Xcel Energy®

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

April 1, 2016

L-MT-16-020
EA-14-193

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

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

Information Responsive to Confirmatory Order Related to NRC Reports No. 05000263/2015008; 07200058/2014001 and OI Report 3-2014-004

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 540 calendar days of the issuance date of the Confirmatory Order, Xcel Energy shall develop and make a presentation based on the facts and lessons learned from the events that gave rise to the Confirmatory Order, with emphasis on corrective actions taken as a result. Xcel Energy agrees to make this presentation at an appropriate industry forum such that industry personnel across the entirety of the United States would have the opportunity to receive the material. Xcel Energy shall inform the Director, DNMS, Region III, of where the presentation will be made, and shall make the presentation materials available to the NRC for review at least 30 calendar days in advance of the presentation."

To address this action, Michael Baumann (Xcel Energy Director, Nuclear Fuel) has the opportunity to make a presentation at the upcoming Nuclear Energy Institute Used Fuel Management Conference to be held in Orlando, Florida on May 3 – 5, 2016. The

agenda is included as Attachment 1. Note that the presentation is scheduled during "Breakout Session IV" on May 4, 2016.

Attachment 2 to this email is a copy of the PowerPoint presentation planned for the conference.

Please contact Michael Baumann (612-330-6816) if you have any questions or comments.

Summary of Commitments

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

Martin C. Murphy
Director Nuclear Licensing and Regulatory Affairs
Northern States Power Company-Minnesota

Attachments
1. Agenda (Preliminary), Used Fuel Management Conference (5 pages)
2. Presentation, Spent Fuel Storage Dye Penetrant Test Issue (32 pages)

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
Mark Lombard, NMSS/DSFM
Darrell Roberts, Region III
Richard Skokowski, Region III
Jared Heck, Region III
Jorge Corujo-Sandin, Region III

L-MT-16-020
Attachment 1

Agenda (Preliminary)

Used Fuel Management Conference

5 pages follow

Agenda

PRELIMINARY as of March 30, 2016

Used Fuel Management Conference

Omni ChampionsGate Orlando, Fla.

May 3-5, 2016

TUESDAY, MAY 3

7 a.m.–5 p.m. **REGISTRATION**

7–8:30 a.m. **CONTINENTAL BREAKFAST**

8:30–10 a.m. **OPENING PLENARY SESSION**

Call to Order and Welcome
Kristopher Cummings
Nuclear Energy Institute

Special Welcome Address
TBD

Keynote Speaker
TBD

Management Perspectives
Rodney McCullum
Nuclear Energy Institute

Mark Lombard
U.S. Nuclear Regulatory Commission

10–10:30 a.m. **BREAK AND EXHIBITS**

10:30 a.m.–noon **POLICY SESSION – USED FUEL POLICY**

Chair
Terry Pickens
Xcel Energy

Speakers
Everett Redmond
Nuclear Energy Institute

Andrew Griffith
U.S. Department of Energy

Katrina McMurrian
Nuclear Waste Strategy Coalition

Ann McCabe
National Association of Regulatory Utility Commissioners

NEI
NUCLEAR ENERGY INSTITUTE

Noon–1:30 p.m. **LUNCH AND EXHIBITS**

1:30–3 p.m. **BREAKOUT SESSIONS I**

Track 1

CONSOLIDATED INTERIM STORAGE

Chair
Kristopher Cummings
Nuclear Energy Institute

Speakers
Stefan Anton
Holtec International

Rodney Baltzer
Waste Control Specialists LLC

Melissa Bates
U.S. Department of Energy

Mark Lombard
U.S. Nuclear Regulatory Commission

Track 2

TIER 1 RESEARCH & DEVELOPMENT OPPORTUNITIES

Chair
Michael Keck
Tennessee Valley Authority

Speakers
Keith Waldrop
Electric Power Research Institute

Ned Larson
U.S. Department of Energy

Richard Ridder
Dominion Generation

Brady Hanson
Battelle Pacific Northwest National Laboratory

3–3:30 p.m. **BREAK AND EXHIBITS**

3:30–5 p.m. **BREAKOUT SESSIONS II**

Track 1

PUBLIC OUTREACH

Chair
Adam Levin
AHL Consulting

Speakers
Andrew Griffith
U.S. Department of Energy

Rodney McCullum
Nuclear Energy Institute

Chuck Smith
Councilmember, Aiken County, S.C.

Maureen Brown
Southern California Edison Company

Track 2

CHANGE CONTROL

Chair
George Carver
NAC International

Speakers
Aladar Csontos
U.S. Nuclear Regulatory Commission

Brian Gutherman
Gutherman Technical Services

Prakash Narayanan
Areva TN

Ben Spiesman
FirstEnergy Corp.

