



**SAFETY INSPECTION REPORT AND COMPLIANCE INSPECTION**

1. CERTIFICATE/QUALITY ASSURANCE PROGRAM (QAP) HOLDER:  AREVA TN / America, Areva Inc. 7135 Minstrel Way, Suite 300 Columbia, MD. 21045		2. NRC/REGIONAL OFFICE  Headquarters U. S. Nuclear Regulatory Commission Mail Stop 3WFN 14C-28 Washington, DC 20555-0001	
REPORT NUMBER(S)  72-1004		4. INSPECTION LOCATION  Limerick Generating Station	5. DATE(S) OF INSPECTION  September 14 - 16, 2015

**CERTIFICATE/QUALITY ASSURANCE PROGRAM HOLDER:**  
The inspection was an examination of the activities conducted under your QAP as they relate to compliance with the Nuclear Regulatory Commission (NRC) rules and regulations and the conditions of your QAP Approval and/or Certificate(s) of Compliance. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The inspection findings are as follows:

1. Based on the inspection findings, no violations were identified.

2. Previous violation(s) closed.

3. The violation(s), specifically described to you by the inspector as non-cited violations, are not being cited because they were self-identified, non-repetitive, and corrective action was or is being taken, and the remaining criteria in the NRC Enforcement Policy, to exercise discretion, were satisfied.

\_\_\_\_\_ Non-cited violation(s) was/were discussed involving the following requirement(s) and Corrective Action(s):

4. During this inspection, certain of your activities, as described below and/or attached, were in violation of NRC requirements and are being cited in accordance with NRC Enforcement Policy. This form is a NOTICE OF VIOLATION, which may be subject to posting in accordance with 10 CFR 19.11.  
(Violations and Corrective Actions)

**Statement of Corrective Actions**

I hereby state that, within 30 days, the actions described by me to the inspector will be taken to correct the violations identified. This statement of corrective actions is made in accordance with the requirements of 10 CFR 2.201 (corrective steps already taken, corrective steps which will be taken, date when full compliance will be achieved). I understand that no further written response to NRC will be required, unless specifically requested.

TITLE	PRINTED NAME	SIGNATURE	DATE
CERTIFICATE/QAP REPRESENTATIVE	Chris Lloyd	<i>Chris Lloyd</i>	11/13/15
NRC INSPECTOR	Marlone Davis	<i>Marlone F. Davis</i>	11/13/15
BRANCH CHIEF	Patricia Silva	<i>Earle Joe for Ps</i>	11/13/15

### INSPECTOR NOTES COVER SHEET

Licensee/Certificate Holder	AREVA TN Americas, Areva Inc. 7135 Minstrel Way, Suite 300 Columbia, Maryland 21045
Licensee/Certificate Holder Contact	Mr. Brian Ocampos, Quality Assurance Manager Mr. Chris Lloyd, VP Quality Assurance AREVA TN
Docket No.	72-1004
Inspection Report No.	72-1004/2015-203
Inspection Date(s)	September 14 - 30, 2015
Inspection Location(s)	Limerick Generating Station, Sanatoga, PA. 19464
Inspectors	Marlone Davis, Team Leader, Senior Safety Inspector John Nicholson, Senior Health Physicist Niklas Floyd, Reactor Inspector Briana Bollinger, Health Physicist
Summary of Findings and Actions	<p>The purpose of this inspection was to determine whether AREVA TN fabricated the NUHOMS Horizontal Storage Modules (HSMs) at the Limerick Generating Station in accordance with the NUHOMS Safety Analysis Report, Safety Evaluation Report, Certificate of Compliance and 10 CFR Part 72 requirements.</p> <p>The team assessed AREVA TN's management of the project, and fabrication controls to determine if AREVA conducted these activities in accordance with their Quality Assurance Program and if Exelon reviewed these activities to determine that there was no adverse impact on the site operations or Technical Specifications. The team observed selected activities; reviewed procedures and instructions; examined documents, records, and drawings; verified personnel training and qualifications; and interviewed personnel responsible for various activities.</p> <p>Based on the results of this inspection, the NRC determined that no violations of significance occurred. Following the initial debrief on September 15, 2015, the team completed the inspection on September 30 with no additional issues or observations.</p>
Lead Inspector Signature/Date	Marlone Davis <i>Marlone F. Davis 11/13/2015</i>
Inspector Notes Approval Branch Chief Signature/Date	Patricia Silva <i>Patricia Silva For PS 11/13/2015</i>

