Exelon Generation®

Order No. EA-12-049

RS-13-024

February 28, 2013

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

Peach Bottom Atomic Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

Subject: 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)

References:

1. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" dated March 12, 2012
2. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0, dated August 29, 2012
3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August, 2012
4. Exelon Generation Company, LLC's Initial Status Report 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 October 25, 2012

On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued an order (Reference 1) to Exelon Generation Company, LLC (EGC). Reference 1 was immediately effective and directs EGC to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event. Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 requires submission of an Overall Integrated Plan by February 28, 2013. The NRC Interim Staff Guidance (ISG) (Reference 2) was issued August 29, 2012 which endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 3 provides direction regarding the content of this Overall Integrated Plan.

Reference 4 provided the EGC initial status report regarding mitigation strategies, as required by Reference 1.

The purpose of this letter is to provide the Overall Integrated Plan pursuant to Section IV, Condition C.1, of Reference 1. This letter confirms EGC has received Reference 2 and has an Overall Integrated Plan developed in accordance with the guidance for defining and deploying strategies that will enhance the ability to cope with conditions resulting from beyond-design-basis external events.

The information in the enclosure provides the Peach Bottom Atomic Power Station, Units 2 and 3 Overall Integrated Plan for mitigation strategies pursuant to Reference 3. The enclosed Integrated Plan is based on conceptual design information. Final design details and associated procedure guidance, as well as any revisions to the information contained in the Enclosure, will be provided in the 6-month Integrated Plan updates required by Reference 1.

This letter contains no new regulatory commitments. If you have any questions regarding this report, please contact David P. Helker at 610-765-5525.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 28th day of February 2013.

Respectfully submitted,

Michael D. Jesse
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Enclosure:

1. Peach Bottom Atomic Power Station, Units 2 and 3 Mitigation Strategies (MS) Overall Integrated Plan

cc: Director, Office of Nuclear Reactor Regulation
NRC Regional Administrator - Region I
NRC Senior Resident Inspector – Peach Bottom Atomic Power Station, Units 2 and 3
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Enclosure 1

Peach Bottom Atomic Power Station, Units 2 and 3

Mitigation Strategies (MS)

Overall Integrated Plan

(59 pages)

General Integrated Plan Elements BWR	
Site: PBAPS	
Determine Applicable Extreme External Hazard **Ref: NEI 12-06 section 4.0 -9.0 JLD-ISG-2012-01 section 1.0**	Seismic events; external flooding; severe storms with high winds; snow, ice and extreme cold; and high temperatures were determined to be applicable Extreme External Hazards for Peach Bottom Atomic Power Station (PBAPS) per the guidance of NEI 12-06 and are as follows: *Seismic Hazard Assessment:* Per NEI 12-06, all sites will consider Seismic Hazards. The list of Peach Bottom Seismic Class I structures includes: the Reactor Building, Main Control Room Complex, Pump Structure (containing critical service water pumps), Emergency Diesel Building, Radwaste Building, and Emergency Heat Sink Facility including cooling tower. All Class I structures were seismically analyzed. The design earthquake considers a maximum horizontal ground acceleration of 0.05g, and the Maximum Credible Earthquake considers a horizontal ground acceleration of 0.12g. A remote possibility exists that a seismic event could affect availability of the Ultimate Heat Sink due to reliance on a non-seismically robust downstream dam. *External Flooding Hazard Assessment:* External Flooding is applicable with regional precipitation, probable maximum flood (PMF) as the Design Basis flood hazard. Critical equipment, systems, and structures essential to a safe shutdown of the reactor are flood protected to Elevation 135 ft, against the most severe combination of the PMF, failure of the upstream dam, and wind-generated waves. During the flooding event, it is assumed that a long lead time exists before flood levels will reach plant grade elevation. *Severe Storms with High Winds Hazard Assessment:* PBAPS is located at 39°45'34" north latitude and 76°16'8" west longitude. Per Figure 7-1 of NEI 12-06, PBAPS is susceptible to hurricanes due to location. Per Figure 7-1, peak wind gusts at PBAPS will be between 130 and 140 mph. Per Figure 7-2 of NEI 12-06, peak tornado winds at PBAPS will be 165 mph. *Snow, Ice, and Extreme Cold Hazard Assessment:* Per NEI 12-06 section 8 Figures, PBAPS is subject to Snow and Ice. PBAPS UFSAR Section 2.3.4.1 characterizes site temperature conditions as a few winter temperatures in the 5° to 10°F range. There is a high probability of severe ice storms in Pennsylvania, and there have been instances in which disruption of power, communications, and transportation has occurred. One severe ice storm can be expected every 3 years.

	<u>High Temperature Hazard Assessment:</u> Per NEI 12-06, all sites will consider High Temperature. PBAPS UFSAR Section 2.3.4.1 states that there are occasional readings above 90°F in the summer. **References** 1. UFSAR Section 1.6.1.1 2. UFSAR Section 2.3.4.1 3. UFSAR Section 2.3.4.3 4. UFSAR Section 2.3.4.4 5. UFSAR Section 2.4.3.5 6. UFSAR Appendix C
Key Site assumptions to implement NEI 12-06 strategies. **Ref: NEI 12-06 section 3.2.1**	• Flood and seismic re-evaluations pursuant to the 10 CFR 50.54(f) letter of March 12, 2012 are not completed and therefore not assumed in this submittal. As the re-evaluations are completed, appropriate issues will be entered into the corrective action system and addressed on a schedule commensurate with other licensing bases changes. • Additional staff resources are assumed to begin arriving at hour 6 and fully staffed by 24 hours. • DC Systems are available. • AC and DC distribution systems are available. • Plant initial response is the same as SBO. • No additional single failures of any SSC are assumed (beyond the initial failures that define the ELAP/LUHS scenario in NEI-12-06). • Primary and secondary storage locations have not been selected; once locations are finalized implementation routes will be defined. • Storage locations will be chosen in order to support the event timeline. • BWROG EPG/SAG Revision 3, containing items such as guidance to allow early venting and to maintain steam driven injection equipment available during emergency depressurization, is approved and implemented in time to support the compliance date. • This plan defines strategies capable of mitigating a simultaneous loss of all alternating current (ac) power and loss of normal access to the ultimate heat sink resulting from a beyond-design-basis event by providing adequate capability to maintain or restore core cooling, containment, and SFP cooling capabilities at all units on a site. Though specific strategies are being developed, due to the inability to anticipate all possible scenarios, the strategies are also diverse and flexible to encompass a wide range of possible conditions. These pre-planned strategies developed to protect the public health and safety will be incorporated into the unit emergency operating procedures in accordance with

	established EOP change processes, and their impact to the design basis capabilities of the unit evaluated under 10 CFR 50.59. The plant Technical Specifications contain the limiting conditions for normal unit operations to ensure that design safety features are available to respond to a design basis accident and direct the required actions to be taken when the limiting conditions are not met. The result of the beyond-design-basis event may place the plant in a condition where it cannot comply with certain Technical Specifications, and, as such, may warrant invocation of 10 CFR 50.54(x) and/or 10 CFR 73.55(p). • In the event of a flood event, sufficient time exists to re-locate FLEX equipment and prepare it for use.
Extent to which the guidance, JLD-ISG-2012-01 and NEI 12-06, are being followed. Identify any deviations to JLD-ISG-2012-01 and NEI 12-06. **Ref: JLD-ISG-2012-01 NEI 12-06 13.1**	Full conformance with JLD-ISG-2012-01 and NEI 12-06 is expected with no deviations.
Provide a sequence of events and identify any time constraint required for success including the technical basis for the time constraint. **Ref: NEI 12-06 section 3.2.1.7 JLD-ISG-2012-01 section 2.1**	The times to complete actions in the Events Timeline are based on operating judgment, the conceptual designs, and the current supporting analyses. The final timeline will be time validated once detailed designs are completed and procedures are developed. The results will be provided in a future 6-month update. Issuance of BWROG document NEDC-33771P, "GEH Evaluation of FLEX Implementation Guidelines" on 1/31/2013 did not allow sufficient time to perform the analysis of the deviations between Exelon's engineering analyses and the analyses contained in the BWROG document prior to commencing regulatory reviews of the Integrated Plan. This analysis is expected to be completed, documented on Attachment 1B, and provided to the NRC in the August 2013 6-month status update. See Attachment 1A for sequence of events timeline. <u>Time Constraints</u> Action Item #6 Without a long-term pneumatic source, manual operation of the ADS SRVs would rely on the volume of nitrogen in their accumulators, which is an exhaustible supply. The accumulators

	are designed for 5 valve operations each at a drywell pressure of one atmosphere, two valve actuations with the Drywell at 70% of design pressure, and one actuation at containment design pressure (See Reference #2). As a priority, Operators will pursue one of two options for supplying pneumatic pressure to the SRVs: aligning the nitrogen cylinders to the ADS SRV or aligning the CAD (Containment Atmosphere Dilution) tank to the Instrument Nitrogen header (See Reference #19). Aligning the nitrogen cylinders to the ADS SRVs ensures that they have the safety related, long term pneumatic supply. The nitrogen cylinders can be lined up using pipe jumpers around SV-8(9)130A&B until AC power is restored to these valves. Supplying pneumatic pressure within 60 minutes provides margin to prevent future exhaustion of accumulator pressure. A strategy to install these jumpers is already in place in PBAPS Fire Safe Shutdown Guidance. (An example is provided in Reference #12.) Action Items #8 and #15 Entrance into ELAP (extended loss of AC power) guidance and commencement of FLEX Generator alignment at one hour will ensure the portable generator is in service within approximately 5 hours. One hour was chosen: a.) to agree with direction in NEI 12-06, Section 3.2.2 (1), and b.) based on a table top review with Operations Department personnel. One hour would allow time for the Operating crew to stabilize the plant and assess available electrical sources, and would include attempting local starts of emergency diesel generators and contacting offsite agencies, such as the Transmission System Operator to validate the fact that an ELAP is in progress. In addition, DC Load shed is performed to prolong battery availability. Preliminary analysis indicates that the limiting battery coping time, which includes the completion of load shedding in accordance with current procedural guidance is approximately 5.5 hours. Table top reviews with Operations personnel determined that SE-11, Attachment T, DC Load Shed procedure would be directed at approximately 15 to 20 minutes after the start of the event. Utilizing two equipment operators, the task would be complete at approximately 60 minutes after the start of the event. Table top reviews with Operations personnel determined that direction to place the FLEX generator in service would be given immediately upon entry into the ELAP procedure. In addition, Operations anticipates that the generators would be aligned and operating at approximately 5 hours after the start of the event. Action Item #14 Early containment venting using the Torus Hardened Vent line will be initiated such that peak Torus temperature remains below the maximum allowed for RCIC operation. Preliminary analysis

