

RA06-060

August 28, 2006

10 CFR 50.46

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

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

Subject: Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report

Reference: Letter from D. J. Enright (Exelon Generation Company, LLC) to U. S. NRC,
"Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated
March 9, 2006

In accordance with 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," Exelon Generation Company, LLC, (EGC) submits the enclosed attachments to fulfill the 30-day and annual reporting requirements for LaSalle County Station (LSCS), Units 1 and 2.

In the referenced letter, EGC reported the fuel peak cladding temperatures (PCTs) calculated for Units 1 and 2 based on an acceptable model to be 1400°F for General Electric (GE) fuel. Since the last evaluation, GE reported a newly discovered sensitivity to the assumed axial power shape for small break Loss-of-Coolant Accident (LOCA) cases. This sensitivity may result in higher calculated PCT values for top-peaked axial power shapes. Based on this change in sensitivity, the PCT for GE-14 fuel small break LOCA increased to a value of 1460°F. This is a change of over 50°F from the last evaluation using a NRC approved acceptable model. The 0.07 ft² Recirculation Line Break is the Licensing Basis PCT event for LaSalle Units 1 & 2 for GE14 fuel.

The referenced letter also provided the PCT for the Framatome Advanced Nuclear Power (FANP) fuel based on an acceptable model. For Unit 1 the PCT for FANP ATRIUM-10 fuel based on an acceptable model was calculated to be 1729°F. For Unit 2 the PCT for FANP ATRIUM-9B fuel based on an acceptable model was calculated to be 1832°F. There is no change in PCT for the FANP fuel for this reporting period.

Unit 1 and Unit 2 employ a mixed core design containing co-resident GE and FANP fuel. The Loss of Coolant Accident (LOCA) analyses of record for both GE and FANP fuel are within all of the acceptance criteria set forth in 10 CFR 50.46.

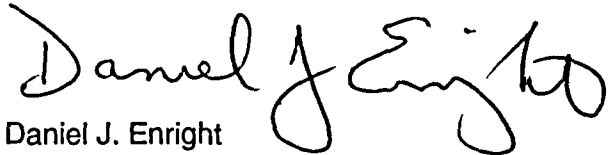
A002

U. S. Nuclear Regulatory Commission
August 28, 2006
Page 2

Attachments 1, 2, and 3 provide PCT information for the limiting LOCA evaluations for LSCS, Units 1 and 2, including all assessments as of August 15, 2006. The assessment notes are contained in Attachment 4 and provide a detailed description for each change or error reported.

Should you have any questions concerning this letter, please contact Mr. Terrence W. Simpkin, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,

A handwritten signature in black ink that reads "Daniel J. Enright". The signature is written in a cursive style with a large, prominent "D" and "E".

Daniel J. Enright
Plant Manager
LaSalle County Station

Attachments

cc: Regional Administrator - NRC Region III
NRC Senior Resident Inspector – LaSalle County Station

**Attachment 1
LaSalle Units 1 and 2 10 CFR 50.46 Report (GE Fuel)**

PLANT NAME: LaSalle Units 1 and 2
 ECCS EVALUATION MODEL: SAFER/GESTR LOCA
 REPORT REVISION DATE: August 15, 2006
 CURRENT OPERATING CYCLES: L1C12 and L2C11

ANALYSIS OF RECORD

Evaluation Model Methodology: NEDE-23785-1-PA, Rev. 1, "GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident (Volume III), SAFER/GESTR Application Methodology", October 1984.

Calculation: (1) "Project Task Report, Exelon LaSalle Unit 1 and 2 SAFER/GESTR Loss-of-Coolant Accident Analysis for GE 14 Fuel," GE report number GE-NE-0000-0022-8684-R1, dated December 2004.
 (2) "Additional Information for 10CFR50.46 Notification Letter 2006-01 for LaSalle and Peach Bottom", GE Report number GE-NE-0000-0054-7653-R0, August 2006.

Fuel: GE14

Limiting Single Failure: HPCS Diesel Generator

Limiting Break Size and Location: 0.07 ft² Recirculation Line Break

Reference PCT: 1340°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

| | |
|---|---------------------|
| 10 CFR 50.46 report dated March 9, 2005 (Note 9) | $\Delta PCT = 0$ °F |
| 10 CFR 50.46 report dated March 9, 2006 (Note 10) | $\Delta PCT = 0$ °F |
| Net PCT | 1340 °F |

B. CURRENT LOCA MODEL ASSESSMENTS

| | |
|--|-----------------------|
| Impact of Top Peaked Power Shape for Small Break LOCA Analysis (Note 11) | $\Delta PCT = 120$ °F |
| | |
| Net PCT | 1460 °F |

**Attachment 2
LaSalle Unit 1 10 CFR 50.46 Report (FANP Fuel)**

PLANT NAME: LaSalle Unit 1
 ECCS EVALUATION MODEL: EXEM BWR-2000 Evaluation Model
 REPORT REVISION DATE: August 15, 2006
 CURRENT OPERATING CYCLES: L1C12

ANALYSIS OF RECORD

Evaluation Model Methodology: EMF-2361 (P)(A) Revision 0, EXEM BWR-2000 ECCS Evaluation Model, Framatome ANP, May 2001.

