Exelon Generation®
Constellation Energy Nuclear Group, LLC

Maria Korsnick
Senior Vice President, Northeast Operations
Chief Nuclear Officer, CENG

100 Constellation Way
Suite 500P
Baltimore, MD 21202

410-470-5133 Office
443-213-6739 Fax
www.exeloncorp.com
maria.korsnick@exeloncorp.com

NRC Order No. EA-12-049

RS-15-057

February 19, 2015

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

Nine Mile Point Nuclear Station, Units 1 and 2
Renewed Facility Operating License Nos. DPR-63 and NPF-69
Docket Nos. 50-220 and 50-410

Subject: February 2015 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)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA 12-049 (Reference 1) to Constellation Energy Nuclear Group, LLC (CENG) for Nile Mile Point Nuclear Station, LLC (NMPNS), Units 1 and 2 (NMP1 and NMP2). Reference (1) requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Enclosures (1) and (2) provide the six-month Status Reports for NMP1 and NMP2, respectively. 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.

There are no regulatory commitments contained in this letter.

If there are any questions regarding this letter, please contact Mr. Terry Syrell, Regulatory Assurance Manager, at (315) 349-5245.

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NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 19th day of February 2015.

Respectfully,

Mary G. Korsnick

MGK/STD

Enclosures:

(1) NMP1 Six-Month Status Report (February 2015) for Mitigation Strategies for Beyond-Design-Basis External Events

(2) NMP2 Six-Month Status Report (February 2015) for Mitigation Strategies for Beyond-Design-Basis External Events

cc: Regional Administrator, Region I, USNRC
NRC Project Manager, NRR – Nile Mile Point Nuclear Station
NRC Senior Resident Inspector – Nile Mile Point Nuclear Station
Director, Office of Nuclear Reactor Regulation
J. A. Kratchman, NRC

ENCLOSURE (1)

NMP1 SIX-MONTH STATUS REPORT (FEBRUARY 2015)

FOR MITIGATION STRATEGIES FOR

BEYOND-DESIGN-BASIS EXTERNAL EVENTS

NINE MILE POINT NUCLEAR STATION, LLC
February 19, 2015

1 Introduction

The Nine Mile Point Unit 1 (NMP1) 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 NMP1 OIP for FLEX was submitted to the NRC in March 2013 (Reference 3). This enclosure provides an update of milestone accomplishments since submittal of the last status report including any changes to the compliance method, schedule, or need for relief/relaxation and the basis (if applicable).

Since the submittal of the last status report in August 2014 (Reference 11), NMP1 has progressed with engineering analysis, calculations, procedures and other activities that support the mitigating strategies and the modification concepts have been refined. Some changes to the mitigation strategies and planned modifications in support of the mitigation strategies have occurred and are explained within this document. Work with the Strategic Alliance for FLEX Emergency Response (SAFER) has continued including review of proposed supporting equipment specifications that support NMP1 for FLEX Phase 3 and the development of the site specific SAFER Response Plan (SRP). The SRP is in the final review and approval phase.

By letter dated December 19, 2013, the NRC issued to the Nine Mile Point Nuclear Station, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF 1129 and MF 1130) (Reference 7). The Interim Staff Evaluation (ISE) contains open and confirmatory items for which Nine Mile Point will provide clarifying or additional information in Six Month Status Reports or compliance communications in order for the NRC to determine that the issues are satisfactorily resolved.

2 Milestone Accomplishments

The following milestone(s) have been completed since the development of the OIP (Reference 3) and are current as of January 16, 2015.

- Refueling Outage (RFO), including walk downs in support of pending modifications for installation for FLEX strategies (see status provided in 8/2013 OIP Update)
- Six Month Integrated Plan Progress Report submitted (Reference 6)
- Six Month Integrated Plan Progress Report submitted (Reference 8)
- Six Month Integrated Plan Progress Report submitted (Reference 11)
- Engineering and Design Completion – Equipment Storage Facility
- Engineering and Design Completion – Portable Equipment Connections

3 Milestone Schedule Status

Table 1 provides an update to Attachment 2 of the NMP1 OIP (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 following target completion dates will be reflected in the notification of full compliance to the Commission.

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

Table 1
Status of NMP1 FLEX OIP Milestones

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Implementation Plan	February 2013	Complete	
Refueling Outage	Spring 2013	Complete	
Six Month Integrated Plan Progress Report	August 2013	Complete	
Engineering and Design Completion – Equipment Storage Facility	November 2014	Complete	
Six Month Integrated Plan Progress Report	February 2014	Complete	
Engineering and Design Completion – Portable Equipment Connections	February 2014	Complete	August 2014
Six Month Integrated Plan Progress Report	August 2014	Complete	
Six Month Integrated Plan Progress Report	February 2015	Completed upon submittal of this report	
Non-Outage Installation – Portable Equipment Connection	March 2015	Started	
Validation Walkdowns Complete	March 2015	Started	
Portable Equipment Procedures Changes	March 2015	Started	
FLEX Training	April 2015	Started	
Outage Installation – Portable Equipment Connections	May 2015	Not Started	April 2015[1]
Equipment Storage Facility Installation	May 2015	Started	April 2015[1]
Final Implementation Notification to USNRC	July 2015	Not Started	June 2015[2]

Note 1: Revised from previous NMP1 Six Month Status Report which identified May 2015. These activities are required to be completed for full implementation before startup from the spring 2015 refueling outage now scheduled to occur in April 2015.

Note 2: Revised from previous NMP1 Six Month Status Report which identified completion in May 2015. The new date reflects the Commission request to notify within 60 days of full implementation.

4 Changes to Compliance Method

Changes were made to the information provided in the OIP that do not change the compliance method with Nuclear Energy Institute (NEI) 12-06 (Reference 5) and were provided in the last Six Month Status Report. NMP1 will incorporate the supplemental guidance provided in the NEI position paper entitled "Shutdown / Refueling Modes" to enhance the shutdown risk process and procedures (References 9 and 10).

NMP1 will implement an alternative approach to the guidance in NEI 12-06 section 3.2.2 with regard to the amount of portable pump hoses maintained to support FLEX mitigation strategies. As an alternative, the spare quantity of hose is adequate if it meets either of the two methods described below:

Method 1: Provide additional hose equivalent to 10% of the total length of each type/size of hose necessary for the "N" capability. For each type/size of hose needed for the "N" capability, at least 1 spare of the longest single section/length must be provided.

Method 2: Provide spare hose of sufficient length and sizing to replace the single longest run needed to support any single FLEX strategy.

For either alternative method, both the 'N' sets of hoses and the '+1' set of hoses will be kept in a location that meets the reasonable protection requirements for the site.

Basis for an alternative approach:

Hoses are passive devices unlikely to fail provided they are appropriately inspected and maintained. The most likely cause of failure is mechanical damage during handling provided that the hoses are stored in areas with suitable environmental conditions. The hoses for the FLEX strategies will be stored and maintained in accordance with manufacturers' recommendations including any shelf life requirements. Initial inspections and periodic inspections or testing will be incorporated in the site's maintenance and testing program implemented in accordance with Section 11.5 of NEI 12-06.

Therefore, the probability of a failure occurring during storage is minimal, resulting in the only likely failure occurring during implementation. Mechanical damage will likely occur in a single section versus a complete set of hose. Therefore, the N+1 alternative addresses the longest individual section/length of hose.

Providing a spare hose of a length of 10% of the total length necessary for the "N" capability or alternatively providing spare hose of sufficient length and sizing to replace the single longest run needed to support any single FLEX strategy is sufficient to ensure a strategy can be implemented. Mechanical damage during implementation can be compensated for by having enough spares to replace any damaged sections with margin. It is reasonable to expect that an entire set of hoses would not be damaged provided they have been reasonably protected.

NMP1 will meet the guidance set forth in Method 1 described above.

No other significant coping strategy changes have occurred since the previous Six Month Status Update provided on August 26, 2014 (Reference 11)

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

NMP1 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 any subsequent Six Month Status Reports and the status of each item.

The following is a list of the open items from the OIP that have been added, deleted or completed since the last Six Month Status Report with an explanation of the changes:

1. **General Integrated Plan Elements BWR**

   Open Item # 2: Evaluate deployment strategies and deployment routes for hazard impact.

   This item is **complete**.

   NMP has identified primary and alternate FLEX deployment routes, including hazard impacts for each route. Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been identified in the staffing study that has been performed and submitted to the Commission (Reference 12). Specifically, the staffing study provides for over two hours of dedicated debris removal time with a pay loader. A soil liquefaction evaluation of the primary and alternate travel paths has been completed. Based upon the original site borings, and the extensive borings conducted for the installation of the ISFSI and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX Storage Building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

   Open Item # 3: Evaluate requirements and options and develop strategies related to the storage on site of the FLEX portable equipment (including lighting tools such as flashlights and batteries) in accordance with the requirements of NEI 12-06

   This item is **complete**.

The Nine Mile Point Nuclear Station is constructing a FLEX robust building (hereafter referred to as the 'FLEX building'). The FLEX building design meets or exceeds the most restrictive plant design requirements on site for external hazards. Thus, the FLEX building will meet the structural requirements in NEI 12-06 Revision 0, Section 5.3.1.1.a, 6.2.3.1.1.a, 7.3.1.1.a, 8.3.1.1.a and temperature requirements specified in NEI 12-06 section 9.3.1 for equipment protection.

Eventually, the sites FLEX storage buildings will consist of one FLEX building and one commercial building. The sites "N" and "+1" equipment will be stored in the robust FLEX building when the first unit on site (NMP1) implements NRC Order EA-12-049. The commercial building will be utilized for the sites "+1" equipment when the second unit (NMP2) implements NRC order EA-12-049. At that time, if NEI 12-06 Revision 1 has not been issued, Exelon Nine Mile Point Nuclear Station will submit an alternate approach.

FLEX portable diesel driven pumps and generators, as well as the refueling equipment for these vehicles, will be stored in the FLEX building. In addition, support equipment necessary for FLEX deployment shall be stored in the FLEX building including debris removal equipment and tow vehicles for FLEX portable diesel driven pumps and generators.

NMP1 Operations maintains an inventoried supply of flashlights and batteries that can be used in an emergency in the plant until the FLEX building equipment is retrieved. For example, fire cabinets that include flashlights are located in multiple strategic locations and an Emergency Operating Procedure (EOP) tool box in the NMP1 MCR containing five (5) flashlights. FLEX building storage includes flashlights, headlights, batteries and other lighting tools routinely used by operators. The FLEX building will also contain a quantity of rechargeable LED battle lanterns to be used by operators within the plant when other lighting is insufficient. Periodic inventories of all equipment will ensure adequate amounts are maintained.

The FLEX building will be utilized to store other items deemed appropriate and necessary to respond to a beyond-design basis (BDB) event. Examples of these items include (this is a partial list for illustration only and does not include all material to be stored in the FLEX building);

- Tool boxes with general tools such as hammers, wrenches, and screw drivers
- Extension cords (multiple lengths and sizes)
- Heavy duty cold weather gear (coats, boots, hats, gloves)
- Personal Protective Equipment (safety glasses, hearing protection)
- Ice shelters and heaters
- Drinking water (small amount to be used for initial deployment staff)

Open Item # 4: Exceptions for the site security plan or other (license/site specific – 10 CFR 50.54x) requirements of a nature requiring NRC approval will be communicated in a future Six Month Update following identification

This item is **complete.**

Nine Mile Point Nuclear Station Unit 1 mitigation strategies are final and do not require specific exceptions to the site security plan or other license/site specific requirements of a nature requiring NRC approval.

Open Item # 14: Establish deployment routes from FLEX equipment storage location to connection points (including hazard impacts)

This item is **complete**.

Primary and alternate deployment paths have been identified and maps have been developed. Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been identified in the staffing study that was performed and submitted to the Commission (Reference 12). Specifically, the staffing study provides for over two hours of dedicated debris removal time with a pay loader. A soil liquefaction evaluation of the primary and alternate travel paths has been completed. Based upon the original site borings, and the extensive borings conducted for the installation of the ISFSI and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX Storage Building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

As an example, an alternate deployment route south of NMP1 is available. A hazard that exists for this route is associated with an overhead line falling and impeding access. In this case, verification of line status (i.e. de-energized) is available locally from observation (and manual operation if necessary) of the high voltage disconnects located in the switchyard in the immediate vicinity, and at the high voltage breakers inside the unit at the switchgears.

Open Item # 15: Establish a suitable local staging area for portable FLEX equipment to be delivered from the RRC to the site SAFER Staging Area "C"

This item is **complete**.

Local Staging Area 'C' is defined as the regional airport outside of the 25 mile radius of the site. SAFER has made appropriate arrangements to provide requested portable FLEX equipment to Staging Area "C" (Syracuse Hancock International Airport). At this point, the equipment will be made ready for transport to the site by either roadway or air transport using helicopters.

The Nine Mile Point Nuclear Station has entered into a Memorandum of Understanding (MOU) with Syracuse Hancock International Airport for utilization of the facilities as a Staging Area (i.e. Staging Area 'C') in an emergency. SAFER has put in place appropriate contracts to transport the FLEX equipment from Staging Area 'C' to the NMP site Staging Area 'B' either by truck or air (helicopter). The Primary and Alternate truck transport routes are contained in Chapter 5 of the NMP SAFER Response Plan.

Open Item # 16: Establish a suitable local staging area for Phase 3 portable FLEX equipment to be deployed on site SAFER Staging Area "B"

This item is **complete**.

Staging Area 'B' is defined as the site delivery and preparation area outside the site Protected Area where the SAFER FLEX equipment is delivered and prepared for use (e.g., unloaded, assembled, and fueled) prior to transport to its final location on site for use. At NMP, this area is the site parking lot located south of the P-building, adjacent to the Site Access Building. Two alternative locations are available on site including the turn-around large parking area south of the Owner Controlled Area entrance point and the Nuclear Learning Center parking lot. These areas were identified and deemed acceptable during the SAFER Rehearsal of Concept meeting at Nine Mile Point in January 2014.

Open item # 17: Provide the necessary storage facilities in order to provide fuel to the transfer pumps during an ELAP event

This item is **complete**.

NMP1 portable equipment refueling strategies for FLEX include use of gasoline engine driven fuel oil transfer pumps. These transfer pumps are capable of taking suction on the installed safety related (SR) fuel oil storage tanks on site and pumping fuel oil into smaller tanks reserved and dedicated for transporting fuel oil to the portable equipment. The gasoline for the fuel oil transfer pumps exist in sealed storage cells providing an extended shelf life. The gasoline is to be stored in approved fire resistant storage cabinets. The fire resistant cabinets and fuel will be located in the FLEX building so that they are preserved for deployment.

Open Item # 24: Evaluate potential soil liquefaction for Nine Mile Point site considering final storage location of FLEX portable equipment and deployment routes established for this equipment

This item is **complete**.

A soil liquefaction evaluation of the primary and alternate travel paths has been completed. Based upon the original site borings, and the extensive borings conducted for the installation of the ISFSI and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX Storage Building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

Open Item # 26: Evaluate NMP1 containment integrity for Phases 1 through 3 and provide analysis in a future required Six Month Status Report (new Open Item added since original OIP as a result of further considerations of necessary analysis to support FLEX strategies)

This item is **complete**.

Plant specific analysis demonstrates that the primary containment parameters (average temperature, pressure, level) remain at acceptable levels for greater than 72 hours following an ELAP.

Although Drywell air space temperature for areas high in the containment and Torus air space temperature exceeds the design limit, the overage is relatively small (approximately 10°F) and is well within design safety margins. At the end of the analysis period, these parameters are relatively stable and are not expected to rise significantly beyond 72 hours. Overall, this results in an insignificant challenge to the containment integrity. Increases in Drywell average air temperature and pressure and Torus air space pressure and temperature are continuing at a decreasing rate after 72 hours, with substantial overall margin remaining to limits that require further action. Should containment parameters eventually reach the level that require containment venting, as required by EOPs, existing vent pathways may be utilized. Procedure direction and appropriate equipment is available in order to implement containment venting. It is reasonable to expect that this will alleviate any further challenge to containment integrity.

