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Site Vice President
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OCAN021405

February 27, 2014

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
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SUBJECT: 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 (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 (OCNA031206) (ML12056A045)
 2. NRC Interim Staff Guidance JLD-ISG-2012-01, *Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs*, Revision 0, dated August 29, 2012 (ML12229A174)
 3. Nuclear Energy Institute (NEI) 12-06, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide*, Revision 0, dated August 2012 (ML12221A205)
 4. Entergy letter to NRC, *Initial 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 October 26, 2012 (OCAN101203) (ML12305A372)
 5. 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 (OCAN021302) (ML13063A151)

6. 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 (OCAN081302)

Dear Sir or Madam:

On March 12, 2012, the NRC issued an order (Reference 1) to Entergy 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 BDBEE.

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

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

This letter contains no new regulatory commitments. Should you have any questions regarding this submittal, please contact Stephanie Pyle at 479.858.4704.

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

Sincerely,

Original Signed by Jeremy G. Browning

JGB/nbm

Attachment: Arkansas Nuclear One Units 1 and 2 Second 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
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Attachment to

0CAN021405

**Arkansas Nuclear One (ANO) Units 1 and 2 (ANO-1 and ANO-2) Second Six Month
Status Report for the Implementation of Order EA-12-049, Order Modifying
Licenses with Regard to Requirements for Mitigation Strategies for
Beyond-Design-Basis External Events (BDBEEs)**

**ANO-1 and ANO-2 Second 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 3), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

2 Milestone Accomplishments

The following milestone(s) have been completed since August 28, 2013, and are current as of January 31, 2014:

- First Six-Month Status Report — August 2013
- Second Six-Month Status Report — Complete with submission of this document in February 2014
- Modifications Evaluation – January 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.

The milestone target completion date for Perform Staffing Analysis has been changed to September 2014, via NRC correspondence (Reference 4). This new milestone target completion date does not impact the Order implementation date.

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	Not Started	
Update 4	February 2015	Not Started	
Update 5	August-2015	Not Started	
Perform Staffing Analysis	December 2013	Started	September 2014
Modifications			

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
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	Not Started	
Procure	November 2014	Not Started	
Off-site FLEX Equipment			
Develop Strategies with Regional Response Center	November 2013	Started	
Install Off-site Delivery Station (if necessary)	October 2014	Not Started	
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	Not Started	
Implement Training	November 2014	Not Started	
Validation			
ANO-1 walk-throughs or demonstration(s) – including all FLEX equipment points of connect/tie-in for Phase 2 and 3	November 2014	Not Started	March 2015*
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 overall integrated plan or previous six month status reports.

**Refueling outage was moved from late 2014 to early 2015

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.

- As stated in the revised ANO FLEX OIP (Reference 3, Enclosure 2), the current ANO-2 Phase 2 reactor coolant system (RCS) makeup strategy is to use a portable FLEX RCS makeup pump. An alternate strategy is under consideration to use the ANO-2 charging pumps to makeup to the ANO-2 RCS after the ANO-1 cooldown is complete. This is the subject of current dialogue with the NRC Staff, so a final decision is in the process of being made.
- As part of the First Six-Month Status Report (Reference 3), the following change to compliance method was included:
 - ANO-1 RCS inventory control is planned to be provided by re-energizing an ANO-2 charging pump from the portable diesel generator and cross-connection of the charging pump to ANO-1 high pressure injection. Entergy intends to continue with the modifications to support this strategy.

This strategy is considered an alternate method of compliance because it does not utilize a portable pump per the guidelines of Section 3.2.2(13) of Nuclear Energy Institute (NEI) 12-06. The justification for this alternative method is provided below:

This strategy for ANO-1 meets the requirement of Order EA-12-049 (Reference 2) because it is an alternate method of meeting NEI 12-06. The order states, *"The initial phase requires the use of installed equipment and resources to maintain or restore core cooling. The transition phase requires providing sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources from off site."* NEI 12-06 allows for crediting plant installed equipment to meet the guidance as long as there is sufficient diversity. The use of an ANO-2 charging pump for ANO-1 and/or ANO-2 RCS inventory control relies upon portable onsite FLEX equipment. A portable FLEX generator and temporary power cables are required to re-power one of three charging pumps. The charging pumps are robust for all BDBEEs. High pressure hoses are used to make the final connections from the new piping connections to the cross-tie header. Because the use of charging pumps for this function is considered an acceptable alternate method for meeting NEI 12-06, the ANO-1 strategy for RCS Inventory Control meets the requirements of EA-12-049.

The NRC provided sixteen additional questions related to this strategy as part of the Audit Process. These sixteen new Audit Questions are reflected in the Audit Questions table in Section 6 of this report.

