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February 20, 2017

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ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Monticello Nuclear Generating Plant  
Docket No. 50-263  
Renewed Facility Operating License No. DPR-22

Monticello Nuclear Generating Plant's Eighth 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) (TAC No. MF0923)

References:

1. NRC Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ADAMS Accession No. ML12054A735).
2. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0, dated August 29, 2012 (ADAMS Accession No. ML12229A174).
3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012 (ADAMS Accession No. ML12242A378).
4. NSPM Letter to NRC, "Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," L-MT-12-088, dated October 29, 2012 (ADAMS Accession No. ML12305A420).

5. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's 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)," L-MT-13-017, dated February 28, 2013 (ADAMS Accession No. ML13066A066).
6. NSPM Letter to NRC, "Monticello's 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)," L-MT-13-079, dated August 28, 2013 (ADAMS Accession No. ML13241A200).
7. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's 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) (TAC No. MF0923)," L-MT-14-014, dated February 28, 2014 (ADAMS Accession No. ML14065A037).
8. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's 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 (Order Number EA-12-049) (TAC No. MF0923)," L-MT-14-073, dated August 28, 2014 (ADAMS Accession No. ML14241A260).
9. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Fourth 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) (TAC No. MF0923)," L-MT-15-004, dated February 24, 2015 (ADAMS Accession No. ML15055A599).
10. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Fifth 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) (TAC No. MF0923)," L-MT-15-059, dated August 19, 2015 (ADAMS Accession No. ML15232A553).
11. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Sixth 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) (TAC No. MF0923)," L-MT-16-009, dated February 22, 2016 (ADAMS Accession No. ML16053A454).

12. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Seventh 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) (TAC No. MF0923)," L-MT-16-038, dated August 19, 2016 (ADAMS Accession No. ML16235A005).

On March 12, 2012, the Nuclear Regulatory Commission (NRC) staff issued Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (Reference 1), to all NRC power reactor licensees and holders of construction permits in active or deferred status. Reference 1 was effective immediately and directed Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, to develop, implement and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event for the Monticello Nuclear Generating Plant (MNGP). Specific requirements are outlined in Attachment 2 of Reference 1.

Pursuant to Condition C of Section IV, Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (ISG), an overall integrated plan, and status reports at six-month intervals following the submittal of the overall integrated plan. The ISG (Reference 2) endorses, with clarifications, an industry guidance document from the Nuclear Energy Institute (NEI), NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0 (Reference 3). Reference 4 provided the MNGP initial 60-day status report regarding mitigation strategies. Reference 5 provided the overall integrated plan for MNGP. The six-month status reports have been provided in References 6 through 12.

The purpose of this letter is to provide the eighth six-month status report pursuant to Section IV, Condition C.2 of Reference 1, which delineates the progress made in implementing the requirements of the Reference 1 Order. Enclosure 1 provides a report of milestone accomplishments since the Reference 12 status report was submitted, including changes to the compliance method, schedule, or the need and basis for relief, if any.

Enclosure 2 provides a response to an outstanding NRC question and provides clarification of a Spent Fuel Pool Instrument Order (EA-12-051) response previously provided to the NRC.

Please contact John Fields, at 763-271-6707, if additional information or clarification is required.

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on February 20, 2017.



Peter A. Gardner  
Site Vice President, Monticello Nuclear Generating Plant  
Northern States Power Company – Minnesota

Enclosures (2)

cc: Administrator, Region III, USNRC  
Project Manager, Monticello Nuclear Generating Plant, USNRC  
Resident Inspector, Monticello Nuclear Generating Plant, USNRC

**Monticello Nuclear Generating Plant  
Eighth Six-Month Status Report for Implementation of Order EA-12-049,  
Order Modifying Licenses with Regard to Requirements for  
Mitigation Strategies for Beyond-Design-Basis External Events**

