Xcel Energy®

Monticello Nuclear Generating Plant
2807 W County Road 75
Monticello, MN 55362

February 28, 2013

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10 CFR 2.202

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

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

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)

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 (Accession No. ML12054A679).

2. 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 (Accession No. ML12221A339).

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. NSPM Letter to NRC, L-MT-12-092, "Initial Status Report 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)," dated October 29, 2012 (Accession No. ML12305A383).

On March 12, 2012, the NRC staff issued Order EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," (Reference 1) to all NRC power reactor licensees and holders of construction permits in

active or deferred status. The Reference 1 Order was immediately effective and directs Northern States Power Company (NSPM), a Minnesota corporation, d/b/a Xcel Energy, to have a reliable indication of the water level in the spent fuel storage pool for Monticello Nuclear Generating Plant (MNGP). Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 requires submission of an overall integrated plan by February 28, 2013. The NRC Interim Staff Guidance (ISG), JLD-ISG-2012-03, Revision 0, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," (Reference 2) was issued August 29, 2012. This ISG endorses, with exceptions and clarifications, the methodologies described in the industry guidance document, Nuclear Energy Institute (NEI) 12-02, Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation" (NEI 12-02), Revision 1, dated August 24, 2012 (Reference 3). Reference 3 provides direction regarding the content of the overall integrated plan.

Reference 4 provided the NSPM initial status report regarding reliable spent fuel pool instrumentation, as required by Reference 1.

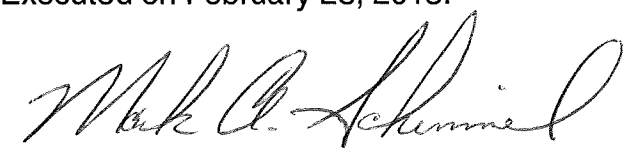
The purpose of this letter is to provide the overall integrated plan, pursuant to Section IV, Condition C.1 of Reference 1, including a description of how compliance with the requirements described in Attachment 2 will be achieved. The Enclosure to this letter provides the MNGP overall integrated plan with consideration of Reference 3. The Enclosure contains the current design information for the SFP level instrument as of the date of this letter, much of which is still preliminary. As the design details are finalized, additional information, as well as any revisions to the information contained in the Enclosure to this letter, will be communicated to the NRC Staff in the six-month updates required by the NRC Order.

Please contact Lynne Gunderson, Licensing Engineer, at 612-396-0173, if additional information or clarification is required.

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 28, 2013.



Mark A. Schimmel
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Director of Nuclear Reactor Regulation (NRR), USNRC
NRR Project Manager, MNGP, USNRC
Senior Resident Inspector, MNGP, USNRC

ENCLOSURE

Monticello Nuclear Generating Plant

Overall Integrated Plan For
Reliable Spent Fuel Pool Instrumentation

(10 pages to follow)

1.0 Introduction

The Nuclear Regulatory Commission (NRC) issued Order EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," on March 12, 2012 (Reference 6.1). The NRC Order requires licensees to have reliable indication of the water level in associated spent fuel pools capable of supporting identification of the following spent fuel pool water level conditions by trained personnel: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred. The NRC Order also requires licensees to submit an overall integrated plan, including a description of how the requirements in Attachment 2 of the NRC Order will be achieved.

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, (Reference 6.4) provides an approach for complying with the Order EA-12-051. NRC Interim Staff Guidance JLD-ISG-2012-03, "Compliance with NRC Order EA-12-051, Reliable Spent Fuel Pool Instrumentation," (Reference 6.3) considers that the methodologies and guidance in conformance with the guidance provided in NEI 12-02, Revision 1, subject to the clarifications and exceptions specific to Section 3.4, Qualification, are an acceptable means of meeting the requirements of NRC Order EA-12-051.

