



Order No. EA-12-049

RS-13-127

August 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: First Six-Month 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)

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
5. Exelon Generation Company, LLC Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013 (RS-13-024)
6. NRC Order Number EA-12-050, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents," dated March 12, 2012
7. NRC Order Number EA-13-109, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013

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 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the EGC initial status report regarding mitigation strategies. Reference 5 provided the Peach Bottom Atomic Power Station, Units 2 and 3 overall integrated plan.

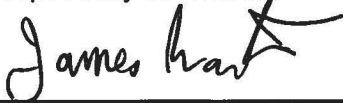
Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. The purpose of this letter is to provide the first six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The enclosed report provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

As described in Reference 5, full implementation of NRC Order EA-12-049 required mitigation strategies is dependent upon implementation of reliable hardened containment venting capability established in accordance with NRC Order EA-12-050 (Reference 6). NRC Order EA-13-109 (Reference 7) issued by the NRC on June 6, 2013, rescinded the requirements of Order EA-12-050 and established revised schedule timelines and implementation dates for reliable hardened containment vents capable of operation under severe accident conditions. The revised schedule and implementation timeline contained in Order EA-13-109 delays the ability to achieve full implementation of the mitigation strategy requirements of Order EA-12-049. This need for relaxation from the implementation requirements of Order EA-12-049 is described in Section 5 of the enclosed update report. The request for relaxation of the full implementation schedule requirements of Order EA-12-049 will be submitted separately.

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 August 2013.

Respectfully submitted,



James Barstow
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

Enclosure:

1. Peach Bottom Atomic Power Station, Units 2 and 3 First Six-Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

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
NRC Project Manager, NRR - Peach Bottom Atomic Power Station, Units 2 and 3
Ms. Jessica A. Kratchman, NRR/JLD/PMB, NRC
Mr. Robert J. Fretz, Jr, NRR/JLD/PMB, NRC
Mr. Robert L. Dennig, NRR/DSS/SCVB, NRC
Mr. Eric E. Bowman, NRR/DPR/PGCB, NRC
Director, Bureau of Radiation Protection – Pennsylvania Department of Environmental Resources
S. T. Gray, State of Maryland
R. R. Janati, Commonwealth of Pennsylvania

Enclosure

Peach Bottom Atomic Power Station, Units 2 and 3

**First Six-Month Status Report for the Implementation of Order EA-12-049, Order
Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-
Design-Basis External Events**

(13 pages)

Enclosure

Peach Bottom Atomic Power Station Units 2 and 3 First Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

1 Introduction

Peach Bottom Atomic Power Station, Units 2 and 3 developed an Overall Integrated Plan (Reference 1 in Section 8), documenting the diverse and flexible strategies (FLEX), in response to Reference 2. This enclosure provides an update of milestone accomplishments since submittal of the Overall Integrated Plan, including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

2 Milestone Accomplishments

None

3 Milestone Schedule Status

The following provides an update to Attachment 2 of the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	Oct 2012	Complete	
Submit Overall Integrated Plan	Feb 2013	Complete	
Contract with RRC		Complete	
Submit 6 Month Updates:			
Update 1	Aug 2013	Complete with this submittal	
Update 2	Feb 2014	Not Started	
Update 3	Aug 2014	Not Started	
Update 4	Feb 2015	Not Started	

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Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Update 5	Aug 2015	Not Started	
Update 6	Feb 2016	Not Started	
Update 7	Aug 2016	Not Started	
Submit Completion Report	Dec 2016	Not Started	
Perform Staffing Analysis	May 2015	Not started	
Modifications:			
Unit 2 Design Engineering	May 2015	Started	
Unit 2 Implementation Outage	Nov 2016	Not Started	
Unit 3 Design Engineering	June 2014	Started	
Unit 3 Implementation Outage	Oct 2015	Not Started	
Storage:			
Storage Design Engineering	Oct 2015	Not started	
Storage Implementation	Oct 2015	Not started	
FLEX Equipment:			
Procure On-Site Equipment	Sept 2015	Started	
Develop Strategies with RRC	Dec 2014	Started	
Procedures:			
Create Site-Specific Procedures	Sept 2015	Not started	
Validate Procedures (NEI-12.06, section 11.4.3)	Sept 2015	Not started	
Create Maintenance Procedures	Sept 2015	Not started	
Training:			

