2807 West County Road 75
Monticello, MN 55362

December 12, 2016

L-MT-16-068
EA-14-193

ATTN: Director – Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission Region III
2443 Warrenville Road
Suite 210
Lisle, Illinois 60532-4352

Monticello Nuclear Generating Plant
Docket 50-263
Renewed Facility Operating License No. DPR-22
Independent Spent Fuel Storage Installation Docket No. 72-58

Project Plan for Restoring 10 CFR 72 Compliance to Dry Shielded Canisters Designated 11 through 16

References: 1) NRC Letter (Pederson) to Northern States Power - Minnesota (Gardner) EA-14-193, Confirmatory Order Related to NRC Reports No. 05000263/2015008; 07200058/2014001 and OI Report 3-2014-004; Monticello Nuclear Generating Plant, dated December 21, 2015 (ADAMS Accession No. ML15355A459)

Pursuant to the subject Confirmatory Order (Reference 1), Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, provides information related to the following action:

> "Within 180 calendar days of the NRC's final action on the docketed exemption request dated September 29, 2015 (ML15275A023), or the date the exemption request is withdrawn, whichever is earlier, the licensee shall submit a project plan to the Director, Division of Nuclear Materials Safety (DNMS), Region III, for returning DSCs 11 through 16 to compliance to 10 CFR Part 72."

On November 9, 2016, Xcel Energy met with the NRC to discuss the project plan and the submittal requirements. Pursuant to the Order and that discussion, attached is the required project plan.

If there are any questions or if additional information is needed, please contact Glenn Adams at 612-330-6777.

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: December 12, 2016

Timothy O'Connor
Senior Vice President and Chief Nuclear Officer
Northern States Power Company-Minnesota

Attachment

cc: Document Control Desk, USNRC
Administrator, Region III, USNRC
Rob Kuntz, Project Manager, Monticello Nuclear Generating Plant, USNRC
Christian Jacobs, Project Manager, Spent Fuel Management, USNRC
Resident Inspector, Monticello Nuclear Generating Plant, USNRC
Marc Dapas, Director NMSS
Bill Dean, Director NRR
Mark Lombard, NMSS/DSFM
Darrell Roberts, Region III
Richard Skokowski, Region III
Jared Heck, Region III
Jorge Corujo-Sandin, Region III
Matt Learn, Region III
Pete Glass, Xcel Energy
Jay Silberg, Pillsbury Law

Project Plan
for Returning Dry Shielded Canisters 11 through 16
to Compliance with 10 CFR Part 72

Background:

During the 2013 Independent Spent Fuel Storage Installation (ISFSI) cask loading campaign at Monticello Nuclear Generating Plant (MNGP), six (6) Type 1 NUHOMS®-61BTH Dry Shielded Canisters (DSC) designated 11 through 16 were loaded under Certificate of Compliance (CoC) 1004, Amendment 10. Condition 1 of the CoC allows use of the Standardized NUHOMS® system subject to the conditions of 10 CFR 72.212 and the CoC 1004 Technical Specifications (TS). TS 1.2.5 of CoC 1004 requires that all DSC closure welds not subjected to full volumetric inspection be dye penetrant tested (PT) in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel (ASME B&PV) Code. The NRC questioned and Xcel Energy subsequently determined that certain elements of the PT examinations performed on these six DSCs do not comply with the examination procedures that support compliance with TS 1.2.5. As a result of this nonconforming condition, NRC issued Confirmatory Order EA-14-193 dated December 21, 2015. Actions 1 and 2 from the order require:

1. The licensee shall restore compliance to 10 CFR Part 72 to DSCs 11 through 16 within 5 years of the date the NRC takes final action upon the September 29, 2015, exemption request pending for DSC 16 (ML15275A023), or the exemption request is withdrawn, whichever is earlier.

2. Within 180 calendar days of the NRC's final action on the docketed exemption request dated September 29, 2015 (ML15275A023), or the date the exemption request is withdrawn, whichever is earlier, the licensee shall submit a project plan to the Director, Division of Nuclear Materials Safety (DNMS), Region III, for returning DSCs 11 through 16 to compliance to 10 CFR Part 72.

The NRC took final action on the September 29, 2015 exemption request on June 15, 2016 (ML16167A036) by granting Xcel Energy an exemption from the requirements of 10 CFR 72.212(a)(2), 72.212(b)(3), 72.212(b)(5)(i), 72.212(b)(11), and 72.214 only with regard to meeting TS 1.2.5 of Attachment A of CoC No.1004, Amendment No. 10, for DSC 16. This exemption restored DSC 16 to compliance with 10 CFR 72 and allowed Xcel Energy to transfer DSC 16 into a Horizontal Storage Module (HSM) for continued storage at the MNGP ISFSI for the service life of the canister.