1.1 Applicability

This overall integrated plan applies to Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, for the Monticello Nuclear Generating Plant (MNGP), Docket No. 50-263. This overall integrated plan is based on the current conceptual design information and may be revised as detailed design engineering proceeds. Consistent with the requirements of NRC Order EA-12-051 and the guidance in NEI 12-02, six-month status reports will describe progress made, any proposed changes in compliance methods, schedule updates, and if needed, requests for relief and the bases for these requests.

1.2 Schedule

The installation of reliable spent fuel pool level instrumentation for the spent fuel pool associated with MNGP is scheduled for completion prior to startup from Refueling Outage R27. The Refueling Outage R27 is presently scheduled for completion and startup in the spring of 2015.

The following milestone schedule is provided. The dates are target dates and subject to change as design and implementation details are developed. Any changes to the following target dates will be reflected in subsequent six-month status reports.

Milestone	**Target Date**
Select Instrument Vendor	March 2013
Commence Engineering Design	January 2014
Commence Installation	September 2014
Reliable Spent Fuel Pool Instrumentation Operational	April 2015 (End of R27)

1.3 Spent Fuel Pool Configuration

Spent fuel discharged from the reactor is transferred under water through the spent fuel storage pool canal into storage racks provided in the single spent fuel storage pool. The spent fuel storage pool is a reinforced concrete structure with a stainless steel liner. Skimmer surge tank duct openings, located at the top of the spent fuel storage pool water level, allow a continuous flow of water from the surface of the pool to the skimmer surge tank. Spent fuel pool level is controlled via adjustable weirs bolted to the front of the skimmer surge tank duct opening. The skimmer surge tank provides suction for the spent fuel pool cooling and demineralizer system.

2.0 Identification of Spent Fuel Pool Water Levels

Key spent fuel pool water levels were determined using the guidance in Section 2.3 of NEI 12-02. The spent fuel pool water levels for MNGP will be as identified in the sections below. The levels are also depicted on Figure 2.1, “Simplified Elevation Sketch of Level 1-3 (Not to Scale),” located at the end of Section 2.0.

2.1 Level 1 - Support Operation of the Normal Fuel Pool Cooling System

Level 1 is the level that is adequate to support operation of the normal fuel pool cooling system. Currently, the level in the fuel pool is maintained at a constant level due to overflow weirs that spill into skimmer surge tanks. This configuration permits the total water volume to change within the skimmer surge tanks but it does not impact the spent fuel pool water level. The minimum level, without weirs, where the skimmer surge tank and the spent fuel pool become decoupled is 37 feet and 3 inches from the bottom of the spent fuel pool. This level will be used for Level 1. Allowance for instrumentation accuracy will be applied to this setpoint.

