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NL-14-031

February 27, 2014

U.S. Nuclear Regulatory Commission  
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**SUBJECT:** Indian Point Energy Center's Second Six-Month Status Report for the Implementation of Order EA-12-049 Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (TAC Nos. MF0744 and MF0745)  
Indian Point Unit Numbers 2 and 3  
Docket Nos. 50-247 and 50-286  
License Nos. DPR-26 and DPR-64

- 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
  2. NRC Interim Staff Guidance JLD-ISG-2012-01, Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, Revision 0, dated August 29, 2012
  3. NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 0, dated August 2012
  4. Entergy letter to NRC (NL-12-144), Initial Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated October 29, 2012
  5. Entergy letter to NRC (NL-13-042), Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013
  6. Entergy letter to NRC (NL-13-110), Indian Point Energy Center's First Six-Month Status Report for the Implementation of Order EA-12-049 Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (TAC Nos. MF0744 and MF0745), dated August 27, 2013

A151  
LRR

Dear Sir or Madam:

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

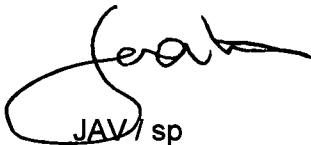
Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the Entergy initial status report regarding mitigation strategies. Reference 5 provided the Entergy overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. Reference 6 provided the first six-month status report. The purpose of this letter is to provide the second six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The attached report provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

This letter contains no new regulatory commitments. Should you have any questions regarding this submittal, please contact Mr. Robert Walpole, Manager, Regulatory Affairs at (914) 254-6710.

I declare under penalty of perjury that the foregoing is true and correct; executed on February 27, 2014.

Sincerely,



JAV/sp

Attachment: Indian Point Energy Center's Second Six-Month Status Report for the Implementation of Order EA-12-049 Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events

cc: Mr. Douglas V. Pickett, Senior Project Manager, NRC NRR DORL  
Mr. William M. Dean, Regional Administrator, NRC Region 1  
NRC Resident Inspectors Office  
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA  
Ms. Bridget Frymire, New York State  
Mr. Robert J. Fretz Jr., NRC NRR OE OB  
Mr. Robert L. Dennig, NRC NRR DSS SCVB  
Ms. Jessica A. Kratchman NRC NSIR DPR DDEP IRIB  
Mr. Eric E. Bowman, NRC NRR DPR PGCB  
Ms. Eileen M. Mckenna, NRC NRO DSRA BPTS NRC NRR DSS SCVB

ATTACHMENT TO NL-14-031

INDIAN POINT ENERGY CENTER'S SECOND SIX-MONTH  
STATUS REPORT FOR THE IMPLEMENTATION OF ORDER  
EA-12-049 MODIFYING LICENSES WITH REGARD TO  
REQUIREMENTS FOR MITIGATION STRATEGIES FOR  
BEYOND-DESIGN-BASIS EXTERNAL EVENTS

ENTERGY NUCLEAR OPERATIONS, INC.  
INDIAN POINT NUCLEAR GENERATING UNIT NOS. 2 and 3  
DOCKET NOS. 50-247 and 50-286

**Indian Point Energy Center's Second Six Month Status Report  
for the Implementation of Order EA-12-049 Order Modifying  
Licenses with Regard to Requirements for Mitigation  
Strategies for Beyond-Design-Basis External Events**

## **1 Introduction**

Entergy Nuclear Operations, Inc. (Entergy) developed an Overall Integrated Plan (Reference 1) for Indian Point Energy Center (IPEC), documenting the diverse and flexible strategies (FLEX), in response to Reference 2. This attachment provides an update of milestone accomplishments since submittal of the last status report (Reference 3), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

## **2 Milestone Accomplishments**

The following milestone(s) have been completed since July 31, 2013, and are current as of January 31, 2014:

- First Six-Month Status Report — August 2013
- Second Six-Month Status Report — Complete with submission of this document in February 2014
- PWROG issues NSSS-specific guidelines
- N-1 Walkdown (Unit 3)

## **3 Milestone Schedule Status**

The following provides an update to Attachment 2 of the Overall Integrated Plan. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed. The milestone listing has been revised to include Unit 2 and Unit 3 sections for unit specific milestones.

