



April 9, 2015

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

R.E. Ginna Nuclear Power Plant
Renewed Facility Operating License No. DPR-18
NRC Docket No. 50-244

Subject: 2015 10 CFR 50.46 Annual Report

Reference: Letter from Thomas G. Morgan (Exelon) to U.S. Nuclear Regulatory
Commission, "10 CFR 50.46 Annual ECCS Report," dated April 9, 2014.

The purpose of this letter is to submit the 10 CFR 50.46 annual reporting information for R.E. Ginna Nuclear Power Plant. The referenced document is the most recent annual 10 CFR 50.46 Report report submitted to the U.S. Nuclear Regulatory Commission.

Two attachments are included with this letter that provide the current Ginna 10 CFR 50.46 status. Attachment 1 provides the Peak Cladding Temperature (PCT) "rack-up" sheets. Attachment 2, "Assessment Notes," contains a detailed description of each change/error reported.

There are no commitments contained in this letter. If you have any questions, please contact Ron Reynolds at 610-765-5247.

Respectfully,

James Barstow
Director - Licensing & Regulatory Affairs
Exelon Generation Company, LLC

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Attachments: 1) Peak Cladding Temperature Rack-Up Sheet for R.E. Ginna Nuclear Power Plant
2) Assessment Notes

cc: USNRC Administrator, Region I
USNRC Project Manager, Ginna
USNRC Senior Resident Inspector, Ginna

ATTACHMENT 1

10 CFR 50.46

**“Acceptance criteria for emergency core cooling systems
for light-water nuclear power reactors”**

**Annual Report of the Emergency Core Cooling System
Evaluation Model Changes and Errors**

Assessments as of April 9, 2015

Peak Cladding Temperature Rack-Up Sheet for

R.E. Ginna Nuclear Power Plant

PLANT NAME: Ginna
 ECCS EVALUATION MODEL: Small Break Loss of Coolant Accident (SBLOCA)
 REPORT REVISION DATE: 4/9/2015
 CURRENT OPERATING CYCLE: 38

ANALYSIS OF RECORD

Evaluation Model: NOTRUMP
 Calculation: Westinghouse CN-LIS-04-206, April 2005
 Fuel: 422 Vantage+
 Limiting Fuel Type: 422 Vantage+
 Limiting Single Failure: Diesel Generator Failure to Start
 Limiting Break Size and Location: 2-inch Equivalent High T_{avg} Cold Leg Break
 Reference Peak Cladding Temperature (PCT) PCT = 1167.0°F

MARGIN ALLOCATION

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

10 CFR 50.46 report dated April 30, 2007 (Note 1)	$\Delta PCT = 0^\circ F$
10 CFR 50.46 report dated February 10, 2009 (Note 3)	$\Delta PCT = 0^\circ F$
10 CFR 50.46 report dated March 4, 2011 (Note 5)	$\Delta PCT = 0^\circ F$
10 CFR 50.46 report dated March 27, 2012 (Note 6)	$\Delta PCT = 0^\circ F$
10 CFR 50.46 report dated April 1, 2013 (Note 8)	$\Delta PCT = 0^\circ F$
10 CFR 50.46 report dated April 9, 2014 (Note 9)	$\Delta PCT = 0^\circ F$
NET PCT	PCT = 1167.0°F

B. CURRENT LOCA MODEL ASSESSMENTS

General Code Maintenance (Note 10)	$\Delta PCT = 0^\circ F$
Fuel Rod Gap Conductance Error (Note 12)	$\Delta PCT = 0^\circ F$
Radiation Heat Transfer Model Error (Note 13)	$\Delta PCT = 0^\circ F$
SBLOCTA Pre-DNB Cladding Surface Heat Transfer Coefficient Calculation (Note 14)	$\Delta PCT = 0^\circ F$
Total PCT change from current assessments	$\sum \Delta PCT = 0^\circ F$
Cumulative PCT change from current assessments	$\sum \Delta PCT = 0^\circ F$
NET PCT	PCT = 1167.0°F

PLANT NAME: Ginna
 ECCS EVALUATION MODEL: Large Break Loss of Coolant Accident (LBLOCA)
 REPORT REVISION DATE: 4/9/2015
 CURRENT OPERATING CYCLE: 38

ANALYSIS OF RECORD

Evaluation Model: ASTRUM (2004)
 Calculation: Westinghouse CN-LIS-05-11, April 2005
 Fuel: 422 Vantage+
 Limiting Fuel Type: 422 Vantage+
 Limiting Single Failure: Loss of one train of ECCS flow
 Limiting Break Size and Location: Cold Leg Split Break
 Reference PCT

PCT = 1870.0°F

MARGIN ALLOCATION

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

10 CFR 50.46 report dated April 30, 2007 (Note 1)	$\Delta PCT = 0^{\circ}F$
10 CFR 50.46 report dated May 4, 2008 (Note 2)	$\Delta PCT = 37^{\circ}F$
10 CFR 50.46 report dated February 10, 2009 (Note 3)	$\Delta PCT = 0^{\circ}F$
10 CFR 50.46 report dated March 26, 2010 (Note 4)	$\Delta PCT = 0^{\circ}F$
10 CFR 50.46 report dated March 4, 2011 (Note 5)	$\Delta PCT = 0^{\circ}F$
10 CFR 50.46 report dated March 27, 2012 (Note 6)	$\Delta PCT = 0^{\circ}F$
10 CFR 50.46 report dated August 16, 2012 (Note 7)	$\Delta PCT = 134^{\circ}F$
10 CFR 50.46 report dated April 1, 2013 (Note 8)	$\Delta PCT = 75^{\circ}F$
10 CFR 50.46 report dated April 9, 2014 (Note 9)	$\Delta PCT = 2^{\circ}F$
NET PCT	PCT =2118.0°F