Calculation: EMF-3230 (P) Revision 0, LaSalle Units 1 and 2 EXEM BWR-2000 LOCA Break Spectrum Analysis for ATRIUM – 10 Fuel, November 2005.
 EMF-3231 (P) Revision 0, LaSalle Units 1 and 2 EXEM BWR-2000 LOCA-ECCS Analysis MAPLHGR Limit for ATRIUM – 10 Fuel, November 2005.

Fuel: ATRIUM – 10

Limiting Single Failure: Low-pressure coolant injection Diesel Generator

Limiting Break Size and Location: Double Ended Guillotine/0.8 discharge coefficient of Recirculation Pump Suction Piping

Reference PCT: 1729 °F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

| | |
|---|-------------|
| 10 CFR 50.46 report dated March 9, 2006 (Note 10) | ΔPCT = 0 °F |
| Net PCT | 1729 °F |

B. CURRENT LOCA MODEL ASSESSMENTS

| | |
|--|---------|
| No errors/issues for this reporting period | N/A |
| Net PCT | 1729 °F |

**Attachment 3
LaSalle Unit 2 10 CFR 50.46 Report (FANP Fuel)**

PLANT NAME: LaSalle Unit 2
 ECCS EVALUATION MODEL: EXEM BWR Evaluation Model
 REPORT REVISION DATE: August 15, 2006
 CURRENT OPERATING CYCLE: L2C11

ANALYSIS OF RECORD

Evaluation Model Methodology: Advanced Nuclear Fuels Corporation Methodology for Boiling Water Reactors EXEM BWR Evaluation Model, ANF-91-048(P)(A), January 1993.

 BWR Jet Pump Model Revision for RELAX, ANF-91-048(P)(A), Supplement 1 and Supplement 2, Siemens Power Corporation, October 1997.

Calculation:

1. LaSalle LOCA-ECCS Analysis MAPLHGR Limits for ATRIUM™-9B Fuel, EMF-2175(P), March 1999.
2. LOCA Break Spectrum Analysis for LaSalle Units 1 and 2, EMF-2174(P), March 1999.
3. LaSalle Units 1 and 2 LOCA-ECCS Analysis MAPLHGR Limit for ATRIUM™-10 Fuel, EMF-2641(P), November 2001.
4. LaSalle Units 1 and 2 LOCA Break Spectrum Analysis for ATRIUM™-10 Fuel, EMF-2639(P), November 2001.

Fuel: ATRIUM™-9B and ATRIUM™-10
 Limiting Fuel: ATRIUM™-9B
 Limiting Single Failure: HPCS Diesel Generator
 Limiting Break Size and Location: 1.1 ft² Recirculation Pump Discharge Side Line Break

Reference PCT: 1807 °F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

| | |
|---|--------------|
| 10 CFR 50.46 report dated May 7, 1999 (See Note 2) | ΔPCT = 0 °F |
| 10 CFR 50.46 report dated February 9, 2000 (See Note 3) | ΔPCT = 18 °F |
| 10 CFR 50.46 report dated June 12, 2000 (See Note 4) | ΔPCT = 0 °F |
| 10 CFR 50.46 report dated June 8, 2001 (See Note 5) | ΔPCT = 0 °F |
| 10 CFR 50.46 report dated June 8, 2002 (See Note 6) | ΔPCT = 2 °F |
| 10 CFR 50.46 report dated June 9, 2003 (See Note 7) | ΔPCT = 5 °F |
| 10 CFR 50.46 report dated March 9, 2004 (See Note 1) | ΔPCT = 0 °F |
| 10 CFR 50.46 report dated March 9, 2005 (See Note 8) | ΔPCT = 0 °F |
| 10 CFR 50.46 report dated March 9, 2006 (Note 10) | ΔPCT = 0 °F |
| Net PCT | 1832 °F |

B. CURRENT LOCA MODEL ASSESSMENTS

| | |
|--|---------|
| No errors/issues for this reporting period | N/A |
| Net PCT | 1832 °F |

Attachment 4
LaSalle Units 1 and 2 10 CFR 50.46 Report (Assessment Notes)

1. **Prior LOCA model assessment for FANP fuel**
During the startup of LaSalle Unit 1 Cycle 11 several evaluations were performed for FANP LOCA analysis as reported in the Reference. The net results of these evaluations were that there was a zero degree PCT impact. Additionally a problem was also identified by FANP pertaining with the transfer of RELAX coolant temperature data from PREHUXY to HUXY at the time of core spray. FANP determined that the impact this problem on the limiting break spectrums results was zero degrees. This was also reported in the Reference.

