



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

June 7, 2012

**LICENSEE:** Exelon Generation Company, LLC

**FACILITY:** LaSalle County Station, Units 1 and 2

**SUBJECT:** SUMMARY OF APRIL 4, 2012, PUBLIC MEETING WITH EXELON GENERATION COMPANY, LLC REGARDING THE PROPOSED EXTENDED POWER UPRATE LICENSE AMENDMENT REQUEST FOR LASALLE COUNTY STATION, UNITS 1 AND 2 (TAC NOS. ME7495 AND ME7496)

On April 4, 2012, a Category 1 public meeting was held between the U.S. Nuclear Regulatory Commission (NRC) and representatives of Exelon Generation Company, LLC (EGC, the licensee) at the NRC Headquarters, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland. The purpose of the meeting was to discuss a planned Extended Power Uprate (EPU) licensee amendment requested (LAR) for LaSalle County Station, Units 1 and 2 (LaSalle). A list of attendees is provided as Enclosure 1.

During the meeting, EGC informed the NRC staff of their plans to submit an LAR, requesting a 12.5 percent increase in licensed thermal power for LaSalle in September 2012. The meeting discussion focused on concurrent calculated peak containment internal accident pressure ( $P_a$ ) changes, alternate source term (AST) radiological analysis, and technical specification setpoint calculation changes. The licensee presented slides contained in Enclosure 2 and discussed a pre-application checklist contained in the public meeting notice (Agencywide Documents Access and Management System (ADAMS) Accession No. ML120750572).

The meeting piloted the use of the Nuclear Energy Institute (NEI) developed pre-application checklist. The purpose of the pre-application meeting using the NEI checklist is for NRC staff and licensees to reach common understanding of the regulatory criteria and standards to be applied in the review of significant licensing actions with a goal of enhancing the effectiveness and efficiency of the review process. A series of LaSalle EPU pre-application meetings are progressing for additional technical area topics. It is planned that for each subsequent pre-application meeting, the NEI checklist will be used to support discussions. Additional information about the NEI checklist pilot process may be found in public meeting summary from November 2, 2012 (ADAMS) Accession No. ML113210594).

No regulatory decisions were made during this meeting, although the following items were generally agreed to between the NRC and EGC, prior to submission of the LaSalle EPU LAR.

### **Summary of Follow-up Actions**

1. EGC and the NRC staff agree in principle that the planned changes to the Technical Specification [TS] Allowable Values of Reactor Protection System and Primary Containment Isolation Instrumentation with EPU may be acceptable provided that the application is consistent with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.36, "Technical specifications," Regulatory Guide (RG) 1.105, Revision 3, "Setpoints for Safety-Related Instrumentation," Regulatory Issue Summary (RIS) 2006-17, "NRC Staff Position on the Requirements of 10 CFR 50.36, "Technical Specifications,"

Regarding Limiting Safety System Settings During Periodic Testing and Calibration of Instrument Channels," NUREG-0800, "Review of Safety Analysis Reports for Nuclear Power Plants," Chapter 7, "Instrumentation and Controls," and Branch Technical Position (BTP) 7-12, "Guidance on Establishing and Maintaining Setpoints." The NRC staff will evaluate consistence with the applicable regulatory criteria when the EPU application is received.