	indicates that opening the vent at approximately 4.8 hours prevents Torus temperature from exceeding 230°F. A BWROG review of RCIC operation with elevated suction temperatures was conducted by GE Hitachi following the events at Fukushima-Daiichi (See Reference #15). The review indicated RCIC could continue to operate up to approximately 230°F suction temperature. Additional work will be performed during detailed design development to ensure Suppression Pool temperature will support RCIC operation. Action Item #17 Preliminary analysis indicates that without makeup, Torus level lowers to approximately 12.5 ft approximately 20 hours into the event. This level is halfway between normal low level in the Torus and the LOCA downcomers. Initiating makeup to the Torus at 12 hours will ensure adequate inventory for RCIC suction. Line-up of the FLEX Pumps also allows them to be available for RPV injection. Action Item #18 Spent Fuel Pool (SFP) makeup is not a time constraint with the initial condition of Mode 1 at 100% power, since the worst case fuel pool heat load conditions only exist during a refueling outage. Under non-outage conditions, the maximum SFP heat load is $2.1E^{+}7$ BTU/hr. Loss of SFP cooling with this heat load and an initial SFP temperature of 150°F results in a time to boil of 7.2 hours, and 95 hours to the top of active fuel. Therefore, completing the equipment line-up for initiating SFP makeup at 12 hours into the event ensures adequate cooling of the spent fuel is maintained. The worst case SFP heat load during an outage is $5.8E^{+}7$ BTU/hr. Loss of SFP cooling with this heat load and an initial SFP temperature of 150°F results in a time to boil of 2.5 hours, and 33 hours to the top of active fuel. With the entire core being located in the SFP, manpower resources normally allocated to aligning core cooling along with the Operations outage shift manpower can be allocated to aligning SFP makeup which ensures the system alignment can be established within 8 hours. Initiation at 8 hours into the event ensures adequate cooling of the spent fuel is maintained. Initial calculations were used to determine the fuel pool timelines. Formal calculations will be performed to validate this information during development of the spent fuel pool cooling strategy detailed design, and will be provided in a future 6-month update. Action Item #19 Preliminary analysis indicates that RCIC Room temperature reaches 165°F in approximately 20 hours. Actions to provide cooling from portable fans will maintain RCIC System availability by addressing the room temperature rise.

	References: 1. UFSAR Section 4.4 2. UFSAR Section 10.17 3. E-26, Sheet 1,Single Line Diagram, 125/250 VDC, Rev 80 4. E-27, Sheet 1, Single Line Diagram, 125/250 VDC, Rev 74 5. M-333,P&ID Instrument Nitrogen, Sheet 1 Rev 57, Sheet 2, Rev 58 6. M-351, P&ID Nuclear Boiler, Sheet 1, Rev 78, Sheet 2, Rev 70, Sheet 3, Rev 74, Sheet 4, Rev 69 7. M-359, P&ID RCIC System, Sheet 1, Rev 50, Sheet 2, Rev 48 8. M-372, P&ID CAD System, Sheet 1, Rev 64, Sheet 2, Rev 54 9. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14 10. SE-11, Attachment T, DC Load Shed, Rev 13 11. T-102, Primary Containment Control, Sheet 1, Rev 20 12. T-313N-3, Area 13N Fire Guide , Rev 4 13. Passport IR #1270719-74, Technical Evaluation 14. Passport IR #1340416-51, FLEX computation 15. 0000-0143-0382-R1, BWROG RCIC System Operation in Prolonged Station Blackout 16. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1 17. PB-MISC-010 (MAAP Analysis to Support Flex Strategy), Rev 0 18. PIMS AR # A1863615-03, RCIC Room Heatup for Extended SBO 19. T-261-2(3), Placing the Backup Instrument Nitrogen Supply from CAD Tank in Service
Identify how strategies will be deployed in all modes. **Ref: NEI 12-06 section 13.1.6**	Deployment of FLEX is expected for all modes of operation. Transportation routes will be developed from the equipment storage area to the FLEX staging areas. An administrative program will be developed to ensure pathways remain clear or compensatory actions will be implemented to ensure all strategies can be deployed during all modes of operation. This administrative program will also ensure the strategies can be implemented in all modes by maintaining the portable FLEX equipment available to be deployed during all modes. Identification of storage and creation of the administrative program are open items. Closure of these items will be documented in a 6-month update.

Provide a milestone schedule. This schedule should include:
• **Modifications timeline**
  o **Phase 1 Modifications**
  o **Phase 2 Modifications**
  o **Phase 3 Modifications**
• **Procedure guidance development complete**
  o **Strategies**
  o **Maintenance**
• **Storage plan (reasonable protection)**
• **Staffing analysis completion**
• **FLEX equipment acquisition timeline**
• **Training completion for the strategies**
• **Regional Response Centers operational**
 	
Ref: NEI 12-06 section 13.1
	See Attachment 2.
	
	Exelon Generation Company, LLC (Exelon) fully expects to meet the site implementation/compliance dates provided in Order EA-12-049 with no exceptions. Any changes or additions to the planned interim milestone dates will be provided in a future 6-month update.

Identify how the programmatic controls will be met. **Ref: NEI 12-06 section 11** **JLD-ISG-2012-01 section 6.0**	Peach Bottom will implement an administrative program for FLEX to establish responsibilities, and testing and maintenance requirements. A plant system designation will be assigned to FLEX equipment which requires configuration controls associated with systems. This will establish responsibilities, maintenance and testing requirements for all components associated with FLEX. Unique identification numbers will be assigned to all components added to the FLEX plant system. Equipment associated with these strategies will be procured as commercial equipment with design, storage, maintenance, testing, and configuration control as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11. Installed structures, systems and components pursuant to 10CFR50.63(a) will continue to meet the augmented quality guidelines of Regulatory Guide 1.155, Station Blackout. Standard industry PMs will be developed to establish maintenance and testing frequencies based on type of equipment and will be within EPRI guidelines. Testing procedures will be developed based on the industry PM templates and Exelon standards.

Describe training plan	Training materials for FLEX will be developed for all station staff involved in implementing FLEX strategies. For accredited training programs, the Systematic Approach to Training, SAT, will be used to determine training needs. For other station staff, a training overview will be developed per change management plan.
Describe Regional Response Center plan	Peach Bottom has contractual agreements in place with the Strategic Alliance for FLEX Emergency Response (SAFER). The industry will establish two (2) Regional Response Centers (RRC) to support utilities during beyond design basis events. Each RRC will hold five (5) sets of equipment, four (4) of which will be able to be fully deployed when requested, the fifth set will have equipment in a maintenance cycle. Equipment will be moved from an RRC to a local Assembly Area, established by the SAFER team and the utility. Communications will be established between the affected nuclear site and the SAFER team and required equipment moved to the site as needed. First arriving equipment, as established during development of the nuclear site's playbook, will be delivered to the site within 24 hours from the initial request.

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Maintain Core Cooling

Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-1 of NEI 12-06:

- **RCIC/HPCI/IC**
- **Depressurize RPV for injection with portable injection source**
- **Sustained water source**

BWR Installed Equipment Phase 1:

- RCIC Injection will maintain RPV inventory, with suction from the Torus.
- SRVs will be used to control RPV pressure. RPV pressure will be lowered using SRVs to allow for injection with portable injection source.
- The Conowingo Pond, which is the Ultimate Heat Sink, is the sustained water source. The Emergency Cooling Tower is available as an alternate source.

At the initiation of the event the operators will enter the TRIPs (Transient Response Implementation Procedures, which are the Peach Bottom-specific EOPs) and SE-11 (Loss of Offsite Power). It is expected that the site specific ELAP (Extended Loss of AC Power) procedure and FLEX Support Guidelines will be entered when there has been a loss of offsite power, including the Conowingo Tie Line and the Emergency Diesel Generators, with confirmation of no imminent return of any of these power sources to service.

The operators will line-up a pneumatic supply to the ADS SRVs and commence a DC load shed. In addition, a gradual cooldown of the RPV will be performed with SRVs, and RPV pressure will be maintained at approximately 200 psig.

<u>**Reactor Level Control**</u>

Initial RPV water level control will be accomplished using the RCIC System, which consists of a steam-driven turbine-pump unit and associated valves and piping capable of delivering makeup water to the reactor vessel. The steam supply to the RCIC turbine comes from the "C" Main Steam line between the reactor and inboard MSIV and exhausts to the suppression pool. The RCIC pump can take suction from the condensate storage tank or from the suppression pool. The RCIC pump discharges to the Feedwater line. The makeup water is delivered into the reactor vessel through a connection to the "B" Feedwater line and is distributed within the reactor vessel through the Feedwater spargers. Cooling water for the RCIC turbine lube oil cooler and barometric condenser is supplied from the discharge of the pump. The CSTs are qualified for all events with the exception of seismic and tornado / high winds. If the CST is unavailable, suction will be transferred to the Torus.

The RCIC System operates independent of AC power. It is expected that RCIC would remain a viable source of injection as long as 125 VDC control power is available for system control and 250 VDC is available for control of valves, the Barometric Condenser Vacuum Pump and Condensate Pump. There is procedural direction to operate RCIC without DC power, which is contained in SE-13.1-2/3. This strategy is available but not required for the ELAP event.

Current battery coping time evaluation indicates that the limiting coping time for RCIC operation from the

[1] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

Main Control Room (MCR) is approximately 5.5 hours for 125VDC bus 3CD001.

Venting of the containment will be initiated such that peak Suppression Pool temperature remains below the maximum allowed for RCIC operation. BWROG RCIC System Operation in Prolonged Station Blackout – Feasibility Study (Reference # 19) indicates that RCIC will remain functional as long as Suppression Pool temperature can be maintained less than approximately 230° F. Operation of RCIC above 230°F is currently being evaluated by General Electric and the BWROG. Preliminary analysis performed for strategy development indicates that Suppression Pool temperature can be maintained below 230°F.

Reactor Pressure Control

The station blackout (SBO) event will cause the RPV to be isolated from the Main Condenser. Pressure in the RPV will be controlled by automatic and then manual actuation of the main steam relief valves (SRVs). SRV discharge is piped to the Torus. Each of the five relief valves provided for automatic depressurization is equipped with an accumulator and check valve arrangement. These accumulators are provided to ensure that the valves can be held open following failure of the supply to the accumulators, and are sized for a minimum of five valve operations at a drywell pressure of one atmosphere, two valve operations at a Drywell pressure of 70% of design pressure, and one valve operation at containment design pressure. The SRV solenoids are powered from the safety related DC Buses.

A long-term, safety grade, pneumatic supply has been provided for the ADS valves. The source of safety grade pneumatic pressure is a series of nitrogen cylinders located within the reactor building with a connection provided outside the reactor building for the installation of additional bottles, as required. Since the supply isolation valves, SV-8(9)130A&B require AC power to open, an existing Fire Safe Shutdown strategy to install pipe jumpers around these valves will be employed.

A long-term, backup, safety grade pneumatic nitrogen supply is available to enable remote operation of the safety relief valves for a period of 72 hours following a design basis fire. The source of the pneumatic nitrogen supply is the Safety Grade Instrument Gas (SGIG) system. The SGIG system is tied into the 6000 gallon liquid nitrogen tank which supplies the Containment Atmospheric Dilution (CAD) system. The CAD Tank will be aligned to supply the nitrogen header when adequate resources are available.

Current battery coping time evaluation indicates that the limiting coping time for manual SRV operation is approximately 7 hours for 125VDC Bus 2BD001.