2. **Maintain Core Cooling – BWR Installed Equipment Phase 1**

Open Item # 28: Perform an evaluation to ensure that the recirculation pump seal operating conditions are consistent with the referenced vendor test report

This item is **complete**.

In the 1990's, laboratory testing of the CAN2A recirculation pump seals was performed. The recirculation pump seal station blackout test reports document the recirculation pump seal performance under loss of forced Reactor Building Closed Loop Cooling (RBCLC) seal cooling conditions. The testing models the reactor depressurization that is expected for a single EC loop reactor cool down profile. The seal test pressure profile follows the expected reactor depressurization defined in the vendor SBO analysis. These test conditions are expected to bound those conditions for seal performance under an event involving depressurization for a two EC loop reactor cool down profile, since a cool down with two EC loops will achieve conditions that remove challenges to seal integrity in a shorter period of time.

The pump seal testing includes the full scale integral pump seal cooler. The integral seal cooler under SBO conditions maintains the seal cooling sub cooled by the boiling heat transfer of the RBCLC coolant and counter current makeup RBCLC gravity driven makeup to the cooler. The test included a mockup of the RBCLC piping to simulate the static head available to maintain the boiling heat transfer and to model the counter current flow regime. The test report summarizes the seal sub cooling. Because the integral seal cooler maintained sub cooled inlet conditions, the SBO testing of the seal demonstrated the leakage remained single phase throughout the test time frame.

These test results adequately model operating conditions and provide an adequate basis for the leak rate assumed for an ELAP event.

Open Item # 49: Implement a design change to install a permanent connection point for FLEX portable pump injection through feed water

This item is **complete**.

A modification was designed and installation is complete. The modification eliminates the need to install a spool piece by providing welded piping and additional valves necessary to make the ability to inject fire water into the feed water system a permanent design feature of the system. This modification included a new fire hose connection that supports the FLEX mitigation strategies as the alternate injection point for RPV makeup capability in order to provide core cooling.

3. **Maintain Core Cooling - BWR Portable Equipment Phase 2**

Open Item #6: Perform an analysis to validate the FLEX equipment ability to deliver sufficient flow under all expected conditions. Flow requirements from the intake/discharge bays will consider Phase 2 requirements

This item is **complete**.

A hydraulic analysis was completed as part of the design process to verify the capability of the pumps and piping/hose system to deliver the required amount of water to each required location in the plant. The hydraulic analysis included primary and alternate injection locations for the Reactor Pressure Vessel, EC shells and Spent Fuel Pool (SFP), and accounted for the Net Positive Suction Head (NPSH) and for conservative lengths of hoses and installed piping in any combination of primary and alternate connection points.

NMP1 mitigation strategies identify use of portable diesel driven centrifugal pumps. The hydraulic analysis concluded that these pumps are sufficient to provide required flow rates to all required makeup points simultaneously at the expected pressures and with the required potential deployment configurations in the event of an ELAP. One pump is capable of supplying the makeup requirements. A second pump is necessary and available if the maximum spent fuel pool spray flow of 250 gpm is required while the first pump is supplying maximum make up to the Emergency Condensers and Reactor Pressure Vessel.

Open Item # 29: Perform an analysis of the portable generator to determine if it will be capable of supplying all expected battery loads

This item is **complete**.

A plant specific calculation identifies that the portable diesel driven generator for NMP1 Phase 2 FLEX application is adequately sized to power the 600VAC/125VDC installed station static battery charger, which in turn can supply all associated DC loads and recharge the station battery. The calculation also provides necessary analysis that supports the appropriate cables and connection points. In addition, NMP1 makes use of the portable battery charger in place to satisfy National Fire Protection Association (NFPA) 805 requirements for use as the alternate power provision for DC battery boards supplied by the FLEX generator. Calculations identify that the portable battery charger is smaller than the installed station battery charger, and so the FLEX portable diesel driven generator is adequately sized in all FLEX applications.

4. **Maintain Containment Pressure**

   Open Item # 33: Perform an analysis to determine the containment pressure profile during an ELAP / LUHS event and verify the instrumentation and controls in containment which are relied upon by the operators are sufficient to perform their intended function

   This item is **complete.**

   Analyses were performed for both Primary Containment (PC) and Secondary Containment response following an ELAP. The calculated pressure, temperature and relative humidity profiles were used to compare with design and qualification parameters of essential instrumentation which are relied upon during an ELAP. The evaluation concluded that the functionality of instrumentation deemed critical for parameter monitoring is not negatively impacted by the conditions expected following an ELAP event.

5. **Maintain Containment – BWR Portable Equipment Phase 2**

   Open Item # 35: Perform analysis to identify the heat load expected during ELAP conditions and the time required to open vents to maintain containment parameters

   This item is **complete.**

   This Open Item was originally identified surmising that a Hardened Containment Vent System (HCVS) would be necessary for successful implementation of FLEX mitigation strategies. New HCVS requirements were initially provided in NRC Order EA-12-050 'Issuance of Order to Modify Licenses With Regard to Reliable Hardened Containment Vents' issued in March 2012, with installation time requirements that were consistent with those for full compliance of FLEX strategies. However, the NMP1 mitigation strategies make use of the EC loops, thereby significantly reducing the amount of decay heat that is deposited in the PC and the overall challenge to PC parameters. There is no reason for using a HCVS to control containment parameters to retain functionality for any system or strategy at NMP1. For this reason, use of a HCVS is not required for FLEX mitigation strategies in responding to an ELAP at NMP1. The NRC Order for a HCVS was further refined in NRC Order EA-13-109 'Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions'. The new Order (EA-13-109) superseded the previous Order (EA-12-50) and revised allowed installation times for a HCVS. Since the HCVS is not necessary for supporting FLEX strategies, NMP1 will utilize the allowable time for installation of the HCVS identified in the new Order.

   Open Item # 38: Perform an evaluation to determine the effects and required actions for Spent Fuel Pool temperatures expected above design of 140^{0}F during an ELAP

   This item is **complete.**

NMP1 has existing calculations that assess the functionality of the SFP structure for pool temperatures to 212°F. The calculations provide the assumption that concrete/liner forces and moments are proportional to the thermal gradient differential temperature. Functionality of the SFP means that structural integrity is maintained.

6. **Safety Function Support – BWR Installed Equipment Phase 1**

   Open Item # 56: Implement necessary administrative controls to ensure that appropriate Meter and Test (M&T) temperature equipment is maintained in the Main Control Room (MCR) for use

   This item is **deleted**.

   Temperature recording instruments are installed in the MCR and Auxiliary Control Room. These instruments were in place and controlled at the time the original OIP was written and so this action is not necessary to be performed. The recorders are controlled in accordance with the stations Meter and Test program and are used by operations personnel to obtain and verify acceptable area temperatures each shift.

7. **Safety Function Support - BWR Portable Equipment Phase 2**

   Open Item # 8: Perform calculations and validate assumptions of fuel consumption and replenishment rate to ascertain the time before off-site replenishment is required

   This item is **complete.**

   Nine Mile Point strategies to provide fuel oil for portable diesels are to use the supply of on-site SR storage tanks that would normally supply the stations emergency diesel generators during a loss of AC/off-site power event.

   In order to ensure proper sizing and strategies for appropriate response for the eventual simultaneous full implementation of FLEX mitigation strategies at both NMP units, calculations associated with fuel consumption were performed assuming the equipment required for full implementation of mitigation strategies at both NMP1 and NMP2 are in operation simultaneously. With regard to this, only the equipment for NMP1 is required to be in place for full implementation for this OIP.

   Fuel consumption for both NMP1 and NMP2 portable equipment to support FLEX (4 diesel driven portable pumps, 2 diesel driven portable generators and 1 diesel driven portable air compressor) is 130 gallons per hour (gph) for all items operating at full load. The Technical Specification (TS) minimum fuel storage on site is over 141,000 gallons in the emergency diesel generator fuel oil storage and day tanks. For the purposes of this analysis, the fuel at NMP1 is not credited (fuel is not accessible during flooding conditions). Fuel available at NMP2 is assumed with one emergency diesel generator fuel oil storage tank unavailable (i.e. TS allowable). The remaining capacity of the two SR storage tanks at NMP2 is greater than 85,000 gallons and will provide over 25 days of fuel for all FLEX portable equipment. The SAFER equipment, as replacement or backup to Phase 2 on-site portable diesel driven equipment, can theoretically increase fuel consumption rate to 270 gph if all equipment were deployed and operated at full

load. The higher rate is due to design differences and larger equipment (i.e. Turbine generator versus diesel generator, booster pump and main pump for water delivery). Even at this consumption rate, on site fuel reserves would provide greater than 13 days of operation without off site replenishment. It is expected that the emergency response organization can ensure delivery of replenishment fuel as required within the times identified above.

NMP will utilize two 528 gallon fuel tanks mounted on separate trailers and stored in the FLEX building. Each tank has a pump that is powered from the towing vehicles DC power or an on-board battery, and will be used to refuel the FLEX portable equipment. These 528 gallon tanks will be filled from the on-site SR fuel oil storage tanks identified above. Transfer pumps and fuel for them are to be stored in the FLEX building, and used during an event to pump the fuel oil out of the SR storage into the refueling tanks. The pumps have been tested on-site and provide over 31 gpm flow (1860 gph). The pump capacity of the deployment tank pump/nozzle is approximately 20 gpm (1200 gph). These delivery rates are well above the full load usage rate of all FLEX Phase 2 portable equipment.

Open Item # 10: Perform an evaluation of the redundant power strategy for radio repeaters and design and implement modifications or programmatic changes as required

This item is **complete.**

Evaluation has been completed and determined that for FLEX implementation, a redundant power strategy for radio repeaters is not required. Hand-held portable radios using the radio-to-radio feature also known as 'talk-around' mode will be utilized for on-site communications between the MCR and the operators in the plant. The backup strategy for on-site communications is Sound Powered Phones (SPP) between FLEX deployment locations and the MCR.

Open Item # 12: Perform an analysis for feasibility of utilizing the sound powered communications for onsite communications for FLEX strategies

This item is **complete.**

The backup strategy for on-site communications is Sound Powered Phones (SPP) between FLEX deployment locations and the MCR. Evaluation has determined that the station Maintenance Communication System can be utilized to provide the necessary communication using SPP equipment.

Open Item # 25: Evaluate requirements and options and develop strategies related to the storage and transport of the on-site FLEX portable equipment

This item is **complete.**

The FLEX building is designed and constructed to protect the contents of the building from all screened in hazards in NEI 12-06. For NMP1, in the interim period until full implementation of mitigation strategies at NMP2 (spring 2016), all N and +1 equipment required to satisfy the NMP1 mitigation strategies will be stored in the FLEX building,

built to meet the design requirements specified in NEI 12-06 for the protection of FLEX portable equipment for the site.

Transport of the mitigation strategy portable equipment during deployment will be accomplished utilizing a large tractor or equivalent for the portable diesel generators and an adequately sized truck for the portable diesel driven pumps. These deployment vehicles will be stored in the FLEX building with the portable equipment attached to the tow vehicle and ready to immediately deploy out of the building for deployment.

8. **Maintain Spent Fuel Pool Cooling - BWR Portable Equipment Phase 2**

Open Item # 39: Perform analysis to verify SFP temperature and level after an ELAP event and adequate level for maintaining radiological access to the refuel floor

This item is **complete.**

With regard to SFP level following an ELAP event, estimations utilizing existing calculations for SFP heatup and makeup water requirements lead to a conclusion that SFP water level is not a significant concern for several hours after the onset of an ELAP. Using the existing heat load and design basis available calculations, SFP level will lower at approximately 1 foot every 3.5 hours and take approximately 45 hours to reach SFP Level 2 (10 feet above the top of the spent fuel).

With regard to SFP temperature, and given the above with regard to SFP level, analysis has been completed that indicates refueling floor radiological conditions will not be as restrictive as the conditions related to refueling floor heat up from spent fuel pool heatup and the radiative heat from the EC condensers. The analysis developed for Secondary Containment conditions following an ELAP indicate that refueling floor temperatures will rise to almost 120°F within one hour of the onset of an ELAP event. Given this rapid heat up and the restrictions associated with refuel floor access, response procedures have been revised to ensure refuel floor preparatory actions for mitigation strategy deployment are conducted immediately following the onset of an ELAP.

Table 2
Status of NMP1 FLEX OIP Open Items

NMP1 OIP Open Items	Status
1. Define criteria for the local (25 mile) staging area	**Complete** (see OIP Update 2/2014)
2. Evaluate deployment strategies and deployment routes for hazard impact	**Complete** (2/2015)
3. Evaluate requirements and options and develop strategies related to the storage on site of the FLEX portable equipment (including lighting tools such as flashlights and batteries) in accordance with the requirements of NEI 12-06	**Complete** (2/2015)
4. Exceptions for the site security plan or other (license/site specific – 10 CFR 50.54x) requirements of a nature requiring NRC approval will be communicated in a future Six Month Update following identification	**Complete** (2/2015)
5. Determine schedule for when Regional Response Centers (RRC) will be fully operational	**Complete** (see OIP Update 8/2013)
6. Perform an analysis to validate the FLEX equipment ability to deliver sufficient flow under all expected conditions. Flow requirements from the intake/discharge bays will consider Phase 2 requirements	**Complete** (2/2015)
7. Perform an analysis to validate the FLEX equipment ability to deliver sufficient flow under all expected conditions. Flow requirements from the intake/discharge bays will consider Phase 3 requirements	**Deleted** (see OIP Update 8/2014)
8. Perform calculations and validate assumptions of fuel consumption and replenishment rate to ascertain the time before off-site replenishment is required	**Complete** (2/2015)
9. Perform an evaluation of the Uninterruptible Power Supply (UPS) strategy and design and implement as required or formalize the use of the small portable gas generators (communication strategies)	Started (2/2014)
10. Perform an evaluation of the redundant power strategy for radio repeaters and design and implement modifications or programmatic changes as required	**Complete** (2/2015)
11. Verify plans for the FLEX storage facilities in accordance with NEI 12-06 requirements; also accommodate the storage and availability of fuel for the small gas generators	**Complete** (see OIP Update 8/2014)

Table 2
Status of NMP1 FLEX OIP Open Items (cont'd)

NMP1 OIP Open Items	Status
12. Perform an analysis for feasibility of utilizing the sound powered communications for onsite communications for FLEX strategies	**Complete** (2/2015)
13. Evaluate required consumables and options for storage and availability during an ELAP and implement programmatic controls to ensure required inventory is maintained	Started (2/2015)
14. Establish deployment routes from FLEX equipment storage location to connection points (including hazard impacts)	**Complete** (2/2015)
15. Establish a suitable local staging area for portable FLEX equipment to be delivered from the RRC to the site SAFER Staging Area "C"	**Complete** (2/2015)
16. Establish a suitable local staging area for Phase 3 portable FLEX equipment to be deployed on site SAFER Staging Area "B"	**Complete** (2/2015)
17. Provide the necessary storage facilities in order to provide fuel to the transfer pumps during an ELAP event	**Complete** (2/2015)
18. Develop site specific SAFER Response Plan (playbook) for delivery of portable FLEX equipment from the RRC to the site	Started (8/2013)
19. Develop and implement a program and/or procedures to keep FLEX equipment deployment pathways clear or identify actions to clear the pathways	Started (2/2015)
20. Develop preventive maintenance and testing procedures with frequencies based on Original Equipment Manufacturer (OEM) recommendation and Electric Power Research Institute (EPRI) guidelines for FLEX equipment	Started (8/2013)
21. Evaluate and implement procedures that direct immediate deployment of Phase 2 equipment during refueling conditions	Started (2/2014)
22. Purchase and maintain the required equipment to ensure debris removal capability to re-establish deployment routes and transport FLEX portable equipment during all modes of operation	Started (8/2014)
23. Develop procedures/guidelines to address the criteria in NEI 12-06 to support existing symptom based strategies in the Emergency Operating Procedures (EOPs)	Started (2/2014)
24. Evaluate potential soil liquefaction for Nine Mile Point site considering final storage location of FLEX portable equipment and deployment routes established for this equipment	**Complete** (2/2015)

