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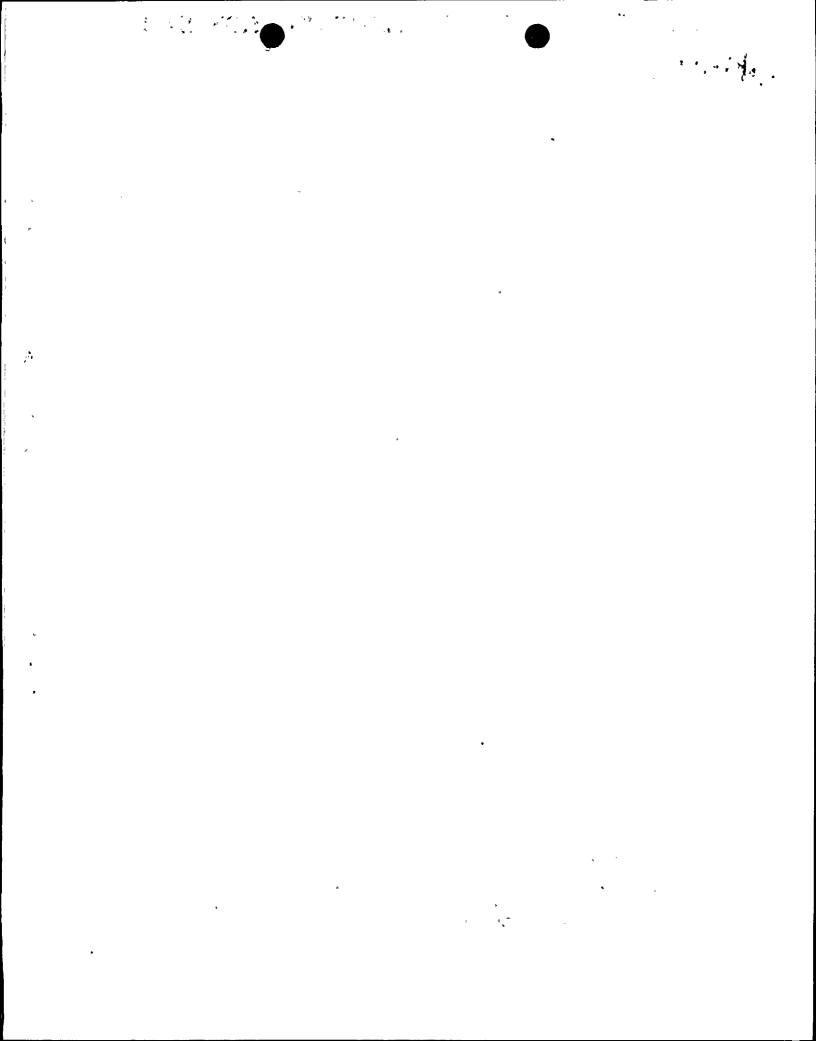
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Arizona Public Service Company

PALO VERDE NUCLEAR GENERATING STATION P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

JAMES M. LEVINE VICE PRESIDENT NUCLEAR PRODUCTION

254-01878-JML/KAC January 13, 1992

Docket Nos. STN 50-528/529/530

U. S. Nuclear Regulatory Commission Attn: Document Control Desk Mail Station P1-37 Washington, D.C. 20555

Dear Sirs:

Subject: Palo Verde Nuclear Generating Station (PVNGS)

Units 1, 2, and 3

Monthly Operating Reports for December 1991

File: 92-024-404; 92-056-026

Attached are the Monthly Operating Reports for December 1991, prepared and submitted pursuant to Specification 6.9.1.6 of Appendix A (Technical Specifications) to the PVNGS Units 1, 2, and 3 Operating Licenses. By copy of this letter, Arizona Public Service Company is also forwarding the Monthly Operating Reports to the Regional Administrator, NRC Region V.

If you have any questions, please contact Mr. Kent A. Chavet at (602) 340-4718.

Very truly yours,

JML/KAC/kac Attachments

J. B. Martin cc:

D. H. Coe

A. C. Gehr

A. H. Gutterman

INPO Records Center Utility Data Institute (all w/attachments)

• • , 

#### NRC MONTHLY OPERATING REPORT

DOCKET NO. <u>50-528</u> UNIT NAME PVNGS-1 DATE 1/8/92 COMPLETED BY K.A. Chavet

TELEPHONE

(602) 340-4718

#### **OPERATING STATUS**

Unit Name: Palo Verde Nuclear Generating Station, Unit 1

2. Reporting Period: December 1991

3. Licensed Thermal Power (MWt): 3800

4. Nameplate Rating (Gross MWe):

5. Design Electrical Rating (Net MWe): 1270

Maximum Dependable Capacity (Gross MWe): 1303 6.