Therefore, with DSC 16 already restored to compliance, the purpose of this document is to provide the project plan, as required by the confirmatory order, to restore DSCs 11 through 15 to compliance with 10 CFR Part 72 by June 15, 2021.

Introduction

The project plan described herein is based on principles stated below and the best available understanding of actions that would be most effective to restore compliance with 10 CFR Part 72. In addition to the periodic updates required by the Confirmatory Order, Xcel Energy will continue to inform NRC of significant changes and in the event of any unexpected result(s).

Principles

One objective of the plan is to resolve the noncompliances which involved inadequate Nondestructive Examination (NDE); namely portions of the PT examination procedure: penetrant and developer dwell times. Lack of NDE does not necessarily implicate the weld or qualified weld process as insufficient for establishing and maintaining cask confinement. The NDE is only one of many means supporting confinement and the reasonable understanding that the casks are safe for storage. Defense-in-depth supports the reasonable assurance of weld integrity and storage and is provided through:

1. Quality procurement of canister and weld materials.
2. Qualification of welding processes, welders, and weld equipment.
3. Satisfactory performance of in-process welds and weld inspections by qualified welders.
4. Engineering review of weld head video recordings.
5. In-process visual examinations (VT).
6. Multiple-layer weld design that meets regulatory requirements with prescribed safety margins and constrains the possible flaw size to that of the weld layer thickness.
7. Weld material which provides ductile properties that reduce the chance of propagation.
8. In-process pressure and vacuum hold tests.
9. Satisfactory helium leak tests on all five DSCs provided confirmation of the Inner Top Cover Plate (ITCP) confinement boundary. This test has been recognized by NRC[1] as more rigorous than PT examination in demonstrating integrity of the confinement boundary.

In addition, the PAUT performed on DSC 16 provided physical evidence from a representative canister that validates the integrity of the 2013 campaign's welding process. Ultrasonic examination of a reasonably-accessible sample of representative welds has been employed previously by NRC to establish a reasonable assurance of

[1] NRC letter to Holtec International, EA-09-190, Exercise of Enforcement Discretion – Holtec International, dated August 5, 2009 (ADAMS Accession No. ML092180140). See Enclosure page 1.

safety in another welded canister system[2]. Furthermore, the analysis of DSC 16 provided in Xcel Energy Exemption Request dated September 29, 2015 demonstrated substantial margin to the allowable stresses of the ASME Code, which itself includes significant inherent margin to weld failure.

Another principle of the project plan recognizes that radiological dose and safety must be appropriately weighed and incorporated in determining a reasonable assurance of safety and the process to restore compliance. For instance, the benefit derived from NDE should be in excess of the risk associated with leaving the canisters in the current, passive state in the HSM. This basic principle has been approved in similar dry storage situations when the risks of handling casks and performing recovery operations are not in the public interest of safety[3]. More specifically, the benefit should be sufficiently demonstrable to exceed the occupational dose incurred and radiological and safety risks associated with canister movement. Considering that the licensing basis[4] describes no condition or accident that would fail the confinement boundary while the DSCs are in storage, the radiological and safety risks of leaving all five DSCs in storage are minimal. Conversely, the incurred radiological dose of an examination campaign is on the order of 1 Rem/canister-examined. In addition, other industrial safety and nuclear safety risks exist when DSC handling and moving operations are performed.

Project Plan

The project plan leverages the defense-in-depth quality processes that were employed during the loading campaign and later confirmed for DSCs 11 – 15; and further supported by the confirmation provided by volumetric examination of DSC 16. As described in the milestone schedule below, Xcel Energy will engage with NRC and determine the feasibility of crediting the defense in-depth of quality processes and the confirmation provided by the DSC 16 examination to demonstrate compliance for DSC 11 through 15.

If it becomes necessary to examine DSC 11, Xcel Energy would have to move DSC 11 from the horizontal storage module (HSM) to the Reactor Building, perform Phased Array Ultrasonic Test (PAUT) examination of the inner top cover plate (ITCP) and outer top cover plate (OTCP), perform PT exam of the OTCP final weld, return the DSC to the HSM, and perform flaw evaluations / stress analysis. Fundamental to this process is

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[2] USNRC Confirmatory Action Letter 97-7-001 Technical Evaluation, Docket No. 72-1007, dated July 22, 1998 (ADAMS Accession No. 060620420).