**1.0 Introduction**

The Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," on March 12, 2012 (Reference 1). The Order required licensees to develop, implement and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event. The Order required licensees to submit an Overall Integrated Plan (OIP), including a description of how the requirements in Attachment 2 of the Order would be achieved. Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, submitted the OIP (Reference 2) for the Monticello Nuclear Generating Plant (MNGP) on February 28, 2013. In accordance with Section IV, Condition C.2 of Reference 1, NSPM submitted the first six-month status report on August 28, 2013 (Reference 3), the second six-month report on February 28, 2014 (Reference 4), the third six-month report on August 28, 2014 (Reference 6), the fourth six-month report on February 24, 2015 (Reference 9), the fifth six-month report on August 19, 2015 (Reference 10), the sixth six-month report on February 22, 2016 (Reference 11) and the seventh six-month report on August 19, 2016 (Reference 12).

On November 25, 2013, the NRC issued an Interim Staff Evaluation (ISE) for MNGP's Mitigating Strategies OIP (Reference 5). The ISE documents the NRC's conclusion that NSPM has provided sufficient information to determine that there is reasonable assurance that the OIP, when properly implemented, will meet the requirements of Order EA-12-049 at MNGP. The ISE also documents the confirmatory and open items identified by the NRC as a result of their review and audit of MNGP's OIP.

This Enclosure provides the eighth six-month status report. This status report includes an update of milestone accomplishments since submittal of the seventh six-month status report, including changes to the compliance method, schedule, or the need and basis for relief, if any. This status report also provides an update on NSPM's closure of the open and confirmatory items identified in the NRC's ISE, if any. This information is current as of January 31, 2017.

## 2.0 Milestone Accomplishments

The original milestone schedule with target dates was provided in Attachment 2 of the Reference 2 Enclosure. No milestones were completed since the last six-month status report and prior to January 31, 2017.

## 3.0 Milestone Schedule Status

The following Table 1 provides an update of the milestone schedule for the OIP. This table includes a brief milestone status and a revised target date, if the target date has changed. The target dates are planning dates subject to change as design and implementation details are developed. This schedule is current as of January 31, 2017.

No activity statuses or target dates have changed for this status report.

| <b>Table 1 – Overall Integrated Plan Milestone Schedule</b>    |                               |                        |                                       |
|--|-------------------------------|------------------------|---------------------------------------|
| <b>Milestone</b>   | <b>Target Completion Date</b> | <b>Activity Status</b> | <b>Revised Target Completion Date</b> |
| Submit 60 Day Status Report                                    | October 2012*                 | Complete               |                                       |
| Submit Overall Integrated Plan                                 | February 2013*                | Complete               |                                       |
| Submit First Six-Month Status Report                           | August 2013*                  | Complete               |                                       |
| Commence Engineering Modification Design – Phase 2 & 3         | January 2014                  | Complete               |                                       |
| Submit Second Six-Month Status Report                          | February 2014*                | Complete               |                                       |
| National SAFER Response Center Operational (MNGP)              | March 2015                    | Complete               |                                       |
| Procure Equipment  | April 2015                    | Complete               |                                       |
| Submit Third Six-Month Status Update                           | August 2014*                  | Complete               |                                       |
| Commence Installation for Online Modifications – Phase 2 and 3 | October 2014                  | Complete               |                                       |
| Implement Storage  | April 2015                    | Complete               |                                       |
| Issue Maintenance Procedures                                   | March 2015                    | Complete               |                                       |
| Implement Training   | April 2015                    | Complete               |                                       |
| Submit Fourth Six-Month Status Report                          | February 2015*                | Complete               |                                       |
| Submit Fifth Six-Month Status Report                           | August 2015*                  | Complete               |                                       |