7. Maximum Dependable Capacity (Net MWe):

8. If Changes Occur In Capacity Ratings (Item Numbers 3 Through 7)

Since Last Report, Give Reasons: N/A

9. Power Level to Which Restricted, If Any (Net MWe): None

10. Reasons For Restrictions, If Any: N/A

	UNIT 1 GENERATING STATISTICS	This Month	Yrto-Date	Cumulative
11.	Hours in Reporting Period	744	8,760	51,936
12.	Hours Reactor was Critical	744.0	7,598.9	29,059.1
13.	Reactor Reserve Shutdown Hours	0.0	0.0	0.0
14.	Hours Generator was On-Line	744.0	7,568.5	28,322.1
15.	Unit Reserve Shutdown Hours	0.0	0.0	0.0
16.	Gross Thermal Energy Generated (MWH)	2,822,439	28,470,155	103,864,256
17.	Gross Electrical Energy Generated (MWH)	980,400	9,876,100	36,048,700
18.	Net Electrical Energy Generated (MWH)	928,678	9,312,140	33,824,792
19.	Unit Service Factor: (%)	100.0%	86.4%	54.5%
20.	Unit Availability Factor (%)	100.0%	86.4%	54.5%
21.	Unit Capacity Factor (Using MDC Net)	102.2%	. 87.1%	53.3%
22.	Unit Capacity Factor (Using DER Net)	98.3%	83.7%	51.3%
23.	Unit Forced Ourage Race (%)	0.0%	2.8%	20.2%

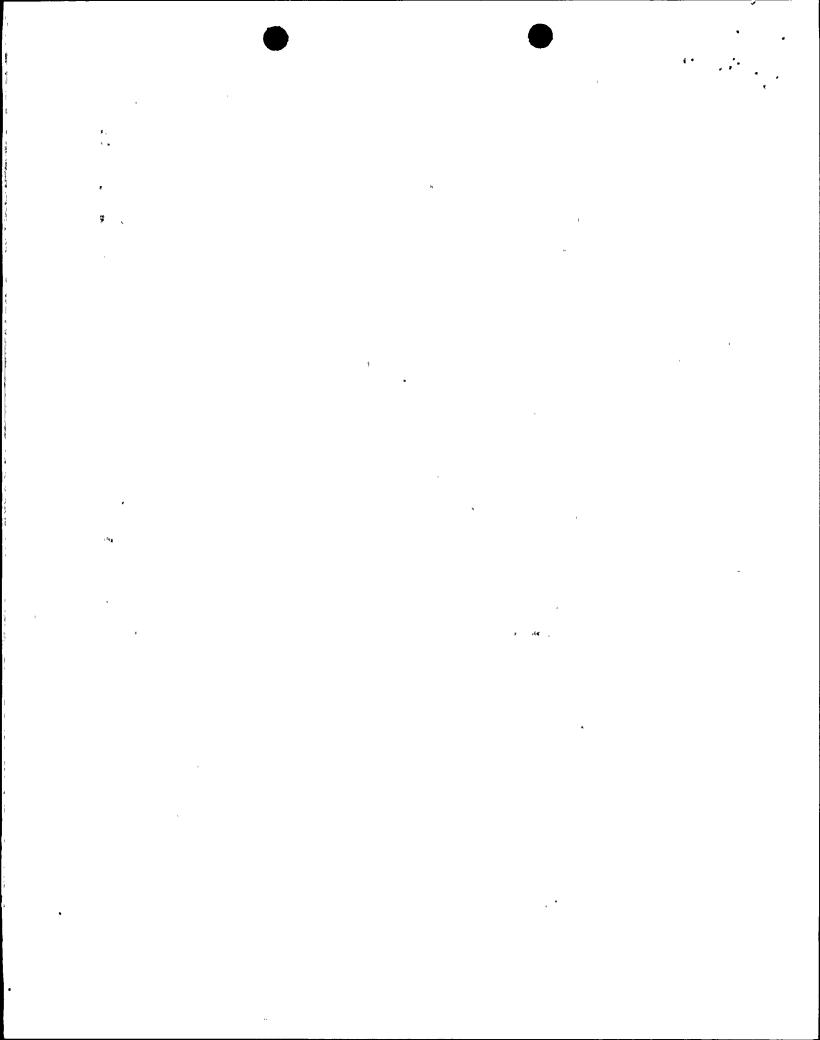
Shutdowns Scheduled Over Next 6 Months (Type, Date and Duration of Each): Refueling 24. outage, February 15,1992, 70 days

