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10 CFR 50.46(a)(3)(ii)

RS-10-191

October 29, 2010

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

Dresden Nuclear Power Station, Units 2 and 3
Renewed Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

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

Reference: Letter from T. Hanley (Exelon Generation Company, LLC) to U. S. NRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," dated October 30, 2009

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 this letter and its attachment to meet the annual reporting requirements.

Dresden Nuclear Power Station (DNPS) has maintained the same emergency core cooling system (ECCS) model as reported in the referenced letter for Unit 2 and 3. The attachment provides the Peak Cladding Temperature (PCT) value for each unit and the "rack-up" sheets for the Loss of Coolant Accident (LOCA) analyses, along with assessment note summaries.

With startup of DNPS Unit 2 Cycle 22 (i.e., D2C22) operation, DNPS Unit 2 implemented core spray lower sectional piping replacement. Both GE Hitachi Nuclear Energy (GEH) and Westinghouse evaluated the core spray leakage due to this modification and concluded that its PCT impact was 0ºF. Westinghouse identified a change in input for modeling bypass hole flow coefficient, which was evaluated for impact on the LOCA analysis. The impact due to this change was determined to be 12ºF in PCT update. For D2C22, Westinghouse established the Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) limit for the fresh bundles to accommodate the change. For 10 CFR 50.46 reporting purposes, the PCT update is conservatively applied to all

bundle types including the fresh bundles. This PCT update will remain in effect only until the MAPLHGR limits for all bundles in future DNPS Unit 2 and Unit 3 cores are evaluated for the change in bypass hole flow coefficient.

There are no regulatory commitments contained in this letter. If there are any questions concerning this letter, please contact Mr. Timothy A Byam at (630) 657-2804.

Respectfully,

Jeffrey L. Hansen
Manager – Licensing and Regulatory Affairs

Attachment: Dresden Nuclear Power Station Units 2 and 3 – 10 CFR 50.46 Report

DRESDEN NUCLEAR POWER STATION

UNITS 2 AND 3

10 CFR 50.46 REPORT

Attachment
Dresden Nuclear Power Station Units 2 and 3
10 CFR 50.46 Report

10CFR50.46 Report (GE Fuel)

PLANT NAME:	Dresden Nuclear Power Station, Unit 2
ECCS EVALUATION MODEL:	SAFER/GESTR-LOCA
REPORT REVISION DATE:	10/01/2010
CURRENT OPERATING CYCLE:	22

ANALYSIS OF RECORD

Evaluation Model: The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident, Volume III, SAFER/GESTR Application Methodology, NEDE-23785-1-PA, General Electric Company, Revision 1, October 1984.

Calculations:

"SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis for Dresden Nuclear Station 2 and 3 and Quad Cities Nuclear Station Units 1 and 2," NEDC-32990P, Revision 2, GE Nuclear Energy, September 2003.

Fuel: 9x9-2, ATRIUM-9B and GE14
Limiting Fuel Type: GE14
Limiting Single Failure: Diesel Generator
Limiting Break Size and Location: 1.0 Double-Ended Guillotine in a Recirculation Suction Pipe

Reference Peak Cladding Temperature (PCT) PCT = 2110°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

10 CFR 50.46 report dated December 6, 2001 (See Note 1)	ΔPCT = 0°F
10 CFR 50.46 report dated November 25, 2002 (See Note 2)	ΔPCT = 0°F
10 CFR 50.46 report dated November 25, 2003 (See Note 3)	ΔPCT = 0°F
10 CFR 50.46 report dated November 24, 2004 (See Note 4)	ΔPCT = 0°F
10 CFR 50.46 report dated November 16, 2005 (See Note 5)	ΔPCT = 0°F
10 CFR 50.46 report dated November 9, 2006 (See Note 6)	ΔPCT = 0°F
10 CFR 50.46 report dated October 31, 2007 (See Note 7)	ΔPCT = 0°F
10 CFR 50.46 report dated October 31, 2008 (See Note 9)	ΔPCT = 0°F
10 CFR 50.46 report dated October 30, 2009 (See Note 10)	ΔPCT = 0°F
Net PCT	**2110°F**

B. CURRENT LOCA MODEL ASSESSMENTS

Core Spray Lower Sectional Replacement (see note 11)	ΔPCT = 0°F
Total PCT change from current assessments	$\Sigma\Delta PCT = 0°F$
Cumulative PCT change from current assessments	$\Sigma \lvert \Delta PCT \rvert = 0°F$
Net PCT	**2110°F**

Attachment
Dresden Nuclear Power Station Units 2 and 3
10 CFR 50.46 Report

10CFR50.46 Report (Westinghouse Fuel)

PLANT NAME:	Dresden Nuclear Power Station, Unit 2
ECCS EVALUATION MODEL:	USA5
REPORT REVISION DATE:	10/01/2010
CURRENT OPERATING CYCLE:	22

ANALYSIS OF RECORD

Evaluation Model: "Westinghouse BWR ECCS Evaluation Model: Supplement 3 to Code Description, Qualification and Application to SVEA-96 Optima2 Fuel," WCAP-16078-P-A, November 2004.