Table 2
Status of NMP1 FLEX OIP Open Items (cont'd)

NMP1 OIP Open Items	Status
25. Evaluate requirements and options and develop strategies related to the storage and transport of the on-site FLEX portable equipment	**Complete** (2/2015)
26. Evaluate NMP1 containment integrity for Phases 1 through 3 and provide analysis in a future required Six Month Status Report (new Open Item added since original OIP as a result of further considerations of necessary analysis to support FLEX strategies)	**Complete** (2/2015)
27. Implement a design change to install a permanent connection point for a portable pump to provide makeup to the Emergency Condensers (ECs) (new Open Item added as a result of strategy changes described in the August 2013 Six Month Update)	**Added** (see the 8/2013 OIP Update) Started (8/2014)
28. Perform an evaluation to ensure that the recirculation pump seal operating conditions are consistent with the referenced vendor test report	**Complete** (2/2015)
29. Perform an analysis of the portable generator to determine if it will be capable of supplying all expected battery loads	**Complete** (2/2015)
30. Perform an analysis to determine the flow/capacity needed for the portable pump from the RRC to adequately supply the Emergency Service Water (ESW) system	**Deleted** (see OIP Update 8/2014)
31. Evaluate the connection point for the RRC portable pump to ESW and implement a design change to ensure that the pump can be connected	**Deleted** (see OIP Update 8/2014)
32. Evaluate implementation of makeup capability for the Reactor Building Closed Loop Cooling (RBCLC) system expansion tank to support restarting the system in Phase 3	**Deleted** (see OIP Update 8/2014)
33. Perform an analysis to determine the containment pressure profile during an ELAP / LUHS event and verify the instrumentation and controls in containment which are relied upon by the operators are sufficient to perform their intended function	**Complete** (2/2015)

Table 2
Status of NMP1 FLEX OIP Open Items (cont'd)

NMP1 OIP Open Items	Status
34. Perform a site specific analysis to confirm that the containment parameters (temperature, pressure and level) stay below their design limits during Phase 1 following an ELAP	**Complete** (see OIP Update 8/2014)
35. Perform analysis to identify the heat load expected during ELAP conditions and the time required to open vents to maintain containment parameters	**Complete** (2/2015)
36. Perform an analysis to determine when ambient heat losses will be enough to cool the containment with Shutdown Cooling (SDC) in Phase 3	**Deleted** (see OIP Update 8/2014)
37. Evaluate a strategy to provide a pathway for steam and condensate or justify why it is not needed (for the refuel floor)	**Complete** (see OIP Update 8/2014)
38. Perform an evaluation to determine the effects and required actions for Spent Fuel Pool temperatures expected above design of 140^0F during an ELAP	**Complete** (2/2015)
39. Perform analysis to verify SFP temperature and level after an ELAP event and adequate level for maintaining radiological access to the refuel floor	**Complete** (2/2015)
40. Perform an analysis of Refuel Floor/SFP area for long term environmental conditions	**Complete** (see OIP Update 8/2014)
41. Perform an analysis of SFP cooling system capability for restoration activities, will be performed considering that the SFP temperatures will be elevated	**Deleted** (see OIP Update 8/2013)
42. Evaluate the ELAP/FLEX strategy to cope with the potential pressurization of the refueling floor and to prevent buildup of steam and condensation if required	**Complete** (see OIP Update 8/2014)
43. Perform an analysis to evaluate long term temperature profiles in NMP1 Main Control Room (MCR) under ELAP conditions	**Deleted** (see OIP Update 8/2013)

Table 2
Status of NMP1 FLEX OIP Open Items (cont'd)

NMP1 OIP Open Items	Status
44. Evaluate requirements and options and develop strategies to maintain MCR habitability after the long-term MCR temperature profile is developed	**Deleted** (see OIP Update 8/2013)
45. Perform an analysis to validate the mild environment in NMP1 EC Makeup Tank Area during an ELAP (Turbine Building)	**Deleted** (see OIP Update 8/2013)
46. Perform an analysis for long term environmental conditions in NMP1 Battery Rooms during an ELAP and evaluate any actions to mitigate the impact of this hydrogen production as required	**Complete** (see OIP Update 2/2014)
47. Perform an analysis of the need for dewatering based on leak rates and flood response capabilities and implement dewatering portable equipment and strategies based on this analysis	**Deleted** (see OIP Update 8/2014)
48. Implement a design change to install a permanent FLEX 600 VAC diesel generator (DG) connection point to the 600 VAC power board (PB16B) and an alternative connection for the opposite 600 VAC power board (PB17B)	**Deleted** (see OIP Update 8/2013)
49. Implement a design change to install a permanent connection point for FLEX portable pump injection through feed water	**Complete** (2/2015)
50. Implement a design change to provide suction hose access points in the intake/discharge structures for FLEX portable pump suction	Started (2/2014)
51. Design and implement a modification that will provide a makeup connection to enable a portable pump to refill the Condensate Storage Tanks (CSTs)	**Deleted** (see OIP Update 8/2013)
52. Evaluate and implement a design change to install permanent generator connection points for 4160 VAC	**Deleted** (see OIP Update 8/2014)
53. Design and implement a modification that provides for connection of a FLEX portable pump to makeup to the SFP	Started (2/2014)
54. Develop procedures to implement the connection of a FLEX portable pump to makeup water to the SFP during an ELAP event to include both primary and alternate strategies	Started (8/2014)

Table 2
Status of NMP1 FLEX OIP Open Items (cont'd)

NMP1 OIP Open Items	Status
55. Revise Station Blackout (SBO) procedures and ELAP procedures, when written, to direct that both EC's are immediately manually placed in service and to manually close Main Steam Isolation Valves (MSIVs) (to conserve RPV inventory)	Started (8/2014)
56. Implement necessary administrative controls to ensure that appropriate Meter and Test (M&T) temperature equipment is maintained in the Main Control Room (MCR) for use	**Deleted** (2/2015)
57. Perform time validation of the core cooling injection capabilities when detailed design is complete, implementation procedures are drafted and final storage facility locations are determined for the portable equipment	Started (2/2015)
58. Implement a modification to provide a connection into the CRD return line for a portable diesel pump connection (new Open Item based on strategy changes described in the August 2013 Six Month Update)	**Added** (see OIP Update 8/2013) Started (2/2014)
59. Implement a modification to connect a portable diesel generator and portable battery charger to battery 11 and battery 12 (new Open Item based on strategy changes described in the August 2013 Six Month Update)	**Added** (see OIP Update 8/2013) Started (2/2014)
60. Perform an evaluation in order to identify and implement the capability to provide motive power to restore the SDC system (new Open Item added subsequent to original OIP submittal and described in the August 2013 Six Month Update)	**Deleted** (see OIP Update 8/2014)
61. In Phase 3, a modification to remove water from the torus using RRC supplied equipment will be evaluated and implemented as required (new Open Item based on strategy changes described in the August 2013 Six Month Update)	**Deleted** (see OIP Update 8/2014)

Table 3 below provides a summary of the open and confirmatory items documented in the NRC's NMP1 ISE (Reference 7) and the status of each item. The following is a list of NMP1 ISE Open or Confirmatory Items **submitted for closure** for this update:

ISE Open Item # 1: ISE Open Item 3.1.1.3.A – Seismic procedural interface consideration NEI 12-06, Section 5.3.3, Consideration 1, which considers the possible failure of seismically qualified electrical equipment by beyond-design-basis seismic events, was not discussed in the Integrated Plan or during the audit process

ISE Open Item # 1 is **submitted for closure**.

Nine Mile Point Unit 1 procedure N1-SOP-29.1 EOP Key Parameter – Alternate Instrumentation was developed and implemented to provide operators with alternate instrumentation to utilize in the event the primary instrumentation used for implementing EOP's malfunctions. The specified alternate instrumentation can then be used to obtain key EOP parameter readings to support successful EOP implementation.

In response to the requirement contained in NEI 12-06 Section 5.3.3 Consideration 1, a reference source document has been developed for NMP1 critical instrumentation which provides guidance on how and where to measure key instrument readings at local instrument sources (i.e. transmitter, penetration, panel connection, connector, etc.). The reference source document information will be added to existing Operations procedure N1-SOP-29.1.

NMP1 FLEX Phase 1 through Phase 3 coping strategies relies upon the Emergency Condenser system (EC) to meet core cooling requirements. The EC system fails on (into service) upon loss of control power (DC) or loss of instrument air. The NMP1 ELAP procedure, N1-SOP33A.2, specifies placing both ECs in service and having at least one remain in service for the duration of the loss of all AC power. If control power were to fail, the ECs will go into service automatically as required by the procedure.

ISE Open Item # 2: ISE Open Item 3.2.1.3.A – The coping strategies for maintaining core cooling were updated in the August 27, 2013 Six Month Update. However, the licensee has not yet updated the sequence of events timeline and the discussion of time constraints

ISE Open Item # 2 is **submitted for closure**.

The actions required and the time constraints that those actions need to be accomplished to support the coping strategies to maintain core cooling, spent fuel cooling and containment integrity are summarized in Attachment 1 to this Enclosure.

ISE Confirmatory Item # 3: ISE Confirmatory Item 3.1.1.1.A – The design of the storage facility for FLEX equipment is under development. The method selected for protection of equipment during a Beyond-Design-Basis External Event (BDBEE) was not discussed in the Integrated Plan or during the audit process. Also, there was no discussion of securing large portable equipment for protection during a seismic hazard

ISE Confirmatory Item # 3 is **submitted for closure**.

Nine Mile Point 1 will satisfy storage of 'N' and '+1' FLEX portable equipment by construction of a robust (protected) building for this purpose, meeting the requirements in NEI 12-06, Section 5.3.2, Consideration 5; Section 6.2.3.2, Consideration 9; and Section 7.3.2, Consideration 4. All required NMP1 FLEX equipment will be stored within the robust FLEX building.

The FLEX building design requires the installation of 77 tie downs embedded within the concrete floor (cast-in place), which will anchor the equipment within the building to prevent seismic damage. This addresses NEI 12-06 Sections 5.3.1.2 and 5.3.1.3.

ISE Confirmatory Item # 4: ISE Confirmatory Item 3.1.1.2.A – Deployment routes have not yet been finalized or reviewed for possible impacts due to debris and potential soil liquefaction. Movement of equipment and procedural interfaces during a BDBEE were not discussed in the Integrated Plan or during the audit process

ISE Confirmatory Item # 4 is **submitted for closure**.

NMP1 deployment routes have been finalized and reviewed for impacts. Primary and alternate deployment paths are identified and maps developed.

Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been allotted in the staffing study for debris removal. This accounts for dispatching an operator within 30 minutes of the onset of an event to begin route assessment and debris removal. This resource is assigned (in the staffing study) for about 2 hours for clearing paths of debris. The FLEX vehicles are capable of traveling over small debris. A pay loader will be used to remove large debris as required. The pay loader will be stored in the FLEX building and Operators will be trained and qualified for operating the loader.

A soil liquefaction evaluation of the primary and alternate travel paths has been completed. The evaluation is applicable to all identified primary and alternate deployment paths as referenced above. Based upon the original site borings, the extensive borings conducted for the installation of the Independent Spent Fuel Storage Installation (ISFSI) and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

Based on the results of the Flooding Hazard Reevaluation performed for NMP, the maximum flood level in the vicinity of NMP1 is 262.2 feet due to probable maximum precipitation. This exceeds the building entrance elevation of 261' for approximately 19 hours. In the reevaluation, a map of maximum flood depths for the site indicates that the maximum water depth associated with FLEX equipment staging/deployed areas is approximately 2.5 feet with one very localized area just under 3 feet. For all areas on the north side of NMP1, the primary deployment pathway flood depths are under 2 feet. For this reason, with the type of vehicles NMP is utilizing for towing, debris removal and

refueling, and the duration of the flood event, it is expected that movement for the purposes of restocking supplies will not be impeded by site flooding.

ISE Confirmatory Item # 5: ISE Confirmatory Item 3.1.1.4.A – Utilization of offsite resources, the local staging area, and the method to deliver the FLEX equipment to the site were not discussed in the context of impacts of BDBEEs in the Integrated Plan or during the audit process

ISE Confirmatory Item # 5 is **submitted for closure**.

Nine Mile Point Nuclear Station (NMP) has signed contracts for participation in SAFER. Each NSRC will hold five (5) sets of equipment, four (4) of which will be able to be fully deployed when requested, the fifth set will have equipment in a maintenance cycle. The two NSRCs are located in Phoenix, Arizona and Memphis, Tennessee.

All licensees, including Exelon Generation Company, relying on SAFER and the NSRC, have executed contractual agreements with Pooled Equipment Inventory Company (PEICo) which allows for the capabilities (considerations) in Section 12.2 of NEI 12-06. The NRC staff evaluated the NSRCs and the SAFER program, plans, and procedures against these 10 capabilities (considerations) from NEI 12-06, Section 12.2. The NRC audit results concluded that that the NSRCs and the SAFER plans and procedures conform to the guidance described by the 10 capabilities (considerations) of NEI 12-06, Section 12.2.

The NRC findings are documented in a letter from the NRC (Jack R. Davis) to the Nuclear Energy Institute (Joseph E. Pollock), Staff Assessment of National Safer Response Centers Established in Response to Order EA-12-049, dated September 26, 2014 (ML14265A107)

The NSRC will support initial portable FLEX equipment delivery to the site within 24 hours of a request for deployment per the site specific response plan. Designated local staging areas have been selected to support deliveries of requested SAFER equipment from the NSRC to NMP.

Local Staging Area 'A' is defined as the final location on site delineated in the FLEX procedures where the SAFER equipment will be placed into service to support the FLEX strategies if needed. The site has equipment that will be able to transfer the portable equipment from SAFER at Staging Area 'B' on-site to Staging Area 'A' inside the protected area. This equipment includes those identified for deployment considerations that will be stored in the FLEX building such as a pay loader, large tractor and large truck.

Local Staging Area 'B' is defined as the site delivery and preparation area outside the site Protected Area where the SAFER equipment is delivered and prepared for use (e.g., unloaded, assembled, and fueled) prior to transport to Staging Area 'A' for use. At NMP, this area is the site parking lot located south of the P-building, adjacent to the Site Access Building.

Local Staging Area 'C' is defined as the regional airport outside of the 25 mile radius of the site. SAFER will provide requested portable equipment through contracts with FedEx via truck transport or air freight to Staging Area "C" where the equipment will be made ready for transport to the site by either roadways using trucks or air transport using helicopters. For NMP, Staging Area 'C' is the Overflow Parking Lot at Syracuse Hancock International Airport.

SAFER has contracts in place with FedEx to truck transport the FLEX equipment from Staging Area 'C' to NMP site Staging Area 'B'. SAFER also has contracts in place for air lift transportation of the equipment from Staging Area 'C' to Staging Area 'B' at NMP using freight helicopters if both Primary and Alternate transportation path roadways are not available for use. The Primary and Alternate truck transport routes are contained in Chapter 5 of the NMP SAFER Response Plan which is currently in review and approval.