[Reference: Letter from Susan R. Landahl (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated March 9, 2004.]

2. **Prior LOCA Model Assessment for FANP fuel**
The May 1999 LOCA model assessment was a new analysis of record for Framatome (Formerly Siemens) due to the introduction of ATRIUM-9B fuel into the Unit 2 Cycle 8 core. Therefore, there is no PCT change. Analysis was performed for a core power of 3722 MWt that bounds the current uprated power of 3489 MWt.

[Reference: Letter from J. A. Benjamin (ComEd) to U.S. NRC, "Report of Significant Change in Calculated Peak Cladding Temperature (PCT) – 10CFR 50.46 Report," dated May 7, 1999.]

3. **Prior LOCA Model Assessment for FANP fuel**
The February 2000 50.46 report assessed the impact of errors in the LOCA evaluation model.

[Reference: Letter from J. A. Benjamin (ComEd) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10CFR 50.46 Report," dated February 9, 2000.]

4. **Prior LOCA Model Assessment for FANP fuel**
The June 2000 10 CFR 50.46 report does not have any PCT assessment for ATRIUM-9B fuel.

[Reference: Letter from C. G. Pardee (ComEd) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated June 12, 2000.]

5. **Prior LOCA model assessment for FANP fuel**
The reference letter assessed impact of Unit 2 LPCS riser leakage, errors in FANP LOCA analysis model and Unit 2 Cycle 9 reload fuel.

[Reference: Letter from M. A. Schiavoni (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated June 8, 2001.]

6. **Prior LOCA model assessment for FANP fuel**
The referenced letter assessed impact of errors in FANP LOCA analysis model, Unit 1 Cycle 10 reload fuel and ATRIUM-9B exposure extension.

[Reference: Letter from M. A. Schiavoni (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated June 8, 2002.]

7. **Prior LOCA model assessment for FANP fuel**
The June 2003 50.46 report assessed the impact of errors in the LOCA evaluation, Unit 2 jet pump leakage, Unit 2 Cycle 10 reload Fuel and the Unit 1 mid-cycle reload.

[Reference: Letter from Susan R. Landahl (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated June 9, 2003.]

Attachment 4
LaSalle Units 1 and 2 10 CFR 50.46 Report (Assessment Notes)

8. Prior LOCA model assessment for FANP fuel
The March 2005 10 CFR 50.46 report does not have any PCT assessment.

[Reference: Letter from Daniel J. Enright (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated March 9, 2005.]

9. Prior LOCA model assessment for GE Fuel
A GE LOCA analysis was performed in December 2004 to support the introduction of GE14 for L2C11. This analysis bounds both LaSalle Units and addressed all errors and issues. This was reported in the Reference.

[Reference: Letter from Daniel J. Enright (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated March 9, 2005.]

10. Prior LOCA model assessment
The referenced letter reported the March 2006 10CFR50.46 report. There was no PCT assessment for the GE LOCA analysis or the AREVA LOCA analysis for Unit 2. The AREVA LOCA analysis for Unit 1 was a new LOCA analysis and addressed all errors and issues.

[Reference: Letter from Daniel J. Enright (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated March 9, 2006.]

11. Current LOCA model assessment
Reference 1 identified that past small break ECCS-LOCA analyses for GE fuel have assumed a mid-peaked power shape, consistent with design basis accident (DBA) break analyses. Recently, it has been determined that for small break cases, a top-peaked axial power shape can result in higher calculated peak cladding temperature (PCT). GE implemented an ECCS-LOCA analysis methodology change to perform the small break LOCA analysis considering both mid-peaked and top-peaked axial power shapes.

The current limiting small break LOCA for GE fuel is a 0.07 ft² recirculation line break assuming an HPCS diesel-generator failure with an estimated licensing basis PCT of 1340 F. The impact of considering the top-peaked power shape has resulted in an increase of 120 F in the limiting small break LOCA PCT, resulting in an estimated licensing basis PCT of 1460 F.

Previous submittal to the NRC (Reference 2) identified the limiting LOCA event for GE fuel to be DBA recirculation suction line break assuming an HPCS diesel- generator failure with a licensing basis PCT of 1400 F. Therefore the issue identified in the 10CFR50.46 Notification letter (Reference 1) resulted in an increase of 60 F in the licensing basis PCT and a change in the limiting break size. Therefore, beginning with this 10CFR50.46 report the current licensing basis PCT becomes 1460 F based on the limiting small break and limiting single failure.

The issue identified in Reference 1 does not affect AREVA LOCA analysis.

[References: (1) LaSalle County Station (Unit 1 & 2) 10CFR50.46 Notification Letter 2006-01 Revision 1, August 7, 2006. (2) Letter from Daniel J. Enright (Exelon) to U.S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated March 9, 2006.]