- The target completion date for Develop Strategies with RRC has been revised from November 2013 to October 2015.
- The target completion date for On-site FLEX Equipment - Purchase / Procure (Unit 2) has been revised from December 2014 to December 2015.
- The target completion dates for Procedures - Create Indian Point FSG and Create Maintenance Procedures (Unit 2) have been revised from October 2014 to October 2015.
- The target completion dates for Training- Develop Training Plan and Implement Training (Unit 2) have been revised from May 2015 and November 2015 to August 2015 and April 2016.
- The target completion dates for Training - Develop Training Plan and Implement Training (Unit 3) have been revised from May 2015 and November 2015 to November 2014 and April 2015.

These new milestone target completion dates do not impact the Order implementation date.

<b>Milestone</b>	<b>Target Completion Date*</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
<b>Submit Overall Integrated Implementation Plan</b>	Feb 2013	Complete	
<b>Submit Six Month Updates</b>			
Update 1	Aug 2013	Complete	
Update 2	Feb 2014	Complete	
Update 3	Aug 2014	Not Started	
Update 4	Feb 2015	Not Started	
Update 5	Aug 2015	Not Started	
Update 6	Feb 2016	Not Started	
Update 7	Aug 2016	Not Started	
<b>Perform Staffing Analysis</b>	Nov 2014	Started	
<b>Off-site FLEX Equipment</b>			
Develop Strategies with RRC	Nov 2013	Started	Oct 2015
<b>Procedures</b>			
PWROG issues NSSS-specific guidelines	Jan 2014	Complete Issued May 2013	
<b>Validation / Demonstration</b>	May 2016	Not Started	
<b>Submit Completion Report</b>	Jun 2016	Not Started	
<b>Unit 2 Specific Milestones</b>			
<b>Modifications</b>			
Engineering and Implementation			
N-1 Walkdown (Unit 2)	Spring 2014	Not Started	
Design Engineering	Dec 2014	Not Started	
Unit 2 Implementation Outage	Apr 2016	Not Started	
<b>On-site FLEX Equipment</b>			
Purchase / Procure	Dec 2014	Started	Dec 2015
<b>Off-site FLEX Equipment</b>			
Develop Strategies with RRC	Nov 2013	Started	
<b>Procedures</b>			
Create Indian Point FSG	Oct 2014	Not Started	Oct 2015
Create Maintenance	Oct 2014	Not Started	Oct 2015

<b>Milestone</b>	<b>Target Completion Date*</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
Procedures			
<b>Training:</b>			
Develop Training Plan	May 2015	Not Started	Aug 2015
Implement Training	Nov 2015	Not Started	Apr 2016
<b>Unit 3 Specific Milestones</b>			
<b>Modifications</b>			
Engineering and Implementation			
N-1 Walkdown (Unit 3)	Spring 2014	Complete	
Design Engineering	Dec 2014	Started	
Unit 3 Implementation Outage	Apr 2015	Not Started	
<b>On-site FLEX Equipment</b>			
Purchase / Procure	Dec 2014	Started	
<b>Procedures</b>			
Create Indian Point FSG	Oct 2014	Started	
Create Maintenance Procedures	Oct 2014	Started	
<b>Training:</b>			
Develop Training Plan	May 2015	Not Started	Nov 2014
Implement Training	Nov 2015	Not Started	Apr 2015

\* - Target Completion Date is the last submitted date from either the overall integrated plan or previous six-month status reports

#### **4 Changes to Compliance Method**

In the continuing design development phase of the FLEX project at IPEC, changes have been identified to the compliance strategies as described in the original OIP (Reference 1).