ISE Confirmatory Item # 11: ISE Confirmatory Item 3.2.1.2.A – There was no discussion of the applicability of the assumed recirculation system leakage rates and the recirculation pump seal leakage rates to the ELAP event; the pressure dependence of the leak rates; whether the leakage was determined to be single-phase, two-phase, or steam at the donor cell; and how mixing of the leakage flow with the drywell atmosphere was modeled

ISE Confirmatory Item # 11 is **submitted for closure**.

In the 1990's, laboratory testing of the CAN2A recirculation pump seals was performed. The recirculation pump seal station blackout test reports document the recirculation pump seal performance under loss of forced Reactor Building Closed Loop Cooling (RBCLC) seal cooling conditions. The testing models the reactor depressurization that is expected for a single EC loop reactor cool down profile. The seal test pressure profile follows the expected reactor depressurization defined in the GE Station Blackout reference analysis. These test conditions are expected to bound those conditions for seal performance under an event involving depressurization for a two EC loop reactor cool down profile, since a cool down with two ECs will achieve conditions that remove challenges to seal integrity in a shorter period of time.

The pump seal testing includes the full scale integral pump seal cooler. The integral seal cooler under SBO conditions maintains the seal cooling sub cooled by the boiling heat transfer of the RBCLC coolant and counter current makeup RBCLC gravity driven makeup to the cooler. The test included a mockup of the RBCLC piping to simulate the static head available to maintain the boiling heat transfer and to model the counter current flow regime. The test report summarizes the seal sub cooling. Because the integral seal cooler maintained sub cooled inlet conditions, the SBO testing of the seal demonstrated the leakage remained single phase throughout the test time frame.

The test results adequately model operating conditions and provide an adequate basis for the leak rate assumed for an ELAP.

Recirculation system leakage is simulated using the GOTHIC computer program. The primary containment model is a sub-divided GOTHIC model. The leakage is in the form of very fine droplets and mixes with drywell atmosphere at lower elevation (representation of Recirculation Pump seal leakage).

ISE Confirmatory Item # 15: ISE Confirmatory Item 3.2.4.2.B – A summary of battery performance with elevated or lowered temperatures in the Battery Room due to an ELAP event will be provided in the future update

ISE Confirmatory Item # 15 is **submitted for closure**.

Calculations have been performed to determine the minimum and maximum battery temperatures required to perform their intended function during an ELAP.

With the minimum design outdoor temperature of -10°F, assuming restoration of a battery charger within 8 hours, the room temperature at the 8 hour time frame for both battery rooms is steady state at approximately 56°F. This is consistent with, and bounded by, the minimum temperature of 55°F determined for an 8-hour Appendix R event.

In addition, for maximum battery temperature, the ELAP event is bounded by the 8-hour Appendix R event contained within a SR approved calculation. The Appendix R event calculation identifies that the maximum room temperature of approximately 113°F is reached within the first hour, followed by steady state conditions at approximately 105°F within approximately 2 hours. The evaluation within the Appendix R calculation concludes that the highest temperature has no adverse impact on battery capacity during the ELAP event.

Based on the above, the high and low battery room temperatures caused by a loss of ventilation will have negligible impact on battery performance during an ELAP.

Temperature conditions in the battery board rooms (as opposed to the battery rooms) during an ELAP are also presented here for reference.

The maximum temperature in the battery board room is bounded by existing SR analysis. The maximum steady state temperature in the battery board room is 103.73°F which is less than the design limit of 104°F. The design basis calculation is specifically written for a Loss of Coolant Accident (LOCA)/Loss of Offsite Power (LOOP) but envelopes an ELAP event since the LOCA/LOOP event uses an electrical load that is considerably higher than the ELAP event (more than half of the loads used in the LOCA/LOOP event calculation will be removed in less than 2 hours into the ELAP event).

The existing calculation also analyzes the minimum air temperatures in the battery board rooms 11 and 12 for a LOCA/LOOP event using numerical method (transient analysis). The minimum temperature is determined to be steady state at approximately 42°F at day 7. This result bounds the ELAP since there are no heat loads credited within the battery board rooms in the LOCA/LOOP event for minimum room temperature analysis. The calculation identifies that the minimum temperature for operability of the SR components in the battery board rooms is 32°F, which is considerably less than the minimum room temperature of approximately 42°F expected during the ELAP.

In conclusion, temperature profiles during an ELAP are acceptable and there is no adverse impact on the components in the battery or battery board rooms.

ISE Confirmatory Item # 16: ISE Confirmatory Item 3.2.4.4.A – The restoration of Emergency Lighting in Phase 2, that may be restored when Battery Board 12 is repowered, is currently under evaluation (i.e. battery loading calculation for ELAP). NMP1 will provide a summary of the restoration of Emergency Lighting in a future update

ISE Confirmatory Item # 16 is **submitted for closure**.

The primary DC power electrical mitigation strategy at NMP1 provides for a portable diesel generator to re-power an installed SR battery charger to SR Battery Board 12. The alternate DC power electrical mitigation strategy provides for a portable battery charger and portable diesel generator to power SR Battery Board 12. An additional alternate capability is to provide a portable battery charger and portable diesel generator to power the opposite SR Battery Board 11.

A portion of (approximately 50%) the Emergency Lighting for the Unit 1 MCR and Auxiliary Control Room is fed from SR Battery Board 12 (the other portion is fed from non-SR Battery Board 14 and is not considered available during a BDB event). Unless it is necessary to re-power Battery Board 11 in lieu of Battery Board 12, this lighting will be available throughout the ELAP event. In the case that the alternate DC battery board (Battery Board 11) must be used in lieu of Battery Board 12, lighting in the MCR will be via flashlights and re-chargeable LED battle lanterns.

Several other lighting capabilities exist. Eight-hour battery-pack lighting is provided in all areas of the plant required for operation of any safe shutdown equipment, and in access and egress routes to meet the requirements of 10CFR50 Appendix R. Fire cabinet supplies, including flashlights, are provided in strategic storage locations throughout the site. These flashlights are inventoried on a periodic base. An EOP tool box is located in the MCR that contains 5 flashlights. These are inventoried and tested quarterly per preventative maintenance procedures. Flashlights and re-chargeable battle lanterns will be stored in the FLEX building to be used by operators within the plant when other lighting is insufficient. These lanterns will also be inventoried periodically with other FLEX equipment.

ISE Confirmatory Item # 18: ISE Confirmatory Item 3.2.4.6.A – Licensee to provide calculation and basis for use of extrapolated SBO evaluation for Main Control Room habitability

ISE Confirmatory Item # 18 is **submitted for closure**.

The maximum temperature in the control complex (MCR and Auxiliary Control Room) during an ELAP event has been evaluated in a plant specific calculation in order to verify the extrapolation information used by interpreting current Appendix R and SBO calculation results. The existing heat loads in the MCR and Auxiliary Control Room are assumed to remain unchanged after the eight (8) hour Appendix R event, which bounds the NMP1 four (4) hour SBO event. The Appendix R heat loads are then extrapolated to 72 hours. The calculation identified that to maintain areas less than the allowable temperature value of 104°F, MCR and Auxiliary Control Room doors must be opened when the Control Room complex temperature reaches 94°F. With these doors open, the maximum air temperature in the MCR is approximately 101°F and the Auxiliary Control Room is approximately 103.6°F, at 72 hours after the ELAP event.

The FLEX procedures have been written to provide for monitoring control complex temperatures and to open MCR and Auxiliary Control Room doors before temperature reaches 94°F, and to remove loads consistent with those required during Appendix R or SBO events.

The functionality of equipment in these areas is not expected to be affected by the loss of ventilation during the ELAP event provided the instrument cabinet doors are opened within 30 minutes of the onset of the event. The cabinet doors are opened to promote the cooling of the instruments by natural convection, consistent with current SBO calculation and procedure requirements.

ISE Confirmatory Item # 19: ISE Confirmatory Item 3.2.4.8.A – The licensee stated that when the design review of the portable generator protection is completed, the specific details on the protection schemes to protect Class 1E equipment from faults from the portable FLEX equipment will be provided in a future update

ISE Confirmatory Item # 19 is **submitted for closure**.

The primary method to restore and maintain the NMP1 SR DC power is through a SR fusible disconnect switch. Therefore, the portable diesel generator and non-safety related cabling and connections will be isolated from the FLEX diesel driven portable generator by the current design of the installed SR static battery charger and by a SR fusible disconnect switch. In either case, the FLEX diesel driven portable generator output breaker is isolated from the battery or battery board in the primary configuration.

The alternate method to restore and maintain the NMP1 SR DC power is through existing SR fusible connections on the SR battery board 11 or 12. The SR battery boards are isolated from the FLEX diesel driven portable generator by the portable battery charger and SR fuses. The potential loss of either DC battery board 11 or 12, due to a fault on the new non-safety related portable battery charger, is precluded by the use of existing (battery board 11) or new (battery board 12) SR fuses that have an

interrupting rating that exceeds the available fault current of the FLEX portable equipment.

ISE Confirmatory Item # 20: ISE Confirmatory Item 3.2.4.8.B – The licensee will provide an updated summary of the sizing calculations for the FLEX generators at a future update

ISE Confirmatory Item # 20 is **submitted for closure**.

A plant specific calculation identifies that the portable diesel driven generator for NMP1 Phase 2 FLEX application is adequately sized to power the 600VAC/125VDC installed station static battery charger, which in turn can supply all associated DC loads and recharge the station battery. The calculation also provides necessary analysis that supports the appropriate cables and connection points. In addition, NMP1 makes use of the portable battery charger in place to satisfy National Fire Protection Association (NFPA) 805 requirements for use as the alternate power provision for DC battery boards supplied by the FLEX generator. Calculations identify that the portable battery charger is smaller than the installed station battery charger, and so the FLEX portable diesel driven generator is adequately sized in all FLEX applications.

SAFER will supply a Turbine Marine 1.1 MW 480 VAC generator with a step up transformer to 600VAC. These capabilities exceed and therefore envelope the on-site Phase 2 diesel generator size (450 kW). The SAFER generators come with the same size cable connectors as the on-site Phase 2 FLEX generators.

SAFER will also provide six (6) NSRC 6 kW diesel generators to provide power to emergency lighting towers and will not be connected to or provide power for equipment within the plant.

ISE Confirmatory Item # 21: ISE Confirmatory Item 3.2.4.9.A – The licensee stated that a summary of the refueling strategies for FLEX equipment will be provided when finalized at a future date

ISE Confirmatory Item # 21 is **submitted for closure**.

Nine Mile Point strategies to provide fuel oil for portable diesels are to use the supply of on-site SR storage tanks that would normally supply the stations emergency diesel generators during a loss of AC/off-site power event.

In order to ensure proper sizing and strategies for appropriate response for the eventual simultaneous full implementation of FLEX mitigation strategies at both NMP units, calculations associated with fuel consumption were performed assuming the equipment required for full implementation of mitigation strategies at both NMP1 and NMP2 are in operation simultaneously. With regard to this, only the equipment for NMP1 is required to be in place for full implementation for this OIP.

Fuel consumption for both NMP1 and NMP2 portable equipment to support FLEX (4 diesel driven portable pumps, 2 diesel driven portable generators and 1 diesel driven portable air compressor) is 130 gallons per hour (gph) for all items operating at full load. The Technical Specification (TS) minimum fuel storage on site is over 141,000 gallons in the emergency diesel generator fuel oil storage and day tanks. For the purposes of this analysis, the fuel at NMP1 is not credited (fuel is not accessible during flooding conditions). Fuel available at NMP2 is assumed with one emergency diesel generator fuel oil storage tank unavailable (i.e. TS allowable). The remaining capacity of the two SR storage tanks at NMP2 is greater than 85,000 gallons and will provide over 25 days of fuel for all FLEX portable equipment. The SAFER equipment, as replacement or backup to Phase 2 on-site portable diesel driven equipment, can theoretically increase fuel consumption rate to 270 gph if all equipment were deployed and operated at full load. The higher rate is due to design differences and larger equipment (i.e. Turbine generator versus diesel generator, booster pump and main pump for water delivery). Even at this consumption rate, on site fuel reserves would provide greater than 13 days of operation without off site replenishment. It is expected that the emergency response organization can ensure delivery of replenishment fuel as required within the times identified above.

NMP will utilize two 528 gallon fuel tanks mounted on separate trailers and stored in the FLEX building. Each tank has a pump that is powered from the towing vehicles DC power or an on-board battery, and will be used to refuel the FLEX portable equipment. These 528 gallon tanks will be filled from the on-site SR fuel oil storage tanks identified above. Transfer pumps and fuel for them are to be stored in the FLEX building, and used during an event to pump the fuel oil out of the SR storage into the refueling tanks. The pumps have been tested on-site and provide over 31 gpm flow (1860 gph). The pump capacity of the deployment tank pump/nozzle is approximately 20 gpm (1200 gph). These delivery rates are well above the full load usage rate of all FLEX Phase 2 portable equipment.

ISE Confirmatory Item # 22: ISE Confirmatory Item 3.2.4.10.A – The licensee stated that a finalized summary of battery coping time, DC load profile, discussion of loads shed, and minimum DC voltage will be provided in a future update

ISE Confirmatory Item # 22 is **submitted for closure**.

A Battery 11 and 12 Load Shed Coping Time for ELAP Event calculation has been completed which addresses the NMP1 DC battery performance under ELAP conditions. The calculation includes an acceptable DC load profile. The battery coping times for the ELAP Event with implementation of DC load shedding were found to be 8.3 hours for Battery 11, and 8.2 hours for Battery 12.

Computer modeling evaluated steady state terminal voltages at selected equipment and the calculation states that "the lowest battery voltage at any point in time for any of the scenarios will be 106.02 V[DC] rather than 105 V[DC]."

A calculation was performed specific to an ELAP event using the specific equipment to be shed during an ELAP event. There is no difference in the loads that are to be shed during an ELAP and those that are currently shed for SBO and Appendix R. The difference is that the ELAP strategy requires all loads to be shed within 30 minutes, rather than the longer periods for SBO and the partial loads shed in 15 minutes for Appendix R (i.e. all load shedding will be completed within 30 minutes). A review also concluded there is no reduction in defense-in-depth or redundancy resulting from the load shedding, nor is there a change in mitigating strategies associated with the timing of the load shedding.

The loads to be shed and the associated function are not different than current SBO or Appendix R loads as previously delineated. The ability to accomplish the load shedding actions was validated with operators in accordance with station procedures for time validation of operator actions.

ISE Confirmatory Item # 23: ISE Confirmatory Item 3.4.A – The program or process to request RRC equipment was not discussed in the Integrated Plan or during the audit process

ISE Confirmatory Item # 23 is **submitted for closure**.

Request for support from SAFER is made as directed in changes to FLEX Support Guidelines (FSGs) for the actual ELAP if attempts to restore AC power are not successful within 1 hour from event initiation. The request is initiated by notifying the Exelon Corporate Nuclear Duty Manager (NDO). Communications to the NDO to request SAFER are prescribed in changes to both the FSG as well as the Emergency Procedure checklist for the Emergency Director/Shift Manager. The NDO will then contact SAFER and request implementation of the NMP SAFER Response Plan which initiates SAFER FLEX equipment deployment to the site. Training on the changes to procedures that support notification and request of equipment from the NSRC has been completed with appropriate Emergency Response Organization personnel.

The NSRC will support initial portable FLEX equipment delivery to the site within 24 hours of a request for deployment. A site specific response plan for Nine Mile Point delineates the transport logistics, staging area setup and preparation, and communications protocols between the SAFER Control Center (SCC), the NSRC, the Staging Areas, and NMP. This response plan provides the detail necessary to ensure the successful delivery of the portable FLEX equipment from the NSRC to the local staging area and from the local staging area to the site.

