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

A subsidiary of Pinnacle West Capital Corporation

Palo Verde Nuclear Generating Station

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102-06189-TNW/RKR
May 10, 2010

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U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Reference: Arizona Public Service Company (APS) letter no. 102-06113, "30-Day Report Pursuant to 10 CFR 50.46(a)(3)(ii) and Submittal of Large Break Loss of Coolant Accident Reanalysis Results," from J. Hesser, APS to USNRC, dated December 22, 2009 (NRC ADAMS Accession No. ML100040066)

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)
Units 1, 2, and 3
Docket Nos. STN 50-528/529/530
Emergency Core Cooling System (ECCS) Performance Evaluation Models, 10 CFR 50.46(a)(3)(ii) Annual Report For Calendar Year 2009

Pursuant to 10 CFR 50.46(a)(3)(ii), APS is providing a summary of the cumulative effects on calculated peak clad temperature (PCT) for PVNGS due to changes or errors in ECCS performance evaluation models (see Enclosure 1). In 2009, APS reported in the above referenced letter, a significant change associated with the large break loss of coolant accident (LOCA) ECCS performance evaluation. ECCS performance for large break LOCA was reanalyzed in 2009 and the results of the analysis were reported to the NRC in the letter referenced above. The reanalysis incorporated and corrected previously identified changes and errors, resetting the cumulative changes and error corrections that had previously been reported through the end of calendar year 2008.

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NRR

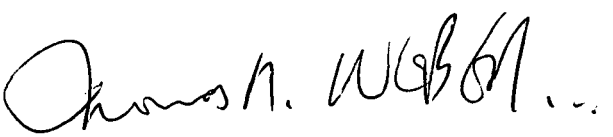
The results in Enclosure 1 are based on the 2009 reanalysis that reset the cumulative changes and error corrections that had previously been reported. As shown in Enclosure 1, there was one change that affected the PVNGS large break LOCA peak clad temperature (PCT) calculation by as much as 4°F for Unit 1. There were no changes that affected the PVNGS large break LOCA PCT calculation for Units 2 and 3. The Unit 1 change was not a significant change. There were no known errors or changes that affected the small break LOCA PCT calculation. Additionally, because PCT is not calculated as part of the post LOCA long-term cooling (LTC) analysis, there are no changes or errors in the LTC models that affect PCT.

Enclosures 2 provides a more detailed discussion of the changes and errors associated with the large break LOCA analysis during this reporting period. Enclosure 2 is Westinghouse Electric Company report, "Palo Verde Nuclear Generating Station Units 1, 2, and 3, 10 CFR 50.46 Annual Notification and Reporting for 2009" (letter number LTR-LAM-10-13, dated February 11, 2010). This report describes the changes and errors in Westinghouse (formerly Combustion Engineering) models for Pressurized Water Reactors (PWRs) ECCS performance analysis in calendar year 2009.

No commitments are being made to the NRC by this letter.

Should you need further information regarding this submittal, please contact Russell A. Stroud, Licensing Section Leader, at (623) 393-5111.

Sincerely,



TNW/RAS/RKR/gat

Enclosures
1. Summary of Cumulative Effects on Calculated Peak Clad Temperature (PCT) for PVNGS Due to Changes/Errors in ECCS Performance Evaluation Models
2. Westinghouse Electric Company Report, "Palo Verde Nuclear Generating Station Units 1, 2, and 3, 10 CFR 50.46 Annual Notification and Reporting for 2009," letter number LTR-LAM-10-13, dated February 11, 2010

cc:

E. E. Collins Jr.	NRC Region IV Regional Administrator
J. R. Hall	NRC NRR Project Manager
L. K. Gibson	NRC NRR Project Manager
R. I. Treadway	NRC Senior Resident Inspector for PVNGS

ENCLOSURE 1

Summary of Cumulative Effects on Calculated Peak Clad Temperature (PCT) for PVNGS Due to Changes/Errors in ECCS Performance Evaluation Models