6 p.m. **EVENING RECEPTION**

WEDNESDAY, MAY 4

7 a.m.–5 p.m. **REGISTRATION**

7–8:30 a.m. **CONTINENTAL BREAKFAST**

8:30–10 a.m. **BREAKOUT SESSIONS III**

Track 1

DECOMMISSIONING STRATEGY & EXPERIENCE

Chair
Mark Richter
Nuclear Energy Institute

Speakers
Pamela Cowan
Exelon Generation Company LLC

John Hickman
U.S. Nuclear Regulatory Commission

Steven Edwards
Duke Energy Corporation

Richard Reid
Electric Power Research Institute

Track 2

OPERATIONAL EXPERIENCE I

Chair
Michael Williams
Areva TN

Speakers
Lee Brookhart
U.S. Nuclear Regulatory Commission

Steve Ewens
Ameren Missouri

Brian Voss
Nebraska Public Power District

Allen Hickman
Holtec International

10–10:30 a.m. **BREAK AND EXHIBITS**

10:30 a.m.–noon **BREAKOUT SESSIONS IV**

Track 1

TECHNICAL & REGULATORY ISSUES

Chair
Robert Quinn
EnergySolutions

Speakers
George Carver
NAC International

Meraj Rahimi
U.S. Nuclear Regulatory Commission

Albert Machiels
Electric Power Research Institute

Ken Sorenson
Sandia National Laboratories

Track 2

OPERATIONAL EXPERIENCE II

Chair
Steven Soler
Holtec International

Speakers
Michael Baumann
Xcel Energy

Keven Donovan
Exelon Generation Company, LLC

Eric Shewbridge
NAC International

Marlin Stoltz
Areva TN

Noon–1:30 p.m. **LUNCH AND EXHIBITS**

1:30–5 p.m. **BREAKOUT SESSIONS V**

Track 1

INTERNATIONAL PERSPECTIVES

Chair
Michael Apted
Intera, Inc.

Speakers
Guillermo Calatayud
Equipos Nucleares S.A.

Paul Standring
International Atomic Energy Agency

Marcel Tardy
Areva TN

Harry Longstaff
Atkins Global

3–3:30 p.m. **BREAK AND EXHIBITS**

3:30–5 p.m. **BREAKOUT SESSIONS VI**

Track 1

TRANSPORTATION ISSUES

Chair
Mark Richter
Nuclear Energy Institute

Speakers
Robert Quinn
EnergySolutions

Matt Feldman
Oak Ridge National Laboratory

Mark Lombard
U.S. Nuclear Regulatory Commission

Jamie Adam
NAC International

Track 2

LICENSE RENEWAL IMPLEMENTATION WORKSHOP

Chair
Brian Gutherman

Lessons Learned Panel
Steve Sisley – EnergySolutions, LLC
Terry Pickens – Xcel Energy
James Wood – Exelon Corporation
Brian Wakeman – Dominion Generation
Prakash Narayanan – Areva TN

Customer Needs Panel
Clay Channell – Southern Nuclear Operating Company
Glenn Schwartz – PSEG Nuclear LLC
Suzanne Leblang – Entergy Services, Inc.
Paul Plante – Maine Yankee Atomic Power Company
Ray Termini – Exelon Corporation
Bill Babiak – FirstEnergy Corp.
Philippe Soenen – Pacific Gas & Electric

Vendor Panel
Jay Wellwood – NAC International
Steven Sisley – EnergySolutions
Abbey Donahue – Areva TN
Kimberly Manzione – Holtec International

THURSDAY, MAY 5

7 a.m.–5 p.m. **REGISTRATION**

7–8:30 a.m. **CONTINENTAL BREAKFAST**

8:30–10 a.m. **BREAKOUT SESSIONS VII**

Track 1

USED FUEL MANAGEMENT AT SHUTDOWN PLANT SITES

Chair
Paul Plante
Maine Yankee Atomic Power Company

Speakers
Mark Tursa
Portland General Electric Company

Richard Ridder
Dominion Generation

Steven Maheras
Pacific Northwest National Laboratory

Gregory Vesey
Areva TN

Track 2

SPENT FUEL POOL STORAGE

Chair
Zita Martin
Tennessee Valley Authority

Speakers
Kent Wood
U.S. Nuclear Regulatory Commission

Kristopher Cummings
Nuclear Energy Institute

Hatice Akkurt
Electric Power Research Institute

Robert Hall
Dominion Generation

10–10:30 a.m. **BREAK AND EXHIBITS**

10:30 a.m.–noon **CLOSING PLENARY SESSION**
USED FUEL: DELIVERING THE NUCLEAR PROMISE

Chair
TBD

Speakers
Kristopher Cummings
Nuclear Energy Institute

Mark Lombard
U.S. Nuclear Regulatory Commission

Ray Termini
Exelon Corporation

Pierre Oneid
Holtec International

Noon **ADJOURN**

L-MT-16-020
Attachment 2

Presentation

Spent Fuel Storage Dye Penetrant Test Issue

32 pages follow

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Monticello Nuclear Generating Plant

Spent Fuel Storage Dye Penetrant Test Issue

NEI Used Fuel Management Conference

May 4, 2016

Michael Baumann
Director- Nuclear Fuel

Monticello Nuclear Generating Plant

- Boiling Water Reactor
- NSSS – General Electric
- Operating License Issued September 8, 1970

