



Palo Verde Nuclear  
Generating Station

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*Designated Original*

10 CFR 2.390

EA-03-009

Mail Station 7605  
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Phoenix, AZ 85072-2034

102-05075-CDM/SAB/RJR

March 19, 2004

Secretary,  
Office of Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
ATTN: Rulemakings and Adjudications Staff  
Washington, DC 20555-0001

Dear Sirs:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Units 1, 2 and 3  
Docket No. STN 50-528, 50-529 and 50-530  
Relief Request No. 25 - Request for Relaxation of First Revised NRC  
Order EA-03-009, Section IV.C.(5)(b) Requirements for CEDM  
Nozzles**

Starting with the spring 2004 PVNGS Unit 1 outage, both the visual and volumetric examinations identified in First Revised NRC Order EA-03-009, Section IV.C(5)(b) will be required for future PVNGS outages since the reactor heads will exceed 12 effective degradation years (EDY). The enclosure to this letter contains Relief Request No. 25 which proposes an alternative examination for the reactor pressure vessel head control element drive mechanism nozzles and contains the basis for concluding that the level of quality and safety prescribed in Order Section IV is maintained.

Attachment 3 of the enclosure contains information considered proprietary to Westinghouse Electric Company LLC, it is supported by an affidavit (Attachment 2 of the Enclosure) signed by Westinghouse, the owner of the information. APS requests that this proprietary information be withheld from public disclosure pursuant to 10 CFR 2.390.

APS is requesting that this relief be granted to include Unit 1's 11<sup>th</sup> refueling outage in the spring of 2004, Unit 3's 11<sup>th</sup> refueling outage in the fall of 2004, and Unit 2's 12<sup>th</sup> refueling outage in the spring of 2005, and all subsequent refueling outages during the period that the First Revised NRC Order EA-03-009 remains in effect.

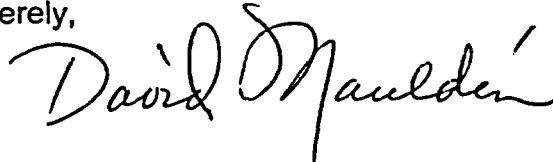
APS requests review and approval of this request as it pertains to Unit 1 prior to Mode 4 entry from the Unit 1 refueling outage. Mode 4 entry is currently scheduled for April 28, 2004. APS also requests that this relaxation be approved for Unit 2 and Unit 3 prior to September 2004.

*A101  
Rec'd 6/16/04  
WCO*

Office of the Secretary of the Commission  
Relief Request No. 25 - Request for Relaxation of First Revised NRC Order EA-03-009,  
Section IV.C.(5)(b) Requirements for CEDM Nozzles

No commitments are being made to the NRC in this letter. Should you have any questions, please contact Thomas N. Weber at (623) 393-5764.

Sincerely,



CDM/SAB/RJR/

Enclosure Relief Request No. 25 - Request for Relaxation of First Revised NRC Order EA-03-009, Section IV.C.(5)(b) Requirements for the PVNGS CEDM Nozzles

Attachment 1 Westinghouse letter LTR-PAFM-04-23, "Head Penetration Minimum Inspection Coverage (Oksi Case) Palo Verde Units 1, 2 & 3, dated March 19, 2004.

Attachment 2: Proprietary Affidavit Pursuant to 10 CFR 2.390

Attachment 3: WCAP-15817-P, Revision 1 (Proprietary)

cc:

J. E. Dyer	(w/Enclosure)
B. S. Mallett	(w/Enclosure)
M. B. Fields	(w/Enclosure)
N. L. Salgado	(w/Enclosure)

Assistant General Counsel for Materials Litigation and Enforcement (w/Enclosure)  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

ATTN: Document Control Desk (w/Enclosure)  
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Washington, DC 20555-0001

**Enclosure**

**Relief Request No. 25 - Request for Relaxation of First  
Revised NRC Order EA-03-009, Section IV.C.(5)(b)  
Requirements  
for the PVNGS CEDM Nozzles**

## Relief Request No. 25

### Background

Starting with the spring 2004 PVNGS Unit 1 outage, both the visual and volumetric examinations identified in First Revised NRC Order EA-03-009, Section IV.C(5)(b) will be required for future PVNGS outages since the reactor heads will exceed 12 effective degradation years (EDY). This relief requests relaxation from the Order requirement IV.C(5)(b)(i) to perform ultrasonic testing of each Control Element Drive Mechanism (CEDM) penetration to the bottom of the nozzle and is being requested for all three PVNGS units.

### I. ASME Code Component(s) Affected

Applicable Units: 1, 2 and 3  
Component number: B4.12  
Description: Control Element Drive Mechanism (CEDM) nozzle penetrations  
Code Class: 1

### II. Applicable Code Addition and Addenda

The second 10-year inservice inspection interval code for Palo Verde Nuclear Generating Station (PVNGS) Units 1 and 2 is the American Society of Mechanical Engineers (ASME) Code, Section XI, 1992 Edition, 1992 Addenda.

The construction code for PVNGS Units 1 and 2 is ASME Section III, 1971 Edition, 1973 Winter Addenda.

The installation code for PVNGS Units 1 and 2 is ASME Section III, 1974 Edition, 1975 Winter Addenda.

### III. Applicable Order Requirement

First Revised NRC Order EA-03-009, Section IV.C(5)(b)(i) requires ultrasonic testing (UT) of each reactor pressure vessel (RPV) head penetration nozzle (i.e., nozzle base material) from 2-inches above the J-groove weld to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2-inches) OR from 2-inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater.

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### **IV. Proposed Alternative**

Ultrasonic testing of each RPV head CEDM penetration nozzle (i.e., nozzle base material) from 2-inches above the J-groove weld to the minimum required inspection distances identified in Tables 1 and 2. Site procedures will require testing of each CEDM nozzles as far down as practical, but will in all cases be equal to or greater than the minimum required inspection distances identified in Tables 1 and 2 (See Figure 1).

### **V. Basis for Demonstrating Hardship or Unusual Difficulty without a Compensating Increase in the Level of Quality and Safety**

Due to the design of the funnel attachment to the CEDM nozzles (i.e., threaded connection with plug weld, see Figure 2) and the as-welded condition of nozzle J-groove weld fillet sizes, Arizona Public Service Company (APS) will be unable to fully comply with the requirement to perform UT to 1.0-inch below the lowest point of the toe of the J-groove weld for all CEDM nozzles. APS will comply with the requirement to perform UT to 2-inches above the J-groove weld and is not seeking relaxation from this portion of the requirement or the requirement to perform an assessment to determine if leakage has occurred into the annulus between the RPV head penetration nozzle and the RPV head low-alloy steel. Relief Request No. 25 is similar to the second relaxation granted in Reference 1 of this enclosure.

Experience gained from the previous UT examinations of the CEDM nozzles completed at PVNGS in response to Bulletins 2001-01, 2002-01, 2002-02, and Order EA-03-009 have shown that scanning becomes impractical and ineffective from slightly above the top of the nozzle's chamfer face to the bottom of the nozzle. Ultrasonic scans in this area do not yield useful data because of the geometry of the nozzle and funnel and the multiple signals reflected back by the threaded surfaces.

The First Revised NRC Order (EA-03-009) issued on February 20, 2004, did reduce the required inspection distance below the bottom of the weld. However, a relaxation is still required for PVNGS Units 1, 2, and 3. The proposed alternative identified in Section IV of this request will provide relief from the requirement to inspect 1-inch below the weld inclusive of all surfaces greater than 20 ksi tensile stress. APS will meet the order requirements, or inspect as far down the nozzles as practical. Where the requirement to inspect 1-inch below the toe of the weld inclusive of all surfaces greater than 20 ksi tensile stress cannot be met, fracture mechanics analysis, as discussed in Attachment 1, has been performed to demonstrate that postulated cracks in the un-inspected area will not propagate to the bottom of the J-groove weld before the next inspection, which is about 1.5 effective full power years. Therefore, the proposed alternative to inspect from 2-inches above the weld to the minimum required inspection

## Relief Request No. 25

distances identified in Tables 1 and 2 provides an acceptable level of quality and safety.