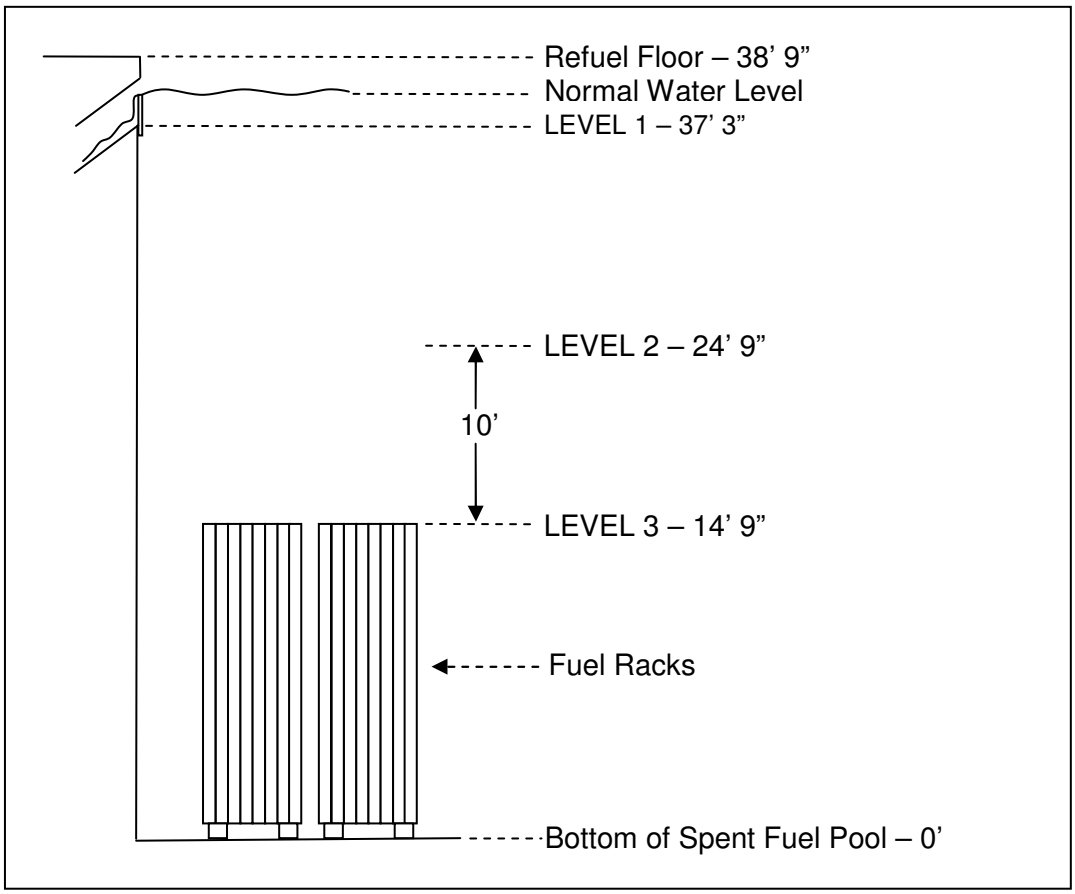
2.2 Level 2 - Provide Substantial Radiation Shielding for a Person Standing on the Spent Fuel Pool Operating Deck

Level 2 represents the 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. Based on the guidance in Section 2.3 of NEI 12-02, Level 2 is 10 feet above the top of the spent fuel rack, which corresponds to 24 feet and 9 inches from the bottom of the MNGP spent fuel storage pool. Therefore, Level 2 will be 24 feet and 9 inches from the bottom of the spent fuel storage pool. Allowance for instrumentation accuracy will be applied to this setpoint.

2.3 Level 3 - Fuel Remains Covered and Actions to Implement Make-up Water Addition Should No Longer be Deferred

Level 3 is the level where the fuel remains covered and actions to implement make-up water addition should no longer be deferred. Level 3 corresponds nominally to the highest point of the fuel rack in the spent fuel pool. Level 3 will be 14 feet and 9 inches from the bottom of the spent fuel storage pool. Allowance for instrumentation accuracy will be applied to this setpoint.

Figure 2.1 - Simplified Elevation Sketch of Level 1 – 3 (Not to Scale)



3.0 Instrument Design Features

3.1 Instruments

The design of the instruments will be consistent with the guidelines of NRC JLD-ISG-2012-03 and NEI 12-02. The following sections describe how the instrumentation for the spent fuel pool level will be designed.

3.1.1 Primary Instrument Channel

The primary instrument channel level sensing component will be a new fixed system. The location of this channel is described in Section 3.2 of this Enclosure. The new fixed system will be a guided wave radar device. The device will be a level monitoring system capable of measuring the range of levels discussed in

Section 2.0. To measure the water level, the device will send a test signal through a cable through a probe. The device records the resultant backscatter to determine the water level. The probe used to measure the water level will be mounted on the edge of the spent fuel pool and the probe will extend down into the spent fuel pool to directly measure the water level. The primary instrument channel will be capable of displaying the level from Level 1 to Level 3. The primary instrument channel will not use any wireless communication technology.

