

RS-18-019  
March 7, 2018

10 CFR 50.46

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

LaSalle County Station, Units 1 and 2  
Renewed Facility Operating License Nos. NPF-11 and NPF-18  
NRC Docket Nos. 50-373 and 50-374

Subject: Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station

Reference: Letter from D. M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station," dated March 7, 2017

In accordance with 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," paragraph (a)(3)(ii), Exelon Generation Company, LLC (EGC) is submitting the attached information to fulfill the annual reporting requirements for LaSalle County Station (LSCS), Units 1 and 2. The attachments describe the changes in accumulated peak cladding temperature (PCT) since the previous annual report submitted in the referenced letter.

There are no regulatory commitments contained in this submittal. Should you have any questions concerning this letter, please contact Ms. Lisa A. Simpson at (630) 657-2815.

Respectfully,



David M. Gullott  
Manager – Licensing  
Exelon Generation Company, LLC

Attachments:

- 1) LaSalle County Station, Units 1 and 2 – 10 CFR 50.46 Report
- 2) LaSalle County Station, Units 1 and 2 – 10 CFR 50.46 Report Assessment Notes

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cc: NRC Regional Administrator, Region III  
NRC Senior Resident Inspector, LaSalle County Station  
Illinois Emergency Management Agency – Division of Nuclear Safety

**ATTACHMENT 1**  
**LaSalle County Station, Units 1 and 2**  
**10 CFR 50.46 Report**

**PLANT NAME:** LaSalle County Station (LSCS), Units 1 & 2

**ECCS EVALUATION MODEL:** SAFER/PRIME LOCA

**REPORT REVISION DATE:** March 7, 2018

**CURRENT OPERATING CYCLES:** L1C17\* and L2C17

**ANALYSES OF RECORD**

- 1) General Electric Hitachi (GEH) Calculation 0000-0121-8990-R0, "LaSalle County Station GNF2 ECCS-LOCA Evaluation," GEH Nuclear Energy, January 2012
- 2) GNF Calculation 002N3086, "Technical Evaluation to Support Introduction of GNF3 Lead Use Assemblies (LUAs) in LaSalle County Station, Unit 2," Global Nuclear Fuel, November 2014

**Fuel Types:** GNF2, GNF3 LUAs

**Limiting Single Failure:** High Pressure Core Spray  
Diesel Generator Failure

**Limiting Break Size & Location:** Small Break (0.08 ft<sup>2</sup>) Recirculation  
Piping Suction Line Break

**Reference Peak Cladding Temperature (PCT):** GNF2: 1540°F  
GNF3 LUAs: 1550°F

\*LSCS, Unit 1, is currently in refueling outage, LSCS, Unit 1 Reload 17 (L1R17). Expected startup date for LSCS, Unit 1, Cycle 18 (L1C18) is targeted for March 19, 2018.

**ATTACHMENT 1**  
**LaSalle County Station, Units 1 and 2**  
**10 CFR 50.46 Report**

**MARGIN ALLOCATION**

**A. PRIOR LOSS-OF-COOLANT ACCIDENT (LOCA) MODEL ASSESSMENTS**

10 CFR 50.46 Report dated March 7, 2012 (See Note 1)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: N/A
10 CFR 50.46 Report dated March 7, 2013 (See Note 2)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: N/A
10 CFR 50.46 Report dated March 7, 2014 (See Note 3)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: N/A
10 CFR 50.46 Report dated March 6, 2015 (See Note 4)	GNF2: $\Delta PCT = -5^{\circ}F$
	GNF3 LUAs: $\Delta PCT = 0^{\circ}F$
10 CFR 50.46 Report dated March 7, 2016 (See Note 5)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: $\Delta PCT = 0^{\circ}F$
10 CFR 50.46 Report dated March 7, 2017 (See Note 6)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: $\Delta PCT = 0^{\circ}F$
<b>Net PCT</b>	<b>GNF2: 1535°F</b>
	<b>GNF3 LUAs: 1550°F</b>

**B. CURRENT LOCA MODEL ASSESSMENTS**

Notification 2017-01 dated June 12, 2017 (See Note 7)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: N/A
Notification 2017-02 dated August 2, 2017 (See Note 7)	GNF2: $\Delta PCT = 0^{\circ}F$
	GNF3 LUAs: $\Delta PCT = 0^{\circ}F$
Total PCT change from current assessments	GNF2: $\sum \Delta PCT = 0^{\circ}F$
	GNF3 LUAs: $\sum \Delta PCT = 0^{\circ}F$
Cumulative PCT change from current assessments	GNF2: $\sum  \Delta PCT  = 0^{\circ}F$
	GNF3 LUAs: $\sum  \Delta PCT  = 0^{\circ}F$
<b>Net PCT</b>	<b>GNF2: 1535°F</b>
	<b>GNF3 LUAs: 1550°F</b>

**ATTACHMENT 2**  
**LaSalle County Station, Units 1 and 2**  
**10 CFR 50.46 Report Assessment Notes**

**1) Prior LOCA Model Assessment**

The referenced letter provided the annual 10 CFR 50.46 report for LSCS, Units 1 and 2, for the 2012 reporting period. The referenced letter reported the introduction of GNF2 fuel into the LSCS, Unit 1, core. A new LOCA analysis of record for GNF2 fuel was performed by General Electric Hitachi (GEH) Nuclear Energy. No Emergency Core Cooling System (ECCS) related changes or modifications occurred at LSCS that affected the assumptions in the GEH GNF2 LOCA analysis.

