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NRC Order No. EA-12-049

FLL-14-027

August 26, 2014

U.S. Nuclear Regulatory Commission
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Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-53 and DPR-69
Docket Nos. 50-317 and 50-318

Subject: August 2014 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, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012 (ML12054A735)

(2) Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), Response to NRC Letter on Technical Issues for Resolution Regarding Communications Submittals Associated with Near Term Task Force Recommendation 9.3, dated February 22, 2013 (ML13066A710)

(3) Letter from B. K. Vaidya (NRC) to G. H. Gellrich (CENG), Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 – Staff Assessment in Response to Recommendation 9.3 of the Near-Term Task Force Related to the Fukushima Dai-ichi Nuclear Power Plant Accident (TAC Nos. ME9947 and ME9948), dated April 24, 2013 (ML13100A240)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA 12-049 (Reference 1) to Constellation Energy Nuclear Group, LLC (CENG) for Calvert Cliffs Nuclear Power Plant, LLC (CCNPP), Units 1 and 2. Reference (1) requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Attachment (1) provides the six-month Status Report for CCNPP. The report updates the milestone accomplishments since the submittal of the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

In Reference (2), CCNPP committed to include the status of the implementing actions identified in Section 4.12 of the Communications Assessment as part of the six-month status reports

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required by Section IV.C.2 of NRC Order EA-12-049. Attachment (1) includes an update of the status of these implementing actions. This will be the last status update for those actions. Future six-month status reports submitted in accordance with Section IV.C.2 of NRC Order EA-12-049 will not include a status of the implementing actions identified in Section 4.12 of the Communications Assessment, as these updates have negligible safety significance. Thus, this letter deletes the regulatory commitment made in Reference (2). As documented in Reference (3), the regulatory commitments to implement the CCNPP Units 1 and 2 improvements related to mitigating strategies (FLEX) derived from the results of the communications assessment will be completed: a) prior to the startup of CCNPP Unit 1 following the Spring 2016 refueling outage and b) prior to the startup of CCNPP Unit 2 following the Spring 2015 refueling outage.

There are no regulatory commitments contained in this letter.

If there are any questions regarding this letter, please contact Bruce Montgomery, Acting Manager - Licensing, at 443-532-6533.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 26th day of August, 2014.

Respectfully,

Mary G. Korsnick

Mary G. Korsnick

MGK/STD

Attachment (1) Six-Month Status Report (August 2014) for Mitigation Strategies for Beyond-Design-Basis External Events

cc: Regional Administrator, Region I, USNRC
NRC Project Manager, NRR – Calvert Cliffs Nuclear Power Plant
NRC Senior Resident Inspector – Calvert Cliffs Nuclear Power Plant
Director, Office of Nuclear Reactor Regulation
J. A. Kratchman, NRC

ATTACHMENT (1)

SIX-MONTH STATUS REPORT (AUGUST 2014)

FOR MITIGATION STRATEGIES FOR

BEYOND-DESIGN-BASIS EXTERNAL EVENTS

CALVERT CLIFFS NUCLEAR POWER PLANT, LLC
August 26, 2014

1 Introduction

The Calvert Cliffs Nuclear Power Plant, LLC (CCNPP) Overall Integrated Plan (OIP) was submitted to the Nuclear Regulatory Commission (NRC) in February 2013 (Reference 1), documenting the diverse and flexible strategies (FLEX) in response to NRC Order Number EA-12-049 (Reference 2). Subsequently, a supplement to the CCNPP OIP for FLEX was submitted to the NRC in March 2013 (Reference 3). This attachment provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief/relaxation and associated basis (if applicable).

CCNPP developed an Interim Action Implementation Schedule as part of an Assessment of Communications during an Extended Loss of AC Power (ELAP) (Reference 4). A commitment was made in Reference 4 to include the status of the implementing actions identified in Section 4.12 of CCNPP's communications assessment as part of the six-month status reports prepared pursuant to Section IV.C.2 of NRC Order EA-12-049. The updated status of the communications assessment interim actions is provided in Section 8. It should be noted that this is the last status report in which an update of communications assessment interim actions will be provided. This change in regulatory commitment is addressed in the cover letter submitting this status report.

Since the submittal of the last two status reports in August 2013 (Reference 6) and February 2014 (Reference 8), CCNPP FLEX has progressed with engineering analysis, calculations and design of modifications that support the mitigating strategies while making some refinements to modification concepts. However, no significant changes to the mitigation strategies or planned modifications in support of the mitigation strategies have occurred. Work to formalize agreements to utilize local spaces as staging areas has progressed with some owners while remaining a challenge with others.

By letter dated December 17, 2013, the NRC issued to CENG the Calvert Cliffs Nuclear Power Plant, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF 1142 and MF 1143) (Reference 7). The Interim Staff Evaluation (ISE) contains open and confirmatory items for which Exelon, the CCNPP licensee, has begun to provide clarifying or additional information in the February 2014 and this six-month status reports in order for the NRC to determine that the issues are on a path to satisfactory resolution. This information and the item status are given in Table 3.

2 Milestone Accomplishments

The following milestones have been completed since the development of the OIP (References 1 and 3), and are current as of July 15, 2014:

- Performed exploratory fluid system walk downs in support of pending modifications for FLEX strategies during spring 2013 Refueling Outage (RFO). (8/2013)
- Performed exploratory electrical system walk downs in support of pending modifications for FLEX strategies during spring 2013 RFO. (8/2013)
- Performed preliminary site walk downs in support of FLEX equipment deployment and storage strategies. (8/2013)
- Submitted the first six-month FLEX status report in August 2013. (8/2013).

- Submitted the second six-month FLEX status report in February 2014. (2/2014)
- Submitted the third six-month FLEX status report in August 2014. (8/2014)
- Developed Strategies/Contract with the Regional Response Center (RRC), (8/2014)

3 Milestone Schedule Status

Table 1 provides an update to Attachment 2-1 of the CCNPP OIP (Attachment 4 - References 1 and 3). 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. Any changes to the indicated target completion dates will be reflected in subsequent 6-month status reports.

The revised milestone target completion dates do not impact the Order implementation date.

Walk-throughs or demonstrations encompassing all FLEX equipment points of connection/tie-ins for Phase 2 and Phase 3 strategies will be performed as presented in Table 1. A detailed schedule for walk-throughs or demonstrations, including individual target dates, has not been developed.

Table 1
Status of CCNPP FLEX OIP Milestones

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Plan	February 2013	Complete	
Commence Engineering and Design	November 2013	Started	U-2: October 2013 U-1: October 2014
Commence Procurement of Equipment	June 2015	Started	U-2: January 2015 U-1: January 2016
Commence Installation of Equipment	March 2016	Not Started	October 2014
Submit 6-Month Status Report	August 2013	Complete	
Develop Modifications	October 2013	Started	U-2: September 2014 U-1: July 2015
Develop Strategies/Contract with the Regional Response Center (RRC)	November 2013	Complete	
Perform Staffing Analysis	January 2014	Not Started	August 2014

Table 1
Status of CCNPP FLEX OIP Milestones

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 6-Month Status Report	February 2014	Complete	
Complete Engineering and Design	March 2014	Started	U-2: October 2014 U-1: June 2015
Create Maintenance and Testing Procedures	June 2014	Started	December 2014
Submit 6-Month Status Report	August 2014	Complete	
Procedure Changes Training Material Complete	September 2014	Started	December 2014
Develop Training Plan	November 2014	Started	April 2014
Submit 6-Month Status Report	February 2015	Not Started	
Issue FLEX Support Guidelines (FSG)	March 2015	Started	U-2: January 2015 U-1: January 2016
Unit 2 Modification Implementation Outage	April 2015	Not Started	March 2015
Walk-throughs or Demonstrations	Unit 2: March 2015 Unit 1: March 2016	Started	
Implement Training	June 2015	Started	U-2: April 2014 U-1: April 2015
Submit 6-Month Status Report	August 2015	Not Started	
Complete Procurement of Equipment	August 2015	Started	U-2: September 2014 U-1: September 2015
Submit 6-Month Status Report	February 2016	Not Started	
Unit 1 Modification Implementation Outage	April 2016	Not Started	March 2016

Table 1
Status of CCNPP FLEX OIP Milestones

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 6-Month Status Report	August 2016	Not Started	
Full compliance with EA-12-049 is achieved	November 2016	Not Started	
Submit Completion Report	December 2016	Not Started	

4 Changes to Compliance Method

There are no changes to the compliance method as documented in the Overall Integrated Plan (Reference 1) and Nuclear Energy Institute (NEI) 12-06 (Reference 5).

