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Exelon SM
Nuclear

June 8, 2001

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

In accordance with 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," Exelon Generation Company (EGC), LLC, formerly Commonwealth Edison (ComEd) Company, submits the enclosed attachments to fulfill the annual reporting requirement for LaSalle County Station, Unit 1 and Unit 2. The previously calculated Peak Cladding Temperature (PCT) of 1301 degrees Fahrenheit (°F) for General Electric (GE) fuel and 1825 °F for Siemens Power Corporation (SPC) fuel was reported in Reference 1. The PCTs remain unchanged for this report.

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

Attachments 1 and 2 provide PCT information for the limiting LOCA evaluations for LaSalle County Station, Unit 1 and Unit 2, including all assessments as of June 12, 2001. The assessment notes are contained in Attachment 3 and provide a detailed description for each change or error reported.

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

Respectfully,

Mark A. Schiavoni
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:	6/12/2001
CURRENT OPERATING CYCLES:	L1C9 and L2C9

ANALYSIS OF RECORD

Evaluation Model Methodology:	"GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident," Volumes I, II and III, NEDE-23785-1-P-A, dated February 1985.
Calculation:	"Project Task Report, LaSalle County Station, Power Uprate Evaluation, Task 407: ECCS Performance," GE report number GE-NE-A1300384-39-01, Revision 1, dated September 1999.
Fuel:	GE8x8NB (GE9)
Limiting Single Failure:	HPCS Diesel Generator
Limiting Break Size and Location:	1.0 Double Ended Guillotine of Recirculation Pump Suction Piping
Reference PCT:	**1301°F**

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

10 CFR 50.46 Report dated June 12, 2000 (see Note 1)	ΔPCT = 0 °F
Net PCT	1301 °F

B. CURRENT LOCA MODEL ASSESSMENTS

Unit 2 LPCS riser leakage (see Note 2)	ΔPCT = 0 °F
Change in time steps used in SAFER calculations (see Note 3)	ΔPCT = -5 °F
SAFER pressure rate inconsistency error (see Note 4)	ΔPCT = +5 °F
Total PCT Change from Current Assessments	$\sum \Delta PCT = 0$ °F
Cumulative PCT Change from Current Assessments	$\sum \lvert \Delta PCT \rvert = 10$ °F
Net PCT	1301 °F

Attachment 2

LaSalle Units 1 and 2 10 CFR 50.46 Report (FANP Fuel)

PLANT NAME:	LaSalle Units 1 and 2
ECCS EVALUATION MODEL:	EXEM BWR Evaluation Model
REPORT REVISION DATE:	6/12/2001
CURRENT OPERATING CYCLE:	L1C9 and L2C9

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:	LaSalle LOCA-ECCS Analysis MAPLHGR Limits for ATRIUM™-9B Fuel, EMF-2175(P), March 1999. And LOCA Break Spectrum Analysis for LaSalle Units 1 and 2, EMF-2174(P), March 1999.
Fuel:	ATRIUM™-9B
Limiting Single Failure:	HPCS Diesel Generator
Limiting Break Size and Location:	1.1 ft^2 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 5)	ΔPCT = 0 °F
10 CFR 50.46 report dated February 20, 2000 (See Note 6)	ΔPCT =18 °F
10 CFR 50.46 report dated June 12, 2000 (See Note 7)	ΔPCT = 0 °F
Net PCT	1825 °F

B. CURRENT LOCA MODEL ASSESSMENTS

Unit 2 LPCS riser leakage (see Note 2)	ΔPCT = 0 °F
Incorrect implementation of Wilson Bubble Rise Model in the FLEX code (see Note 8)	ΔPCT = 0 °F
Incorrect implementation of Momentum Equation in the FLEX code (see Note 9)	ΔPCT = 0 °F
Impact of FLEX code changes due to verification and validation activities (see Note 10)	ΔPCT = 0 °F
Unit 2 Cycle 9 reload fuel (see Note 11)	ΔPCT = 0 °F
Total PCT Change from Current Assessments	$\sum\Delta$PCT = 0 °F
Cumulative PCT Change from Current Assessments	$\sum \lvert\Delta$PCT $\rvert$ = 0 °F
Net PCT	1825 °F

Attachment 3

LaSalle Units 1 and 2 10 CFR 50.46 Report
Assessment Notes

1. Prior LOCA model assessment for GE fuel

   The reference letter reported a new analysis of record for GE fuel as a result of the mid-cycle power uprate to 3489 MWt during Unit 1 Cycle 9 and Unit 2 Cycle 8.

   [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.]