- Pages 16, 17, 28, 39, and 49 of the OIP indicate that portable FLEX equipment will be stored in the existing Unit 1 Chemical Systems Building. The Unit 1 Chemical Systems Building is no longer the selected means of storage for FLEX equipment.
- On Page 50 of the OIP, it is stated, "The electrical portion of the Phase 3 coping strategy has the main goal of repowering the 480 Vac equipment to aid in cooling down the plant to a stable, Mode 5 condition. This will be achieved through the same spare breaker connection points in Bus 2A or 6A as presented for Phase 2." The IPEC strategy has changed such that the breaker connections for Phase 3 will be different from Phase 2. Phase 3 will now use spare breaker connections on Bus 3A or Bus 6A.

- The OIP provides a discussion of the sequence of events (SOE) on pages 6 through 8 and in Attachment 1A, Sequence of Events Timeline, pages 62 through 67. Several of the time constraints have been revised.
  - The timeline for debris removal in the event has changed. Three hours is no longer valid. The current plan for debris removal in accordance with the staffing plan is to begin at 1.5 hours and continue to hour eight using onsite personnel and extended as necessary with offsite personnel.
  - The OIP SOE states, "RCS makeup is required for inventory at 5.2 hours assuming cooldown is commenced at one 1 hour." This is no longer the required time. The makeup time is now 16.11 hours (based on WCAP-17601-P, Table 5.2.2-1). This time is based on a cooldown commencing at 2 hours from the ELAP. Therefore, with IP3 cooldown commencing at 0.5 hours (consistent with current SBO procedures), additional margin would exist.
  - The timeline for CST makeup has changed from 32 hours to 36 hours.
- In numerous locations (e.g., pages 7, 8 and 20), the OIP states that the boric acid storage tank (BAST) is used as the water source for RCS inventory control and sub-criticality. The strategy for IPEC no longer credits the BAST. The refueling water storage tank (RWST) is used instead, with the opposite unit's RWST serving as the backup source of borated water.
- On Page 25 of the OIP, it is stated, "The Phase 2 activities for RCS inventory control involve aligning a pump to provide borated coolant for RCS makeup and to maintain the reactor subcritical. The FLEX pump will be deployed at a time consistent with the loss of single phase natural circulation. This pump will provide core make-up such that a limited period of two phase natural circulation cooling occurs maintaining the respective flow conditions desired in order to provide adequate core cooling." The current strategy would prevent the two phase condition from occurring (based on injection need time of 16.11 hours per WCAP-17601-P).
- On Page 44 of the OIP, it is stated, "Additional equipment may be required to be powered during this event such as portable lighting and ventilation fans. These are not conveniently powered via the FLEX generator." The current strategy is to restore some HVAC to the control room and the battery room with the Phase 2 portable generator. Lighting panels for high priority areas (e.g., control building, control room, and some primary auxiliary building rooms) will also be repowered by the Phase 2 portable generator.
- The IPEC FLEX strategy has been revised to allow use of a diesel driven air compressor. The compressor may be used to support continued remote operation of Turbine Driven Auxiliary Boiler Feed Pump (TDABFP) for SG level control and Automatic Dump Valves (ADVs).
- On Page 41 of the OIP, it is stated, "The SFP cooling system pumps will be repowered using a larger generator from the RRC or a mobile heat exchanger system from the RRC will be used to reestablish SFP cooling." While this may

eventually be accomplished, the primary strategy for Phase 3 will be maintaining the Phase 2 strategy of boil off and makeup.

- The Phase 2 electrical strategy, as described on Pages 44 through 46, has changed such that the FLEX generator primary connection will power Bus 5A through a spare breaker, with the secondary connection powering Bus 3A and Bus 5A through reconfiguration of terminations.
- The development of the detail design has resulted in the modification of some of the mechanical and electrical connection points from their descriptions provided in the OIP. The changes are the result of the detailed design process or the adoption of the changes in compliance methods identified above. While some of the specific connections points and area locations may have changed, the overall intent of NEI 12-06 has been maintained.

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

IPEC 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 Interim Staff Evaluation

The following tables provide a summary and status of any open items documented in the Overall Integrated Plan and any open items or confirmatory items documented in the Interim Staff Evaluation (ISE). A fourth table includes a listing of Audit Questions and the status of each item.