Table 1: Large Break LOCA Margin Summary Sheet for 2009

Plant Name: Palo Verde Nuclear Generating Station Units 1, 2, and 3

Utility Name: Arizona Public Service Company

Evaluation Model: Westinghouse (formerly Combustion Engineering) 1999 EM

Peak Clad Temperature: 2106°F (Analysis-of-Record reported in PVNGS UFSAR Section 6.3)

			Net PCT Effect	Absolute PCT Effect
A.	Cumulative 10 CFR 50.46 Changes and Error Corrections – Previously Reported for CY 2008		Not Applicable[(a)]	Not Applicable[(a)]
B.	10 CFR 50.46 Changes and Error Corrections – New for CY 2009			
	1. Planned Plant Modification; Insertion of 8 AREVA Lead Test Assemblies (LTAs) Into PVNGS Unit 1 Core	ΔPCT =	+ 4°F (Unit 1 Only)	+ 4°F (Unit 1 Only)
C.	Absolute Sum of Cumulative 10 CFR 50.46 Changes and Error Corrections	ΔPCT =		+ 4°F (Unit 1) + 0°F (Unit 2) + 0°F (Unit 3)
D.	Licensing Basis PCT (Reported in UFSAR) + Cumulative PCT Assessments (Changes and Error Corrections)			2110°F (Unit 1) 2106°F (Unit 2) 2106°F (Unit 3)

Note: (a) PVNGS reanalyzed the Large Break LOCA event with an NRC approved Evaluation Model in 2009, as reported in Letter No. 102-06113 "30-Day Report Pursuant to 10 CFR 50.46(a)(3)(ii) and Submittal of Large Break Loss of Coolant Accident Reanalysis Results," dated December 22, 2009 (NRC ADAMS Accession No. ML100040066). The reanalysis incorporated and corrected previously identified changes and errors, resetting the cumulative changes and error corrections that had previously been reported through the end of CY 2008 (NRC ADAMS Accession No. ML091810703).

The sum of the PCT from the most recent Analysis-of-Record (AOR) using an acceptable evaluation model, and the estimated cumulative effects of PCT impacts for changes and error corrections made since that AOR, remains less than 2200°F.

Table 2: Small Break LOCA Margin Summary Sheet for 2009

Plant Name: Palo Verde Nuclear Generating Station Units 1, 2, and 3

Utility Name: Arizona Public Service Company

Evaluation Model: Westinghouse (formerly Combustion Engineering) S2M

Peak Clad Temperature: 1618°F (Analysis-of-Record reported in PVNGS UFSAR Section 6.3)

			Net PCT Effect	Absolute PCT Effect
A.	Cumulative 10 CFR 50.46 Changes and Error Corrections – Previously Reported for CY 2008			
	1. None Identified	ΔPCT =	+ 0°F	+ 0°F
B.	10 CFR 50.46 Changes and Error Corrections – New for CY 2009			
	1. None Identified	ΔPCT =	+ 0°F	+ 0°F
C.	Absolute Sum of Cumulative 10 CFR 50.46 Changes and Error Corrections	ΔPCT =		+ 0°F
D.	Licensing Basis PCT (Reported in UFSAR) + Cumulative PCT Assessments (Changes and Error Corrections)			1618°F

The sum of the PCT from the most recent Analysis-of-Record (AOR) using an acceptable evaluation model, and the estimated cumulative effects of PCT impacts for changes and error corrections made since that AOR, remains less than 2200°F.