| <b>Table 1 – Overall Integrated Plan Milestone Schedule</b> |                               |                              |                                       |
|---|-------------------------------|------------------------------|---------------------------------------|
| <b>Milestone</b>  | <b>Target Completion Date</b> | <b>Activity Status</b>       | <b>Revised Target Completion Date</b> |
| Submit Sixth Six-Month Status Report                        | February 2016*                | Complete                     |                                       |
| Submit Seventh Six-Month Status Report                      | August 2016*                  | Complete                     |                                       |
| Submit Eighth Six-Month Status Report                       | February 2017                 | Complete with this submittal |                                       |
| Submit Staffing Assessment                                  | Four months prior to R27*     | Complete                     |                                       |
| Complete Communication Recommendations                      | Four months prior to R27*     | Complete                     |                                       |
| Issue Procedures Updated for FLEX strategies                | May 2015                      | Complete                     |                                       |
| Implementation Outage                                       | May 2015 (End of R27)*        | Complete                     |                                       |
| Validation Walk-throughs                                    | April 2015                    | Complete                     |                                       |
| Submit Completion Report                                    | July 2017                     | Not Started                  |                                       |

\*Required dates

#### **4.0 Proposed Changes to Compliance Method**

There are no additional changes to the compliance methods in the Reference 2 OIP. No updates to information in the OIP are included in this report.

#### **5.0 Need and Basis for Relief from the Requirements of the Order**

NSPM expects to comply with the Order implementation date (as described below) and requirements. No relief from the requirements of the Order is required at this time.

On October 1, 2014, NSPM submitted a relaxation request to the NRC for Order EA-12-049 (Reference 7). The relaxation request was proposed because the installation of a containment wetwell vent that meets the requirements of Order EA-13-109, Phase I, will take additional time to complete, as compared to the compliance dates associated with Order EA-12-049. On November 21, 2014, the NRC approved the requested relaxation (Reference 8).

NSPM plans to provide the NRC with a report that full compliance with the EA-12-049 order has been achieved within 60 days after completion of the 2017 refueling outage. The "Submit Completion Report" milestone is consistent with the current projected completion of the 2017 refueling outage, plus 60 days.

## **6.0 Open Items from Overall Integrated Plan and Interim Staff Evaluation**

NSPM did not identify any open items in the MNGP Mitigating Strategies OIP. The OIP contained future actions to ensure compliance with the Order. The future actions were identified internally and are being tracked through NSPM's corrective action program (CAP).

On November 25, 2013, the NRC issued the ISE for MNGP's Mitigating Strategies OIP (Reference 5). As a result of the review and audit of MNGP's OIP, the NRC identified a list of confirmatory and open items that required additional follow-up or resolution. Subsequently, during the week of November 17, 2014, the NRC held an onsite audit to assess MNGP's readiness for compliance with Order EA-12-049.

NSPM provided a full update to ISE open items and audit questions in a separate letter to the NRC dated October 12, 2015 (Reference 13). Subsequent to the Reference 13 letter, the NRC opened an additional item identified as SE.11. NRC sent SE.11 to NSPM in an email dated November 13, 2015 (Reference 14). NSPM provided a response to SE.11 on the eportal under the current NRC audit process for the Reference 1 Order. A formal docketed response is provided in Enclosure 2.

In addition, NSPM is providing in Enclosure 2 a clarification of information provided in response to the Spent Fuel Pool Instrumentation Order (EA-12-051) (Reference 15). In Reference 16, NSPM provided a response to open items resulting from the NRC audit of the NSPM implementation of EA-12-051 for MNGP. NSPM is providing a clarification to the response to Open Item Request for Additional Information (RAI) 1 as documented in Reference 16.

## **7.0 Potential Interim Staff Evaluation Impacts**

No potential impacts of ISE updates are proposed in this report.

## **8.0 References**

1. NRC Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ADAMS Accession No. ML12054A735).



2. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's 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)," L-MT-13-017, dated February 28, 2013 (ADAMS Accession No. ML13066A066).
3. NSPM Letter to NRC, "Monticello's 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)," L-MT-13-079, dated August 28, 2013 (ADAMS Accession No. ML13241A200).
4. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's 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) (TAC No. MF0923)," L-MT-14-014, dated February 28, 2014 (ADAMS Accession No. ML14065A037).
5. NRC Letter to NSPM, "Monticello Nuclear Generating Plant – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC No. MF0923)," dated November 25, 2013 (ADAMS Accession No. ML13220A139).
6. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's 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 (Order Number EA-12-049) (TAC No. MF0923)," L-MT-14-073, dated August 28, 2014 (ADAMS Accession No. ML14241A260).
7. NSPM Letter to NRC, "Request for Relaxation from NRC Order EA-12-049, 'Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events' - Monticello Nuclear Generating Plant," L-MT-14-083, dated October 1, 2014 (ADAMS Accession No. ML14289A512).
8. NRC letter to NSPM, "Monticello Nuclear Generating Plant- Relaxation of Certain 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' (TAC No. MF0923)," dated November 21, 2014 (ADAMS Accession No. ML14294A061).

9. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Fourth 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) (TAC No. MF0923)," L-MT-15-004, dated February 24, 2015 (ADAMS Accession No. ML15055A599).
10. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Fifth 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) (TAC No. MF0923)," L-MT-15-059, dated August 19, 2015 (ADAMS Accession No. ML15232A553).
11. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Sixth 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) (TAC No. MF0923)," L-MT-16-009, dated February 22, 2016 (ADAMS Accession No. ML16053A454).
12. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Seventh 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) (TAC No. MF0923)," L-MT-16-038, dated August 19, 2016 (ADAMS Accession No. ML16235A005).
13. NSPM Letter to NRC, "Monticello Nuclear Generating Plant: Update of Information Related to NRC Order EA-12-049 Mitigation Strategies for Beyond-Design-Basis External Events (TAC No. MF0923)," L-MT-15-047, dated October 12, 2015, (ADAMS Accession No. ML15288A132).
14. Email from P. Bamford (NRC) to J. Fields (NSPM), "New SE Tracker Question for Monticello Mitigating Strategies Audit," dated November 13, 2015.
15. NRC Order EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (ADAMS Accession No. ML12054A682).
16. NSPM Letter to NRC, "Monticello Nuclear Generating Plant Completion of Required Action by NRC Order EA-12-051 Reliable Spent Fuel Pool Instrumentation (TAC No. MF0924)," L-MT-15-046, dated July 28, 2015 (ADAMS Accession No. ML15212A114).

## **Monticello Nuclear Generating Plant Responses and Supplemental Information**

This Enclosure contains additional information for two items related to Fukushima Orders. The first is a response to SE.11 relating to seismic ruggedness of the FLEX Storage Building at Monticello Nuclear Generating Plant (MNGP) relating to the Mitigating Strategies Order (EA-12-049). The second item is a clarification of information provided to the NRC regarding the Spent Fuel Pool Instrumentation Order (EA-12-051).

### **SE.11 Introduction:**

The NRC opened an additional item identified as SE.11 in an email dated November 13, 2015 (Reference 1). Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, provided a response to SE.11 for the MNGP on the eportal under the current NRC audit process for the EA-12-049 Order. Below is the formal response for the MNGP docket.

### **References:**

1. Email from P. Bamford (NRC) to J. Fields (NSPM), "New SE Tracker Question for Monticello Mitigating Strategies Audit," dated November 13, 2015.

### **SE.11**

Regarding the seismic design of the two FLEX storage buildings (the newly constructed building and the modified warehouse 6), if the buildings are not designed to a level commensurate with the plant SSE, provide justification that the equipment necessary to mitigate a beyond-design basis seismic event under the conditions of Order EA-12-049 can be deployed successfully. This could be demonstrated by one of the following means:

1. Evaluate the storage buildings to the SSE level and demonstrate its performance is adequate to support fulfillment of the strategies (e.g. does it collapse, fail major/minor structural members, skew doorframes, etc.)
2. Show that there is another load case (such as wind loading) which governs the building design such that the building would be functional following an SSE.
3. Show that the equipment stored in the building is not essential for the strategies to succeed following a seismic event. (This may be applicable to sites who rely heavily on pre-staged FLEX equipment already in other protected buildings.)

4. Show that the reevaluated GMRS seismic hazard is equivalent to or enveloped by the ASCE 7-10 spectra which was used to design the building.