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Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Develop Training Plan	March 2015	Not started	
Training Complete	Oct 2015	Not started	
Unit 2 FLEX Implementation	Oct 2016	Not started	
Unit 3 FLEX Implementation	Oct 2015	Not started	
Full Site FLEX Implementation	Oct 2016	Not started	

4 Changes to Compliance Method

General Integrated Plan Elements BWR –

Change 1

Time Constraints- Action Item #14: Early Containment Venting. Early containment venting was to be initiated using the Torus Hardened Vent Line at approximately 4.8 hours into the event to prevent Torus temperature from exceeding 230 F.

Reason for change: Modification of the Torus Hardened Vent to allow venting at pressures below 30 psig have been delayed due to the Severe Accident Capable Vent (SACV) Order EA-13-109, scheduled for completion at Peach Bottom Unit 2 in Fall 2016 and Unit 3 in Fall 2017.

Maintain Core Cooling: Determine baseline coping capability with installed coping modifications not including FLEX modifications. Utilizing methods described in Table 3-1 of NEI 12-06:

Reactor Level Control: Venting of containment was to be initiated such that peak Suppression Pool temperature was to remain below the maximum allowed for RCIC operation, at 230 deg F.

Modifications to the Peach Bottom Torus Hardened Vent required to perform early venting have been delayed due to the Severe Accident Capable Vent (SACV) Order EA-13-109, scheduled for completion at Peach Bottom Unit 2 in Fall 2016 and Unit 3 in Fall 2017. Venting of containment using the Torus Hardened Vent could only now begin at a minimum containment pressure of 30 psig with a saturation temperature of the torus of at least 278 deg F.

Attachment 1 Conceptual Sketch and the discussion section for Safety Function Support show modifications to install FLEX 480VAC generator connections. The primary strategy is being revised to install a 480VAC portable generator connection in each unit's 135' elevation reactor building railroad access bay with cable supplying transfer switches to the E124 and E134 Load Centers. The alternate

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strategy is being revised to install a 480VAC portable generator connection at each unit's Outage Power area behind the Reactor Building on the west wall with cable supplying the E324 and E334 Load Centers. Existing cabling between the E124 and E324, and the E134 and the E334 Load Centers will be used to crosstie power from the FLEX generators. The 480VAC motor control centers required for FLEX will be powered from the E124, E324, E134 and E334 Load Centers. No new cables or modifications will be required to the motor control centers.

This change reduces the number of 480VAC Load Centers and Motor Control Centers to be powered by the FLEX generators. On Unit 2 the E224 and E424 480VAC Load Centers and the E224-R-B and E424-T-B 480VAC Motor Control Centers will not be powered. On Unit 3 the E234 480VAC Load Center and the E234-R-B and E234-T-B Motor Control Centers will not be powered. The Division 2 "B" RHR MO-2(3)-25B valve for vessel injection and the MO-2(3)-39B and MO-2(3)-34B valves for Torus makeup will not have power and will be unavailable for operation from the Control Room. The Division 2 "B" RHR MO-2(3)-25B valve for vessel injection and the MO-2(3)-39B and MO-2(3)-34B valves for Torus makeup are not required for compliance with Order EA-12-049.

Maintain Containment: EPG/SAG Rev 3 guidance to perform early containment venting at approximately 4.8 hours into the event required modification to the existing Peach Bottom Torus Hardened Vent. These modifications have been delayed due to the Severe Accident Capable Vent (SACV) Order EA-13-109, scheduled for completion at Peach Bottom Unit 2 in Fall 2016 and Unit 3 in Fall 2017.

Change 2

Key Containment Parameters: Torus Wide Range Level Instruments LR/TR-8(9)123A is added to the Key Containment Parameters list of instrumentation.