- Current Licensed Power 2004 MWt
- Net Power Output ~665 MWe

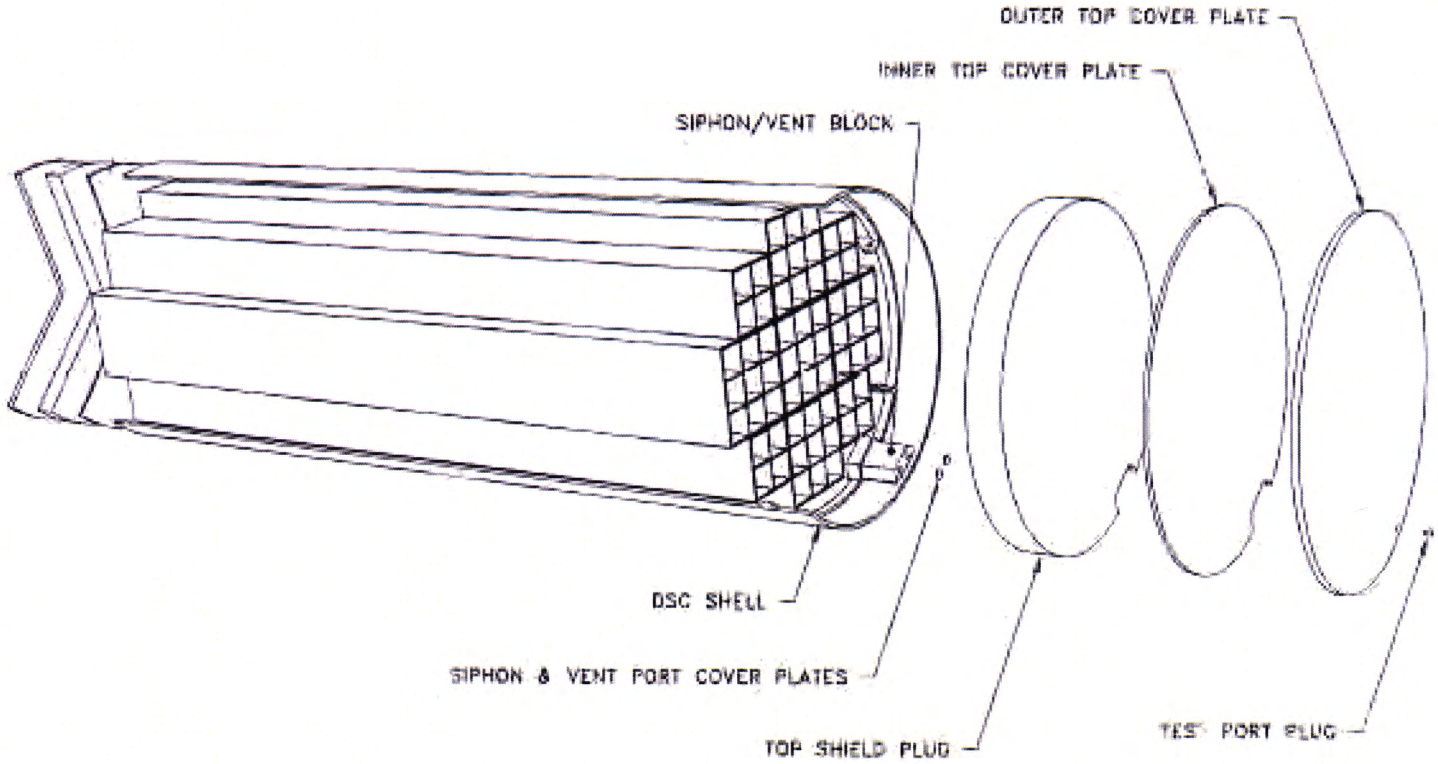
- Renewed Operating License Issued November 8, 2006
- Operating License Expires September 8, 2030

MNGP Spent Fuel Strategy

Spent Nuclear Fuel Management Plan

- Maintain a minimum of 664 available locations in the Spent Fuel Pool
  - Enables one full core offload capability (484 spaces)
  - Allows efficient pre-staging of new fuel in pool (180 spaces)
- **2013 Goal – Load 10 AREVA TN NUHOMS® 61 BTH Dry Shielded Canisters (DSC)**
  - **Loading DSCs 11 – 20**
  - **Experienced Contractor hired to perform "Pool-to-Pad" loading campaign**