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

CCNPP expects to comply with the Order implementation date and no relief/relaxation is required at this time.

6 Open Items from Overall Integrated Plan and Draft Safety Evaluation

Table 2 provides a summary of the open items documented in the OIP and those added in a subsequent six month status report and the status of each item.

Table 3 provides a summary of the open items and confirmatory items documented in the NRC's CCNPP ISE (Reference 7) and the status of each item.

Table 2
Status of CCNPP FLEX OIP Open Items

CCNPP OIP Open Items	Status
1. Add margin to design FLEX components and hard connection points to address future requirements as re-evaluation warrants. Portable FLEX components will be procured commercially	Started. (Notification provided in Reference 8)
2. Implement a design change to install permanent protected FLEX equipment connection points	Started. (Notification provided in Reference 8)
3. Evaluate deployment strategies and deployment routes to ensure they are assessed for and address applicable hazards impact.	Started. (Notification provided in Reference 8)
4. Develop a process for implementation of exceptions for the site security plan or other (license/site specific – 10CFR50.54X) requirements of a nature requiring NRC approval will be communicated in a future 6 month update following identification.)	Started. (Notification provided in Reference 8)
5. Define implementation routes upon finalizing a location or locations for FLEX equipment storage location(s).	Started. (Notification provided in Reference 6)
6. Evaluate requirements, options, and develop strategies to provide reasonably protected storage on site for the FLEX portable equipment.	Started. (Notification provided in Reference 6)
7. Design and build a protected storage location or locations for the FLEX equipment. Ensure the design meets the requirements of NEI 12-06.	Started. (Notification provided in Reference 6)
8. Identify analysis needed to develop or support mitigating strategies.	Started. (Notification provided in Reference 6)
9. Provide an administrative program governing the FLEX deployment strategy, marking of setup locations, including primary and alternate pathways, maintaining the pathways clear, and clearing the pathways.	Started. (Notification provided in Reference 8)
10. Determine the location of the CCNPP local staging area, primary and alternate delivery routes, and delivery methods to the proposed onsite laydown areas.	Complete. (Addressed in Reference 8)
11. Determine schedule for when RRCs will be fully operational.	Complete. (Addressed in Reference 6)
12. Define criteria for the local staging area by June 2013.	Complete. (Addressed in Reference 8)

CCNPP OIP Open Items	Status
13. Establish a suitable local staging area for portable FLEX equipment to be delivered from the RRC to the site.	Started. (Notification provided in this status report)
14. Develop site specific SAFER Response Plan (playbook) for delivery of portable FLEX equipment from the RRC to the site.	Started. (Notification provided in Reference 8)
15. Original open item text: Implement a design change to replace the 1 ft. diameter wheel with a 3 ft. wheel on each Atmospheric Dump Valve (ADV) chain operator. Modified open item text: Implement a design change to improve mechanical advantage on each Atmospheric Dump Valve (ADV) chain operator.	Started. (Notification provided in Reference 8)
16. Evaluate the feasibility of the WCAP-17601-P recommendation to install a remotely operated RCP CBO return line isolation valve.	Deleted. (Addressed in Reference 6)
17. Develop a procedure or FSG to perform an early cooldown and depressurization as recommended by WCAP-17601-P.	Started. (Notification provided in Reference 6)
18. Perform engineering analyses to confirm that CCNPP maintains an adequate level of Shutdown Margin (SDM) for an RCS cooldown to 350°F, to cover a period of at least 72 hours.	Complete. (Addressed in Reference 8)
19. Implement a design change to re-power the [Safety Injection Tank] SIT level and pressure indicators from a vital 120 VAC instrument bus.	Started. (Notification provided in Reference 8)
20. Implement a design change to install new leak-tight SIT vent Solenoid Valves (SV) that will allow the vent line pipe caps to remain off.	Deleted. (Addressed in Reference 6)
21. Original open item text: Implement design changes to install "plug and play" protected hose connections for the portable alternate [Auxiliary Feedwater] AFW pump to AFW on the exterior of the Auxiliary Building west wall with piping run to the 27 ft. East penetration Rooms to connect to the AFW to S/G headers. Modified open item text: Utilize flexible hose to connect a FLEX pump to a newly installed, dedicated hose connections (one per unit) located on the motor driven AFW pump cross-connect lines on the 5 ft. elevation of the Auxiliary Building.	Started. (Notification provided in Reference 8)

CCNPP OIP Open Items	Status
22. Implement a design change to install reliable local level indicators on all of the water storage tanks located in the 11, 12 and 21 CSTs, 11 DWST, and 11 and 12 PWSTs.	Deleted. (Addressed in Reference 8)
23. Perform an analysis to determine the necessary scope of the DC load shedding strategy.	Started. (Notification provided in Reference 8)
24. Implement a design change to clearly identify the set of DC load breakers that will either be left energized or load shed by identifying the selected breakers by their unique numbers and load title.	Started. (Notification provided in Reference 8)
25. Implement a procedure or FSG to perform the DC load shedding.	Started. (Notification provided in Reference 6)
26. Complete a time-motion study to validate that DC load shedding can be accomplished on each unit in one (1) hour.	Started. (Notification provided in Reference 8)
27. Original open item text: Implement a design change to install an 8-hour Uninterruptible Power Supply (UPS) on the Mansell RCS Level Monitoring System. Modified open item text: Implement a design change to connect a portable diesel generator to the Mansell RCS Level Monitoring System.	Started. (Notification provided in Reference 8)
28. Perform engineering analyses and develop strategies for providing RCS make-up and core cooling while in Modes 5 and 6, for all possible RCS conditions, following an ELAP. The analysis should determine the FLEX pump capacity needed to provide adequate flow in all RCS conditions.	Started. (Notification provided in Reference 8)
29. Perform an analysis to determine that there is sufficient decay heat generated for TDAFW operation 36 hours after shutdown.	Complete. (Addressed in Reference 8)
30. Implement a design change to provide dedicated hose connections and piping to the Safety Injection System.	Started. (Notification provided in Reference 8)
31. Develop a procedure or FSG to mimic the AFW makeup strategy described in ERPIP-611, Attachment 1.	Started. (Notification provided in Reference 6)
32. Install a design change to add makeup and pump suction hose connections for FLEX pump connection to 12 CST.	Deleted. (Addressed in Reference 8)

