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NL-15-059

May 20, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Rockville, MD 20852-2738

SUBJECT: Notification of Full Compliance with Order EA-12-049 "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" and Order EA-12-051 "Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation" (TAC Nos. MF0745 and MF0738)
Indian Point Unit Number 3
Docket No. 50-286
License No. 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 (ML 12054A736).
 2. NRC Order Number EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated March 12, 2012 (ML12054A682)
 3. 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 (ML13079A348)
 4. Entergy letter to NRC (NL-13-043), Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-043), dated February 27, 2013 (ML 13079A348)
 5. NRC Letter Regarding Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF0744 and MF0745), January 24, 2014 (ML13337A594)
 6. NRC Letter Report for the Onsite Audit Regarding Implementation

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of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0744, MF0745, MF0737, and MF0738), December 9, 2014 (ML14335A642)

- 7 NRC Letter Regarding Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan in Response to Order EA-12-051 (Spent Fuel Pool Instrumentation) (TAC Nos. MF0737 and MF0738), November 8, 2013 (ML 13298A805)

Dear Sir or Madam:

The purpose of this letter is to notify the NRC that Indian Point 3 (IP3) is in compliance with Orders EA-12-049 and EA-12-051. On March 12, 2012, the Nuclear Regulatory Commission ("NRC" or "Commission") issued Orders EA-12-049 (Reference 1) and Order EA-12-051 (Reference 2) to Entergy Nuclear Operations Inc. (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 2 was immediately effective and directed Entergy to install reliable spent fuel pool level instrumentation.

Order EA-12-049, Section IV.A.2 and Order EA-12-051, Section IV.A.2 requires completion of full implementation to be no later than two refueling cycles after submittal of the Overall Integrated Plan (OIP), as required by Condition C.1.a, or December 31, 2016, whichever comes first. In addition, Section IV.C.3 of Orders EA-12-049 and EA-12-051 require that Licensees and CP holders report to the NRC when full compliance is achieved. The OIP for EA-12-049 was submitted (Reference 3) on February 28, 2013 and the OIP for EA-12-051 was submitted (Reference 4) on February 27, 2013. On March 24, 2015, IP3 entered Mode 2 (startup) following the 3RO18 refueling outage. Full compliance with Orders EA-12-049 and EA-12-051 was achieved at that time as discussed in the Attachments.

Attachment 1 provides a brief summary of the key elements associated with compliance to Order EA-12-049 for IP3. A listing of each item that has not been docketed as closed by the NRC from the Open and Confirmatory Items identified in the Interim Staff Evaluation (Reference 5), Open items in the OIP (Reference 3), and Audit questions and open items (Reference 6) is provided which references the responses. The responses are based on information and analyses that have been completed as of the date of full compliance. As such, Energy considers these items complete pending NRC closure.

Attachment 2 provides a brief summary of the key elements associated with compliance to Order EA-12-051 for IP3. A listing of each item that has not been docketed as closed by the NRC from the Open and Confirmatory Items identified in the Interim Staff Evaluation (Reference 7), Open items in the OIP (Reference 4), and Audit questions and open items (Reference 6) is provided which references the responses. The responses are based on information and analyses that have been completed as of the date of full compliance. As such, Energy considers these items complete pending NRC closure.

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

I declare under penalty of perjury that the foregoing is true and correct; executed on May 20, 2015.

Sincerely,



LC / sp

Attachments: 1. Indian Point 3 Summary of Compliance Bases for Order EA-12-049
2. Indian Point 3 Summary of Compliance Bases for Order EA-12-051

cc: Mr. Douglas V. Pickett, Senior Project Manager, NRC NRR DORL
Mr. Daniel H. Dorman, Regional Administrator, NRC Region 1
Mr. John Boska, Senior Project Manager, NRC NRR DORL
NRC Resident Inspectors Office
Mr. John B. Rhodes, President and CEO, NYSERDA

ATTACHMENT 1 TO NL-15-059

INDIAN POINT 3 SUMMARY OF COMPLIANCE BASES FOR ORDER EA-12-049

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

**Indian Point Unit Three's Compliance Letter
for the Implementation of Order EA-12-049 Order Modifying
Licenses with Regard to Requirements for Mitigation
Strategies for Beyond-Design-Basis External Events**

BACKGROUND

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-049 "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (Reference 1) to Entergy. This Order was effective immediately and Entergy Nuclear Operations, Inc. (Entergy) developed an Overall Integrated Plan (OIP) (Reference 2) for Indian Point Energy Center (IPEC), documenting the diverse and flexible strategies (FLEX) required. The Order required compliance prior to plant startup from the second refueling outage following submittal of the OIP, or by December 31, 2016, whichever comes first. The compliance date for Indian Point 3 (IP3) was March 24, 2015. The NRC staff requested that the compliance report be submitted within 60 days of the compliance date. The information provided herein documents full compliance for Indian Point 3 in response to the Order.

Milestone Schedule - Items Complete

The following milestone(s) have been completed as of March 24, 2015:

Milestone	Target Completion Date*	Activity Status
Submit Overall Integrated Implementation Plan	Feb 2013	Completed
Submit Six Month Updates		
Update 1	Aug 2013	Completed
Update 2	Feb 2014	Completed
Update 3	Aug 2014	Completed
Update 4	Feb 2015	Completed
Perform Staffing Analysis	Nov 2014	Completed
Off-site FLEX Equipment		
Develop Strategies with NSRC	March 2015	Completed
Procedures		
PWROG issues NSSS-specific guidelines	Jan 2014	Completed
Validation / Demonstration	March 2015	Completed
Submit Completion Report Unit 3	May 2015	Open

Milestone	Target Completion Date*	Activity Status
Modifications		
Engineering and Implementation		
N-1 Walkdown	Spring 2014	Completed
Design Engineering	Dec 2014	Completed
On-site FLEX Equipment		
Purchase / Procure	Jan 2015	Completed
Procedures		
Create Indian Point FSG	Oct 2014	Completed
Create Maintenance Procedures	March 2015	Completed
Training:		
Develop Training Plan	Nov 2014	Completed
Implement Training	March 2015	Completed

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

STRATEGIES – COMPLETE

Indian Point Unit 3 strategies are in compliance with Order EA-12-049. There are no strategy related Open Items, Confirmatory Items, or Audit Questions/Audit Report Open Items. Although there are items not reviewed by the NRC Staff, Entergy considers these items to be closed.

MODIFICATIONS – COMPLETE

The modifications required to support the FLEX strategies for Indian Point Unit 3 have been fully implemented in accordance with the station design control process.

EQUIPMENT – PROCURED AND MAINTENANCE & TESTING – COMPLETE

The equipment required to implement the FLEX strategies for Indian Point Unit 3 has been procured in accordance with NEI 12-06, Section 11.1 and 11.2, received at IPEC, initially tested/performance verified as identified in NEI 12-06, Section 11.5, and is available for use.

Maintenance and testing will be conducted through the use of the Preventative Maintenance program such that equipment reliability is achieved.

PROTECTED STORAGE – COMPLETE

The storage facility/facilities required to implement the FLEX strategies for Indian Point Unit 3 has been completed and provides protection from the applicable site hazards. The equipment required to implement the FLEX strategies for Indian Point Unit 3 is stored in its protected configuration.

PROCEDURES – COMPLETE

FLEX Support Guidelines (FSGs), for Indian Point Unit 3 have been developed, and integrated with existing procedures. The FSGs and affected existing procedures have been validated per NEI12-06, Section 11.4.3 and are available for use in accordance with the site procedure control program.

TRAINING – COMPLETE

Training for Indian Point Unit 3 has been completed in accordance with an accepted training process as recommended in NEI 12-06, Section 11.6.

