) was completed accurately.
9.	Perform State/local notifications	EPD 710J-10 thru 42: Classification and Notification E.2.1.3 State/local notifications were performed within 15 minutes of an event or PAR declaration. E.2.1.6 The ENF was verbally communicated to offsite agencies accurately
10.	Complete NRC event notification form	E.3.1.3 The NRC notification form was completed accurately and in time to support the notification call.
11.	Activate emergency response data system (ERDS)	F.2.1.1 ERDS was initiated within one hour of an Alert or higher declaration.
12.	Offsite radiological assessment	LJC-150 thru 152: CR Dose assessment I.2.2.1 Dose assessment evaluations were performed within 15 minutes of the availability of indications impacting offsite dose (e.g., core state, release path, release status, and met conditions).
13.	Perform NRC notifications	E.3.2.1 Communications were established and maintained over the ENS circuit when requested by the NRC.
14.	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	N/A Not performed by DCCP shift staff
15.	Personnel accountability	J.1.1.1 Personnel assembly and accountability was initiated at a site area emergency (SAE) or higher ECL and the site emergency signal was sounded as soon as possible. J.1.1.4 All unaccounted for individuals were identified by name and a list provided to the SM/SEC within 30 minutes of the sounding of the site emergency signal.
16.	Other: track personnel	J.1.1.3 In plant team members that were not required to assemble were accounted for. J.1.1.6 Accountability of personnel was maintained once initial accountability had been established.

Attachment 2
NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 1

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table # / Line#	Unanalyzed Task?	Time Motion Study Required?
1.	Shift Manager	Section 5 Table 5-1	N/A	2 / 1 5 / 1 5 / 2 5 / 3 5 / 5 5 / 8	No	No
2.	U1 Shift Foreman	Section 5 Table 5-1	N/A	2 / 2	No	No
3.	U2 Shift Foreman	Section 5 Table 5-1	N/A	2 / 3	No	No
4.	Work Control Shift Foreman	Section 5 Table 5-1	N/A	2 / 4 5 / 12	No	No
5.	U1 Control Operator	Section 5 Table 5-1	N/A	2 / 5.A 2 / 5.B	No	No
6.	U2 Control Operator	Section 5 Table 5-1	N/A	2 / 6.A 2 / 6.B	No	No
7.	U1 Balance of Plant Control Operator	Section 5 Table 5-1	N/A	2 / 7.A 2 / 7.B	No	No
8.	U2 Balance of Plant Control Operator	Section 5 Table 5-1	N/A	2 / 8.A 2 / 8.B	No	No
9.	U1 Work Control Lead	Section 5 Table 5-1	N/A	2 / 9.A 2 / 9.B 5 / 9 5 / 16	No	Yes
10	U2 Work Control Lead	Section 5 Table 5-1	N/A	2 / 10.A 2 / 10.B 5 / 6 5 / 10 5 / 11 5 / 17	No	Yes

Attachment 2
NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 1

Line	On-shift Position	Emergency Plan Reference	Augmentation Elapsed Time (min)	Role in Table # / Line#	Unanalyzed Task?	Time Motion Study Required?
11.	U1 Turbine Building Operator	Section 5 Table 5-1	N/A	2 / 11.A 2 / 11.B	No	Yes
12.	U1 Auxiliary Building Operator	Section 5 Table 5-1	N/A	2 / 12.A 2 / 12.B	No	Yes
13.	U2 Turbine Building Operator	Section 5 Table 5-1	N/A	2 / 13.A 2 / 13.B 2 / 13.C 2 / 13.D	No	Yes
14.	U2 Auxiliary Building Operator	Section 5 Table 5-1	N/A	2 / 14.A 2 / 14.B	Yes	Yes
15.	Intake Watch Operator	Section 5 Table 5-1	N/A	2 / 15.A 2 / 15.B 2 / 15.C 2 / 15.D 2 / 15.E	Yes	Yes
16.	Shift control technician #1	Section 5 Table 5-1	N/A	2 / 16	Yes	Yes
17.	Shift control technician #2	Section 5 Table 5-1	N/A	2 / 17	Yes	Yes
18.	Fire brigade leader	Section 5 Table 5-1	N/A	3 / 1	No	No
19.	Fire brigade team member #1	Section 5 Table 5-1	N/A	3 / 2	No	No
20.	Fire brigade team member #2	Section 5 Table 5-1	N/A	3 / 3	No	No
21.	Fire brigade team member #3	Section 5 Table 5-1	N/A	3 / 4	No	No
22.	Fire brigade team member #4	Section 5 Table 5-1	N/A	3 / 5	No	No
23.	C&RP technician #1	Section 5 Table 5-1	360	4 / 3 4 / 4	No	No
24.	C&RP technician #2	Section 5 Table 5-1	360	4 / 3 4 / 7 4 / 8	No	No
25.	Watch commander	Section 5 Table 5-1	N/A	5 / 15	No	No