Change 3

Attachment 2 Conceptual Sketch and the SFP Makeup discussion section for the Maintain Spent Fuel Pool Cooling show water supply modifications to the Spent Fuel Pool by installing additional manual valves and hose connections downstream of HV-(3)-4457A and HV-2(3)-4457B. This is being revised to a single hose connection upstream of the HV-2(3)-4457A and HV-2(3)-4457B on 165' Reactor Building with sections of fire hose then routed to the 234' elevation of the Refuel Floor. Hoses will then be used to makeup to the Spent Fuel Pool or provide spray capability to the Spent Fuel Pool. The new hose connections will be installed on seismically rated piping.

Change 4

Attachment 1 Conceptual Sketch and the discussion section for Safety Function Support show modifications to install FLEX 480VAC generator connections. The primary strategy is being revised to install a 480VAC portable generator connection in each unit's 135' elevation reactor building railroad access bay with cable supplying transfer switches to the E124 and E134 Load Centers. The alternate

strategy is being revised to install a 480VAC portable generator connection at each unit's Outage Power area behind the Reactor Building on the west wall with cable supplying the E324 and E334 Load Centers. Existing cabling between the E124 and E324, and the E134 and the E334 Load Centers will be used to crosstie power from the FLEX generators. The 480VAC motor control centers required for FLEX will be powered from the E124, E324, E134 and E334 Load Centers. No new cables or modifications will be required to the motor control centers.

This change reduces the number of 480VAC Load Centers and Motor Control Centers to be powered by the FLEX generators. On Unit 2 the E224 and E424 480VAC Load Centers and the E224-R-B and E424-T-B 480VAC Motor Control Centers will not be powered. On Unit 3 the E234 480VAC Load Center and the E234-R-B and E234-T-B Motor Control Centers will not be powered. The Division 2 "B" RHR MO-2(3)-25B valve for vessel injection and the MO-2(3)-39B and MO-2(3)-34B valves for Torus makeup will not have power and will be unavailable for operation from the Control Room. The Division 2 "B" RHR MO-2(3)-25B valve for vessel injection and the MO-2(3)-39B and MO-2(3)-34B valves for Torus makeup are not required for compliance with Order EA-12-049.

The OAV030 Control Room Emergency Vent Supply Fan A, the OAV034 Emergency Switchgear and Battery Room Vent Supply Fan A and the OAV036 Battery Room Exhaust Fan A are powered from the E324-T-B Motor Control Center and will be available for operation.

5 Need for Relief/Relaxation and Basis for the Relief/Relaxation

Relief /Relaxation is required due to the delay in the modifications to the Torus Hardened Vent due to the Severe Accident Capable Vent (SACV) Order EA-13-109 (Reference 3).

This section provides a summary of needed relief/relaxation only. The specific details will be submitted in a separate document at a later date.

NRC Order EA-12-049 requires implementation of Mitigation Strategies to include procedures, guidance, training, and acquisition, staging, or installing of equipment needed for the strategies. Reference 1 provided the Peach Bottom Atomic Power Station response to NRC Order EA-12-049. The cover letter identifies that delays in implementing the Hardened Containment Vent System as required by NRC order EA-12-050 (Reference 4) will also affect implementation of the Mitigation Strategies Order EA-12-049 actions.

The Reference 1 enclosure describes the Peach Bottom Atomic Power Station Mitigation Strategies that is based on venting the containment using the Hardened Containment Vent System. It also describes that a modification to install a Hardened Containment Vent System (HCVS) is required.

Thus, the Peach Bottom Atomic Power Station NRC Order EA-12-049 response provided in Reference 1 was premised on installation and use of a Hardened Containment Vent System as required by NRC Order

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EA-12-050. Upon issuance of NRC Order EA-13-109, the NRC staff changed technical and schedule requirements applicable to the Hardened Containment Vent System and rescinded the requirements of NRC Order EA-12-050.

As a result, full compliance to the Mitigation Strategies required by NRC Order EA-12-049 and described in Reference 1 for Peach Bottom Atomic Power Station Units 2 and 3 will not be achieved until compliance to NRC Order EA-13-109 is achieved. Relief/relaxation from the NRC Order 12-049 IV.A.2 requirements is required.