ISE Confirmatory Item # 24: ISE Confirmatory Item 3.4.B – Sizing calculations of RRC FLEX equipment and the compatibility of RRC equipment to plant connection points was not discussed in the Integrated Plan or during the audit process

ISE Confirmatory Item # 24 is **submitted for closure**.

The portable diesel generator for NMP1 Phase 2 FLEX application has been evaluated as being adequately sized at 450 kW per calculation (see ISE Open Item # 20). The NSRC will supply a 480VAC, 1.1 MW portable Turbine Marine generator with a step up transformer to 600 VAC (NMP1 SR distribution system is 600 VAC) and will come with

the same style (same manufacturer) connectors and cable sizes as the on-site Phase 2 FLEX generators. The NSRC generator size exceeds and envelopes the capability of the NMP Phase 2 generators.

The Phase 2 FLEX pump hose connections are standard 3 inch hose with 2.5 inch threaded normal fire hose (NH) fittings. The NSRC supplied equipment utilized to support NMP has the same 2.5 inch NH fittings or a 5 inch Storz fitting. NMP has one 5 inch Storz to 2.5 inch NH hose adapter for each Phase 2 FLEX portable diesel driven pump to adapt the NSRC fittings to the NMP1 Phase 2 FLEX connections. The NSRC pumps that would be utilized to support as a backup to the Phase 2 NMP FLEX pumps are the SG/RPV Makeup Pump rated at 500 psi and 500 gpm, and/or the Low Pressure/Medium Flow Pump rated at 300 psi and 2500 gpm, in conjunction with the Suction Lift Booster Pump for supporting required suction lift at up 2500 gpm. These pumps meet/exceed and therefore envelope the NMP1 Phase 2 FLEX strategy requirements delineated in NMP1 FLEX Hydraulic calculations.

Table 3
Status of NMP1 Interim Staff Evaluation (ISE) Open and Confirmatory Items

ISE Open Items	Status
1. **ISE Open Item 3.1.1.3.A** – Seismic procedural interface consideration NEI 12-06, Section 5.3.3, Consideration 1, which considers the possible failure of seismically qualified electrical equipment by beyond-design-basis seismic events, was not discussed in the Integrated Plan or during the audit process	**Submitted for closure** (2/2015)
2. **ISE Open Item 3.2.1.3.A** – The coping strategies for maintaining core cooling were updated in the August 27, 2013 Six Month Update. However, the licensee has not yet updated the sequence of events timeline and the discussion of time constraints	**Submitted for closure** (2/2015)
ISE Confirmatory Items	**Status**
3. **ISE Confirmatory Item 3.1.1.1.A** – The design of the storage facility for FLEX equipment is under development. The method selected for protection of equipment during a Beyond-Design-Basis External Event (BDBEE) was not discussed in the Integrated Plan or during the audit process. Also, there was no discussion of securing large portable equipment for protection during a seismic hazard	**Submitted for closure** (2/2015)
4. **ISE Confirmatory Item 3.1.1.2.A** – Deployment routes have not yet been finalized or reviewed for possible impacts due to debris and potential soil liquefaction. Movement of equipment and procedural interfaces during a BDBEE were not discussed in the Integrated Plan or during the audit process	**Submitted for closure** (2/2015)
5. **ISE Confirmatory Item 3.1.1.4.A** – Utilization of offsite resources, the local staging area, and the method to deliver the FLEX equipment to the site were not discussed in the context of impacts of BDBEEs in the Integrated Plan or during the audit process	**Submitted for closure** (2/2015)
6. **ISE Confirmatory Item 3.2.1.1.A** – MAAP benchmarks must be identified and discussed which demonstrate that MAAP4 is an appropriate code for the simulation of an ELAP event	**Submitted for closure** (see OIP Update 8/2014)
7. **ISE Confirmatory Item 3.2.1.1.B** – MAAP Analysis-collapsed level must remain above Top of Active Fuel (TAF) and the cool down rate must be within technical specification limits	**Submitted for closure** (see OIP Update 8/2014)

Table 3
Status of NMP1 Interim Staff Evaluation (ISE) Open and Confirmatory Items (cont'd)

ISE Confirmatory Items	Status
8. **ISE Confirmatory Item 3.2.1.1.C** – MAAP4 must be used in accordance with Sections 4.1, 4.2, 4.3, 4.4, and 4. 5 of the June 2013 position paper	**Submitted for closure** (see OIP Update 8/2014)
9. **ISE Confirmatory Item 3.2.1.1.D** – MAAP modeling parameters must be identified and justified	**Submitted for closure** (see OIP Update 8/2014)
10. **ISE Confirmatory Item 3.2.1.1.E** – The specific MAAP4 analysis case that was used to validate the timing of mitigating strategies in the Integrated Plan must be identified and should be available for review	**Submitted for closure** (see OIP Update 8/2014)
11. **ISE Confirmatory Item 3.2.1.2.A** – There was no discussion of the applicability of the assumed recirculation system leakage rates and the recirculation pump seal leakage rates to the ELAP event; the pressure dependence of the leak rates; whether the leakage was determined to be single-phase, two-phase, or steam at the donor cell; and how mixing of the leakage flow with the drywell atmosphere was modeled	**Submitted for closure** (2/2015)
12. **ISE Confirmatory Item 3.2.3.A** – The licensee has yet to evaluate containment integrity for Phases 1 through 2 and provided the finalized analysis for review	**Submitted for closure** (see OIP Update 8/2014)
13. **ISE Confirmatory Item 3.2.3.B** – A modification to remove water from the torus in Phase 3 using RRC supplied equipment will be evaluated and implemented as required	**Submitted for closure** (see OIP Update 8/2014)
14. **ISE Confirmatory Item 3.2.4.2.A** – Evaluation of the refueling floor SFP area for steam and condensation was not yet completed. Mitigating strategies, including establishing a vent pathway for steam and condensate from the area, were not discussed in the Integrated Plan or during the audit process	**Submitted for closure** (see OIP Update 8/2014)
15. **ISE Confirmatory Item 3.2.4.2.B** – A summary of battery performance with elevated or lowered temperatures in the Battery Room due to an ELAP event will be provided in the future update	**Submitted for closure** (2/2015)

Table 3
Status of NMP1 Interim Staff Evaluation (ISE) Open and Confirmatory Items (cont'd)

ISE Confirmatory Items	Status
16. **ISE Confirmatory Item 3.2.4.4.A** – The restoration of Emergency Lighting in Phase 2, that may be restored when Battery Board 12 is repowered, is currently under evaluation (i.e. battery loading calculation for ELAP). NMP1 will provide a summary of the restoration of Emergency Lighting in a future update	**Submitted for closure** (2/2015)
17. **ISE Confirmatory Item 3.2.4.4.B** – Follow-up of commitments, as discussed in the staff analysis (ML 13100A236) for communications assessment, is required	Started (8/2014)
18. **ISE Confirmatory Item 3.2.4.6.A** – Licensee to provide calculation and basis for use of extrapolated SBO evaluation for Main Control Room habitability	**Submitted for closure** (2/2015)
19. **ISE Confirmatory Item 3.2.4.8.A** – The licensee stated that when the design review of the portable generator protection is completed, the specific details on the protection schemes to protect Class 1E equipment from faults from the portable FLEX equipment will be provided in a future update	**Submitted for closure** (2/2015)
20. **ISE Confirmatory Item 3.2.4.8.B** – The licensee will provide an updated summary of the sizing calculations for the FLEX generators at a future update	**Submitted for closure** (2/2015)
21. **ISE Confirmatory Item 3.2.4.9.A** – The licensee stated that a summary of the refueling strategies for FLEX equipment will be provided when finalized at a future date	**Submitted for closure** (2/2015)
22. **ISE Confirmatory Item 3.2.4.10.A** – The licensee stated that a finalized summary of battery coping time, DC load profile, discussion of loads shed, and minimum DC voltage will be provided in a future update	**Submitted for closure** (2/2015)
23. **ISE Confirmatory Item 3.4.A** – The program or process to request RRC equipment was not discussed in the Integrated Plan or during the audit process	**Submitted for closure** (2/2015)
24. **ISE Confirmatory Item 3.4.B** – Sizing calculations of RRC FLEX equipment and the compatibility of RRC equipment to plant connection points was not discussed in the Integrated Plan or during the audit process	**Submitted for closure** (2/2015)

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 OIP described in this enclosure.

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 Modifying 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), 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
7. Letter from J. S. Bowen (NRC) to J. A. Spina, Nine Mile Point Nuclear Station, Units 1 and 2 – Interim Staff Evaluations Relating to Overall Integrated Plans in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF 1129 and MF1130), dated December 19, 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
9. NEI Position Paper Shutdown and Refueling: ADAMS Accession No. ML13273A514
10. NRC Endorsement of NEI Shutdown and Refueling paper: ADAMS Accession No. ML13267A382
11. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), 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), dated August 26, 2014

12. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), Response to March 12, 2012, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, Enclosure 5, Recommendation 9.3, Emergency Preparedness – Staffing, Requested Information Items 1, 2 and 6 – Phase 2 Staffing Assessment

Attachment 1

Updated Annotated Sequence of Events Timeline
NINE MILE POINT 1 Overall Integrated Plan

Action Item	Elapsed Time	Action	Time constraint Y/N	Remarks/Applicability
1	0 min	Enter SOP-33A.2 Station Blackout/ELAP	Y 2min	Procedure applicable for the duration of the SBO/ELAP
2	0-3 min	Manually place 11 and 12 ECs in service	Y 3 min	Manually placed in service to minimize time ERVs are open
3	0-15 min	Dispatch operator for debris removal	Y 1hr	Need to be clear to Unit 1 pump deployment area in 1 hr - continues for 2 hrs total
4	0-30 min	Actions for loss of air: SOP-33A.2 Attachment 2	Y 30 min	CRS directs, THEN, NLO performs (EC shell level control within 30 min)
5	0-30 min	Actions for DC load shed SOP-33A.2 Attachment 4	Y 30 min	CRS directs, THEN, NLO performs (SR batteries at 30 min)
6	0-60 min	Refuel Floor Actions: Lay out hose for SFP Alternate Makeup and Spray	Y 1 hr	Directed by CRS: personnel carry out in < 1hr from t=0
7	1 hr	Deploy 1st FLEX pump for primary RPV, EC & SFP MU	Y 3 hrs	4 people total to help with installation of suction hose
8	2 hr	Deploy FLEX generator for SR battery charging	Y 4 hrs	2 people
9	4 hr	Establish makeup capability to the RPV through CRD return line	Y 5.7 hrs	Capability comes from the FLEX pump deployed in Action Item 7

Attachment 1

Updated Annotated Sequence of Events Timeline
NINE MILE POINT 1 Overall Integrated Plan (cont'd)

Action Item	Elapsed Time	Action	Time constraint Y/N	Remarks/Applicability
10	8 hrs	Establish Reactor Building Vent to maintain habitability and qualification for instruments	Y 8 hrs	Doors on 261 opened when hose deployed into Reactor Bldg. TB door and wall vents can be opened any time prior to RB 340 airlock. Person controlling EC level on TB 369 (Within 8 hrs T = 0
11	8 hrs	Establish make up to 12 EC (primary) or makeup to 11 and 12 EC with FLEX pump via Fire Water system (alternate)	Y 8 hrs	Capability comes from the FLEX pump deployed in Action Item 12
12	10 hrs	Deploy the capability to Refuel Portable Equipment	Y 10 hrs	2 people with one truck and trailered 528 fuel tank. Additional truck/tank is available
13	12 hrs	Establish makeup to the SFP	Y 45 hrs	Deploy 2nd FLEX pump to Screen House for Alternate SFP make up may be required 4 people if it is

ENCLOSURE (2)

NMP2 SIX-MONTH STATUS REPORT (FEBRUARY 2015)

FOR MITIGATION STRATEGIES FOR

BEYOND-DESIGN-BASIS EXTERNAL EVENT

NINE MILE POINT NUCLEAR STATION, LLC
February 19, 2015

1 Introduction

The Nine Mile Point Unit 2 (NMP2) 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 NMP2 OIP for FLEX was submitted to the NRC in March 2013 (Reference 3). This enclosure provides an update of milestone accomplishments since submittal of the last status report including any changes to the compliance method, schedule, or need for relief/relaxation and the basis (if applicable).

Since the submittal of the last status report in August 2014 (Reference 11), NMP2 has progressed with engineering analysis, calculations, procedures and other activities that support the mitigating strategies and the modification concepts have been refined. Some changes to the mitigation strategies and planned modifications in support of the mitigation strategies have occurred and are explained within this document. Work with the Strategic Alliance for FLEX Emergency Response (SAFER) has continued including review of proposed supporting equipment specifications that support NMP2 for FLEX Phase 3 and the development of the site specific SAFER Response Plan (SRP). The SRP is in the final review and approval phase.

By letter dated December 19, 2013, the NRC issued to CENG the Nine Mile Point Nuclear Station, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF 1129 and MF 1130) (Reference 7). The Interim Staff Evaluation (ISE) contains open and confirmatory items for which CENG will provide clarifying or additional information in Six Month Status Reports in order for the NRC to determine that the issues are satisfactorily resolved.

2 Milestone Accomplishments

The following milestone(s) have been completed since the development of the OIP (Reference 3), and are current as of January 16, 2015.

- Six Month Integrated Plan Progress Report submitted (8/2013)
- Six Month Integrated Plan Progress Report submitted (2/2014)
- Refueling Outage (RFO), including walk downs in support of pending modifications for installation for FLEX strategies (8/2014)
- Six Month Integrated Plan Progress Report submitted (Reference 11)
- Engineering and Design Completion – Equipment Storage Facility

3 Milestone Schedule Status

Table 1 provides an update to Attachment 2 of the NMP2 OIP (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 following target completion dates will be reflected in subsequent Six Month Status Reports.

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

Table 1
Status of NMP2 FLEX OIP Milestones

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Implementation Plan	February 2013	Complete	
Six Month Integrated Plan Progress Report	August 2013	Complete	
Engineering and Design Completion – Equipment Storage Facility	November 2014	Complete	
Six Month Integrated Plan Progress Report	February 2014	Complete	
Refueling Outage	April 2014	Complete	
Six Month Integrated Plan Progress Report	August 2014	Complete	
Engineering and Design Completion – Portable Equipment Connections	November 2014	Started	March 2015[1]
Six Month Integrated Plan Progress Report	February 2015	Completed upon submittal of this report	
Equipment Storage Facility installation	May 2015	Started	April 2015[2]
Six Month Integrated Plan Progress Report	August 2015	Not Started	
Non-Outage Installation – Portable Equipment Connection	January 2016	Not Started	
Six Month Integrated Plan Progress Report	February 2016	Not Started	
Validation Walkdowns Complete	February 2016	Not Started	
Portable Equipment Procedures Changes	March 2016	Started	
FLEX Training	March 2016	Not Started	

Table 1
Status of NMP2 FLEX OIP Milestones (cont'd)

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Refueling Outage	April 2016	Not Started	
Outage Installation – Portable Equipment Connections	May 2016	Not Started	
Final Implementation Notification to USNRC	July 2016	Not Started	

Note 1: Revised from previous NMP2 Six Month Status Report which identified November 2014. NMP2 portable equipment connections design is currently scheduled to be completed in March 2015 to support full implementation in May 2015.

Note 2: Revised from previous NMP2 Six Month Status Report which identified completion in May 2015. The storage facility will be completed in time to support NMP1 full implementation in April 2015.

4 Changes to Compliance Method

Changes were made to the information provided in the OIP that do not change the compliance method with Nuclear Energy Institute (NEI) 12-06 (Reference 5) and were provided in the last Six Month Status Report. NMP2 will incorporate the supplemental guidance provided in the NEI position paper entitled "Shutdown / Refueling Modes" to enhance the shutdown risk process and procedures (References 9 and 10).