2. EGC and the NRC staff agree in principle that the Analytical Limit (AL) for Average Power Range Monitor (APRM) Flow Biased Simulated Thermal Power Upscale Scram and Main Steam Line High Flow Group I Isolation will change with EPU. EGC stated that the new Allowable Value, Limiting Trip Setpoint, Nominal Trip Setpoints, As-Left Tolerance (ALT) and As-Found Tolerance are determined for each ALT using the EGC Setpoint Methodology NES-EIC-20.04, "Analysis of Instrument Channel Setpoint Error and Instrument Loop Accuracy," Revision 6. The EGC stated that the NES-EIC-20.04 Revision 6, licensee's methodology addresses the criteria in RG 1.105, Revision 3, RIS 2006-17, and TSTF-493, "Clarify Application of Setpoint Methodology for Limiting Safety System Settings," Revision 4, Option A. The staff requested that NES-EIC-20.04, Revision 6, be included in the EPU submittal. The staff also requested that two examples of setpoint calculations (e.g., APRM High Flux, Main Steam Line High Flow) be included with the EPU submittal to verify that the proposed amendment is indeed consistent with applicable guidance. The staff will conduct the regulatory review to evaluate consistence with the applicable regulatory criteria when the EPU application is received which also includes NUREG-0800, Chapter 7, BTP 7-12, and the regulations in 10 CFR Part 50.36.
3. EGC proposed to develop and submit a LAR for TS 5.5.13, revising Containment  $P_a$  for both current plant conditions and EPU conditions by submitting an LAR prior to their EPU LAR. Following the meeting, NRC staff concluded that EGC's approach may not be considered a linked review during the staff's acceptance of the EPU LAR provided that amendment revising TS 5.5.13 is found acceptable for NRC review under LIC-109, "Acceptance Review Procedures."
4. EGC and the NRC staff agree in principle that the revised AST Radiological Consequence Analyses with EPU has considered the applicable regulatory criteria and follow regulatory guidelines.
5. The NRC staff recommended that all parameters and assumptions used in the revised radiological dose consequence analyses supporting the application be listed in a table. The NRC staff also recommended that the table contain the current licensing basis (CLB) values, the revised values, as well as, the basis for any changes to the CLB and consistency with regulatory guidelines.
6. The NRC staff suggested that future presentation topics address all proposed TSs, a list of all plant modifications required for EPU approval, and a list of all planned 10 CFR 50.59 evaluations supporting EPU implementation to allow for NRC inspection coordination. Ultimate heat sink was also suggested for a future presentation topic by both EGC and NRC staff.
7. The NRC staff suggested that the description of major modifications contained in the application include a brief description of industry precedence.

8. EGC informed the NRC staff that implementation of the EPU will rely on existing analog power range neutron monitors after approval. Approval will not be dependent on the planned application requests relating to digital instrumentation and control upgrades for power range neutron monitors or maximum extended load line limit analysis plus discussed during an April 5, 2012, public meeting (ADAMS Accession No. ML12137A209).
9. NRC requested EGC to coordinate exchange of generic data to allow for confirmatory analysis of the annual pressurization analysis presented during the prior December 7, 2011, pre-application meeting (ADAMS Accession No. ML120030321). NRC informed EGC that confirmatory models require significant time to develop a working model and benchmark the licensee's analyses. Preliminary modeling information would be needed prior to EPU submittal which would include TRACG computer input files or excel input tables information (e.g., mass and energy release information, vessel and containment structure geometric information).
10. The NRC staff requested that EGC discuss LaSalle's reactor core thermal hydraulic stability monitoring analysis. Given that LaSalle, Unit 2, previously experienced a power oscillation in March 1988, the staff will focus on how the changes in the core loading strategies will affect stability under EPU conditions. The EGC should also demonstrate that anticipated transient without scram stability mitigating actions remain effectively under the EPU conditions.

The meeting notice and agenda are available under ADAMS Accession No. ML120750572. The public was invited to observe the meeting. Several members of the public were in attendance. Public Meeting Feedback forms were not received.

Please direct any inquiries to me at 301-415-1115, or [Nicholas.DiFrancesco@nrc.gov](mailto:Nicholas.DiFrancesco@nrc.gov).

Sincerely,



Nicholas DiFrancesco, Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosures:

1. List of Attendees
2. Licensee Handouts

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LIST OF ATTENDEES  
APRIL 4, 2012, PUBLIC MEETING  
WITH EXELON GENERATION COMPANY, LLC  
REGARDING THE PROPOSED EXTENDED POWER UPRATE  
LICENSE AMENDMENT REQUEST FOR  
LASALLE COUNTY STATION, UNITS 1 AND 2

**NRC**

J. Zimmerman  
N. DiFrancesco  
W. Jessup  
J. Huang  
D. Rahn  
T. Huang  
A. Sallman  
G. Armstrong  
B. Dittman  
J. Parillo  
D. Duvigneaud