Peach Bottom Atomic Power Station will be in compliance with the aspects of the Reference 1 Unit 2 and Unit 3 Mitigation Strategies that do not rely upon a Hardened Containment Vent System unless otherwise described.

6 Open Items from Overall Integrated Plan and Draft Safety Evaluation

The following tables provide a summary of the open items documented in the Overall Integrated Plan or the Draft Safety Evaluation (SE) and the status of each item.

Section Reference	Overall Integrated Plan Open Item	Status
Multiple Sections	Item 1) 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. The location of the storage areas, identification of the travel paths and creation of the administrative program are open items.	Started
Programmatic Controls (p. 7)	Item 2) An administrative program for FLEX to establish responsibilities, testing and maintenance requirements will be implemented.	Not started
Describe Training Plan (p. 8)	Item 3) Training materials for FLEX will be developed for all station staff involved in implementing FLEX strategies.	Not started

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Maintain Spent Fuel pool Cooling (p. 30)	Item 4) Complete an evaluation of the spent fuel pool area for steam and condensation to determine vent path strategy requirements.	Not started
Safety Function Support (p. 38)	Item 5) RCIC room temperature analysis is still in progress.	Started
Safety Function Support (p.38)	Item 6) Evaluate the habitability of the Main Control Room and develop a strategy to maintain habitability.	Not started
Safety Function Support (p. 38)	Item 7) Develop a procedure to prop open battery room doors and utilize portable fans or utilize installed room supply and exhaust fans upon energizing the battery chargers to prevent a buildup of hydrogen in the battery rooms.	Not started
Sequence of Events (p. 4)	Item 8) Timeline walk through will be completed for the FLEX generator installations when the detailed design and site strategy is finalized. The final timeline will be validated once the detailed designs are developed. The results will be provided in a future 6 month update.	Not started
Sequence of Events (p.4)	Item 9) Timeline walk through will be completed for the FLEX pump installations when the detailed design and site strategy is finalized. The final timeline will be validated once the detailed designs are developed. The results will be provided in a future 6 month update.	Not started
Sequence of Events (p. 5)	Item 10) Additional analysis will be performed during detailed design development to ensure Suppression Pool temperature will support RCIC operation, in accordance with approved BWROG analysis, throughout the event.	Not started

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Sequence of Events (p. 5)	Item 11) Analysis of deviations between Exelon’s engineering analyses and the analyses contained in BWROG Document NEDC-33771P, “GEH Evaluation of FLEX Implementation Guidelines and documentation of results on Att. 1B, “NSSS Significant Reference Analysis Deviation Table.” Planned to be completed and submitted with August 2013 Six Month Update.	Completed. Attachment 3 included in this six month update
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Draft Safety Evaluation Open Item	Status
N/A	N/A

7 Potential Draft Safety Evaluation Impacts

There are no potential impacts to the Draft Safety Evaluation identified at this time.

8 References

The following references support the updates to the Overall Integrated Plan described in this enclosure.