If the plant was placed in Hot Shutdown as a result of a flood event when the ELAP occurred, then allowing the RPV to pressurize or maintaining RPV pressure would allow the use of a steam driven system, such as the RCIC System to provide core cooling. In addition, deployment of FLEX Pumps could be accomplished expeditiously because supplemental resources would be available onsite in response to the flood event and shutdown of both reactors.

Cold Shutdown and Refueling

When in Cold Shutdown and Refueling, many variables exist which impact the ability to cool the core. In the event of an ELAP during these Modes, installed plant systems cannot be relied upon to cool the core; thus, transition to Phase 2 will begin immediately. All efforts will be made to expeditiously provide core cooling and minimize heat-up and repressurization. All efforts will be made to control reactor temperature below 212°F to prevent an unplanned mode change. Exelon has a program in place (Reference #11) to determine the time to boil for all conditions during shutdown periods. This time will be used to determine the time required to complete transition to Phase 2.

To accommodate the activities of vessel disassembly and refueling, water levels in the reactor vessel and

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the reactor cavity are often changed. The most limiting condition is the case in which the reactor head is removed and water level in the vessel is at or below the reactor vessel flange. If an ELAP/LUHS occurs during this condition then (depending on the time after shutdown) boiling in the core may occur quite rapidly.

Deploying and implementing portable FLEX pumps to supply injection flow must commence immediately from the time of the event. This should be plausible because more personnel are onsite during outages to provide the necessary resources. Strategies for makeup water include deploying a FLEX pump to take suction from the Ultimate Heat Sink as described in the Phase 2 Core Cooling section.

Guidance will be provided to ensure that sufficient area is available for deployment and that haul paths remain accessible without interference from outage equipment during refueling outages.

References:

1. UFSAR Section 4.4
2. UFSAR Section 4.7
3. UFSAR Section 5.2
4. UFSAR Section 10.17
5. E-26, Single Line Diagram, 125/250 VDC, Rev 80
6. E-27, Single Line Diagram, 125/250 VDC, Rev 74
7. M-333,P&ID Instrument Nitrogen, Sheet 1 Rev 57, Sheet 2, Rev 58
8. M-351, P&ID Nuclear Boiler, Sheet 1, Rev 78, Sheet 2, Rev 70, Sheet 3, Rev 74, Sheet 4, Rev 69
9. M-359, P&ID RCIC System, Sheet 1, Rev 50, Sheet 2, Rev 48
10. M-372, P&ID CAD System, Sheet 1, Rev 64, Sheet 2, Rev 54
11. OU-AA-103, Shutdown Safety Management Program
12. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14
13. SE-11, Attachment T, DC Load Shed, Rev 13
14. SE-13.1-2(3), RCIC Manual Operation on Loss of 125/250 VDC Bus, Rev 0
15. T-101, RPV Control, Rev 19
16. T-102, Primary Containment Control, Sheet 1, Rev 20
17. T-313N, Area 13N Fire Guide , Rev 4
18. Passport IR #1270719-74, Technical Evaluation
19. 0000-0143-0382-R1, BWROG RCIC System Operation in Prolonged Station Blackout
20. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1
21. PB-MISC-010 (MAAP Analysis to Support Flex Strategy), Rev 0
</td></tr>
<tr><td colspan="2">Details:</td></tr>
<tr><td>Provide a brief description of Procedures / Strategies / Guidelines</td><td>T-101, RPV Control provides direction to use RCIC and SRVs in accordance with existing system operating procedures.

Peach Bottom will use the industry developed guidance from the owners groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.</td></tr>
<tr><td>Identify modifications</td><td>None</td></tr>
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Key Reactor Parameters	RPV Water Level LI-2(3)-02-3-85A and LI-2(3)-02-3-85A LI-2(3)-02-3-091 and LI-2(3)-02-3-113 RPV Pressure PI-2(3)-06-90A, PI-2(3)-06-90B, PI-2(3)-06-90C PR/LR-2(3)-06-096 PI-2(3)-23-111 (HPCI Steam Inlet Pressure) PI-2(3)-13-094 (RCIC Steam Inlet Pressure) Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.
Notes: Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.	

Maintain Core Cooling

BWR Portable Equipment Phase 2:

Station personnel will line-up portable equipment to supply makeup to the Torus and to re-energize 480VAC components for the purpose of re-energizing the 125VDC battery chargers. With containment venting in progress, make-up to the Torus is required to replace inventory lost through the Torus vent.

RPV Level Control

RCIC will continue to maintain RPV inventory. Re-energizing battery chargers will ensure continued functionality of the RCIC System, by allowing control of the system from the Main Control Room, and continued operation of the system valves and the Barometric Condenser Vacuum Pump and Condensate Pump. Refer to the Safety Function Support section of this report for a description of the strategy to restore power to the safety related 480VAC System.

A GEH study (Reference #23) indicates that RCIC will remain functional as long as Torus temperature can be maintained at or below 230°F. Preliminary analysis indicates that early venting of the containment ensures that Torus temperature will not rise above 230°F.

Addition of makeup water to the Torus will ensure adequate inventory for RCIC suction needs. Line-up of the FLEX pump will also allow for injection into the RPV, if RCIC experiences a failure.

The primary water source for makeup to the Torus and RPV is the Ultimate Heat Sink. If the event results in a loss of the Ultimate Heat Sink, Peach Bottom will use the inventory in the Emergency Cooling Tower as a suction source.

RPV Pressure Control

SRVs will continue to be used to control RPV pressure. Re-energizing battery chargers will ensure continued functionality of the SRVs by allowing control of them from the Main Control Room.

Preliminary analysis indicates that early venting of the containment ensures that containment pressure will not approach the Primary Containment Pressure Limit – A (PCPL-A) of 60 psig.

Alignment of the nitrogen cylinders to the ADS valves and the CAD Tank to the nitrogen header will ensure a long-term supply of pneumatics to the SRV operators.

Injection of water into the Torus will ensure Torus level can be adequately maintained and makeup for losses due to containment venting.

Torus Makeup:

Primary Method:

The FLEX Pump will take suction on the Ultimate Heat Sink and discharge through hoses to new valves and quick hose connection on the HPSW System inside the Pump Structure. Water would flow from the FLEX Pump into the HPSW System, and then into the RHR System through MO-2(3)-10-174 and MO-2(3)-10-176 (HPSW to RHR Cross-Tie valves). From the RHR System, water can be supplied to the Torus through MO-2(3)-10-39 and MO-2(3)-10-34 (RHR to Torus valves). Water also can be supplied to the RPV, if required,

Maintain Core Cooling
BWR Portable Equipment Phase 2:

through MO-2(3)-10-25 (LPCI Injection valve). If RPV injection is required, then water would be injected via the LPCI injection line and returned to the Torus through an open SRV.

Diversity is inherent in the connection to HPSW Systems, since the Unit 2 and Unit 3 HPSW Systems can be cross connected by opening two manually operated valves. In addition, the MO-2(3)-10-20, (RHR Loop Cross-Tie valve) allows use of either RHR loop.

Alternate Method:

The FLEX Pump will take suction on the Ultimate Heat Sink or the Emergency Cooling Tower, and discharge through hoses to new valves and quick hose connection on the RHR System inside the RBCCW Room between HV-2(3)-10-57 and HV-2(3)-10-66 (RHR to Radwaste valves). Water would flow from the FLEX Pump into the RHR System. From the RHR System, water can be supplied to the Torus through MO-2(3)-10-39 and MO-2(3)-10-34. Water can also be supplied to the RPV, if required, through MO-2(3)-10-25. If RPV injection is required, then water would be injected via the LPCI injection line and returned to the Torus through an open SRV.

In the event that the Fire Header remains available, a FLEX Pump could be used to pressurize the fire header, and water could be provided to the RHR System from the Fire System inside the plant via hose connections.

References:

1. UFSAR Section 4.4
2. UFSAR Section 4.7
3. UFSAR Section 4.8
4. UFSAR Section 5.2
5. UFSAR Section 6.4
6. UFSAR Section 10.7
7. UFSAR Section 10.17
8. E-26, Single Line Diagram, 125/250 VDC, Rev 80
9. E-27, Single Line Diagram, 125/250 VDC, Rev 74
10. M-315,P&ID Emergency Service Water and High Pressure Service Water System, Sheet 1, Rev 78, Sheet 2, Rev 57, Sheet 3, Rev 53
11. M-318,P&ID Fire Protection System, Sheet 1, Rev 64
12. M-330,P&ID Emergency Cooling Water System, Rev 36
13. M-333,P&ID Instrument Nitrogen, Sheet 1 Rev 57, Sheet 2, Rev 58
14. M-351, P&ID Nuclear Boiler, Sheet 1, Rev 78, Sheet 2, Rev 70, Sheet 3, Rev 74, Sheet 4, Rev 69
15. M-359, P&ID RCIC System, Sheet 1, Rev 50, Sheet 2, Rev 48
16. M-361, P&ID RHR System, Sheet 1, Rev 83, Sheet 2, Rev 69, Sheet 3, Rev 70, Sheet 4, Rev 70
17. M-372, P&ID CAD System, Sheet 1, Rev 64, Sheet 2, Rev 54
18. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14
19. SE-13.1-2(3), Rev 0
20. T-101, RPV Control, Rev 19
21. T-102, Primary Containment Control, Sheet 1, Rev 20
22. TSG-4.1, Peach Bottom Station Operational Contingency Guidelines
23. 0000-0143-0382-R1, BWROG RCIC System Operation in Prolonged Station Blackout
24. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1

Maintain Core Cooling	
BWR Portable Equipment Phase 2:	
25. PB-MISC-010 (MAAP Analysis to Support Flex Strategy), Rev 0	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	T-101, RPV Control provides direction to use RCIC and SRVs using existing system operating procedures. Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	Modify Units 2 and 3 HPSW Systems with connections to allow portable pump injection, which will allow injection from the Ultimate Heat Sink into RHR and then into the Torus and RPV. Modify Units 2 and 3 RHR piping to add connections for FLEX injection. Perform a modification to allow the FLEX Pump to take suction from the Emergency Cooling Tower. Perform modifications to allow the FLEX Pump to take suction from the Ultimate Heat Sink (potentially inside the Pump Structure or to the Security Fence, including the installation of dry hydrants).
Key Reactor Parameters	RPV Water Level LI-2(3)-02-3-85A and LI-2(3)-02-3-85A LI-2(3)-02-3-091 and LI-2(3)-02-3-113 RPV Pressure PI-2(3)-06-90A, PI-2(3)-06-90B, PI-2(3)-06-90C PR/LR-2(3)-06-096 PI-2(3)-23-111 (HPCI Steam Inlet Pressure) PI-2(3)-13-094 (RCIC Steam Inlet Pressure) Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6 month update following identification.