**Public**

J. Keys - NEI  
J. Fields – Xcel Energy  
D. Anderson – Westinghouse\*  
E. Chu – Westinghouse\*  
V. Kumar – Westinghouse\*

**EGC**

K. Bolton  
J. Rommel  
K. Ainger  
V. Shah  
F. Pournia  
K. Barnes  
D. Neff  
T. Simpkin  
J. Krejcie  
R. Janowiak  
B. Maurer – Westinghouse  
E. Schrull – GEH  
S. DuPont  
C. Lambert \*  
M. Lohman \*  
S. Rudy – GEH\*  
J. Creech – GEH\*

\* via teleconference



# **LaSalle County Station**

**Pre-Application Meeting  
Extended Power Uprate**

**April 4, 2012**

- **Kenneth Ainger – Project Management Director, EPU**
- **Kevin Borton – Power Uprate Licensing Manager**
- **Vikram Shah – Power Uprate Senior Engineering Manager**
- **Jessica Krejcie – LaSalle Power Uprate Engineer**

# **Agenda and Meeting Purpose**

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- **Briefly Describe NEI Pre-Submittal Meeting Pilot**
- **Status of Extended Power Uprate Schedule**
- **Describe Key Aspects of Technical Evaluations**
  - **Concurrent  $P_a$  Change**
  - **Alternate Source Term**
  - **Technical Specification Setpoint Calculations**
- **Planned Major Modifications**
- **Update on Steam Dryer Evaluation**
- **Future Pre-submittal Meetings**
- **NEI Checklist Critique**

# NEI Pilot – Pre-submittal Meetings

**Purpose is to enhance License Amendment Request pre-submittal meetings**

- **Reach a common understanding on the regulatory criteria and standards to be applied during the NRC review of the proposed changes**
- **Identify potential application issues that can be addressed during the application conceptual phase that will reduce acceptance review time, requests for additional information, and application review time**

## **Process**

- **Pilot Checklist is used to focus on applicable review criteria, codes, standards, justification required for use of a new analytical method, applicability of a precedent, or feasibility of a desired schedule in order to reach alignment with the NRC**
- **NRC meeting notice and meeting summary will docket the expectations and outcomes of the alignment in order to greatly reduce the risk and uncertainty associated with future application acceptance and NRC review**

## **LaSalle specific checklist focus – Technical Issues**

- **Concurrent  $P_a$  Change**
- **Alternate Source Term**
- **Technical Specification Setpoint Calculations**



**EPU Projected Power Uprate level of 3988 MWt (increase ~12.5% of current licensed power or 120% of original licensed power)**

## **EPU Implementation Schedule**

- |                          |                              |
|--------------------------|------------------------------|
| ▪ Submit LAR:            | Target September 2012        |
| ▪ LAR Approval:          | Target May 2014              |
| ▪ Unit 2 Implementation: | February 2015 (Outage L2R15) |
| ▪ Unit 1 Implementation: | February 2016 (Outage L1R16) |

# **Concurrent Calculated Peak Containment Internal Accident Pressure ( $P_a$ ) Change**

**Kevin Borton**

# Concurrent $P_a$ Change

## Purpose:

Reach an understanding that a separate  $P_a$  current power level change would not be linked to the proposed EPU related  $P_a$  change

## Background:

- EPU LAR will include a request to increase  $P_a$
- LaSalle identified a current calculated Technical Specification  $P_a$  issue that requires a  $P_a$  increase
  - Issue entered in LaSalle Corrective Action Program
    - Operability Evaluation in place to address issue

## **LIC-109 Guidance**

- **Current issue requires  $P_a$  value increase**
- **EPU power level requires  $P_a$  value increase beyond current issue required increase**
- **Assumptions and methods regarding current power level and EPU power levels are the same**
- **Although the proposed changes are prepared and reviewed the same, the current issue and the EPU LAR are not contingent upon the approval of the other**
  - Multiple LARs can affect the same systems or Technical Specifications (TS) without being linked
  - LIC-109 guidance supports concurrent NRC reviews