## Inspector Notes

During the week of September 14 - 16, 2015, a team of NRC inspectors conducted inspection activities in accordance with NRC Inspection Procedure 60853, "On-site Fabrication of Components and Construction of an ISFSI". The purpose of the inspection was to determine whether AREVA TN performed on-site fabrication activities at the Limerick Generating Station (LGS) in accordance with the NUHOMS Safety Analysis Report, Safety Evaluation Report, Certificate of Compliance and 10 CFR Part 72 requirements.

The team assessed AREVA TN's management and fabrication controls to determine if AREVA conducted these activities in accordance with their Quality Assurance Program and if Exelon reviewed these activities to determine that there was no adverse impact on site operations or LGS technical specifications. The team observed selected activities; reviewed procedures and instructions; examined documents, records, and drawings; verified personnel training and qualifications; and interviewed personnel responsible for various activities. Based on the results of this inspection, the team determined that no violations of significance occurred.

The team performed a preliminary exit briefing on September 15. During the preliminary exit briefing, there were some outstanding requests that the team needed to complete the inspection activity. The team noted to AREVA TN that once the team completed the review of the outstanding items then the team would conduct a final telephone exit briefing if there were any changes. The team completed the inspection on September 30, 2015 with no additional issues or observations.

**INSPECTOR NOTES: THE TEAM PERFORMED AND DOCUMENTED APPLICABLE PORTIONS OF SECTION 02.01 THROUGH 02.06 OF INSPECTION PROCEDURE 60853**

On September 15, 2015, the team observed construction activities and performed reviews of fabrication quality assurance (QA) records and activities related to the NUHOMS Horizontal Storage Modules (HSMs) at the Limerick Generating Station (LGS). The inspection focus was to determine whether AREVA TN constructed the HSMs in accordance with the NRC approved QA program, and whether the HSMs would perform their intended function as stated in the NUHOMS Safety Analysis Report (SAR) and Certificate of Compliance (CoC), as applicable following fabrication. Additionally, the team assessed how Exelon reviewed these activities to determine that there were no adverse impact on site operations and LGS technical specifications.

The team reviewed nonconformance reports and verified that Exelon and AREVA personnel initiated and resolved corrective actions in a timely manner. The inspectors reviewed selected records and interviewed selected personnel to verify that AREVA TN effectively implemented a nonconformance control program at the site. Specifically, the inspectors reviewed AREVA TN approved procedure SPM 5.20.9, "Control of Nonconforming Items during Onsite Fabrication and Assembly of HSM." The inspectors reviewed a number of nonconformance reports for this project.

The team verified that the fabrication procedures, drawings, and purchase orders of the HSMs were consistent with design commitments and requirements contained in the final safety analysis report. The inspectors also verified that trained and certified individuals performed quality-related activities, and that on-site fabricators were familiar with the specified design, fabrication techniques, and quality control requirements associated with the HSM construction. The inspectors reviewed AREVA TN approved procedure SPM 5.20.1, "Conduct of Site – Onsite Fabrication and Installation." In addition, the inspectors verified that Exelon personnel performed appropriate oversight of the construction activities and documented deficiencies.