[Reference: Letter from David M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated March 7, 2012]

**2) Prior LOCA Model Assessment**

The referenced letter provided the annual 10 CFR 50.46 report for LSCS, Units 1 and 2, for the 2013 reporting period. The referenced letter reported the introduction of GNF2 fuel into the LSCS, Unit 2, core. The referenced letter also reported no vendor notifications of ECCS model errors/changes applicable to the GNF2 fuel in LSCS, Units 1 and 2, and reported that no ECCS related changes or modifications occurred at LSCS that affected the assumptions in the GEH GNF2 LOCA analysis for the GNF2 fuel in LSCS, Units 1 and 2.

[Reference: Letter from David M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station," dated March 7, 2013]

**3) Prior LOCA Model Assessment**

The referenced letter provided the annual 10 CFR 50.46 report for LSCS, Units 1 and 2, for the 2014 reporting period. The referenced letter reported no vendor notifications of ECCS model errors/changes applicable to the GNF2 fuel in LSCS, Units 1 and 2, and reported that no ECCS related changes or modifications occurred at LSCS that affected the assumptions in the GEH GNF2 LOCA analysis for the GNF2 fuel in LSCS, Units 1 and 2.

[Reference: Letter from David M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station," dated March 7, 2014]

**ATTACHMENT 2**  
**LaSalle County Station, Units 1 and 2**  
**10 CFR 50.46 Report Assessment Notes**

**4) Prior LOCA Model Assessment**

The referenced letter provided the annual 10 CFR 50.46 report for LSCS, Units 1 and 2, for the 2015 reporting period. The referenced letter reported four vendor notifications, Notifications 2014-01 through 2014-04, of ECCS model error/changes. The first notification addressed several code maintenance changes to the SAFER04A model, which resulted in a PCT change of 0°F for GNF2. The second notification corrected a logic error, which affects the ECCS flow credited as reaching the core. Correction of this error resulted in a 0°F PCT change for GNF2. The third notification addressed an error with the imposed minimum pressure differential ( $\Delta p$ ) for droplet flow above a two-phase level in the core. This error can offer an inappropriate steam cooling benefit above the core two phase level. Correction of this error resulted in a PCT change of -10°F for GNF2. The fourth notification addressed an incorrect pressure head representation when defining the counter current flow limitation (CCFL). Correction of this error resulted in a +5°F PCT change for GNF2.

The referenced letter also reported that no ECCS related changes or modifications occurred at LSCS that affected the assumptions in the GEH LOCA analysis for the GNF2 fuel in LSCS, Units 1 and 2.

Four (4) GNF3 Lead Use Assemblies (LUAs) were loaded into LSCS, Unit 2, during the LSCS, Unit 2, Reload 15 outage (L2R15). Notifications 2014-01 through 2014-04 were included in the determination of the licensing basis PCT for the GNF3 LUAs.

[Reference: Letter from David M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station," dated March 6, 2015]

**5) Prior LOCA Model Assessment**

The referenced letter provided the annual 10 CFR 50.46 report for LSCS, Units 1 and 2, for the 2016 reporting period. The referenced letter reported no vendor notifications of ECCS model errors/changes applicable to the GNF2 fuel in LSCS, Units 1 and 2, and reported that no ECCS related changes or modifications occurred at LSCS that affected the assumptions in the GEH GNF2 LOCA analysis of record for the GNF2 fuel in LSCS, Units 1 and 2.

The referenced letter reported no vendor notifications of ECCS model errors/changes applicable to the GNF3 fuel in LSCS, Unit 2, and that no ECCS related changes or modifications occurred at LSCS, Unit 2, that affected the assumptions in the GEH GNF3 LOCA analysis of record for the GNF3 fuel in LSCS, Unit 2. All ATRIUM-10 fuel was removed from LSCS, Unit 1, during the LSCS, Unit 1 Reload 16 (L1R16) outage prior to startup of LSCS, Unit 1 Cycle 17 (L1C17).

[Reference: Letter from David M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station," dated March 7, 2016]

**ATTACHMENT 2**  
**LaSalle County Station, Units 1 and 2**  
**10 CFR 50.46 Report Assessment Notes**

**6) Prior LOCA Model Assessment**

The referenced letter provided the annual 10 CFR 50.46 report for LSCS, Units 1 and 2, for the 2017 reporting period. The referenced letter reported no vendor notifications of ECCS model errors/changes applicable to the GNF2 or GNF3 fuel in LSCS, Units 1 and 2, and reported that no ECCS related changes or modifications occurred at LSCS that affected the assumptions in the GEH LOCA analyses for the GNF2 or GNF3 fuel in LSCS, Units 1 and 2.

The letter also noted that all ATRIUM-10 fuel was removed from LSCS, Unit 2, prior to the start of LSCS, Unit 2, Cycle 17 (L2C17).

[Reference: Letter from David M. Gullott (Exelon Generation Company, LLC) to U.S. Nuclear Regulatory Commission, "Annual 10 CFR 50.46 Report of Emergency Core Cooling System Evaluation Model Changes and Errors for LaSalle County Station," dated March 7, 2017]

**7) Current LOCA Model Assessment**

Since the last annual 10 CFR 50.46 report, two vendor notifications were produced, 2017-01 and 2017-02. Notification 2017-01 describes corrections made to the GNF2 lower tie plate modeling, and Notification 2017-02 describes corrections made to the fuel rod upper plenum thermal model. Neither of these corrections resulted in a change in PCT for either GNF2 or GNF3.