Attachment 2
NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 2: Plant Operations and Safe Shutdown

Minimum Operations Crew (Two Units- One Control Room)				
Line	Generic Title/Role	On-Shift Position	Task Description	Controlling Method
1.	Shift Manager	Shift Manager	Plant Oversight	Ops Training Program
2.	Unit Supervisor	U1 Shift Foreman	Direct U1 CR operations (ECA 0.0 / ECA 0.3)	Ops Training Program
3.	Unit Supervisor	U2 Shift Foreman	Direct U2 CR operations (ECA 0.0 / ECA 0.3)	Ops Training Program
4.	Shift Technical Advisor	Work Control Shift Foreman	Shift technical advisor tasks	Ops Training Program
5.	Reactor Operator #1	U1 Control Operator	A. U1 CR operations (ECA 0.0)	Ops Training Program
			B. U1 CR operations (ECA 0.3)	Ops Training Program
6.	Reactor Operator #2	U2 Control Operator	A. U2 CR operations (ECA 0.0)	Ops Training Program
			B. U2 CR operations (ECA 0.3)	Ops Training Program
7.	Other	U1 BOPCO	A. U1 CR operations (ECA 0.0)	Ops Training Program
			B. U1 CR operations (ECA 0.3)	Ops Training Program
8.	Other	U2 BOPCO	A. U2 CR operations (ECA 0.0)	Ops Training Program
			B. U2 CR operations (ECA 0.3)	Ops Training Program
9.	Reactor Operator #5	U1 Work Control Lead	A. U1 CR operations (ECA 0.3)	Ops Training Program
			B. Direct U1 in-plant operations (ECA 0.0)	Ops Training Program
10.	Reactor Operator #6	U2 Work Control Lead	A. U2 CR operations (ECA 0.3)	Ops Training Program
			B. Direct U2 in-plant operations (ECA 0.0)	Ops Training Program
11.	Auxiliary Operator #1	U1 Turbine Building Operator	A. Locally start U1 DGs (ECA 0.0)	JPM# LJP-003 / LJP-038
			B. Throttle auxiliary feedwater (AFW) to U1/U2 steam generators (SGs) (ECA 0.0)	Basic OPs Valve Training
12.	Auxiliary Operator #2	U1 Aux Building Operator	A. Isolate U1 RCP seal leakoff (ECA 0.0)	JPM# NJP-099
			B. Throttle AFW to U1/U2 SGs (ECA 0.0)	Basic OPs Valve Training
13.	Auxiliary Operator #3	U2 Turbine Building Operator	A. Locally start U2 DGs (ECA 0.0)	JPM# LJP-003 / LJP-038
			B. Locally close U2 DG output breaker (ECA 0.0)	Ops Relay/Breaker Training
			C. Strip U2 dc bus loads (ECA 0.0)	JPM# LJP-099
			D. Purge U1/U2 main generators (ECA 0.0)	NJP-003
14.	Other	U2 Aux Building Operator	A. Isolate U2 RCP seal leakoff (ECA 0.0)	JPM# NJP-066
			B. Locally monitor U1/U2 spent fuel pool (SFP) level (ECA 0.0)	NIV ^(a) , Refer to Section 5.2.1.1

Attachment 2
NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 2: Plant Operations and Safe Shutdown

