



Entergy Nuclear Operations, Inc.  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043  
269 764 2000

Jeffery A. Hardy  
Regulatory Assurance Manager

PNP 2021-010

March 19, 2021

10 CFR 50.46

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

Subject: Annual Report of Changes in Emergency Core Cooling System Models

Palisades Nuclear Plant  
Docket 50-255  
Renewed Facility Operating License No. DPR-20

Reference: 1) Letter FS1-0054943 1.0, dated September 16, 2020, from E. Hunter Marshall, Framatome, to Mr. Dennis Pearson, Entergy Services, Inc., "Palisades, Annual 10 CFR 50.46 Report - 2020"

Entergy Nuclear Operations, Inc. (ENO) is submitting the annual report of changes in the emergency core cooling system (ECCS) models for the Palisades Nuclear Plant (PNP). The report is submitted in accordance with 10 CFR 50.46(a)(3)(ii).

Attachment 1 contains the large break loss of coolant accident (LOCA) peak clad temperature (PCT) summary. Attachment 2 contains the small break LOCA PCT summary. This report covers the period from January 1, 2020, through December 31, 2020.

This letter contains no new commitments and no revisions to existing commitments.

Respectfully,

JAH/mrp

Attachment 1: Large Break Loss of Coolant Accident Peak Cladding Temperature Summary  
Attachment 2: Small Break Loss of Coolant Accident Peak Cladding Temperature Summary

CC Administrator, Region III, USNRC  
Project Manager, Palisades, USNRC  
Resident Inspector, Palisades, USNRC

# ATTACHMENT 1

## LARGE BREAK LOSS OF COOLANT ACCIDENT PEAK CLADDING TEMPERATURE SUMMARY

	<b>ΔPCT (°F)</b>	<b>PCT (°F)</b>
<b>PCT (Last Acceptable Model Results) New Cycle 21 Analysis</b>		<b>1740</b>
<b>PCT (2009 Annual Report)</b>		
CR 2009-337 S-RELAP5 Radiation to Fluid Correlation Under Predicts the Radiative Heat Transfer	-27	<b>1713</b>
CR 2009-2309 S-RELAP5 Kinetics and Heat Conduction Model	-22	<b>1691</b>
CR 2009-2360 RODEX TCD (FAB09-306)	0	<b>1691</b>
<b>PCT (2010 Annual Report)</b>		
CR 2010-3095 RLBLOCA & S-RELAP5 – FIJ Multiplier & Underpredicting Liquid Entrained to SG Tubes (FAB10-387)	0	<b>1691</b>
<b>PCT (2011 Annual Report)</b>		
CR 2011-1688 RLBLOCA Upper Plenum Modeling (FAB11-219)	0	
CR 2011-7155 S-RELAP5 Sleicher-Rouse Correlation	+8	<b>1699</b>
<b>PCT (2012 Annual Report)</b>		
CR 2012-2301 Liquid fallback into surrounding 6 assemblies	0	
CR 2012-8277 Cathcart-Pawel Uncertainty Implementation in RLBLOCA Applications (FAB13-00134-001)	0	<b>1699</b>
<b>PCT (2013 Annual Report)</b>		
CR 2013-4230 S-RELAP5 routine associated with the RODEX3a fuel rod model in the code.	+6	<b>1705</b>
<b>PCT (2014 Annual Report)</b>		
CR 2012-8371 S-RELAP5 vapor absorptivity correlation	0	<b>1705</b>
CR 2014-3953 Non-Physical Axial Shapes Generated by Modal Decomposition Procedure	0	<b>1705</b>
<b>PCT (2015 Annual Report)</b>		<b>1705</b>
<b>PCT (2016 Annual Report)</b>		<b>1705</b>
<b>PCT (2017 Annual Report)</b>		<b>1705</b>
<b>PCT (2018 Annual Report)</b>		<b>1705</b>
<b>PCT (2019 Annual Report)</b>		
CR 2019-1130 Cathcart-Pawel Correlation Implementation (FS1-0046435-1.0)	0	<b>1705</b>
<b>PCT (2020 Annual Report)</b>		<b>1705</b>
<b>Total Delta</b>	<b>-35</b>	
<b>Total</b>		<b>1705</b>

# **ATTACHMENT 2** **SMALL BREAK LOSS OF COOLANT ACCIDENT** **PEAK CLADDING TEMPERATURE SUMMARY**

	<b>ΔPCT (°F)</b>	<b>PCT (°F)</b>
<b>PCT (Last Acceptable Model Results) New Cycle 21 Analysis</b>		<b>1734</b>
<b>PCT (2009 Annual Report)</b>		
CR 2009-337 S-RELAP5 Radiation to Fluid Correlation Under Predicts the Radiative Heat Transfer	-64	<b>1670</b>
CR 2009-2309 S-RELAP5 Kinetics Model	+4	<b>1674</b>
<b>PCT (2010 Annual Report)</b>		<b>1674</b>
<b>PCT (2011 Annual Report)</b>		<b>1674</b>
<b>PCT (2012 Annual Report)</b>		
CR 2011-7155 S-RELAP5 Sleicher-Rouse Correlation	-3	<b>1671</b>
<b>PCT (2013 Annual Report)</b>		<b>1671</b>
<b>PCT (2014 Annual Report)</b>		
CR 2012-8371 – S-RELAP5 Vapor Absorptivity Correlation	+73	<b>1744</b>
<b>PCT (2015 Annual Report)</b>		<b>1744</b>
<b>PCT (2016 Annual Report)</b>		<b>1744</b>
<b>PCT (2017 Annual Report)</b>		
CR 2017-3565 M5® LOCA Swelling and Rupture Model (SRM) Update (FAB17-00369)	0	<b>1744</b>
CR 2017-5630 Error in S-RELAP5 Oxidation Calculations (FS1-0035262-1.0)	+17	<b>1761</b>
<b>PCT (2018 Annual Report)</b>		<b>1761</b>
<b>PCT (2019 Annual Report)</b>		<b>1761</b>
<b>PCT (2020 Annual Report)</b>		<b>1761</b>
<b>Total Delta</b>	<b>+27</b>	
<b>Total</b>		<b>1761</b>