25. If Shutdown At End of Report Period, Estimated Date of Start-up: N/A\_

> INITIAL CRITICALITY INITIAL ELECTRICITY COMMERCIAL OPERATION

Forecast 05/85 06/85 11/85

Achieved 05/25/85 06/10/85 01/28/86



## AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO.	50-528
UNIT NAME	PVNGS-1
DATE	1/8/92
COMPLETED BY	K.A. Chavet
TELEPHONE	(602) 340-4718

MONTH: December 1991

MONIN	. December 1991	
DAY	AVERAGE DAILY POWER LEVEL	DAY AVERAGE DAILY POWER LEVEL
1	1245	171251
2 _	1246	181249
3 _	1246	191250
4 _	1244	201250
5 _	1252	211242
6 _	1254	22 1248
7 _	1253	23 1248
8 _	1252	24 1248
9 _	1251	251249
10 _	1248	261251
11 _	1250	271241
12 _	1252	281220
13 _	1252	291248
14 _	1250	301249
15 _	1251	311250
16	1251	•

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### REFUELING INFORMATION

50-528

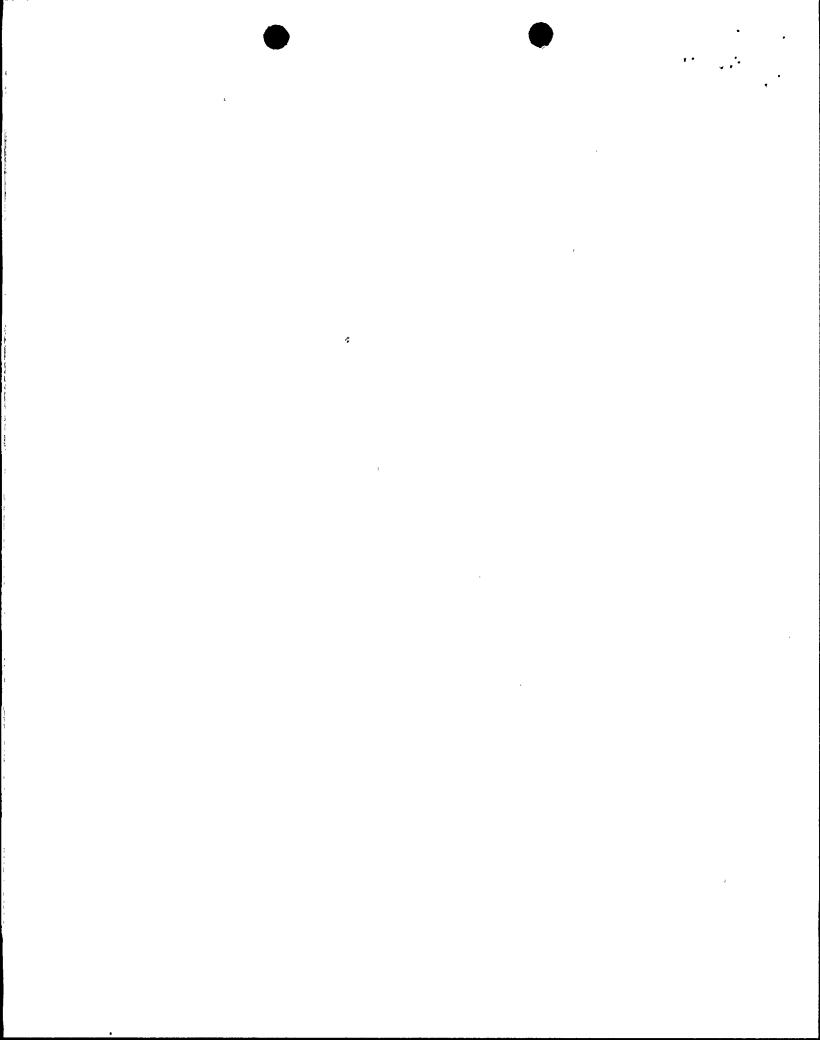
PVNGS-1

1/8/92

DOCKET NO. UNIT NAME

DATE

	TELEPHONE (602) 340-4718
1.	Scheduled date for next refueling shutdown.
	02/15/92, 3rd refueling
2.	Scheduled date for restart following refueling.
	04/26/92
3.	Will refueling or resumption of operation thereafter require a Technical Specification change or other license amendment?
	Yes. Figures 3.2-2 and 3.2-2A of the Technical Specifications will require revision to reflect different DNBR margin limits.
4.	Scheduled date for submitting proposed licensing action and supporting information.