Minimum Operations Crew (Two Units- One Control Room)				
Line	Generic Title/Role	On-Shift Position	Task Description	Controlling Method
15.	Other	Intake Watch Operator	A. Open U1/U2 containment fan cooler unit (CFCU) breakers (ECA 0.0)	Ops Relay/Breaker Training
			B. Break U1/U2 condenser vacuum (ECA 0.0)	JPM# NJP-003
			C. Isolate U1/U2 hotwells (ECA 0.0)	Basic OPs Valve Training
			D. Strip U1 dc bus loads (ECA 0.0)	JPM# LJP-099
			E. Open CR, battery charger/inverter rooms, solid state protection system rooms, cable spreading room, and turbine driven AFW Pump room doors (ECA-0.0)	N/V , Refer to Section 5.2.1.1
Other (non-operations) Personnel				
16.	I&C Technician	Shift Control Technician #1	Install and monitor temporary temperature instruments in U1 and U2 SFPs	N/V , Refer to Section 5.2.1.1
17.	I&C Technician	Shift Control Technician #2	Install and monitor temporary temperature instruments in U1 and U2 SFPs	N/V , Refer to Section 5.2.1.1

Notes:

(a) Non-validated (N/V)

Attachment 2
NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 3: Firefighting

Line	Performed By	Task Description	Controlling Method
1.	Fire Brigade Leader	Preparation of firefighting apparatus	Fire Fighter Training Program
2.	FBT Member #1	Preparation of firefighting apparatus	Fire Fighter Training Program
3.	FBT Member #2	Preparation of firefighting apparatus	Fire Fighter Training Program
4.	FBT Member #3	Preparation of firefighting apparatus	Fire Fighter Training Program
5.	FBT Member #4	Preparation of firefighting apparatus	Fire Fighter Training Program

Attachment 2
NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 4: Radiation Protection and Chemistry

#	Position Performing Function/Task	Performance Time Period After Emergency Declaration (minutes)										
		0-30	30-60	60-90	90-120	120-150	150-180	180-210	210-240	240-300	300-330	330-360
1.	In-Plant Survey On-Shift Position:											
2.	On-Site Radiological Survey On-Shift Position:											
3.	Personnel Monitoring On-Shift Position: C&RP Technician #1 C&RP Technician #2	X X	X	X	X	X	X	X	X	X	X	X
4.	Job Coverage On-Shift Position: C&RP Technician #1		X	X	X							
5.	Offsite Radiological Assessment On-Shift Position:											
6.	Other RP – Describe: On-Shift Position:											
7.	Sampling On-Shift Position: C&RP Technician #2					X	X	X	X	X	X	X
8.	Post Rx-Trip Checklist On-Shift Position: C&RP Technician #2	X										

Notes: The basis for the selected performance time period was established by the subject matter experts during the task analysis review. Specific performance time periods for concurrent tasks are analyzed as part of the time motion study.

Post trip checklist tasks to prioritize sampling activities halted with loss of all ac. Personnel monitoring support task followed (sequential).

- CR and chemistry procedures direct C&RP technician #2 to perform several sampling tasks. C&RP technician #2 enters Job Aid SCARP JA-001 immediately when informed of the reactor trip.
- When informed that a loss of all ac power occurred, C&RP Technician #2 suspended SCARP JA-001 and reported to the 85-ft RCA Access to assist the C&RP technician #1.
- Subsequently, the C&RP technician #2 is directed by the Shift Manager to perform samples of all SGs as part of EOP actions.
- Chemistry procedure CAP E-1 directs RCS sampling 2 to 6 hours following the reactor trip.

Attachment 2: NEI 10-05, Appendix B, "On-shift Staffing Analysis Results"
Table 5: Emergency Plan Implementation

Line	Function/Task	On-Shift Position	Controlling Method
1.	Declare the ECL	Shift Manager	Ops Training Program EP Drill Program
2.	Approve offsite protective action recommendations	Shift Manager	Ops Training Program EP Drill Program
3.	Approve content of State/local notifications	Shift Manager	Ops Training Program EP Drill Program
4.	Approve extension to allowable dose limits	N/A	EP Drill Program
5.	Notification and direction to on-shift staff (e.g., to assemble, evacuate, etc.)	Shift Manager	EP Drill Program
6.	ERO notification	U2 Work Control Lead	Ops Training Program EP Drill Program
7.	Abbreviated NRC notification for DBT event	N/A	EP Drill Program
8.	Complete State/local notification form	Shift Manager	EP Drill Program
9.	Perform State/local notifications	U1 Work Control Lead	Ops Training Program EP Drill Program
10.	Complete NRC event notification form	U2 Work Control Lead	EP Drill Program
11.	Activate ERDS	U2 Work Control Lead	EP Drill Program
12.	Offsite radiological assessment	Work Control Shift Foreman	Ops Training Program EP Drill Program
13.	Perform NRC notifications	U2 Work Control Lead	EP Drill Program
14.	Perform other site-specific event notifications (e.g., INPO, ANI, etc.)	N/A	EP Drill Program
15.	Personnel accountability	Watch Commander	EP Drill Program
16.	Other: Track U1 personnel	U1 Work Control Lead	Ops Training Program EP Drill Program
17.	Other: Track U2 personnel	U2 Work Control Lead	Ops Training Program EP Drill Program

Notes: Line #3, #8, and #9 includes initial and follow-up State/local notifications.

