Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-3110

Jeremy G. Browning
Site Vice President
Arkansas Nuclear One

0CAN081402

August 28, 2014

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

SUBJECT: Third Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (BDBEEs) (Order Number EA-12-049)
Arkansas Nuclear One – Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6

REFERENCES:

1. NRC Order Number EA-12-049, *Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs*, dated March 12, 2012 (0CNA031206) (ML12056A045)
2. Entergy letter to NRC, *Overall Integrated Plan (OIP) in Response to March 12, 2012, Commission Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs (Order Number EA-12-049)*, dated February 28, 2013 (0CAN021302) (ML13063A151)
3. Entergy letter to NRC, *First Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs (Order Number EA-12-049)*, dated August 28, 2013 (0CAN081302)
4. Entergy letter to NRC, *Second Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs (Order Number EA-12-049)*, dated February 27, 2014 (0CAN021405)

Dear Sir or Madam:

On March 12, 2012, the NRC issued an order (Reference 1) to Entergy Operations, Inc. (Entergy) which required submission an OIP pursuant to Section IV, Condition C which was provided by Reference 2.

Reference 1 also requires submission of a status report at six-month intervals following submittal of the OIP. References 3 and 4 provided the first and second six-month status reports, respectively. The purpose of this letter is to provide the third 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 Stephenie Pyle at 479.858.4704.

I declare under penalty of perjury that the foregoing is true and correct; executed on August 28, 2014.

Sincerely,

ORIGINAL SIGNED BY JEREMY G. BROWNING

JGB/nbm

Attachment: Arkansas Nuclear One Units 1 and 2 Third Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs

cc: Mr. Marc L. Dapas
Regional Administrator
U. S. Nuclear Regulatory Commission, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

U. S. Nuclear Regulatory Commission
Attn: Ms. Andrea E. George
MS O-8B1
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

U. S. Nuclear Regulatory Commission
Attn: Mr. John Hughey
MS 13-C5
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

Attachment to

0CAN081402

Arkansas Nuclear One (ANO) Units 1 and 2 (ANO-1 and ANO-2) Third 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 (BDBEEs)

ANO-1 and ANO-2 Third Six Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs

1 Introduction

Entergy Operations, Inc. (Entergy) developed an Overall Integrated Plan (OIP) for ANO-1 and ANO-2 (Reference 1), documenting the diverse and flexible strategies (FLEX) in response to Reference 2. The OIP was updated and submitted with the First Six-Month Status Report (Reference 3). This enclosure provides an update of milestone accomplishments since submittal of the last status report (Reference 8), 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 January 31, 2014, and are current as of July 31, 2014:

- Second Six-Month Status Report — February 2014
- Modifications Evaluation – January 2014
- Third Six-Month Status Report — Complete with submission of this document in August 2014

3 Milestone Schedule Status

The following provides an update to the milestone schedule to support the OIP. It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

Milestone	Target Completion Date*	Activity Status	Revised Target Completion Date
Submit OIP	February 2013	Complete	
Update 1	August 2013	Complete	
Update 2	February 2014	Complete	
Update 3	August 2014	Complete	
Update 4	February 2015	Not Started	
Update 5	August-2015	Not Started	
Perform Staffing Analysis	September 2014	Started	

Milestone	Target Completion Date*	Activity Status	Revised Target Completion Date
Modifications			
Modifications Evaluation	June 2013	Complete	
Engineering and Implementation	June 2013 - October 2015	Started	
ANO-1 Implementation Outage	February 2015	Not Started	
ANO-2 Implementation Outage	October 2015	Not Started	
On-site FLEX Equipment			
Purchase	June 2014	Started	October 2014
Procure	November 2014	Not Started	August 2015
Off-site FLEX Equipment			
Develop Strategies with Regional Response Center	November 2013	Started	November 2014
Install Off-site Delivery Station (if necessary)	October 2014	Complete	
Procedures			
Pressurized Water Reactor Owners Group issues Nuclear System Steam Supply (NSSS)-specific guidelines	June 2013	Completed Issued May 2013	
Create ANO FLEX Strategy Guide	November 2014	Started	
Create Maintenance Procedures	November 2014	Not Started	
Training			
Develop Training Plan	June 2014	Started	December 2014
Implement Training	November 2014	Started	August 2015
Validation			
ANO-1 walk-throughs or demonstration(s) – including all FLEX equipment points of connect/tie-in for Phase 2 and 3	March 2015	Not Started	

Milestone	Target Completion Date*	Activity Status	Revised Target Completion Date
ANO-2 walk-throughs or demonstration(s) – including all FLEX equipment points of connect/tie-in for Phase 2 and 3	October 2015	Not Started	
Submit Completion Report	February 2016	Not Started	

Note: *Target Completion Date is the last submitted date from either the OIP or previous six month status reports.