Maintain Core Cooling	
BWR Portable Equipment Phase 2:	
Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level	FLEX equipment can be stored below flood level at Peach Bottom since sufficient warning time is available to relocate and/or deploy the equipment. Plant procedures/guidance will be developed to address the needed actions. FLEX equipment will be relocated to a position that is protected from the flood, either by barriers or by elevation, prior to the arrival of the potentially damaging flood levels. Both electrical and at least one mechanical FLEX connection will be protected from external flooding. Fuel oil storage tanks will be protected from flood conditions.
Severe Storms with High Winds	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Snow, Ice, and Extreme Cold	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
High Temperatures	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct

Maintain Core Cooling		
BWR Portable Equipment Phase 2:		
	permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.	
Deployment Conceptual Modification **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
The FLEX Pumps will be brought to the area of the Pump Structure. The suction of the pumps will be routed to the Ultimate Heat Sink; the discharge of the pumps will be routed to the HPSW System of each unit. Water will be injected into the HPSW System and from there into the RHR System. With injection being supplied to the RHR System, makeup to the Torus can begin when required, and makeup to the RPV will be available if necessary.	Modifications to allow the FLEX Pump to take suction from the Ultimate Heat Sink will be provided during detailed engineering design.	FLEX piping, valves, and connections (electrical & fluid) will meet NEI 12-06 Rev.0 protection requirements.
Notes: Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.		

Maintain Core Cooling	
BWR Portable Equipment Phase 3:	
Phases 1 and 2 strategy will provide sufficient capability such that no additional Phase 3 strategies are required. Phase 3 equipment for Peach Bottom includes backup portable pumps and generators. The portable pumps will be capable of providing the necessary flow and pressure as outlined in Phase 2 response for Core Cooling & Heat Removal, RCS Inventory Control and Spent Fuel Pool Cooling. The portable generators will be capable of providing the necessary 480 volt power requirements as outlined in Phase 2 response for Safety Functions Support.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	None
Key Reactor Parameters	RPV Water Level LI-2(3)-02-3-85A and LI-2(3)-02-3-85A LI-2(3)-02-3-091 and LI-2(3)-02-3-113 RPV Pressure PI-2(3)-06-90A, PI-2(3)-06-90B, PI-2(3)-06-90C PR/LR-2(3)-06-096 PI-2(3)-23-111 (HPCI Steam Inlet Pressure) PI-2(3)-13-094 (RCIC Steam Inlet Pressure) Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Deployment Conceptual Modification **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**

Maintain Core Cooling		
BWR Portable Equipment Phase 3:		
None	None	None
Notes: Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.		

Maintain Containment

Determine Baseline coping capability with installed coping[2] modifications not including FLEX modifications, utilizing methods described in Table 3-1 of NEI 12-06:

- **Containment Venting or Alternate Heat Removal**
- **Hydrogen Igniters (Mark III containments only)**

BWR Installed Equipment Phase 1:

At the initiation of the event the operators will enter the TRIPs (Transient Response Implementation Procedures) and SE-11 (Loss of Offsite Power). It is expected that the site specific ELAP (Extended Loss of AC Power) procedure and FLEX Support Guidelines will be entered when there has been a loss of Offsite power, including the Conowingo Tie Line and the Emergency Diesel Generators, with confirmation of no imminent return of any of these power sources to service.

Containment integrity is maintained by normal design features, such as the containment isolation valves. In accordance with NEI 12-06, the containment is assumed to be isolated following the event. The SBO event will cause the RPV to be isolated from the main condenser. Pressure in the RPV will be controlled by automatic and then manual actuation of the main steam relief valves (SRVs). SRV discharge is piped to the Torus, which will cause the containment, including the Torus to heat up and pressurize. In addition, operation of RCIC will result in the addition of some heat into the Torus, since RCIC exhaust is directed to the Torus. Without the use of containment venting, there is no current method to remove heat from the containment.

In an SBO event, current procedural direction requires depressurization of the RPV to 125 psig using SRVs. Without use of early containment venting, HCTL (Heat Capacity Temperature Limit) is reached at approximately 5.5 hours and PSP (Pressure Suppression Pressure limit) is reached at approximately 10.6 hours. Current TRIP direction requires the RPV be fully depressurized (emergency depressurization) upon reaching either of these limits, which would result in RCIC becoming unavailable due to a loss of driving steam pressure. Primary Containment Pressure Limit – A (PCPL-A), 60 psig would be reached in approximately 13.5 hours which will require venting of the containment.

The future strategy, which will be supported by full implementation of EPG/SAG, Revision 3 will allow a reduction in RPV pressure to approximately 200 psig versus full RPV depressurization when HCTL or PSP limits are reached. This supports continued RCIC operation by ensuring its steam supply. Other EOP revisions will permit the containment to be vented if required to maintain adequate core cooling prior to reaching PCPL-A. This results in heat rejection from the containment and allows the Torus to reach equilibrium temperature of $\leq$ 230°F to support continued RCIC operation (Reference 18). Preliminary analysis indicates that with containment venting commencing at approximately 4.8 hours, HCTL would be reached in approximately 6.5 hours, PSP is reached in approximately 41 hours, and PCPL-A is not reached.

The containment design pressure is 56 psig. This pressure is not expected to be reached during the event, as indicated by preliminary analysis.

[2] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

Current battery coping time evaluation indicates that the limiting coping time for Torus Hardened Vent valve operation is approximately 7 hours for 125VDC bus 3AD001.

It is expected that the HCVS (Hardened Containment Vent System) modification will result in the ability to operate the required components for at least 24 hours without re-energizing the station batteries.

References:

1. UFSAR Section 4.4
2. UFSAR Section 4.7
3. UFSAR Section 4.8
4. UFSAR Section 5.2
5. UFSAR Section 6.4
6. UFSAR Section 10.7
7. UFSAR Section 10.17
8. E-26, Single Line Diagram, 125/250 VDC, Rev 80
9. E-27, Single Line Diagram, 125/250 VDC, Rev 74
10. M-333,P&ID Instrument Nitrogen, Sheet 1 Rev 57, Sheet 2, Rev 58
11. M-351, P&ID Nuclear Boiler, Sheet 1, Rev 78, Sheet 2, Rev 70, Sheet 3, Rev 74, Sheet 4, Rev 69
12. M-359, P&ID RCIC System, Sheet 1, Rev 50, Sheet 2, Rev 48
13. M-372, P&ID CAD System, Sheet 1, Rev 64, Sheet 2, Rev 54
14. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14
15. T-101, RPV Control, Rev 19
16. T-102, Primary Containment Control, Sheet 1, Rev 20
17. Passport IR #1270719-74, Technical Evaluation
18. BWR Owners Group, Emergency Procedure and Severe Accident Guideline, Rev 3
19. 0000-0143-0382-R1, BWROG RCIC System Operation in Prolonged Station Blackout
20. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1
21. PB-MISC-010 (MAAP Analysis to Support Flex Strategy), Rev 0

Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	EA-12-050, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents
Key Containment Parameters	Drywell pressure PR/TR-4(5)805 PI-8(9)458 (located on ASD Panel) Drywell temperature TI-2501 (Unit 2 only) TI-80146 (Unit 2 only) PR/TR-4(5)805

	Torus temperature TRS-131 TI-8(9)457 (located on ASD Panel) Torus level LI-8(9)456 (located on ASD Panel) LI-8(9)027 (narrow range) Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6 month update following identification.

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Maintain Containment

BWR Portable Equipment Phase 2:

The design basis of the Torus Hardened Vent is to relieve pressure from the Containment under accident conditions in which Containment integrity is threatened by overpressure, resulting from an accident sequence which is beyond the plant's licensing basis.

The primary strategy for maintaining containment integrity is to continue venting the containment using the Torus hardened vent line. Implementation of the Hardened Containment Vent System (HCVS) modification will result in this vent path becoming more reliable.

Station personnel will line-up portable equipment to supply makeup to the Torus and to re-energize 480VAC components for the purpose of re-energizing the 125VDC battery chargers. This will continue to allow control of important components such as SRVs and the Torus Vent path valves. The re-energization of 480VAC components is discussed in the Safety Function Support Section of this submittal.

With containment venting in progress, makeup to the Torus is required to replace inventory lost through the Torus vent.

Torus Makeup:

Primary Method:

The FLEX Pump will take suction on the Ultimate Heat Sink and discharge through hoses to new valves and quick hose connection on the HPSW System inside the Pump Structure. Water would flow from the FLEX Pump into the HPSW System, and then into the RHR System through MO-2(3)-10-174 and MO-2(3)-10-176 (HPSW to RHR Cross-Tie valves). From the RHR System, water can be supplied to the Torus through MO-2(3)-10-39 and MO-2(3)-10-34 (RHR to Torus valves).

Diversity is inherent in the connection to HPSW Systems, since the Unit 2 and Unit 3 HPSW Systems can be cross connected by opening two manually operated valves. In addition, MO-2(3)-10-20 (RHR Loop Cross-Tie valve) allows use of either RHR loop.

Alternate Method:

The FLEX Pump will take suction on the Ultimate Heat Sink or the Emergency Cooling Tower and discharge through hoses to new valves and quick hose connection on the RHR System inside the RBCCW Rooms between HV-2(3)-10-57 and HV-2(3)-10-66 (RHR to Radwaste valves). Water would flow from the FLEX Pump into the RHR System. From the RHR System, water can be supplied to the Torus through MO-2(3)-10-39 and MO-2(3)-10-34.

In the event that the Fire Header remains available, a FLEX Pump could be used to pressurize the fire header and water could be provided to the RHR System from the Fire System inside the plant via hose connections.

If the event results in a loss of the Ultimate Heat Sink, Peach Bottom will use the inventory in the Emergency Cooling Tower as a suction source.

Maintain Containment	
BWR Portable Equipment Phase 2:	
References: 1. UFSAR Section 4.4 2. UFSAR Section 4.7 3. UFSAR Section 4.8 4. UFSAR Section 5.2 5. UFSAR Section 6.4 6. UFSAR Section 10.7 7. UFSAR Section 10.17 8. E-26, Single Line Diagram, 125/250 VDC, Rev 80 9. E-27, Single Line Diagram, 125/250 VDC, Rev 74 10. M-315,P&ID Emergency Service Water and High Pressure Service Water System, Sheet 1, Rev 78, Sheet 2, Rev 57, Sheet 3, Rev 53 11. M-318,P&ID Fire Protection System, Sheet 1, Rev 64 12. M-330, Emergency Cooling Water System, Rev 36 13. M-351, P&ID Nuclear Boiler, Sheet 1, Rev 78, Sheet 2, Rev 70, Sheet 3, Rev 74, Sheet 4, Rev 69 14. M-361, P&ID RHR System, Sheet 1, Rev 83, Sheet 2, Rev 69, Sheet 3, Rev 70, Sheet 4, Rev 70 15. M-359, P&ID RCIC System, Sheet 1, Rev 50, Sheet 2, Rev 48 16. M-372, P&ID CAD System, Sheet 1, Rev 64, Sheet 2, Rev 54 17. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14 18. T-101, RPV Control, Rev 19 19. T-102, Primary Containment Control, Sheet 1, Rev 20 20. TSG-4.1, Peach Bottom Station Operational Contingency Guidelines 21. 10CFR50.59 Review for Modification #5236, Torus Hardened Vent for PBAPS 22. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1 23. PB-MISC-010 (MAAP Analysis to Support Flex Strategy), Rev 0	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	Modify Units 2 and 3 HPSW Systems with connections to allow portable pump injection, which will allow injection from the Ultimate Heat Sink into RHR and then into the Torus and RPV. Modify Units 2 and 3 RHR piping to add connections for FLEX injection. Perform modifications to allow the FLEX Pump to take suction from the Ultimate Heat Sink (potentially inside the Pump Structure or to the Security Fence, including the installation of dry hydrants). Perform a modification to allow the FLEX Pump to take suction from the