Overall Integrated Plan Open Item	Status
There were no open items documented in the IPEC Overall Integrated Plan	N/A

Interim Staff Evaluation Open Items		Status
3.1.2.A	Review of the licensee's new flooding level evaluation results and its potential impact on the flooding hazard analyses previously provided in their Integrated Plan and during the audit process is identified as an Open Item. If the flooding levels are modified based on the results of this review, it may affect the evaluation of the deployment described in Section 3.1.2.2 of this evaluation.	The initial flooding assessment has been completed for a 500,000 year flood and was submitted to the NRC in Dec 2013. There are currently no major changes in FLEX strategy based on the flooding evaluation. The evaluation is related to Audit Question 6 and will be uploaded to the ePortal.
3.2.4.7.A	It is noted that NEI 12-06 guidance only credits water supplies that are robust with respect to seismic events, floods, and high winds, and the	The Tank Tornado Wind/Missile Evaluation is complete. The



<b>Interim Staff Evaluation Open Items</b>		<b>Status</b>
	associated missiles. The licensee should determine if a water supply for the SGs and RCS would be available after a tornado event by analyzing the tornado characteristics for the site compared to the separation characteristics of the tanks. This is an alternate approach from the strategies identified in NEI 12-06.	evaluation is related to Audit Question 41 and will be uploaded to the ePortal.

<b>Interim Staff Evaluation Confirmatory Items</b>		<b>Status</b>
3.1.1.2.A	Confirm that at least one connection point for the FLEX AFW pump is accessible and is located inside a building that is seismically robust as described in Consideration 2 of NEI 12-06, Section 5.3.2.	In Progress
3.1.1.2.8	Confirm that the pickup trucks, forklifts or any other equipment that will be used to deploy the portable equipment for implementing FLEX strategies will be reasonably protected from the event as described in Consideration 5 of NEI 12-06, Section 5.3.2.	In Progress
3.1.1.2.C	Confirm provisions will be made to ensure that access to all required areas will be assured in the event of a power failure as described in Consideration 5 of NEI 12-06, Section 5.3.2.	In Progress
3.1.1.2.D	Confirm that the licensee has reviewed the deployment paths from the near site storage areas to the site and from the onsite storage areas to the deployment location to verify that these paths are not subject to soil liquefaction concerns as described in Consideration 1 of NEI 12-06, Section 5.3.2.	In Progress
3.1.1.3.A	Confirm that the licensee's review of the potential impacts of large internal flooding sources that are not seismically robust and do not require ac power has been completed per consideration 2 of NEI 12-06, Section 5.3.3.	In Progress
3.1.1.4.A	Confirm that the intermediate staging area has been selected and implementing procedures have been developed.	In Progress
3.1.2.2.A	Confirm that evaluations address: whether procedures have been established for actions to be taken upon receipt of a hurricane warning;	In Progress

<b>Interim Staff Evaluation Confirmatory Items</b>		<b>Status</b>
	ensuring that fuel in oil storage tanks would not be inundated or damaged by flooding; and, whether the means (e.g., trucks) for moving FLEX equipment is reasonably protected from the event.	
3.2.1.A	Confirm which analysis performed in WCAP-17601-P is being applied to Indian Point. Also confirm the licensee has adequately justified the use of that analysis by identifying and evaluating the important parameters and assumptions demonstrating that they are representative of Indian Point and appropriate for simulating the ELAP transient.	In Progress
3.2.1.1.A	Confirm that the licensee is using NOTRUMP and has taken into account its limitations. Reliance on the NOTRUMP code for the ELAP analysis of Westinghouse plants is limited to the flow conditions prior to reflux condensation initiation. This includes specifying an acceptable definition for reflux condensation cooling.	In Progress
3.2.1.3.A	Confirm that the licensee has satisfactorily addressed the applicability of Assumption 4 on page 4-13 of WCAP-17601 which states that decay heat is per ANS 5.1-1979 + 2 sigma, or equivalent. If the ANS 5.1-1979 + 2 sigma model is used in the Indian Point ELAP analysis, address the adequacy of the use of the decay heat model in terms of the plant-specific values of the following key parameters: ( 1) initial power level, (2) fuel enrichment, (3) fuel burnup, (4) effective full power operating days per fuel cycle, (5) number of fuel cycles, if hybrid fuels are used in the core, and (6) fuel characteristics (addressing whether they are based on the beginning of the cycle, middle of the cycle, or end of the cycle). If a different decay heat model is used, describe the specific model and address the adequacy of the model and the analytical results.	In Progress
3.2.1.6.A	Confirm that the licensee has finalized its strategy for controlling the RCS pressure to prevent nitrogen from escaping from the safety injection accumulators into the RCS until the isolation valves can be closed.	In Progress
3.2.1.8.A	The PWROG submitted to NRC a position	In Progress