CCNPP OIP Open Items	Status
33. Install a design change to replace the 2-½ inch hose connections with 4 inch hose connections at 11 and 21 CSTs, 11 DWST, and 11 and 12 PWSTs.	Deleted. (Addressed in Reference 6)
34. Install a design change to add hose connections at 11 and 21 Refueling Water Storage Tanks (RWT) for makeup and suction for the FLEX pumps.	Started. (Notification provided in Reference 8)
35. Install design change to add 4" hose connections to the Reactor Coolant Waste Receiver Tanks (RCWRTs) and Reactor Coolant Waste Monitor Tanks (RCWMTs).	Deleted. (Addressed in Reference 8)
36. Perform an analysis to determine the survivability of the wells as a long-term source of make-up water. Analysis should include any modifications needed to improve the survivability of the associated Well Water System piping and to provide 480 VAC power to the well pumps.	Started. (Notification provided in Reference 8)
37. Perform an analysis to determine the long-term effect on the S/Gs from use of water from the [Ultimate Heat Sink] UHS as a cooling medium.	Started.
38. Perform an analysis to determine station battery coping time with DC load shedding. Analysis should consider battery age, battery performance without battery room ventilation, and load and load duration prior to completion of DC load shedding.	Started. (Notification provided in Reference 8)
39. Track the completion of ECP-11-000293 and -000294, the Reserve Battery distribution system modification that is currently in progress.	Started. (Notification provided in Reference 6)
40. Develop and implement procedures to supply power to critical instrumentation using primary and alternate methods.	Started. (Notification provided in Reference 6)
41. Perform an analysis to determine that the assumed load capacity of the FLEX 480 VAC DG is sufficient to provide power to the selected loads.	Complete. ECP-14-000052 includes an analysis to determine that the assumed load capacity of the FLEX 480 VAC DG is sufficient to provide power to the selected loads.
42. Implement a design change to connect a FLEX 480 VAC Diesel generator to either of the A or B train 480 VAC load centers on each unit to provide power to the battery chargers and other critical AC equipment.	Started. (Notification provided in Reference 8)

CCNPP OIP Open Items	Status
43. Implement a design change to provide direct connection of a portable 100 kW diesel generator to reactor [Motor Control Centers] MCCs 104 or 114 and 204 or 214 to provide power to the inverter backup bus (which can power the 120VAC vital bus), the SIT Outlet [Motor Operated Valves] MOVs, and the AFW Pump Room Vent Fans.	Started. (Notification provided in Reference 8)
44. Implement a design change to install connection points, conduit, cabling, and transfer switches locally at battery chargers to provide for direct connection from the FLEX 480 VAC DGs.	Deleted. (Addressed in Reference 6)
45. Perform an analysis to determine the feasibility of the S/G "batch" feeding strategy.	Not Started.
46. Implement a procedure to connect a 4160 VAC RRC DG to either of the A or B Train 1E 4160 VAC Buses on each unit to provide power for Phase 3.	Started. (Notification provided in Reference 8)
47. Develop procedures or FSGs for repower vital 4160 VAC Class 1E buses from RRC FLEX 4KV DGs.	Started. (Notification provided in Reference 8)
48. Provide modified 4160 VAC breakers for direct RRC DG connection for use in place of the normal 4160 VAC breakers in service for LPSI Pump and SW Pump power supplies.	Deleted. (Addressed in Reference 8)
49. Implement a design change to power containment dome and reactor cavity temperatures instrumentation from a vital 120 VAC instrument bus.	Started. (Notification provided in Reference 8)
50. Perform an analysis to determine containment temperature and pressure response over a period of 72 hours. Perform analysis with and without RCS cooldown and with and without restoration of containment air cooling.	Complete. (Addressed in Reference 6)
51. Implement a design change to install a hose connection on the A-Train and B-Train [Containment Spray] CS headers in the Auxiliary Building.	Deleted. (Addressed in Reference 6)

CCNPP OIP Open Items	Status
52. Purchase additional special check valve bonnets and store them inside each [Emergency Core Cooling System] ECCS Pump Room.	Deleted. The scope of this action was to build additional hose bonnet tools for each ECCS pump room rather than one tool that would have to be moved from room to room if being used to support the FLEX mitigation strategy. The CCNPP FLEX strategy for containment cooling will no longer use this connection path. FLEX will not use the same means to cool containment as B.5.b uses for containment flooding through the spray header. Therefore additional tools, as were originally planned, are not needed for this scope of FLEX modification.
53. Perform an analysis to determine the feasibility of providing Containment cooling with CAC Units using an alternate cooling water strategy.	Started.
54. Install hose connections on the Service Water (SRW) supply and return lines to the CAC for connection to a RRC portable heat exchanger.	Deleted. (Addressed in Reference 8)
55. Implement a design change to install reliable wide range spent fuel pool (SFP) level instrumentation in accordance with NRC Order EA-12-051.	Started. (Notification provided in Reference 6)
56. Implement a design change to provide a 6" hose connection to each RWT.	Started. (Notification provided in Reference 8)
57. Implement a design change to provide dedicated hose connections to the SFP Cooling system.	Started. (Notification provided in Reference 8)
58. Develop and implement procedures or FSGs that include the SFP Cooling FLEX makeup flow path.	Started. (Notification provided in Reference 6)
59. Develop procedures or FSGs that mimic the ERPIP-612 sections for SFP makeup and SFP spray.	Started. (Notification provided in Reference 6)
60. Implement a design change to install reliable wide range SFP fuel pool level instrumentation in accordance with NRC Order EA-12-051	Duplicate Open Item. See Open Item # 55
61. Perform an analysis to determine the Control Room temperature response over a period of 72 hours.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hours with limited stay times possible during the hottest part of the day.

CCNPP OIP Open Items	Status
62. Perform an analysis to confirm that TDAFW Pump room air temperature remains acceptable over 72 hours of pump operation.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hours with limited stay times possible during the hottest part of the day.
63. Develop primary and alternate strategies for ventilating the TDAFW Pump Room.	Complete. (Addressed in Reference 6)
64. Perform an analysis to confirm the [Probable Maximum Precipitation] PMP event maximum flood height will not impact the operation of TDAFW or preclude access to the room.	Complete. (Addressed in Reference 6)
65. Perform an analysis to determine the possible effects of Beyond Design Basis External Events (BDBEEs) on the Turbine Building structure and the potential effect on access to the TDAFW Pump Room.	Complete. The turbine building was originally designed to the requirements for a Seismic Class II structure, including wind load and seismic load. The building is an integrated steel structure with metal siding, supported on reinforced concrete foundations. In addition, all of the structural steel columns, beams, and roof trusses of the building have been designed as independent members and in accordance with American Institute of Steel Construction, Inc. specifications. It was determined that facilities which were built to the requirement of basic construction codes have the ability to survive seismically-induced loadings and stresses well in excess of the original allowances. Although a quantitative evaluation of the seismic capability of the turbine building has not been performed, it is unlikely that catastrophic failure of the turbine building would occur. Class II structures are designed in accordance with design methods of accepted codes and standards insofar as they are applicable. Wind design (25 psf zone) is in accordance with the UBC, with a one third increase in the allowable stresses. Seismic design is in accordance with the UBC. Seismic forces were based on Seismic Probability Zone 3 multiplied by a ratio of 0.08/0.30. A one third increase in allowable stresses was not allowed. All of the structural steel columns, beams, and roof trusses of the building have been designed as independent members and in accordance with AISC Specifications. The Turbine Building is constructed below grade from the turbine deck down to its base mat. In addition, taking the position stated in the NRC-endorsed Generic Implementation Procedure (GIP), it is a fact that

CCNPP OIP Open Items	Status
	large, commercial industrial structures, such the steel-constructed Turbine Building, have behaved very well during strong motion earthquakes with seismic ground motion in excess of 0.9gs. They have retained their structural and system integrity with the exception of localized damage due to insufficiently anchored equipment. Facilities which were built to the requirements of basic code construction have been found to have the ability to survive seismic-induced loadings and stresses well in excess of the original allowables. A review of the Turbine Building structural design revealed that it is a ductile structure with inherent damping and energy absorbing capacity. The building is built to withstand 90 mph winds, thereby resisting lateral loads in excess of UBC seismic requirements. As a result, the review of the Turbine Building at CCNPP and NRC-endorsed GIP statements, the turbine building has the ability to survive an SSE without the potential for damage to its piping systems and there is a high likelihood the structure will remain standing following a Beyond Design Basis External Event (BDBEE).
66. Develop an alternate access strategy for access into the TDAFW Pump Room.	Complete. Based on the determination that the Turbine Building can withstand a BDBEE, it can be concluded that the normal access path to the TDAFW pump room will not be blocked. Consequently, there is no need to consider an alternate route to reach the TDAFW pump room. Consideration to have an alternate access path to the TDAFW pump room was given prior to concluding that the Turbine Building would not suffer any damage during a BDBEE.
67. Perform an analysis to determine the temperature profile over 72 hours in the area around ADV enclosures.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the area environment acceptable for occupancy as well as equipment for 72 hours with limited stay times possible during the hottest part of the day.
68. Perform an analysis to determine the Cable Spreading Room temperature response over a period of 72 hours.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hours with limited stay times.