ENCLOSURE 2

Westinghouse Electric Company Report, "Palo Verde Nuclear Generating Station Units 1, 2, and 3, 10 CFR 50.46 Annual Notification and Reporting for 2009," letter number LTR-LAM-10-13, dated February 11, 2010

Westinghouse Electric Company
Nuclear Services
P. O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

Direct tel: (412) 374-4545
Direct fax: (860) 731-6439
e-mail: mckainmj@westinghouse.com

Our ref: LTR-LAM-10-13

February 11, 2010

Palo Verde Nuclear Generating Station Unit 1, 2 and 3
10 CFR 50.46 Annual Notification and Reporting for 2009

Dear Sir or Madam:

This letter provides 10 CFR 50.46 reporting information pertaining to the Westinghouse Electric Company Emergency Core Cooling System (ECCS) performance Evaluation Models (EMs) and their application to your plant(s) for calendar year 2009.

There were no changes, error corrections or enhancements to the 1999 Evaluation Model (EM), which is the EM used in your plant's Large Break Loss-of-Coolant Accident (LBLOCA) ECCS performance analysis in calendar year 2009. In addition, there were no 2009 changes, error corrections or enhancements to the Supplement 2 Evaluation Model (S2M), which is the EM used in your plant's Small Break Loss-of-Coolant Accident (SBLOCA) ECCS performance analysis.

The Peak Cladding Temperature (PCT) Rackup sheets along with your plant specific evaluation text are enclosed in the Attachment. The rackup sheets, which were obtained from the Westinghouse 10 CFR 50.46 Rackup eRoom, identify the PCTs of the ECCS performance Analyses of Record (AORs) for your plant(s) and the PCT assessments associated with the AORs through the end of calendar year 2009.

This letter is provided for your use in making a determination relative to the reporting requirements of 10 CFR 50.46. The information provided in this letter was prepared in accordance with Westinghouse's Quality Management System (QMS).

Author: (Electronically Approved)*
M. J. McKain
LOCA Integrated Services

Verifier: (Electronically Approved)*
D. W. Atkins
LOCA Analysis & Methods

Verifier: (Electronically Approved)*
E. F. Jageler
LOCA Analysis & Methods

Approved: (Electronically Approved)*
J. Ghergurovich
Manager, LOCA Analysis & Methods

Attachment

Electronically approved records are authenticated in the electronic document management system.

NEW LBLOCA AOR TO IMPLEMENT RSGS, SHA, AND PASSIVE HEAT SINK ACCOUNTING
Discretionary Change

Background
A new LBLOCA AOR has been completed which specifically models the implementation of the RSGs, SHA, and includes passive heat sink accounting. This is a discretionary change.

Affected Evaluation Model(s)
Appendix K LBLOCA Evaluation Model, 1999 EM

Estimated Effect
The PCT delta is reset with the new LBLOCA AOR and is therefore = 0°F

Reference(s)
1. CVER-09-62, "Analysis of Record for Large Break LOCA ECCS Performance Analysis Including Replacement Steam Generators and Simplified Head Implementation for PVNGS Units 1, 2, and 3," August 31, 2009.

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Large Break

Plant Name: Palo Verde Nuclear Generating Station Unit 1
Utility Name: Arizona Public Service
Revision Date: 1/27/2010

Analysis Information

EM:	1999 EM	**Analysis Date:**	8/31/2009	**Limiting Break Size:**	0.6 DEG/PD
Fuel:	16x16 System 80	**SGTP (%):**	10		
		PLHGR (kW/ft):	13.1		

Notes: 1. Plant Configuration: Rated Core Power = 3990 MWt, Replacement Steam Generators.

2. Fuel Design: 16x16 System 80 with ZIRLO™ cladding, value-added pellets, and erbia burnable absorbers.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**2106**	**1**	
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . None	0		
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . Evaluation for the Insertion of 8 AREVA LTAs into Palo Verde	4	2	
C. 2009 ECCS MODEL ASSESSMENTS			
1 . None	0		
D. OTHER*			
1 . None	0		
LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =** 2110		

* It is recommended that the licensee determine if these PCT allocations should be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . CVER-09-62, "Analysis of Record for Large Break LOCA ECCS Performance Analysis Including Replacement Steam Generators and Simplified Head Implementation for PVNGS Units 1, 2, and 3," August 2009.