No significant coping strategy changes have occurred since the previous Six Month Status Update provided on August 26, 2014 (Reference 11).

Remaining design specifications and requirements and strategy revisions will be determined upon completion of the final design.

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

NMP2 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 below provides a summary of the open items documented in the OIP and those added in any subsequent Six Month Status Reports and the status of each item.

The following is a list of the open items from the OIP that have been added, deleted or completed since the last Six Month Status Report with an explanation of the changes:

1. **General Integrated Plan Elements – BWR**

   Open Item # 2: Evaluate deployment strategies and deployment routes for hazard impact.

   This item is **complete**.

   NMP has identified primary and alternate FLEX deployment routes, including hazard impacts for each route. Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been identified in the NMP1 staffing study that has been performed and submitted to the Commission (Reference 12). Specifically, the staffing study provides for over two hours of dedicated debris removal time with a pay loader for both NMP1 and NMP2 deployment paths. A soil liquefaction evaluation of the primary and alternate travel paths has been completed. Based upon the original site borings, and the extensive borings conducted for the installation of the ISFSI and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX Storage Building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

   Open Item # 14: Establish deployment routes from FLEX equipment storage location to connection points (including hazards impacts)

   This item is **complete**.

   Primary and alternate deployment paths have been identified and maps have been developed. Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been identified in the NMP1 staffing study that was performed and submitted to the Commission (Reference 12). Specifically, the staffing study provides for over two hours of dedicated debris removal time with a pay loader for both NMP1 and NMP2 deployment paths. A soil liquefaction evaluation of the primary and alternate travel paths has been completed. Based upon the original site borings, and the extensive borings conducted for the installation of the ISFSI and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX Storage Building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

   As an example, an alternate deployment route south of NMP1 is available. A hazard that exists for this route is associated with an overhead line falling and impeding access. In this case, verification of line status (i.e. de-energized) is available locally from observation (and manual operation if necessary) of the high voltage disconnects located in the switchyard in the immediate vicinity, and at the high voltage breakers inside the unit at the switchgears.

Open Item # 15: Establish a suitable local staging area for portable FLEX equipment to be delivered from the RRC to the site SAFER Staging Area "C"

This item is **complete.**

Local Staging Area 'C' is defined as the regional airport outside of the 25 mile radius of the site. SAFER has made appropriate arrangements to provide requested portable FLEX equipment to Staging Area "C" (Syracuse Hancock International Airport). At this point, the equipment will be made ready for transport to the site by either roadway or air transport using helicopters.

The Nine Mile Point Nuclear Station has entered into a Memorandum of Understanding (MOU) with Syracuse Hancock International Airport for utilization of the facilities as a Staging Area (i.e. Staging Area 'C') in an emergency. SAFER has put in place appropriate contracts to transport the FLEX equipment from Staging Area 'C' to the NMP site Staging Area 'B' either by truck or air (helicopter). The Primary and Alternate truck transport routes are contained in Chapter 5 of the NMP SAFER Response Plan.

Open Item # 16: Establish a suitable local staging area for Phase 3 portable FLEX equipment to be deployed on site SAFER Staging Area "B"

This item is **complete.**

Staging Area 'B' is defined as the site delivery and preparation area outside the site Protected Area where the SAFER FLEX equipment is delivered and prepared for use (e.g., unloaded, assembled, and fueled) prior to transport to its final location on site for use. At NMP, this area is the site parking lot located south of the P-building, adjacent to the Site Access Building. Two alternative locations are available on site including the turn-around large parking area south of the Owner Controlled Area entrance point and the Nuclear Learning Center parking lot. These areas were identified and deemed acceptable during the SAFER Rehearsal of Concept meeting at Nine Mile Point in January 2014.

Open Item # 24: Evaluate potential soil liquefaction for Nine Mile Point site considering final storage location of FLEX portable equipment and deployment routes established for this equipment

This item is **complete.**

A soil liquefaction evaluation of the primary and alternate travel paths has been completed. Based upon the original site borings, and the extensive borings conducted for the installation of the ISFSI and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX Storage Building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

Open Item # 32: Perform an analysis to identify necessary actions, (e.g., modifications or programmatic changes) to maximize battery coping time to at least 8 hours

This item is **complete.**

With Operations input in order to extend the battery coping time, a specific calculation was performed to determine the actions necessary to maximize the coping time for the Division I and II safety related batteries. The calculation concluded that the station's battery coping time with implementation of additional DC load shedding, will be a minimum of 12 hours for an ELAP event for each divisional battery. The loads to be shed are itemized in the calculation. The minimum battery voltage design input for the calculation is a minimum cell voltage of 1.75 volts per cell (60 cells in the battery) or 105 VDC for the battery.

An existing NMP2 safety related calculation specifically for DC cable sizing provides the basis for the required terminal voltage of 105 VDC and includes an evaluation that determines that the terminal voltage at each load meets the minimum requirements for operating the equipment.

In order to provide the DC loads with power for the specified coping time during an ELAP event, load shedding for the safety related batteries will be performed within 60 minutes. The load shed process will be accomplished per procedure (Station Blackout support procedure).

2. **Maintain Containment - BWR Portable Equipment Phase 3**

Open Item # 36: Perform an analysis to determine when ambient heat losses will be low enough such that with Residual Heat Removal (RHR) in a Phase 3 mode of shutdown cooling, venting of the primary containment will no longer be required

This item is **deleted.**

Activities to restart Residual Heat Removal (RHR) for shutdown cooling operation are considered to be restoration. The FLEX mitigation strategies for Phase 2 provide indefinite coping for the key safety functions associated with core and containment cooling. This will be accomplished by utilizing portable equipment for reactor makeup to maintain RPV level above the Top of Active Fuel (TAF) and by venting the containment to ensure pressure and temperature are maintained to support the strategy. Restoration of RHR is not required for consideration for the FLEX strategies.

Makeup to the RPV with portable equipment will utilize on site protected equipment in accordance with the guidance provided in NEI 12-06 (Reference 5). The ability to vent the Primary Containment will be established by installation of hardened vent capability in accordance with the requirements of NRC Order EA-13-109 'Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions' (ML13143A321). Primary containment venting capability with the hardened vents will be required indefinitely.

Although Phase 2 strategies achieve indefinite coping, Phase 3 strategy is support from SAFER NSRC to deliver portable equipment for backup or redundant capability of Phase 2 equipment.

3. **Maintain Spent Fuel Pool Cooling – BWR Installed Equipment Phase 1**

   Open Item # 43 – Perform an evaluation to determine the effects and required actions for Spent Fuel Pool temperatures expected above design of 150°F during an ELAP

   This item is **complete.**

   An evaluation of existing calculations and licensing information concluded that the structural integrity of the NMP2 SFP is maintained for a SFP temperature of 212°F. Given the evaluation conclusion, the NMP2 FLEX strategies to allow SFP heat up and boiling, and providing makeup water to maintain adequate submergence to ensure spent fuel cooling is acceptable.

4. **Safety Functions Support - BWR Portable Equipment Phase 2**

   Open Item # 8: Perform calculations and validate assumptions of fuel consumption and replenishment rate to ascertain the time before off-site replenishment is required

   This item is ***complete.***

   Nine Mile Point strategies to provide fuel oil for portable diesels are to use the supply of on-site safety related (SR) storage tanks that would normally supply the stations emergency diesel generators during a loss of AC/off-site power event.

   In order to ensure proper sizing and strategies for appropriate response for the eventual simultaneous full implementation of FLEX mitigation strategies at both NMP units, calculations associated with fuel consumption were performed assuming the equipment required for full implementation of mitigation strategies at both NMP1 and NMP2 are in operation simultaneously.

   Fuel consumption for both NMP1 and NMP2 portable equipment to support FLEX (4 diesel driven portable pumps, 2 diesel driven portable generators and 1 diesel driven portable air compressor) is 130 gallons per hour (gph) for all items operating at full load. The Technical Specification (TS) minimum fuel storage on site is over 141,000 gallons in the emergency diesel generator fuel oil storage and day tanks. For the purposes of this analysis, the fuel at NMP1 is not credited (fuel is not accessible during flooding conditions). Fuel available at NMP2 is assumed with one emergency diesel generator fuel oil storage tank unavailable (i.e. TS allowable). The remaining capacity of the two SR storage tanks at NMP2 is greater than 85,000 gallons and will provide over 25 days of fuel for all FLEX portable equipment. The SAFER equipment, as replacement or backup to Phase 2 on-site portable diesel driven equipment, can theoretically increase fuel consumption rate to 270 gph if all equipment were deployed and operated at full load. The higher rate is due to design differences and larger equipment (i.e. Turbine generator versus diesel generator,

booster pump and main pump for water delivery). Even at this consumption rate, on site fuel reserves would provide greater than 13 days of operation without off site replenishment. It is expected that the emergency response organization can ensure delivery of replenishment fuel as required within the times identified above.

NMP will utilize two 528 gallon fuel tanks mounted on separate trailers and stored in the FLEX building. Each tank has a pump that is powered from the towing vehicles DC power or an on-board battery, and will be used to refuel the FLEX portable equipment. These 528 gallon tanks will be filled from the on-site SR fuel oil storage tanks identified above. Transfer pumps and fuel for them are to be stored in the FLEX building, and used during an event to pump the fuel oil out of the SR storage into the refueling tanks. The pumps have been tested on-site and provide over 31 gpm flow (1860 gph). The pump capacity of the deployment tank pump/nozzle is approximately 20 gpm (1200 gph). These delivery rates are well above the full load usage rate of all FLEX Phase 2 portable equipment.

Open Item # 17: Provide the necessary storage facilities in order to provide fuel to the transfer pumps during an ELAP event

This item is **complete**.

NMP2 portable equipment refueling strategies for FLEX include use of gasoline engine driven fuel oil transfer pumps. These transfer pumps are capable of taking suction on the installed SR fuel oil storage tanks on site and pumping fuel oil into smaller tanks reserved and dedicated for transporting fuel oil to the portable equipment. The gasoline for the fuel oil transfer pumps exist in sealed storage cells providing an extended shelf life. The gasoline is being stored in approved fire resistant storage cabinets. The fire resistant cabinets and fuel will be located in the FLEX building so that they are preserved for deployment.

Open Item # 22: Purchase and maintain the required equipment to ensure debris removal capability to re-establish deployment routes and transport FLEX portable equipment during all modes of operation

This item is **complete**.

Nine Mile Point mitigation strategies identify the use of three dedicated deployment vehicles that are to be stored with the Phase 2 portable equipment in the FLEX robust storage building. These include two large flatbed trucks for portable pump deployment and a large tractor or equivalent for portable diesel generator deployment. One of the large trucks is capable of deploying either a portable pump or generator. The large tractor can also deploy the FLEX pumps. Furthermore, for added defense in depth, the debris removal equipment (i.e. pay loader) is large enough and capable of deploying either a portable pump or generator. All other support equipment can be deployed by any of the vehicles described above.

Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been allotted in the staffing study that has been performed for debris removal. The strategy includes dispatching an operator from NMP1 within the first 30 minutes to begin route assessment and debris removal. This operator is dedicated to debris removal (in the staffing study) for about 2 hours for clearing paths to both units' deployment sites. The FLEX vehicles are capable of traveling over small debris. A wheeled pay loader will be used to remove debris as required. This will be stored in the robust FLEX building and Operators are to receive training/qualification for operation of the loader.

5. **Safety Functions Support – BWR Portable Equipment Phase 3**

Open Item # 48: Perform an analysis of the light coverage during ELAP conditions and determine if the lighting loads should be re-energized from the non-safety related buses by the RRC FLEX generator

This item is **complete.**

Some plant lighting could be provided for the first 8 hours by Appendix R lights throughout the plant. The appendix R lights are seismically mounted, not to interfere with safety related equipment, but are not seismically qualified.

The emergency lighting system was designed to provide adequate illumination in areas required for operating safety-related equipment during emergency conditions. The emergency lighting system normally receives power from Division I, II and III 600 VAC emergency busses. Portions of this lighting may be restored when Division I or Division II 600 VAC is repowered during a BDB event. If available after the event, the emergency lighting will supply a portion of the lighting in the MCR, Relay Room, Divisional Switchgear and Remote Shutdown Rooms and the Divisional Emergency Diesel Rooms.

From the onset of the event, operators will utilize battery powered portable lighting sources. When a safety related switchgear has been re-energized (current FLEX electrical mitigation strategy), it is expected that a portion of the safety related lighting in the Control Building may be restored.

Lighting systems within the plant are designed for a number of diverse events, but none are able to be fully credited to survive a BDB seismic event. For this reason, only personal portable lighting devices with batteries are credited. Currently, battery-powered portable hand lights have been provided for use by the Fire Brigade and other operations personnel. Fire cabinet supplies, including flashlights, are provided in strategic storage locations throughout the site. Inventory of the Fire cabinets is performed on periodic bases (typically quarterly). In addition, there are two (2) Emergency Operating Procedure (EOP) tool boxes in the NMP2 Main Control Room (MCR) that contain 10 flashlights. These flashlights are inventoried and tested quarterly. There also is a Station Blackout (SBO) tool box immediately outside the MCR containing 22 flashlights that is inventoried and tested quarterly.

The FLEX Storage Building will have a quantity of rechargeable LED battle lanterns to be used by operators within the plant. These lanterns are to be inventoried and tested periodically.

Table 2
Status of NMP2 FLEX OIP Open Items

NMP2 OIP Open Items	Status
1. Define criteria for the local (25 mile) staging area	**Complete** (see OIP Update 2/2014)
2. Evaluate deployment strategies and deployment routes for hazard impact	**Complete** (2/2015)
3. Evaluate requirements and options and develop strategies related to the storage on-site of the FLEX portable equipment (including lighting tools such as flashlights and batteries) in accordance with the requirements of NEI 12-06	Started (8/2013)
4. Exceptions for the site security plan or other (license/site specific – 10 CFR 50.54x) requirements of a nature requiring NRC approval will be communicated in a future Six Month Update following identification	Started (8/2013)
5. Determine schedule for when Regional Response Centers (RRCs) will be fully operational	**Complete** (see OIP Update 8/2013)
6. Perform an analysis to validate the FLEX equipment ability to deliver sufficient flow under all expected conditions. Flow requirements from the dry hydrants will consider Phase 2 requirements	Started (2/2014)
7. Perform an analysis to validate the FLEX equipment ability to deliver sufficient flow under all expected conditions. Flow requirements from the dry hydrants will consider Phase 3 requirements	**Deleted** (see OIP Update 8/2014)
8. Perform calculations and validate assumptions of fuel consumption and replenishment rate to ascertain the time before off-site replenishment is required	**Complete** (2/2015)
9. Perform an evaluation of the Uninterruptible Power Supply (UPS) strategy and design and implement as required or formalize the use of the small portable gas generators (communication strategies)	Started (2/2014)
10. Perform an evaluation of the redundant power strategy for radio repeaters and design and implement modifications or programmatic changes as required	Started (2/2014)

Table 2

Status of NMP2 FLEX OIP Open Items (cont'd)