CCNPP OIP Open Items	Status
69. Investigate changing Appendix R lighting batteries to a longer life battery or new battery technology to lengthen the duration of lighting available in vital areas of the plant.	Deleted. (Addressed in Reference 8)
70. Procure battery operated hardhat mounted lights ("miners" lights) for on-shift and Emergency Response Organization (ERO) personnel.	Not Started.
71. Procure a sufficient quantity of hand-held battery operated lanterns for on-shift and ERO personnel.	Not Started.
72. Procure six (6) portable diesel generator powered exterior lighting units with 30 ft. masts and a minimum 400,000 lumens.	Complete. (Addressed in Reference 8)
73. Change Appendix R lighting from incandescent to LED to lengthen the duration of lighting available in vital areas of the plant.	Deleted. (Addressed in Reference 8)
74. Implement a design change to install a protected, backup power supply capable of 24 hours of operation, for the Plant Public Address system. This includes backup power for the individual building speaker network amplifiers.	Started. (Notification provided in Reference 8)
75. Implement a design change to modify the 800 MHz Radio System to provide protection from external hazards, transmitter and antennas protected from seismic, wind, and wind-driven missiles, including back-up power supply capable of 24 hours operation for the system and repeaters, or install an alternative communication system in lieu of the 800 MHz Radio system.	Started. (Notification provided in Reference 8)
76. Implement a design change to modify the Fixed Dedicated Satellite Phone System to provide protection from external hazards, and transmitter and antennas protected from seismic, wind, and wind-driven missiles, including back-up power supply capable of 24 hours operation for the system.	Started. (Notification provided in Reference 8)
77. Purchase one wheeled and one tracked vehicle with bucket/blade and grapple of sufficient size and load handling capacity to remove debris.	Complete. (Addressed in Reference 8)
78. Purchase the portable equipment needed to outfit CCNPP Fire Engine 171 for debris removal.	Deleted. (Addressed in Reference 6)
79. Implement a design change to install a protected alternate means of accessing the UHS for all BDBEEs, including installing necessary modifications to meet required deployment times. The strategy must also address how debris in the UHS will be filtered / strained and how the resulting debris will effect core cooling.	Started. (Notification provided in Reference 8)

CCNPP OIP Open Items	Status
80. Develop strategies for use of the Control Room and Cable Spreading Room Appendix R Ventilation System during an ELAP.	Deleted. The use of the Control Room and Cable Spreading Room Appendix R Ventilation System for ELAP is no longer being pursued. The opening of doors and the activation of a 2,000 cfm portable fan units are planned for the Control Room. The opening of doors is planned for the Cable Spreading Rooms (Refer to Calculation CA08253). It was concluded that temporary power required to reactivate the Control Room and Cable Spreading Room Appendix R Ventilation System during an ELAP would be not be provided given that this equipment is in a non-protected location and likely would not survive a BDBEE.
81. Perform an analysis to evaluate hydrogen buildup in the battery rooms during charging and the long term room temperature profiles.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the battery room environment acceptable for occupancy as well as equipment for 72 hours, with possible limited stay times and that hydrogen concentration will remain well below flammable limits.
82. Perform an analysis to determine the Switchgear Room temperature response under the above scenario and assuming various 480 VAC load center and 4160 VAC bus loadings over a period of 72 hours.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hours, with limited stay times.
83. Perform an analysis to verify the above strategy will provide sufficient air flow to vent steam from the SFP Area.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors), will provide sufficient air flow to vent steam and maintain the spent fuel pool area environment acceptable for occupancy as well as equipment for 72 hours, with limited stay times.
84. Evaluate the cost of draining 21 Fuel Oil Storage Tank (FOST) and 1A DG FOST and refilling with ultra-low sulfur (<15 ppm) diesel fuel oil.	Started. (Notification provided in Reference 8)

CCNPP OIP Open Items	Status
85. Original open item text: Implement a design change to install dedicated FLEX hose connections on 21 FOST, 1A DG FOST, and the 1B, 2A, and 2B DG fuel oil Y-strainers. Modified open item text: Implement a design change to install dedicated FLEX hose connections on the 21 FOST.	Started. (Notification provided in this status report)
86. Provide a permanent, fully protected diesel FOST for refueling the FLEX diesel-driven equipment.	Deleted. The existing 21 Fuel Oil Storage Tank (FOST) will be modified to accommodate connections to take fuel for FLEX equipment through an air-driven pump that will be mounted inside the enclosure. Air will be supplied via a FLEX portable air compressor. As a result, there will no longer be a need to provide a permanent, protected Diesel FOST for refueling the FLEX Diesel-driven equipment. (See the modified text of OIP Open Item 85.)
87. Perform an analysis of the fuel consumption rate for all of the FLEX equipment that could be in operation during an ELAP for a period of 72 hours to determine a conservative refueling interval.	Started. (Notification provided in Reference 8)
88. Develop strategies to reduce the transport time for fuel oil loading and delivery.	Started. (Notification provided in Reference 6)
89. Purchase the consumables that should be stocked to support at least 24 hours of site operation independent of offsite support.	Started.
90. Provide a procedure governing the maintenance and distribution of the consumables that will be stocked to support at least 24 hours of site operation independent of offsite support.	Started.
91. Develop a strategy to protect onsite consumables for use after a BDBEE.	Started.
92. Develop equipment operating procedures or FSGs, considering vendor technical manual operating procedures, for each of the pieces of portable FLEX equipment that will be procured.	Started. (Notification provided in Reference 8)
93. Install connection points on Class 1E 4KV Buses for the RRC 4KV portable DG.	Deleted. (Addressed in Reference 8)
94. Develop procedures or FSG for each of the RRC based strategies and for operation of the equipment provided by the RRC.	Started. (Notification provided in Reference 8)

Table 3
Status of CCNPP Interim Staff Evaluation (ISE) Open and Confirmatory Items

ISE Open Items	Status
1. **ISE Open Item 3.2.1.1.A** – The licensee will need to perform a plant specific analysis of RCS cooling and inventory control. If the CENTS code is used, the value of flow quality at the upper region of [Steam Generator] SG tubes for the condition when the RCS makeup pump is required to inject water into the RCS will also need to be submitted, and the licensee should confirm that CENTS is not used outside of any ranges of applicability discussed in the white paper addressing the use of CENTS (e.g., prior to the reflux boiling initiation). If other codes are used for the ELAP analysis, the licensee will need to justify the acceptance of the codes for this use.	Started. (Notification provided in this status report)
2. **ISE Open Item 3.2.1.1.B** – The licensee's plan for analysis for core and containment cooling is still under development and CENG will identify additional analysis to support the mitigating strategies. The subjects of the analyses are: maintaining core cooling (e.g., confirm shutdown margin during cooldown, DC load shedding, and adequate steam pressure for TDAFW pump operation), containment temperature and pressure response for containment cooling, and various safety functions regarding ventilation and cooling systems (e.g., for the main control room, TDAFW pump room, cable spreading room, battery rooms, switchgear rooms and the SFP area). Review of these analyses is needed to confirm acceptability of the mitigating strategies.	Complete. Calculation CA08023, "Minimum Allowable RCS Temperature to Support FLEX Implementation" has been completed. The conclusion is that the cycle-independent established time for which a cooldown to 325°F could be performed without boration while maintaining reactivity more negative than -1000 pcm is 32 hours following reactor trip. Beyond 32 hours, boration is required in order to provide confidence that the reactor remains shut down by more than 1000 pcm. DC load shedding: To confirm the safety-related station batteries will support the vital instrumentation required for the Phase 1 FLEX mitigation strategy at Calvert Cliffs until the Phase 2 diesel generators are deployed, the following calculations are prepared corresponding to the four safety-related station batteries: CA08256 - Battery 11 Load Shed Coping Time for ELAP Event; CA08257 - Battery 12 load Shed Coping Time for ELAP Event; CA08258 - Battery 21 Load Shed Coping Time for ELAP Event; CA08259 - Battery 22 Load Shed coping Time for ELAP Event. An analysis was performed to determine that there is sufficient decay heat generated for TDAFW operation 36 hours after shutdown. The results of the analysis show that there is sufficient decay heat to support adequate steam pressure for TDAFW pump operations for 72 hours.