To support this request, the crack growth analysis for PVNGS Units 1, 2, and 3 was performed using plant specific data. This analysis is summarized below.

In this analysis, contained in Attachment 1, an axial through-wall flaw is conservatively postulated with its upper crack tip assumed to be located at the end of the inspection zone, while its lower crack tip is assumed to be located where the hoop stress drops below 0 ksi on either the inside or outside surface of the CEDM penetration nozzle. There is nearly universal agreement that high stresses, on the order of the material yield strength, are necessary to initiate Primary Water Stress Corrosion Cracking (PWSCC). The stress level of 20 ksi is a conservative value below which PWSCC initiation is extremely unlikely. Therefore the assumption of any PWSCC crack initiation in the region of the penetration nozzle with a stress level of 20 ksi or less is very conservative.

The PWSCC Crack Growth Law recommended in MRP-55 Rev. 1 was used in the crack growth calculation and the vessel head temperature of 597°F was used for Palo Verde Units 1 and 2, and 595°F for Palo Verde Unit 3 in determining the PWSCC crack growth rate. Note that 597°F upper head temperature is the estimated temperature for Unit 2 reactor vessel head after the power uprate modification. The same temperature was used as an added conservatism for Unit 1 based on similarities with Unit 2 CEDM nozzle thicknesses.

The minimum required inspection coverage on the downhill side of the head penetration nozzles has been determined to show that an undetected axial through-wall flaw will not reach the weld bottom in less than one fuel cycle (~1.5 Effective Full Power Years).

The stress input values used in the above calculation were obtained from WCAP-15817-P and 16044-P hoop stress distribution curves. Attachment 3 contains a copy of Westinghouse Proprietary Class 2 report WCAP-15817-P, Revision 1, "Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: Palo Verde Units 1 and 2" which has the Unit 1 and 2 hoop stress distribution curves. This information is considered proprietary and APS requests that this proprietary information be withheld from public disclosure. Pursuant to 10 CFR 2.390(b)(1), an affidavit in support of this request is provided in Attachment 2. The hoop stress distribution graphs for Unit 3 were submitted in APS letter 102-04916-CDM/SAB/RJR, dated April 2, 2003 (Reference 2).

**Relief Request No. 25**

Table 1: Palo Verde Units 1 & 2 Minimum Required Inspection Coverage

Nozzle Angle (°)	Penetration No. Applicability	Minimum Inspection Coverage Required Below the Weld on the Downhill Side (in) <sup>NOTE 1</sup>	EFPY for Upper Crack Tip to Reach the Bottom of Weld
0	1	0.45	1.7
7.5	2-21	0.45	1.7
28.0	22-45	0.45	1.8
35.7	46-85, 90-97	0.40	1.7
51.5	86-89	0.35	1.9

Table 2: Palo Verde Unit 3 Minimum Required Inspection Coverage

Nozzle Angle (°)	Penetration No. Applicability	Minimum Inspection Coverage Required Below the Weld on the Downhill Side (in) <sup>NOTE 1</sup>	EFPY for Upper Crack Tip to Reach the Bottom of Weld
0	1-29	0.40	1.7
31.5	30-81	0.35	2.0
47.6	82-85	0.30	2.4
49.5	90-97	0.30	3.4
51.5	86-89	0.20	2.4

NOTE 1 Nozzles receiving the minimum inspection coverage, but less than 1-inch inspection coverage, will be reported in accordance with Order Section IV.E

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The APS process calls for each CEDM nozzle to be examined from the weld toe to the bottom of the nozzle (as close as practical to the chamfer face of the nozzle/cone interface). The minimum inspection coverage required in Tables 1 and 2 would result in a more than one cycle before a postulated axial through-wall flaw in the un-inspected area of the CEDM penetration nozzle would propagate into the pressure boundary formed by the J-groove weld. This exam will provide reasonable assurance that safety significant circumferential flaws do not exist at or above the weld root and assure that operation between refueling outages can be accomplished without pressure boundary leakage from the examined nozzles

The CEDM nozzles at PVNGS are all installed into the RPV head with an interference fit. The APS examination is sufficient to reliably detect cracking of RPV head nozzles which could cause corrosion of the RPV head or pose a safety concern because of the possibility of a nozzle ejection or loss-of-coolant accident.

### **VI. Assessment of Order Inspection Options**

#### **Inspection Option IV.C(5)(b)(ii)**

Order inspection option IV.C(5)(b)(ii) requires ET or PT of the wetted surface of each J-groove weld and RPV head penetration nozzle base material at least 2-inches above the J-groove weld. Due to the location and proximity of the funnels to each other and limited space, performing a surface examination on the outside diameter of the CEDM nozzles would be a high dose manual process. In order for APS to comply with this requirement for all the CEDM nozzles, APS would need to develop new remote tooling or remove and reinstall a large number of funnels. APS estimates the exposure for this examination method to be at least 30 times the dose of the proposed UT/ET examination discussed in Section V above. Therefore, it is not practical to perform ET or PT of the wetted surface of each nozzle as required.

#### **Inspection Option IV.C(5)(b)(iii)**

Order inspection option IV.C(5)(b)(iii) allows a combination of (i) and (ii) to cover equivalent volumes, surfaces and leak paths of the RPV head penetration nozzle base material and J-groove weld as described in (i) and (ii). Since APS will be conducting a volumetric examination of the CEDM nozzles, inspection option IV.C(5)(b)(iii) does not apply.

### **VII. Duration of Proposed Alternative**

APS requests relaxation for the Unit 1's 11<sup>th</sup>, Unit 2's 12<sup>th</sup>, and U3's 11<sup>th</sup> refueling outages and for all subsequent refueling outages in Units 1, 2, and 3 during the period while the First Revised NRC Order, EA-03-009, remains in effect.



## Relief Request No. 25

IV.C(5)(b)(i) Alternative - Ultrasonic testing of each RPV head CEDM penetration nozzle (i.e., nozzle base material) from 2-inches above the J-groove weld to the minimum required inspection distances identified in Tables 1 and 2. Site procedures will require testing of each CEDM nozzles as far down as practical, but will in all cases be equal to or greater than the minimum required inspection distances identified in Tables 1 and 2.

### **VIII. Conclusion**

Section IV.F of the Order states that conditions may be relaxed or rescinded upon demonstration by the Licensee of good cause. A request for relaxation regarding inspection of specific nozzles shall also address the following criteria:

1. The proposed alternative(s) for inspection of specific nozzles will provide an acceptable level of quality and safety, or
2. Compliance with this Order for specific nozzles would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

APS believes that compliance with this Order as written would result in a hardship and require unusual difficulty without a compensating increase in the level of quality and safety. The proposed alternative presented in Section IV and discussed in Section V demonstrates that at least one operating cycle would elapse before a postulated flaw in the un-inspected area of the CEDM penetration nozzle would propagate into the pressure boundary formed by the J-groove weld. Therefore, we request that the proposed alternative be authorized pursuant to Order Section IV.F.2.

### **IX. Commitments**

No new commitments are being made to the NRC in this letter.

### **X. Precedent**

Millstone Power Station, Unit No. 2, Relaxation of the Requirements of Order EA-03-009 Regarding Reactor Pressure Vessel Head Inspections, Approval date November 21, 2003 (TAC No. MC0942, ADAMS Accession Number ML033220099)

Southern California Edison, Units 2 and 3 Relaxation Requests 1 and 2, Approval date PENDING (TAC Nos. MC1540, MC1541, MC1442 and MC1543)

## Relief Request No. 25

### **XI. References**

1. NRC letter to APS, "Relaxations from Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads," dated April 25, 2003.
2. APS letter 102-04916-CDM/SAB/RJR, "Response to Request for Additional Information Regarding Relaxation Request to NRC Order EA-03-009," dated April 2, 2003
3. WCAP-15817-P Revision 1, "Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: Palo Verde Units 1 and 2," dated October 2003, Westinghouse Proprietary Class 2.