4 Changes to Compliance Method

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

- The use of a portable FLEX reactor coolant system (RCS) makeup pump during Phase 2 for ANO-2 has been changed. The current strategy is to use an ANO-2 charging pump as the injection source to meet the FLEX RCS inventory control requirements for ANO-2 after the ANO-1 RCS cooldown is complete (Interim Safety Evaluation (ISE) Open Item 3.2.1.D and Audit Questions (AQ) ANO-035, ANO-046, ANO-106 and ANO-107). The NRC staff concluded "….that the licensee provided sufficient information to determine that there is reasonable assurance that the plan, when properly implemented, will meet the requirements of Order EA 12-049 at ANO-1 and ANO-2." (Reference 7).

- ANO-2 cooldown and depressurization strategy would be implemented within two hours of the ELAP event in accordance with WCAP-17601-P and as assumed in the specific ANO-2 site analysis (ISE Confirmatory Item 3.2.1.B, and AQ ANO-014, ANO-015, ANO-018, ANO-021, ANO-025, ANO-035, ANO-049, ANO-051, ANO-075, ANO-077, ANO-078, and ANO-085) (Reference 9).

- Entergy is submitting the following alternative to NEI 12-06 which is necessary to support the ANO-1 and ANO-2 strategies. The final analysis is expected by the end of the year 2015. The ANO-1 and ANO-2 strategy for FLEX requires use of ANO-1's Borated Water Storage Tank (BWST) and/or ANO-2's Refueling Water Tank (RWT). These tanks are not required for safe shutdown and so were not previously evaluated for tornado winds and tornado missiles in the current licensing basis. An evaluation was performed to determine if the tanks are "robust" (per the definition in Appendix A of NEI 12-06) for tornado and tornado missiles for use in the ANO FLEX strategy. NEI 12-06 defines robust as: "*Robust (designs): the design of an SSC either meets the current plant design basis for the applicable external hazards or has been shown by analysis or test to meet or exceed the current design basis."* When evaluated against current tornado wind and missile design basis for the site, the ANO-1's BWST and ANO-2's RWT tanks do not meet the NEI definition of "robust".

For the current licensing basis, ANO-1's BWST and ANO-2's RWT are the normal sources for large inventory additions to their respective RCS or spent fuel pool. They are located between the two units and they are partially protected by the reactor and turbine buildings. Each of the tanks has sufficient capacity to support the FLEX strategy for both units.

The tornado resistant design of the ANO units was completed prior to the issuance of Regulatory Guide (RG) 1.76, *Design Basis Tornado and Tornado Missiles for Nuclear Power Plants,* (ANO-1 Safety Analysis Report (SAR) Section 5.1.5 and ANO-2 SAR Section 3.3.2.1). The current design assumptions used for both units are conservative relative to the criteria of RG 1.76 Revision 1. When applying the conservative criteria of the current design basis of the site to ANO-1's BWST and ANO-2's RWT, the tanks do not meet the NEI definition of "robust".

As an alternative to the NEI 12-06 definition of robust, i.e., the use of current plant design basis, Entergy is requesting approval of the use of RG 1.76 Revision 1 as the criteria for robust with respect to tornado winds and missiles for the use of ANO-1's BWST and ANO-2's RWT for support of ANO FLEX strategies.

The preliminary evaluation indicates that, relative to RG 1.76 Revision 1, both tanks may be considered robust for tornados and tornado missiles and the ANO-1 and ANO-2 FLEX strategies may consider the tanks provide a robust source of borated water. Prior to crediting the tanks for compliance with EA-12-049, Entergy plans to complete a detailed evaluation to confirm and document the "robust" status of ANO-1's BWST and ANO-2's RWT relative to tornado and tornado missiles consistent with RG 1.76 Revision 1.

This evaluation is being used only for meeting NRC Order EA-12-049 and does not alter the current design bases of ANO-1's BWST and ANO-2's RWT. Nor does the use of RG 1.76 Revision 1 for this evaluation indicate any intent by ANO to alter the sites current design or licensing basis.