Extended Loss of All Power (ELAP)

Position: U1 Work Control

Lead Line #: 1-9

Attachment 3

NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function/Responsibility (Task) Analysis"

Function	Responsibility (Task)	Action Step	Duration
1. Plant Operations (status monitoring and EOP actions)	1.1 U1 CR operations (2/9.A)	1.1.1 ECA 0.3 (attempt to start U1 DGs)	1
	1.2 Direct U1 in-plant operations (2/9.B)	1.2.1 ECA 0.0	359
2. Local/State Event Notification	2.1 Perform State/local notifications (5/9)	2.1.1 EP G-3, Step 4.1 (SAE Initial Notification)	4
		2.1.2 EP G-3, Step 4.1 (GE Initial Notification)	4
		2.1.3 EP G-3, Step 4.2 (Follow-up Notification #1)	6
		2.1.4 EP G-3, Step 4.2 (Follow-up Notification #2)	6
		2.1.5 EP G-3, Step 4.2 (Follow-up Notification #3)	6
		2.1.6 EP G-3, Step 4.2 (Follow-up Notification #4)	6
3. Assembly and Accountability	3.1 Track U1/U2 personnel (5/16)	3.1.1 EP G-2, Step 4.6.4 (Comm #2 Checklist)	346

Extended Loss of All Power (ELAP)

Position: U1 Work Control

Lead Line #: 1-9

Attachment 3

NEI 10-05, Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"

Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
07:55	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform U1 CR panel operations (07:55 – 07:56)
07:57	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Direct U1 CR in plant operations (07:57 – through event)
08:09	Actions completed in the c CR. Refer to section 4.4 and 4.5 for event and conditions description.	Track personnel: CR accountability sheet (08:09 – 08:11)
08:12	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Track personnel: Continuous U1/U2 tracking (08:12 – through event)
08:17	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform State/Local notifications: Performed initial SAE notifications (08:17 – 08:21)
09:10	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform State/Local notifications: Performed GE initial notifications (09:10 – 09:14)
10:10	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform State/Local notifications: Performed first follow-up notifications (10:10 – 10:16)
11:10	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform State/Local notifications: Performed second follow-up notifications (11:10 – 11:16)
12:10	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform State/Local notifications: Performed third follow-up notifications (12:10 – 12:16)
13:10	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform State/Local notifications: Performed fourth follow-up notifications (13:10 – 13:16)

Note: Task duration and times derived from DCPD NEI 10-05 SBO time motion study results.

Extended Loss of All Power (ELAP)

Position: U2 Work Control Lead

Line #: 1-10

Attachment 3

NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function / Responsibility (Task) Analysis"

Function	Responsibility (Task)	Action Step	Duration
1. Plant operations (status monitoring and EOP actions)	1.1 U2 CR operations (2/10.A)	1.1.1 ECA 0.3 (attempt to start U1 DGs)	1
	1.2 Direct U2 in-plant operations (2/10.B)	1.2.1 ECA 0.0	359
2. ERO notification	2.1 ERO notification (5/6)	2.1.1 EP G-2, Step 4.6.2 (Comm #2 Checklist)	1
3. NRC event notification	3.1 Complete NRC event notification form (5/10)	3.1.1 EP G-2, Att 6.3 (Comm #1 Checklist)	7
4. NRC emergency telecommunications system	4.1 Activate ERDS (5/11)	4.1.1 EP G-2, Att 2, Step 2.a.	<1
5. Assembly and Accountability	5.1 Track U2 personnel (5/17)	5.1.1 EP G-2, Step 4.6.4 (Comm #2 Checklist)	340

Attachment 3

NEI 10-05, Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"

Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
07:55	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Perform U2 CR panel operations (07:55 – 07:56)
07:56	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Direct U2 CR in plant operations (07:56 – through event)
08:11	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Activate ERDS (08:11 – 08:11)
08:11	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	ERO Notification: initiate VANS (08:11 – 08:15)
08:15	Actions completed in the CR. Refer to section 4.4 for event and conditions description.	Track personnel: Continuous U2 tracking (08:15 – Thru Event)
08:50	Actions completed in the CR. Refer to section 4.4 and 4.5 for event and conditions description.	Complete NRC emergency notification form (08:50 – 08:57)

Note: Task duration and times derived from DCPD NEI 10-05 SBO time motion study results.