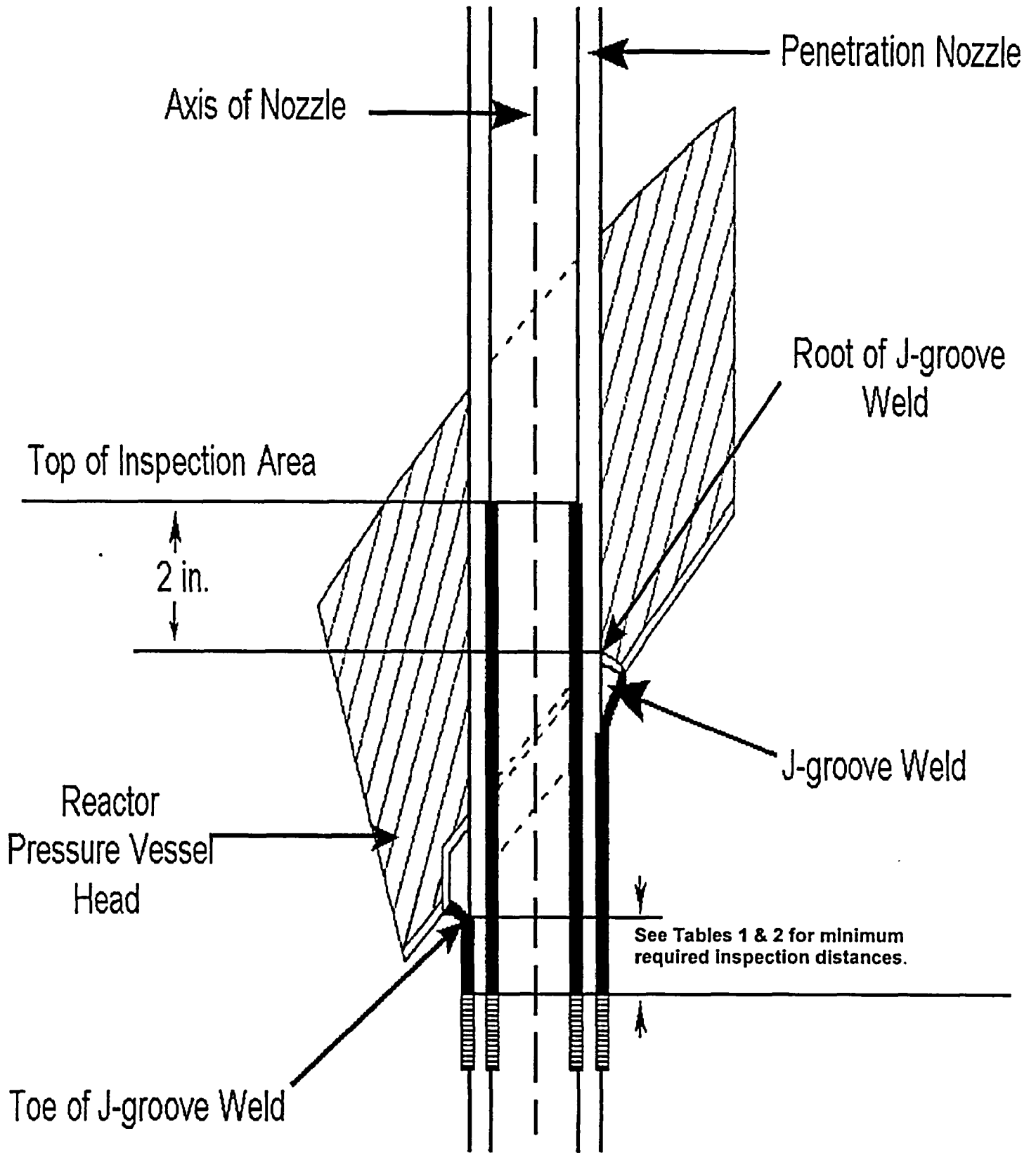
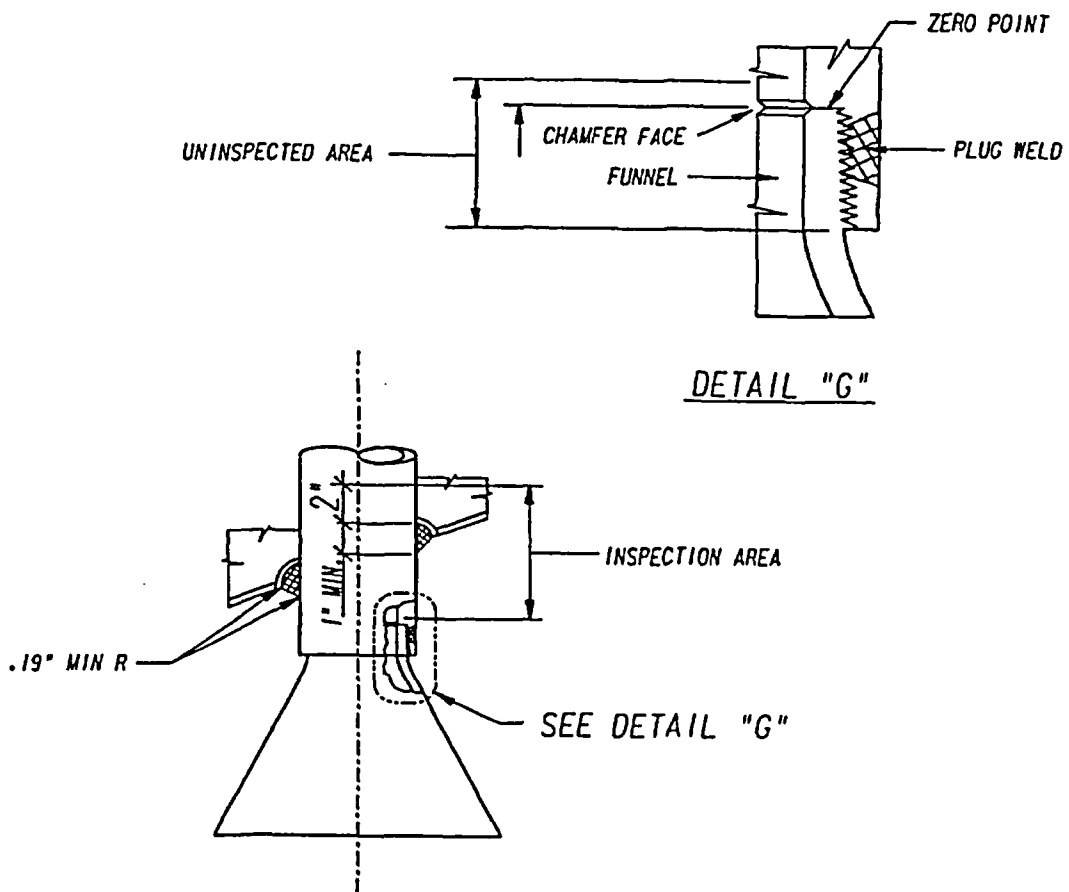


Figure 1



TYPICAL PENETRATION NO'S 1 THRU 97.

Figure 2

**Relief Request No. 25  
Attachment 1**

**Westinghouse letter LTR-PAFM-04-23, "Head Penetration Minimum  
Inspection Coverage (0ksi Case) Palo Verde Units 1, 2 & 3, dated  
March 19, 2004**



**Westinghouse**

To: Jim Compas  
cc: Seth Swamy, Jim Olszewski

Date: March 19, 2004

From:  
Ext: 724-722-6030  
Fax: 724-722-5597

Your ref:  
Our ref: LTR-PAFM-04-23

Subject: **Palo Verde Units 1, 2 & 3 Head Penetration Minimum Inspection Coverage with Crack Growth Curve for 0 ksi case**

Minimum required inspection coverage below the weld for the head penetration nozzles has been determined for Palo Verde Units 1, 2 and 3. The required inspection coverage demonstrated that more than one operating cycle would elapse before a postulated flaw in the un-inspected area of the CEDM penetration nozzle would propagate into the pressure boundary formed by the J-groove weld. The attachment to this letter provides a discussion of the methodology and assumptions used to determine the crack growth below the weld for a given inspection coverage and the associated results.