The NRC staff considers a configuration where the FLEX storage buildings are not designed to survive SSE-level loads an alternative to NEI 12-06, Sections 5.3.1.2, 5.3.1.3 and 5.3.2.2. Licensees may propose a justification for the alternative that differs from the suggestions above as long as the ability to deploy at least “N” sets of equipment during a seismic event is demonstrated. This information is necessary to evaluate the requirement of Order EA-12-049 to provide reasonable protection for the associated equipment from external events.

### NSPM Response

MNGP utilizes two Beyond-Design-Basis (BDB) storage buildings to meet NEI 12-06 FLEX storage requirements (N+1 sets); the FLEX Storage Building and Warehouse 6. The FLEX Storage Building was designed to ASCE 7-10 standards. Warehouse 6 was a previously existing building with only a portion used to house FLEX equipment. Warehouse 6 was successfully evaluated against ASCE 7-10 standards. The seismic design input spectra used for both buildings was obtained from ASCE 7-10, which is in accordance with NEI 12-06, Section 5.3.1.1.b. ASCE 7-10 provides a spectra with lower spectral accelerations than the MNGP safe shutdown earthquake (SSE). Warehouse 6 was not evaluated in response to SE.11, as only one storage building (containing a full set of BDB equipment) needs to be available following the ELAP event resulting from high wind or seismic conditions.

In this response, NSPM used NRC approach #2 (above) to compare the ability of the FLEX Storage Building structure to resist plant Ground Motion Response Spectra (GMRS) or SSE accelerations, against the ASCE 7-10 based wind loading reactions obtained from the FLEX Storage Building design. The results of the calculation determined that the existing FLEX Storage Building design provides reasonable protection for the FLEX equipment from external events.

### Seismic Design as Compared to Wind Loading Design

A calculation was performed to determine which is the most limiting event for the FLEX Storage Building – a High Wind event or a Seismic event.

Initially, the calculation compared the Ground Motion Response Spectra (GMRS) spectral acceleration against the SSE Spectra spectral acceleration to determine the limiting seismic event. The calculation determined that the GMRS bounds the SSE spectral acceleration (GMRS = 0.324 g versus SSE = 0.30 g). Therefore, the GMRS forces are the more limiting on the FLEX Storage Building design.

The calculation then compared the GMRS seismic demand to the wind load demand on the FLEX storage building. The ratio of seismic demand to wind demand using GMRS

forces yielded a ratio of 0.96. A comparison value less than 1 indicates that wind forces were the most limiting. Therefore, based on the calculation performed, the high wind event bounds the FLEX Storage Building seismic design such that the building would be functional following an SSE. Further, the FLEX Storage Building design is shown to maintain structural integrity after an SSE, GMRS or High Wind event.

Thus, it is reasonable to conclude that the FLEX storage building has adequate capacity to provide reasonable protection of the equipment and facilitate its deployment following a seismic event. Therefore, no alternative to the NEI 12-06 endorsed guidance is required.

**Spent Fuel Pool Instrumentation Clarification Introduction:**

NSPM is providing a clarification to previously provided information regarding Spent Fuel Pool Instrument (SFPI) Levels as required per NRC Order EA-12-051.

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued Order EA-12-051, "*Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation*," (Reference 1) to NSPM. The Order was effective immediately and directed NSPM to install reliable spent fuel pool level instrumentation in MNGP as outlined in Attachment 2 of the Order. The Order required compliance prior to plant startup from the second refueling outage following submittal of the Overall Integrated Plan (OIP) (Reference 2), or by December 31, 2016, whichever comes first.

NSPM reported that full compliance with the Order was achieved in a letter to the NRC dated July 28, 2015 (Reference 3).

Subsequently, NSPM determined that certain information concerning SFPI levels and the instrument probe range required clarification. Specifically, the SFPI level probe does not extend the full range from Level 1 to Level 3 as stated in previous NRC correspondence. Below is the clarified information.