ISE Open Items	Status
	Containment temperature and pressure response: Calculation CA07961 evaluates the containment temperature and pressure response to an ELAP. Room ventilation and cooling: Calculation CA08253 evaluates the temperature response of auxiliary and turbine building area in response to the loss of forced ventilation (HVAC) during an Extended Loss of A/C Power (ELAP) event. The purpose of this analysis is to establish the necessary mitigating actions and required timing of those actions to support the FLEX Overall Integrated Plan (OIP) of ensuring survivability of coping equipment and the operator's ability to perform the required mitigating actions in a safe and timely manner. The mitigating actions will be detailed in Emergency Response Plan Implementing Procedure ERPIP-0652, "Alignment for Area Cooling" and include establishing ventilation pathways, e.g. opening personnel and equipment doors, and staging portable ventilation equipment, e.g. portable fan units powered by small portable diesel generators. No permanent plant modifications are planned in order to implement these mitigating actions. The plant areas addressed include: Charging Pump Rooms; Battery Rooms, Cable Spreading Rooms, Spent Fuel Pool Heat Exchanger and Pump Room; East Piping Penetration Rooms, Main Steam Piping Penetration Rooms, Main Steam Piping Penetration Rooms, West Piping Penetration Rooms, Switchgear Rooms, Main Control room, Truck Bay Loading Area, Spent Fuel Pool Level Instrumentation Area, Atmospheric Dump Valve Area, East Electrical Penetration Rooms, Spent Fuel Pool Area, Main Plant Exhaust Equipment Room, and Turbine Driven Auxiliary Feedwater (TDAFW) Pump Rooms.
3. **ISE Open Item 3.2.1.8.A** – During the audit process, the licensee informed the NRC staff of its intent to abide by the Pressurized-Water Reactor Owners Group (PWROG) generic approach regarding boric acid mixing discussed in Section 3.2.1.8 of this report; however, the NRC staff concluded that the August 15, 2013, position paper was not adequately justified and that further information is required.	Started. (Notification provided in Reference 8)

ISE Confirmatory Items	Status
1. **ISE Confirmatory Item 3.1.1.1.A** – On page 8 of the Integrated Plan, the licensee specified that Phase 2 FLEX components will be stored at the site in a location or locations such that	Complete. FLEX equipment storage locations have been selected. One robust storage building and one commercial building will be

ISE Confirmatory Items	Status
they are reasonably protected and that no one external event can reasonably fail the site FLEX capability. Provision will be made for multiple sets of portable on-site equipment stored in diverse locations or through storage in structures designed to reasonably protect from applicable external events. FLEX equipment storage location(s) have not been selected.	constructed at CCNPP. The robust building, the Flex Storage Robust Building (FSRB), will be of reinforced concrete approximately 60' wide x 140' long x 21' high and located outside of the Protected Area to the west. The commercial building, the Flex Storage Commercial Building (FSCB), will be a pre-engineered building approximately 60' wide x 60' long x 18' high and located outside of the Protected Area to the south. The distance between the two buildings is approximately 2,685 feet.
2. **ISE Confirmatory Item 3.1.1.1.B** – The licensee will provide the specific protection requirements described in NEI 12-06 for the applicable hazard.	Started. (Notification provided in Reference 8)
3. **ISE Confirmatory Item 3.1.1.4.A** – The licensee has not yet identified the local staging area or described the methods to be used to deliver the equipment to the site for all hazards. The licensee will develop a playbook which will provide the detail necessary to ensure the successful delivery of the portable FLEX equipment from the RRC to the local staging area and from the local staging area to the site.	Started. (Notification provided in Reference 8)
4. **ISE Confirmatory Item 3.1.2.2.A** – The licensee identified two open items; one regarding evaluating deployment strategies and deployment routes to ensure they are assessed for and address applicable hazards impact. The second was to provide an administrative program governing the FLEX deployment strategy, marking of setup locations, including primary and alternate pathways, maintaining the pathways clear, and clearing the pathways.	Started. (Notification provided in Reference 8)
5. **ISE Confirmatory Item 3.1.2.2.B** – Regarding the open items noted in 3.1.2.2.A, evaluations are needed to assure that connection points for portable equipment remain viable for the flooded condition, and that the effects of the maximum storm surge or probable maximum hurricane should be considered in evaluating the adequacy of the baseline deployment strategies.	Started. (Notification provided in Reference 8)

ISE Confirmatory Items	Status
6. **ISE Confirmatory Item 3.1.2.2.C** – The licensee specified that primary access to the UHS is via the openings in the [Circulating Water] CW Discharge Structure (plant outfall). An alternate UHS location has not been established; however the licensee has identified an open item to implement a design change to install a protected alternate means of accessing the UHS for all BDBEEs, including installing necessary modifications to meet required deployment times. The strategy must also address how debris in the UHS will be filtered and/or strained and how the resulting debris will affect core cooling.	Started. (Notification provided in Reference 8)
7. **ISE Confirmatory Item 3.1.3.2.A** – The licensee specified that CCNPP currently has a varied array of wheeled vehicles, e.g., forklifts, small tractors, and a backhoe, that could be used for debris removal. However, the licensee did not specify if this equipment would be protected from high wind and other hazards.	Complete. Equipment that has been procured and evaluated in support of the FLEX effort and that will be dedicated for use during an ELAP event will be stored in the FLEX storage buildings (see Item 3.1.1.1.A). The decision to store which equipment in what building is based on the guidance given in NEI 12-06.
8. **ISE Confirmatory Item 3.1.4.2.A** – The licensee did not address procurement requirements to ensure that the FLEX equipment can be operated in extreme hot or cold temperature environments or how hot or cold temperatures will affect manual actions.	Started. FLEX equipment is being procured to the extreme hot and cold temperature environments specified in Calvert Cliffs' Design Criteria Document "Implementation of Diverse and Flexible Coping Strategies (FLEX)".

ISE Confirmatory Items	Status
9. **ISE Confirmatory Item 3.1.4.2.B** – Deployment of FLEX equipment has not been addressed for conditions of snow, ice and extreme cold. The current screening omits a discussion of deployment of FLEX equipment for hazards due to ice blockage or formation of frazil ice on the UHS.	Complete. Calvert Cliffs Units 1 and 2 use its circulating water (CW) and saltwater (SW) systems suction and discharge structures for the ELAP Ultimate Heat Sink (UHS) water source for all BDBEEs. The primary access to the UHS water source is via openings in the CW/SW discharge structure (plant outfall). The alternate access to the UHS water source is via the intake structure downstream of the circulating water screens through existing access hatches associated with the CW screen wash pumps. The alternate UHS water source can be readily accessed to meet required deployment strategies and is protected from debris and ice by the CW screens. There are 12 CW pumps (6 per Unit) rated at 200,000 gpm each and 6 SW pumps (3 per Unit) rated at 15,500 gpm each, resulting in a normal flow through the intake and discharge structures of approximately 2,500,000 gpm. Under ELAP conditions, the maximum expected flow through the intake structure will be less than 20,000 gpm (1% of the normal flow), and more like reverse flow through the CW screens, which significantly reduces the intake velocity into the intake area and screens as well as providing significant margin for screen clogging due to debris or ice as described in the Exelon Position Paper, "FLEX Water Source Debris Clogging at Suction Point." Similarly, while Calvert Cliffs has been found not to be susceptible to frazil ice (Ref. Station Response to INPO SOER 2007-02, "Intake Cooling Water Blockage"), this reduced intake velocity also provides significant margin for screen blockage due to frazil ice, if it were to occur concurrent with a BDBEE.
10. **ISE Confirmatory Item 3.2.1.2.A** – The RCP seal initial maximum leakage rate should be greater than or equal to the upper bound expectation for the seal leakage rate for the ELAP event discussed in the PWROG white paper addressing the RCP seal leakage for CE plants. If the RCP seal leakage rate used in the plant-specific ELAP analysis is less than upper bound expectation for the seal leakage rate discussed in the white paper, justification should be provided.	Complete. (Addressed in Reference 8)
11. **ISE Confirmatory Item 3.2.1.5.A** – The licensee has not provided sufficient analyses to confirm instruments are reliable and accurate in the containment harsh conditions with high moisture levels, temperature and pressure during the ELAP event.	Complete. Confirmation that instruments are reliable and accurate in the containment harsh conditions is provided in Engineering Change Package ECP-14-000024, Instrument Re-Power Modification.