Please transmit the attached information (page 2 to 15) to APS in a project letter.

Author: \_\_\_\_\_

C. K. Ng<sup>1</sup>, Piping Analysis & Fracture Mechanics

Verifier: \_\_\_\_\_

Santit Jirawongkraisorn<sup>1</sup>, Piping Analysis & Fracture Mechanics

<sup>1</sup> Official Record Electronically Approved in EDMS 2000

Crack growth below the weld calculations were performed for Palo Verde Units 1, 2 and 3 demonstrating that more than one operating cycle would elapse before a postulated flaw in the un-inspected area of the CEDM penetration nozzle would propagate into the pressure boundary formed by the J-groove weld. The following provides a discussion of the methodology and assumptions used to determine the crack growth below the weld for a given inspection coverage and the associated results.

An axial through-wall flaw is conservatively postulated with its upper crack tip assumed to be located at the end of the inspection zone, while its lower crack tip is assumed to be located where the hoop stress drops below 0 ksi on either the inside or outside surface of the CEDM penetration nozzle. There is nearly universal agreement that high stresses, on the order of the material yield strength, are necessary to initiate Primary Water Stress Corrosion Cracking (PWSCC). The stress level of 20 ksi is a conservative value below which PWSCC initiation is extremely unlikely. Therefore the assumption of any PWSCC crack initiation in the region of the penetration nozzle with a stress level of 20 ksi or less is very conservative. For comparison purposes, the minimum required inspection coverage for the case with the stress level of the lower crack tip at 20 ksi is also provided.

The stress intensity factor expression for an axial through-wall flaw in a cylinder was obtained from the Stress Analysis of Cracks Handbook (2<sup>nd</sup> Edition) by Hiroshi Tada, where:

$$K_I = \sigma \sqrt{\pi a} F(\lambda)$$

and  $\lambda = a/\sqrt{Rt}$   
 $F(\lambda) = (1+1.25\lambda^2)^{1/2}$  for  $0 < \lambda \leq 1$   
 $F(\lambda) = 0.6+0.9\lambda$  for  $1 \leq \lambda \leq 5$

with a = half flaw length  
R = penetration nozzle mean radius  
t = penetration nozzle wall thickness  
 $\sigma$  = applied stress

The PWSCC Crack Growth Law recommended in MRP-55 Rev. 1 was used in the crack growth calculation and the vessel head temperature of 597°F was used for Palo Verde Units 1 and 2, and 595°F for Palo Verde Unit 3 in determining the PWSCC crack growth rate.

The minimum required inspection coverage on the downhill side of the head penetration nozzles has been determined to show that an undetected axial through-wall flaw will not reach the weld bottom in less than one fuel cycle (~1.5 Effective Full Power Years). The results are shown in Table 1 for Palo Verde Units 1 and 2 and Table 2 for Palo Verde Unit 3.

Table 1: Palo Verde Units 1&2 Minimum Required Inspection Coverage

Stress Level for Lower Crack Extremity = 20 ksi			
Nozzle Angle (°)	Penetration No. Applicability	Minimum Inspection Coverage Required Below the Weld on the Downhill Side (in)	EFPY for Upper Crack Tip to Reach the Bottom of Weld
0	1	0.45	1.8
7.5	2-21	0.45	2.0
28.0	22-45	0.35	1.9
35.7	46-85, 90-97	0.25	2.2
51.5	86-89	0.20	1.9

Stress Level for Lower Crack Extremity = 0 ksi			
Nozzle Angle (°)	Penetration No. Applicability	Minimum Inspection Coverage Required Below the Weld on the Downhill Side (in)	EFPY for Upper Crack Tip to Reach the Bottom of Weld
0	1	0.45	1.7
7.5	2-21	0.45	1.7
28.0	22-45	0.45	1.8
35.7	46-85, 90-97	0.40	1.7
51.5	86-89	0.35	1.9



**Table 2: Palo Verde Unit 3 Minimum Required Inspection Coverage**

Stress Level for Lower Crack Extremity = 20 ksi			
Nozzle Angle (°)	Penetration No. Applicability	Minimum Inspection Coverage Required Below the Weld on the Downhill Side (in)	EFPY for Upper Crack Tip to Reach the Bottom of Weld
0	1-29	0.30	2.5
31.5	30-81	0.20	2.2
47.6	82-85	0.20	2.8
49.5	90-97	0.20	3.5
51.5	86-89	0.20	4.4

Stress Level for Lower Crack Extremity = 0 ksi			
Nozzle Angle (°)	Penetration No. Applicability	Minimum Inspection Coverage Required Below the Weld on the Downhill Side (in)	EFPY for Upper Crack Tip to Reach the Bottom of Weld
0	1-29	0.40	1.7
31.5	30-81	0.35	2.0
47.6	82-85	0.30	2.4
49.5	90-97	0.30	3.4
51.5	86-89	0.20	2.4

The crack growth curves below the weld for Palo Verde Units 1, 2 and 3 are shown in Figures 1-10 for the case where the stress level at the lower crack tip of the through-wall axial flaw is at 0 ksi.

Figure 1 Palo Verde Unit 1& 2 Crack Growth Below The Weld  
(Center Penetration)

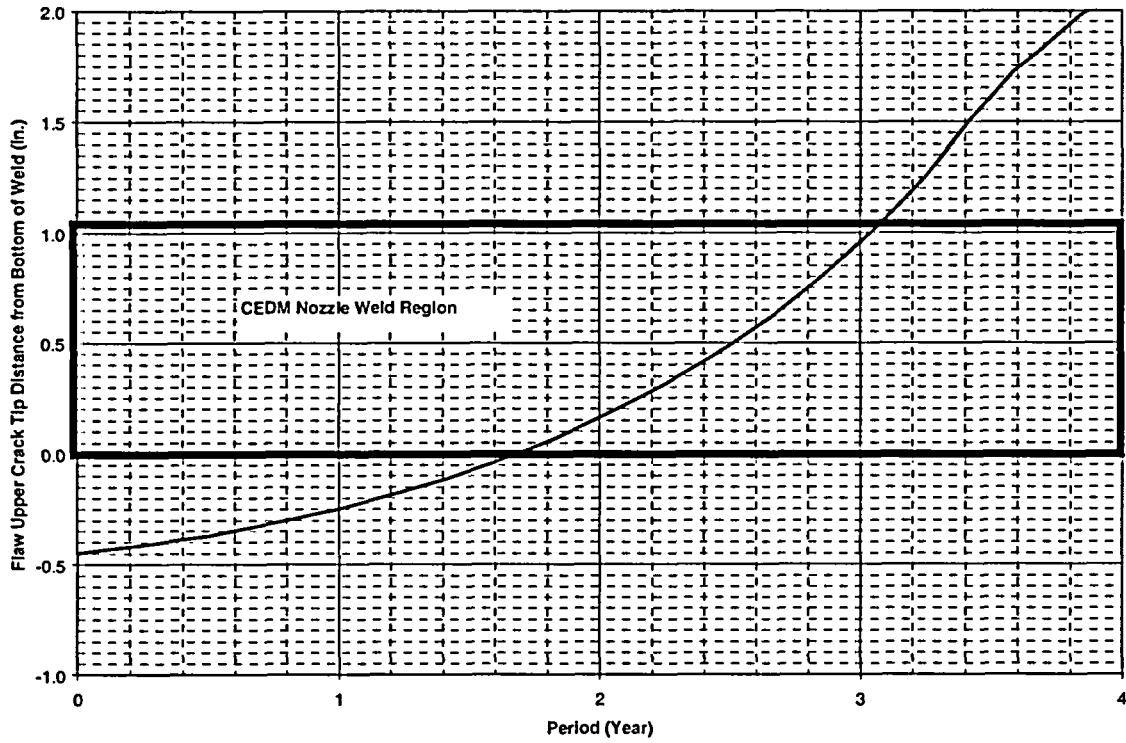


Figure 2 Palo Verde Unit 1& 2 Crack Growth Below The Weld  
(Downhill Side of 7.5° Penetration)