STAFFING – COMPLETE

The staffing study for IPEC has been completed in accordance with 10CFR50.54(f), "Request for Information Pursuant to Title 10 of the Code of Federal Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force review of Insights from the Fukushima Dai-ichi Accident," Recommendation 9.3, dated March 12, 2012 (Reference 1), as documented in letter dated November 3, 2014 which submitted the Phase 2 staffing study (Reference 8).

NATIONAL SAFER RESPONSE CENTERS – COMPLETE

Entergy has established a contract with Pooled Equipment Inventory Company (PEICo) and has joined the Strategic Alliance for FLEX Emergency Response (SAFER) Team Equipment Committee for off-site facility coordination. It has been confirmed that PEICo is ready to support IPEC with Phase 3 equipment stored in the National SAFER Response Centers in accordance with the site specific SAFER Response Plan.

VALIDATION – COMPLETE

Entergy has completed performance of validation in accordance with industry developed guidance to assure required tasks, manual actions and decisions for FLEX strategies are feasible and may be executed within the constraints identified in the Overall Integrated Plan (OIP) / Final Integrated Plan (FIP) for Order EA-12-049.

FLEX PROGRAM DOCUMENT – ESTABLISHED

The Indian Point Unit 3 FLEX Program Document has been developed in accordance with the requirements of NEI 12-06.

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 the FLEX related NRC Audit Visit Open Items, which includes open items on previously issued Audit Questions and new Safety Evaluation (SE) Open Items that were not closed during the October 2014 NRC Audit Visit as documented in the NRCs Report for the Onsite Audit (Reference 12). A fifth table includes a listing of all Audit Questions and the status of each item. Where appropriate the tenses have been changed and items revised to reflect the completion of activities.

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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-006).
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 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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-041).

Interim Staff Evaluation Confirmatory Items		Status
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-036).
3.1.1.2.B	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.	This item was closed during the October 2014 NRC Audit Visit.
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.	<p>This item is addressed by updated AQ-IPEC-023 response.</p> <p>Entergy Response Update to E Portal to address ISE Confirmatory Item 3.1.1.2.C (02/27/2015)</p> <p>3-FSG-005, Initial Assessment and Flex Equipment, Step 4.2 notifies Security of ELAP and to expedite access per Security procedures listed (i.e., safeguards procedures 0-SE-001, Access Control, 0-SE-021, Integrated Response Plan, and 0-SE-301, Contingency Events). The FLEX Building is accessible by manual action using a come along. Security will be able to open vital areas, initially on uninterruptible power, when notified. Access through the SOCA and PA boundaries can be manually controlled by security. Truck barriers can be operated hydraulically using procedure 0-SE-005. The NRC Report (ML14335A642) for the onsite audit, issued on December 9, 2014, closed this item.</p>
3.1.1.2.D	Confirm that the licensee	This item was closed during the October 2014

Interim Staff Evaluation Confirmatory Items		Status
	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.	NRC Audit Visit (associated with AQ IPEC-002).
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-004).
3.1.1.4.A	Confirm that the intermediate staging area has been selected and implementing procedures have been developed.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-005).
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; 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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-006).
3.2.1.A	Confirm which analysis performed in WCAP-17601-P is being applied to Indian Point. Also	This item was closed following the October 2014 NRC Audit Visit as documented in Reference 13 (associated with AQ IPEC-012).

Interim Staff Evaluation Confirmatory Items		Status
	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.	
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.	<p>This item was closed following the October 2014 NRC Audit Visit as documented in Reference 13 (associated with AQ IPEC-012).</p> <p>Entergy Response Update to E Portal to address ISE Confirmatory Item 3.2.1.1.A (10/27/2014):</p> <p>The following updated response was superseded by the response to SE#5.</p> <p>“The analysis performed in Section 5.2.1 of WCAP-17601-P used the NOTRUMP computer code to develop the basis for the time lines in the Overall Integrated Plan for Indian Point Units 2 and 3.</p> <p>The PWROG submitted PWROG-14064-P, “Application of NOTRUMP Code Results for the Westinghouse Designed PWRs in Extended Loss of AC Power Circumstances”, to the NRC on September 26, 2014. PWROG-14064-P is the position paper on the use of the NOTRUMP thermal hydraulic computer code for analyzing the Westinghouse and CE NSSS designed reactor system response (RCS) to an extended loss of AC power (ELAP) event and addresses the USNRC questions relative to the applicability of the NOTRUMP code to the RCS analysis of an ELAP during various plant audits regarding flexible and diverse coping mitigating strategies (FLEX) implementation.”</p>
3.2.1.3.A	Confirm that the licensee has satisfactorily addressed the applicability of Assumption 4 on page	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-013).

Interim Staff Evaluation Confirmatory Items		Status
	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.	
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-035).
3.2.1.8.A	The PWROG submitted to NRC a position paper, dated August 15, 2013, which provides test data regarding boric acid mixing	This item is addressed by updated AQ IPEC-050 response. Entergy Response Update to E Portal for IPEC -50 (02/27/2015):

Interim Staff Evaluation Confirmatory Items	Status
	<p>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.</p> <p>Indian Point Unit 3 RCS makeup strategy was revised to provide RCS makeup prior to 11.9 hours, to prevent reflux cooling. This strategy is supported by PWROG-14027-P, Revision 1, Table 6-1, Category 1, Time to Enter Reflux Cooling. The RCS makeup strategy revision includes a new time-dependent seal leakage profile based on PWROG-14027-P, Revision 1 results (see SE#13). IPEC will continue to follow PWROG FLEX efforts that may impact this response.</p> <p>See SE#5 for additional information.</p>
3.2.1.9.A	<p>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</p> <p>This item is addressed by updated AQ IPEC-017 response.</p> <p>Entergy Response Update to E Portal (02/27/2015):</p> <p>In regards to the RCS Inventory Response, the Indian Point 3 RCS makeup strategy is revised to provide RCS makeup prior to 11.9 hours to prevent reflux cooling. This strategy is supported by the methodology developed on PWROG-14027-P, Revision 1, Table 6-1, Category 1, Time to Enter Reflux Cooling. The RCS makeup strategy revision includes a new time-dependent seal leakage profile based on PWROG-14027-P, Revision 1 results (see also updated response SE #13). IPEC will continue to follow PWROG FLEX efforts that may impact this response.</p>

Interim Staff Evaluation Confirmatory Items		Status
	of computer codes/methods and assumptions used in the analyses above.	
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-036).
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-034).
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.	<p>This item is addressed by updated AQ response spreadsheet on the E Portal. (Unit 3 Open Item from the October 2014 NRC Audit Visit.)</p> <p>Entergy Response Update to E Portal for Item 3.2.3.A for IPEC Unit 3 (02/27/2015)</p> <p>To address the information requested by the NRC Audit Visit Report (ML14335A642) related to ISE Confirmatory Item 3.2.3.A, the following update to the response is provided for IPEC Unit 3:</p> <p>The IPEC Unit 3 containment analysis has been revised to incorporate the leakage profile developed by applying PWROG-14015 Category 1 seal leakage rates and PWROG-14027 time period methodology to the IPEC FLEX cooldown timeline.</p> <p>The results of the revised MAAP analysis for IPEC Unit 3 indicate that the containment</p>