	Information to support the revision to Figures 3.2-2 and 3.2-2A was submitted on 12/24/91.
5.	Important Licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, and new operating procedures.
	The Unit 1 Cycle 4 nuclear design was performed using the DIT, ROCS, and MC computer codes described in Topical Report CENPD-266-P-A with the improvements in anisotropic scattering, higher order interface currents, nodal expansion method, and assembly discontinuity factors. Biases and uncertainties used in the Unit 1 Cycle 4 analysis were established by comparing results obtained from analytical calculation with measured data to insure that 95/95 confidence limits are maintained in the safety analysis.
6.	The number of fuel assemblies.
	a) In the core241 b) In the spent fuel storage pool188
7.	Licensed spent fuel storage capacity1329
	Intended change in spent fuel storage capacity. None
8.	Projected date of last refueling that can be discharged to spent fuel storage pool assuming present capacity.
	2004 (18 Month reloads and full core discharge capability).



### SUMMARY OF OPERATING EXPERIENCE FOR THE MONTH

DOCKET NO. 50-528 UNIT NAME PVNGS-1 DATE 1/8/92 COMPLETED BY K.A. Chavet

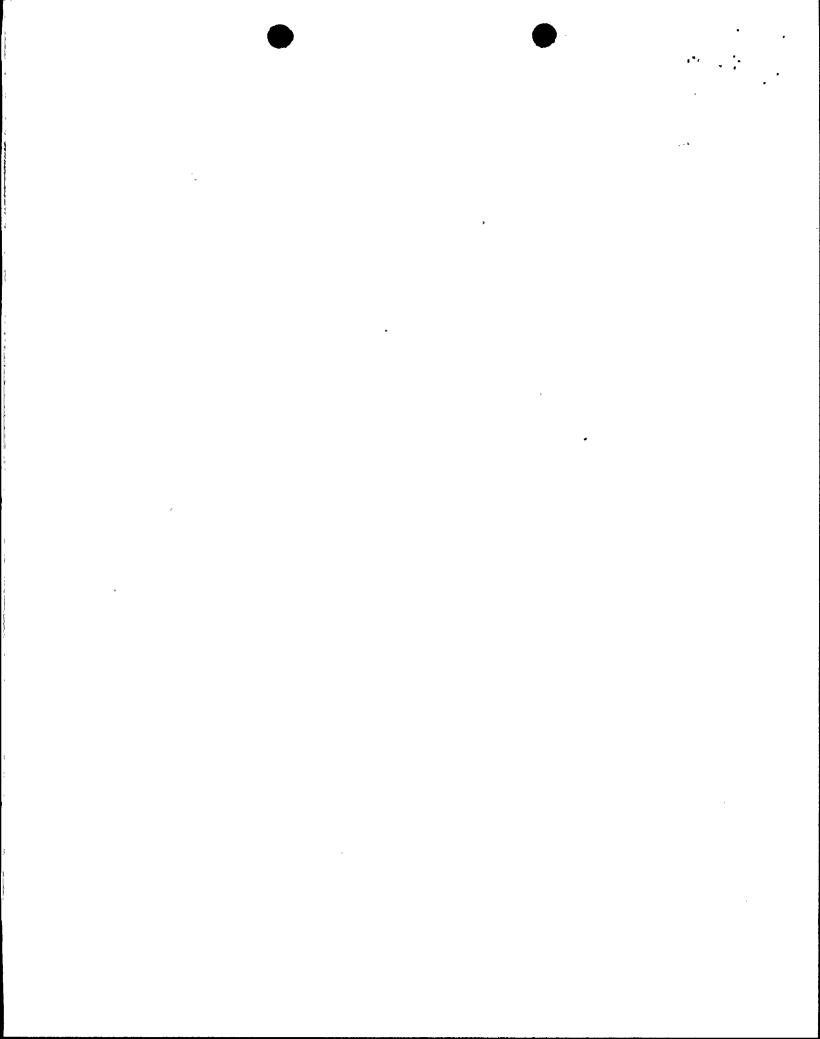
TELEPHONE

(602) 340-4718

December 1991

Unit began the month in Mode 1, 100% RX power. 12/01 0000

12/31 Ended the month in Mode 1, 100% RX power. 2400



# SHUTDOWNS AND POWER REDUCTIONS December 1991

 DOCKET NO
 50-528
 ...