- The ANO-1 and ANO-2 strategy for FLEX requires use of the "Q" condensate storage tank (QCST). Using the same approach as the one described above for the ANO-1 BWST and ANO-2 RWT, Entergy is currently pursuing applying RG 1.76 Revision 1 to the QCST to qualify additional water supply through a finite element analysis. In a similar way as described above, this represents an alternative to NEI 12-06 definition of robust.

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

Entergy expects to comply with the order implementation date for ANO-2; however, as part of a separate submittal (Reference 5) Entergy requested an extension for ANO-1 for no later than startup of ANO-2 from refueling outage 2R24 currently scheduled for October 2015. The request was submitted to support the RCS inventory control strategy associated with the alternate power connection for the charging pump. This request for relief/relaxation for ANO-1 was approved by the NRC via Reference 6.

6 Open Items from OIP and Interim Staff Evaluation (ISE)

The following tables provide a summary and status of any open items documented in the OIP and any open items or confirmatory items documented in the ISE (Reference 10). Also provided is a listing of Audit Questions and the status of each item.

OIP Open Items	Status
There were no open items documented in the ANO OIP.	N/A

ISE Open Items		Status
3.2.1.D	The NRC staff has reviewed the ANO approach that uses the ANO-2 charging pump to supply makeup to the ANO-1 RCS for inventory control but has not concluded that this approach is acceptable. The staff has identified a number of concerns that need to be addressed regarding the proposed RCS inventory control strategy. Therefore, this open item tracks completion of the development of an acceptable integrated RCS makeup strategy that meets the requirements of Order EA-12-049.	This item is addressed by updated AQ ANO-035, ANO-046, ANO-106, and ANO-107 responses spreadsheet on the ePortal.
3.2.1.8.B	For ANO-1 and ANO-2, verify resolution of the generic concern associated with the modeling of the timing and uniformity of the mixing of a liquid boric acid solution injected into the RCS under natural circulation conditions potentially involving two-phase flow.	This item is addressed by updated AQ ANO-041 response spreadsheet on the ePortal.

ISE Confirmatory Items		Status
3.1.1.2.A	Confirm whether there is a need for a power source to move or deploy the FLEX equipment (e.g., to open the door from a storage location).	This item is addressed on updated Audit Question (AQ) response spreadsheet on the ePortal.
3.1.1.4.A	Confirm that the local staging area for the Regional Response Center (RRC) equipment has been identified and a description of the methods to be used to deliver the equipment to the site has been provided.	In progress. This item to be addressed on updated AQ response spreadsheet on the ePortal when the information is available.

ISE Confirmatory Items		Status
3.1.3.1.A	Confirm that the axis of separation and distance between the portable equipment storage buildings provides assurance that a single tornado will not impact both buildings.	This item is addressed by updated AQ ANO-002 response spreadsheet on the ePortal.
3.2.1.A	Confirm that the Atmospheric Dump Valves and associated piping at both units are sufficiently robust and will remain functional during and following a seismic event.	This item is addressed by updated AQ ANO-109 response spreadsheet on the ePortal.
3.2.1.B	Confirm that the ANO-2 cooldown analysis supports the delay in the cooldown to eight hours following the ELAP.	This item is addressed by updated AQ-014, 015, 018, 021, 025,035, 049, 051, 075, 077, 078, and 085 responses spreadsheet on the ePortal.
3.2.1.C	Confirm that the evaluation of the emergency feedwater (EFW) turbine exhaust piping for robustness is completed with acceptable results.	This item is addressed by updated AQ 109 response spreadsheet on the ePortal.
3.2.1.1.A	Confirm that reliance on the RELAP5/MOD2-B&W code in the ELAP analysis for ANO-1 is limited to the flow conditions prior to boiler-condenser cooling initiation.	In progress. This item to be addressed by update to AQ ANO-015 response spreadsheet on the ePortal when the information is available.
3.2.1.1.B	Confirm that the use of CENTS in the ELAP analysis is limited to the flow conditions prior to reflux boiling initiation.	This item is addressed by updated AQ-015 response spreadsheet on the ePortal.
3.2.1.2.A	For ANO-1 confirm that the strategy is effective in keeping the RCS temperatures within the limits of	NRC Confirmatory Action