**References:**

1. NRC Order EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (ADAMS Accession No. ML12054A682).
2. NSPM Letter to NRC, "Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)," L-MT-13-016, dated February 28, 2013 (ADAMS Accession No. ML13060A447).
3. NSPM Letter to NRC, "Monticello Nuclear Generating Plant Completion of Required Action by NRC Order EA-12-051 Reliable Spent Fuel Pool Instrumentation (TAC No. MF0924)," L-MT-15-046, dated July 28, 2015 (ADAMS Accession No. ML15212A114).
4. 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.

**SFPI Level Information Clarification:**

**NSPM Compliance:**

In References 2 and 3, NSPM stated its intent to comply with NRC Order EA-12-051 by designating the following three levels.

**Level 1** - Level that is adequate to support operation of the normal fuel pool cooling system.

**Level 2** - Level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool (SFP) operating deck. NEI 12-02 indicates that selection of 10 feet between Level 2 and Level 3 assures a range of water level where any necessary operations in the vicinity of the spent fuel pool can be completed without significant dose consequences from direct gamma radiation from the stored spent fuel.

**Level 3** – Level where fuel remains covered and actions to implement make-up water addition should no longer be deferred.

Level 1 was designated as 37' – 3" above the bottom of the MNGP SFP.  
Level 2 was designated as 24' – 9" above the bottom of the MNGP SFP.  
Level 3 was designated as 14' – 9" above the bottom of the MNGP SFP.

In Reference 2, NSPM further stated that the instrument channel would be capable of displaying the SFP level from Level 1 to Level 3. In Reference 3, Figure 1 - 1, provided the specific SFP levels for the MNGP installation and indicated that "Sensor Range" covered the entire span from Level 1 to Level 3.

**Clarification:**

The SFPI probes installed in the MNGP SFP extend from the top of the SFP (mounted on the Refuel Floor) to a level 15' – 3" above the bottom of the SFP. In previous correspondence with the NRC (References 2 and 3) it was indicated that the sensor range of the probe extended from Level 1 to Level 3 with Level 3 defined as 14' – 9". To meet EA-12-051 requirements and in accordance with NEI 12-02, NSPM is redesignating the levels in the following manner based on the actual installed sensor range.

Level 1 remains unchanged at 37' – 3" above the bottom of the MNGP SFP.  
Level 2 remains unchanged at 24' – 9" above the bottom of the MNGP SFP.  
Level 3 is changed to 15' – 3" above the bottom of the MNGP SFP.

Figure 1-1 is revised and provided below. The revised figure shows the overall view of the levels and sensor range.

Justification for change:

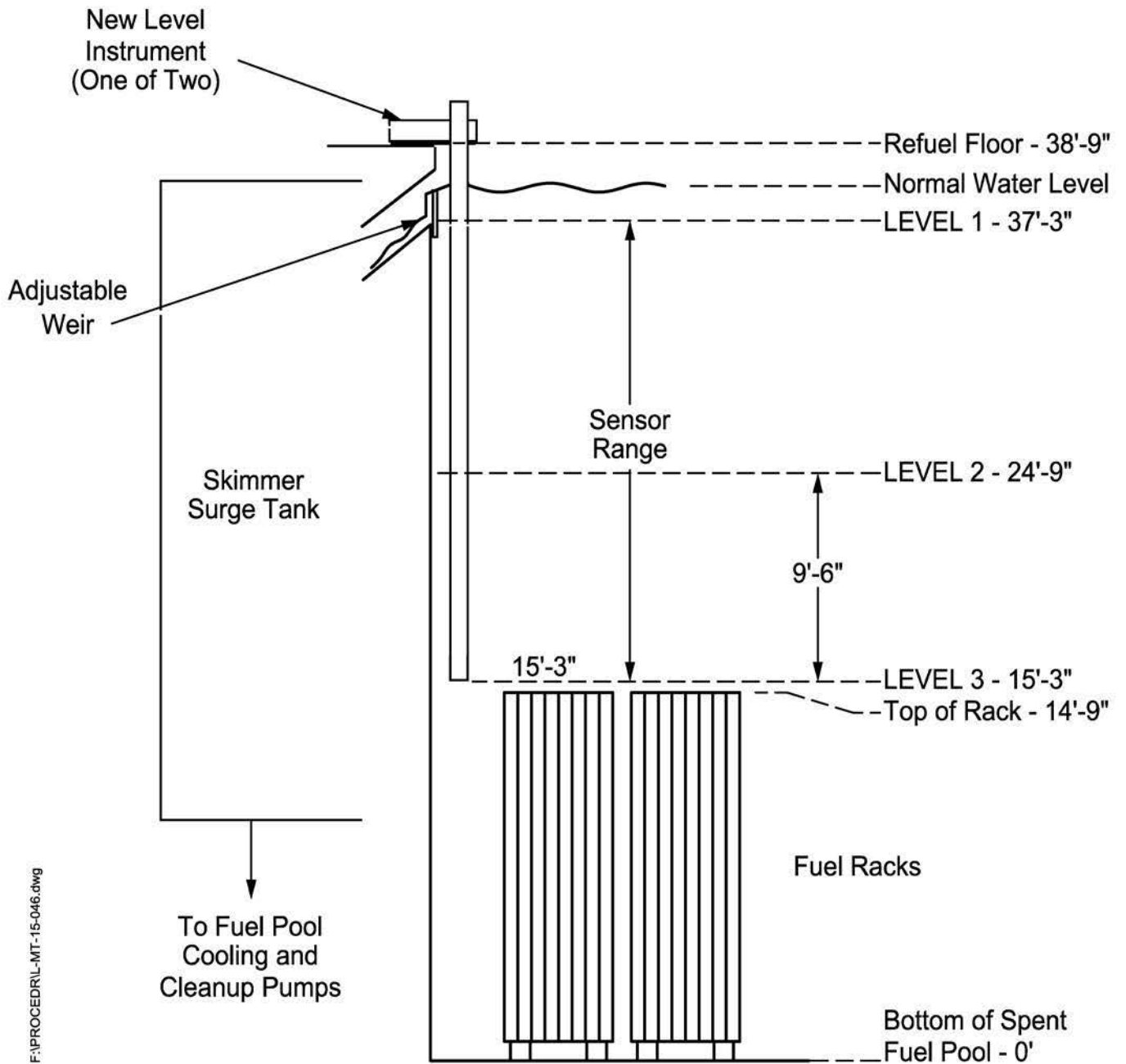
Level 1 is not changed and no further justification of this level is required.

Level 2 is not changed, but is now less than 10' from Level 3. This continues to be acceptable as NEI 12-02 requires that Level 2 be 10' +/- 1' above the highest point of any fuel rack seated in the spent fuel pool. The highest point of any fuel rack in the MNGP SFP is 14' – 9". Therefore, 24' – 9" remains within NEI 12-02 requirements.

Level 3 is changed from 14' – 9" to 15' – 3" above the bottom of the SFP. Previously, Level 3 coincided with the highest point of any fuel rack in the MNGP SFP. However, since the probe for SFPI level does not extend from the top of the SFP down to 14' – 9", above the bottom of the SFP, it is not appropriate to consider this level as Level 3. NEI 12-02 states that Level 3 must be nominally (i.e., +/- 1 foot) positioned to the highest point of any fuel rack seated in the spent fuel pool. The revised Level 3 is approximately 6" from the highest point of any fuel rack seated in the MNGP SFP, thus meeting NEI 12-02 requirements. NEI 12-02 also requires that Level 3 should provide the maximum range of information to operators, decision makers and emergency response personnel. By using the full length of the probe, the MNGP installation meets this NEI 12-02 requirement. Finally, NEI 12-02 requires that designation of this level [Level 3] should not be interpreted to imply that actions to initiate water make-up must or should be delayed until this level is reached. The MNGP procedures require operators to begin looking for methods to refill the MNGP SFP prior to reaching Level 3. Therefore, use of 15' – 3" as Level 3 is an acceptable designation and meets all NEI 12-02 requirements.



Figure 1-1 – Spent Fuel Pool Levels (Revised)



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