 UNIT NAME
 PVNGS-1
 ...

 DATE
 1/8/92

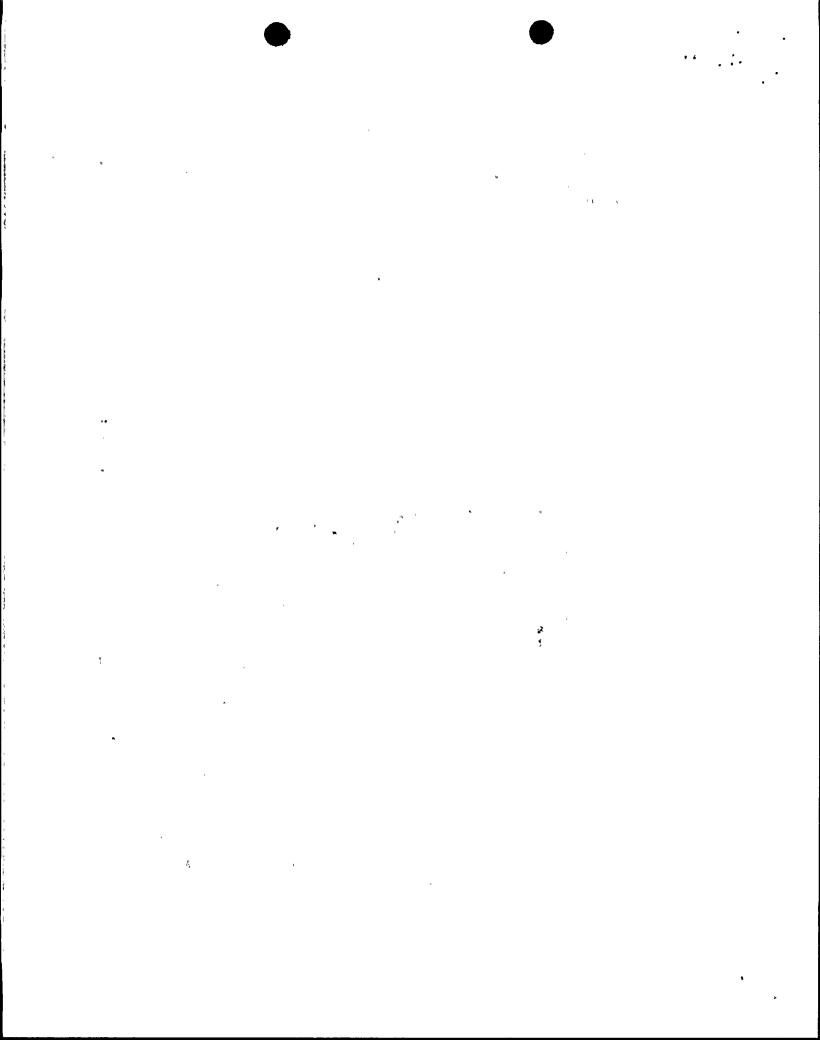
 COMPLETED
 BY
 K.A. Chavet
 ...

 TELEPHONE
 (602)
 340-4718

			Outage		Method of			-	Cause and Corrective
No.	Date	Type <sup>1</sup>	Duratio Hours	n Reason <sup>2</sup>	Shutting Down Reactor <sup>3</sup>	LER No.	System Code <sup>4</sup>	Component Code <sup>5</sup>	Action to Prevent Recurrence
110.	Ducc	1990	Modes	Reason	Down Reactor	DER NO.	oouc	ooue	Hevent Recallence

No reactor shutdowns or significant power reductions occurred during the month.

<sup>1</sup> F-Forced	<sup>2</sup> Reason:	<sup>3</sup> Method:	Exhibit F-Instructions
S-Scheduled	A-Equipment Failure(Explain)	1-Manual	for Preparation of the Data
	B-Maintenance or Test	2-Manual Scram	Entry Sheets for Licensee
	C-Refueling	3-Automatic Scram	Event Report (LER) File
	D-Regulatory Restriction	4-Continuation from	(NUREG 0161)
	E-Operator Training & License Examination	Previous Month 5-Reduction of 20% or	
	F-Administrative	Greater in the Past	<sup>5</sup> Exhibit H-Same Source
	G-Operational Error	24 Hours	
	H-Other (Explain)	9-Other-(Explain)	
		-	



#### NRC MONTHLY OPERATING REPORT

DOCKET NO. UNIT NAME

<u>50-529</u> PVNGS-2

DATE

1/8/92

COMPLETED BY K.A. Chavet

TELEPHONE

(602) 340-4718

#### OPERATING STATUS

Unit Name: Palo Verde Nuclear Generating Station, Unit 2

2. Reporting Period: December 1991

3. Licensed Thermal Power (MWt): 3800

Nameplate Rating (Gross MWe): 4. <u>1403</u>

5. Design Electrical Rating (Net MWe): 1270

Maximum Dependable Capacity (Gross MWe): 1303 6.