Interim Staff Evaluation Confirmatory Items		Status
		<p>design pressure and design temperature, which values are 47 psig and 271°F respectively, will not be exceeded during Phase 1 or 2 of a FLEX event when the plant was initially in Modes 1-4. As such, there are no coping strategies required for maintaining containment integrity during Phase 1 or 2. The only action necessary is to monitor containment pressure and temperature. When the RCS is in Mode 5 or 6, the revised MAAP analysis indicates that a BDBEE event may challenge containment pressure unless a vent path is established. The vent path has been determined to require an equivalent flow to that of a 4" hole in containment and to be opened within 10 hours of the event to guarantee that containment will not pressurize sufficiently to challenge containment pressure or temperature design limits under the assumed worst case boil-off conditions. 10 hours is adequate time to ensure that a vent path is established.</p> <p>Calculation IP-CALC-13-00081, Rev. 1, IP3 MAAP 4.0.5 Containment Analysis for an Extended Loss of all AC Power Event (ELAP), January 2015, is available on the E Portal.</p>
3.2.4.2.A	<p>Confirm that the assessment of the predicted 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.</p>	<p>This item is addressed by updated AQ IPEC-020 response. (Unit 3 Open Item from the October 2014 NRC Audit Visit.)</p> <p>Entergy Response Update to E Portal for Items 3.2.4.2.A and 3.2.4.6.A (02/27/2015):</p> <p>Additionally, to address the information requested by the NRC Audit Visit Report (ML14335A642) related to ISE Confirmatory Item 3.2.4.2.A, the following update to the response is provided for IPEC Unit 3:</p> <p>Control Room: Section 3.2.1.8 of NEI 12-06 states that the effects of loss of HVAC in an ELAP event can be addressed consistent with NUMARC 87-00 or by plant specific calculation utilizing software such as GOTHIC. Calculation IP-CALC-13-00065 utilized the methodology for temperature limits as defined in NUMARC 87-00 and modeled the control room using</p>

Interim Staff Evaluation Confirmatory Items		Status
		<p>GOTHIC. Section 2.7.1(a) of NUMARC 87-00 indicates the control room is considered a Condition 1 area. Per NUMARC 87-00, a Condition 1 area is considered of low concern with respect to elevated temperature effects as long as a steady state temperature of 120° F is not exceeded. As documented in calculation IP-CALC-13-00065 the temperature of the control room did not exceed 120° F for the length of the analysis. Although specific equipment temperature ranges are not referenced in this calculation, the equipment in the control room is considered acceptable via the referenced sections of NUMARC 87-00.</p> <p>TDAFW Pump Room: Temperature switches are provided in the Auxiliary Feedwater Pump Room to close steam supply isolation valves PCV-1310A and PCV-1310B to prevent adverse environmental conditions resulting from a high energy line break. Switches (TC-1112A and 1113A) isolate the steam supply to the TDABFP. Calculation IP-CALC-13-00064 justifies that the room heat-up, with the roll-up door opened at 30 minutes, stays below the switch setpoint for up to 168 hours after the BDBEE and therefore adverse environmental conditions do not occur. For that reason the equipment in the Auxiliary Feedwater Pump Room is considered acceptable.</p>
3.2.4.2.B	Confirm that hydrogen concentration in the battery rooms during battery recharging would be maintained at an acceptable level.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-047).
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.	<p>This item is addressed by updated AQ IPEC-021 response. (Unit 3 Open Item from the October 2014 NRC Audit Visit.)</p> <p>Energy Response Update to E Portal for Item 3.2.4.3.A (02/27/2015):</p> <p>Additionally, to address the information requested by the NRC Audit Visit Report (ML14335A642) related to ISE Confirmatory Item 3.2.4.3.A, the following update to the</p>

Interim Staff Evaluation Confirmatory Items	Status
	<p>response is provided for IPEC Unit 3: During the extreme cold situation in a postulated FLEX event, the FLEX connections at the various tanks proposed as sources for make-up may not be available (i.e., allow flow) due to internal ice formation. The problem is that the FLEX scenario involves an Extended Loss of AC Power (ELAP) which deactivates the heat trace (freeze protection) installed at the applicable tank connections. This heat trace is assumed not to be re-activated until power is restored to it from the FLEX diesel generator a maximum of eight (8) hours into the event. The piping extension from the tank and the first manual (CLOSED) isolation valve in the line will likely be filled with water, which can freeze without adequate insulation and/or heating.</p> <p>Calculation IP-CALC-13-00058 Rev 1 evaluated the potential for the tank contents themselves to freeze during the BDBEE. The conclusions of these individual tanks calculations were that all sources of water will be available for a significant and sufficient period of time.</p> <p>Also calculation IP-CALC-15-00007 Rev 0 evaluated the potential for ice formation in the FLEX connection piping from the tank to the isolation valve upon loss of heat tracing. This calculation found that in some cases, some ice would form on the inner wall of the piping during the 8 hour period wherein no heat trace was operating. However, in all cases it was concluded that the particular tank connection was available for its intended function.</p> <p>The isolation valve at the connection will be initially closed. Some minor amount of water could be in the valve body or bonnet in such fashion that with internal icing, opening the said valve could be problematic. For IP3, the heat trace will be active for approximately 2 hours or 4 hours (for the RWST and CST respectively) prior to the pumps beings connected for strategy compliance. During this time, it is anticipated that the active heat trace will thaw any ice formed in the valve body or bonnet and allow valve operation with no additional</p>

Interim Staff Evaluation Confirmatory Items		Status
		components required. Use of the PWST and FWST FLEX connections is not credited until later in the event where the heat trace will be on for longer periods of time (at least 28 hours or later). For that reason these tanks are also acceptable for use. Note later analyses show credited at 25 hours.
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-020) and 3.2.4.2A.
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.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-025).
3.2.4.10.A	Confirm that analysis of the following aspects of the dc power requirements have been identified and evaluated: <ul style="list-style-type: none"> a. The dc load profile with the required loads for the mitigating strategies to maintain core cooling, containment, and spent fuel pool 	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-026).

Interim Staff Evaluation Confirmatory Items		Status
	<p>cooling;</p> <p>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</p> <p>c. The basis for the minimum dc bus voltage that is required to ensure proper operation of all required electrical equipment.</p>	
3.4.A	Confirm that the 480V portable/FLEX generators are adequately sized to supply loads assumed for implementing Phase 2 strategies.	This item was closed during the October 2014 NRC Audit Visit (associated with AQ IPEC-031).

October 2014 NRC Audit Visit FLEX Related Open Items (Reference 13)			
Audit Item Reference	Item Description	Licensee Input Needed	Status
ISE CI 3.2.3.A	<p>Containment Evaluation</p> <p>The calculation of the conditions inside the containment building was done by the licensee with an assumption of an initial leak rate of 21 gallons per minute (gpm) seal leakage per RCP. As the RCP seal leakage model has not been</p>	<p>The calculation of the conditions inside the containment building was done by the licensee with an assumption of an initial leak rate of 21 gallons per minute (gpm) seal leakage per RCP. As the RCP seal</p>	<p>This item is addressed on updated AQ response spreadsheet on the E Portal.</p> <p>Entergy Response Update on E Portal (02/27/2015)</p> <p>To address the information requested by the NRC Audit Visit Report (ML14335A642) related to ISE Confirmatory Item 3.2.3.A, the following update to the response is provided for IPEC Unit 3:</p>

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Audit Item Reference	Item Description	Licensee Input Needed	Status
	accepted yet by the NRC staff, it is not possible to perform a final evaluation of this calculation.	leakage model has not been accepted yet by the NRC staff, it is not possible to perform a final evaluation of this calculation.	<p>The IPEC Unit 3 containment analysis has been revised to incorporate the leakage profile developed by applying PWROG-14015 Category 1 seal leakage rates and PWROG-14027 time period methodology to the IPEC FLEX cooldown timeline.</p> <p>The results of the revised MAAP analysis for IPEC Unit 3 indicate that the containment design pressure and design temperature, which values are 47 psig and 271°F respectively, will not be exceeded during Phase 1 or 2 of a FLEX event when the plant was initially in Modes 1-4. As such, there are no coping strategies required for maintaining containment integrity during Phase 1 or 2. The only action necessary is to monitor containment pressure and temperature to ensure that RCS leakage is minimal.</p> <p>When the RCS is in Modes 5 or 6, the revised MAAP analysis indicates that a BDBEE event may challenge containment pressure unless a vent path is established. The vent path has been determined to require an equivalent flow to that of a 4" hole in containment and to be opened within 10 hours of the event to guarantee that containment will not pressurize sufficiently to challenge containment pressure or temperature design limits under the assumed worst case boil-off conditions. 10 hours is adequate time to ensure that a vent path is established.</p>