2. Unit 2 LPCS riser leakage

   The leakage at rated LPCS pump flow conditions is increased from 0 gpm to 18.7 gpm due to assuming a through wall crack at the P5 weld. Both Framatome ANP (formerly Siemens) and GE analyses of record contain conservatisms in anticipation of the need to address leakage or other ECCS performance degradation issues. The conservatism is in the form of 750 gpm of flow reduction with respect to the Technical Specifications surveillance requirement 4.5.1.b in effect at the time. Therefore, the impact on licensing PCT is zero. With this leakage, the conservatism allocated to flow degradation is reduced from 750 gpm to 731.3 gpm.

   [Reference: Memo from R. W. Tsai to D. Bost, "Impact of Unit 2 LPCS Riser Leakage on LaSalle LOCA Analysis," NFM:BSA:00-063, dated November 24, 2000.]

3. Change in time steps used in SAFER calculations

   In response to a concern raised in the BWR Owners Group audit of the SAFER LOCA analysis process and methodology, an evaluation was performed by GE to determine the sensitivity of time step sizes. Based on the evaluation, smaller hydraulic and conduction time step sizes were recommended. The result of using the recommended time step is a reduction of 5 degrees in PCT.

   [Reference: 10 CFR 50.46 Notification Letter 2000-04 Revision 1, "Impact of SAFER Time Step Size on the Peak Clad Temperature (PCT) for Jet Pump Plant Analyses." Issued by G. A. Watford of General Electric Nuclear Fuel Engineering, no date.]

4. SAFER pressure rate inconsistency error

   An inconsistent core exit steam flow was used in pressure calculation in the SAFER code when there is a change in the two-phase level. The incorrect calculated pressure may result in premature termination of ECCS condensation and will impact the second PCT. GE evaluated the impact of this error and determined that the impact is an increase of 5 °F.

   [References:

   Letter from C. P. Collins (Global Nuclear Fuel) to K. Donovan (Exelon), "10 CFR 50.46 Notification – SAFER Pressure Error – 2001-02 – Exelon," CPC:01-044, dated May 10, 2001.

Attachment 3

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Assessment Notes

10 CFR 50.46 Notification Letter 2001-02, "Impact of SAFER Pressure Rate Inconsistency Error on the Peak Clad Temperature (PCT)." Issued by G. A. Watford of Global Nuclear Fuel Fuel Engineering Services, no date.]

5. 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.]

6. 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.]

7. 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.]

8. Incorrect implementation of Wilson Bubble Rise Model in the FLEX code

   The Wilson Bubble Rise Model has two regions that used different empirical correlations. The transition logic in the FLEX code was found to contain an error resulting in a discontinuity between the regions. The impact of this error was estimated to be zero degrees.

   [References:
   Letter from D. Garber (Siemens) to R. J. Chin (ComEd), "10 CFR 50.46 PCT Reporting for the LaSalle Units," DEG:00:203, dated August 29, 2000.

   Letter from J. F. Mallay (Framatome) to U.S. NRC, "2000 – Annual Reporting of Changes and Errors in ECCS Evaluation Models," NRC:01:013, dated February 26, 2001.]

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LaSalle Units 1 and 2 10 CFR 50.46 Report
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9. Incorrect implementation of Momentum Equation in the FLEX code

   The momentum equation in FLEX for pipe geometries adjacent to the break was missing an area divider in the ECCS flow term. This error is only relevant if the ECC flow is injected into the piping node next to the break. LaSalle is not modeled in this way. Therefore, the impact of this error is reported as 0° F.

   [References:
   Letter from D. Garber (Siemens) to R. J. Chin (ComEd), " 10 CFR 50.46 PCT Reporting for the LaSalle Units," DEG:00:203, dated August 29, 2000.

   Letter from J. F. Mallay (Framatome) to U.S. NRC, "2000 – Annual Reporting of Changes and Errors in ECCS Evaluation Models," NRC:01:013, dated February 26, 2001.

   Framatome ANP Condition Report 7806 Revision 2, "FLEX V&V Findings," dated September 21, 1999.]

10. Impact of FLEX code changes due to verification and validation activities

    In response to the 1997 NRC inspection, Framatome (formerly Siemens) committed to perform additional verification and validation of its key codes. A number of minor errors were identified and corrected in the FLEX code as part of this effort. The impact of this collective change is estimated to be 0° F.

    [References:
    Letter from D. Garber (Siemens) to R. J. Chin (ComEd), "10 CFR 50.46 PCT Reporting for the LaSalle Units," DEG:00:203, dated August 29, 2000.

    Letter from J. F. Mallay (Framatome) to U.S. NRC, "2000 – Annual Reporting of Changes and Errors in ECCS Evaluation Models," NRC:01:013, dated February 26, 2001.]

11. Unit 2 Cycle 9 reload fuel

    The calculated PCT of the new ATRIUM-9B fuel loaded into the L2C9 core is bounded by the licensing PCT. Therefore, the ΔPCT is reported as 0 ° F.

    [Reference: "LaSalle Unit 2 Cycle 9 Reload Analysis," EMF-2437, Revision 0, Siemens Power Corporation, October 2000.]