2 . LTR-OA-08-106, "10 CFR 50.46 Report for PVNGS Units 1, 2, and 3 for an Evaluation for the Insertion of 8 AREVA LTAs and the Correction of an Error in the Steam Generator Economizer Input," December 2008.

Notes:

None

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Small Break

Plant Name: Palo Verde Nuclear Generating Station Unit 1
Utility Name: Arizona Public Service
Revision Date: 1/27/2010

Analysis Information

EM:	S2M	**Analysis Date:**	3/22/2002	**Limiting Break Size:**	0.05 sq ft/PD
Fuel:	16x16 System 80	**SGTP (%):**	10		
		PLHGR (kW/ft):	13.5		

Notes: 1. Plant Configuration: Rated Core Power = 3990 MWt, Replacement Steam Generators.

2. Fuel Design: 16x16 System 80 with ZIRLO™ cladding, value-added pellets, and erbia burnable absorbers.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**1618**	**1**	
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . None	0		
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . Evaluation for the Insertion of 8 AREVA LTAs Into Palo Verde	0	2	
2 . Evaluation of the Simplified Head Assembly	0	3	
C. 2009 ECCS MODEL ASSESSMENTS			
1 . None	0		
D. OTHER*			
1 . None	0		
LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =** 1618		

* It is recommended that the licensee determine if these PCT allocations should be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . A-PV-FE-0149, Rev. 001, "Palo Verde Units 1, 2 and 3 S2M Bounding SBLOCA ECCS Performance Analysis," March 2002.

2 . LTR-OA-08-106, "10 CFR 50.46 Report for PVNGS Units 1, 2, and 3 for an Evaluation for the Insertion of 8 AREVA LTAs and the Correction of an Error in the Steam Generator Economizer Input," December 2008.

3 . CVER-09-25, "Interim Evaluation of the Effects of SHA Implementation on PVNGS Units 1, 2, and 3 ECCS Performance," April 2009.

Notes:

None

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Large Break

Plant Name: Palo Verde Nuclear Generating Station Unit 2
Utility Name: Arizona Public Service
Revision Date: 1/27/2010

Analysis Information

EM:	1999 EM	**Analysis Date:**	8/31/2009	**Limiting Break Size:**	0.6 DEG/PD
Fuel:	16x16 System 80	**SGTP (%):**	10		
		PLHGR (kW/ft):	13.1		

Notes: 1. Plant Configuration: Rated Core Power = 3990 MWt, Replacement Steam Generators.

2. Fuel Design: 16x16 System 80 with ZIRLO™ cladding, value-added pellets, and erbia burnable absorbers.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**2106**	**1**	
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . None	0		
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . None	0		
C. 2009 ECCS MODEL ASSESSMENTS			
1 . None	0		
D. OTHER*			
1 . None	0		
LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =** 2106		

* It is recommended that the licensee determine if these PCT allocations should be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . CVER-09-62, "Analysis of Record for Large Break LOCA ECCS Performance Analysis Including Replacement Steam Generators and Simplified Head Implementation for PVNGS Units 1, 2, and 3," August 2009.

Notes:

None

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Small Break

Plant Name: Palo Verde Nuclear Generating Station Unit 2
Utility Name: Arizona Public Service
Revision Date: 1/27/2010

Analysis Information

EM:	S2M	**Analysis Date:**	3/22/2002	**Limiting Break Size:**	0.05 sq ft/PD
Fuel:	16x16 System 80	**SGTP (%):**	10		
		PLHGR (kW/ft):	13.5		

Notes: 1. Plant Configuration: Rated Core Power = 3990 MWt, Replacement Steam Generators.

2. Fuel Design: 16x16 System 80 with ZIRLO™ cladding, value-added pellets, and erbia burnable absorbers.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**1618**	**1**	
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . None	0		
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . Evaluation of the Simplified Head Assembly	0	2	
C. 2009 ECCS MODEL ASSESSMENTS			
1 . None	0		
D. OTHER*			
1 . None	0		
LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =** 1618		

* It is recommended that the licensee determine if these PCT allocations should be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . A-PV-FE-0149, Rev. 001, "Palo Verde Units 1, 2 and 3 S2M Bounding SBLOCA ECCS Performance Analysis," March 2002.