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Audit Item Reference	Item Description	Licensee Input Needed	Status
			Calculation IP-CALC-13-00081, Rev. 1, IP3 MAAP 4.0.5 Containment Analysis for an Extended Loss of all AC Power Event (ELAP), January 2015, is available on the E Portal.
ISE CI 3.2.4.2.A	Room Temperatures The NRC staff needs additional information on the maximum predicted temperatures in rooms where FLEX equipment is operating, and the equipment temperature limits, to confirm that there is no impact on equipment operation.	The staff requested the licensee to provide electrical equipment qualification for the temperatures reached in the control room and TDAFW pump room.	This item is addressed by updated AQ IPEC-020 response on the E Portal (see 3.2.4.2.A response above)
ISE CI 3.2.4.3.A	Heat Tracing The NRC staff needs additional information on the ability to use outdoor tanks during extreme cold conditions with no operational heat tracing.	The NRC staff needs additional information on the ability to use outdoor tanks during extreme cold conditions with no operational heat tracing, especially when the use of the tank is delayed while FLEX equipment is deployed, and outdoor isolation valves must be opened.	This item is addressed by updated AQ IPEC-021 response on the E Portal (see 3.2.4.3.A above)
AQ-27	Maintenance and Testing of FLEX Equipment The NRC staff has	The NRC staff has concerns that testing procedures may	This item is addressed by updated AQ IPEC-027 response on the E Portal.

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Audit Item Reference	Item Description	Licensee Input Needed	Status
	<p>concerns that testing procedures may not have sufficient details, such as acceptance criteria and shelf-life considerations for FLEX equipment, to identify when FLEX equipment needs to be repaired or replaced. Also, the licensee plans to extend certain intervals between testing longer than stated in the EPRI templates endorsed by the NRC. The licensee will provide a report which evaluates this extension.</p>	<p>not have sufficient details, such as acceptance criteria and shelf-life considerations for FLEX equipment, to identify when FLEX equipment needs to be repaired or replaced. Also, the licensee plans to extend certain intervals between testing longer than stated in the EPRI templates endorsed by the NRC. The licensee will provide a report which evaluates this extension.</p>	<p>Entergy Response Update to E Portal (02/27/2015): To address the information requested by the NRC Audit Visit Report (ML14335A642) related to maintenance and testing of FLEX equipment, the following update is provided: Entergy utilizes the EPRI preventive maintenance templates for FLEX as the foundation and “starting point” for the Entergy Fleet PM Basis Templates identical to the process of INPO AP-913 for critical components. The Entergy Fleet PM Basis Templates for FLEX provide general guidance (just as with critical components) that is then converted to model Work Order instructions in the field. As such, these templates do not provide all the detail that would be found in the work instructions derived from them. The templates provide high order acceptance criteria such as pumps must meet or exceed pump curves, generators must meet or exceed prime ratings, cable insulation should not show any signs of cuts, nicks, tears, etc. This guidance is input to the work order instructions that implement the template requirements. Entergy continues to be an active member of the EPRI FLEX Industry PM working group. Shelf-life preventive maintenance guidance is currently under development with EPRI and has yet to be finalized. However, Entergy has instituted</p>

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Audit Item Reference	Item Description	Licensee Input Needed	Status
			<p>shelf life preventive maintenance actions within the Entergy Fleet PM Basis Templates as follows pending finalization by EPRI:</p> <ul style="list-style-type: none"> • Battery Replacements every 4 years • Cable exposed surface inspections every 1 year and tan-delta testing every 20 years (this guidance is endorsed by EPRI through the industry PM working group) • Hose replacements every 10 years <p>Entergy is extending the interval for “Functional Test and Inspection” tasks for engine driven subcomponents from 3 months to 6 months. This task is a fact finding task specific to engine availability to provide assurance that the engine will start and run. An integral component of the EPRI PM database is the capability to run vulnerability studies on stand-alone tasks to determine overall impact to assessing the risk to uncovering failure modes unique to that task. Entergy used the vulnerability tool to determine the increase in risk of detection of the associated failure modes and found the risk to be small (2%) considering the capability of other tasks with unchanged frequencies to still vet those failure modes. This small increase in risk was determined acceptable and is documented in the associated Entergy PM Basis templates under “Justification for Deviation”. It should also be</p>

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			noted that this basis was supported by a document prepared by EPRI (Functional Test- Evaluation of Impact of Interval Extensions, dated 10/7/2014). Also of note, the industry in whole is endorsing this change in frequency from the base template and is doing so in concert with EPRI. It should be noted that this change process is consistent with the living PM process used by Entergy and employed throughout the industry for PM Programs on existing critical components. It is not required that EPRI endorse PM changes in intervals or specific details for subcomponents for any PM on critical components, but any changes made should be substantiated and justified with a technical basis by the licensee.
AQ-28	Offsite Resources The NRC staff identified that a revision is needed to procedure FSG-100 in order for the licensee staff to reach the step to activate the offsite resource delivery. The licensee also needs to finalize the SAFER Response Plan for Indian Point, and finalize contractual arrangements for the use of the offsite staging areas.	The NRC staff identified that a revision is needed to procedure FSG-100 in order for the licensee staff to reach the step to activate the offsite resource delivery. The licensee also needs to finalize the SAFER Response Plan for Indian Point, and finalize contractual arrangements for the use of the	This item is addressed by updated AQ IPEC-028 response on the E Portal. Entergy Response Update on E Portal (02/27/2015): To address the information requested by the NRC Audit Visit Report (ML14335A642) related to the revision of procedure FSG-100 and the SAFER Response Plan, the following update to the response is provided: Procedure FSG-100 was revised to add a step to activate the offsite resource delivery is in progress. Additionally the Indian Point Energy Center Response Plan is

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Audit Item Reference	Item Description	Licensee Input Needed	Status
		offsite staging areas.	available on the E Portal.
AQ-46	<p>Battery Room Temperature Extremes</p> <p>The NRC staff needs additional information to evaluate the performance of the plant batteries considering the temperature extremes (hot and cold) that may be reached in the battery rooms.</p>	<p>The NRC staff requested the licensee to provide a technical basis to support the conclusion that the battery rooms would not be exposed to extreme high and low temperatures during the first phase of the ELAP event.</p>	<p>This item is addressed by updated AQ IPEC-046 response on the E Portal.</p> <p>Entergy Response Update on E Portal (02/27/2015):</p> <p>As stated on the response provided on 08/28/2014 for IPEC Unit 3, the battery rooms are located inside the control building and would not be exposed to extreme high and/or low temperatures. Therefore, at the onset of the event, the battery rooms would be at their normal operating temperature and the temperature of the electrolyte in the cells would build up due to the heat generated by the batteries discharging and during re-charging. The duty cycle calculation IP-CALC-13-00056 assumes a minimum ambient temperature of 60°F. This is the temperature of the battery room based on the existing HVAC system design basis. During the worst assumed low temperature environmental conditions, the FLEX strategy starts with a temperature of -15°F and equipment de-energized, therefore the heat contribution from the equipment will dwindle over time as the equipment cools down. Based on engineering judgment, considering the thickness of the walls shared with outside environment, the change in temperature inside the battery rooms would be negligible during</p>