AREVA TN NUHOMS®
61 BTH DSC



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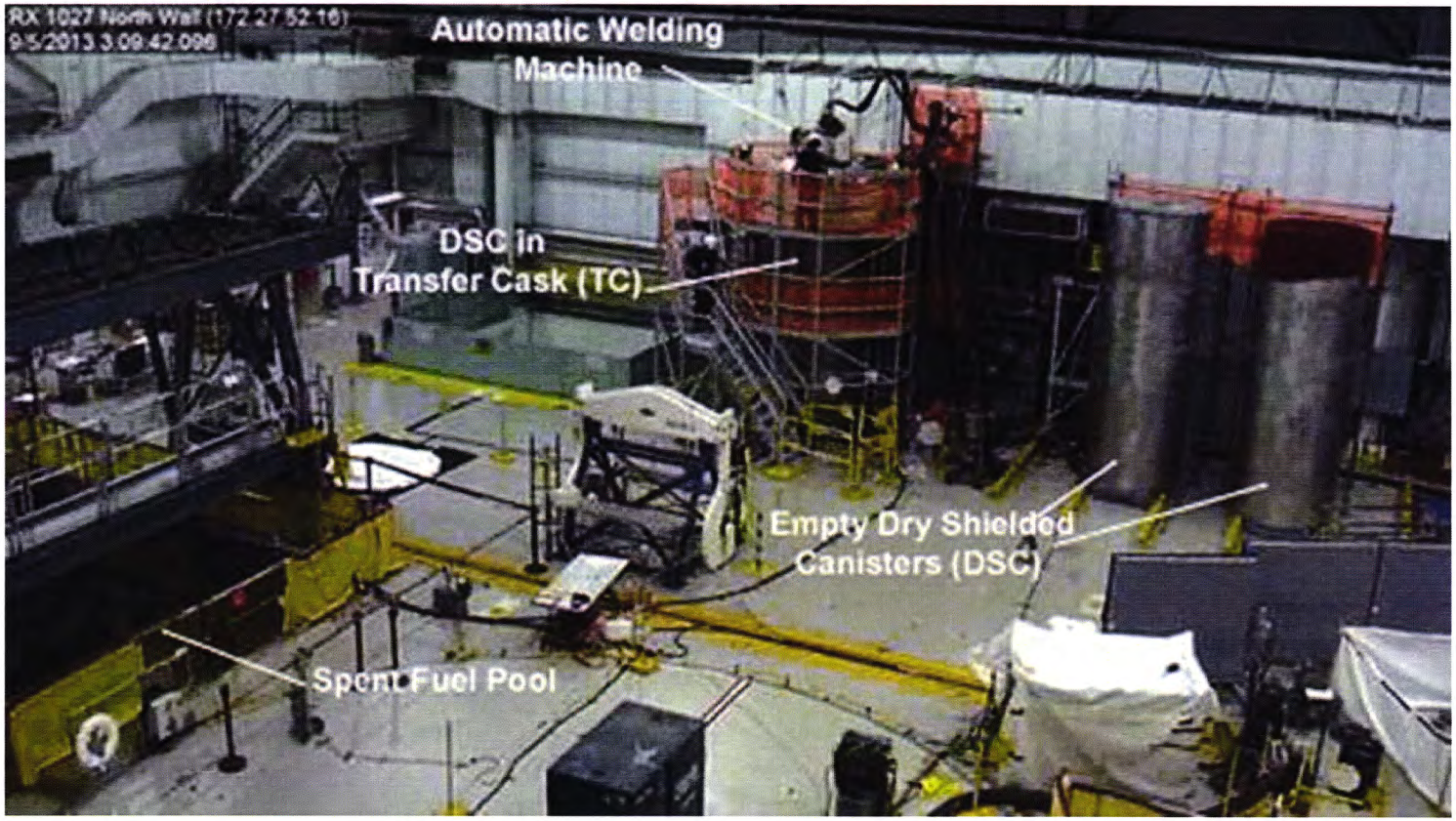
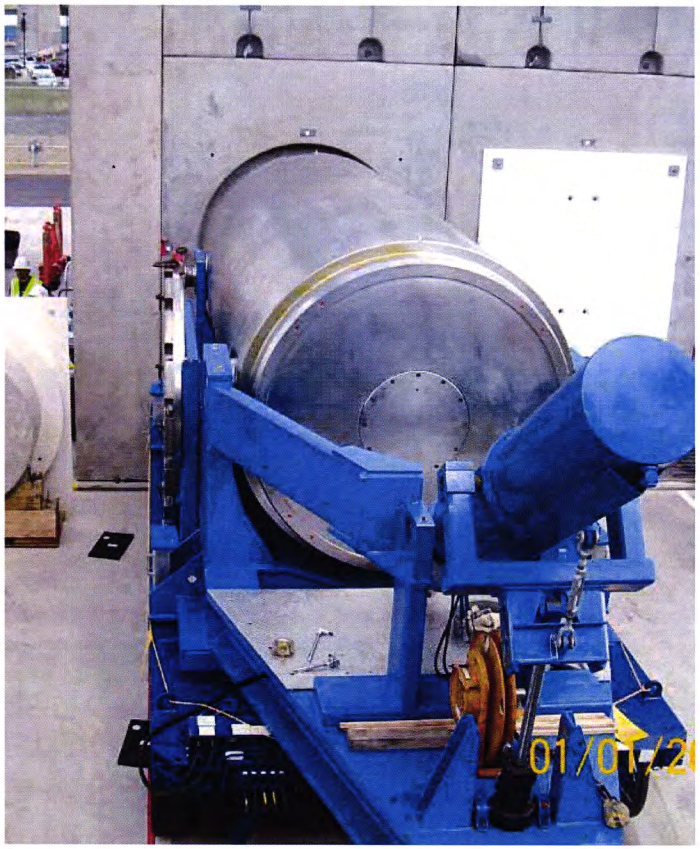
AREVA TN NUHOMS® 61 BTH DSC



Xcel Energy®

AREVA TN NUHOMS® 61 BTH DSC



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Monticello Independent Spent Fuel Storage Installation

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DSC Weld Inspection Requirements

NRC Interim Staff Guidance (ISG-15)

The structural lid weld should be examined by ultrasonic testing (UT) or other volumetric methods. Review the applicant's evaluation of the critical flaw size using the linear-elastic fracture mechanics methodology based on service temperature, dynamic fracture toughness, and critical design stress parameters, as specified in Section XI of the ASME Code.

Progressive surface examinations, utilizing dye penetrant testing (PT) or MT, are permitted only if unusual design and loading conditions exist. In addition, a stress-reduction-factor of 0.8 is imposed on the weld strength of the closure joint to account for imperfections or flaws that may have been missed by progressive surface examinations. The weld design should be approved by the NRC on a case-by-case basis.