ISE Confirmatory Items		Status
	the seal design temperatures, and supports the leakage rate (two gallons per minute (gpm)/seal) used in the ELAP analysis.	
3.2.1.2.B	For ANO-1, confirm adequate justification for (including seal leakage testing data) the use of two gpm/seal in the ELAP analysis.	NRC Confirmatory Action
3.2.1.3.A	Verify the ELAP analysis assumption that decay heat is per ANS [American Nuclear Society] 5.1-1979 + 2 sigma, or equivalent.	This item is addressed for ANO-2 by updated AQ ANO-019 response spreadsheet on the ePortal. For ANO-1 – In progress. This item to be addressed by update to AQ ANO-019 response spreadsheet on the ePortal when the information is available.
3.2.1.4.A	For ANO-1, confirm the revision to WCAP-17601 used and also confirm whether there are any deviations taken from the assumptions presented in NEI 12-06, Section 3.2.	This item is addressed by updated AQ ANO-075 response spreadsheet on the ePortal.
3.2.1.8.A	Confirm the acceptability of the ANO-2 shutdown margin results after accounting for the delay in the cooldown to eight hours following an ELAP.	This item is addressed by updated AQ ANO-078 response spreadsheet on the ePortal.
3.2.1.9.A	Confirm the adequacy of the RCS injection strategy considering the analysis in licensee calculation CN-SEE-II-13-2 as it relates to the delay in the ANO-2 cooldown to eight hours following an ELAP.	This item is addressed by updated AQ ANO-051 and ANO-077 responses spreadsheet on the ePortal.
3.2.1.9.B	Confirm the final specific times for connection and use of the portable RRC pumps.	In progress. This item to be addressed by update to AQ

ISE Confirmatory Items		Status
		ANO-035 response spreadsheet on the ePortal when the information is available.
3.2.3.A	Confirm acceptable results of the ANO-2, containment ELAP analysis after it is completed.	This item is addressed by updated AQ ANO-032 response spreadsheet on the ePortal.
3.2.4.2.A	Confirm acceptable results of the ANO-2, Main Control Room heat-up calculation after it is performed.	This item is addressed by updated AQ ANO-061 response spreadsheet on the ePortal.
3.2.4.2.B	Confirm the adequacy of ANO-2 battery room ventilation for extreme temperature protection when the design development is completed.	This item is addressed by updated AQ ANO-125 response spreadsheet on the ePortal.
3.2.4.2.C	Confirm the adequacy of calculations for extreme temperature protection regarding ANO-2, turbine-driven EFW pump room and electrical equipment rooms when the design development is completed.	This item is addressed by updated AQ ANO-060 response spreadsheet on the ePortal.
3.2.4.4.A	Confirm that upgrades to the site's communications systems have been completed as planned.	NRC Confirmatory Action
3.2.4.7.A	Confirm that a final strategy for use of the mobile boration unit is developed.	This item is addressed by updated AQ ANO-044 response spreadsheet on the ePortal.
3.2.4.10.A	For ANO-2, confirm that an acceptable load shedding strategy is developed.	This item is addressed by updated AQ ANO-128 response spreadsheet on the ePortal.
3.2.4.10.B	For ANO-2, confirm that an acceptable dc load	This item is

ISE Confirmatory Items		Status
	profile is developed.	addressed by updated AQ ANO-070 response spreadsheet on the ePortal.
3.2.4.10.C	For ANO-2, confirm that an acceptable basis for the minimum dc bus voltage is determined.	This item is addressed by updated AQ ANO-072 response spreadsheet on the ePortal.
3.3.2.A	Confirm that acceptable strategies and their bases are developed and maintained in an overall program document, as described in NEI 12-06, Section 11.8, items 1 and 3.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.4.A	Confirm that the licensee has fully addressed considerations (2) through (10) of NEI 12-06, Section 12.2, Minimum Capability of Off-Site Resources, which requires each site to establish a means to ensure the necessary resources will be available from off-site.	This item is addressed on updated AQ response spreadsheet on the ePortal.