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			Phase 1 (approximately 8 hours). Therefore, it is reasonable to assume that the battery room will remain near its pre-event temperature during the first phase of the ELAP event until the FLEX generators are deployed and have energized the battery chargers. Once the battery charger is re-energized and is charging the battery, the charger is carrying the DC loads during Phase 2 and 3, which will provide some heating to the battery room. During the worst assumed high temperature environmental conditions, the battery exhaust fans can be powered from the DC batteries which will maintain ventilation through Phase 1. Calculation IP-CALC-13-00056, Rev. 0, Battery Sizing and Voltage Drop Calculation for Extended Loss of Power (ELAP), is available on the E Portal.
AQ-51	Use of Non-Safety-Related Equipment The NRC staff needs information on the use of non-safety-related installed electrical equipment credited during an ELAP event and its ability to perform its safety function considering the potential external hazards.	The NRC staff requested the licensee to address non-safety related installed electrical equipment credited for mitigation strategies and whether this equipment will survive the BDBEE.	This item is addressed by updated AQ IPEC-051 response on the E Portal. Entergy Response Update on E Portal (02/27/2015): Refer to SE#6 submittal of 10/27/2014 for supplemental information See response to SE #6 below. To address the information requested by the NRC Audit Visit Report (ML14335A642) related to the use of non-safety related installed electrical equipment, the following update to the response is provided for IPEC Unit 3:

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			<p>A review of all installed electrical equipment was performed using the load list shown in Report IP-RPT-13-00059. Based on this review, the only non-safety related components credited in the strategy are the heat trace systems associated with the RWST, CST, PWST and FWSTs, Battery Room Ventilation and the auxiliary HVAC system for the Control Room. The equipment associated with the heat trace is designed for cold temperatures and has operating temperature ranges that are below the -15° F extreme cold BDBEE. For that reason it is acceptable to credit the heat trace in the extreme cold BDBEE coping strategy. In addition, for the extreme high temperature BDBEE, the non-safety related auxiliary HVAC system is activated for long term Control Room habitability once the Phase 2 generator is connected. The Auxiliary HVAC units are Liebert Model DME037E which have a vendor rated outdoor temperature limit of 115° F which matches the extreme high temperature beyond design basis external event.</p>
SE#2	RCP Seal Leakage and NSAL 14-1 Westinghouse nuclear safety advisory letter NSAL -14-1 indicates there may be higher leakage from the reactor coolant pump (RCP) seals during	Provide final resolution for this issue.	<p>This item is addressed on updated AQ response spreadsheet on the E Portal.</p> <p>Entergy Response Update on E Portal (02/27/2015):</p> <p>Revise the 10/27/2014 response for Items a, b and g as follows:</p> <p>a. <u>Revise</u> "Indian Point Energy Center (IPEC) contracted with</p>

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	<p>an extended loss of ac power (ELAP) than was previously analyzed. The licensee proposed to limit leakage by throttling existing valves in the #1 seal leakoff line. The NRC staff expressed concerns regarding the licensee's proposal. The licensee is working to resolve this issue, and is considering modifications to the plant. The NRC will review the final resolution.</p>		<p>Westinghouse to perform a plant specific evaluation of the RCP seal leak-off using a methodology similar to that used in the generic analysis performed for NSAL 14-1. The overall result is that the FLEX strategy assumption of 21 gpm seal leakage is expected to remain valid for Indian Point Units 2 and 3." The assumption of 21 gpm of seal leakage per RCP is no longer the leakage rate assumed in the strategy. Indian Point Energy Center (IPEC) contracted with Westinghouse to perform plant specific evaluations to justify Indian Point Unit 3 as a Category 1 plant as reported in PWROG-14015-P, Rev. 1. By making this category change, Indian Point is able to use the Category 1 plant results in subsequent analysis for cooldown and depressurization documented in PWROG-14027-P.</p> <p>An analysis was done to justify Indian Point Unit 3 as a Category 1 plant via the installation of orifices. Therefore, by applying such methods as installation of orifices, seal leakage rates for Indian Point Unit 3 will be in agreement with the seal leakage rates for Category 1 plants as presented on Table 4 of PWROG-14015-P, Rev. 1. The RCS makeup strategy revision includes a new time-dependent seal leakage</p>

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			<p>profile based on PWROG-14027-P, Revision 1 results. IPEC will continue to follow PWROG FLEX efforts that may impact this response.</p> <p>b. <u>Revise</u> "As indicated above, Westinghouse is performing a plant specific seal leak-off evaluation for IPEC. The results include throttling of the #1 Seal Leak-off Line rotameter isolation valves such that IPEC Units 2 and 3 can be classified as a Category 1 plant as indicated in PWROG-14015-P and subsequent phases of the PWROG Seal Leakage Program." <u>to</u> As indicated above, Indian Point Energy Center (IPEC) contracted with Westinghouse to perform plant specific evaluations which will justify Indian Point Units 2 and 3 as Category 1 plants as reported in PWROG-14015-P. By applying such methods as installation of orifices, seal leakage rates for Indian Point Units 2 and 3 will be in agreement with the seal leakage rates for Category 1 plants as presented on Table 4 of PWROG-14015-P, Rev. 1 and the methodology identified in PWROG-14027, Rev. 1. As a result the IP3 seal leakage rates are as follows:</p> <ol style="list-style-type: none"> 1) Pre-cooldown period (0-30 minutes): 16.75 gpm/seal 2) Cooldown period (30

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			<p>minutes– 180 minutes): 11.6 gpm/seal 3) Post-cooldown period (180 minutes – 6900 minutes): 5.7 gpm/seal</p> <p>g. <u>Revise</u> “The plant modifications for reclassifying IPEC Unit 2 and 3 from Category 4 to Category 1 Plant are to throttle the rotameter isolation globe valves to increase the overall equivalent length of ¾” schedule 160 piping of the #1 Seal Leak-off Line to 120.3 ft. The time frame for completing the valve throttling will be no later than the FLEX outage schedule for each unit, per Order EA-12-049.” <u>to</u> The plant modification for reclassifying IPEC Unit 3 from Category 4 to Category 1 Plant was the installation of orifices in the RCP seal leak off lines. Entergy installed an orifice on the seal leak off line during refueling outage 3R18 (spring 2015) that would align the leakage rates with the leakage rates from Category 1 plants as provided on Table 6 of PWROG-14015, Rev. 1.</p> <p>Subsequent discussion is in the Margin Analysis</p>
SE #5	Accuracy of the NOTRUMP Computer Code Westinghouse used the NOTRUMP computer code to develop certain timelines for operator	Provide PWROG resolution on accuracy of the NOTRUMP code. Provide a comparison chart to compare how the plant	<p>This item is addressed on updated AQ response spreadsheet on the E Portal.</p> <p>Entergy Response Update on E Portal (02/27/2015): The PWROG resolution of</p>

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	actions in an ELAP event (see WCAP-17601-P for example). NRC simulations using the TRACE code indicate some differences, which may be significant enough to affect the timeline for operator actions. The Pressurized Water Reactor Owners Group (PWROG) is working with the NRC on a resolution, which may be applicable to all PWRs. The NRC staff also needs a comparison chart from the licensee to compare how the plant parameters assumed in the Westinghouse analyses compare to Indian Point parameters.	parameters assumed in the Westinghouse analyses compare to Indian Point parameters.	accuracy of the NOTRUMP code is provided in PWROG-14064-P Revision 0 (Application of NOTRUMP Code Results for Westinghouse Designed PWRs in Extended Loss of AC Power Circumstances) and validates the use of NOTRUMP for ELAP events with restrictions identified regarding boron mixing, RCP seal leakage and reflux cooling. IPEC meets the identified restrictions by unit-specific application of the boron mixing NRC endorsement letter dated January 8, 2014 (ML13276A183, Boron Mixing Endorsement Letter in regards to Mitigation Strategies Order EA-12-049), PWROG-14015 Revision 0 (No. 1 Seal Flow Rate for Westinghouse Reactor Coolant Pumps Following Loss of All AC Power, Task 2: Determine Seal Flow Rates) and PWROG-14027 Revision 1 (No. 1 Seal Flow Rate for Westinghouse Reactor Coolant Pumps Following Loss of All AC Power, Task 3: Evaluation of Revised Seal Flow Rate on Time to Enter Reflux Cooling and Time at which the Core Uncovers). A comparison chart to compare how the plant parameters assumed in the Westinghouse analyses compare to IPEC parameters for seal leakage and reflux cooling is provided in file "SE 5 Analysis Data Summary.docx" located on the E Portal.
SE #7	Operation of the SG ADVs	The NRC staff has concerns	This item is addressed on updated AQ response