Calculations:

"Dresden 2 & 3 LOCA Analysis for SVEA-96 Optima2 Fuel," OPTIMA2-TR021DR-LOCA, Revision 5, Westinghouse Electric Company LLC, October 2009.

Fuel Analyzed in Calculation: SVEA-96 Optima2
Limiting Fuel Type: SVEA-96 Optima2
Limiting Single Failure: LPCI injection valve
Limiting Break Size and Location: 1.0 double-ended guillotine break in the recirculation pump suction line

Reference Peak Cladding Temperature (PCT) PCT = 2150°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

New Analysis (See note 10)	ΔPCT = 2°F
Net PCT	**2152°F**

B. CURRENT LOCA MODEL ASSESSMENTS

Core Spray Lower Sectional Replacement (see note 11)	ΔPCT = 0°F
Bypass hole flow coefficient update (see note 12)	ΔPCT = 12°F
Total PCT change from current assessments	$\Sigma\Delta PCT = 12°F$
Cumulative PCT change from current assessments	$\Sigma \lvert \Delta PCT \rvert = 12°F$
Net PCT	**2164°F**

Attachment
Dresden Nuclear Power Station Units 2 and 3
10 CFR 50.46 Report

10CFR50.46 Report (GE Fuel)

PLANT NAME:	Dresden Nuclear Power Station, Unit 3
ECCS EVALUATION MODEL:	SAFER/GESTR-LOCA
REPORT REVISION DATE:	10/01/2010
CURRENT OPERATING CYCLE:	21

ANALYSIS OF RECORD

Evaluation Model: The GESTR-LOCA and SAFER Models for the Evaluation of the Loss-of-Coolant Accident, Volume III, SAFER/GESTR Application Methodology, NEDE-23785-1-PA, General Electric Company, Revision 1, October 1984.

Calculations:

"SAFER/GESTR-LOCA Loss-of-Coolant Accident Analysis for Dresden Nuclear Station 2 and 3 and Quad Cities Nuclear Station Units 1 and 2," NEDC-32990P, Revision 2, GE Nuclear Energy, September 2003.

Fuel: 9x9-2, ATRIUM-9B and GE14
Limiting Fuel Type: GE14
Limiting Single Failure: Diesel Generator
Limiting Break Size and Location: 1.0 Double-Ended Guillotine in a Recirculation Suction Pipe

Reference Peak Cladding Temperature (PCT) PCT = 2110°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

10 CFR 50.46 report dated November 25, 2002 (See Note 2)	ΔPCT = 0°F
10 CFR 50.46 report dated November 25, 2003 (See Note 3)	ΔPCT = 0°F
10 CFR 50.46 report dated November 24, 2004 (See Note 4)	ΔPCT = 0°F
10 CFR 50.46 report dated November 16, 2005 (See Note 5)	ΔPCT = 0°F
10 CFR 50.46 report dated November 9, 2006 (See Note 6)	ΔPCT = 0°F
10 CFR 50.46 report dated October 31, 2007 (See Note 7)	ΔPCT = 0°F
10 CFR 50.46 report dated October 31, 2008 (See Note 9)	ΔPCT = 0°F
10 CFR 50.46 report dated October 30, 2009 (See Note 10)	ΔPCT = 0°F
Net PCT	**2110°F**

B. CURRENT LOCA MODEL ASSESSMENTS

None	ΔPCT = 0°F
Total PCT change from current assessments	ΣΔPCT = 0°F
Cumulative PCT change from current assessments	Σ |ΔPCT| = 0°F
Net PCT	**2110°F**

Attachment
Dresden Nuclear Power Station Units 2 and 3
10 CFR 50.46 Report

10CFR50.46 Report (Westinghouse Fuel)

PLANT NAME:	Dresden Nuclear Power Station, Unit 3
ECCS EVALUATION MODEL:	USA5
REPORT REVISION DATE:	10/01/2010
CURRENT OPERATING CYCLE:	21

ANALYSIS OF RECORD

Evaluation Model: "Westinghouse BWR ECCS Evaluation Model: Supplement 3 to Code Description, Qualification and Application to SVEA-96 Optima2 Fuel," WCAP-16078-P-A, November 2004.

