



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PA 19406-2713

June 24, 2015

Docket Nos. 07200028  
05000388

License No. NPF-22

Timothy S. Rausch  
Senior Vice President and Chief Nuclear Officer  
Susquehanna Nuclear, LLC  
769 Salem Boulevard - NUCSB3  
Berwick, PA 18603-0467

SUBJECT: NRC INDEPENDENT SPENT FUEL STORAGE INSTALLATION INSPECTION  
REPORT NO. 07200028/2014002, SUSQUEHANNA NUCLEAR, LLC,  
BERWICK, PENNSYLVANIA

Dear Mr. Rausch:

This refers to the Independent Spent Fuel Storage Installation (ISFSI) reactive inspection conducted between December 2, 2014, and June 15, 2015, at Susquehanna Nuclear, LLC's Susquehanna Steam Electric Station (SSES) Unit 2. The purpose of the inspection was to follow-up on the identification of indications of the siphon/vent block base metal on dry storage canister (DSC) #83. The results of this inspection were discussed with Duane Karchner and other members of your staff at the conclusion of the inspection on June 15, 2015, and are described in the enclosed report. No findings of safety significance were identified.

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Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **Radioactive Waste; Storage of Spent Nuclear Fuel**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

T. Rausch

2

No reply to this letter is required. Please contact Steve Hammann at 610-337-5399 if you have any questions regarding this matter.

Sincerely,

***/RA MRoberts f/***

Marc S. Ferdas, Chief  
Decommissioning and Technical Support  
Branch  
Division of Nuclear Materials Safety

Enclosure: NRC Inspection Report No.  
07200028/2014002

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DATE	6/17/15		6/24/15				

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No.	07200028/2014002
Docket Nos.	07200028 05000388
License Nos.	NPF-22
Licensee:	Susquehanna Nuclear, LLC
Facility:	Susquehanna Steam Electric Station (SSES) Unit 2
Location:	769 Salem Blvd. Berwick, PA 18603
Inspection Dates:	December 2-5, 2014
In-office reviews:	March 4, – June 15, 2015
Inspectors:	Stephen Hammann, Senior Health Physicist Decommissioning and Technical Support Branch Division of Nuclear Materials Safety, Region I  Marlone Davis, Project Manager Renewals & Materials Branch Division of Spent Fuel Management Office of Nuclear Material Safety and Safeguards  Clyde Morell, Materials Engineer Renewals & Materials Branch Division of Spent Fuel Management Office of Nuclear Material Safety and Safeguards
Approved By:	Marc S. Ferdas, Chief Decommissioning and Technical Support Branch Division of Nuclear Materials Safety, Region I

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**EXECUTIVE SUMMARY**

NRC Inspection Report No. 07200028/2014002

The inspectors reviewed SSES's activities associated with the repair of dry shielded canister (DSC) #83 after the identification of indications on the siphon/vent block base metal. The condition was documented in SSES's corrective action program in Condition Reports (CRs) 2014-36107, 37018, and 37033. The inspectors interviewed SSES and Transnuclear, Inc. (TN) personnel, reviewed SSES and TN documents and procedures, and observed repairs to the DSC between December 2-5, 2014. The inspection continued through June 15, 2015, and consisted of in-office reviews of information provided by SSES. The inspectors also reviewed SSES's corrective actions and apparent cause investigation report.

Based on the results of this inspection, no findings of safety significance were identified.