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	The NRC staff has concerns with the nitrogen bottles used to provide the motive force to operate the SG ADVs, needed for plant cooldown. The staff needs additional information on the capacity of the nitrogen bottles, and what other equipment uses those bottles.	with the nitrogen bottles used to provide the motive force to operate the SG ADVs, needed for plant cooldown. Provide additional information on the capacity of the nitrogen bottles, and what other equipment uses those bottles.	spreadsheet on the E Portal. Entergy Response Update on E Portal (02/27/2015): Revise the 10/27/2014 response for Item 3 above as follows: Additionally, to address the information requested by the NRC Audit Visit Report (ML14335A642) related to the operation of the SG ADVs, the following update to the response is provided: ADV and associated PRV operation have adequate installed standby nitrogen bottles that are placed in service. IP-CALC-13-00059 (Nitrogen Backup to AFW Valves and Atmospheric Dump Valves for FLEX Event -IPEC 3) determined that the installed nitrogen bottles will provide the needed compressed air to maintain ADV operation for 24 hours for IP3. Additional bottles are stored in the FLEX Equipment Storage Building to provide an adequate nitrogen bottle supply for 72 hours, which allows adequate time to obtain additional nitrogen bottles (or portable air compressor) as needed. Calculation IP-CALC-13-00059 is available on the E Portal.
SE #13	RCP Seal Leakage Rates The NRC staff needs information to demonstrate that the current RCP seal leakage rate calculation is accurate or	The NRC staff needs information to demonstrate that the current RCP seal leakage rate calculation is accurate or conservative.	This item is addressed on updated AQ response spreadsheet on the E Portal. Entergy Response (10/27/2014): IPEC is participating in the PWROG RCP Working Group under PA-SEE-1196 and the response to this question will be

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	conservative.		coordinated within this effort. Subsequent discussion is in the Margin Analysis
SE #14	<p>Pressurization of the RCP #1 Seal Leakoff Line</p> <p>The NRC staff has asked the licensee to determine the expected maximum pressure in the #1 seal leakoff line during this event and to demonstrate that the components of this line will not fail in such a manner that will increase the seal leakage.</p>	<p>The NRC staff has asked the licensee to determine the expected maximum pressure in the #1 seal leakoff line during this event and to demonstrate that the components of this line will not fail in such a manner that will increase the seal leakage.</p>	<p>This item is addressed on updated AQ response spreadsheet on the E Portal.</p> <p>Entergy Response Update (02/27/2015):</p> <p>To address the information requested by the NRC Audit Visit Report (ML14335A642) related to the pressurization of the RCP #1 seal leakoff lines, the following update is provided :</p> <p>a. Figure 3 of PWROG-14015-P Rev 1 shows the expected pressure response in the No. 1 Seal and Leak-off Line for a Category 1 plant. The expected maximum steady state pressure in the leak-off line up stream of the flow elements (e.g., restriction orifice) is less than 1000 psia. The pressure downstream of the flow element is on the order of 150 psig, which corresponds to the relief valve setting. These values are less than the design values, so the leak-off line is expected to remain intact. The analysis for the leak-off rate assumes that the pressure downstream of the flow element (e.g., restriction orifice) goes to atmosphere, so even if the low pressure piping was to fail, the seal leakage rate will remain within analyzed values.</p>

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			<p>To address the potential pulse situation concern wherein the peak pressure / temperature in the line may be high for a brief period of time before steady-state conditions assert themselves and pressures and temperatures stabilize at the more reasonable expected values described above, the 2045 psia peak pressure which was measured in the Montereau hot shock test (Appendix B to WCAP-10541) remains applicable to IPEC design. Therefore, because the seal leak off lines up to and including the location of the flow restricting orifice are designed for 2580 psig at 650 F and 2510 psig at 680 F, the potential pulse concern will not result in the seal leak off line failing and producing an increase in seal leakage.</p> <p>IPEC continues to participate in industry initiatives for analyzing the expected maximum pressure (currently 2045 psia) in the seal leak off line during a loss of seal cooling event. It is expected that if the WCAP-10541 peak pressure is revised, IPEC will remain bounding based on the current margin to exceeding the design criteria discussed above.</p>

Audit Questions	Status	Completion or Target Date
IPEC-002	This item was closed during the October 2014 NRC Audit	Closed

Audit Questions	Status	Completion or Target Date
	Visit (associated with ISE Confirmatory Item 3.1.1.2.D).	
IPEC-003	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-004	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.1.1.3.A).	Closed
IPEC-005	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.1.1.4.A).	Closed
IPEC-006	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Open Item 3.1.2.A and ISE Confirmatory Item 3.1.2.2.A).	Closed
IPEC-008	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-009	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-010	<p>Updated response available on the E Portal</p> <p>Entergy Response Update (02/27/2015): The debris assessment has been finalized. The conclusions stated on the response update dated 08/28/2014 remain valid. Therefore, the removal of snow, ice, and debris can be cleared using heavy-duty debris removal equipment (e.g., 4 Wheel Loader with fork blade and bucket attachment stored in the FLEX equipment storage building). Since the debris removal vehicles will be kept inside the FLEX equipment building, no procedures are required for the protection of the vehicles. Furthermore, the NRC report for the onsite audit (ML14335A642), issued on December 9, 2014, closed this item.</p>	Review ready
IPEC-011	<p>Updated response available on the E Portal.</p> <p>Entergy Response Update (02/27/2015): FLEX equipment will be stored inside the FLEX Equipment Storage Building. Calculation IP-CALC-14-00033, evaluated the FESB for the impacts of extreme heat conditions and determined that the peak indoor temperature within the first eight hours following the event is less than 106°F with no compensatory actions taken. FLEX equipment is specified to tolerate storage under the high temperature conditions identified above. Portable/FLEX equipment will be deployed and operated to</p>	Review ready

Audit Questions	Status	Completion or Target Date
	locations outside of plant structures and buildings. Therefore, the effects of high temperatures on the FLEX equipment have been addressed through the design requirement process, and development of specific procedures is not applicable. Furthermore, the NRC report for the onsite audit (ML14335A642), issued on December 9, 2014, closed this item.	
IPEC-012	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.1.A and ISE Confirmatory Item 3.2.1.1.A).	Closed
IPEC-013	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.1.3.A).	Closed
IPEC-014	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-017	Updated response available on the E Portal (associated with ISE Confirmatory Item 3.2.1.9.A).	Review ready
IPEC-020	Updated response available on the E Portal (associated with ISE Confirmatory Item 3.2.4.2.A) (Unit 3 Open Item from the October 2014 NRC Audit Visit.).	Review ready
	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.4.6.A)	Closed
IPEC-021	Updated response available on the E Portal (associated with ISE Confirmatory Item 3.2.4.3.A) (Unit 3 Open Item from the October 2014 NRC Audit Visit.).	Review ready
IPEC-022	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-023	Updated response available on the E Portal (associated with ISE confirmatory Item 3.1.1.2.C).	Review ready
IPEC-025	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.4.9.A)	Closed
IPEC-026	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.4.10.A)	Closed
IPEC-027	Updated response available on the E Portal (Unit 3 Open Item from the October 2014 NRC Audit Visit.).	Review ready
IPEC-028	Response available on the E Portal (Unit 3 Open Item from the October 2014 NRC Audit Visit.).	Review ready
IPEC-029	This item was closed during the October 2014 NRC Audit Visit.	Closed