# **Alternate Source Term (AST) Radiological Analyses**

**Jessica Krejcie**

# **AST Radiological Analyses**

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## **Purpose**

**Discuss LaSalle's planned approach for AST analyses**

## **Methodology**

- **Used Regulatory Guide (RG) 1.183 Rev. 0, Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors, July 2000**
- **Started with existing approved AST analyses and modified for EPU core source term and power level**
  - **RADTRAD re-run**
  - **AST analyses performed for Main Steam Line Break Accident (MSLBA) and Control Rod Drop Accident (CRDA) consistent with RG 1.183 section 1.1.3 guidance**
- **All regulatory dose limits specified in 10 CFR 50.67 are met with EPU**

**Exelon.**

Nuclear

- **Analyses performed using EPU core inventory and AST for**
  - **LOCA**
  - **FHA**
  - **MSLBA**
  - **CRDA**
- **Analyses are consistent with previously approved AST analyses with changes as necessary for EPU**
  - **Core inventory, power level, post-LOCA temperatures**
- **RG 1.183 Revision 0 criteria met**

# AST Radiological Analyses

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## Draft Results

- All analyses re-performed meet applicable limits with EPU
- No revision to input parameters required to meet regulatory limits with EPU

**DRAFT LOCA Radiological Consequences**

	TEDE Dose (REM)		
	Receptor Location		
	CR	EAB	LPZ
Calculated Dose CLTP	4.27	2.59	0.27
Calculated Dose EPU	4.70	2.91	0.31
Allowable TEDE Limit	5.0	25.0	25.0



# Technical Specification Setpoint Changes

**Vikram Shah**

## **Purpose:**

**Obtain an agreement that the LaSalle's methodology and approach to Instrument Setpoint Changes is appropriate**

## **Methodology**

- **Current - Exelon Setpoint Methodology (NES-EIC-20.04  $\leq$  Rev 5)**
  - **Methodology through Rev 4 was reviewed with the Improved Technical Specification Conversion**
- **EPU – Exelon Setpoint Methodology (NES-EIC-20.04  $\geq$  Rev 6)**

## **Conformance with NRC Guidance**

- **Consistent with RG 1.105 Rev 3**
- **Current Basis (NES-EIC-20.04 Rev 5 or earlier)**
- **New Technical Specification Setpoints – TSTF-493 Rev 4 Option A Implemented in NES-EIC-20.04 Rev 6**

# Technical Specification Setpoint Changes

## Comparison of CLTP to Proposed EPU Technical Specification (TS) Setpoint Changes

	CLTP Value		EPU Value		
	TS AV	NTSP	TS AV	NTSP	
APRM Flow Biased STP Upscale Scram - TLO	$\leq 0.61W + 68.2$ & $\leq 115.5\%$	$0.61W + 62.6$ & $113.5\%$	$\leq 0.55W + 63.5$ & $\leq 118.0\%$	$0.55W + 57.4$ & $113.3\%$	
APRM Flow Biased STP Upscale Scram - SLO	$\leq 0.54W + 55.9$ & $\leq 112.3\%$	$0.54W + 50.5$ & $108.1\%$	$\leq 0.48W + 49.6$ & $\leq 112.3\%$	$0.48W + 43.6$ & $107.6\%$	
APRM Flow Biased STP Upscale Rod Block - TLO	$\leq 0.61W + 56.9$	$0.61W + 51.3$	$\leq 0.55W + 52.2$	$0.55W + 46.6$	
APRM Flow Biased STP Upscale Rod Block - TLO	$\leq 0.54W + 44.7$	$0.54W + 39.2$	$\leq 0.48W + 39.5$	$0.48W + 39.1$	
APRM Neutron Flux-High, Setdown Scram	$\leq 20.0\%$	$15.0\%$	$\leq 22.6\%$	$17.8\%$	
APRM Neutron Flux-High, Setdown Rod Block	$\leq 14.0\%$	$12.0\%$	$\leq 16.6\%$	$12.3\%$	
Main Steam Line Flow - High Primary Containment Isolation	$\leq 128$ psid	$125$ psid	$\leq 197.3$ psid	$188.8$ psid	
Turbine Trip Scrams Permissive	$\geq 25\%$ RTP	$104.1$ psig	$\geq 23\%$ RTP	TBD	
Rod Worth Minimizer Low Power Setpoint	$\leq 10\%$ RTP	$14.2\%$ RTP	$\leq 10\%$ RTP	$14.4\%$ RTP	