[3] USNRC letter to Entergy Operations, Request for Exemption from Holtec International Certificate of Compliance 1014 Fuel Inspection and Loading Conditions at Arkansas Nuclear One Independent Spent Fuel Storage Installation (TAC No. L24954), dated December 19, 2014, ADAMS Accession No. ML14353A466.

[4] Updated Final Safety Analysis Report for the Standardized NUHOMS® Horizontal Modular Storage System for Irradiated Nuclear Fuel, NUH-03, Revision 12. Reference Section T7.3.2.

the need to move a noncompliant DSC from the HSM to perform the PAUT exam, followed by timely return to the HSM. Prior to movement of DSC 11 under these conditions, Xcel Energy would plan to seek alignment with NRC on the appropriate regulatory process to support the move.

Open question on noncompliant DSC movement (if necessary). As discussed at the November 9, 2016 public meeting, the license does not require specific action when a noncompliant PT is discovered during DSC storage, nor does it specifically prohibit transfer of a DSC with a noncompliant PT. Therefore, some form of regulatory alignment with NRC must be achieved to support moving a noncompliant DSC, if necessary. This is an open question that is reflected in the Project Plan as a set of milestones that would lead to resolution. Currently, three potential paths have been identified: (1) exemption, (2) enforcement discretion, or (3) application of existing criteria of the license. Further dialogue and interaction with the NRC is necessary for resolution.

Exemption Request: Xcel Energy plans to submit an exemption request to restore DSCs 11 – 15 to compliance.

This exemption request will establish a reasonable assurance of safety based on quality material procurement, qualification of welding processes, quality work by qualified welders, engineering review of weld head video, VT, weld design, weld material properties, in-process pressure and vacuum hold tests, helium leak tests, and the margins of safety available in the welds demonstrated by analysis of theoretical flaws and analysis of representative flaw sets derived from PAUT of DSC 16 (and DSC 11, if necessary). Representative flaw sets will be based on PAUT examination of DSC 16 (and DSC 11, if necessary), and informed by considering the welding equipment, qualified welding process, materials, examinations and qualified personnel used to perform the welds along with a comparative review of available weld head video.

In preparing this plan, Xcel Energy has carefully considered the safety significance and risks resulting from the noncompliant PTs as compared to the actual radiological consequences and risks of processing a DSC for PAUT exam. Processing a DSC for PAUT examination incurs significant radiological dose (approximately 1 Rem) and creates increased nuclear and industrial risk arising from the handling operations. However, in the passive storage condition, it can be shown that the probability and consequences of weld failure and radiological release are not increased by noncompliant PT.

Therefore, the project plan provides a balance of nuclear, radiological and industrial safety while applying proven PAUT technology and methods of analysis to leverage previous Xcel Energy and NRC experience gained from the DSC 16 exemption process.

The project plan for returning DSCs 11 through 15 to compliance to 10 CFR Part 72 is described by the following milestone schedule:

Date	Major Milestone
6/2017	Xcel Energy engage with NRC and determine feasibility of crediting the defense in-depth of quality processes and the confirmation provided by the DSC 16 examination to demonstrate compliance for DSC 11 through 15. Apply the precedent of similar regulatory positions (e.g., ADAMS Accession No. ML092180140). If feasible, an exemption request will be submitted within six months.
9/2017	If determined that PAUT of DSC 11 is necessary, NRC and Xcel Energy resolve the approach to address the open question of moving a noncompliant DSC.
10/2018	If necessary, move DSC 11 from the HSM to the Reactor Building, perform PAUT of the ITCP and OTCP, perform PT of the OTCP final weld, verify data integrity, perform comparative review of PAUT data and return the DSC to the HSM. Note that the milestone date is set to coincide with a planned cask loading campaign when required equipment and qualified operators are expected to be available.
2/2019	Complete the analysis of DSC 11 PAUT and submit an exemption request to justify restoration of DSCs 11 – 15 to compliance with 10 CFR Part 72.
3/2020	NRC grant approval, thereby returning DSC 11 through 15 to compliance with 10 CFR Part 72.

Progress Reporting:

Progress reporting will be provided as required by Confirmatory Order EA-14-193 dated December 21, 2015, Action 3:

> "Within 180 calendar days after submittal of the DSCs 11 through 16 project plan, Xcel Energy shall submit a letter to the Director, DNMS, Region III, regarding progress under the plan, and any non-editorial changes to the plan. A letter providing a progress update and any non-editorial plan changes shall be provided every 360 calendar days thereafter to the Director, DNMS, Region III, until the plan is completed."

In addition to the required progress reports, Xcel Energy will provide additional communication and updates (at public meetings, as appropriate) during the detailed planning and execution of the plan.