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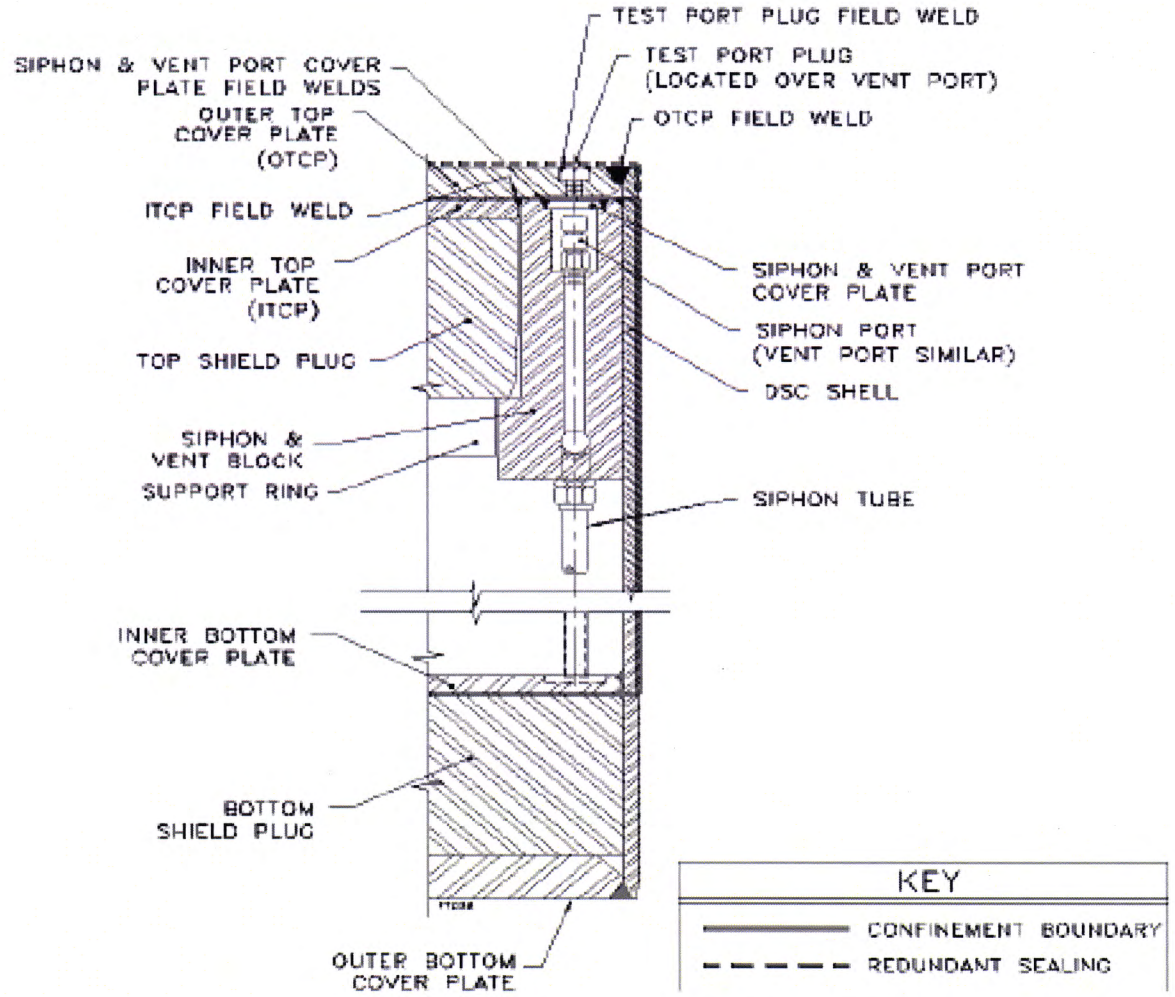
DSC Weld Inspection Requirements

NUHOMS® 61 BTH (DSC)
Technical Specification 1.2.5

"All DSC closure welds except those subjected to full volumetric inspection shall be dye penetrant tested in accordance with the requirements of the ASME Boiler and Pressure Vessel Code Section III, Division 1, Article NB-5000. The liquid penetrant test acceptance standards shall be those described in Subsection NB-5350 of the Code."

DSC Closure Welds



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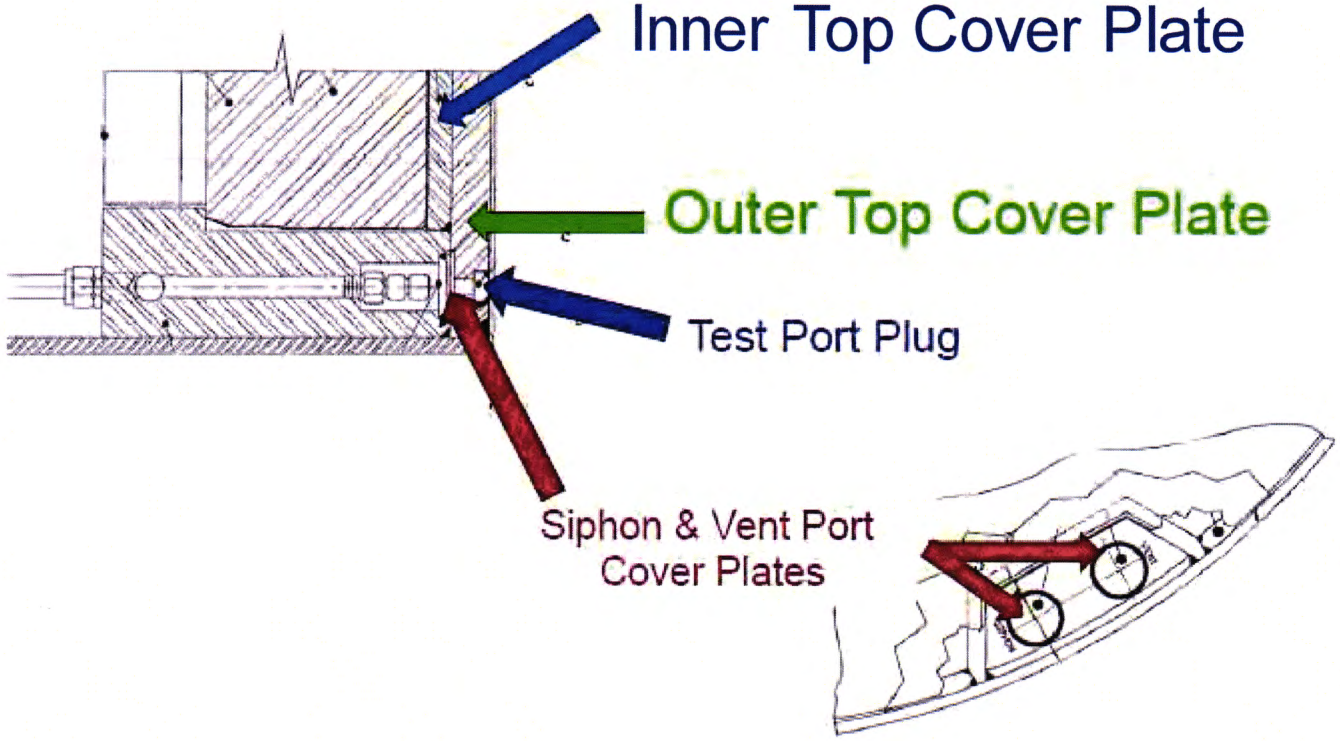
DSC Closure Welds