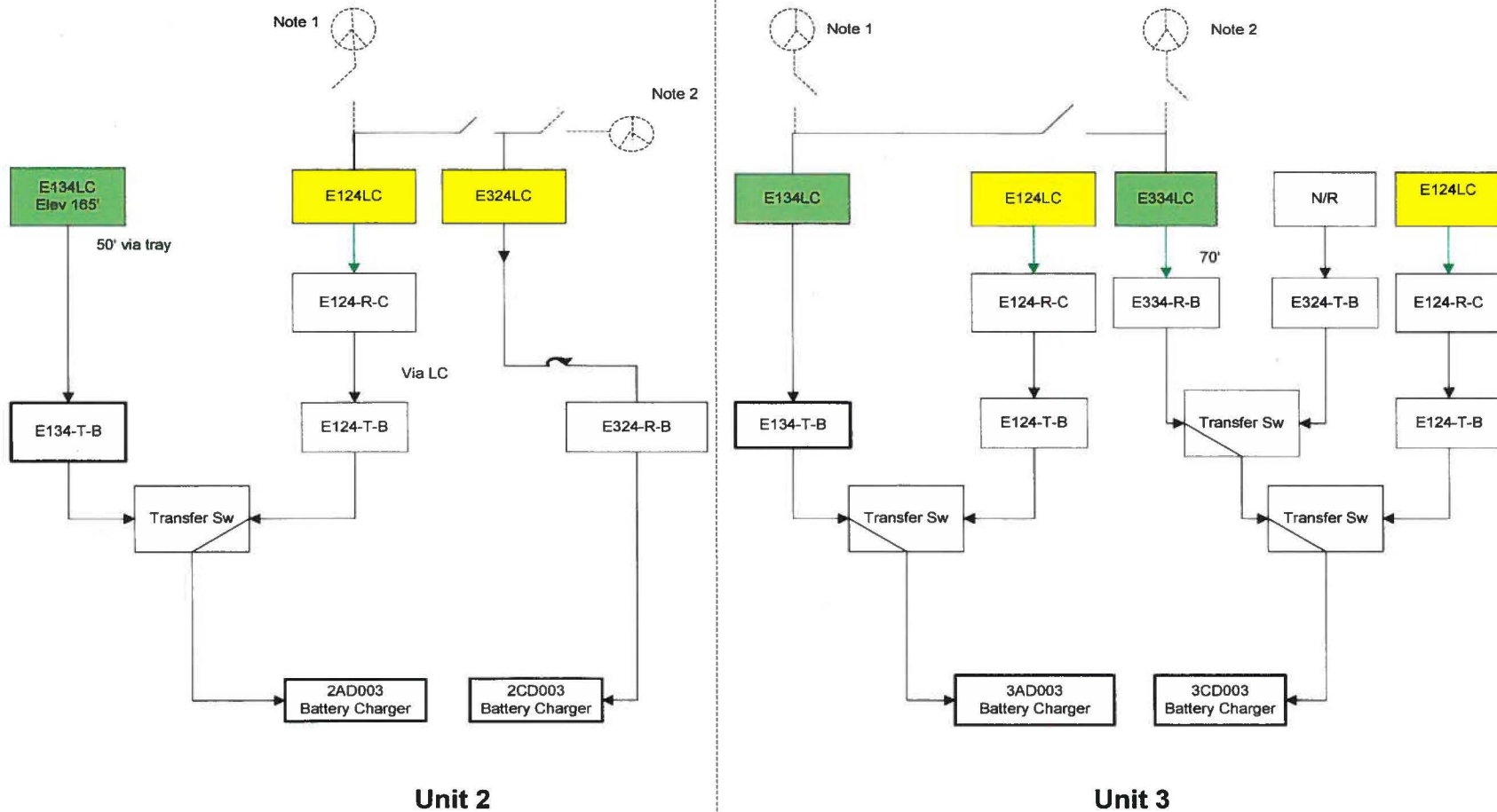
1. Peach Bottom Atomic Power Station Units 2 and 3, Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013.
2. NRC Order Number EA-12-049, “Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,” dated March 12, 2012.
3. NRC Order Number EA-13-109, “Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions,” dated June 6, 2013.
4. NRC Order Number EA-12-050, “Order Modifying Licenses with Regard to Reliable Hardened Containment Vents,” dated March 12, 2012

9 Attachments

1. PBAPS Primary and Alternate Power Requirements Electrical Schematic
2. FLEX Simplified Design Mechanical Schematic
3. Peach Bottom Atomic Power Station FLEX Integrated Plan Analyses Reconciliation to NEDC-33771P, Rev 1