NMP2 OIP Open Items	Status
11. Verify plans for the FLEX storage facilities in accordance with NEI 12-06 requirements also accommodate the storage and availability of fuel for the small gas generators	**Completed** (see OIP Update 8/2014)
12. Perform an analysis for feasibility of utilizing the sound powered communications for onsite communications for FLEX strategies	Started (2/2014)
13. Evaluate required consumables and options for storage and availability during an ELAP and implement programmatic controls to ensure required inventory is maintained	Not Started
14. Establish deployment routes from FLEX equipment storage location to connection points (including hazards impacts)	**Complete** (2/2015)
15. Establish a suitable local staging area for portable FLEX equipment to be delivered from the RRC to the site SAFER Staging Area "C"	**Complete** (2/2015)
16. Establish a suitable local staging area for Phase 3 portable FLEX equipment to be deployed on site SAFER Staging Area "B"	**Complete** (2/2015)
17. Provide the necessary storage facilities in order to provide fuel to the transfer pumps during an ELAP event	**Complete** (2/2015)
18. Develop site specific SAFER Response Plan (playbook) for delivery of portable FLEX equipment from the RRC to the site	Started (8/2013)
19. Develop and implement a program and/or procedures to keep FLEX equipment deployment pathways clear or identify actions to clear the pathways	Started (2/2015)
20. Develop preventive maintenance and testing procedures with frequencies based on Original Equipment Manufacturer (OEM) recommendation and Electric Power Research Institute (EPRI) guidelines for FLEX equipment	Started (8/2013)
21. Evaluate and implement procedures that direct immediate deployment of Phase 2 equipment during Refueling conditions	Started (2/2014)
22. Purchase and maintain the required equipment to ensure debris removal capability to re-establish deployment routes and transport FLEX portable equipment during all modes of operation	**Complete** (2/2015)

Table 2
Status of NMP2 FLEX OIP Open Items (cont'd)

NMP2 OIP Open Items	Status
23. Develop procedures/guidelines to address the criteria in NEI 12-06 to support existing symptom based strategies in the Emergency Operating Procedures (EOPs)	Started (2/2014)
24. Evaluate potential soil liquefaction for Nine Mile Point site considering final storage location of FLEX portable equipment and deployment routes established for this equipment	**Complete** (2/2015)
25. Evaluate requirements and options and develop strategies related to the storage and transport of the on-site FLEX portable equipment	Started (2/2014)
26. Implement a design change to Reactor Core Isolation Cooling (RCIC) that will support operation of the system at elevated Suppression Pool temperatures as identified in GEH 000-0155-1545 (BWROG RCIC Pump and Turbine Durability Evaluation – Pinch Point Study)	Not Started
27. Perform an analysis of long term RCIC Room temperatures (for equipment qualification and habitability) under ELAP conditions considering elevated Suppression Pool and Secondary Containment temperatures	Started (2/2014)
28. Perform an evaluation of containment structures to identify necessary actions to enable implementation of the strategy with running RCIC with elevated temperatures	Not Started
29. Perform additional plant specific analysis to verify acceptable Suppression Pool levels during a long term operation of RCIC beginning with suction from the Condensate Storage Tanks (CSTs). Verify containment limitations are not exceeded	Not Started
30. Perform an analysis to verify acceptable parameters (e.g., Net Positive Suction Head (NPSH) requirements) for RCIC operation with the higher temperatures and anticipated changes in Suppression Pool level	Started (2/2015)
31. Perform an analysis to validate containment vent sizing to maintain Suppression Pool parameters to support RCIC capability	Started (2/2014)
32. Perform an analysis to identify necessary actions, (e.g., modifications or programmatic changes) to maximize battery coping time to at least 8 hours	**Complete** (2/2015)

Table 2
Status of NMP2 FLEX OIP Open Items (cont'd)

NMP2 OIP Open Items	Status
33. Evaluate NMP2 containment integrity for Phases 1 through 3 and update calculations	Started (2/2015)
34. Implement an alternative Containment Cooling strategy, if required, when the analysis of structural temperatures are complete	Not Started
35. Perform an analysis to determine the containment pressure profile during an ELAP / Loss of Ultimate Heat Sink (LUHS) event and verify the instrumentation and controls in containment which are relied upon by the operators are sufficient to perform their intended function	Started (2/2015)
36. Perform an analysis to determine when ambient heat losses will be low enough such that with Residual Heat Removal (RHR) in a Phase 3 mode of shutdown cooling, venting of the primary containment will no longer be required	**Deleted** (2/2015)
37. Perform an analysis to verify assumptions related to an adequate nitrogen supply during ELAP conditions and revise or provide ELAP procedures that optimize Safety Relief Valve (SRV) control during an ELAP condition	Not Started
38. Perform an analysis to verify the capability of the portable diesel generator (DG) to power all expected loads	Started (2/2014)
39. Perform an analysis to determine the limiting conditions for an RHR loop to be restarted (e.g., RHR Room, seals and fluid temperatures) and adjust the strategy to start in Shutdown Cooling (SDC) based on the results of the analysis	**Deleted** (see OIP Update 8/2014)
40. Perform a load distribution analysis for safety related equipment restoration utilizing either two RRC Diesel Generators paralleled on one 4160 VAC bus or one RRC Diesel Generator on each safety related bus (i.e., one on Division 1 and one on Division 2)	**Deleted** (see OIP Update 8/2013)
41. Perform an analysis to determine the service water cooling water flow needed to accommodate all expected cooling loads and resulting RRC pump size requirement	**Deleted** (see OIP Update 8/2013)
42. Evaluate a strategy to provide a vent pathway for steam and condensate from the SFP or justify why it is not needed	Started (2/2014)

Table 2
Status of NMP2 FLEX OIP Open Items (cont'd)

NMP2 OIP Open Items	Status
43. Perform an evaluation to determine the effects and required actions for Spent Fuel Pool temperatures expected above design of 150°F during an ELAP	**Complete** (2/2015)
44. Perform analysis to verify SFP temperature and level after an ELAP event and adequate level for maintaining radiological access to the refuel floor	Started (2/2014)
45. Perform an analysis to evaluate long term temperature profiles in the NMP2 Main Control Room (MCR) under ELAP condition (Phase 1)	**Deleted** (see OIP Update 8/2013)
46. Perform an analysis for long term environmental conditions in the NMP2 Battery Rooms during an ELAP and evaluate any actions to mitigate the impact of this hydrogen production as required	Started (2/2014)
47. Evaluate the strategy for repower of select Emergency Lighting loads when the FLEX portable Diesel Generator reenergizes the 600 VAC bus	Started (2/2014)
48. Perform an analysis of the light coverage during ELAP conditions and determine if the lighting loads should be re-energized from the non-safety related buses by the RRC FLEX generator	**Complete** (2/2015)
49. Perform an analysis of the need for dewatering based on leak rates and flood response capabilities	**Deleted** (see OIP Update 8/2014)
50. Implement a design change to install permanent 4160 VAC bus connection points to be able to connect to the RRC supplied Diesel Generator, including paralleling capability, as required to connect more than one Diesel Generator to an electrical bus	**Deleted** (see OIP Update 8/2014)
51. Implement a design change to receive large capacity RRC pumps to supply the service water distribution header	**Deleted** (see OIP Update 8/2014)
52. Design and implement a modification that provides for connection of a FLEX portable pump to makeup to the SFP	Started (8/2014)
53. Implement a design change to install connections for FLEX portable pumps to RHR for both RHR 'A' and 'B'	Started (8/2014)
54. Implement a design change to install portable generator connections for 600 VAC primary (2EJS*US1) and alternate (2EJS*US3) busses	Started (8/2014)

Table 2
Status of NMP2 FLEX OIP Open Items (cont'd)

NMP2 OIP Open Items	Status
55. Revise procedures to provide reactor pressure control direction during an ELAP event	Not Started
56. Develop and implement procedure direction to ensure that the Main Turbine Hydrogen is vented prior to battery depletion	Not Started
57. Revise current EOPs to implement EOP actions necessary to support the strategy to terminate emergency depressurization to preserve RCIC operation	Started (2/2014)
58. Develop and implement procedures to provide direction for re-energizing the Solenoid Operated Valves (SOVs) and ensuring long term pneumatic supply during an ELAP	Not Started
59. Develop procedures to implement the connection of a FLEX portable pump to makeup water to the SFP during an ELAP event to include both primary and alternate strategies	Started (8/2014)
60. Develop and implement procedures that provide direction for restoration of SFP cooling during ELAP conditions (Phase 3)	**Deleted** (see OIP Update 8/2013)
61. Implement a design change to install permanent dry hydrants in the intake structure for FLEX portable pump suctions	Started (2/2015)

Table 3 below provides a summary of the open and confirmatory items documented in the NRC's NMP2 ISE (Reference 7) and the status of each item.

ISE Open Item # 3: ISE Open Item 3.2.3.C – Revision 3 to the [Boiling Water Reactor Owner's Group] BWROG Emergency Procedure Guidance (EPG) Severe Accident Guidance (SAG) is a Generic Concern because the BWROG has not addressed the potential for the revised venting strategy to increase the likelihood of detrimental effects on containment response for events in which the venting strategy is invoked (identified as a 'Significant Concern' in the Notes for this Open Item in the ISE)

ISE Open Item # 3 is **submitted for closure**.

The BWROG, through the Nuclear Energy Institute (NEI), provided a Technical Report entitled 'BWR Containment Venting' for NRC Order EA-12-049 (ML1335A066, ML1335A079). The report documents the benefits and consequences of proposed protective action to perform Anticipatory Venting of BWR containments during an extended loss of AC power (ELAP) event.

Anticipatory venting is a feature of the latest revision to the BWROG emergency procedure guidance (EPG/SAG Rev 3), which was developed based on lessons-learned from the March 2011 Fukushima Dai-ichi accident. The technical report outlines the benefits of anticipatory venting as a protective action that limits containment pressure, containment temperature, suppression pool temperature and provides time for implementation of Phase 2 and Phase 3 core and containment cooling mitigation strategies and allowing portable pumps to inject water into the reactor at lower pressures.

The NRC provided endorsement of the BWROG Technical Report and revised venting strategies provided in BWROG EPG/SAG Rev 3 in a letter to NEI on January 9, 2014 (ML13358A206).

ISE Confirmatory Item # 5: ISE Confirmatory Item 3.1.1.2.A – Deployment routes have not yet been finalized or reviewed for possible impacts due to debris and potential soil liquefaction. Movement of equipment and procedural interfaces during a BDBEE were not discussed in the Integrated Plan or during the audit process. Deployment of temporary flood barriers, restocking of supplies in the context of a flood with long persistence and the potential impact of surface icing were also not addressed

ISE Confirmatory Item # 5 is **submitted for closure**.

NMP2 deployment routes have been finalized and reviewed for impacts. Primary and alternate deployment paths are identified and maps developed.

Small sections of the travel paths, primarily at the storage building and at the deployment sites, may require some debris removal. Time, equipment and resources have been allotted in the staffing study for debris removal. This accounts for dispatching an operator within 30 minutes of the onset of an event to begin route assessment and debris removal. This resource is assigned (in the staffing study) for about 2 hours for

clearing paths of debris. The FLEX vehicles are capable of traveling over small debris. A pay loader will be used to remove large debris as required. The pay loader will be stored in the FLEX building and Operators will be trained and qualified for operating the loader.

A soil liquefaction evaluation of the primary and alternate travel paths has been completed. The evaluation is applicable to all identified primary and alternate deployment paths as referenced above. Based upon the original site borings, the extensive borings conducted for the installation of the Independent Spent Fuel Storage Installation (ISFSI) and the associated Heavy Haul Path, and the recent vendor soil borings for the design of the FLEX building, the soil liquefaction potential for the primary and alternate deployment paths are considered minimal.

Based on the results of the Flooding Hazard Reevaluation performed for NMP, the maximum flood level in the vicinity of NMP2 is 262.4 feet due to persistent maximum precipitation. This exceeds the building entrance elevation of 261' for approximately 19 hours. A map of maximum flood depths for the site indicates that the maximum water depth associated with FLEX equipment staging/deployed areas is approximately 2.5 feet with one very localized area just under 3 feet. All areas to the north, the primary deployment pathway, are under 2 feet. For this reason, with the type of vehicles NMP has for towing, debris removal, and refueling, and the duration of the flood event, it is expected that movement for the purposes of restocking supplies will not be impeded by site flooding.

ISE Confirmatory Item # 6: ISE Confirmatory Item 3.1.1.4.A – Concerning utilization of offsite resources during a BDBEE, the local staging area and access routes were not discussed in the Integrated Plan or during the audit process

ISE Confirmatory Item # 6 is **submitted for closure**.

Nine Mile Point Nuclear Station (NMP) has signed contracts for participation in SAFER. Each NSRC will hold five (5) sets of equipment, four (4) of which will be able to be fully deployed when requested, the fifth set will have equipment in a maintenance cycle. The two NSRCs are located in Phoenix, Arizona and Memphis, Tennessee.

All licensees, including Exelon Generation Company, relying on SAFER and the NSRC, have executed contractual agreements with Pooled Equipment Inventory Company (PEICo) which allows for the capabilities (considerations) in Section 12.2 of NEI 12-06. The NRC staff evaluated the NSRCs and the SAFER program, plans, and procedures against these 10 capabilities (considerations) from NEI 12-06, Section 12.2. The NRC audit results concluded that that the NSRCs and the SAFER plans and procedures conform to the guidance described by the 10 capabilities (considerations) of NEI 12-06, Section 12.2.

The NRC findings are documented in a letter from the NRC (Jack R. Davis) to the Nuclear Energy Institute (Joseph E. Pollock), Staff Assessment of National Safer Response Centers Established in Response to Order EA-12-049, dated September 26, 2014 (ML14265A107)

The NSRC will support initial portable FLEX equipment delivery to the site within 24 hours of a request for deployment per the site specific response plan. Designated local staging areas have been selected to support deliveries of requested SAFER equipment from the NSRC to NMP.

Local Staging Area 'A' is defined as the final locations on site delineated in the FLEX procedures where the SAFER equipment will be placed into service to support the FLEX strategies if needed. The site has equipment that will be able to transfer the portable equipment from SAFER at Staging Area 'B' on-site to Staging Area 'A' inside the protected area. This equipment includes those identified for deployment considerations that will be stored in the FLEX building such as a pay loader, large tractor and large truck.

Local Staging Area 'B' is defined as the site delivery and preparation area outside the site Protected Area where the SAFER equipment is delivered and prepared for use (e.g., unloaded, assembled, and fueled) prior to transport to Staging Area 'A' for use. At NMP, this area is the site parking lot located south of the P-building, adjacent to the Site Access Building.

Local Staging Area 'C' is defined as the regional airport outside of the 25 mile radius of the site. SAFER will provide requested portable equipment through contracts with FedEx via truck transport or air freight to Staging Area "C" where the equipment will be made ready for transport to the site by either roadways using trucks or air transport using helicopters. For NMP, Staging Area 'C' is the Overflow Parking Lot at Syracuse Hancock International Airport.

SAFER has contracts in place with FedEx to truck transport the FLEX equipment from Staging Area 'C' to NMP site Staging Area 'B'. SAFER also has contracts in place for air lift transportation of the equipment from Staging Area 'C' to Staging Area 'B' at NMP using freight helicopters if both Primary and Alternate transportation path roadways are not available for use. The Primary and Alternate truck transport routes are contained in Chapter 5 of the NMP SAFER Response Plan which is currently in review and approval.

ISE Confirmatory Item # 18: ISE Confirmatory Item 3.2.4.6.A – Licensee to provide calculation and basis for use of extrapolated station blackout (SBO) evaluation for Main Control Room habitability

ISE Confirmatory Item # 18 is **submitted for closure**.

NMP2 currently has an approved safety related calculation that provides indication that the maximum temperature in the MCR during an 8-hour SBO event is about 100°F at hour 1.6 into the SBO event. The peak temperature then starts lowering and is approximately constant at <100°F at the end of an 8 hour calculated SBO event.

The heat loads in the MCR during the 72-hour ELAP event will actually be lower than that in the SBO event since enhanced load shedding will be implemented during the ELAP in order to maximize the battery coping time. Therefore, it is reasonable to conclude that the temperature in the MCR will not exceed 100°F and habitability is not a concern during the ELAP event based on results from the existing SBO calculation.

ISE Confirmatory Item # 20: ISE Confirmatory Item 3.2.4.8.B – The licensee will provide an updated summary of the sizing calculations for the FLEX generators at a future update

ISE Confirmatory Item # 20 is **submitted for closure**.