Maintain Containment	
BWR Portable Equipment Phase 2:	
	Emergency Cooling Tower.
Key Containment Parameters	Drywell pressure PR/TR-4(5)805 PI-8(9)458 (located on ASD Panel) Drywell temperature TI-2501 (Unit 2 only) TI-80146 (Unit 2 only) PR/TR-4(5)805 Torus temperature TRS-131 TI-8(9)457 (located on ASD Panel) Torus level LI-8(9)456 (located on ASD Panel) LI-8(9)027 (narrow range) Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Storage / Protection of Equipment : Describe storage / protection plan or schedule to determine storage requirements	
Seismic	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	FLEX equipment can be stored below flood level at Peach Bottom since sufficient warning time is available to relocate and/or deploy the equipment. Plant procedures/guidance will be developed to address the needed actions. FLEX equipment will be relocated to a position that is protected from the flood, either by barriers or by elevation, prior to the arrival of the potentially damaging flood levels. Both electrical and at least one mechanical FLEX

Maintain Containment	
BWR Portable Equipment Phase 2:	
	connection will be protected from external flooding. Fuel oil storage tanks will be protected from flood conditions.
Severe Storms with High Winds	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Snow, Ice, and Extreme Cold	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
High Temperatures	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
The FLEX Pumps will be brought to the area of the Pump Structure. The suction of the pumps will be routed to the Ultimate Heat Sink; the discharge of the pumps will be routed to the HPSW System of each unit. Water will be injected into the HPSW System and from there into the RHR System. With	Modifications to allow the FLEX Pump to take suction from the Ultimate Heat Sink will be provided during detailed engineering design.	FLEX piping, valves, and connections (electrical & fluid) will meet NEI 12-06 Rev.0 protection requirements.

Maintain Containment		
BWR Portable Equipment Phase 2:		
injection being supplied to the RHR System, makeup to the Torus can begin when required, and makeup to the RPV will be available if necessary.		

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Maintain Containment	
BWR Portable Equipment Phase 3:	
Phases 1 and 2 strategy will provide sufficient capability such that no additional Phase 3 strategies are required. Phase 3 equipment for Peach Bottom includes backup portable pumps and generators. The portable pumps will be capable of providing the necessary flow and pressure as outlined in Phase 2 response for Core Cooling & Heat Removal, RCS Inventory Control and Spent Fuel Pool Cooling. The portable generators will be capable of providing the necessary 480 volt power requirements as outlined in Phase 2 response for Safety Functions Support.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	None
Key Containment Parameters	Drywell pressure PR/TR-4(5)805 PI-8(9)458 (located on ASD Panel) Drywell temperature TI-2501 (Unit 2 only) TI-80146 (Unit 2 only) PR/TR-4(5)805 Torus temperature TRS-131 TI-8(9)457 (located on ASD Panel) Torus level LI-8(9)456 (located on ASD Panel) LI-8(9)027 (narrow range) Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Maintain Containment		
BWR Portable Equipment Phase 3:		
Deployment Conceptual Design **(Attachment 3 contains Conceptual Sketches)**		
Strategy	**Modifications**	**Protection of connections**
None	None	None

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Maintain Spent Fuel Pool Cooling

Determine Baseline coping capability with installed coping[3] modifications not including FLEX modifications, utilizing methods described in Table 3-1 of NEI 12-06:

BWR Installed Equipment Phase 1:

There are no Phase 1 actions required at this time that need to be addressed. Operators will monitor Spent Fuel Pool (SFP) level.

A total of 3819 fuel storage locations are available in the SFP. In addition to nuclear fuel, other equipment, such as control rods, spent nuclear instrumentation, and small vessel components are temporarily stored in the SFP. Additional storage for large components, such as the steam dryer and the steam separator is provided in a separate storage pool adjacent to the drywell head cavity.

There are several sources of makeup water available to the SFP, including from the CST and the Demineralized Water Storage Tank. RHR can be used to pump water from the Torus to the SFP. HPSW can be used to supply the SFP after being cross-connected to RHR. In addition, fire hoses can be used to supply water from standpipes on the Refuel Floor.

Upon a loss of Spent Fuel Pool Cooling during a Beyond Design Basis Event:

- Fuel in the SFP will be cooled by convection and evaporative cooling of the water in the SFP.
- Once SFP temperature reaches 212°F, the fuel will be cooled by boiling heat transfer.

Spent Fuel Pool Heat Load

Spent Fuel Pool (SFP) makeup is not a time constraint with the initial condition of Mode 1 at 100% power, since the worst case fuel pool heat load conditions only exist during a refueling outage. Under non-outage conditions, the maximum SFP heat load is $2.1E^{+}7$ BTU/hr. Loss of SFP cooling with this heat load and an initial SFP temperature of 150°F results in a time to boil of 7.2 hours, and 95 hours to the top of active fuel. Therefore, completing the equipment line-up for initiating SFP make-up at 12 hours into the event ensures adequate cooling of the spent fuel is maintained.

The worst case SFP heat load during an outage is $5.8E^{+}7$ BTU/hr. Loss of SFP cooling with this heat load and an initial SFP temperature of 150°F results in a time to boil of 2.5 hours, and 33 hours to the top of active fuel. With the entire core being located in the SFP, manpower resources normally allocated to aligning core cooling along with the Operations outage shift manpower can be allocated to aligning SFP makeup which ensures the system alignment can be established within 8 hours. Initiation at 8 hours into the event ensures adequate cooling of the spent fuel is maintained.

Refuel Floor Area Habitability

Evaluation of the spent fuel pool area for steam and condensation has not yet been performed. The results of this evaluation and the vent path strategy, if needed, will be provided in a future 6-month update. A

[3] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

steam atmosphere in the area of the Refuel Floor can be mitigated by opening the Refuel Floor Roof Hatch.

References:

1. UFSAR Section 10.3
2. AO 19.3-2(3) Loss of Fuel Pool Cooling, Rev 1
3. CC-PB-201, Hazard Barrier Control Program, Rev 1
4. Passport IR #1340416-51, FLEX computation
5. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1

Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify any equipment modifications	EA-12-051, Spent Fuel Pool Level Instrumentation
Key SFP Parameter	EA-12-051, Spent Fuel Pool Level Instrumentation Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Maintain Spent Fuel Pool Cooling

BWR Portable Equipment Phase 2:

Station personnel will line-up portable equipment to supply makeup to the SFP.

SFP Makeup:

Primary Method:

The FLEX Pump will take suction on the Ultimate Heat Sink and discharge through hoses to new valves and quick hose connection on the HPSW System inside the Pump Structure. Water would flow from the FLEX Pump into the HPSW System, and then into the RHR System through MO-2(3)-10-174 and MO-2(3)-10-176 (HPSW to RHR Cross-Tie valves). From the RHR System, water can be supplied to the SFP through HV-2(3)-10-180 and HV-2(3)4457A and HV-2(3)4457B (RHR to Fuel Pool valves). The RHR to SFP piping will be modified with quick hose connections to provide the capability for spray of the SFP.

Diversity is inherent in the connection to HPSW Systems, since the Unit 2 and Unit 3 HPSW Systems can be cross connected by opening two manually operated valves. In addition, the RHR Loop Cross-Tie valve allows use of either RHR loop.

Alternate Method:

The FLEX Pump will take suction on the Ultimate Heat Sink or the Emergency Cooling Tower and discharge through hoses to new valves and quick hose connection on the RHR System inside the RBCCW Rooms between HV-2(3)-10-57 and HV-2(3)-10-66 (RHR to Radwaste valves). Water would flow from the FLEX Pump into the RHR System. From the RHR System, water can be supplied to the SFP through HV-2(3)-10-180 and HV-24457A and B. The RHR to SFP piping will be modified with quick hose connections to provide the capability for spray of the SFP.

In the event that the Fire Header remains available, a FLEX Pump could be used to pressurize the fire header and then water could be provided to the RHR System from the Fire System inside the plant via hose connections. In addition, pressurization of the fire header would provide for addition or spray makeup to the SFP utilizing the Fire System standpipes located on the Refuel Floor. As another alternative, with the FLEX Pump located west of the Reactor Building, hoses connecting to the pump discharge could be routed up the west Reactor Building stairwell and onto the Refuel Floor to supply water addition or spray makeup to the SFP.

If the event results in a loss of the Ultimate Heat Sink, Peach Bottom will use the inventory in the Emergency Cooling Tower as a suction source.

Refuel Floor Area Habitability

Evaluation of the spent fuel pool area for steam and condensation has not yet been performed. The results of this evaluation and the vent path strategy, if needed, will be provided in a future 6-month update.
A steam atmosphere in the area of the Refuel Floor can be mitigated by opening the Refuel Floor Roof Hatch.

Maintain Spent Fuel Pool Cooling

BWR Portable Equipment Phase 2:

References

1. UFSAR Section 4.8
2. UFSAR Section 10.3
3. UFSAR Section 10.7
4. E-26, Single Line Diagram, 125/250 VDC, Rev 80
5. E-27, Single Line Diagram, 125/250 VDC, Rev 74
6. M-315,P&ID Emergency Service Water and High Pressure Service Water System, Sheet 1, Rev 76, Sheet 2, Rev 3, Rev 53
7. M-318,P&ID Fire Protection System, Sheet 1, Rev 64
8. M-330,P&ID Emergency Cooling Water System, Rev 36
9. M-361, P&ID RHR System, Sheet 1, Rev 83, Sheet 2, Rev 69, Sheet 3, Rev 70, Sheet 4, Rev 70
10. M-363, P&ID Fuel Pool Cooling, Sheets 1 and 2, Rev 40
11. CC-PB-201, Hazard Barrier Control Program, Rev 1
12. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14
13. TSG-4.1, Peach Bottom Station Operational Contingency Guidelines, Rev 22
14. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1

Schedule:

Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	Modify Units 2 and 3 HPSW Systems with connections to allow portable pump injection, which will allow injection from the Ultimate Heat Sink into RHR and then into the SFP. Modify Units 2 and 3 RHR piping to add connections for FLEX injection. Perform modifications to allow the FLEX Pump to take suction from the Ultimate Heat Sink (potentially inside the Pump Structure or to the Security Fence, including the installation of dry hydrants). Perform a modification to allow the FLEX Pump to take suction from the Emergency Cooling Tower. Modify RHR to SFP piping on the RB 234' elevation to add quick hose connections to allow for SFP overspray. EA-12-051, Spent Fuel Pool Level Instrumentation

Maintain Spent Fuel Pool Cooling	
BWR Portable Equipment Phase 2:	
Key SFP Parameter	EA-12-051, Spent Fuel Pool Level Instrumentation Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.
Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	FLEX equipment can be stored below flood level at Peach Bottom since sufficient warning time is available to relocate and/or deploy the equipment. Plant procedures/guidance will be developed to address the needed actions. FLEX equipment will be relocated to a position that is protected from the flood, either by barriers or by elevation, prior to the arrival of the potentially damaging flood levels. Both electrical and at least one mechanical FLEX connection will be protected from external flooding. Fuel oil storage tanks will be protected from flood conditions.
Severe Storms with High Winds	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Snow, Ice, and Extreme Cold	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site

Maintain Spent Fuel Pool Cooling	
BWR Portable Equipment Phase 2:	
	compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
High Temperatures	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
The FLEX Pumps will be brought to the area of the Pump Structure. The suction of the pumps will be routed to the Ultimate Heat Sink; the discharge of the pumps will be routed to the HPSW System of each unit. Water will be injected into the HPSW System and from there into the RHR System. With injection being supplied to the RHR System, makeup to the Torus can begin when required, and makeup to the RPV will be available if necessary.	Modifications to allow the FLEX Pump to take suction from the Ultimate Heat Sink will be provided during detailed engineering design.	FLEX piping, valves, and connections (electrical & fluid) will meet NEI 12-06 Rev.0 protection requirements.