B. CURRENT LOCA MODEL ASSESSMENTS

General Code Maintenance (Note 10)	$\Delta PCT = 0^{\circ}F$
Errors in Decay Group Uncertainty Factors (Note 11)	$\Delta PCT = 0^{\circ}F$
Total PCT change from current assessments	$\sum \Delta PCT = 0^{\circ}F$
Cumulative PCT change from current assessments	$\sum \Delta PCT = 0^{\circ}F$
NET PCT	PCT =2118.0°F

ATTACHMENT 2

10 CFR 50.46

**“Acceptance criteria for emergency core cooling systems
for light-water nuclear power reactors”**

**Annual Report of the Emergency Core Cooling System
Evaluation Model Changes and Errors**

Assessment Notes

R.E. Ginna Nuclear Power Plant

1) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated April 30, 2007, reported new licensing basis peak cladding temperature (PCT) for small break loss of coolant accident (SBLOCA) and large break loss of coolant accident (LBLOCA) analyses to support fuel assembly transition from OFA to 422 Vantage+ and extended power uprate. The new licensing basis PCT reported for SBLOCA and LBLOCA are 1167°F and 1870°F, respectively.

2) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated May 4, 2008, reported an evaluation for LBLOCA related to HOTSPOT fuel relocation error which resulted in a 37°F PCT assessment.

3) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated February 10, 2009, reported evaluations for SBLOCA and LBLOCA model changes which resulted in 0°F PCT change.

4) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated March 26, 2010, reported evaluations for LBLOCA model changes which resulted in 0°F PCT change.

5) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated March 4, 2011, reported evaluations for SBLOCA and LBLOCA model changes which resulted in 0°F PCT change.

6) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated March 27, 2012, reported evaluations for SBLOCA and LBLOCA model changes which resulted in 0°F PCT change.

7) Prior LOCA Model Assessment

The 30-day 10 CFR 50.46 report dated August 16, 2012, reported evaluations for fuel pellet thermal conductivity degradation (TCD) and peaking factor burndown, and design input change assessments which resulted in a 134°F PCT impact for LBLOCA.

8) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated April 1, 2013, reported evaluations for SBLOCA model changes which resulted in 0°F PCT impact. A LBLOCA assessment for the evaluation of an elevated initial containment and accumulator temperature was submitted in a License Amendment Request for NRC review and approval. The assessment resulted in a 75°F PCT impact. This increase in temperature was approved in an NRC Safety Evaluation Report (SER)

(ML14232A331) dated August 21, 2014. The SER (ML14232A331) evaluated the 10 CFR 50.46 reporting criteria explicitly.

9) Prior LOCA Model Assessment

The 10 CFR 50.46 report dated April 9, 2014, reported evaluations for SBLOCA model changes which resulted in 0°F PCT impact. A LBLOCA assessment was reported related to revised heat transfer multiplier distribution which resulted in a 2°F PCT assessment.

10) Current LOCA Model Assessment – General Code Maintenance (LBLOCA and SBLOCA)

Various changes have been made to enhance the usability of codes and to streamline future analyses. Examples of these changes include modifying input variable definitions, units and defaults; improving the input diagnostic checks; enhancing the code output; optimizing active coding; and eliminating inactive coding. These changes resulted in an estimated PCT impact of 0°F.

11) Current LOCA Model Assessment – Errors in Decay Group Uncertainty Factors (LBLOCA)

Errors were discovered in the calculation of decay heat in WCOBRA/TRAC. The uncertainty factors for ^{239}Pu were applied to ^{238}U , and those for ^{238}U were applied to ^{239}Pu . This error causes an over-prediction of the uncertainty in decay power from ^{239}Pu and an under-prediction of the uncertainty in decay power from ^{238}U . Further, the decay group uncertainty factor for Decay Group 6 of ^{235}U was erroneously coded as 2.5% instead of 2.25%. Evaluation of these errors resulted in an estimated PCT impact of 0°F.

12) Current LOCA Model Assessment – Fuel Rod Gap Conductance Error (SBLOCA)

An error was identified in the fuel rod gap conductance model in the NOTRUMP computer code. This error is associated with the use of an incorrect temperature in the calculation of the cladding emissivity term. Evaluation of this error resulted in an estimated PCT impact of 0°F.

13) Current LOCA Model Assessment – Radiation Heat Transfer Model Error (SBLOCA)

Two errors were discovered in the calculation of the radiation heat transfer coefficient within the fuel rod model of the NOTRUMP computer code. First, existing logic did not preclude non-physical negative or large (negative or positive) radiation heat transfer coefficients from being calculated. These erroneous calculations occurred when the vapor temperature exceeded the cladding surface temperature or when the predicted temperature difference was less than 1°F. Second, a temperature term incorrectly used degrees Fahrenheit instead of Rankine. The effect of these errors was estimated to be 0°F.

14) Current LOCA Model Assessment – SBLOCTA Pre-DNB Cladding Surface Heat Transfer Coefficient Calculation (SBLOCA)

Two errors were discovered in the pre-departure from nucleate boiling (pre-DNB) cladding surface heat transfer coefficient calculation in the SBLOCTA code. The first error is a result of inconsistent time units (hours vs. seconds) in the parameters used for the calculation of the Reynolds and Prandtl numbers, and the second error relates to an incorrect diameter used to develop the area term in the cladding surface heat flux calculation. The correction of these errors led to an estimated PCT impact of 0°F.

[Reference : LTR-LIS-15-79, "R.E. Ginna 10 CFR 50.46 Annual Notification and Reporting for 2014," February 19, 2015.]