Maximum Dependable Capacity (Net MWe): 7.

8. If Changes Occur In Capacity Ratings (Item Numbers 3 Through 7)

Since Last Report, Give Reasons: N/A

9. Power Level to Which Restricted, If Any (Net MWe): None

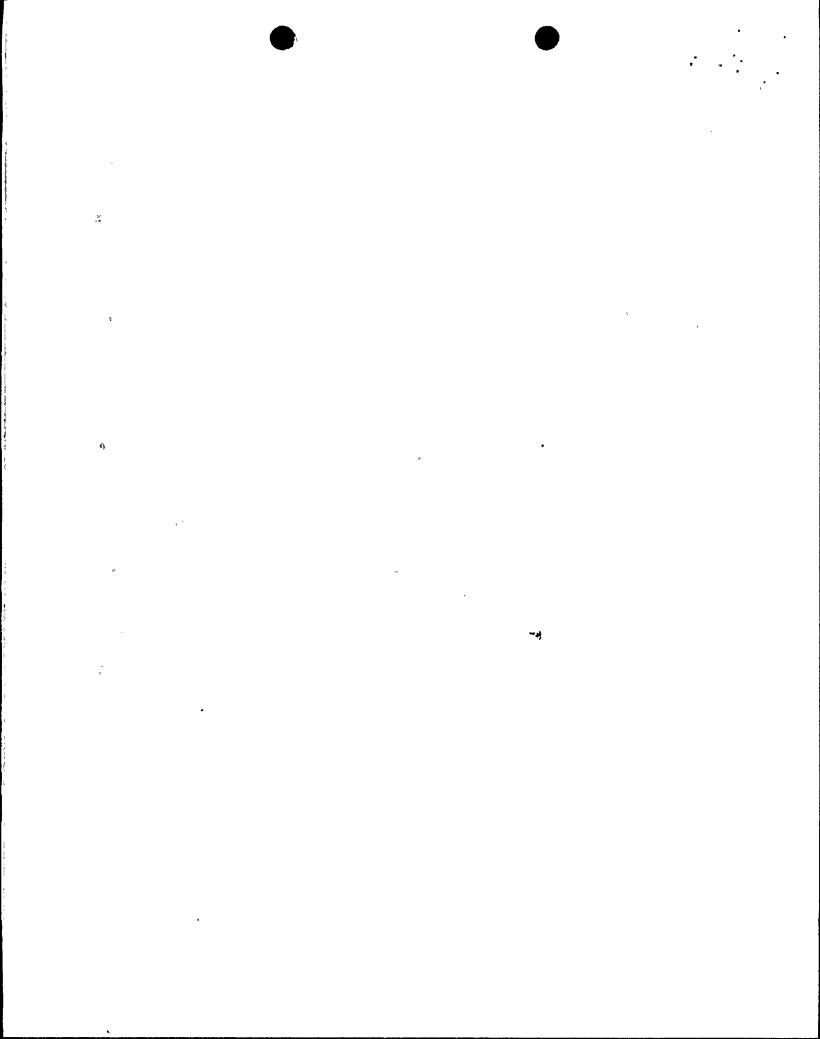
10. Reasons For Restrictions, If Any: N/A

	UNIT 2 GENERATING STATISTICS	This Month	Yrto-Date	Cumulative
11.	Hours in Reporting Period	744	8,760	46,320
12.	Hours Reactor was Critical	0.0	6,718.5	31,345.8
13.	Reactor Reserve Shutdown Hours	0.0	0.0	0
14.	Hours Generator was On-Line	0.0	6,690.9	30,714.3
15.	Unit Reserve Shutdown Hours	0.0	0.0	0
16.	Gross Thermal Energy Generated (MWH)	0	25,224,817	112,946,218
17.	Gross Electrical Energy Generated (MWH)	0	8,778,500	39,406,070
18.	Net Electrical Energy Generated (MWH)	0	8,265,186	36,890,215
19.	Unit Service Factor (*)	0.0%	76.4%	66.3%
20.	Unit Availability Factor (%)	0.0%	76.4%	66.3%
21.	Unit Capacity Factor (Using MDC Net)	0.0%	77.3%	65.2%
22.	Unit Capacity Factor (Using DER Net)	0.0%	74.3%	62.7%
23.	Unit Forced Outage Rate (%)	0.0%	3.5%	7.4%