Total of 11 Closure Welds

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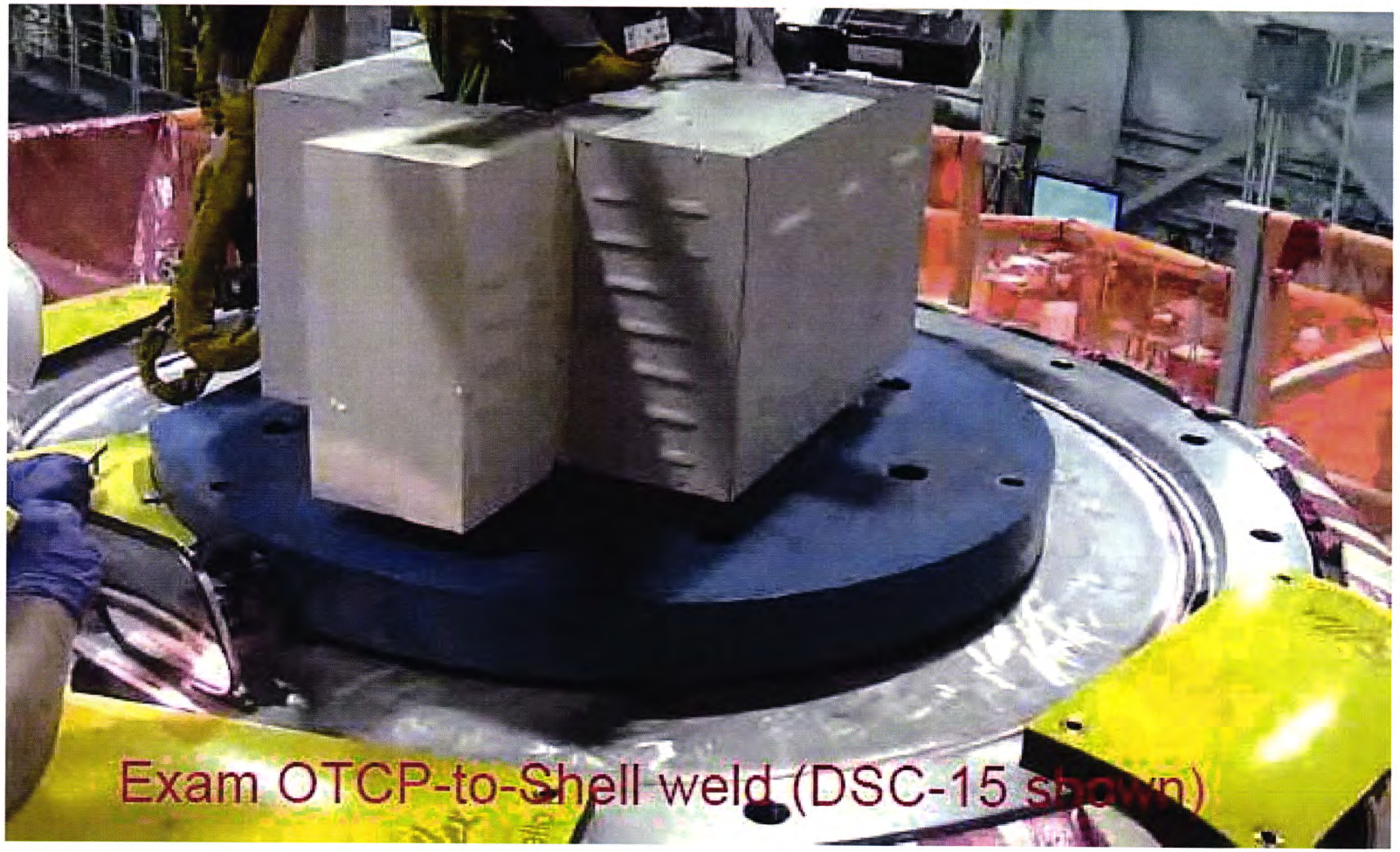
Dye Penetrant Exam



Nuclear Regulatory Commission Identified Issue

"On 10/17/2013 at approximately 1530 NDE was performed on the final pass of the Dry Shielded Canister Outer Top Cover Plate. An NRC inspector observed part of this activity and questioned the ISFSI project team if the dwell and development times were sufficient to meet procedural requirements."