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Maintain Spent Fuel Pool Cooling	
BWR Portable Equipment Phase 3:	
Phases 1 and 2 strategy will provide sufficient capability such that no additional Phase 3 strategies are required. Phase 3 equipment for Peach Bottom includes backup portable pumps and generators. The portable pumps will be capable of providing the necessary flow and pressure as outlined in Phase 2 response for Core Cooling & Heat Removal, RCS Inventory Control and Spent Fuel Pool Cooling. The portable generators will be capable of providing the necessary 480 volt power requirements as outlined in Phase 2 response for Safety Functions Support.	
Schedule:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	EA-12-051, Spent Fuel Pool Level Instrumentation
Key SFP Parameter	EA-12-051, Spent Fuel Pool Level Instrumentation Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
None	None	None
Notes: Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.		

Safety Functions Support
Determine Baseline coping capability with installed coping[4] modifications not including FLEX modifications.
BWR Installed Equipment Phase 1

DC Power

There are two independent safety-related 125/250 V, 3-wire, DC systems per unit. Each system is comprised of two 125 V batteries, each with its own charger panel consisting of two 100% chargers. There are a total of four safety-related 125/250 V batteries in the station, two for Unit 2 and two for Unit 3. Each safety-related 125/250 V battery is in a separate ventilated battery room. Power required for the larger loads, such as DC motor driven pumps and valves, is supplied at 250 V from the two 125 V sources of each system connected in series, and distributed through 250 VDC motor control centers.

The safety-related chargers are suitable for float charging the lead-calcium battery at 2.25 V per cell, and supplying an equalizing charge at 2.33 V per cell. The safety-related chargers operate from 480 V, 3-phase, 60 Hz sources supplied from separate 480 V motor control centers. Each of these motor control centers is connected to an independent emergency AC bus. The chargers for three Unit 2 and three Unit 3 batteries can be supplied from the other units' emergency AC buses via manual transfer switches. Charger voltage is maintained at (+/-) 1% from 0 to 100% of charger rating with a supply voltage variation of (+/-) 10% . The chargers are in compliance with all applicable NEC, NEMA, and ANSI standards.
The 125 V chargers are capable of carrying the normal DC system load and, at the same time, supplying charging current to keep the batteries in a fully charged condition.

During the ELAP (extended loss of AC power) event, safety related 250VDC and 125VDC Bus voltage will be maintained by their associated batteries until the portable 480V generators are placed in service to re-energize the battery chargers.

The initial stage of DC Load shedding will be accomplished in accordance with SE-11, Attachment T.

The station batteries' coping time was determined using the Direct Current System Database Model (DCSDM) program to simulate an ELAP event. This program performs load flow and voltage drop analysis for DC systems and is used in Peach Bottom's battery capacity analysis. The model was run under the following parameters:

- DC Load Shed per SE-11 Attachment T, beginning at 20 minutes into the event.
- Battery temperature assumed at 65°F (18.3°C), based on a review of past battery room/electrolyte temperature. This is also the battery room temperature low alarm set point.
- Battery capacity is assumed at 90%, based on reviews of the most recent battery discharge test, of which the lowest battery capacity was 103%.
- HPCI System is secured in 5 minutes.

[4] Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

The analysis was run for each battery. The limiting battery coping time is approximately 5.5 hours.

Currently, there is limited margin between the limiting battery coping time and the time to align the portable generator. The effect of additional load shed on the coping time will be evaluated, and additional analysis is in progress to increase the coping time. Changes to the strategy will be communicated in a future update.

RCIC Room Habitability

Per preliminary analysis, RCIC Room temperature will reach 165°F (room temperature limit for RCIC operation) within approximately 20 hours without compensatory action. The RCIC Room doors will be opened within approximately 1 hour to slow the room temperature rise. RCIC Room temperature analysis is in progress.

Main Control Room Habitability

If all MCR HVAC were lost, the control room operator would initiate an emergency shutdown of non-essential equipment and lighting to reduce the heat generation to a minimum. Procedure ON-115, Loss of Normal Main Control Room Ventilation, directs actions that reduce the heat load in the MCR and extend the time of its habitability. The equilibrium condition for temperature and humidity in the MCR following the loss of all HVAC would be a maximum of 114°F and 27 percent relative humidity. The equilibrium temperature of 114°F could be achieved during ambient conditions of 95°F, 50 percent relative humidity.

Battery Room Ventilation

The maximum equilibrium temperature in the emergency switchgear and battery rooms following a design basis accident with a loss of instrument air is 118°F. Design analysis has determined that all safety-related equipment in the switchgear and battery rooms is acceptable for operation at this maximum ambient room temperature.

References:

1. UFSAR Section 7.19
2. UFSAR Section 8.7
3. E-26, Single Line Diagram, 125/250 VDC, Rev 80
4. E-27, Single Line Diagram, 125/250 VDC, Rev 74
5. ON-115, Loss of Main Control Room Ventilation, Rev 19
6. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14
7. SE-11, Attachment T, DC Load Shed, Rev 13
8. SE-13.1-2(3), RCIC Manual Operation on Loss of 125/250 VDC Bus, Rev 0
9. Passport IR #1270719-74, Technical Evaluation
10. 0000-0143-0382-R1, BWROG RCIC System Operation in Prolonged Station Blackout
11. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1
12. AR # A1863615-03, RCIC Room Heatup for Extended SBO

Details:	
Provide a brief description of Procedures / Strategies / Guidelines	SE-11 currently provides direction to open RCIC Room doors. ON-115 currently provides direction to take action to reduce the heat load in the Main Control Room.

	Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.
Identify modifications	None
Key Parameters	ON-115 directs monitoring of local indication of temperature in the Main Control Room using portable temperature instrumentation. Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage. NEI 12-06 Rev. 0 Section 3.2.1.10 and any differences will be provided in a future 6-month update following identification.

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Safety Functions Support

BWR Portable Equipment Phase 2

DC Power

Portable 480VAC generators will be used to re-energize the safety related 480VAC load centers. This will provide power to the safety related battery chargers. Re-powering the safety related battery chargers will assure a source of DC power for long term availability of SRVs, RCIC, and Torus vent line valve solenoid valves.

The electrical strategy conceptual design contains features to expedite and simplify implementation, and may not be required in order to meet the event timeline for maintaining the safety function requirements of NEI 12-06. The following modifications are being proposed for Unit 2 to connect a portable generator to provide power to critical loads. In order to supply power to the Unit 3 critical loads, the modifications will need to be replicated in Unit 3, and a second portable generator will be used to supply power to the Unit 3 loads:

Primary Strategy:

The FLEX design will provide a seismically-qualified panel with quick-disconnects to allow rapid and straightforward connection of a FLEX 480VAC Generator. From the new panel, the FLEX design will provide a new conduit pathway to the Unit 2 Reactor Building 165' elevation, where dedicated cabling will follow raceways to junction boxes J2916 and J2918. Junction box J2916 connects to J2915 by closing switch 20S354. Junction box J2918 connects to J2917 by closing switch 20S355. The FLEX design will provide dedicated cabling and permanently installed connections from Junction boxes J2915, J2917, J2916, and J2918 to Unit 2 480VAC Emergency LCs E124, E224, E324, and E424. The 480VAC Emergency LCs, via Emergency MCCs, provide power to all loads required to cope with a BDBEE, including battery chargers, key motor-operated valves, and selected HVAC components, as shown on the attached figure (page 58).

Alternate Strategy:

The FLEX design will provide a seismically-qualified panel with quick-disconnects to allow rapid and straightforward connection of a FLEX 480VAC Generator. From the new panel, the FLEX design will provide dedicated cabling to multiple 480VAC Emergency MCCs, as shown on the attached figure (page 59). The 480VAC Emergency MCCs directly provide power to all loads required to cope with a BDBEE, including battery chargers, key motor-operated valves, and selected HVAC components. The battery chargers, for three of the four emergency batteries on each unit, can be powered from the other unit via manual transfer switches. The Alternate Strategy design will consider these cross-ties to ensure the diversity and flexibility of the temporary power supplies to the 480VAC Emergency MCCs.

NOTE: The electrical modification drawings in Attachment 3 of this submittal are representations of possible methods for re-powering 480VAC load centers and motor control centers using portable generators.

RCIC Room Habitability

Per preliminary analysis, RCIC Room temperature can be maintained below 165°F using a portable fan to supply forced air into the RCIC Room.

Safety Functions Support

BWR Portable Equipment Phase 2

Main Control Room Habitability

Exelon Generation Company, LLC (Exelon) intends on maintaining the operational command and control function within the Main Control Room. Habitability conditions will be evaluated and a strategy will be developed to maintain Main Control Room habitability. The strategy and associated support analyses will be provided in a future 6-month update.

Main Control Room doors can be opened and portable fans powered by small portable generators can be used to supply air cooling of the Main Control Room.

Battery Room Ventilation

Battery Room doors will be opened once the battery chargers are re-energized.

Further evaluation will be conducted to determine if actions such as staging portable fans are required for long term ELAP. Any differences will be communicated in a future 6-month update following identification.

Fuel Oil Supply to Portable Equipment

Fuel oil to FLEX Pumps and Generators will be supplied by the quantity of fuel in the tanks located on the skids of the portable equipment. This will be supplemented by fuel tanks contained on the back of the FLEX Truck. When required, fuel can then be pumped from the EDG Fuel Storage Tanks by accessing the tanks via tank access covers. In the event the access covers become covered with water in the flooding event, fuel from the EDG Fuel Storage Tanks can be pumped using a transfer pump to a piping connection near the Auxiliary Boiler Fuel Storage Tank.