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## **REPORT DETAILS**

### **1.0 Background**

On November 19, 2014, during the performance of nondestructive examination (NDE) dye penetrate testing (PT) on DSC #83, multiple indications (areas of potential imperfections in the base metal) were found in the heat-affected zone area around the siphon/vent block port cover welds. The NDE was performed after the completion of welding of the siphon/vent block port covers. In consultation with the dry cask vendor and CoC holder, TN, it was determined that the siphon/vent block should be repaired by grinding out the base metal indications. Upon completion of the repair work and successful completion of a PT on the vent and siphon port welds, the outer top cover (OTC) was installed and a helium leak rate test was re-performed on November 21, 2014, as required by the Technical Specifications (TS) for the CoC. The helium leak rate test did not pass the requirements specified in TS 1.2.4a. The test was repeated several times between November 21-22, 2014, and on each occasion did not meet the TS requirement. All activities associated with the processing of the DSC were placed on hold while SSES and TN developed a repair plan for DSC #83. Prior to implementing the repair plan, TN demonstrated to SSES, at their facility in Aiken, South Carolina, that they could remove the OTC by grinding out the welds without damaging the DSC. On December 2, 2014, SSES approved the final version of the repair plan, PTIP-30696-5.2, Rev.0, Susquehanna Weld Remediation, and repair activities commenced the same day.

### **2.0 Scope**

#### **a. Inspection Scope (Inspection Procedures (IPs) 60855 and 60855.1)**

The inspectors reviewed SSES's activities associated with the repair of DSC #83 after the identification of indications on the siphon/vent block base metal. The condition was documented in SSES's corrective action program in CRs 2014-36107, 37018, and 37033. The inspectors interviewed SSES and TN personnel, reviewed SSES and TN documents and procedures, and observed repairs to the DSC between December 2-5, 2014. The inspection continued through June 15, 2015, and consisted of in-office reviews of information provided by SSES. The inspectors also reviewed SSES's corrective actions and apparent cause investigation report.

#### **b. Observations and Findings**

The inspectors reviewed the results of PT and ultrasonic testing (UT) of the edges of the DSC after the OTC was removed, and verified that the DSC was not damaged by the grinding out of the OTC welds. After the completion of localized helium leak rate testing, SSES determined the siphon/vent block was the source of the leakage. The inspectors observed the performance of a weld overlay of the entire top of the siphon/vent block up to within 3/16" of the edge of the siphon/vent block. A PT of the weld overlay showed additional indications on the siphon/vent block in the 3/16" edge that did not have the weld overlay. The inspectors reviewed the SSES and TN revised repair plan that placed a weld overlay on the portion of the siphon/vent block that had not previously had an overlay. Further localized helium leak rate testing did not indicate any further leaks

Enclosure

after the completion of the weld overlays and SSES re-entered their procedure for processing of DSC #83. On December 12, 2014, processing of DSC #83 was completed and the inspectors confirmed that the DSC met all the TS requirements prior to it being moved to the ISFSI pad on December 16, 2014. The inspectors verified that throughout the repair the DSC was in a safe stable condition and all TS requirements were met.

The inspectors reviewed the root cause investigation report that documented the determination that the siphon/vent block had been fabricated from a thick rolled plate and contained inherent inclusions resulting during ingot solidification. The inclusions induced in the rolled plate were brought to the block face by weld-induced stresses. The inspectors confirmed that SSES has two unused canisters on-site that had their siphon/vent blocks fabricated from the same lot of rolled plate as DSC #83. Planned corrective actions include placing a weld overlay on the siphon/vent block of one of the unused canisters and returning the other canister to the manufacturer. These activities are being tracked in the corrective action program.

c. Conclusions

Based on the results of this inspection, no findings of safety significance were identified.

**3.0 Exit Meeting Summary**

On June 15, 2015, the inspectors presented the inspection results, via teleconference, to Duane Karchner, Refuel Floor Manager, and other members of SSES's staff.