<b>Interim Staff Evaluation Confirmatory Items</b>		<b>Status</b>
	paper, dated August 15, 2013, which provides test data regarding boric acid mixing under single-phase natural circulation conditions and outlined applicability conditions intended to ensure that boric acid addition and mixing would occur under conditions similar to those for which boric acid mixing data is available. During the audit process, the licensee informed the NRC staff of its intent to abide by the generic approach discussed above. The licensee should address the clarifications in the NRC endorsement letter dated January 8, 2014.	
3.2.1.9.A	Confirm that the licensee has specified the required time for the operator to realign each of the above discussed pumps and confirm that the required times are consistent with the results of the ELAP analysis. Confirm that the licensee discussed the analyses that are used to determine the required flow rate and corresponding total developed head for each of the portable pumps and also to justify that the required capacities of each of the above-discussed portable pumps are adequate to maintain core cooling and sub-criticality during phases 2 and 3 of ELAP. Confirm that the licensee has included a discussion and justification of computer codes/methods and assumptions used in the analyses above.	In Progress
3.2.1.9.B	Confirm that the licensee has provided an evaluation that demonstrates flow through a 2-inch connection will be sufficient to provide adequate flow to maintain the SG level using the alternate SG FLEX pump.	In Progress
3.2.2.A	Confirm that the licensee has satisfactorily explained the strategy to provide a secondary connection for SFP makeup if the building is inaccessible, and explain where these valves are and if access to these valves will be available during an ELAP event.	In Progress
3.2.3.A	Confirm that a containment evaluation has been completed and, based on the results of this evaluation; required actions to ensure maintenance of containment integrity and required instrument function will be developed.	In Progress
3.2.4.2.A	Confirm that the assessment of the predicted	In Progress

<b>Interim Staff Evaluation Confirmatory Items</b>		<b>Status</b>
	maximum temperatures in rooms with equipment that is required for FLEX strategies during the ELAP demonstrates that the equipment will continue to function as needed.	
3.2.4.2.B	Confirm that hydrogen concentration in the battery rooms during battery recharging would be maintained at an acceptable level.	In Progress
3.2.4.3.A	Confirm that the need for heat tracing has been evaluated for the BAST and all other equipment necessary to ensure that all FLEX strategies can be implemented successfully.	In Progress
3.2.4.6.A	Confirm that habitability limits will be maintained and/or operator protective measures will be employed in all Phases of an ELAP to ensure operators will be capable of FLEX strategy execution under adverse temperature conditions. Examples of areas of concern are the control room, TDABFW pump room, SFP area, and charging pump room.	In Progress
3.2.4.7.B	Confirm that the licensee has evaluated the acceptability of the missile protection for the Unit 2 BAST.	In Progress
3.2.4.9.A	Confirm that method for supplying fuel oil has been finalized. Also confirm that the fuel required for each FLEX piece of equipment has been established and that the total fuel usage has been calculated to demonstrate that sufficient fuel with margin exists on site.	In Progress
3.2.4.10.A	<p>Confirm that analysis of the following aspects of the dc power requirements have been identified and evaluated:</p> <ul style="list-style-type: none"> <li>a. The dc load profile with the required loads for the mitigating strategies to maintain core cooling, containment, and spent fuel pool cooling;</li> <li>b. The loads that will be shed from the dc bus, the equipment location (or location where the required action needs to be taken), and the required operator actions and the time to complete each action</li> <li>c. The basis for the minimum dc bus voltage that is required to ensure proper operation of all required electrical</li> </ul>	In Progress