Extended Loss of All Power (ELAP)

Position: U1 Turbine Building Operator

Line #: 1-11

Attachment 3 NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function / Responsibility (Task) Analysis"			
Function	Responsibility (Task)	Action Step	Duration
1. Plant operations (status monitoring and EOP actions)	1.1 Locally start U1 DGs (2/11.A)	1.1.1 ECA 0.0 Step 5.a	5
	1.2 Throttle AFW to U1/U2 SGs (2/11.B)	1.2.1 ECA 0.0 Step 8.b	20
		1.2.2 ECA 0.0 Step 8.c	Through event

Attachment 3 NEI 10-05. Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"		
Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
00:00	Actions completed locally in U1 DG room. Refer to section 4.4 and 4.5 for event and conditions description.	Locally start U1 DGs (00:00 – 00:05)
00:06	Actions completed in the auxiliary building. Refer to section 4.4 and 4.5 for event and conditions description.	Throttle AFW to U1/U2 SGs (00:06 – 00:26)
00:27	Actions completed in the auxiliary building. Refer to section 4.4 and 4.5 for event and conditions description.	Throttle AFW to U1/U2 SGs (00:27 – 06:00)

Notes: Task duration and times derived from DCPD NEI 10-05 SBO time motion study results.

Actual first throttle of AFW took 8 minutes to perform. Additional 12 minutes for instruction and movement to location. Additional throttling performed as cooldown progressed when directed by CR (U1 turbine building operator remained in auxiliary building).

Extended Loss of All Power (ELAP)

Position: U2 Turbine Building Operator

Line #: 1-13

Attachment 3 NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function / Responsibility (Task) Analysis"			
Function	Responsibility (Task)	Action Step	Duration
1. Plant operations (status monitoring and EOP actions)	1.1 Locally start U2 DGs (2/13.A)	1.1.1 ECA 0.0 Step 5.a	10
	1.2 Locally close U2 DG output breaker (2/13.B)	1.2.1 ECA 0.0 Step 5.a	9
	1.3 Strip U2 dc bus loads (2/13.C)	1.3.1 ECA 0.0 Step 16	11
	1.4 Purge U1/U2 main generators (2/13.D)	1.4.1 ECA0.0 Step 11 (Start)	19
		1.4.2 ECA0.0 Step 11 (Stop)	2

Attachment 3 NEI 10-05, Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"		
Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
08:13	Actions completed locally in U2 DG room. Refer to section 4.4 and 4.5 for event and conditions description.	Locally start U2 DGs (08:13 – 08:23)
08:24	Actions completed in vital switchgear room. Refer to section 4.4 and 4.5 for event and conditions description.	Locally close U2 DG output breaker (08:24 – 08:33)
08:34	Actions completed in turbine building. Refer to section 4.4 and 4.5 for event and conditions description.	Purge U1/U2 main generators: start purge (08:34 – 08:53)
09:03	Actions completed in turbine building. Refer to section 4.4 and 4.5 for event and conditions description.	Strip U2 dc bus loads (09:03 – 09:31)
11:50	Actions completed in turbine building. Refer to section 4.4 and 4.5 for event and conditions description.	Purge U1/U2 main generators: secure purge (11:50 – 11:52)

Note: Task duration and times taken from DCPD NEI 10-05 SBO time motion study results.