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

Entergy expects to comply with the order implementation date for ANO-2; however, relief/relaxation for ANO-1 is expected to be needed to support the RCS inventory control strategy associated with the alternate power connection for the charging pump.

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. A fourth table includes a listing of Audit Questions and the status of each item.

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

ISE Open Items	Status
The U.S. Nuclear Regulatory Commission (NRC) has not issued an ISE for ANO; therefore, there are no open items from the ISE identified at this time.	N/A

ISE Confirmatory Items	Status
The NRC has not issued an ISE for ANO; therefore, there are no confirmatory items from the ISE identified at this time.	N/A

Audit Questions	Status	Completion or Target Date
ANO-001	Closed	
ANO-002	Closed	
ANO-003	Closed	
ANO-004	Closed	
ANO-006	Closed	
ANO-010	Closed	
ANO-011	Closed	
ANO-012	Closed	
ANO-013	Closed	
ANO-014	In progress	February 2015
ANO-015	In progress	February 2015
ANO-018	In progress	February 2015
ANO-019	In progress	August 2014
ANO-020	Closed	
ANO-021	In progress	February 2015

Audit Questions	Status	Completion or Target Date
ANO-022	Closed	
ANO-023	Closed	
ANO-024	Closed	
ANO-025	In progress	February 2015
ANO-026	Closed	
ANO-027	Closed	
ANO-028	Closed	
ANO-029	Closed	
ANO-030	Closed	
ANO-032	In progress	February 2015
ANO-034	Closed	
ANO-035	Closed	
ANO-041	Closed	
ANO-044	Closed	
ANO-045	In progress	August 2014
ANO-046	Closed	
ANO-047	In progress	August 2014
ANO-049	In progress	February 2015
ANO-051	In progress	February 2015
ANO-055	Closed	
ANO-056	Closed	
ANO-059	Closed	
ANO-060	Closed	
ANO-061	Closed	
ANO-062	Closed	
ANO-063	In progress	August 2014
ANO-064	Closed	
ANO-066	Closed	
ANO-067	In progress	August 2014
ANO-068	Closed	
ANO-069	In progress	August 2014
ANO-070	Closed	
ANO-071	Closed	
ANO-072	Closed	
ANO-075	In progress	February 2015
ANO-076	Closed	

Audit Questions	Status	Completion or Target Date
ANO-077	In progress	February 2015
ANO-078	In progress	February 2015
ANO-080	Closed	
ANO-082	Closed	
ANO-084	Closed	
ANO-085	In progress	February 2015
ANO-086	Closed	
ANO-088	Closed	
ANO-089	Closed	
ANO-090	Closed	
ANO-091	Closed	
ANO-092	Closed	
ANO-094	Closed	
ANO-098	Closed	
ANO-100	In progress	February 2015
ANO-104	Closed	
ANO-106	Closed	
ANO-107	In progress	February 2015
ANO-108	Closed	
ANO-109	In progress	August 2014
ANO-110	Closed	
ANO-112	Closed	
ANO-113	Closed	
ANO-115	In progress	August 2014
ANO-116	Closed	
ANO-117	In progress	August 2014
ANO-118	Closed	
ANO-120	Closed	
ANO-123	Closed	
ANO-125	In progress	February 2015
ANO-126	Closed	
ANO-127	In progress*	February 2015
ANO-128	In progress	February 2015
ANO-129	In progress	August 2014

The following additional questions related to ANO Cross-Unit RCS Makeup Strategy were received in January 2014 during the audit process

Audit Questions	Status	Completion or Target Date
ANO-1	In progress	February 2014
ANO-2	In progress	February 2014
ANO-3	In progress	February 2014
ANO-4	In progress	February 2014
ANO-5	In progress	February 2014
ANO-6	In progress	February 2014
ANO-7	In progress	February 2014
ANO-8	In progress	February 2014
ANO-9	In progress	February 2014
ANO-10	In progress	February 2014
ANO-11	In progress	February 2014
ANO-12	In progress	February 2014
ANO-13	In progress	February 2014
ANO-14	In progress	February 2014
ANO-15	In progress	February 2014
ANO-16	In progress	February 2014

*To include supplemental guidance provided in the NEI position paper entitled *Shutdown/Refueling Modes*.

7 Potential ISE Impacts

There are no potential impacts to the ISE identified at this time except for those identified in Section 6.

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 (OCAN021302) (ML13063A151)
2. NRC Order Number EA-12-049, *Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for BDBEEs*, dated March 12, 2012 (OCNA031206) (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 (OCAN081302) (ML13241A414)
4. Entergy letter to NRC, *Emergency Preparedness Commitment Changes Related to the March 12, 2012, Information Request*, dated October 25, 2013 (OCAN101303)