Interim Staff Evaluation Confirmatory Items		Status
	equipment.	
3.4.A	Confirm that the 480V portable/FLEX generators are adequately sized to supply loads assumed for implementing Phase 2 strategies.	In Progress

Audit Questions	Status	Completion or Target Date
IPEC-002	In progress	August 2014
IPEC-004	In progress	August 2014
IPEC-006	In progress	August 2014
IPEC-008	In progress	August 2014
IPEC-009	In progress	August 2014
IPEC-012	In progress	August 2014
IPEC-013	In progress	August 2014
IPEC-017	In progress	August 2014
IPEC-020	In progress	August 2014
IPEC-021	In progress	August 2014
IPEC-025	In progress	August 2014
IPEC-026	In progress	August 2014
IPEC-029	In progress	August 2014
IPEC-031	In progress	August 2014
IPEC-033	In progress	August 2014
IPEC-034	In progress	August 2014
IPEC-035	In progress	August 2014
IPEC-036	In progress	August 2014
IPEC-041	In progress	August 2014
IPEC-042	In progress	August 2014
IPEC-043	In progress	August 2014
IPEC-045	In progress	August 2014
IPEC-046	In progress	August 2014
IPEC-047	In progress	August 2014
IPEC-048	In progress	August 2014
IPEC-049b	In progress	August 2014
IPEC-049i	In progress	August 2014
IPEC-050	In progress	August 2014
IPEC-051	In progress	August 2014

## 7 Potential Interim Staff Evaluation Impacts

The following items have been identified which have potential impact to the Interim Staff Evaluation (ISE).

1. ISE/TER Section 3.1.1.1, Page 6, Item 3, the TER states "On pages 16, 27, 38 and 46 of the Integrated Plan the licensee stated that the storage location of IPEC's FLEX equipment is the existing Unit 1 Chemical Systems Building." Unit 1 Chemical Systems Building is no longer the selected means of storage for FLEX equipment.
2. ISE/TER Section 3.1.1.2, Page 8, paragraph 2, the TER states "This will be achieved through the same spare breaker connection points in Bus 2A...." The IPEC strategy has been changed such that breaker connection will be to Bus 3A (instead of Bus 2A) and Bus 6A through separate breakers from Phase 2.
3. ISE/TER Section 3.1.1.2, Page 7 and Section 3.1.2.2, Page 13, the TER states "On page 17 of the Integrated Plan, the licensee specified that deployment from the Unit 1 Chemical Systems Building would necessitate..." Unit 1 Chemical Systems Building is no longer selected/accepted means of storage for FLEX equipment..
4. ISE/TER Section 3.1.3.2, Page 18, the TER states "On pages 62 through 67, Attachment 1A, Sequence of Events Timeline, in the Integrated Plan regarding the sequence of events and time constraints required for success, the licensee stated that the earliest need for debris removal to facilitate access to deploy the RCS makeup pump would be at 3 hours into the event." The timeline for debris removal in the event has changed. 3 hours is no longer valid. The current plan for debris removal in accordance with the staffing plan is to begin at 1.5 hours and continue to hour 8 using onsite personnel and extended as necessary with offsite personnel.
5. ISE/TER Section 3.1.4.1, Page 20, the TER states "On pages 17, 27, 39 and 47 of the Integrated Plan, the licensee stated that portable equipment would be maintained in climate controlled storage locations to protect it from snow, ice and extreme cold." The climate controlled storage locations for the portable equipment is changing. Climate control is still to be determined.
6. ISE/TER Section 3.2.1.2, Page 27, the TER states "During the audit process the licensee stated that IPEC Units 1 and 2 use Westinghouse model 93A....". Should be Units 2 and 3. Typo needs to be corrected on the ISE.
7. ISE/TER Section 3.2.1.6, Page 32, the TER states "On pages 6, 7 and 8 and in Attachment 1A of the Integrated Plan the licensee stated: At 8.0 hours align FLEX RCS makeup pump from boric acid storage tank (BAST)." The strategy for IPEC no longer credits the boric acid storage tank.
8. ISE/TER Section 3.2.1.6, Page 32, the TER states "RCS boration is required for shutdown margin at 23.3 hours." The current analysis indicates that time for boration (beyond that provided by SI Accumulators) is 24.4 hours.