The inspectors reviewed the pre-placement activities for one outlet vent cover (LGS-OVC-8) and one end wall (LGS-EW-3B). The inspectors walked down the fabrication area; examined the rebar and embed installation; and verified that the rebar size, spacing, splice length, and concrete coverage on the top, side, and bottom complied with approved drawings and specifications. The inspectors also evaluated the concrete formwork installation for depth, straightness, and horizontal bracing and verified the overall dimensions and orientation for compliance to the licensee-approved drawings. The inspectors interviewed Exelon, AREVA TN, and contract personnel to verify knowledge of the ongoing work and appropriate oversight of the HSM construction activities.

The inspectors observed the concrete placement for one end wall (LGS-EW-3B) to verify that personnel properly placed, consolidated, and finished the concrete. The team also observed testing of the concrete for slump and air content, temperature measurements, and the collection and preparation of cylinder samples such that compression tests met the acceptance criteria in the approved specification. The inspectors reviewed the concrete truck batch tickets to verify that the concrete delivered to the site met code and specification requirements regarding batch composition and time to placement. The inspectors performed a documentation review of one completed base component (LGS-B-ES-1) and one completed roof component (LGS-R-ES-1) to verify that AREVA TN personnel performed the proper QA hold points. The inspectors also verified that the 28-day compressive strength test results for these two completed components exceeded the specified minimum design strength.

The team concluded that AREVA TN conducted activities related to the HSM fabrication in accordance with an NRC approved QA program. Overall, the team verified that implementing procedures were in place and effective in controlling activities in accordance with licensing and design documents.

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Personnel Interviewed

Steve Bostic, TN Onsite Project Coordinator  
James Seals Jr., TN Director of Services Business Line  
Brian Ocampos, TN Quality Assurance Manager  
Polina Fox, TN Quality Assurance  
Jamie Peterson, TN Quality Control

### **LIST OF DOCUMENTS REVIEWED**

#### Procedures

SPM 5.20.9, Control of Nonconforming Items during Onsite Fabrication and Assembly of HSM, Revision 1  
SPM 5.20.9, Conduct of Site – Onsite Fabrication and Installation, Revision 2  
SPM 5.21.1, General Construction Requirements and Methods for Onsite Fabrication of HSM-M, Revision 3  
SPM 5.21.8, Concrete Batching and Testing Procedure for Onsite Fabrication of HSM-H, Revision 3

#### Drawings

NUH-03-7103, Base, Revision 5  
NUH-03-7105, Walls and Outlet Vent Cover Design Drawing, Revision 2

#### Corrective Action Report (CAR)

2015-229, Identifies Base #2 casting deck horizontal surface distortion condition  
2015-293, Addresses the failure to initiate timely NCR  
2015-298, Missing M&TE Calibration Log

#### Nonconformance Reports (NCR)

2015-145, Chloride ion content for composite concrete sample between the age of 28 and 42 days was not tested  
2015-164, Batching materials found out-of-tolerance during uniformity testing  
2015-169, On batch ticket 170805, the water quantity of -1.1% was found to exceed allowable maximum tolerance for total mixing water.  
2015-174, Minor rock pocket found in LGS-B-ES-1 in the lower back right corner of the unit.

Miscellaneous

Batch Ticket 179654 and Supplemental Sheet, dated September 15, 2015  
Batch Ticket 179672 and Supplemental Sheet, dated September 15, 2015  
Concrete Batching for Onsite Fabrication Signoff Sheet, dated September 15, 2015  
HSM Procedure Traveler for Base LGS-B-ES-1, dated August 28, 2015  
HSM Procedure Traveler for End Wall LGS-EW-3B, dated September 15, 2015  
HSM Procedure Traveler for Outlet Vent Cover LGS-OVC-8, dated September 15, 2015  
HSM Procedure Traveler for Roof LGS-R-ES-1, dated August 28, 2015  
Lab Report 10-132843, Concrete Cylinder Compression Test, dated September 10, 2015  
Lab Report 10-132844, Concrete Cylinder Compression Test, dated September 10, 2015  
Project Specification NUH-03-0314, AREVA Specification: Concrete Construction of NUHOMS  
HSM, Revision 4