3.1.2 Backup Instrument Channel

The backup instrument channel is identical to and independent from the primary instrument channel. The backup instrument channel probe will be mounted on the edge of the spent fuel pool and the probe will extend down into the spent fuel pool to directly measure the water level. The backup instrument channel will also not use any wireless communication technology. The location of the backup instrument channel is also described in Section 3.2 of this Enclosure.

3.1.3 Reliability

Reliability of the primary and backup instrument channels will be assured by conformance with the guidelines of NRC JLD-ISG-2012-03 and NEI 12-02. The instrument channel reliability will be established through the use of an augmented quality assurance process, which is described in Section 3.4. The instrument channel reliability will be demonstrated through an appropriate combination of design, analyses, operating experience, and/or testing of channel components.

3.1.4 Time Duration

The duration of time required for the primary and backup instrument channels to be functional will be coordinated with the mitigating strategies being developed for NRC Order EA-12-049 (Reference 6.2) and NEI 12-06 (Reference 6.5).

3.2 Arrangement

3.2.1 Probes

The probe for the primary channel level transmitter will be located near or in a corner of the spent fuel pool to utilize the inherent shielding from missiles. The final length, location, and mounting of the probe will be determined during the design process.

The probe for the backup channel level transmitter will be located across the spent fuel pool from the probe of the primary level transmitter. The backup channel probe will be located in or near a different corner of the pool. The final length, location and mounting of the backup channel probe will be determined during the design process.

The primary and backup level transmitter probes will be located in separate corners, which will allow separation between the probes and will also provide protection against a single missile damaging both the primary and the backup spent fuel pool probes.

3.2.2 Cable Routing

The cable routing for the primary and backup instrument channels will be diverse and protected from external events, in accordance with the requirements of NRC JLD-ISG-2012-03 and NEI 12-02. No cables will be routed outside structures. The conduit and cable routing will be determined during the design process.

Independence of the instrument channels is discussed in Section 3.5 of this Enclosure.

3.3 Mounting

Both the primary and backup system mounting will be installed as Seismic Category I to meet the NRC JLD-ISG-2012-03 and NEI 12-02 guidance requirements. An evaluation of other hardware stored in the spent fuel pool will be conducted as part of the design process to ensure other hardware will not adversely interact with the fixed instrument locations.

3.4 Qualification

The primary and backup instrument channels will be qualified through the use of an augmented quality assurance process that meets the NRC JLD-ISG-2012-03 and NEI 12-02 guidance requirements. The following sections describe the conditions and details of the qualification.

3.4.1 Conditions

Both the primary and the backup instrument channels will be capable of performing their function and maintaining the required accuracy under conditions described by NRC JLD-ISG-2012-03 and Section 3.4 of NEI 12-02. Per this guidance, the sensor and cables for both of the channels will be reliable at the temperature, humidity and radiation levels consistent with conditions in the

vicinity of the spent fuel pool and the area of use for normal operation, event and post-event conditions. The sensors and cables located in the vicinity of the SFP will be qualified to withstand these conditions for an extended period consistent with strategies developed in response to NRC Order EA-12-049 and NEI 12-06.

3.4.2 Shock and Vibration

The primary and backup instrument channel components required after an event will be rated for anticipated shock and vibration per the recommendations of NRC JLD-ISG-2012-03 and NEI 12-02, Section 3.4.

3.4.3 Seismic

The applicable primary and backup instrument channel components will be qualified for reliable operation following a seismic event. The methods used to qualify components will be consistent with the guidance of NEI 12-02 and the exceptions and clarifications to NEI 12-02 provided by the NRC Staff in NRC JLD-ISG-2012-03. Mounting of components for reliable operation following a seismic event is addressed in Section 3.3 of this Enclosure.

3.5 Independence

The primary channel will be independent of the backup channel. Both channels will have their own probes located in separate corners of the spent fuel pool with separate cable routes and separate electronics. Where routed in conduit and cable trays, the primary and backup channel cabling will be routed in separate conduit or cable trays to achieve independence. Power supply independence is addressed in Section 3.6.