Audit Questions	Status	Completion or Target Date
IPEC-031	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.4.A)	Closed
IPEC-032	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-033	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-034	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.2.A).	Closed
IPEC-035	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.1.6.A).	Closed
IPEC-036	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.1.1.2.A).	Closed
	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.1.9.B).	Closed
IPEC-037	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-041	This item was closed during the October 2014 NRC Audit Visit (associated with ISE Open Item 3.2.4.7.A and ISE Confirmatory Item 3.2.4.7.B).	Closed
IPEC-042	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-043	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-045	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-046	IPEC Unit 3 – Updated response available on the E Portal (Unit 3 Open Item from the October 2014 NRC Audit Visit.)	Review ready – see above
IPEC-047	IPEC Unit 3 - This item was closed during the October 2014 NRC Audit Visit (associated with ISE Confirmatory Item 3.2.4.2.B)	Closed
IPEC-048	IPEC Unit 3 - This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-049a	This item was closed following the October 2014 NRC Audit Visit.	Closed
IPEC-049b	This item was closed following the October 2014 NRC Audit Visit .	Closed
IPEC-049c	This item was closed during the October 2014 NRC Audit	Closed

Audit Questions	Status	Completion or Target Date
	Visit.	
IPEC-049d	This item was closed following the October 2014 NRC Audit Visit.	Closed
IPEC-049e	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-049f	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-049g	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-049h	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-049i	This item was closed during the October 2014 NRC Audit Visit.	Closed
IPEC-050	Updated response available on the E Portal (associated with ISE Confirmatory Item 3.2.1.8.A).	Review ready
IPEC-051	Updated response available on the E Portal (Unit 3 Open Item from the October 2014 NRC Audit Visit.).	Review ready

*Closed indicates that Entergy's response is complete.

Margin Analysis

At this time the PWROG continues to resolve issues over the amount of RCP seal leakage that would be expected during an extended loss of ac power (ELAP) for reactors with the standard Westinghouse seals. The IP3 OIP RCP seal leak rate profile and the analysis to validate the capability to maintain natural circulation core cooling used Westinghouse WCAP-17601. The PWROG generic analysis methodology and results included use of the 4-Loop Westinghouse reference plant identified in WCAP-17601. Subsequent to the OIP, the IP3 analyses have used the Category 1 plant (based on the installation of RCP seal line orifice) analysis results and mass balance methodology of PWROG-14015 and PWROG-14027 with plant specific parameters. Margins were achieved regarding resolution of leak rate by the use of generic parameters and results as follows:

To utilize the PWROG RCP seal leak rates for a Category 1 plant and apply the reflux cooling analysis methodology, the following actions were taken to support the IP3 FLEX strategy timeline:

1. IP3 analysis using plant-specific parameters determined accumulator mass injection and initial RCS mass were less than the PWROG generic analysis input parameters. As a result, an IP3 parameter specific calculation (Reference 17) determined the time to onset of reflux cooling using the mass balance methodology

was 11.9 hours in place of the generic analysis result of 15.6 hours (Reference 15).

2. IP3 calculations using IP3 parameters and Category 1 RCP seal leak rates (References 14 and 15) plus 1 gpm unidentified RCS leakage were performed to determine the impact on RCS makeup inventory capability for 120 hours (Reference 18) and that containment pressure / temperature responses (Reference 19) remain less than design parameters. Results were incorporated into the FLEX strategy (Reference 23).
3. Installation of a flow orifice in each RCP seal leak-off line during the 3R18 Refueling Outage under EC 54478 (Reference 20) was performed to characterize IP3 as a Category 1 plant with respect to RCP No. 1 seal leakage.
4. To confirm that the installation of orifices in the RCP leak-off lines ensure Category 1 performance, the IP3 specific seal leak-off piping configurations were analyzed in calculation IP-CALC-15-00017 (Reference 21). The leak rates determined in this calculation were lower than References 14 and 15, except at the lowest cited temperature and pressure conditions. At 375^oF and 200 psia, the calculation found that flow choking occurs at the installed orifice at a flow rate of 3.5 gpm when conservatively not crediting relief valve backpressure of 150 psig. References 14 and 15 credited the relief valve backpressure and thus flow choking actually occurred at a flow rate of 0.7 gpm (Reference 22).

The time to the onset of Reflux Cooling Margin represents another area of margin. The Phase 2 Staffing Assessment contained in NL-2014-132 (Reference 8) identifies that RCS makeup will be started between 10 to 11 hours. This is prior to the onset of reflux cooling at 11.9 hours as determined in Reference 17. This calculation and the IP3 FLEX strategy (Reference 23) contain the following conservative approaches different than the PWROG generic analysis that reported a time to onset of reflux cooling of 15.6 hours (Reference 15):

1. The IP3 analysis (Reference 17) uses IP3 parameters and therefore eliminates the concern of using non-conservative available RCS mass values.
2. The IP3 calculation (Reference 17) includes the loss of 1 gpm unidentified RCS leakage in addition to the Category 1 leak rate profile.
3. The IP3 FLEX strategy initiates plant cooldown 90 minutes earlier than the PWROG analysis.
4. The IP3 FLEX strategy cooldown is completed 60 minutes earlier than assumed in the PWROG analysis.

Subsequent to Reference 17, calculation IP-CALC-15-00035 (Reference 22) quantifies additional margin gained as a result of using the IP3 specific RCP seal leak-off values (Reference 21) applied to Reference 17 results instead of the PWROG generic seal leak rates. Calculation IP-CALC-15-00035 determined the time to onset of reflux cooling was

14.24 hours. Therefore, using IP3 specific leak rates provide an additional 2.34 hours to the Reference 17 result (11.9 hours) for the onset of reflux cooling.

In summary, the FLEX strategy identifies that RCS makeup will be started between 10 to 11 hours (References 8 and 22) with the onset of reflux cooling occurring at 11.9 hours. Analyses and modifications ensure RCS makeup can be initiated prior to the onset of reflux cooling. Subsequently, using IP3 specific leak rates resulting from the orifice modification (Reference 20) provides an additional 2.34 hours of margin added to the original 0.9 hours of margin assuming RCS makeup is initiated at 11 hours. Therefore, there exists 3.24 hours of margin from the conservative latest initiation of RCS makeup at 11 hours until the onset of reflux cooling at 14.24 hours. In addition, calculation IP-CALC-15-00035 (Reference 22) also identifies an increase in RCS makeup inventory availability (additional 18,519 gallons remaining after 120 hours), reduction in containment temperature (reduction of 17.2°F) and pressure (reduction of 1.3 psi) based on using the site-specific leak rates in place of the generic PWROG leak rates.

The design of the RCP#1 seal leakoff line versus the expected pressure profile provides margin. The RCP #1 seal leakoff line pressurization spike creates a potential for a ruptured line and increased RCS leak rate. As noted in response to SE#14, the potential pulse situation is a concern wherein the peak pressure / temperature in the line may be high for a brief period of time before steady-state conditions assert themselves and pressures and temperatures stabilize. The peak pressure of 2045 psia (measured in the Montereau hot shock test, Appendix B to WCAP-10541) remains applicable to IPEC. Because the #1 seal leak off lines up to and including the location of the flow restricting orifice are designed for 2580 psig at 650 °F and 2510 psig at 680 °F, there is margin to assure that the potential pulse concern will not result in the seal leak off line failing and producing an increase in seal leakage.

This issue is considered closed based on this information.

References

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

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 (ML 12054A736).
2. 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 (ML13079A348).
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 (ML13247A032).