Audit Questions	Status	Completion or Target Date
ANO-001	Closed*	
ANO-002	Updated response available on the ePortal (ISE Confirmatory Item 3.1.3.1.A)	
ANO-003	Closed*	
ANO-004	Closed*	
ANO-006	Closed*	
ANO-010	Closed*	
ANO-011	Updated response available on the ePortal	
ANO-012	Closed*	
ANO-013	Closed*	
ANO-014	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
ANO-015	Updated response available on the ePortal (ISE	

Audit Questions	Status	Completion or Target Date
	Confirmatory Item 3.2.1.B)	
	In progress - This AQ response spreadsheet on the ePortal to be updated when information is available (ISE Confirmatory Item 3.2.1.1.A)	February 2015
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.1.B)	
ANO-018	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
ANO-019	ANO-1 – In progress - This AQ response spreadsheet on the ePortal to be updated when information is available (ISE Confirmatory Item 3.2.1.3.A)	February 2015
	Updated response for ANO-2 available on the ePortal (ISE Confirmatory Item 3.2.1.3.A)	
ANO-020	Closed*	
ANO-021	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
ANO-022	Closed*	
ANO-023	Closed*	
ANO-024	Closed*	
ANO-025	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
ANO-026	Closed*	
ANO-027	Closed*	
ANO-028	Closed*	
ANO-029	Closed*	
ANO-030	Closed*	
ANO-032	Updated response available on the ePortal (ISE Confirmatory Item 3.2.3.A)	
ANO-034	Closed*	
ANO-035	Updated response available on the ePortal (ISE Open Item 3.2.1.D)	
	Updated response available on the ePortal(ISE Confirmatory Item 3.2.1.B)	
	In progress - This AQ response spreadsheet on the ePortal to be updated when information is available	February 2015

Audit Questions	Status	Completion or Target Date
	(ISE Confirmatory Item 3.2.1.9.B)	
ANO-041	ANO-1 – In progress - This AQ response spreadsheet on the ePortal to be updated when information is available (ISE Open Item 3.2.1.8.B)	February 2015
	ANO-2 – Updated response available on the ePortal (ISE Open Item 3.2.1.8.B)	
ANO-044	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.7.A)	
ANO-045	Updated response available on the ePortal	
ANO-046	Updated response available on the ePortal (ISE Open Item 3.2.1.D)	
ANO-047	Updated response available on the ePortal	
ANO-049	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
ANO-051	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.9.A	
ANO-055	Closed*	
ANO-056	Closed*	
ANO-059	Updated response available on the ePortal	
ANO-060	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.2.C)	
ANO-061	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.2.A)	
ANO-062	Updated response available on the ePortal	
ANO-063	Updated response available on the ePortal	
ANO-064	Closed*	
ANO-066	Closed*	
ANO-067	Updated response available on the ePortal	
ANO-068	Closed*	
ANO-069	Updated response available on the ePortal	
ANO-070	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.10.B)	
ANO-071	Updated response available on the ePortal	

Audit Questions	Status	Completion or Target Date
ANO-072	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.10.C)	
ANO-075	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.4.A)	
ANO-076	Closed	
ANO-077	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.9.A)	
ANO-078	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.8.A)	
ANO-080	Closed*	
ANO-082	Closed*	
ANO-084	Closed*	
ANO-085	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
ANO-086	Closed*	
ANO-088	Closed*	
ANO-089	Updated response available on the ePortal	
ANO-090	Updated response available on the ePortal	
ANO-091	Closed*	
ANO-092	Closed*	
ANO-094	Updated response available on the ePortal	
ANO-098	Updated response available on the ePortal	
ANO-100	Updated response available on the ePortal	
ANO-104	Closed*	
ANO-106	Updated response available on the ePortal (ISE Open Item 3.2.1.D)	
ANO-107	Updated response available on the ePortal (ISE Open Item 3.2.1.D)	

Audit Questions	Status	Completion or Target Date
ANO-108	Closed*	
ANO-109	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.A)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.C)	
ANO-110	Updated response available on the ePortal	
ANO-112	Closed*	
ANO-113	Updated response available on the ePortal	
ANO-115	In progress - This AQ response on the ePortal to be updated when information is available	February 2015
ANO-116	Closed*	
ANO-117	Updated response available on the ePortal	
ANO-118	Closed*	
ANO-120	Closed*	
ANO-123	Updated response available on the ePortal	
ANO-125	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.2.B)	
ANO-126	Updated response available on the ePortal	
ANO-127	Updated response available on the ePortal	
ANO-128	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.10.A)	
ANO-129	Updated response available on the ePortal	
The following additional questions related to ANO Cross-Unit RCS Makeup Strategy were received in January 2014 during the audit process		
ANO-1	Updated response available on the ePortal	
ANO-2	Updated response available on the ePortal	
ANO-3	Closed*	
ANO-4	Updated response available on the ePortal	
ANO-5	Closed*	
ANO-6	Updated response available on the ePortal	
ANO-7	Updated response available on the ePortal	
ANO-8	Updated response available on the ePortal	
ANO-9	Updated response available on the ePortal	