3.6 Power Supplies

The instrument channels will each have an independent backup battery power supply that will be capable of supporting the instrument until repowered as specified by the mitigating strategies of NRC Order EA-12-049 and NEI 12-06. Any onsite generators used as an alternate power source and replaceable batteries used for instrument channel function will have sufficient capacity to maintain level indication function until offsite resource availability is reasonably assured. Any portable power supplies used will be stored consistent with the requirements of NRC Order EA-12-049 and NEI 12-06. The design process will determine the normal power source, battery power supply, and any additional power sources required for the instrument channels.

Both the primary and the backup instrument channels will maintain their design accuracy without recalibration following a power interruption or change in the power source as required by NRC Order EA-12-051.

3.7 Accuracy

The accuracy will be consistent with the guidelines of NRC JLD-ISG-2012-03 and NEI 12-02.

The primary and backup instrument channels will maintain their design accuracy without requiring recalibration following a power interruption or change in the power source as required by NRC Order EA-12-051. The total loop accuracy of the primary system and the backup system will be determined for the entire span (Level 1 through 3) during the design process.

3.8 Testing

The instrument channel design will provide for routine testing and calibration. The primary and backup instrumentation channels will be capable of in-situ testing and calibration. Testing will be consistent with the guidelines of NRC JLD-ISG-2012-03 and NEI 12-02 and will be performed in accordance with station procedures.

3.9 Display

The primary and backup instrumentation displays will be installed per the requirements of NRC JLD-ISG-2012-03 and NEI 12-02, Section 3.9. The primary display will be located in the control room and will provide the operators an on-demand or continuous display of the spent fuel pool level. The backup display will be located in an area which meets the four characteristics defined in NEI 12-02, Section 3.9. The location for both of the electronics control cabinets will be determined during the design process.

4.0 Instrument Channel Program Features

The program features for the instrument channels will be consistent with the guidelines of NRC JLD-ISG-2012-03 and NEI 12-02.

4.1 Training

Personnel will be trained in the use and the provision of alternate power to the primary and backup instrument channels, as determined by plant processes and procedures. NSPM's Systematic Approach to Training (SAT) will be used to identify the population to be trained, as well as the initial and continuing elements of the required training.

4.2 Procedures

Procedures will be developed for both the primary and backup instrument channels consistent with the requirements of NRC JLD-ISG-2012-03 and NEI 12-02, Section 4.2. This will include procedures for the maintenance, operation, testing, calibration and normal/abnormal response of the primary and backup instrument channels. As described in Section 3.1.4, the duration of time required for both the primary and backup spent fuel pool instrumentation channels to be functional will be coordinated with the mitigating strategies being developed for NRC Order EA-12-049 and NEI 12-06.

4.3 Testing and Calibration

Testing and calibration of the primary and backup instrument channels will be established and implemented by existing MNGP processes, and will be scheduled in intervals such that the design accuracy of the instrument channels is maintained. Surveillance or testing intervals will be established per the recommendations of NEI 12-02, Section 4.3. Allowed out of service time as identified in NEI 12-02 will be incorporated consistent with the programmatic process used for compliance with NRC Order EA-12-49.

5.0 Need for Relief and Basis

NSPM is not requesting relief from the requirements of NRC Order EA-12-051 or the guidance in NRC JLD-ISG-2012-03 at this time.

Consistent with the requirements of NRC Order EA-12-051 and the guidance in NEI 12-02, the six-month status reports will delineate progress made, any proposed changes in our compliance methods, updates to the schedule, and if needed, requests for relief and the bases for these requests.

6.0 References

6.1 NRC Order EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," dated March 12, 2012 (Accession No. ML12054A679).

6.2 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 (Accession No. ML12054A736).

6.3 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 (Accession No. ML12221A339).

6.4 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.

6.5 NEI 12-06, “Diverse and Flexible Coping Strategies (FLEX) Implementation Guide,” Revision 0, dated August 2012.