Calculations:

"Dresden 2 & 3 LOCA Analysis for SVEA-96 Optima2 Fuel," OPTIMA2-TR021DR-LOCA, Revision 5, Westinghouse Electric Company LLC, October 2009.

Fuel Analyzed in Calculation: SVEA-96 Optima2
Limiting Fuel Type: SVEA-96 Optima2
Limiting Single Failure: LPCI injection valve
Limiting Break Size and Location: 1.0 double-ended guillotine break in the recirculation pump suction line

Reference Peak Cladding Temperature (PCT) PCT = 2150°F

MARGIN ALLOCATION

A. PRIOR LOCA MODEL ASSESSMENTS

New Analysis (see note 10)	ΔPCT = 2°F
Net PCT	**2152°F**

B. CURRENT LOCA MODEL ASSESSMENTS

Bypass hole flow coefficient update (see note 12)	ΔPCT = 12°F
Total PCT change from current assessments	ΣΔPCT = 12°F
Cumulative PCT change from current assessments	Σ |ΔPCT| = 12°F
Net PCT	**2164°F**

Attachment
Dresden Nuclear Power Station Units 2 and 3
10 CFR 50.46 Report

10 CFR 50.46 Report Assessment Notes

1. Prior LOCA Model Assessment

   The 50.46 letter dated December 6, 2001 reported a new LOCA analysis to support extended power uprate (EPU) and transition to GE14 fuel for Dresden Unit 2 Cycle 18. The same report assessed impact of errors in Framatome ANP LOCA analysis model for Dresden Unit 3 Cycle 17 at pre-EPU power level.

   [Reference: Letter from Preston Swafford (PSLTR: #01-0122) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," December 6, 2001.]

2. Prior LOCA Model Assessment

   Unit 3 implemented GE LOCA analysis and GE14 fuel with Dresden Unit 3 Cycle 18 startup on October 25, 2002. Therefore, both Dresden Units 2 and 3 are being maintained under the same LOCA analysis. In the referenced letter, the impact of GE LOCA error in the WEVOL code was reported for Dresden Units 2 and 3 and determined to be negligible.

   [Reference: Letter from Robert J. Hovey (RHLTR: #02-0083) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," November 25, 2002.]

3. Prior LOCA Model Assessment

   The annual 50.46 report provided information on the LOCA model assessments for SAFER Level/Volume table error and Steam Separator pressure drop error. In the referenced letter, the impact of these two GE LOCA errors was reported to be negligible.

   [Reference: Letter from Robert J. Hovey (RHLTR: #03-0077) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," November 25, 2003.]

4. Prior LOCA Model Assessment

   The referenced annual 50.46 report provided information on reload of GE14 fuel for Dresden Unit 2 Cycle 19 and impact of postulated hydrogen-oxygen recombination on PCT. GE determined that there is no PCT impact because of the change due to the new reload of GE14 fuel and the postulated hydrogen – oxygen recombination.

   [Reference: Letter from Danny Bost (SVPLTR: #04-0075) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," November 24, 2004.]

5. Prior LOCA Model Assessment

   The referenced letter provided the annual 50.46 report for Units 2 and 3. The letter reported the PCT impact of reload of GE14 fuel for D3C19 starting on December 8, 2004. Also, the letter reported the GE LOCA evaluation for Unit 3, which implemented the lower sectional replacement and T-box clamp repairs. GE determined that there is no PCT impact because of the change due to the new reload of GE14 fuel and the lower sectional replacement and T-box clamp repairs.

   [Reference: Letter from Danny Bost (SVPLTR: #05-0044) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," November 16, 2005.]

6. Prior LOCA Model Assessment

   The referenced letter provided the annual 50.46 report for Units 2 and 3. The letter reported the PCT impact of the reload of GE14 fuel for D2C20. The letter also reported an evaluation of increased leakage of less than 5 gpm at runout condition in core spray line flow due to crack growth identified during D2R19 outage. Additionally, a GE evaluation of the small break for impact due to top-peak axial power shape was reported in this letter. The impact due to these changes on the licensing basis PCT was reported as zero.

   [Reference: Letter from Danny Bost (SVPLTR: #06-0054) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," November 9, 2006.]