4. Entergy Letter to NRC (NL-13-031), 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 (TAC Nos. MF0744 and MF0745), dated February 27, 2014 (ML14070A365).
5. Entergy Letter to NRC (NL-14-110), Indian Point Energy Center's Third 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, 2014 (ML 14251A227).
6. Entergy Letter to NRC (NL-15-025), Indian Point Energy Center's Fourth 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 February 27, 2015.
7. 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 (ML13337A594).
8. Entergy Letter to NRC (NL-14-132) Regarding Response to March 12, 2012, Request for Information (RFI) Pursuant to Title 10 of the Code of Federal Regulation 50.54(f) Regarding Recommendations of the Near-Term Task Force (NTTF) 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, dated November 3, 2014 (ML14328A631).
9. 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 (ML13079A348).
10. NRC Letter to Entergy Regarding Plan for the Onsite Audit Regarding Implementation of Mitigating Strategies AND Reliable Spent Fuel Instrumentation Related To Orders EA-12-049 and EA-12-051 (TAC NOS. MF0744, MF0745, MF07371 AND MF0738), dated September 30, 2014 (ML14269A384).
11. 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 (ML12229A174).
12. NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 0, dated August 2012 (ML12242A378).
13. NRC Letter to Entergy Regarding Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation

Related to Orders EA 12-049 and EA 12-051 (TAC Nos. MF0744, MF0745, MF0737 and MF0738), dated December 9, 2014 (ML14335A642).

14. Westinghouse Report PWROG-14015-P, Rev. 1, No. 1 Seal Flow Rate for Westinghouse Reactor Coolant Pumps Following Loss of All AC Power, September 19, 2014.
15. Westinghouse Report PWROG-142027-P, Rev 2, No. 1 Seal Flow Rate for Westinghouse Reactor Coolant Pumps Following Loss of All AC Power Task 3, October, 2014.
16. WCAP-17601-P, Rev. 1, Reactor Coolant System Response to the Extended Loss of AC Power Event for Westinghouse, Combustion Engineering and Babcock and Wilcox NSSS Designs
17. IP-CALC-15-00003, Rev. 0, IP3 Time to Reflux Cooling Calculation
18. IP-CALC-14-00012, Rev. 0, IP3 RCS Inventory Evaluation for FLEX
19. IP-CALC-13-00081, Rev. 1, IP3 MAAP 4.0.5 Containment Analysis for an Extended Loss of all AC Power Event (ELAP)
20. EC 54478, Rev. 1, Installation of an Orifice Plate on the Outlet Flange of Flow Meters FIT-156B, -157B, -158B, -159B
21. IP-CALC-15-00017, Rev. 0, (Westinghouse Number CN-SEE-I-15-2 Rev 0): Indian Point Reactor Coolant Pump Seal Leakoff Analysis with Flow Restricting Orifice
22. IP-CALC-15-00035, Rev.0, Margin Gained in the Results of Applicable FLEX Calculations Using Input from IP-CALC-15-00017
23. EC 45874, Rev. 1, IP3 FLEX Strategy Development

ATTACHMENT 2 TO NL-15-059

INDIAN POINT 3 SUMMARY OF COMPLIANCE BASES FOR ORDER EA-12-051

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

**Indian Point Unit Three's Compliance Letter
for the Implementation of Order EA-12-051 Order Modifying
Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation**

BACKGROUND

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Reference 1) to Entergy. This Order was effective immediately and Entergy Nuclear Operations, Inc. (Entergy) developed an Overall Integrated Plan (OIP) (Reference 2) for Indian Point Energy Center (IPEC), documenting the Reliable Spent Fuel Pool Instrumentation requirements. The Order required compliance prior to plant startup from the second refueling outage following submittal of the OIP, or by December 31, 2016, whichever comes first. The compliance date for Indian Point 3 (IP3) was March 24, 2015. The NRC staff requested that the compliance report be submitted within 60 days of the compliance date. The information provided herein documents full compliance for Indian Point 3 in response to the Order.

COMPLIANCE

IP3 has installed two independent full scale level monitors on the Unit 3 Spent Fuel Pool (SFP) in response to Reference 1. Indian Point Energy Center (IPEC) is a three unit site with Unit 1 decommissioned with an empty spent fuel pool and Units 2 and 3 each have a separate and associated spent fuel pool.

Entergy submitted the IP3 OIP by letter dated February 27, 2013 (Reference 2). Entergy responded to an NRC request for additional information (Reference 4) by letter dated August 20 2013 (Reference 5). The NRC letter of November 8, 2013 (Reference 6), the NRC provided its interim staff evaluations and requested additional information necessary for completion of the review. This information was provided in the Entergy Status reports (References 7, 8, 9, and 10). The NRC conducted an Audit of the Entergy responses to Orders EA-12-049 and EA-12-051 and documented the results in Reference 11. Reference 10 contained a summary of the responses provided:

RAI #	IP3 Response Status	IP3 Review Status
1	Submitted in Reference 7	Closed During NRC Audit (Reference 11)
2	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
3	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
4	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
5	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
6a	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
6b	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
6c	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
7	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)

8	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
9	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
10	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
11	Submitted in Reference 9	Closed During NRC Audit (Reference 11)
12	Submitted in Reference 9	Closed During NRC Audit (Reference 11)
13	Uploaded to e-portal September 30, 2014	Closed During NRC Audit (Reference 11)
14	Submitted in Reference 10 (See Note)	Reference 10 Section 9 (See Note)
15a	Submitted in Reference 9	Closed During NRC Audit (Reference 11)
15b	Submitted in Reference 9	Closed During NRC Audit (Reference 11)
16	Submitted in Reference 10	Closed During NRC Audit (Reference 11)
17	Submitted in Reference 10	Closed During NRC Audit (Reference 11)
18a	Submitted in Reference 10 (See Note)	Reference 10 Section 9 (See Note)
18b	Submitted in Reference 10 (See Note)	Reference 10 Section 9 (See Note)
18c	Submitted in Reference 10 (See Note)	Reference 10 Section 9 (See Note)

Note: These RAIs were listed as Open Items in the NRC Audit Visit Report (Reference 11).

Compliance with Order EA-12-051 was achieved using the guidance in Nuclear Energy Institute (NEI) document NEI 12-02 (Reference 3) which has been endorsed by the NRC (Reference 12).

REFERENCES

1. NRC Order Number EA-12-051, Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated March 12, 2012 (ML12054A682).
2. Entergy Letter to NRC (NL-13-043), Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation, dated February 27, 2013 (ML 13072A082).
3. NEI 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation", Revision 1, dated August 2012.
4. NRC Letter Requesting Additional Information Regarding Reliable Spent Fuel Pool Instrumentation, Order no. EA-12-051 (TAC Nos. MF0737 and MF0738), dated June 25, 2013 (ML13169A127).
5. Entergy Letter to NRC (NL-13-103) Response to Request for Additional Information (RAI) Regarding Reliable Spent Fuel Pool (SFP) Instrumentation (Order No, EA-12-051) (TAC NOS. MF0737 and MF0738) dated August 20, 2013 (ML13239A238).
6. NRC Letter to Entergy Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), Dated November 8, 2013. (ML13298A805).
7. Entergy Letter to NRC (NL-13-109), Indian Point Energy Center's First Six-Month

Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated August 27, 2013 (ML13247A031).

8. Entergy Letter to NRC (NL-14-029), Indian Point Energy Center's Second Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated February 27, 2014 (ML 14070A447).
9. Entergy Letter to NRC (NL-14-109), Indian Point Energy Center's Third Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated August 27, 2014 (ML 14251A226).
10. Entergy Letter to NRC (NL-15-026), Indian Point Energy Center's Fourth Six-Month Status Report for the Implementation of Order EA-12-051 Modifying Licenses with Regard to Requirements for to Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0737 and MF0738), dated February 26, 2015. (ML15069A028).
11. NRC Letter to Entergy Regarding Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA 12-049 and EA 12-051 (TAC Nos. MF0744, MF0745, MF0737 and MF0738), dated December 9, 2014 (ML14335A642).
12. NRC Interim Staff Guidance JLD-ISG-2012-03, Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation, Revision 0, dated August 29, 2012 (ML12221A339).