## Planned Major Modifications

**Vikram Shah**

## Planned Major Modifications

- High Pressure Turbine Upgrade
- Main Generator Upgrade
- Condensate Pump Upgrade
- Reactor Water Level Control System Upgrade
- Addition of runback logic on trip of Condensate Pump
- Main Steam and Feedwater flow induced vibration monitoring
- Several balance-of-plant setpoint and scaling changes
- Addition of three Safety Relief Valves
- Boron 10 Enrichment
- Condensate Polisher System Upgrade
- Replacement of Main Steam Line Flow Switches
- Isophase Bus Duct Upgrade
- Steam Dryer Replacement

# Update on Steam Dryer Evaluation

**Kenneth Ainger**

# Update on Steam Dryer Evaluation

## Purpose:

Provide update on steam dryer replacement decision and schedule

The Exelon Licensing Approach will be provided during the Peach Bottom Pre-submittal Meeting on April 5

## Decision:

### Analyzed current steam dryers:

- Evaluated necessary modifications
- Decided to proceed with replacement dryer

Proceeding with Westinghouse Replacement Steam Dryers (RSD)

## RSD Schedule:

RSD driving EPU submittal date

Installation sequence is:

- |                          |                              |
|--------------------------|------------------------------|
| • LaSalle County Unit 2: | February 2015 (Outage L2R15) |
| • LaSalle County Unit 1: | February 2016 (Outage L1R16) |

# Acronym List

- **ACM – Acoustic Circuit Model**
- **APRM – Average Power Range Monitor**
- **AST – Alternate Source Term**
- **AV – Allowable Value**
- **CLTP – Current Licensed Thermal Power**
- **CR – Control Room**
- **CRDA – Control Rod Drop Accident**
- **DBA – Design Basis Accident**
- **ECCS – Emergency Core Cooling System**
- **EAB – Exclusion Area Boundary**
- **EPU – Extended Power Uprate**
- **FHA – Fuel handling Accident**
- **LAR – License Amendment Request**
- **LOCA – Loss-of-coolant Accident**
- **LPZ – Low Population Zone**
- **MSLBA – Main Steam Line Break Accident**
- **MWt – Mega Watts thermal**
- **NEI – Nuclear Energy Institute**
- **NTSP – Nominal Trip Setpoint**
- **P<sub>s</sub> – The calculated peak containment internal pressure related to the design basis accident**
- **PUR – Power Uprate**
- **RG – Regulatory Guide**
- **SLO – Single Loop Operation**
- **STP – Simulated Thermal Power**
- **TEDE – Total Effective Dose Equivalent**
- **TLO – Two Loop Operation**
- **TS – Technical Specification**
- **TSTF – Technical Specification Task Force**



- **Follow-up EPU Meetings**
  - **Proposed Topics**
    - Human Factors
    - Technical Specifications
    - Ultimate Heat Sink
  
- **Next meeting target July 2012**

- **Pilot Alignment and Outcome**
  - Discussion
  - Checklist Mark-up
- **Critique**

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Sincerely,

/ RA /

Nicholas DiFrancesco, Project Manager  
Plant Licensing Branch III-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-373 and 50-374

Enclosures:

1. List of Attendees
2. Licensee Handouts

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[Name] EDO Region X

John Bozga RIII

David Hills RIII

Accession Number:Package: ML 12130A49, Meeting Summary w/ enclosure 1:ML 12130A044, Enclosure 2: ML 120930616

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NAME	NDiFrancesco	SRohrer	JZimmerman	NDiFrancesco
DATE	6/ 5 /12	6/ 5 /12	6/ 07 /12	6/ 07 /12

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