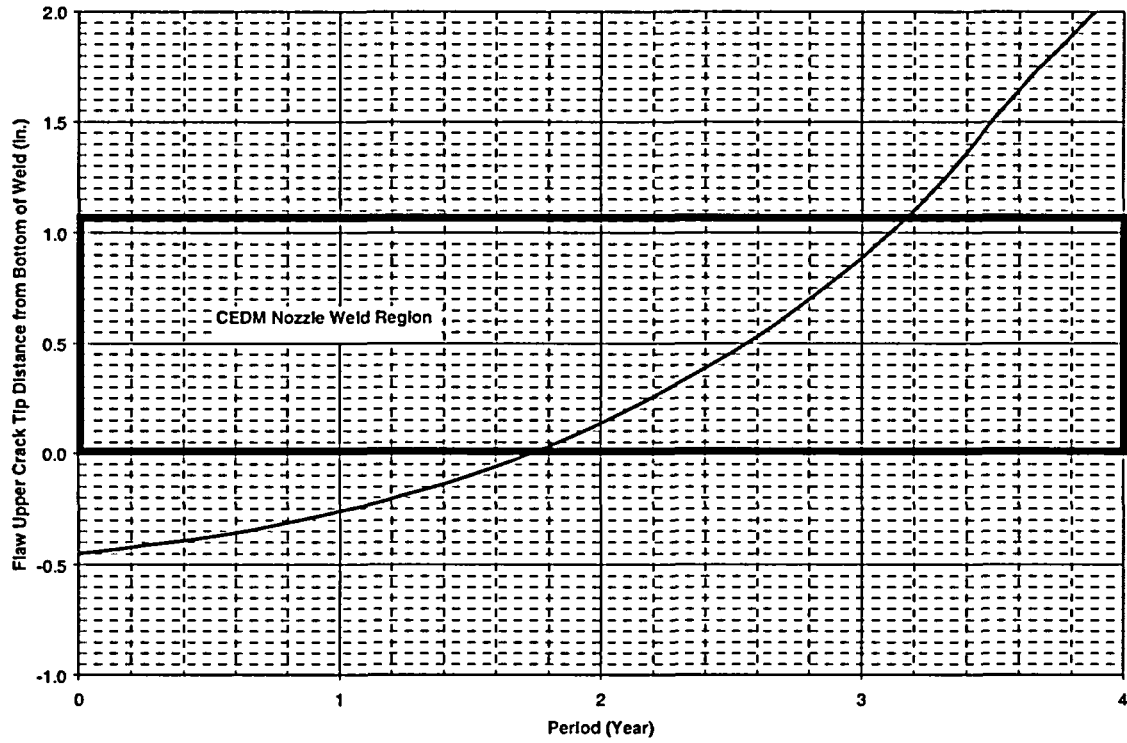


Figure 3 Palo Verde Unit 1& 2 Crack Growth Below The Weld  
(Downhill Side of 28.1° Penetration)

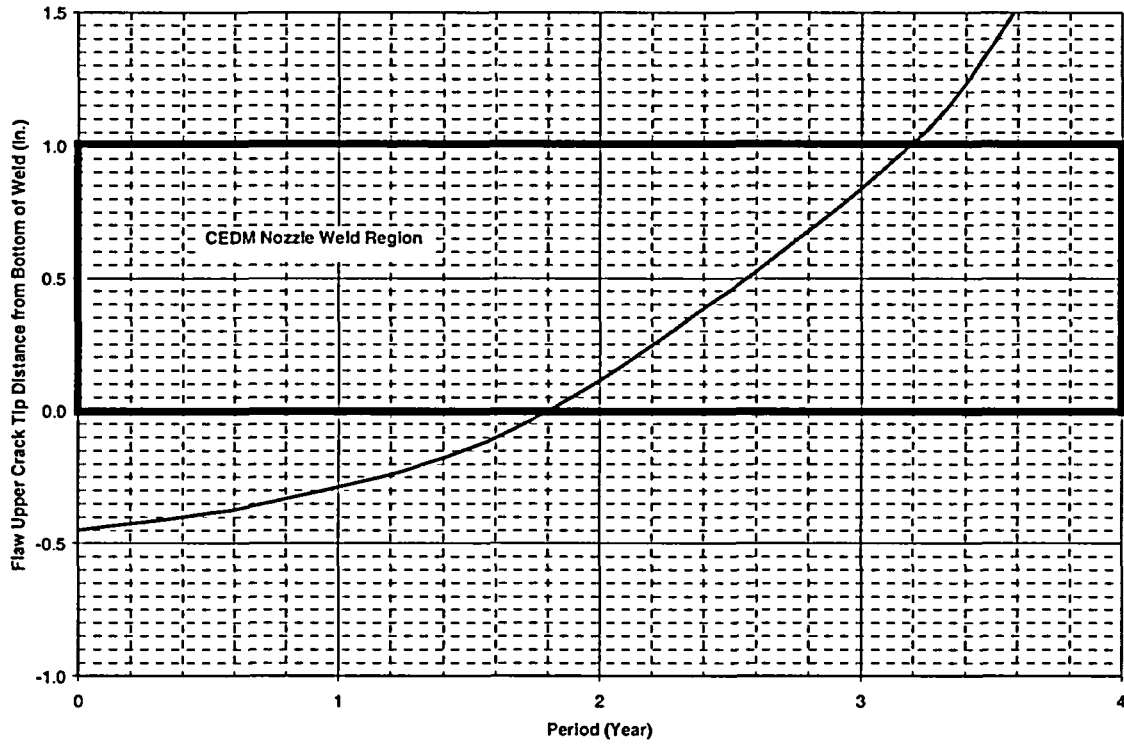


Figure 4 Palo Verde Unit 1& 2 Crack Growth Below The Weld  
(Downhill Side of 35.7° Penetration)

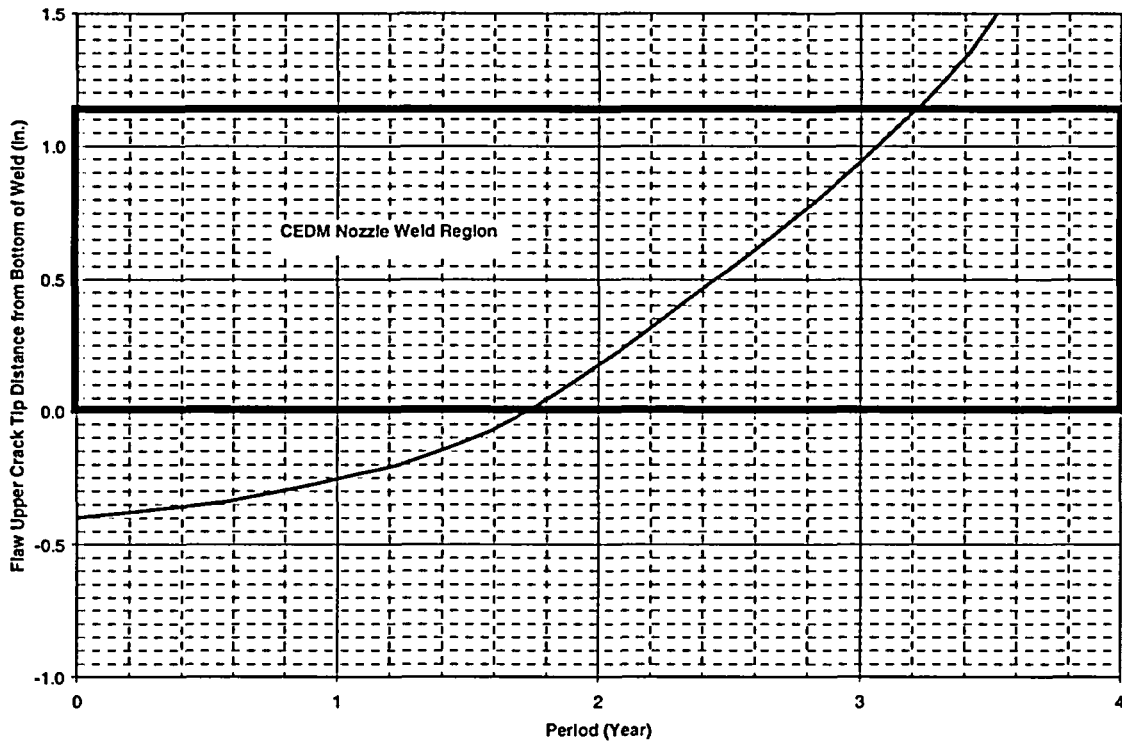


Figure 5 Palo Verde Unit 1& 2 Crack Growth Below The Weld  
(Downhill Side of 51.5° Penetration)