Extended Loss of All Power (ELAP)

Position: U1 Auxiliary Building Operator

Line #: 1-12

Attachment 3 NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function / Responsibility (Task) Analysis"			
Function	Responsibility (Task)	Action Step	Duration
1. Plant operations (status monitoring and EOP actions)	1.1 Isolate U1 RCP seal leakoff (2/12.A)	1.1.1 ECA 0.0 Step 7	17
	1.2 Throttle AFW to U1/U2 SGs (2/12.B)	1.2.1 ECA 0.0 Step 8.b	15
		1.2.2 ECA 0.0 Step 8.c	Through event

Attachment 3 NEI 10-05, Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"		
Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
00:00	Actions completed in the auxiliary building filter gallery. Refer to section 4.4 and 4.5 for event and conditions description.	Isolate U1 RCP seal leakoff (00:00 – 00:17)
00:18	Actions completed in the auxiliary building. Refer to section 4.4 and 4.5 for event and conditions description.	Throttle AFW to U1/U2 SGs (00:18 – 00:33)
00:34	Actions completed in the auxiliary building. Refer to section 4.4 and 4.5 for event and conditions description.	Throttle AFW to U1/U2 SGs (00:34 – 06:00)

Notes: Task duration and times derived from DCPD NEI 10-05 SBO time motion study results.

First throttle of AFW took 15 minutes including instruction and movement to location as NO was already in the auxiliary building. Additional throttling performed as cooldown progressed when directed by CR (U1 auxiliary building operator remained in auxiliary building).

Extended Loss of All Power (ELAP)

Position: U2 Auxiliary Building Operator

Line #: 1-14

Attachment 3 NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function / Responsibility (Task) Analysis"			
Function	Responsibility (Task)	Action Step	Duration
1. Plant operations (status monitoring and EOP actions)	1.1 Isolate U2 RCP seal leakoff (2/14.A)	1.1.1 ECA 0.0 Step 7	14
	1.2 Locally monitor U1/U2 SFP level (2/14.B)	1.2.1 ECA 0.0 Step 26.a	11

Attachment 3 NEI 10-05, Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"		
Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
00:00	Actions completed in the auxiliary building filter gallery. Refer to section 4.4 and 4.5 for event and conditions description.	Isolate U2 RCP seal leakoff (00:00 – 00:12)
00:13	Actions completed at U1 and U2 SFPs in fuel handling Building. Refer to section 4.4 and 4.5 for event and conditions description.	Locally monitor U1/U2 SFP level (00:13 – 00:24)

Notes: Task to isolate U2 RCP seal leakoff is taken from DCPD NEI 10-05 SBO time motion study results.

Timing for the task to locally monitor U1/U2 SFP level (11 minutes rounded up) was performed as a time motion study walkthrough on 03/18/13.

Extended Loss of All Power (ELAP)

Position: Intake Watch Operator

Line #: 1-15

Attachment 3 NEI 10-05, Appendix D, "On-shift Staffing Analysis Results: Function / Responsibility (Task) Analysis"			
Function	Responsibility (Task)	Action Step	Duration
1. Plant Operations (status monitoring and EOP actions)	1.1 Open U1/U2 CFCU breakers (2/15.A)	1.1.1 ECA 0.0 Step 9	4
	1.2 Break U1/U2 condenser vacuum (2/15.B)	1.2.1 ECA 0.0 Appendix DC Step 1	20
	1.3 Isolate U1/U2 hotwells (2/15.C)	1.3.1 ECA 0.0	13
	1.4 Strip U1 DC bus loads (2/15.D)	1.4.1 ECA 0.0	9
	1.5 Open doors for ventilation (2/15.E)	1.5.1 ECA 0.0	23

Attachment 3 NEI 10-05, Appendix E, "On-shift Staffing Analysis Results: Work Activities Analysis"		
Time	Plant/equipment/environmental events and conditions applicable to the functions and tasks	Task / Action Step description (start & stop)
00:00	Actions completed in the Aux Building switchgear rooms. Refer to section 4.4 and 4.5 for event and conditions description.	Open U1/U2 CFCU breakers (00:00 – 00:00:07)
00:08	Actions completed in the Turbine Building. Refer to section 4.4 and 4.5 for event and conditions description.	Break U1/U2 condenser vacuum (00:08 – 00:28)
00:29	Actions completed in the Turbine Building. Refer to section 4.4 and 4.5 for event and conditions description.	Isolate U1/U2 hotwells (00:29 – 00:42)
00:43	Actions completed in the Turbine Building. Refer to section 4.4 and 4.5 for event and conditions description.	Strip U1 DC bus loads (00:43 – 00:52)
00:53	Actions completed various locations. Refer to section 4.4 and 4.5 for event and conditions description.	Open doors for ventilation (00:53 – 01:16)

Notes: Task to open U1/U2 CFCU breakers is derived from DCPD 10-05 SBO time motion study results.

Timing for the task to break U1/U2 condenser vacuum is taken from JPM# NJP-003 average time of 20 minutes (rounded up).