ISE Confirmatory Items	Status
12. **ISE Confirmatory Item 3.2.1.6.A** – The following references used as basis for several sequence of events (SOE) Action Time constraints were not available for review: CCN0012-17-STUDY-001, and CCNPP FLEX Strategy Table Top.	Complete. CCN0012-17-STUDY-001, Rev. 0, Analysis of Calvert Cliffs DC Systems in Support of INPO Event Report 11-4, is a 596-page document. It will be posted to the CCNPP ePortal and be available for review. It should be noted that the DC Systems study has been superseded by detailed DC system analyses. (Refer to ISE Open Item 3.2.1.1.B). On the other hand, "CCNPP FLEX Strategy Table Top "is not a document. It was a compilation of notes the meeting organizer took while conducting the table tops. These notes were discarded sometime after the table tops were conducted and their results were reviewed.
13. **ISE Confirmatory Item 3.2.1.6.B** – The licensee has not completed final analysis regarding validation of the action times reported in the Sequence of Events, including any SOE changes that may result from ongoing evaluations for; RCP seal leakage, plant specific CENTS analysis, and any revised battery load shed analysis.	Started. (Notification provided in Reference 8)
14. **ISE Confirmatory Item 3.2.1.7.A** –The Generic Concern related to the shutdown and refueling modes, required clarification of CCNPP's approach to demonstrate that the strategies can be implemented in all modes. During the audit, the licensee informed the NRC of their plans to abide by this generic resolution. The implementation of these plans is identified as Confirmatory Item 3.2.1.7.A.	Complete. CCNPP will implement PWROG Shutdown mode guidance PA-PSC-1126, Core Team Interim Guidance for Early Implementers as provided in letter OG-14-101, dated March 14, 2014. This includes implementing Shutdown Mode FSG-14, Shutdown RCS Makeup and FSG-15, Shutdown Water Management.

15. **ISE Confirmatory Item 3.2.1.9.C** – During the audit process, the licensee stated that it will provide revised analyses as detailed engineering evaluations are performed for each Phase 3 FLEX component and modification strategy.	Complete.
	
	Detailed engineering evaluations of each Phase 3 FLEX component and modification strategy are provided in the following Engineering Change Packages:
	
	• ECP-14-000153, Phase 3 4160 VAC RRC DG Connection Mod (Note: 10% package only)
	• ECP-14-000105: Phase 3
	  • Long Term Coping for Reactor Core Cooling via Shutdown Cooling
	  • Provide boric acid batching capability for RWT / RCS makeup
	• Maintain Spent Fuel Pool (SFP)

ISE Confirmatory Items	Status
16. **ISE Confirmatory Item 3.2.1.9.D** – The licensee provided an open item, to perform engineering analysis to determine that there is sufficient decay heat generated for TDAFW operation 36-hours after shutdown and that the TDAFW pumps can operate reliably provided there is greater than 65 psia steam pressure in one of the SGs.	Complete. (Addressed in Reference 8)
17. **ISE Confirmatory Item 3.2.2.A** – The licensee did not discuss the impacts of salt/brackish water on the structures and components of the SFP system, and the fuel. During the audit process the licensee specified that they will perform an analysis to determine the effects of salt/brackish water on the structures and components (including instrumentation) of the SFP system and the stored fuel.	Complete. The source of spent fuel pool makeup water will be selected based on availability, priority of use, and water quality. Condensate-grade water from any available condensate storage or demineralized water tank is the preferred source, followed by pre-treated (fire) water, well water, and finally, as a last resort, Chesapeake Bay (brackish) water via B.5.b (10 CFR 50.54 (hh) (1)) methods in response to potential aircraft threats. As brackish water is already approved for use in response to 10 CFR 50.54 (hh) (1), analysis of the effects of brackish water on SFP structures and components, including instrumentation and fuel, is not planned. It should be noted that the newly installed spent fuel pool level instrumentation would not be affected by brackish water because the cone, its closest part to the water, hangs 2.5 ft. above the pool water surface.
18. **ISE Confirmatory Item 3.2.2.B** – The licensee will perform an analysis to verify that the proposed strategy for SFP ventilation will provide sufficient air flow to vent steam from the SFP area, in order to determine whether natural air circulation is sufficient, or forced ventilation provided by FLEX equipment will be required.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors), will provide sufficient air flow to vent steam and maintain the spent fuel pool area environment acceptable for occupancy as well as equipment for 72 hours, with limited stay times.
19. **ISE Confirmatory Item 3.2.3.A** – The licensee specified that an analysis of the Containment response during the ELAP event indicated that the Containment would not require additional cooling. During the audit, the licensee provided a document entitled "CCNPP Containment Analysis" that was based on the GOTHIC code, however, the tabulated results did not match those transmitted in the August 2013 6-month update.	Started. (Notification provided in Reference 8)
20. **ISE Confirmatory Item 3.2.4.1.A** – Charging Pump Room ventilation is provided by the non-safety related Auxiliary Building	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation

ISE Confirmatory Items	Status
Supply and Exhaust Ventilation System. An evaluation will be performed to determine if the Charging Pumps can meet their mission time without room ventilation.	(Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the charging pump room environment acceptable for occupancy as well as equipment for 72 hours.
21. **ISE Confirmatory Item 3.2.4.2.A** – The licensee identified an open item to perform an analysis to determine the Control Room temperature response over a period of 72 hours.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hrs with limited stay times possible during the hottest part of the day.
22. **ISE Confirmatory Item 3.2.4.2.B** – The licensee identified an open item to develop strategies for use of the Control Room and Cable Spreading Room Appendix R Ventilation System during an ELAP.	Deleted. The use of the Control Room and Cable Spreading Room Appendix R Ventilation System for ELAP is no longer being pursued. The opening of doors and the activation of a 2,000 cfm portable fan units are planned for the Control Room. The opening of doors is planned for the Cable Spreading Rooms (Refer to Calculation CA08253). It was concluded that temporary power required to reactivate the Control Room and Cable Spreading Room Appendix R Ventilation System during an ELAP would be not be provided given that this equipment is in a non-protected location and would likely not survive a BDBEE.
23. **ISE Confirmatory Item 3.2.4.2.C** – The licensee identified an open item to perform an analysis to evaluate hydrogen buildup in the battery rooms during charging and room temperature profiles.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the battery room environment acceptable for occupancy as well as equipment for 72 hours, with possible limited stay times and that hydrogen concentration will remain well below flammable limits.
24. **ISE Confirmatory Item 3.2.4.2.D** – The licensee identified an open item to perform an analysis to determine the Switchgear Room temperature response following the reenergizing of buses and assuming various 480 VAC load center and 4160 VAC bus loadings over a period of 72 hours.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hours, with limited stay times.