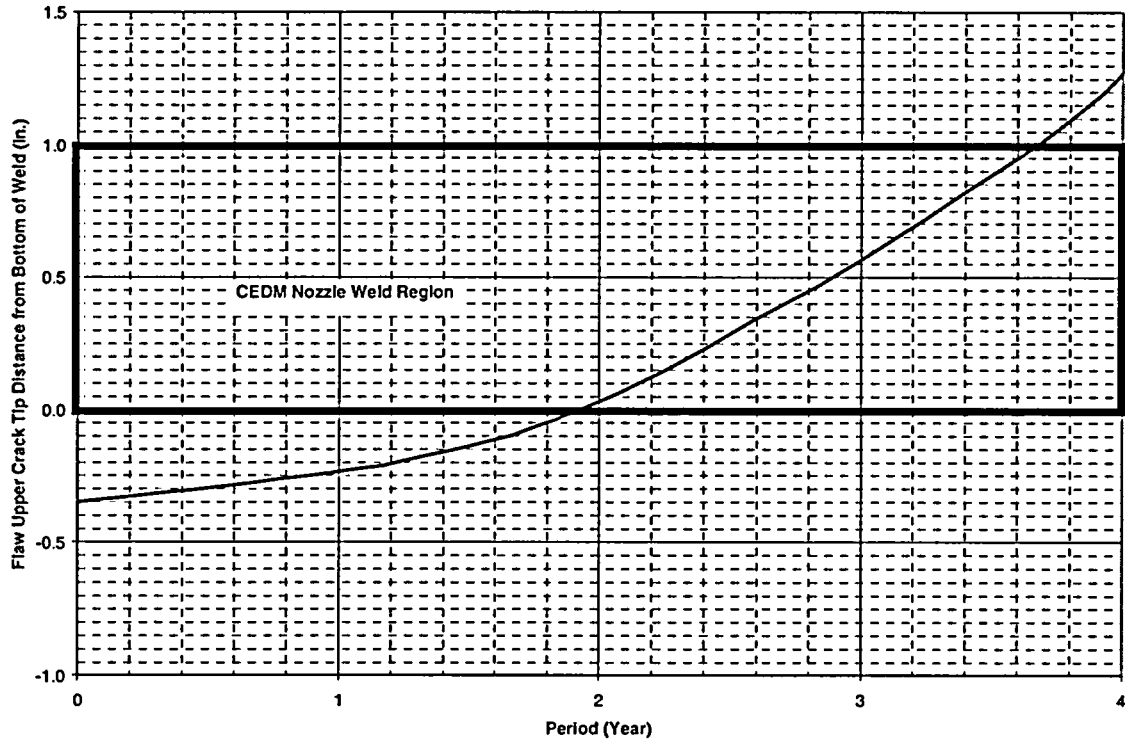


Figure 6 Palo Verde Unit 3 Crack Growth Below The Weld  
(Center Penetration)

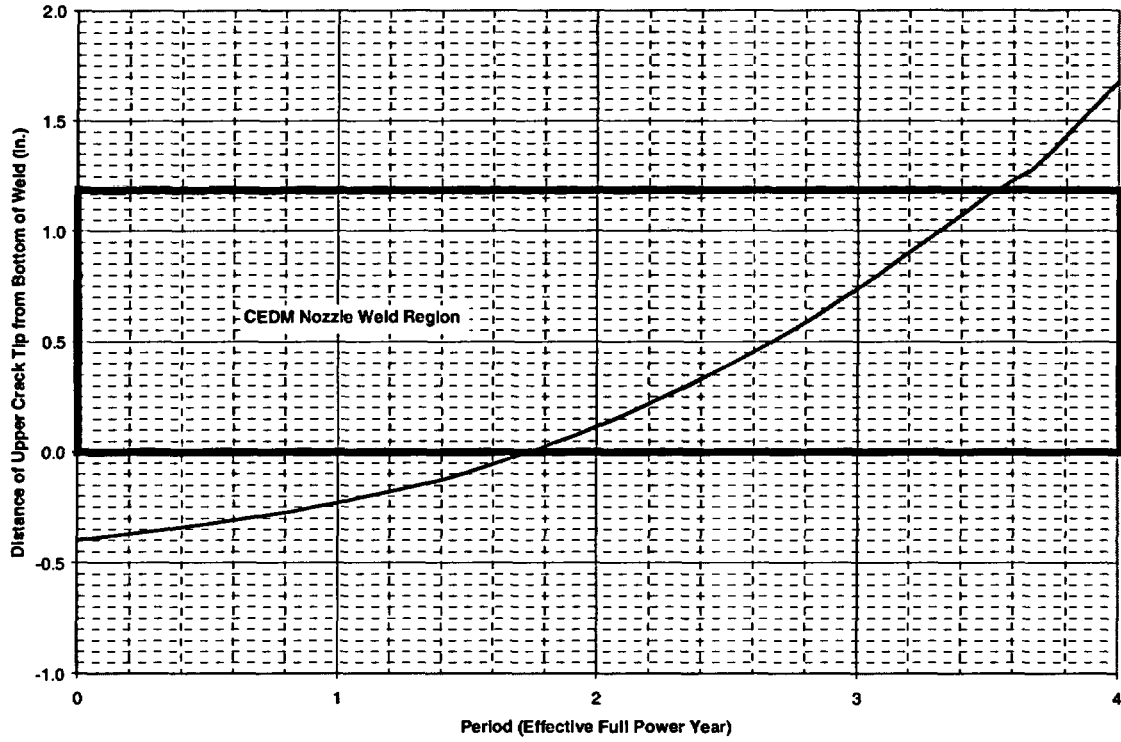




Figure 7 Palo Verde Unit 3 Crack Growth Below The Weld  
(Downhill Side of 31.5° Penetration)

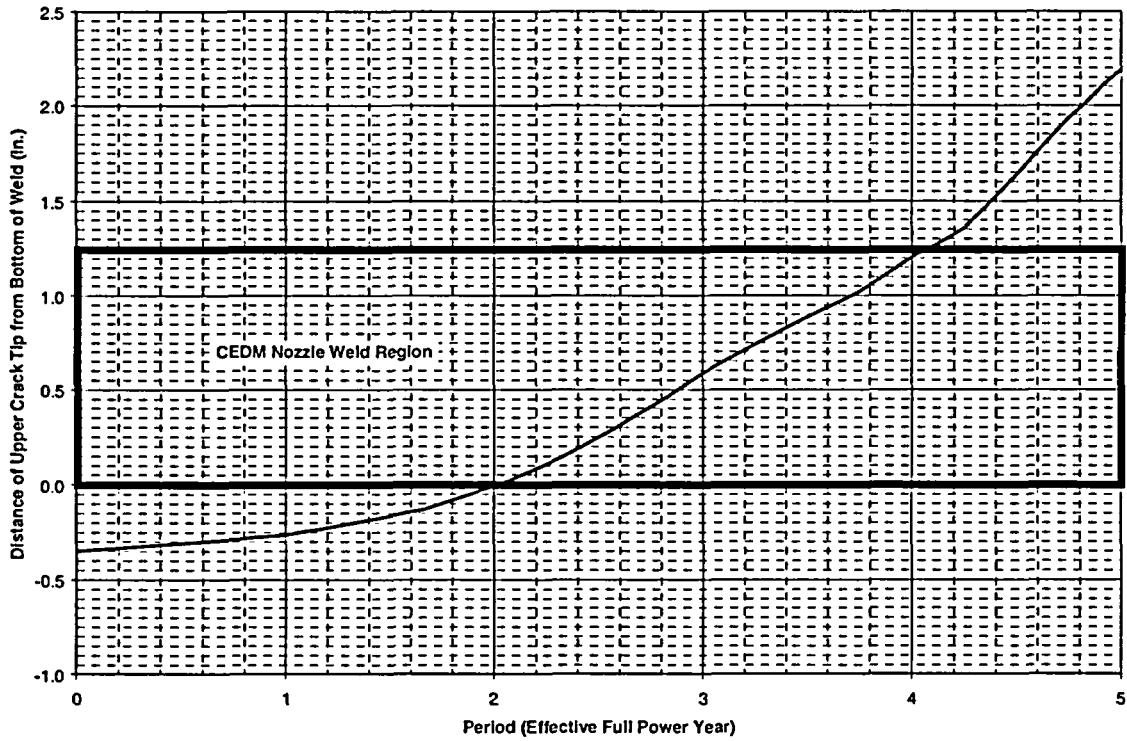


Figure 8 Palo Verde Unit 3 Crack Growth Below The Weld  
(Downhill Side of 47.6° Penetration)