Timing for the task to strip U1/U2 DC bus loads is taken from JPM# LPJ-099 average time of 9 minutes (rounded up).

Timing for the tasks to isolate U1/U2 hotwells (13 minutes) and open doors for ventilation (13 minutes) were performed as a TMS walkthrough on 03/18/13.

Pacific Gas and Electric Company (PG&E) Response to Nuclear Regulatory
Commission (NRC) Requested Information

NRC Staffing Requested Information #1

Provide an assessment of the onsite and augmented staff needed to respond to a large scale natural event meeting the conditions described. 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 Nuclear Regulatory Commission (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).*

Provide onsite and augmented staffing assessment considering all requested functions except those related to NTTF Recommendation 4.2. [Phase 1 staffing assessment]

PG&E Response to NRC Staffing Requested Information #1

PG&E's Phase 1 Staffing Assessment (Assessment) was completed on March 28, 2013, and is provided in Enclosure 1.

The Assessment did not include actions of how staff will move back-up equipment from alternate onsite storage facilities to repair locations at each reactor as described in the order regarding the NRC NTTF Recommendation 4.2. PG&E will perform this assessment as a part of the Phase 2 Staffing Assessment as described in PG&E Letter DCL-12-048, dated May 9, 2012.

No new staff or functions were identified as a result of this assessment. Refer to Enclosure 1, Sections 5.2 and 6.2.

Several on-shift personnel were identified to have collateral duties. Time motion studies validated that the on-shift personnel were able to complete all tasks in a timely manner

without degraded performance of their other assigned functions. Refer to Enclosure 1, Section 5.2.

NRC Staffing Requested Information #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.

1. *Conduct the onsite and augmented staffing assessment:*
 - a. *The onsite and augmented staffing assessment considering all requested functions except those related to NTTF Recommendation 4.2. [Phase 1 staffing assessment]*
2. *A schedule of the time needed to implement changes will be provided as follows:*
 - a. *Those associated with the Phase 1 staffing assessment.*

PG&E Response to NRC Staffing Requested Information #2

1. The PG&E Phase 1 Staffing Assessment was conducted by March 28, 2013.
2. The time needed to implement changes are as follows:
 - a. The enhancement of procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 2.9, to integrate the expanded response and transportation capabilities will be implemented 4 months prior to Unit 1 Refueling Outage (1R19). 1R19 is expected to commence during Fall 2015.
 - b. The establishment of emergency response facilities for technical support center and operational support center personnel to support operations of an expanded emergency response organization will be completed as part of the new Emergency Preparedness Rulemaking in accordance with 10 CFR 50, Appendix E. This action is expected to be completed by December 23, 2014.
 - c. The evaluation of the drill and exercise program will be conducted once NRC guidance regarding demonstration criteria for dual unit events or expanded ERO activities is received. This action will be implemented 4 months prior to 1R19. Refueling outage 1R19 is expected to commence during Fall 2015.

NRC Staffing Requested Information #6

NRC Staffing Requested Information #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, multi-unit event, including any new or revised agreements with offsite resource providers (e.g., staffing, equipment, transportation, etc.).

Changes will be identified as follows:

Those associated with the Phase 1 staffing assessment.

PG&E Response to NRC Staffing Requested Information #6

As part of the new emergency preparedness rulemaking NEI 10-05 staffing study, a reactor operator was added to the on-shift staff complement to support emergency plan functions.

No other changes will be made to the emergency plan as a result of the Phase 1 Staffing Assessment.

Regulatory Commitments

Pacific Gas and Electric Company (PG&E) is making the following regulatory commitment (as defined by NEI 99-04) in this submittal:

Commitment	Due Date
PG&E will include applicable IER actions as a part of the Phase 2 Staffing Study.	4 months prior to 1R19
PG&E will evaluate and enhance procedures, as required, using the guidance in NEI 12-01, Sections 3.4 and 3.9, to integrate the expanded response and transportation capabilities.	4 months prior to 1R19
PG&E will establish emergency response facilities for TSC and OSC personnel to support operation of an expanded ERO. This will be completed as part of the new EP Rulemaking in accordance with 10 CFR 50, Appendix E.	December 23, 2014
PG&E will evaluate its drill and exercise program and make any necessary changes once future NRC guidance is received regarding demonstration criteria for dual unit events or expanded ERO activities.	4 months prior to 1R19