ISE Confirmatory Items	Status
25. **ISE Confirmatory Item 3.2.4.2.E** – The West Electrical Penetration Rooms will begin to heat up after the Reactor motor control centers (MCC) are re-energized from the FLEX 480 VAC DGs, therefore, they will need to be evaluated for limiting temperatures for equipment survivability.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the West Electrical Penetration Rooms environment acceptable for occupancy as well as equipment for 72 hours.
26. **ISE Confirmatory Item 3.2.4.4.A** – On page 56 of the Integrated Plan, the licensee identified five open items to; 1) investigate changing Appendix R lighting batteries to a longer life battery or new battery technology to lengthen the duration of lighting available in vital areas of the plant, 2) procure battery operated hardhat mounted lights ("miners" lights) for on-shift and emergency response organization (ERO) personnel, 3) to procure a sufficient quantity of hand-held battery operated hardhat lanterns for on-shift and ERO personnel, 4) to procure six (6) portable diesel generator powered exterior lighting units with 30 ft. masts and a minimum 400,000 lumens, and 5) to change Appendix R lighting from incandescent to LED to lengthen the duration of lighting available in vital areas of the plant.	Complete. The status of these five open items is as follows: 1. On-shift individuals and members of the Emergency Response Organization will be provided with hardhat mounted lights ("miners" lights). Therefore, there is no longer a need to change Appendix R lighting from incandescent to LED. 2. See Item 1 3. See Item 1 4. The six portable diesel generator-powered exterior lighting units have been purchased and are at CCNPP. 5. See Item 1
27. **ISE Confirmatory Item 3.2.4.4.B** – The NRC staff reviewed the licensee communications assessment and has determined that the assessment for communications is reasonable, and the analyzed existing systems, proposed enhancements, and interim measures will help to ensure that communications are maintained. Confirmation that upgrades to the site's communications systems have been completed will be accomplished at a later date.	Complete. The assessment for satellite communications has started. The assessment for radios is on-going with the final phase scheduled by the summer of 2014. At that time the scope of modification for 800MHz radio system will be determined.
28. **ISE Confirmatory Item 3.2.4.5.A** – The licensee has not completed its evaluation of the primary and alternate access points	Started.

ISE Confirmatory Items	Status
29. **ISE Confirmatory Item 3.2.4.6.A** – The licensee has identified an open item to perform an analysis to determine the temperature profile over 72 hours in the area around the Atmospheric Dump Valve enclosures.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the area environment acceptable for occupancy as well as equipment for 72 hrs with limited stay times possible during the hottest part of the day.
30. **ISE Confirmatory Item 3.2.4.6.B** – The licensee identified an open item to perform an analysis to determine the Cable Spreading Room temperature response over a period of 72 hours.	Complete. Calculation CA08253, "Room Heatup for FLEX Evaluation (Loss of HVAC)" has been completed. The conclusion is that the planned compensatory measures (e.g., opening doors, using temporary fans and air coolers) will maintain the room environment acceptable for occupancy as well as equipment for 72 hours, with limited stay times.
31. **ISE Confirmatory Item 3.2.4.6.C** – The licensee identified two open items to perform an analysis to determine the possible effects of BDBEE on the Turbine Building structure and the potential effect on access to the TDAFW Pump Room, and to develop an alternate access strategy for access into the TDAFW Pump Room.	Complete. The Turbine Building was originally designed to the requirements for a Seismic Class II structure, including wind load and seismic load. The building is an integrated steel structure with metal siding, supported on reinforced concrete foundations. In addition, all of the structural steel columns, beams, and roof trusses of the building have been designed as independent members and in accordance with American Institute of Steel Construction, Inc. specifications. It was determined that facilities which were built to the requirement of basic construction codes have the ability to survive seismically-induced loadings and stresses well in excess of the original allowances. Although a quantitative evaluation of the seismic capability of the turbine building has not been performed, it is unlikely that catastrophic failure of the turbine building would occur. Class II structures are designed in accordance with design methods of accepted codes and standards insofar as they are applicable. Wind design (25 psf zone) is in accordance with the UBC, with a one third increase in the allowable stresses. Seismic design is in accordance with the UBC. Seismic forces were based on Seismic Probability Zone 3 multiplied by a ratio of 0.08/0.30. A one third increase in allowable stresses was not allowed. All of the structural steel columns, beams, and roof trusses of the building have been designed as independent members and in accordance with AISC Specifications. The Turbine Building is constructed below grade from the turbine deck down to its base mat.

ISE Confirmatory Items	Status
	In addition, taking the position stated in the NRC-endorsed Generic Implementation Procedure (GIP), it is a fact that large, commercial industrial structures, such the steel-constructed Turbine Building, have behaved very well during strong motion earthquakes with seismic ground motion in excess of 0.9gs. They have retained their structural and system integrity with the exception of localized damage due to insufficiently anchored equipment. Facilities which were built to the requirements of basic code construction have been found to have the ability to survive seismic-induced loadings and stresses well in excess of the original allowables. A review of the Turbine Building structural design revealed that it is a ductile structure with inherent damping and energy absorbing capacity. The building is built to withstand 90 mph winds, thereby resisting lateral loads in excess of UBC seismic requirements. As a result, the review of the Turbine Building at CCNPP and NRC-endorsed GIP statements, the turbine building has the ability to survive an SSE without the potential for damage to its piping systems and there is a high likelihood the structure will remain standing following a Beyond Design Basis External Event (BDBEE). Based on the determination that the Turbine Building can withstand a BDBEE, it can be concluded that the normal access path to the TDAFW pump room will not be blocked. Consequently, there is no need to consider an alternate route to reach the TDAFW pump room. Consideration to have an alternate access path to the TDAFW pump room was given prior to concluding that the Turbine Building would not suffer any damage during a BDBEE.
32. **ISE Confirmatory Item 3.2.4.8.A** – The medium voltage 4160VAC generators and the low voltage 480VAC 800kW generators that will arrive from the RRC will have protective devices as specified in AREVA document 51-9199717-000. An evaluation will be performed to verify the internal protection is adequate to protect the 1E buses.	Started.

ISE Confirmatory Items	Status
33. **ISE Confirmatory Item 3.2.4.8.B** – One 480VAC/675KVA diesel generator set will be deployed for each unit to connect to one vital 480 VAC Load Center on that unit. The 480VAC/125KVA diesel generators are intended as an alternate strategy to connect to one of two vital reactor MCCs on each unit. The supplied reactor MCC can be cross-connected to the redundant train reactor MCC on that unit. An evaluation to validate the intended use of these diesel generators is pending.	Started Engineering Change Package ECP-14-000052, 480 VAC FLEX Diesel Generator Connection Modification evaluates the 480VAC/500KW and 480VAC/100KW diesel generators for their intended use.
34. **ISE Confirmatory Item 3.2.4.9.A** – The licensee identified Open items to perform an analysis of the fuel consumption rate for all of the FLEX equipment that could be in operation during an ELAP for a period of 72 hours to determine a conservative refueling interval, and to develop strategies to reduce the transport time for fuel oil loading and delivery.	Started. (Notification provided in this status report)
35. **ISE Confirmatory Item 3.2.4.10.A** – On page 19 of the Integrated Plan, the licensee identified Open Items: to implement a design change to clearly identify the set of [DC] load breakers that will either be left energized or load shed by identifying the selected breakers by their unique numbers and load title; to implement a procedure or FSG to perform the [DC} load shedding; and to complete a time-motion study to validate that DC load shedding can be accomplished on each unit in one hour.	Started. (Notification provided in Reference 8)
36. **ISE Confirmatory Item 3.2.4.10.B** – Maintenance of vital 125 VDC power will include aligning the Reserve Battery to one of the four vital 125 VDC buses via bus work and disconnects that are currently being installed under an existing plant modification. This action will extend the coping time for one vital 125 VDC bus to greater than 20 hours. The licensee needs to provide a copy of the analysis/calculations which shows aligning the Reserve Battery to one of the four 125VDC buses can extend the coping time for one vital 125 VDC bus to greater than 20 hours.	Complete. The reserve battery is not being credited in the Station's FLEX strategy because the battery load shedding strategy per ERPIP-653 (FSG-4) provides sufficient time (> 6 hours to restore battery charging to at least one battery per Unit). However, the reserve battery has similar capacity to two of the station batteries and slightly smaller capacity than the other two station batteries and therefore would significantly increase the battery copying time should there be a delay in restoring battery charging.