- 24. Shutdowns Scheduled Over Next 6 Months (Type, Date and Duration of Each): Unit was shut down for refueling outage on October 17, 1991.
- 25. If Shutdown At End of Report Period, Estimated Date of Start-up: Refueling outage ended on 1/8/92.

INITIAL CRITICALITY INITIAL ELECTRICITY COMMERCIAL OPERATION Forecast 03/86\_ 06/86 11/86

Achieved 04/18/86 05/20/86 09/19/86



### AVERAGE DAILY UNIT POWER LEVEL

<u>50-529</u>

PVNGS-2

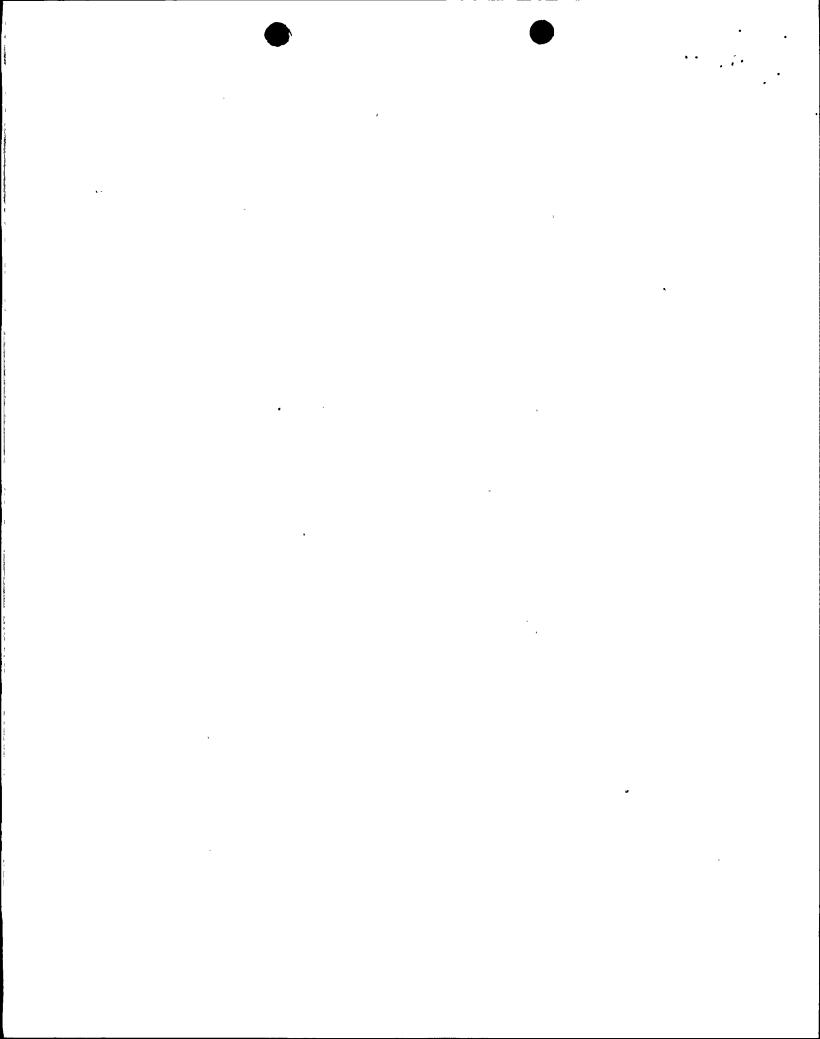
DOCKET NO.