2 . CVER-09-25, "Interim Evaluation of the Effects of SHA Implementation on PVNGS Units 1, 2, and 3 ECCS Performance," April 2009.

Notes:

None

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Large Break

Plant Name: Palo Verde Nuclear Generating Station Unit 3
Utility Name: Arizona Public Service
Revision Date: 1/27/2010

Analysis Information

EM:	1999 EM	**Analysis Date:**	8/31/2009	**Limiting Break Size:**	0.6 DEG/PD
Fuel:	16x16 System 80	**SGTP (%):**	10		
		PLHGR (kW/ft):	13.1		

Notes: 1. Plant Configuration: Rated Core Power = 3990 MWt, Replacement Steam Generators.

2. Fuel Design: 16x16 System 80 with ZIRLO™ cladding, value-added pellets, and erbia burnable absorbers.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**2106**	**1**	
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . None	0		
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . None	0		
C. 2009 ECCS MODEL ASSESSMENTS			
1 . None	0		
D. OTHER*			
1 . None	0		
LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =** 2106		

* It is recommended that the licensee determine if these PCT allocations should be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . CVER-09-62, "Analysis of Record for Large Break LOCA ECCS Performance Analysis Including Replacement Steam Generators and Simplified Head Implementation for PVNGS Units 1, 2, and 3," August 2009.

Notes:

None

Westinghouse LOCA Peak Clad Temperature Summary for Appendix K Small Break

Plant Name: Palo Verde Nuclear Generating Station Unit 3
Utility Name: Arizona Public Service
Revision Date: 1/27/2010

Analysis Information

EM:	S2M	**Analysis Date:**	3/22/2002	**Limiting Break Size:**	0.05 sq ft/PD
Fuel:	16x16 System 80	**SGTP (%):**	10		
		PLHGR (kW/ft):	13.5		

Notes: 1. Plant Configuration: Rated Core Power = 3990 MWt, Replacement Steam Generators.

2. Fuel Design: 16x16 System 80 with ZIRLO™ cladding, value-added pellets, and erbia burnable absorbers.

	Clad Temp (°F)	Ref.	Notes
LICENSING BASIS			
Analysis-Of-Record PCT	**1618**	**1**	
PCT ASSESSMENTS (Delta PCT)			
A. PRIOR ECCS MODEL ASSESSMENTS			
1 . None	0		
B. PLANNED PLANT MODIFICATION EVALUATIONS			
1 . Evaluation of the Simplified Head Assembly	0	2	
C. 2009 ECCS MODEL ASSESSMENTS			
1 . None	0		
D. OTHER*			
1 . None	0		
LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =** 1618		

* It is recommended that the licensee determine if these PCT allocations should be considered with respect to 10 CFR 50.46 reporting requirements.

References:

1 . A-PV-FE-0149, Rev. 001, "Palo Verde Units 1, 2 and 3 S2M Bounding SBLOCA ECCS Performance Analysis," March 2002.

2 . CVER-09-25, "Interim Evaluation of the Effects of SHA Implementation on PVNGS Units 1, 2, and 3 ECCS Performance," April 2009.

Notes:

None

RACKUP eRoom Check:

EMs applicable to Palo Verde Nuclear Generating Station Unit 1, 2 and 3:
Appendix K Small Break – S2M
Appendix K Large Break – 1999 EM

2009 Issues

Transmittal Letter	Issue Description
LTR-LAM-09-65	Evaluation of Additional Uncoated Material in Containment & Evaluation of the Simplified Head Assembly
LTR-LAM-09-125	New LBLOCA AOR for Palo Verde Units 1, 2, and 3 for RSGs, SHA and Passive Heat Sink Accounting