A preliminary plant specific evaluation identifies that the portable diesel generator for NMP2 Phase 2 FLEX is adequately sized to power the required loads defined by the NMP2 FLEX Phase 2 strategy. The breakers utilized at the 600 VAC load centers are adequately sized and have sufficient short circuit rating for this application. The calculation also provides necessary analysis that supports the appropriate cables and connection points. The evaluation considered the installed safety related battery charger as the primary load and delineates the capability of the portable diesel generator to provide both steady state and starting (in rush) current. Additional loads both required and identified as optional by Operations were also considered in the evaluation and indicated that worst case loading conditions will result in operation of the portable diesel generator at under 80%.

SAFER will supply a Turbine Marine 1.1 MW 480 VAC generator with a step up transformer to 600VAC. These capabilities exceed and therefore envelope the on-site Phase 2 diesel generator size (450 kW). The SAFER generators come with the same size cable connectors as the on-site Phase 2 FLEX generators.

SAFER will also provide six (6) NSRC 6 kW diesel generators to provide power to emergency lighting towers and will not be connected to or provide power for equipment within the plant.

Final calculations and analysis will be provided as a function of the design modification process and will serve to verify the preliminary sizing evaluation. In addition, the formal modification process outcome will be used to develop procedural controls for operation, loading and controlling portable diesel generator load.

ISE Confirmatory Item # 21: ISE Confirmatory Item 3.2.4.9.A – The licensee stated that a summary of the refueling strategies for FLEX equipment will be provided when finalized at a future date

ISE Confirmatory Item # 21 is **submitted for closure**.

Nine Mile Point strategies to provide fuel oil for portable diesels are to use the supply of on-site SR storage tanks that would normally supply the stations emergency diesel generators during a loss of AC/off-site power event.

In order to ensure proper sizing and strategies for appropriate response for the eventual simultaneous full implementation of FLEX mitigation strategies at both NMP units, calculations associated with fuel consumption were performed assuming the equipment required for full implementation of mitigation strategies at both NMP1 and NMP2 are in operation simultaneously.

Fuel consumption for both NMP1 and NMP2 portable equipment to support FLEX (4 diesel driven portable pumps, 2 diesel driven portable generators and 1 diesel driven portable air compressor) is 130 gallons per hour (gph) for all items operating at full load. The Technical Specification (TS) minimum fuel storage on site is over 141,000 gallons in the emergency diesel generator fuel oil storage and day tanks. For the purposes of this analysis, the fuel at NMP1 is not credited (fuel is not accessible during flooding conditions). Fuel available at NMP2 is assumed with one emergency diesel generator fuel oil storage tank unavailable (i.e. TS allowable). The remaining capacity of the two SR storage tanks at NMP2 is greater than 85,000 gallons and will provide over 25 days of fuel for all FLEX portable equipment. The SAFER equipment, as replacement or backup to Phase 2 on-site portable diesel driven equipment, can theoretically increase fuel consumption rate to 270 gph if all equipment were deployed and operated at full load. The higher rate is due to design differences and larger equipment (i.e. Turbine generator versus diesel generator, booster pump and main pump for water delivery). Even at this consumption rate, on site fuel reserves would provide greater than 13 days of operation without off site replenishment. It is expected that the emergency response organization can ensure delivery of replenishment fuel as required within the times identified above.

NMP will utilize two 528 gallon fuel tanks mounted on separate trailers and stored in the FLEX building. Each tank has a pump that is powered from the towing vehicles DC power or an on-board battery, and will be used to refuel the FLEX portable equipment. These 528 gallon tanks will be filled from the on-site SR fuel oil storage tanks identified above. Transfer pumps and fuel for them are to be stored in the FLEX building, and used during an event to pump the fuel oil out of the SR storage into the refueling tanks. The pumps have been tested on-site and provide over 31 gpm flow (1860 gph). The pump capacity of the deployment tank pump/nozzle is approximately 20 gpm (1200 gph). These delivery rates are well above the full load usage rate of all FLEX Phase 2 portable equipment.

ISE Confirmatory Item # 22: ISE Confirmatory Item 3.2.4.10.A – The licensee stated that a finalized summary of battery coping time, DC load profile, discussion of loads shed, and minimum DC voltage will be provided in a future update

ISE Confirmatory Item # 22 is **submitted for closure**.

With Operations input in order to extend the battery coping time, a specific calculation was performed to determine the actions necessary to maximize the coping time for the Division I and II safety related batteries. The calculation concluded that the station's battery coping time with implementation of additional DC load shedding, will be a minimum of 12 hours for an ELAP event for each divisional battery. The loads to be shed are itemized in the calculation. The minimum battery voltage design input for the calculation is a minimum cell voltage of 1.75 volts per cell (60 cells in the battery) or 105 VDC for the battery.

An existing NMP2 safety related calculation specifically for DC cable sizing provides the basis for the required terminal voltage of 105 VDC and includes an evaluation that determines that the terminal voltage at each load meets the minimum requirements for operating the equipment.

In order to provide the DC loads with power for the specified coping time during an ELAP event, load shedding for the safety related batteries will be performed within 60 minutes. The load shed process will be accomplished per procedure (Station Blackout support procedure).

ISE Confirmatory Item # 23: ISE Confirmatory Item 3.4.A – The program or process to request RRC equipment was not discussed in the Integrated Plan or during the audit process

ISE Confirmatory Item # 23 is **submitted for closure**.

The request for support from SAFER will be made as directed in changes to FLEX Support Guidelines (FSGs) for the actual ELAP if attempts to restore AC power are not successful within 1 hour from event initiation. The request is initiated by notifying the Exelon Corporate Nuclear Duty Officer (NDO). Communications to the NDO to request SAFER are prescribed in changes to both the FSG as well as the Emergency Procedure checklist for the Emergency Director/Shift Manager. The NDO will then contact SAFER and request implementation of the NMP SAFER Response Plan which initiates SAFER FLEX equipment deployment to the site. Training on the changes to procedures that support notification and request of equipment from the NSRC is scheduled to be performed prior to FLEX full compliance for the first Nine Mile Point Unit implementing FLEX (NMP1).

The National SAFER Regional Centers (NSRC) will support initial portable FLEX equipment delivery to the site within 24 hours of a request for deployment. A site specific response plan for Nine Mile Point delineates the transport logistics, staging area setup and preparation, and communications protocols between the SAFER Control Center (SCC), the NSRC, the Staging Areas, and NMP. This response plan provides the detail necessary to ensure the successful delivery of the portable FLEX equipment from the NSRC to the local staging area and from the local staging area to the site

ISE Confirmatory Item # 24: ISE Confirmatory Item 3.4.8 – Sizing calculations of RRC FLEX equipment and the compatibility of RRC equipment to plant connection points was not discussed in the Integrated Plan or during the audit process

ISE Confirmatory Item # 24 is **submitted for closure**.

The portable diesel generator for NMP2 Phase 2 FLEX application has been evaluated as being adequately sized at 450 kW per calculation (see ISE Open Item # 20). The NSRC will supply a 480VAC, 1.1 MW portable Turbine Marine generator with a step up transformer to 600 VAC (NMP2 safety related distribution system is 600 VAC) and will come with the same style (same manufacturer) connectors and cable sizes as the on-site Phase 2 FLEX generators. The NSRC generator size exceeds and envelopes the capability of the NMP2 Phase 2 generator.

The Phase 2 FLEX pump hose connections are standard 3 inch hose with 2.5 inch threaded normal fire hose (NH) fittings. The NSRC supplied equipment utilized to support NMP has the same 2.5 inch NH fittings or a 5 inch Storz fitting. NMP has one 5 inch Storz to 2.5 inch NH hose adapter for each Phase 2 FLEX portable diesel driven pump to adapt the NSRC fittings to the NMP2 Phase 2 FLEX connections. The NSRC pumps that would be utilized to support as a backup to the Phase 2 NMP FLEX pumps are the SG/RPV Makeup Pump rated at 500 psi and 500 gpm, and/or the Low Pressure/Medium Flow Pump rated at 300 psi and 2500 gpm, in conjunction with the Suction Lift Booster Pump for supporting required suction lift at up 2500 gpm. These pumps meet/exceed and therefore envelope the NMP2 Phase 2 FLEX strategy requirements delineated in preliminary NMP2 FLEX Hydraulic calculations.

Table 3
Status of NMP2 Interim Staff Evaluation (ISE) Open and Confirmatory Items

	ISE Open Items	Status
1.	**ISE Open Item 3.1.1.3.A** – Seismic procedural interface consideration NEI 12-06, Section 5.3.3, Consideration 1, which considers the possible failure of seismically qualified electrical equipment by beyond-design-basis seismic events, was not discussed in the Integrated Plan or during the audit process	Started (8/2014)
2.	**ISE Open Item 3.2.3.B** – The licensee has not performed finalized calculations to demonstrate that the assumed timeline is appropriate and that containment functions will be restored and maintained following an ELAP event	Started (2/2014)
3.	**ISE Open Item 3.2.3.C** – Revision 3 to the [Boiling Water Reactor Owner's Group] BWROG Emergency Procedure Guidance (EPG) Severe Accident Guidance (SAG) is a Generic Concern because the BWROG has not addressed the potential for the revised venting strategy to increase the likelihood of detrimental effects on containment response for events in which the venting strategy is invoked (identified as a 'Significant Concern' in the Notes for this Open Item in the ISE)	**Submitted for Closure** (2/2015)
	ISE Confirmatory Items	**Status**
4.	**ISE Confirmatory Item 3.1.1.1.A** – The design of the storage facility for FLEX equipment is under development. The method selected for protection of equipment during a Beyond-Design-Basis External Event (BDBEE) was not discussed in the Integrated Plan or during the audit process. Also, there was no discussion of securing large portable equipment for protection during a seismic hazard	Started (2/2014)

Table 3
Status of NMP2 Interim Staff Evaluation (ISE) Open and Confirmatory Items (cont'd)

ISE Confirmatory Items	Status
5. **ISE Confirmatory Item 3.1.1.2.A** – Deployment routes have not yet been finalized or reviewed for possible impacts due to debris and potential soil liquefaction. Movement of equipment and procedural interfaces during a BDBEE were not discussed in the Integrated Plan or during the audit process. Deployment of temporary flood barriers, restocking of supplies in the context of a flood with long persistence and the potential impact of surface icing were also not addressed	**Submitted for Closure** (2/2015)
6. **ISE Confirmatory Item 3.1.1.4.A** – Concerning utilization of offsite resources during a BDBEE, the local staging area and access routes were not discussed in the Integrated Plan or during the audit process	**Submitted for Closure** (2/2015)
7. **ISE Confirmatory Item 3.2.1.1.A** – MAAP benchmarks must be identified and discussed which demonstrate that MAAP4 is an appropriate code for the simulation of an ELAP event	Started (2/2014)
8. **ISE Confirmatory Item 3.2.1.1.B** – MAAP Analysis collapsed level must remain above Top of Active Fuel (TAF) and the cool down rate must be within technical specification limits	Started (2/2014)
9. **ISE Confirmatory Item 3.2.1.1.C** – MAAP4 must be used in accordance with Sections 4.1, 4.2, 4.3, 4.4 and 4. 5 of the June 2013 position paper	Started (2/2014)
10. **ISE Confirmatory Item 3.2.1.1.D** – MAAP modeling parameters	Started (2/2014)
11. **ISE Confirmatory Item 3.2.1.1.E** – The specific MAAP4 analysis case that was used to validate the timing of mitigating strategies in the Integrated Plan must be identified and should be available for review	Started (2/2014)
12. **ISE Confirmatory Item 3.2.1.2.A** – There was no discussion of the applicability of the assumed recirculation system leakage rates and the recirculation pump seal leakage rates to the ELAP event; the pressure dependence of the leak rates; whether the leakage was determined to be single-phase, two-phase, or steam at the donor cell; and how mixing of the leakage flow with the drywell atmosphere was modeled	Not Started
13. **ISE Confirmatory Item 3.2.2.A** – Evaluation of the refueling floor SFP area for steam and condensation was not yet completed. Mitigating strategies were not discussed in the Integrated Plan or during the audit process	Started (2/2014)

Table 3
Status of NMP2 Interim Staff Evaluation (ISE) Open and Confirmatory Items (cont'd)

ISE Confirmatory Items	Status
14. **ISE Confirmatory Item 3.2.3.A** – Perform an evaluation of containment structures to identify necessary actions to enable implementation of the strategy with running RCIC with elevated temperatures	Started (2/2014)
15. **ISE Confirmatory Item 3.2.4.2.A** – The completion and determination of acceptable results for all of the calculations associated with the proposed strategies for ventilation and critical equipment cooling (e.g., RCIC and Battery Rooms) are required	Started (2/2014)
16. **ISE Confirmatory Item 3.2.4.4.A** – The potential restoration of a portion of the Emergency Lighting System when Division I 600 VAC Unit Substation 2EJS*US1 (or alternatively Division II 2EJS*US3) is repowered is currently under evaluation. NMP2 will provide a summary of the restoration of Emergency Lighting expected to be restored in a future update	Not Started
17. **ISE Confirmatory Item 3.2.4.4.B** – Follow-up of communication commitments as discussed in the staff analysis (ML 13100A236) is required	Started (2/2015)
18. **ISE Confirmatory Item 3.2.4.6.A** – Licensee to provide calculation and basis for use of extrapolated station blackout (SBO) evaluation for Main Control Room habitability	**Submitted for Closure** (2/2015)
19. **ISE Confirmatory Item 3.2.4.8.A** – The licensee stated that when the design review of the portable generator protection is completed, the specific details on the protection schemes to protect Class 1E equipment from faults from the portable FLEX equipment will be provided in a future update	Not Started
20. **ISE Confirmatory Item 3.2.4.8.B** – The licensee will provide an updated summary of the sizing calculations for the FLEX generators at a future update	**Submitted for Closure** (2/2015)
21. **ISE Confirmatory Item 3.2.4.9.A** – The licensee stated that a summary of the refueling strategies for FLEX equipment will be provided when finalized at a future date	**Submitted for Closure** (2/2015)
22. **ISE Confirmatory Item 3.2.4.10.A** – The licensee stated that a finalized summary of battery coping time, DC load profile, discussion of loads shed, and minimum DC voltage will be provided in a future update	**Submitted for Closure** (2/2015)

Table 3
Status of NMP2 Interim Staff Evaluation (ISE) Open and Confirmatory Items (cont'd)

ISE Confirmatory Items	Status
23. **ISE Confirmatory Item 3.4.A** – The program or process to request RRC equipment was not discussed in the Integrated Plan or during the audit process	**Submitted for Closure** (2/2015)
24. **ISE Confirmatory Item 3.4.8** – Sizing calculations of RRC FLEX equipment and the compatibility of RRC equipment to plant connection points was not discussed in the Integrated Plan or during the audit process	**Submitted for Closure** (2/2015)

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 OIP described in this enclosure.

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 Modifying 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), 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
7. Letter from J. S. Bowen (NRC) to J. A. Spina, Nine Mile Point Nuclear Station, Units 1 and 2 – Interim Staff Evaluations Relating to Overall Integrated Plans in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF 1129 and MF1130), dated December 19, 2013
8. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), 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
9. NEI Position Paper Shutdown and Refueling: ADAMS Accession No. ML13273A514
10. NRC Endorsement of NEI Shutdown and Refueling Paper: ADAMS Accession No. ML13267A382
11. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), 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), dated August 26, 2014
12. Letter from M. G. Korsnick (CENG) to Document Control Desk (NRC), Response to March 12, 2012, Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations of the Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident, Enclosure 5, Recommendation 9.3, Emergency Preparedness – Staffing, Requested Information Items 1, 2 and 6 – Phase 2 Staffing Assessment