References

1. UFSAR Section 7.19
2. UFSAR Section 8.7
3. E-26, Single Line Diagram, 125/250 VDC, Rev 80
4. E-27, Single Line Diagram, 125/250 VDC, Rev 74
5. E-223, Sheet 1, Electrical Schematic, Fuel Oil Transfer Pump
6. E-1610, Single Line Diagram, 2PS4 and 4PS4 Load Centers, Rev 44
7. E-1615, Single Line Diagram, E124 and E224 Emergency Load Centers, Rev 77
8. E-1617, Single Line Diagram, E324 and E424 Emergency Load Centers, Rev 67
9. M-323, P&ID, Auxiliary Boiler Fuel Oil, Rev 48
10. M-377, P&ID, DG Fuel Oil, Sheet 4, Rev 40
11. ON-115, Loss of Main Control Room Ventilation, Rev 19
12. SE-11, Loss of Offsite Power, Sheets 1 and 5, Rev 14
13. SE-11, Attachment T, DC Load Shed, Rev 13
14. SE-13.1-2(3), RCIC Manual Operation on Loss of 125/250 VDC Bus, Rev 0
15. Passport IR #1270719-74, Technical Evaluation
16. 0000-0143-0382-R1, BWROG RCIC System Operation in Prolonged Station Blackout
17. NEDC-33771P, GEH Evaluation of FLEX Implementation Guidelines, Rev 1
18. AR # A1863615-03, RCIC Room Heatup for Extended SBO

Safety Functions Support	
BWR Portable Equipment Phase 2	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	480VAC Load Centers will be modified and permanent cable and conduit and connection points for the FLEX Generators will be installed. For diversity, several 480VAC motor control centers will also be modified for connection points for FLEX Generators. The Fuel Oil Transfer Pump power supply will be modified to allow re-energizing the pump and control of the pump during the flood event. In addition, the piping from the transfer pump will be modified with a quick disconnect to allow re-supply of the FLEX components.
Key Parameters	ON-115 directs monitoring of local indication of temperature in the Main Control Room using portable temperature instrumentation. Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	FLEX equipment can be stored below flood level at Peach Bottom since sufficient warning time is available to relocate and/or deploy the

Safety Functions Support	
BWR Portable Equipment Phase 2	
	equipment. Plant procedures/guidance will be developed to address the needed actions. FLEX equipment will be relocated to a position that is protected from the flood, either by barriers or by elevation, prior to the arrival of the potentially damaging flood levels. Both electrical and at least one mechanical FLEX connection will be protected from external flooding. Fuel oil storage tanks will be protected from flood conditions.
Severe Storms with High Winds	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
Snow, Ice, and Extreme Cold	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.
High Temperatures	Structures to provide protection of FLEX equipment will be constructed to meet the requirements of NEI 12-06 Section 11. Schedule to construct permanent building is contained in Attachment 2, and will satisfy the site compliance date. Temporary locations will be used until building construction completion. Procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the external hazards applicable to PBAPS.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
The portable generator will be brought to its designated deployment area and cables will be connected to permanently installed quick disconnects and	Modifications for deployment not required	FLEX piping, valves, and connections (electrical & fluid) will meet NEI 12-06 Rev.0 protection requirements.

Safety Functions Support		
BWR Portable Equipment Phase 2		
associated breakers will be closed to supply power to the 480V load centers.		

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

Safety Functions Support	
BWR Portable Equipment Phase 3	
Phases 1 and 2 strategy will provide sufficient capability such that no additional Phase 3 strategies are required. Phase 3 equipment for Peach Bottom includes backup portable pumps and generators. The portable pumps will be capable of providing the necessary flow and pressure as outlined in Phase 2 response for Core Cooling & Heat Removal, RCS Inventory Control and Spent Fuel Pool Cooling. The portable generators will be capable of providing the necessary 480 volt power requirements as outlined in Phase 2 response for Safety Functions Support.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	Peach Bottom will use the industry developed guidance from the Owners Groups, EPRI and NEI Task team to develop site specific procedures or guidelines to address the criteria in NEI 12-06. These procedures and/or guidelines will support the existing symptom based command and control strategies in the current EOPs.
Identify modifications	No additional modifications are required. Equipment arriving from the RRC, such as 4KV generators will include cabling and spare breakers that can be easily connected to 4KV buses.
Key Parameters	Peach Bottom's evaluation of the FLEX strategy may identify additional parameters that are needed in order to support key actions identified in the plant procedures/guidance or to indicate imminent or actual core damage (NEI 12-06 Rev. 0 Section 3.2.1.10) and any differences will be provided in a future 6-month update following identification.

Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
None	None	None

Notes:

Exelon Generation Company, LLC (Exelon) has not finalized the engineering designs for compliance with NRC Order EA-12-049. Detailed designs based on the current conceptual designs will be developed to determine the final plan and associated mitigating strategies. Analysis will be performed to validate that the plant modifications, selected equipment, and identified mitigating strategy can satisfy the safety function requirements of NEI 12-06. Once these designs and mitigating strategies have been fully developed, Exelon will update the integrated plan for Peach Bottom during a scheduled 6-month update. This update will

Safety Functions Support
BWR Portable Equipment Phase 3
include any changes to the initial designs as submitted in the February 28, 2013 Integrated Plan.

BWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Maintenance*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / PM requirements
Three portable pumps	X	X	X			Required capacity will be verified during detailed design	Equipment maintenance and testing will be performed in accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11
Three hose trailers	X	X	X			Contain hoses and fittings necessary for strategies associated with portable pumps	Equipment maintenance and testing will be performed in accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11
Three 480 VAC Generator	X	X	X	X		Required capacity will be verified during detailed design	Equipment maintenance and testing will be performed in accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11
Heavy Duty Truck(s)	X	X	X	X	X	Truck with on-board fuel tanks for refueling portable equipment. Used to transport portable equipment and clear debris	Equipment maintenance and testing will be performed in accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11
Industrial Blowers					X		Equipment maintenance and testing will be performed in

BWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Maintenance*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / PM requirements
						Required capacity will be verified during detailed design	accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11
Portable fans with flexible ducting					**X**	Required capacity will be verified during detailed design	Equipment maintenance and testing will be performed in accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11
120/240V Portable AC Generators					**X**	Required capacity will be verified during detailed design	Equipment maintenance and testing will be performed in accordance with the industry templates, as outlined in JLD-ISG-2012-01 section 6 and NEI 12-06 section 11

BWR Portable Equipment Phase 3							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Notes*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		
Note: The RRC equipment has not been procured at the time of this submittal. Once the SAFER committee determines the equipment specifications for bid, updates will be made as necessary to this table. The Phase 3 portable equipment table will be updated once all of the equipment has been procured and placed in inventory.							
Medium Voltage Diesel Generator	X	X	X	X	X	2 MW output at 4160 VAC, three phase	• Generator must be common commercially available • Must run on diesel fuel
Low Voltage Diesel Generator	X	X	X	X	X	500 KW output at 480 VAC, three phase	• Generator must be common commercially available • Must run on diesel fuel
Low Pressure Pump	X	X	X			300 psi shutoff head, 2500 gpm max flow	
Low Pressure Pump	X		X			500 psi shutoff head, 500 gpm max flow	
Low Pressure Pump					X	110 psi shutoff head, 400 gpm max flow submersible	

Low Pressure Pump	**X**	**X**				150 psi shutoff head, 5000 gpm max flow	
Air Compressor		**X**				120 psi minimum pressure, 2000 scfm	

Phase 3 Response Equipment/Commodities	
Item	**Notes**
Radiation Protection Equipment • Survey instruments • Dosimetry • Off-site monitoring/sampling	**The RRC will not stock this type of equipment, but this equipment will be requested from site-to-site and utility-to-utility on an as required basis.**
Commodities • Food • Potable water	**The RRC will not stock these commodities, but they will be requested from site-to-site and utility-to-utility on an as required basis.**
Fuel Requirements	**300 – 500 gallon bladders that can be delivered by air**
Heavy Equipment • Transportation equipment • Debris clearing equipment	• **TBD during site specific playbook development** • **Redundant Phase 2 equipment to be located at RRC**

Attachment 1A
Sequence of Events Timeline

Action item	Elapsed Time	Action	Time Constraint Y/N [5]	Remarks / Applicability
	0	Event Starts	NA	Plant @100% power
1	0	SBO, Reactor Scram	NA	
2	0.5 min	HPCI and RCIC start automatically on -48 inch signal	N	This is an approximation – depending on how the event is initiated, RCIC could start automatically or be manually started by the operator.
3	5 min	Operators shut down HPCI	N	As long as RCIC is in service, HPCI operation is not required. This is not time critical because HPCI could remain in operation if the CST is available, and could be used for makeup if the operator chooses to use it. The operator will secure HPCI if it is not needed for RPV makeup or if CST is not available for use in the CST – CST mode of operation (RPV pressure control).
4	20 min	Commence cooldown of RPV at 80F/hr	N	T-101 and SE-11 currently direct RPV depressurization. This is not time critical. This is the PB strategy for coping with an SBO condition. The RPV could remain pressurized. However, eventual RPV depressurization would be required due to the approach to HCTL limits.
5	20 min	DC Load Shed commenced	N	Prolong safety related battery life. Completion of load shed is time critical. SE-11 Att. T
6	60 min	Align Nitrogen Bottles to ADS SRV's using Pipe Jumpers around SV-8(9)130A& B	Y	Prevent exhausting the ADS SRV accumulators by providing a long

[5] Instructions: Provide justification if No or NA is selected in the remarks column
If yes, include technical basis discussion as required by NEI 12-06 section 3.2.1.7

				term supply of nitrogen.
7	60 min	**Open RCIC Room doors**	**N**	**Limit heatup of RCIC Room. This is not a time constraint because preliminary analysis indicates that placing a portable fan in service to blow air into the RCIC Room will maintain temperature in the RCIC Room less than 165°F.** **SE-11 Att. U**
8	60 min	**Complete DC Load Shed**	**Y**	**Prolong safety related battery availability.** **SE-11 Att. T**
9	60 min	**Operators enter ELAP procedure**	**Y**	**Time is reasonable approximation based on operating crew assessment of plant conditions.**
10	60 min	**Equipment Operators dispatched to begin setup/connection of FLEX generator.**	**N**	**Maintain DC power to vital equipment, such as SRVs, RCIC, Y50 (vital instruments)** **Completing this lineup is time critical.**
11	90 min	**Defeat RCIC High Temperature isolations**	**N**	**Prevent high temperature isolation of RCIC due to loss of ventilation in the RCIC Room, Torus Room and Outboard MSIV Room. This is not a time constraint because preliminary analysis shows that placing a fan in service to blow air into the RCIC Room will maintain temperature in the RCIC Room less than 165°F.** **SE-11 Att. X**
12	2 hr	**Defeat RCIC low pressure isolation**	**N**	**Prevent isolation of RCIC on low RPV pressure. This is not time critical because the low pressure RCIC isolation is at 60 psig.** **T-225-2 and T-225-3**
13	2.5 hr	**Complete RPV depressurization to 200 psig**	**N**	**This is the PB strategy for coping with an SBO condition. The RPV could**

				remain pressurized. However, eventually, RPV depressurization would be required due to the approach to HCTL limits. The EPG/SAG, Rev 3 strategy will provide guidance to maintain the RPV pressurized to preserve availability of steam driven systems relied upon for adequate core cooling.
14	4.8 hr	Commence containment venting	Y	Limit Torus temperature rise.
15	5 hr	Portable generator is providing power to Safety Related 480VAC System	Y	Provide power to safety related battery chargers.
16	6 hr	Commence lineup of FLEX pump	N	Allow makeup to Torus and SFP. Completion of the lineup is considered time critical.
17	12 hr	Complete lineup of FLEX pump and commence injection into Torus	Y	Provide makeup to Torus due to inventory loss from venting.
18	12 hr	Begin Makeup to SFP from FLEX Pump (based on lowering SFP level)	Y	Provide makeup to the SFP due to inventory loss from boiling.
19	14 hr	Deploy portable fans to supply cooling air flow to the RCIC Rooms	Y	Prevent RCIC Room temperature from rising above 165°F. Deploying the fan before 20 hours supports maintaining room temperature less than 165°F.
20	24 hrs	Initial equipment from Regional Response Center becomes available.		
21	24 hrs	Align CAD Tank (nitrogen) to supply SRVs	N	This is not time critical since the ADS SRVs will have a long term source of pneumatics from the nitrogen bottles. At 24 hours, adequate resources will be available at the site to complete this action. T-261-2 and T-261-3
22	24 -72	Continue to maintain critical functions of		

