



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 25, 2018

LICENSEE: Exelon Generation Company, LLC

FACILITY: Braidwood Station, Units 1 and 2

SUBJECT: SUMMARY OF DECEMBER 7, 2017, CLOSED MEETING WITH EXELON GENERATION COMPANY, LLC, REGARDING TVEL LEAD TEST ASSEMBLIES TO BE PLACED IN THE BRAIDWOOD REACTOR (EPIDS 000976/05000456/L-2017-LRM-0047 AND 000976/05000457/L-2017-LRM-0047)

On December 7, 2017, a closed meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Exelon Generation Company, LLC (Exelon, the licensee) at NRC Headquarters, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to provide an updated status of Exelon's work planned and in progress to load TVEL's TVS-K lead test assemblies into the Braidwood Station, Unit 1, reactor. The meeting notice, dated December 4, 2017, is available in the Agencywide Documents Access and Management System (ADAMS) at Accession No. ML17335A044. A list of attendees is provided as Enclosure 1.

The licensee presented proprietary information regarding the lead test assemblies. Exelon stated that the fuel is not considered accident tolerant fuel. A non-proprietary version of the presentation is provided as Enclosure 2. Licensing aspects of the project were not discussed at the meeting.

The NRC staff queried the licensee about proprietary aspects of the lead test assemblies and the quality assurance program to be used to manufacture them. Requested information to be provided during a future meeting included:

1. NRC to determine if it needs to conduct vendor inspections and, if so, identify the scope.
2. NRC to determine the need to perform an audit of the Global Nuclear Fuel Quality Plan, including formal design reviews and implementation of 10 CFR Part 21.
3. Exelon to provide fuel manufacturing tolerance information compared to fuel manufacturing tolerance of fuel manufactured in the United States.
4. Exelon to provide fuel failure information excluding failures caused by foreign material.
5. Licensing aspects of the project will be discussed during a future public meeting.

Please direct any inquiries to me at 301-415-6606, or Joel.Wiebe@nrc.gov.



Joel S. Wiebe, Senior Project Manager
Plant Licensing Branch III
Division of Operating Reactors
Office of Nuclear Reactor Regulation

Docket Nos. 50-456 and 50-457

Enclosure 1: List of Attendees

Enclosure 2: Non-proprietary Handout

cc w/encl: Distribution via Listserv

LIST OF ATTENDEES

DECEMBER 7, 2017, MEETING WITH EXELON GENERATION COMPANY, LLC

Nuclear Regulatory Commission

M. Gaveilas, Office of Nuclear Reactor Regulation (NRR)
G. Casto, NRR
V. Cusumano, NRR
J. Wiebe, NRR
P. Clifford, NRR
M. Panicker, NRR
D. Woodyatt, NRR
S. Crane, Office of the Chairman
P. Prescott, Office of New Reactors, Quality Assurance Center of Excellence
L. English, Office of Nuclear Security and Incident Response

Exelon Generation Company

P. Wengloski
J. Bauer
T. Rodack
R. Close
A. Wong

Global Nuclear Fuel - Americas

C. Alonso
R. Stachowski
R. Augi
S. Swoope

Dominion Energy

B. Vitiello

Southern Nuclear Company

M. Leonard

Duke Energy

R. Hight
B. Howell

Non-proprietary Handout

Agenda

- Introductions and Opening Remarks
- Meeting Purpose
- Project Overview
- Design and Fabrication of LTAs
- LTA Analysis
- Project Schedule/Milestones
- Summary
- NRC Questions/Feedback

Meeting Purpose

- Provide an update to NRC on the status of work planned and in progress to load TVS-K LTAs into the Braidwood Station Unit 1 reactor in response to the NRC's request at the March 6, 2017 meeting
 - Summarize the LTA design features and overall project
 - Report on Operating Experience with the design
 - Discuss engineering and manufacturing of the LTAs, including Quality Assurance
 - Outline Exelon's proposed licensing approach for the LTAs
- Obtain NRC feedback on the program and identify specific NRC Staff issues

Agenda

- Introductions and Opening Remarks
- Meeting Purpose
- *Project Overview*
 - *Background and Objective*
 - *Description of TVS-K Fuel Design*
 - *Overall Project*
 - *Ringhals Operational Experience*
- Design and Fabrication of LTAs
- LTA Analysis
- Project Schedule/Milestones
- Summary
- NRC Questions/Feedback

Project Overview

- Exelon plans to load up to eight TVEL TVS-K LTAs in the Braidwood Station Unit 1 reactor core for operation in Cycles 22, 23, and 24; Unit 1 Cycle 22 starts in Fall 2019
- The purpose of this evaluation program is to allow Exelon to gain an understanding of the behavior of mixed fuel cores prior to a possible transition from Westinghouse fuel to the TVS-K fuel design
 - TVEL fuel is currently used in non-US pressurized water reactors; however, the TVS-K LTA fuel design has not been reviewed by the NRC and the cladding alloy is not explicitly listed in 10 CFR 50.46 or 10 CFR 50 Appendix K as an approved material type
- LTA program is a joint initiative among Exelon, GNF and TVEL
- Exelon has briefed NRC on the program previously:
 - August 8, 2016 to introduce NRC to Exelon's plans to load TVS-K LTAs
 - March 6, 2017 to discuss the licensing approach to utilize the LTAs

Agenda

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- ***Project Schedule/Milestones***
- Summary
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Project Schedule/Milestones

- Jul 2016 Commercial agreements in place for TVS-K LTA core reload analysis
- Aug 2016 NRC pre-submittal presentation
- Mar 2017 50.46 Exemption Request Pre-submittal Meeting held with NRC; preliminary feedback indicated no exemption request needed
- Dec 2017 NRC status meeting
- Jul 2018 LTA 50.59 Evaluation drafted
- Sep 2018 Core design with LTAs complete for Braidwood Station Cycle 22
- Oct 2018 Begin manufacturing TVEL LTAs
 - 9 months lead time prior to ship date
- Jul 2019 Core reload analysis complete
 - Exelon will notify the NRC and confirm analysis results are acceptable prior to loading LTAs
 - LTA 50.59 Evaluation completed
- Jul 2019 Ship 8 TVS-K LTAs to Braidwood Station
- Oct 2019 Load 8 TVS-K LTAs in Braidwood Station Unit 1 core

Summary

- Extensive work is in progress to support loading up to 8 TVS-K LTAs into the Braidwood Station Unit 1 reactor prior to Cycle 22
 - Operating experience from the Ringhals 3 TVS-K LTA program is being factored into Exelon's program
- Future updates will be provided to the NRC as appropriate

NRC Questions/Feedback

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LRM-0047) DATED JANUARY 25, 2018

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MGaveilas, NRR

GCasto, NRR

VCusumano, NRR

PClifford, NRR

MPanicker, NRR

DWoodyatt, NRR

SCrane, OCM/KLS

PPrescott, NRO

LEnglish, NSIR

JBowen, EDO

ADAMS Accession Nos.:

Meeting Notice: ML17335A044

Meeting Summary: ML18018B443

Handouts: ML18018B406

OFFICE	NRR/DORL/LPL3/PM	NRR/DORL/LPL3/LA	NRR/DORL/LPL3/BC/	NRR/DORL/LPL3/PM
NAME	JWiebe	SRohrer	DWrona	JWiebe (JRankin for)
DATE	01/24/18	01/22/18	01/25/18	01/25/18

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