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Attachment 1



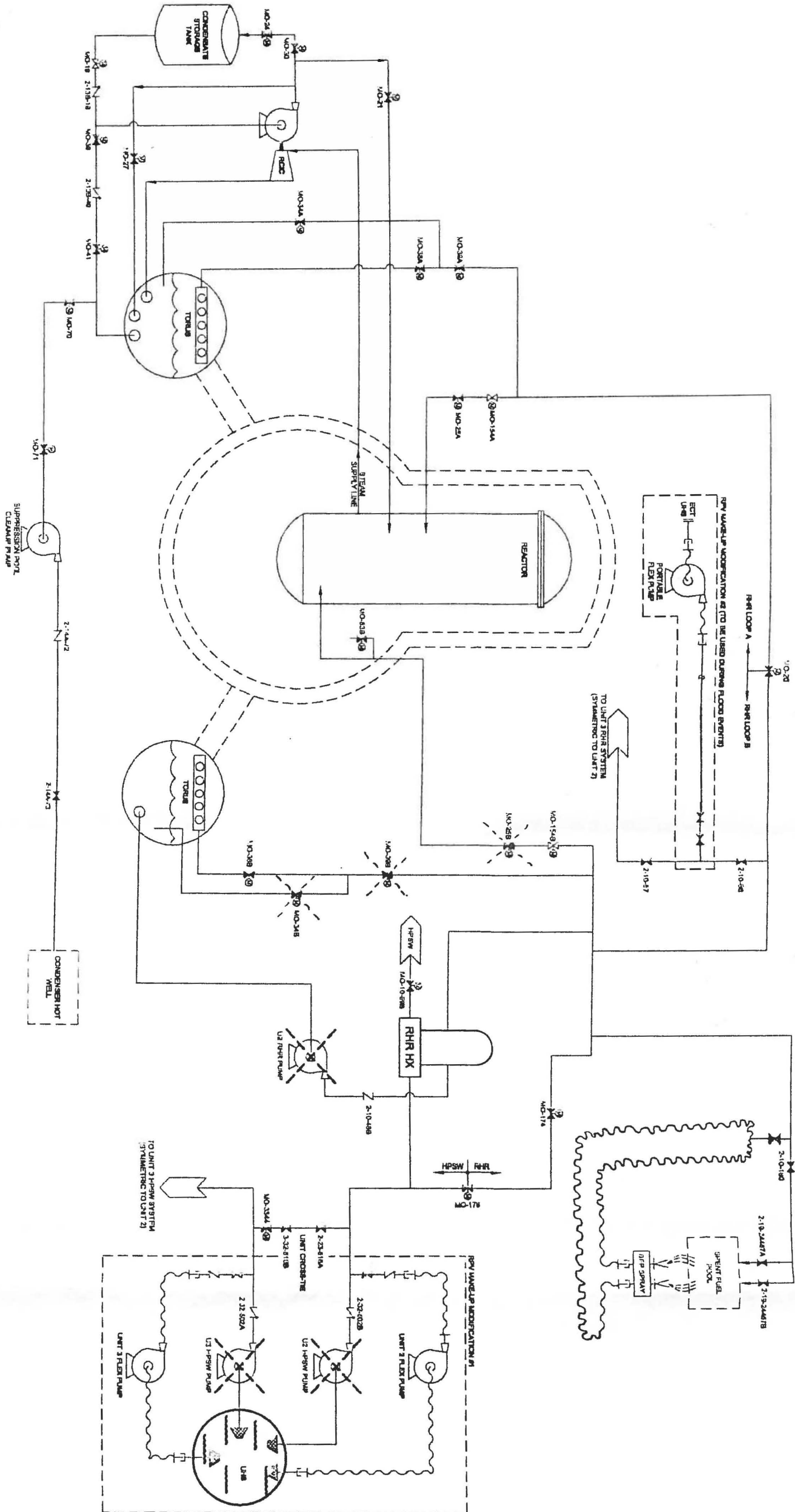
PBAPS Primary and Alt Power Requirements

Note 1 – Primary Connection in RB to support 1 Unit Specific Generator

Note 2 – Alternate connection west of RB to support 1 Unit Specific Generator

Load List
 Battery Chargers – Input 45A
 RCIC Control Power – 30A
 Baro Cond Vac Pp – 35A
 Vac Tank Cond Pp – 35A
 *OY050 – 100A

ATTACHMENT 2



LEGEND:
 ——— EXISTING EQUIPMENT
 ——— NEW PERMANENT EQUIPMENT
 - - - - NEW PORTABLE FLEX EQUIPMENT
 - - - - NEW HOSE CONNECTION