7. Prior LOCA Model Assessment

   The referenced letter provided the annual 10 CFR 50.46 report for Units 2 and 3. The letter reported D3C20 startup with the first reload of Westinghouse Optima2 fuel and implementation of the Westinghouse LOCA analysis. No error was reported for GE LOCA applicable to operation of GE14 fuel in the Unit 2 core and Unit 3 core.

   [Reference: Letter from Danny Bost (SVPLTR: #07-0049) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," October 31, 2007.]

8. Prior LOCA Model Assessment

   The referenced letter provided the 30-day 10 CFR 50.46 report for Dresden Unit 2. The 30-day 10 CFR 50.46 report was submitted for Dresden Unit 2 due to the non-conservative modeling of Low Pressure Core Spray (LPCS) performance for Unit 2. Dresden Unit 3 was not affected. Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) limit reduction was implemented at Dresden Unit 2 in order to meet all 10 CFR 50.46 criteria while maintaining a PCT at or below the licensing basis value of 2150°F for the entire Cycle 21 operation.

   [Reference: Letter from Jeffrey Hansen (RS-08-073) (Exelon) to USNRC, "Plant

Specific ECCS Evaluation Changes – 10 CFR 50.46 30-Day Report for Fuel Type SVEA-96 Optima2," May 23, 2008.]

9. Prior LOCA Model Assessment

   The referenced letter provided the annual 10 CFR 50.46 report for Units 2 and 3. The letter reported implementation of Westinghouse revised LOCA report to document evaluation of the non-conservative modeling of Low Pressure Core Spray (LPCS) performance for Unit 2. Dresden Unit 3 was not affected by this error.

   [Reference: Letter from David Wozniak (SVPLTR: #08-0059) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," October 31, 2008.]

10. Prior LOCA Model Assessment

    The referenced letter provided the annual 10 CFR 50.46 report for Units 2 and 3. The letter updated the vessel leakage between the lower shroud and the downcomer. Westinghouse evaluated this change and demonstrated that all 10 CFR 50.46 criteria were satisfied. This evaluation resulted in maximum PCT impact due to the change in vessel leakage of 2°F for Optima2 fuel with the licensing basis PCT of 2152°F. The vessel leakage identified by GE to have an insignificant impact on the PCT transient portion of the LOCA event. Therefore, a PCT impact of 0°F is reported for GE14 fuel with the licensing basis PCT remaining at 2110°F. Note: The new analysis is documented in Revision 5 of the Dresden LOCA Report and contains the same information as stated above and transmitted to the NRC in the Reference.

    [Reference: Letter from Timothy Hanley (SVPLTR: #09-0052) (Exelon) to USNRC, "Plant Specific ECCS Evaluation Changes – 10 CFR 50.46 Report," October 30, 2009.]

11. Current LOCA Model Assessment

    With startup of D2C22 operation, Dresden Unit 2 implemented core spray lower sectional piping replacement. Both GEH and Westinghouse evaluated the core spray leakage due to this modification and concluded that its PCT impact was 0ºF.

    [References:

    1) "Dresden 2 & 3 LOCA Analysis for SVEA-96 Optima2 Fuel," OPTIMA2-TR021DR-LOCA, Revision 5, Westinghouse Electric Company LLC, October 2009.

    2) "Dresden Nuclear Power Station Unit 2 Core Spray Lower Sectional Replacement, Dresden 2 Leakage Assessment," 0000-0086-0088-R2, GE Hitachi Nuclear Energy, April 2009.]

12. Current LOCA Model Assessment

Westinghouse identified a change in input for modeling bypass hole flow coefficient, which was evaluated for impact on the LOCA analysis. The impact due to this change was determined to be 12ºF in PCT update. For D2C22, Westinghouse established the MAPLHGR limit for the fresh bundles to accommodate the change. For 10 CFR 50.46 reporting purposes, the PCT update is conservatively applied to all bundle types including the fresh bundles. This PCT update will remain in effect only until the MAPLHGR limits for all bundles in future Dresden Unit 2 and Unit 3 cores are evaluated for the change in bypass hole flow coefficient.

[References:
1) "Dresden Nuclear Power Station Unit 3 Cycle 22 MAPLHGR Report," Westinghouse report NF-BEX-10-80-NP, R0, August 2010.

2) "Dresden Units 2 & 3 and Quad Cities Units 1 & 2 10 CFR 50.46 Annual Notification and Reporting for 2009," Westinghouse letter LTR-LAM-09-168, Revision 0, March 2010.]