Audit Questions	Status	Completion or Target Date
ANO-10	Closed*	
ANO-11	Updated response available on the ePortal	
ANO-12	Closed*	
ANO-13	Closed*	
ANO-14	Updated response available on the ePortal	
ANO-15	Updated response available on the ePortal	
ANO-16	Updated response available on the ePortal	

*Closed indicates that Entergy's response is complete.

7 Potential ISE Impacts

The following items have been identified which have potential impact to the Interim Staff Evaluation (ISE) except for those identified in Section 6.

1. ISE/TER (Technical Evaluation Report) Section 3.1.2.2, Page 15, the TER states "ANO-2 FLEX RCS makeup pump requires primary and secondary connections to the HPSI/charging piping and the refueling water tank (RWT) or borated water storage tank (BWST)." The current strategy utilizes an ANO-2 charging pump as the RCS injection source for both units. This strategy eliminates the need for onsite portable RCS makeup pumps, and any connections to the HPSI/charging piping.

2. ISE/TER Section 3.2.1, Page 29, the TER states, "…the Boric Acid Makeup Tanks (BAMTs), RWT, BWST or the new borated water tank will provide this function." Currently, besides the option to install a new borated water tank, Entergy is also pursuing applying RG 1.76 Revision 1 to the borated water storage tanks available at the site to qualify additional borated water through a finite element analysis.

3. ISE/TER Section 3.2.1, Page 31, the TER states, "…and ANO-2 indicate cooldown is currently scheduled to begin at approximately eight hours from event initiation. The ANO-2 cooldown requires confirmation of existing analysis or additional analysis during the ANO-2 detailed design to support the delay in the cooldown to eight hours following the ELAP." The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis.

4. ISE/TER Section 3.2.1, Page 31, item c, the TER states, "This analysis requires confirmation or additional analysis during the ANO-2 detailed design to support the delay in the ANO-2 cooldown to two hours following an ELAP." The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis.

5. ISE/TER Section 3.2.1, Page 31, item d, the TER states, “For ANO-2 the suction source will be either the ANO-1 BWST or ANO-2 RWT.” The current strategy is to use an ANO-2 charging pump. The suction source is provided from the ANO-2 boric acid makeup tank (BAMT) and then the ANO-2 RWT.

6. ISE/TER Section 3.2.1, Page 35, the TER states, “1 RCS makeup pump (Unless it is decided to use charging pump for ANO-2 RCS makeup).” The current strategy is to use an ANO-2 charging pump; therefore, the RCS makeup pump is eliminated.

7. ISE/TER Section 3.2.1.1, Page 39, the TER states, “The current ANO-2 cooldown strategy, as detailed in the 6-month update, delays the ANO-2 cooldown until eight hours following an ELAP.” The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis.

8. ISE/TER Section 3.2.1.1, Page 40, the TER states, “Recommendation 2 – The ANO-2 strategy incorporates cooldown starting at eight hours…” The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis.

9. ISE/TER Section 3.2.1.1, Page 40, the TER states, “Recommendation 6 – …to support the delay in the ANO-2 cooldown to eight hours following an ELAP.” The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis.

10. ISE/TER Section 3.2.1.8, Page 48, the TER states, “The analysis requires confirmation or additional analysis during the ANO-2 detailed design to support the delay in the cooldown to eight hours following the ELAP.” The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis.

11. ISE/TER Section 3.2.1.8, Page 51, the TER states, “CN-SEE-II-13-2, Revision 1, requires confirmation or additional analysis during the ANO-2 detailed design to support the delay in the ANO-2 cooldown to eight hours following an ELAP.” The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis (CN-SEE-II-13-2, Revision 1).

12. ISE/TER Section 3.2.1.8, Page 52, the TER states, “…the analysis performed in CN-SEE-II-13-2, Revision 1, requires confirmation or additional analysis during the ANO-2 detailed design to support the delay in the ANO-2 cooldown to eight hours following an ELAP.” The current strategy is to begin cooldown at two hours following a reactor trip resulting from a BDBEE consistent with the Westinghouse site-specific analysis (CN-SEE-II-13-2, Revision 1).