- Identified during closure weld on DSC 16 while viewing activity from Remote Monitoring Station
- DSCs 11 – 15 loaded and placed in HSMs

Nuclear Regulatory Commission Identified Issue

All loading activities captured and stored on video

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Immediate Response to NRC Question

- Stop Work Order issued
- Video review showed numerous failures to adhere to required dwell times and other violations of procedural requirements. PT documentation did not match recorded video. All 66 Weld PTs did not meet procedural requirements.
- Operations declares DSCs 11 – 16 Inoperable, Not Meeting Technical Specifications
- Review of results of final process to ensure adequate confinement (Helium Leak Test) showed all six DSCs had passed
- Root Cause Evaluation Team Chartered

NRC Office of Investigation

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NRC Response

Notice of Apparent Violations – July 23, 2015

- Control of Special Processes – NRC determined that the contractors apparently willfully failed to follow procedures [10 CFR 72.158]
- Completeness and accuracy of information – contractors apparently completed PT examination forms with inaccurate information [10 CFR 72.11]
- Control of purchased material, equipment and services – licensee apparently did not assess the effectiveness of the control of quality by contractors [10 CFR 72.154(c)]

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NOV Response Options

Apparent Violations Response Options

- Provide a written response to Apparent Violations, or
- Predecisional Enforcement Conference, or
- Alternative Dispute Resolution

Opted for Alternative Dispute Resolution

Met with NRC on October 15, 2015

ADR Results

Confirmatory Order Required Actions – December 21, 2015

- Restore DSCs 11-16 to compliance by ~May 2021
- Plan for restoring DSCs provided to NRC by ~November 2016
  - Annual updates to NRC
- Training for all first line supervisors & above by April 2016
- Evaluate effectiveness of improvements in oversight by December 2016
- Provide industry presentations on event and lessons learned by June 2017
- Provide industry article on event and lessons learned by December 2016

ADR Results

Confirmatory Order – December 21, 2015

NRC Acknowledged Additional Corrective Actions Completed by Xcel Energy

- Xcel Energy revised Nuclear Oversight and Supply Chain Procedures to require oversight of contractors working under their QA program and improve oversight of project implementation
- Xcel Energy created a Procedure for Oversight of Supplemental Personnel
- Xcel Energy Issued a Rapid Operational Experience Notice for this Event and Shared with Industry through INPO Consolidated Event System
- Xcel Energy Reviewed General Access Training to Ensure it Addresses Consequences of Willful Violations

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ADR Results

Confirmatory Order – December 21, 2015

Based on Commitments contained in Confirmatory Order and Corrective Actions taken by Xcel Energy, the NRC agreed to:

1. "The NRC will consider the Confirmatory Order as an escalated enforcement action for a period of one year from its issuance date."
2. "The NRC will refrain from issuing a Notice of Violation and proposed imposition of a civil penalty."