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EXELON NUCLEAR PEACH BOTTOM ATOMIC POWER STATION SIMPLIFIED FLEX DESIGN MITIGATION STRATEGIES		1848 LAY ROAD DELTA, PENNSYLVANIA 17314
SIGNATURE BLOCK		CLIENT: PEACH BOTTOM ATOMIC POWER STATION
DRAWN BY: <i>Adam Gasiorek</i>	DATE: 2/14/2013	 NEXUS CONSULTANTS 15415 LEBANON, PENNSYLVANIA 17046 717-233-8800 15415 LEBANON, PENNSYLVANIA 17046 717-233-8800
CHECKED BY: <i>Richard D. D'Amico</i>	DATE: 2/14/2013	
APPROVED BY: <i>[Signature]</i>	DATE: 2/14/2013	
PROJECT: 13-4001 BUILDING: UNIT 2 FLOOR:		SHEET NAME: FLEX SIMPLIFIED DESIGN MECHANICAL SCHEMATIC
DATE: 2/14/2013 SCALE: N/A DRAWN BY: AG CHECKED BY: RD		1 OF 5

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Attachment 3

Peach Bottom Atomic Power Station FLEX Integrated Plan Analyses Reconciliation to NEDC-33771P, Rev 1

(Attachment 1B in the Overall Integrated Plan Report)

NOTE: NEDC-33771P, Rev 1, Appendices B and D (BWR/4 Mark I with RCIC (No Venting, Suction From Suppression Pool, and Venting Starting at 8 hours, Suction From CST)) are most similar to the Peach Bottom Atomic Power Station FLEX Plan strategy for maintaining Containment Integrity. Notable differences between the input parameters used in the Peach Bottom Atomic Power Station FLEX analyses and the NEDC-33771P, Rev 1, analyses are noted below in the Gap and Discussion column.

Item	Parameter of Interest	NEDC-33771P Value (Page Reference)	Peach Bottom Analyses Applied Value	Design Value	Gap and Discussion
Input Parameter Values					
1	Core Thermal Power	17	3517 MWT 100%	N/A	
2	Reactor Dome Pressure	17	1050 psia	N/A	
3	Initial RPV Water Level above vessel zero	17	562.5 inches	N/A	
4	Primary system Leakage	17	42 gpm	N/A	MAAP model configured with Recirc pump leakage 18 gpm/pump, 5 gpm unidentified leakage and 1 gpm identified leakage
5	RPV Depressurization Time	17	20 minutes	N/A	
6	RPV Depressurization Rate	17	80 F / hour	N/A	
7	RPV Maintained Pressure	17	200 psig	N/A	
8	Initial Wetwell Airspace Temperature	17	145 F	N/A	
9	Initial Wetwell Pressure	17	15.2 psia	N/A	
10	Suppression Pool Level	17	14.5 feet	N/A	

Attachment 3

Item	Parameter of Interest	NEDC-33771P Value (Page Reference)	Peach Bottom Analyses Applied Value	Design Value	Gap and Discussion
11	Initial Suppression Pool Temperature	17	95 F	N/A	
12	Drywell Free Volume	17	116,882.37 ft ³	N/A	
13	Start of Venting	17	4.7 hours	N/A	MAAP Containment Venting starting when torus temperature exceeds 200 F
14	Venting Flow Coefficient	17	0.75	N/A	
15	Venting Pipe Size	17	16 inches	N/A	
Resultant Parameter Values					
	Maximum Suppression Pool Temperature (Venting, Torus Suction)	34	221 F at 11.8 hours	281°F	The differences identified between the SHEX and MAAP analyses are due to the time in which containment venting was initiated. Analyses of the containment pressures and temperature prior to initiation of the venting action are approximately equal. The time for containment venting initiation in the MAAP analysis is based on Torus temperature exceeding 200 deg F.
	Maximum WetWell Temperature (Venting, Torus Suction)	34	241 F at 13.4 hours	281°F	
	Maximum Wetwell Pressure (Venting, Torus Suction)	34	25.0 psia at 4.7 hours	56psig	
	Maximum Drywell Temperature (Venting, Torus Suction)	34	256 F at 72 hours	281°F	
	Maximum Drywell Pressure (Venting, Torus Suction)	34	24.9 psia at 4.7 hours	56psig	