13. ISE/TER Section 3.2.1.8, Page 52, the TER states, “An alternate strategy is under consideration to use the charging pump to make up to the ANO-2 RCS after ANO-1 cooldown is complete.” The use of the charging pumps to make up to the ANO-2 RCS has become the primary strategy.

14. ISE/TER Section 3.2.4.7, Page 65, the TER states, “For ANO-2,…RCS inventory will be added as needed by utilizing a portable FLEX RCS makeup pump.” The current strategy utilizes the ANO-2 charging pumps as the means for RCS inventory control for both ANO-1 and ANO-2.

15. ISE/TER Section 3.2.4.7, Page 66, the TER states, “For high wind BDBEEs, a new borated water storage tank, which…” Currently, besides the option to install a new borated water tank, Entergy is also pursuing applying RG 1.76 Revision 1, Design Basis Tornado and Tornado Missiles for Nuclear Power Plants, to the borated water storage tanks available at the site to qualify additional borated water through a finite element analysis.

16. ISE/TER Section 3.2.4.7, Page 67, the TER states, “This 30-minute action to manually align valves in the Intake Structure will be validated during the procedure development phase and staffing assessment.” To qualify additional QCST inventory beyond the 30 minutes to allow enough time for aligning this new permanently installed crosstie between the fire water and the service water, Entergy is currently pursuing applying RG 1.76 Revision 1, Design Basis Tornado and Tornado Missiles for Nuclear Power Plants, to the QCST to qualify additional water through a finite element analysis.

17. ISE/TER Section 3.2.4.7, Page 68, the TER states, “A new borated water tank will be installed for coping with FLEX following high wind BDBEEs.” Currently, besides the option to install a new borated water tank, Entergy is also pursuing applying RG 1.76 Revision 1, Design Basis Tornado and Tornado Missiles for Nuclear Power Plants, to the borated water storage tanks available at the site to qualify additional borated water through a finite element analysis.

18. ISE/TER Section 3.2.4.7, Pages 68 and 69, the TER states, “.An alternate strategy is under consideration to use the charging pumps to make up to the ANO-2 RCS after the AN0-1 cooldown is complete.” The current strategy utilizes the ANO-2 charging pumps as the means for RCS inventory control for both ANO-1 and ANO-2.

8 References

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

1. *OIP in Response to March 12, 2012, Commission Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs (Order Number EA-12-049)*, dated February 28, 2013 (0CAN021302) (ML13063A151)

2. NRC Order Number EA-12-049, *Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs*, dated March 12, 2012 (0CNA031206) (ML12056A045)

3. Entergy letter to NRC, *First Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events*

(Order Number EA-12-049), dated August 28, 2013 (0CAN081302) (ML13241A414)

4. Entergy letter to NRC, *Emergency Preparedness Commitment Changes Related to the March 12, 2012, Information Request,* dated October 25, 2013 (0CAN101303)

5. Entergy letter to NRC, *Request for Implementation Date Relief in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (BDBEEs) (NRC Order EA-12-049) Arkansas Nuclear One – Unit 1*, dated April 8, 2014 (1CAN041401) (ML14098A114)

6. NRC letter, *Arkansas Nuclear One, Unit 1 –Relaxation of the Schedule Requirements for Order EA-12-049 "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design Basis External Events*", dated May 20, 2014 (ML14114A697)

7. NRC letter, *Arkansas Nuclear One, Units 1 and 2 – Update Regarding Audit Activities Associated with Order EA-12-049 (Mitigation Strategies)*, dated May 28, 2014 (ML14140A514)

8. Entergy letter to NRC, *Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events* (Order Number EA-12-049), dated February 27, 2014 (0CAN021405) (ML14059A229)

9. Westinghouse calculation CN-SEE-II-13-2, Revision 1, *Arkansas Nuclear One Unit 2 Reactor Coolant System Inventory, Shutdown Margin, and Modes 5 and 6 Boric Acid Precipitation Control Analyses to Support the Diverse and Flexible Coping Strategies (FLEX)*, dated February 19, 2013.

10. NRC letter, *Arkansas Nuclear One, Units 1 and 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF0942 and MF0943),* dated February 25, 2014