Xcel Energy Actions

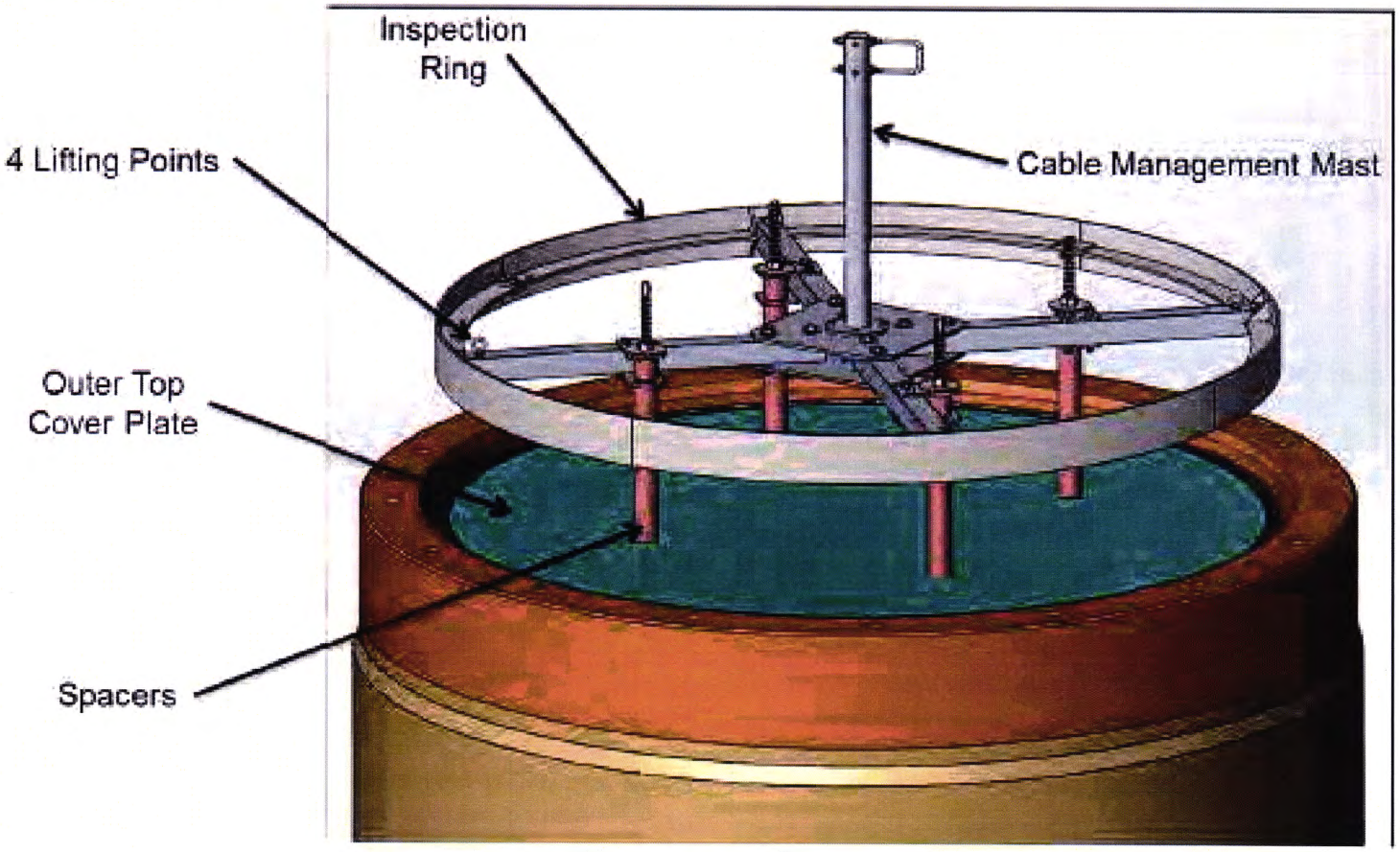
Options Reviewed

- Reviewed Remedy Options
  - Unload fuel from DSCs 11-16
  - Effect repair of DSCs 11-16
  - Request Exemption to Tech Spec Requirements from NRC
- Chose Exemption Request
  - Evaluation to show additional margin available beyond Stress Allowable Reduction Factor of 0.8 from ISG-15
  - Withdrew Exemption Request to obtain additional knowledge of the physical quality of welds
- Worked with AREVA to develop ability to inspect OTCP and majority of ITCP welds with Phased Array Ultrasonic Test

Xcel Energy Actions

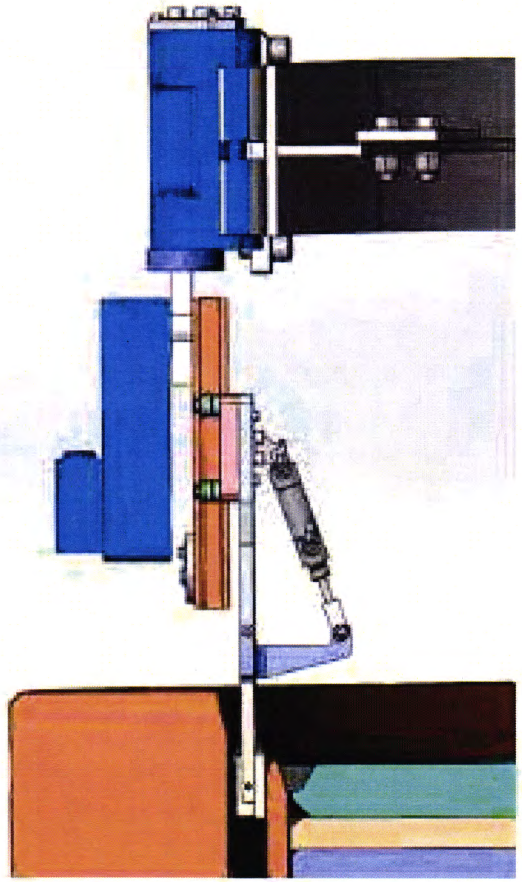
Phased Array Ultrasonic Test

Monticello, DSC-16, Phased Array UT Examination Results of the Inner and Outer Top Cover Lid Welds



Xcel Energy Actions

Phased Array Ultrasonic Test



Xcel Energy Actions

Phased Array Ultrasonic Test (PAUT) Results

- Indications identified in OTCP & ITCP welds

Finite Element Analysis (FEA)

- Results of PAUT were analyzed by AREVA TN using a Finite Element Analysis Model
- Analysis showed adequate margin to support new Exemption Request

Exemption Request

- Exemption request with results of PAUT and FEA submitted to NRC in September 2015, under review. Responded to two sets of Requests for Additional Information.

Xcel Energy Actions

- Xcel Energy is pursuing contractual and legal remedies against the contractor and its insurers
- Xcel Energy obtained a $10 million default judgment against the contractor
- Contractor is no longer in business
- Xcel Energy continues to pursue insurance coverage

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Lessons Learned

Root Cause Evaluation Result

"Xcel Energy management has not implemented adequate controls and ownership to ensure performance by the prime contractor meets Xcel Energy standards and expectations."

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Lessons Learned

Warning Signs

- Industry experienced "Pool-to-Pad" contractor
  - Relied on review of performance audit conducted by another utility without additional evaluation
- 2nd campaign conducted by "Pool-to-Pad" contractor at MNGP, first campaign completed in 2008 with QC challenges
- Contractor Level II NDE Inspectors' lack of experience
- Contractor Level III NDE Inspector minimal time onsite

Oversight of Loading

Corrective Actions for Oversight of Loading

Revised Loading Procedures

- Requires oversight of all procedural steps related to AREVA TN NUHOMS®61 BTH DSC Technical Specifications
- Added Quality Control Hold Points to ensure Xcel Energy Nuclear Oversight is in attendance to witness all Dye Penetrant Tests
- Sign-Offs by Xcel Energy QC to Acknowledge Oversight of PT, Proper Recording of PT Parameters and Recorded Parameters are in Compliance with Procedure
- Requires Xcel Energy Operations Shift Supervisor to review all actions related to AREVA TN NUHOMS®61 BTH DSC Technical Specifications immediately following completion of procedural steps to ensure compliance with requirements

Other Changes to Oversight of Spent Fuel Activities

Project Oversight Governance Changes to Strengthen Barriers

- Expanded Project Oversight Plans to expand scope of formal oversight for all high-risk projects
- Created separate Spent Fuel Project Oversight Plans for each site providing greater detail on implementation oversight and oversight responsibilities
- Strengthened Nuclear Oversight involvement in vendor selection and qualification
- Successfully completed loading campaign at Prairie Island during 2015

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Monticello Nuclear Generating Plant

Spent Fuel Storage Dye Penetrant Test Issue

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