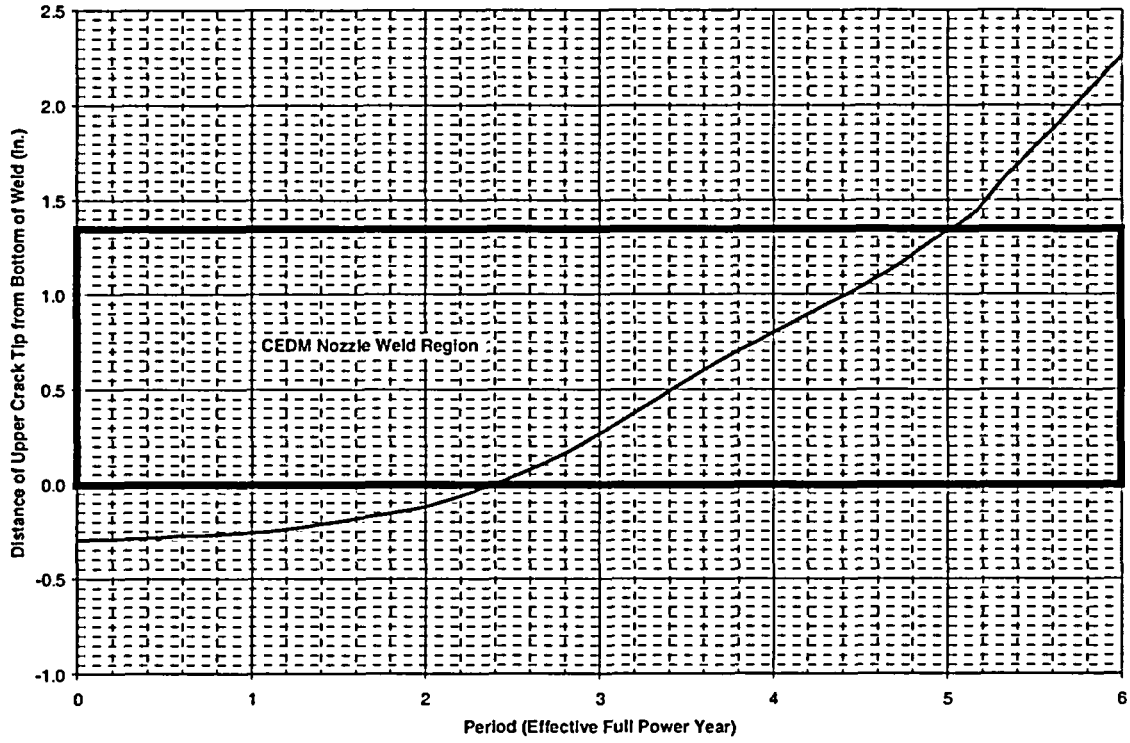


Figure 9 Palo Verde Unit 3 Crack Growth Below The Weld  
(Downhill Side of 49.5° Penetration)

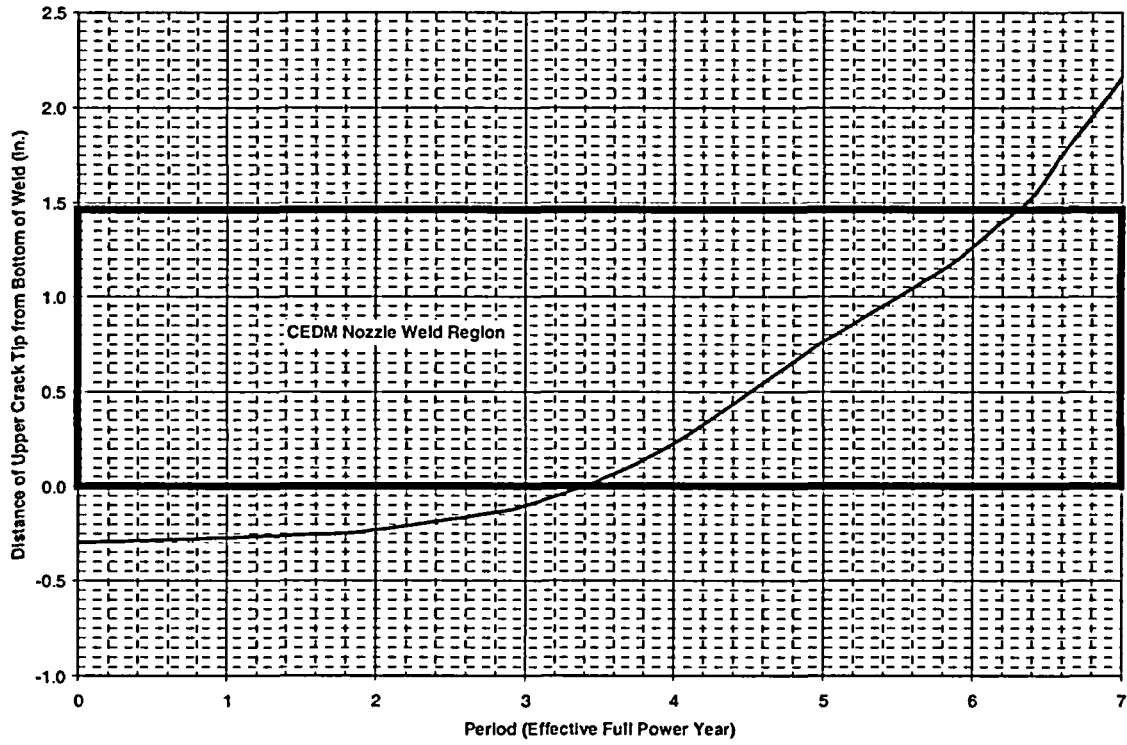
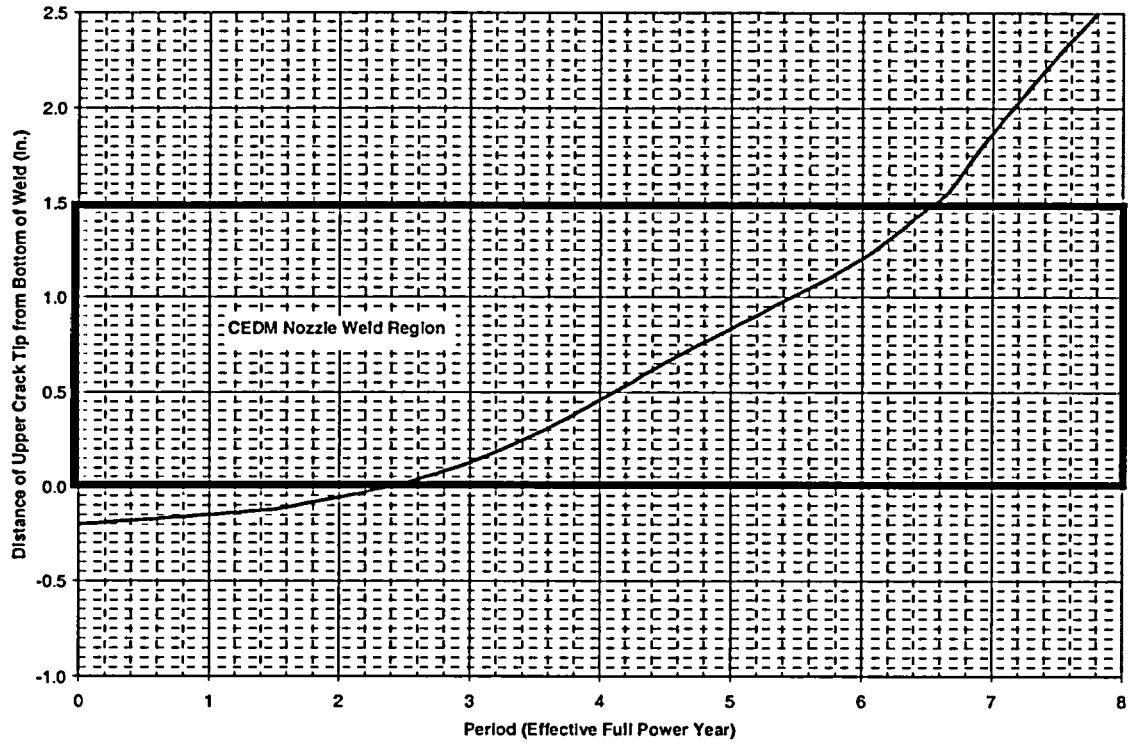