9. ISE/TER Section 3.2.1.6, Page 32, the TER states "RCS makeup is required for inventory at 5.2 hours," This is no longer the required time. Time is now 16.11 hours (based on WCAP-17601-P, Table 5.2.2-1). This time is based on a cooldown starting at 2 hours from ELAP. Therefore, with IP3 cooldown commencing at 0.5 hours, additional margin would exist.
10. ISE/TER Section 3.2.1.6, Page 32, the TER states "It is assumed the accumulators are isolated." This would not be the "normal" system line-up and therefore is no longer an assumption. Accumulators are not assumed to be isolated.
11. ISE/TER Section 3.2.1.9, Page 35, the TER states "This pump will provide core make-up such that a limited period of two phase natural circulation cooling occurs..." Current strategy would prevent the two phase condition from occurring (based on injection need time of 16.11 hrs per WCAP-17601-P). The only period of two phase flow expected to occur would happen during the cooldown before the accumulators can restore system mass (WCAP-17601-P Table 5.2.2-1).
12. ISE/TER Section 3.2.1.9, Page 35, the TER states "To ensure that the core is maintained subcritical, borated injection into the RCS is provided from the installed, high concentration boric acid tanks via a FLEX pump." The strategy for source of borated injection has changed to the RWSTs.
13. ISE/TER Section 3.2.1.9, Page 35, the TER states "This has been identified as Confirmatory Item 3.1.1.9.B in Section 4.2." This should be Confirmatory Item 3.2.1.9.B.
14. ISE/TER Section 3.2.4.1, Page 38, the TER states "In the Integrated Plan, the licensee made no reference regarding the need for, or use of, additional cooling systems necessary to assure that coping strategy functionality can be maintained." Current Phase 3 strategy will repower RHR and CCW systems and a Containment Cooler. These systems / components will require cooling water / systems which will be provided by directing water from the discharge canal to the Containment Cooler and the CCW HX via the RRC Phase 3 UHS pump and Service Water piping.
15. ISE/TER Section 3.2.4.3, Page 40, the TER states "Other than a discussion of the strategy for FLEX RCS makeup from the BAST in the Integrated Plan,..." The strategy no longer relies on the using the BAST.
16. ISE/TER Section 3.2.4.3, Page 40, the TER states "...the licensee did not adequately address heat tracing." IP-CALC-13-00058 addresses the issue of heat tracing. Heat tracing may be required for RWST only. All other tanks relatively immune.
17. ISE/TER Section 3.2.4.8, Page 45, the TER states "This will be achieved through the same spare breaker connection points in Bus 2A or 6A used for Phase 2." The IPEC strategy has changed such that the breaker connections for Phase 3 will be different from Phase 2. They will be spare breaker connections on Bus 3A or Bus 6A.
18. ISE/TER Section 3.2.4.9, Page 46, the TER states "Establish FLEX equipment fuel deployment at 13 hours." Current strategy assumes fuel deployment occurs

at hour 10 with a constraint that deployment would be required before hour 24 (based on FLEX DG deployed at hour 8 with all FLEX equipment having at least 16 hours of fuel in onboard tanks). This timeline may be changing based on plant desires to not have a separate fuel deployment vehicle.

## **8 References**

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

1. Entergy letter to NRC (NL-13-042), Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013
2. NRC Order Number EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.
3. Entergy letter to NRC (NL-13-110), Indian Point Energy Center's First Six-Month Status Report for the Implementation of Order EA-12-049 Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (TAC Nos. MF0744 and MF0745), dated August 27, 2013
4. NRC letter to Entergy, Indian Point Nuclear Generating Unit Nos. 2 and 3 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF0744 and MF0745), dated January 24, 2014