**PARTIAL LIST OF PERSONS CONTACTED**

Susquehanna

\* Duane Karchner, Refuel Floor Manager  
\* Justion Mirilovich, Refuel Floor Shift Manager  
\* Anthony Nestico, Refuel Floor Shift Manager  
Brenda O'Rourke, Senior Engineer  
Robert Rose, Engineering  
Robert Specht, NDE

Transnuclear

Mike Williams, Director of Operations  
Pam Waite, Work Package Coordinator  
David Wright, Project Coordinator

\* Indicates attendance at the exit meeting

**ITEMS OPEN, CLOSED, AND DISCUSSED**

None

**LIST OF DOCUMENTS REVIEWED**

Analysis and Tests

AREVA Examination Summary Sheet, Ultrasonic Exam, SSE-61BTH-1-B-2-050, SSE-61BTH-1-B-2-051  
AREVA Root Cause Investigation of Siphon and Vent Block Base Metal Indications (AREVA TN Root Cause Investigation 2014-339)  
Helium Leak Rate Test, Inner Lid to Shell, Port Cover Plate & outer Top Cover, Canister 81  
Helium Leak Rate Test, Vent and Siphon Port Cover Plates, Canister 81  
Helium Leak Rate Test, Inner Lid to Shell, Port Cover Plate & outer Top Cover, Canister 82  
Helium Leak Rate Test, Vent and Siphon Port Cover Plates, Canister 82  
Liquid Penetrant Examination, Final Pass Welds for Inner Vent & Siphon Port Covers, Canister 83  
Liquid Penetrant Examination, Rework of Indication Areas at Vent & Siphon Port Covers, Canister 81  
Liquid Penetrant Examination, Root Pass Weld for Inner Top Cover Plate, Canister 81  
Liquid Penetrant Examination, Root Pass Weld for Inner Top Cover Plate, Canister 82  
Liquid Penetrant Examination, Top surface of Block, Cannister S/N-SSE-61BTH-1-2-050

Condition Reports

CR 2014-35887, 2014-36107, 2014-37018, 2014-37033, 2014-37036  
Transnuclear Nonconformance Report No: 2014-313, Rev. 0



Procedures

NDE-LT-001, Rev. 2, Helium Mass Spectrometer Leak Test Procedure for Dry Fuel Storage Casks

NDE-PT-001, Rev. 4, Color Contrast Liquid Penetrant Examination

NDE-PT-003, Rev. 2, Color Contrast Liquid Penetrant Examination High Temperature

NDE-UT-014, Rev. 7, Ultrasonic Examination

PTIP-30696-5.2, Rev. 0, Rev. 0, Susquehanna Weld Remediation

PTIP-30696-5.2, Rev. 0, Rev. 1, Susquehanna Weld Remediation Procedure

Miscellaneous

2014 Dry Fuel Storage, Status Report - Campaign No. 8

72.48 Screening, Susquehanna Weld Remediation of DFS Canister

AREVA E-41005, Executive Summary of PPL and TN Review of Fabrication Issues

AREVA E-42068, DSC Procurement Specification, May 22, 2015

AREVA TN Form 15.1-1, Rev. 10, Reportability Determination, CAR No. 2014-339

AREVA Presentation "SSE-61BTH-1-2-052 Repair Plan"

Certificate of Compliance No. 1004, Amendment 10

Form 3.5-1, Rev.8 10 CFR Part 72.48 Applicability and 10 CFR Part 71 Review, LR No. 721004-1388 Rev. 1

PPL Susquehanna Pool to Pad 30969 TN Logbook 2014

Radiation Work Permit 2014-0204, Repair Dry Fuel Storage Canister #83

TC/DSC Monitoring Log

WPS TN-P8-P8-GT1, Rev. 1

WPS TN-P8-P8-GT2, Rev. 1

**LIST OF ACRONYMS USED**

CoC	Certificate of Compliance
DNMS	Division of Nuclear Material Safety
DSC	Dry Shielded Canister
IP	Inspection Procedure
ISFSI	Independent Spent Fuel Storage Installation
NDE	Nondestructive Examination
NRC	Nuclear Regulatory Commission
OTC	Outer Top Cover
PT	Dye Penetrant Test
SSES	Susquehanna Steam Electric Station
TN	Transnuclear, Inc.
TS	Technical Specifications
UT	Ultrasonic Testing