ISE Confirmatory Items	Status
37. **ISE Confirmatory Item 3.4.A** – The licensee's plans for the use of off-site resources conform to the minimum capabilities specified in NEI 12-06 Section 12.2, with regard to the capability to obtain equipment and commodities to sustain and backup the site's coping strategies. The licensee did not address the remaining minimum capabilities of Section 12.2.	Started. (Notification provided in this status report)

7 Potential Draft Safety Evaluation Impacts

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

8 Communications Assessment Interim Actions Status

Table 4 provides a listing of the implementing actions documented in the Assessment of Communications during an ELAP (Reference 4). It provides the status of each action, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed. It should be noted that this is the last status report in which an update of communications assessment interim actions will be provided. This change in regulatory commitment is addressed in the cover letter submitting this status report.

Table 4
Status of CCNPP Communications Assessment Interim Actions

Communications Assessment Implementing Actions	Target Completion Date	Status	Revised Target Completion Date
Fixed Satellite Phone System and Antennas			
1. Determine the status of existing fixed satellite phone system and antennas in terms of suitability of being "reasonably protected."	12/31/2013	Complete. (Addressed in Reference 8)	
2. Install additional antennas/dishes as necessary to support the use of fixed satellite phones at all locations.	Startup 2016 RFO Unit 1	Started. (Notification provided in this status report)	
3. Stage portable satellite dishes as necessary to support the use of fixed satellite phones at all locations.	Startup 2016 RFO Unit 1	Not Started.	
North Service Building and Switchyard House			
1. Determine whether or not the North Service Building (NSB) and Switchyard House are "reasonably protected."	12/31/2013	Complete. (Addressed in Reference 8)	
Portable Satellite Phones			
1. Stage satellite phones		Complete. (Addressed in Reference 6)	
2. Stage batteries and chargers in the applicable ERO Facilities.	10/31/2013	Complete. (Addressed in Reference 8)	
3. Update work instructions for portable satellite phone inventory.	10/31/2013	Complete. (Addressed in Reference 8)	
4. Develop/update preventive maintenance and testing procedures for portable satellite phones, batteries and chargers.	12/31/2013	Complete. (Addressed in Reference 8)	
5. Include information on portable satellite phone locations and usage in procedures.	12/31/2013	Complete. (Addressed in Reference 8)	

Table 4
Status of CCNPP Communications Assessment Interim Actions

Communications Assessment Implementing Actions	Target Completion Date	Status	Revised Target Completion Date
6. Procure and install a high power UPS or similar modification providing backup power for the battery chargers for portable satellite phones.	12/31/2014	Complete. (Notification provided in this status report)	
Fixed Satellite Phones			
1. Procure and install fixed satellite phones, fixed satellite dishes and uninterruptable power supplies for the Technical Support Center (TSC)/Operations Support Center (OSC), Emergency Operations Facility (EOF), and Joint Information Center (JIC).	12/31/2014	Started.	Startup 2016 RFO Unit 1
2. Update work instructions for fixed satellite phone inventory		Complete. (Addressed in Reference 6)	
3. Develop/update preventive maintenance and testing procedures for fixed satellite phones.		Complete. (Addressed in Reference 6)	
4. Include information on fixed satellite phone locations and usage in procedures.		Complete. (Addressed in Reference 6)	
5. Determine the acceptability of the backup UPS in its present location. Relocate higher, if necessary.	8/31/2014	Started.	12/31/2014
6. Provide instructions for use at every fixed satellite phone location.		Complete. (Addressed in Reference 6)	
Communication with ORO Facilities			
1. Provide each Offsite Response Organization (ORO) identified in Section 4.0 of the Communications Assessment with instructions for proper storage and rotation of satellite phone batteries.	10/31/2013	Complete. (Addressed in Reference 8)	

Table 4
Status of CCNPP Communications Assessment Interim Actions

Communications Assessment Implementing Actions	Target Completion Date	Status	Revised Target Completion Date
2. Provide each Offsite Response Organization (ORO) identified in Section 4.0 of the Communications Assessment with fixed satellite dish.	Startup 2016 RFO Unit 1	Started.	
Portable Generators			
1. Develop portable generator fueling plan to ensure ability to provide power for a minimum of 24 hours.	8/31/2015	Complete. (Addressed in Reference 8)	
2. Develop procedures to maintain and test the portable generators.	12/31/2013	Complete. (Addressed in Reference 8)	
3. Update work instructions to inventory portable generators and ensure adequate volume of fuel.	12/31/2013	Complete. (Addressed in Reference 8)	
4. Develop preventive maintenance procedure for portable generators fuel supply.	12/31/2013	Complete. (Addressed in Reference 8)	
5. Procure additional generators as required to support FLEX and communications strategies.	6/30/2014	Complete. (Addressed in Reference 8) (see note 1)	
6. Determine a process for relocating portable generators to the appropriate locations to power the necessary equipment.	Startup 2015 RFO Unit 2	Not Started.	
Plant Paging (Announcement) System			
1. Provide a battery backed power source for the Tellabs Peripheral Equipment and the Power Block Amplicenters or otherwise modify the paging system to attain battery backed operation in the event of a loss of all AC power at the site.	Startup 2015 RFO Unit 2	Started.	

Table 4
Status of CCNPP Communications Assessment Interim Actions

Communications Assessment Implementing Actions	Target Completion Date	Status	Revised Target Completion Date
2. Revise ERPIP 3.0, Immediate Actions, to provide guidance to the Shift Manager on how to implement back-up site announcements if the Site Paging system is not functional.	12/31/2013	Complete. (Addressed in Reference 8)	
3. Revise ERPIP 750, Security, to provide specific guidance on how to execute the public address announcements if the plant paging system is not functional.	12/31/2013	Complete. (Addressed in Reference 8)	
4. Revise ERPIP-B.1, Equipment Checklist, to add necessary bull horns to support back-up method for site announcements.	12/31/2013	Complete. (Addressed in Reference 8)	
Training			
1. Evaluate training needs specific to the use of, portable and fixed satellite phones, radios and implementation of back-up methods for site announcements during an extended loss of AC power event.	11/30/2014	Started.	
2. Develop and implement training on the use of portable generators.	Startup 2015 RFO Unit 2	Started.	
Portable Radios			
1. Procure and install a high power UPS or similar modification providing backup power for the radio system repeaters	Startup 2015 RFO Unit 2	Not Started.	
2. Complete estimates of portable radio battery life and purchase additional batteries as necessary based on an estimate of minimum talk time to ensure 24 hours of operation.	10/31/2013	Started. (Notification provided in Reference 6)	December 2014

Note:

1. Complete with respect to Communication but not to FLEX

9 References

The following references support the updates to the OIP described in this attachment.

1. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), Overall Integrated Plan for Mitigation Strategies for Beyond-Design-Basis External Events, dated February 28, 2013.

2. NRC Order Number EA-12-049, Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012.

3. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), Supplement to Overall Integrated Plan for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 8, 2013.

4. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), Response to NRC Letter on Technical Issues for Resolution Regarding Communication Submittals Associated with Near-Term Task Force Recommendation 9.3, dated February 22, 2013.

5. NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, dated August 2012.

6. Letter from E. D. Dean (CENG) to Document Control Desk (NRC), Calvert Cliffs Nuclear Power Plant, Units 1 and 2- 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), dated August 27, 2013 (ADAMS Accession No. ML 13254A278)

7. Letter from J. S. Bowen (NRC) to J. A. Spina (CENG), Calvert Cliffs Nuclear Power Plant, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF 1142 and MF 1143), dated December 17, 2013.

8. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), February 2014 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), dated February 27, 2014 (ADAMS Accession No. ML 14069A318)