	hrs	**core cooling (via RCIC), containment (via hardened vent opening and FLEX pump injection to suppression pool) and SFP cooling (FLEX pump injection to SFP). Utilize initial RRC equipment in spare capacity and begin setup for suppression pool cooling via the additional RRC equipment to be delivered (4160VAC generator to power RHR pump and large FLEX pump to provide cooling water flow from UHS to the RHR Heat Exchanger).**		
		References: **1. SE-11, Loss of Offsite Power, Sheet 5, Rev 14** **2. SE-11, Attachment T, DC Load Shed, Rev, 13** **3. SE-11, Attachment U, Opening Secondary Containment Doors to Support Long Term HPCI/RCIC Operation, Rev 3** **4. SE-11, Attachment X, Rev 3** **5. T-101, RPV Control, Rev 19** **6. T-102, Primary Containment Control, Sheet 1, Rev 20** **7. T-225-2&3, Defeating RCIC Low Pressure Isolation, Rev 4** **8. T-261-2&3, Placing the Backup Instrument Nitrogen Supply from CAD Tank in Service, Rev 3**		

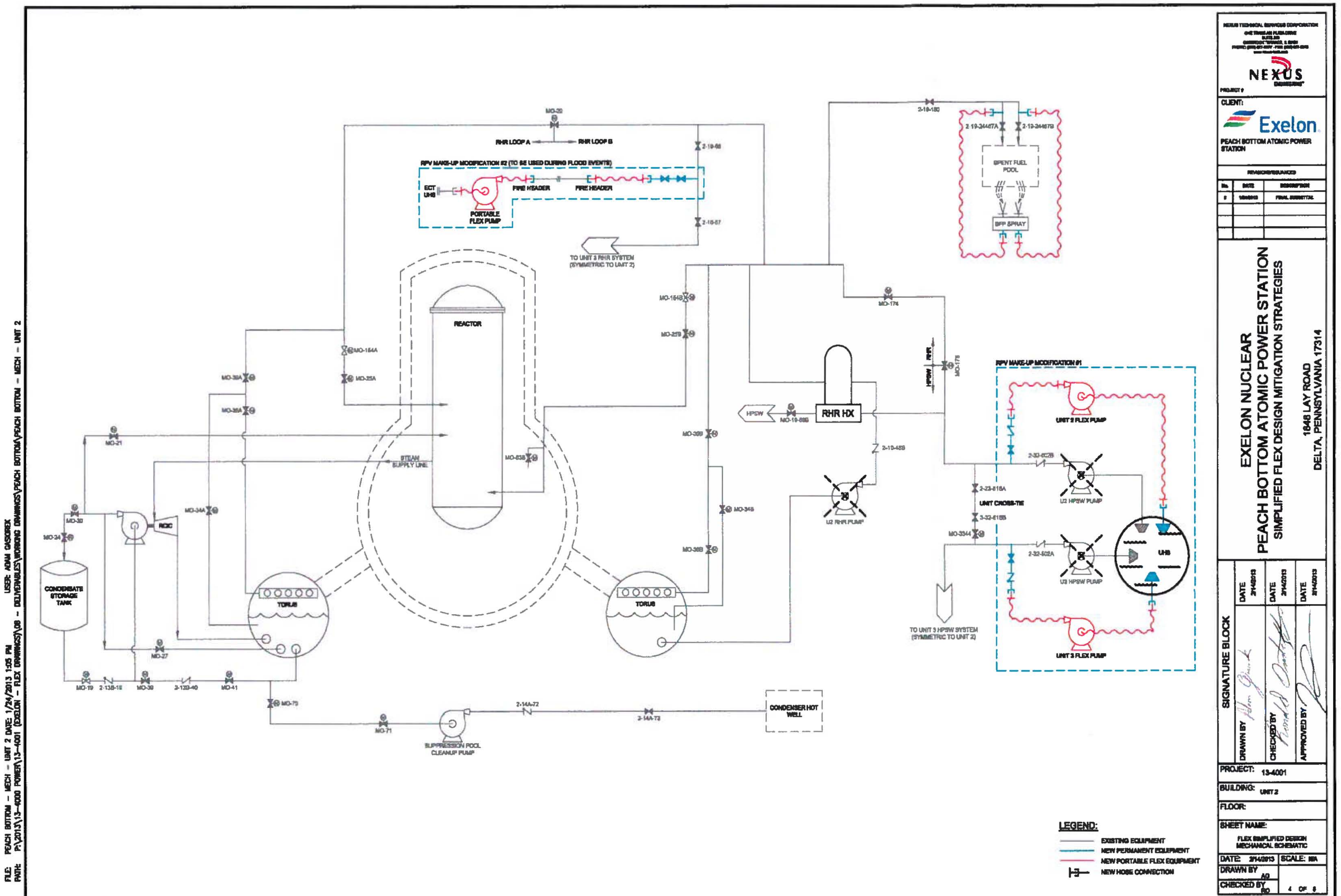
Attachment 2
Milestone Schedule

Site: Peach Bottom

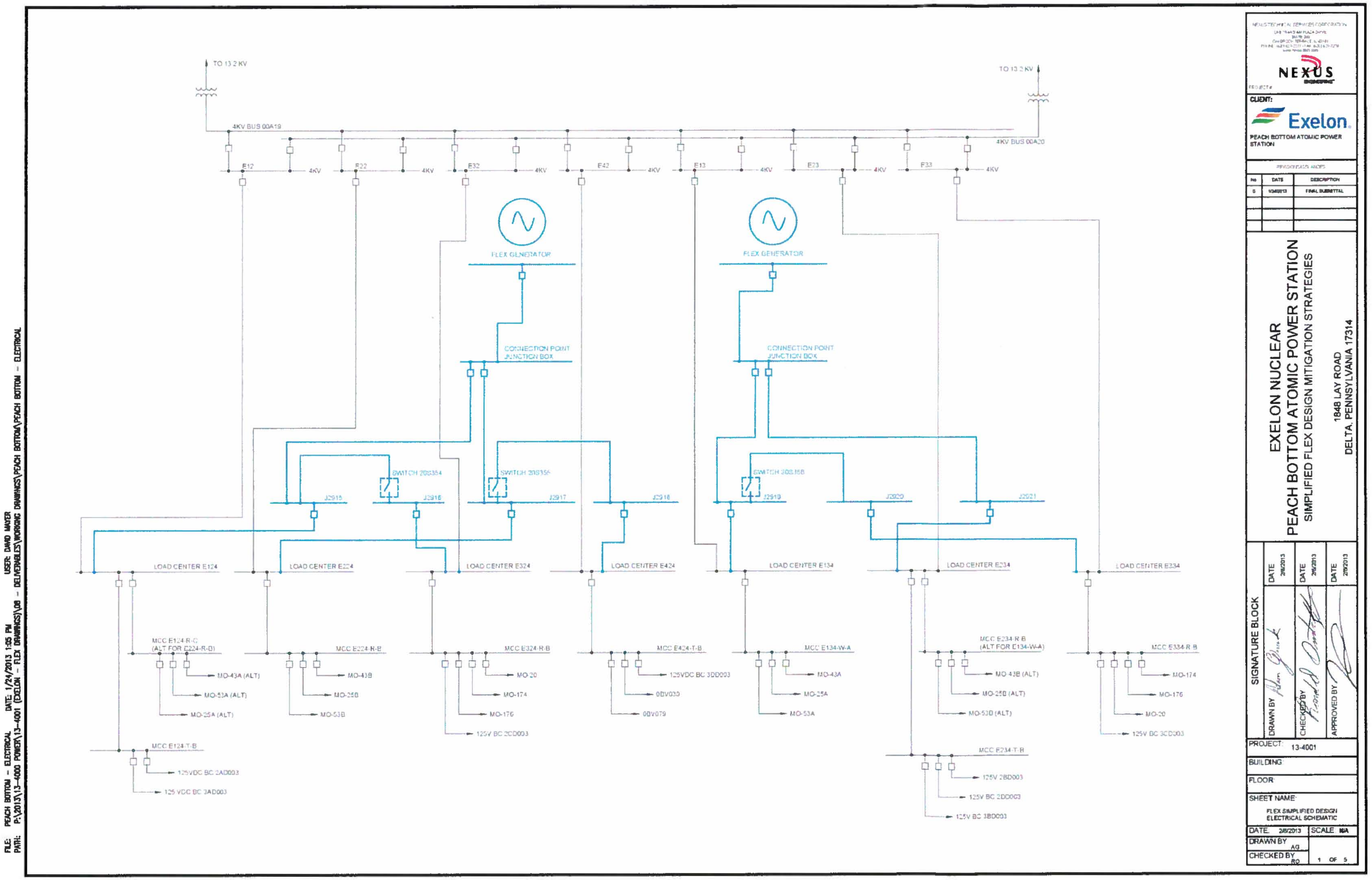
Original Target Completion Date		Activity	Status {Include date changes in this column}
		Submit 60 Day Status Report	Complete
		Submit Overall Integrated Implementation Plan	Complete
		Contract with RRC	Complete
Recurring action, Aug and Feb		Submit 6-month updates	Ongoing
Unit 2	Unit 3	Modification Development	
Sept 2015	Aug 2014	• Phase 1 modifications	Note 1
Sept 2015	Aug 2014	• Phase 2 modifications	Note 1
Sept 2015	Aug 2014	• Phase 3 modifications	Note 1
Unit 2	Unit 3	Modification Implementation	
Nov 2016	Oct 2015	• Phase 1 modifications	Note 1
Nov 2016	Oct 2015	• Phase 2 modifications	Note 1
Nov 2016	Oct 2015	• Phase 3 modifications	Note 1
		Procedure development	
Oct 2015		• Strategy procedures	Note 1
Oct 2015		• Maintenance procedures	Note 1
Jun 2015		Staffing analysis	Note 1
Oct 2015		Storage Plan and construction	Note 1
Oct 2015		FLEX equipment acquisition	Note 1
Oct 2015		Training completion	Note 1
Jul 2015		Regional Response Center Operational	(will be a standard date from RRC)
Nov 2016 (P2R21)		Unit 2 Implementation date	Note 1
Oct 2015 (P3R20)		Unit 3 Implementation date	Note 1

Note 1: Exelon will update the status of ongoing and future milestones in the Integrated Plan for Peach Bottom during a scheduled 6-month update. This update will include any changes to the milestone schedule as submitted in the February 28, 2013 Integrated Plan.

Attachment 3
Conceptual Sketches



Attachment 3
Conceptual Sketches (continued)



Attachment 3
Conceptual Sketches (continued)