Figure 10 Palo Verde Unit 3 Crack Growth Below The Weld  
(Downhill Side of 51.5° Penetration)



**Relief Request No. 25  
Attachment 2:**

**Proprietary Affidavit Pursuant to 10 CFR 2.390**



Westinghouse Electric Company  
Nuclear Services  
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Pittsburgh, Pennsylvania 15230-0355  
USA

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

Direct tel: (412) 374-4643  
Direct fax: (412) 374-4011  
e-mail: greshaja@westinghouse.com

Our ref: CAW-04-1803

March 17, 2004

**APPLICATION FOR WITHHOLDING PROPRIETARY  
INFORMATION FROM PUBLIC DISCLOSURE**

Subject: WCAP-15817-P, Rev. 1 "Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: Palo Verde Units 1 and 2," dated October 2003 (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-04-1803 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Arizona Public Service Company.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-04-1803, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

A handwritten signature in black ink that reads "J. A. Gresham".

J. A. Gresham, Manager  
Regulatory Compliance and Plant Licensing

Enclosures

cc: D. Holland  
B. Benney  
E. Peyton

bcc: J. A. Gresham (ECE 4-7A) 1L  
R. Bastien, 1L, 1A (Nivelles, Belgium)  
C. Brinkman, 1L, 1A (Westinghouse Electric Co., 12300 Twinbrook Parkway, Suite 330, Rockville, MD 20852)  
RCPL Administrative Aide (ECE 4-7A) 1L, 1A (letter and affidavit only)



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

Arizona Public Service Company  
Palo Verde Nuclear Generating Station  
5801 S. Wintersburg Road  
Tonopah, AZ 85354-7529

Direct tel: (412) 374-4643  
Direct fax: (412) 374-4011  
e-mail: Greshaja@westinghouse.com

Attn: Mr. Michael Powell

Ref: LTR-NRC-04-14

March 17, 2004

Arizona Public Service Company  
Palo Verde Nuclear Generating Station Units 1 and 2  
Transmittal of Enclosures for Submittal to the NRC

Dear Mr. Powell:

This letter transmits the following four enclosures for your submittal to the NRC for review and approval of WCAP-15817-P:

1. Information which should be included in your NRC transmittal letter.
2. Proprietary Information Notice to be attached to your NRC transmittal letter.
3. Copyright Notice to be attached to your NRC transmittal letter.
4. Westinghouse letter, "Application for Withholding Proprietary Information from Public Disclosure" (CAW-04-1803) with Affidavit CAW-04-1803.

Please transmit the original of Item 4 to the NRC in your transmittal.

If you have any questions, please do not hesitate to contact us.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J. A. Gresham'.

J. A. Gresham, Manager  
Regulatory Compliance & Plant Licensing

Enclosures



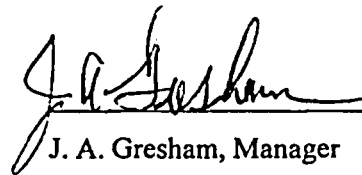
AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

SS

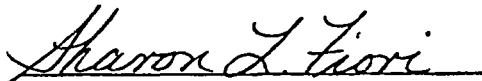
COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

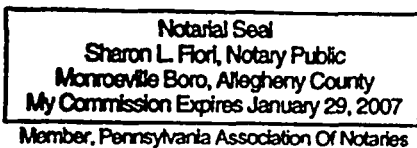
  
\_\_\_\_\_

J. A. Gresham, Manager  
Regulatory Compliance and Plant Licensing

Sworn to and subscribed  
before me this 17<sup>th</sup> day  
of March, 2004

  
\_\_\_\_\_

Notary Public



- (1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.
- (2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.
- (3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.
- (4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.
  - (i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.
  - (ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

- (a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

- (b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.
- (c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.
- (d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.
- (e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.
- (f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

- (a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.
- (b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.
- (c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

- (d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.
  - (e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.
  - (f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.
- (iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.
- (iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.
- (v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in WCAP-15817-P, Rev. 1 "Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: Palo Verde Units 1 and 2" (Proprietary) dated October, 2003, being transmitted by Arizona Public Service Company letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted for use by Westinghouse for Palo Verde Units 1 and 2 is expected to be applicable for other licensee submittals in response to certain NRC requirements for justification of the use of fracture mechanics analyses to support continued safe operation of Palo Verde Units 1 and 2 with the presence of a crack in a control element drive mechanism head penetration.

This information is part of that which will enable Westinghouse to:

- (a) Determine the allowable time of safe operation if cracks are found.
- (b) Assist the customer to obtain NRC approval.

Further this information has substantial commercial value as follows:

- (a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for licensing documentation.
- (b) Westinghouse can sell support and defense of continued safe operation with the presence of cracks in a control rod drive head penetration.
- (c) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar calculations and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

## PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

## **COPYRIGHT NOTICE**

The reports transmitted herewith each bear a Westinghouse copyright notice. The NRC is permitted to make the number of copies of the information contained in these reports which are necessary for its internal use in connection with generic and plant-specific reviews and approvals as well as the issuance, denial, amendment, transfer, renewal, modification, suspension, revocation, or violation of a license, permit, order, or regulation subject to the requirements of 10 CFR 2.390 regarding restrictions on public disclosure to the extent such information has been identified as proprietary by Westinghouse, copyright protection notwithstanding. With respect to the non-proprietary versions of these reports, the NRC is permitted to make the number of copies beyond those necessary for its internal use which are necessary in order to have one copy available for public viewing in the appropriate docket files in the public document room in Washington, DC and in local public document rooms as may be required by NRC regulations if the number of copies submitted is insufficient for this purpose. Copies made by the NRC must include the copyright notice in all instances and the proprietary notice if the original was identified as proprietary.

**Arizona Public Service Company**

**Letter for Transmittal to the NRC**

The following paragraphs should be included in your letter to the NRC:

Enclosed are:

1. 6 copies of WCAP-15817-P, Rev. 1, "Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: Palo Verde Units 1 and 2" dated October 2003 (Proprietary)

Also enclosed is Westinghouse authorization letter CAW-04-1803, accompanying affidavit, Proprietary Information Notice, and Copyright Notice.

As Item 1 contains information proprietary to Westinghouse Electric Company LLC, it is supported by an affidavit signed by Westinghouse, the owner of the information. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b) (4) of Section 2.390 of the Commission's regulations.

Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR Section 2.390 of the Commission's regulations.

Correspondence with respect to the copyright or proprietary aspects of the items listed above or the supporting Westinghouse Affidavit should reference CAW-04-1803 and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.



**Relief Request No. 25  
Attachment 3:**

**WCAP-15817-P Revision 1 (Proprietary)**