UNIT NAME

			DATE 1/8/92 COMPLETED BY K.A. Chavet TELEPHONE (602) 340-4718
MONTH	H: December 1991		
DAY	AVERAGE DAILY POWER LEVEL	DAY	AVERAGE DAILY POWER LEVEL
1 _	0	17	0
2 _	0	18	<u> </u>
3 _	0	19	0
4 -	0	20	0
5 _	.0	21	0
6 _	0	22	0
7 _	0	23	0
8 _	0	24	0
9 _	0		0
10 _	0	26	0
11 _	.0	27	0
12 _	0	28	0
13 _	0	29	0
14 _	· 0	30	0
15	0		

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16 \_



### REFUELING INFORMATION

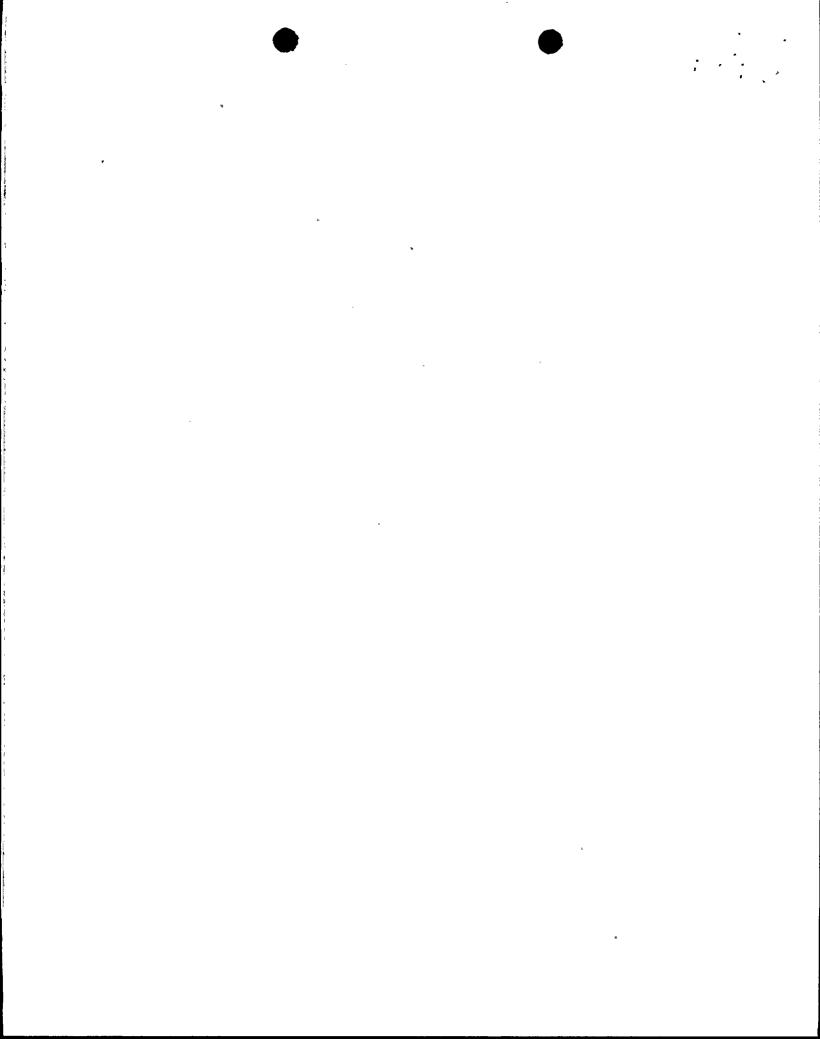
DOCKET NO.

UNIT NAME

50-529

	DATE 1/8/92  COMPLETED BY <u>K.A. Chavet</u> TELEPHONE (602) 340-4718
1.	Scheduled date for next refueling shutdown.
	Unit was shut down on 10/17/91 for refueling.
2.	Scheduled date for restart following refueling.
	The refueling outage ended on 1/8/92.
3.	Will refueling or resumption of operation thereafter require a Technical Specification change or other license amendment?
	No. Analyses indicate that no proposed Technical Specification change or other license amendment will be required as a result of the next refueling.
4.	Scheduled date for submitting proposed licensing action and supporting information.
	N/A
5.	Important Licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, and new operating procedures.
	The Unit 2 Cycle 4 nuclear design was performed using the DIT, ROCS and MC computer codes described in Topical Report CENPD-266-P-A with improvements in anisotropic scattering, higher order interface currents, nodal expansion method and assembly discontinuity factors. The increased accuracy of the improved methodology was not credited in the safety analysis, as the larger of the uncertainties associated with the previous code versions and improved code versions was used. This approach yielded the most conservative results. The Unit 2 Cycle 4 reload is otherwise typical of other PVNGS cycles.
6.	The number of fuel assemblies.
	a) In the core. 241 b) In the spent fuel storage pool. 288
7.	Licensed spent fuel storage capacity1329
	Intended change in spent fuel storage capacity. None
8.	Projected date of last refueling that can be discharged to spent fuel storage pool assuming present capacity.

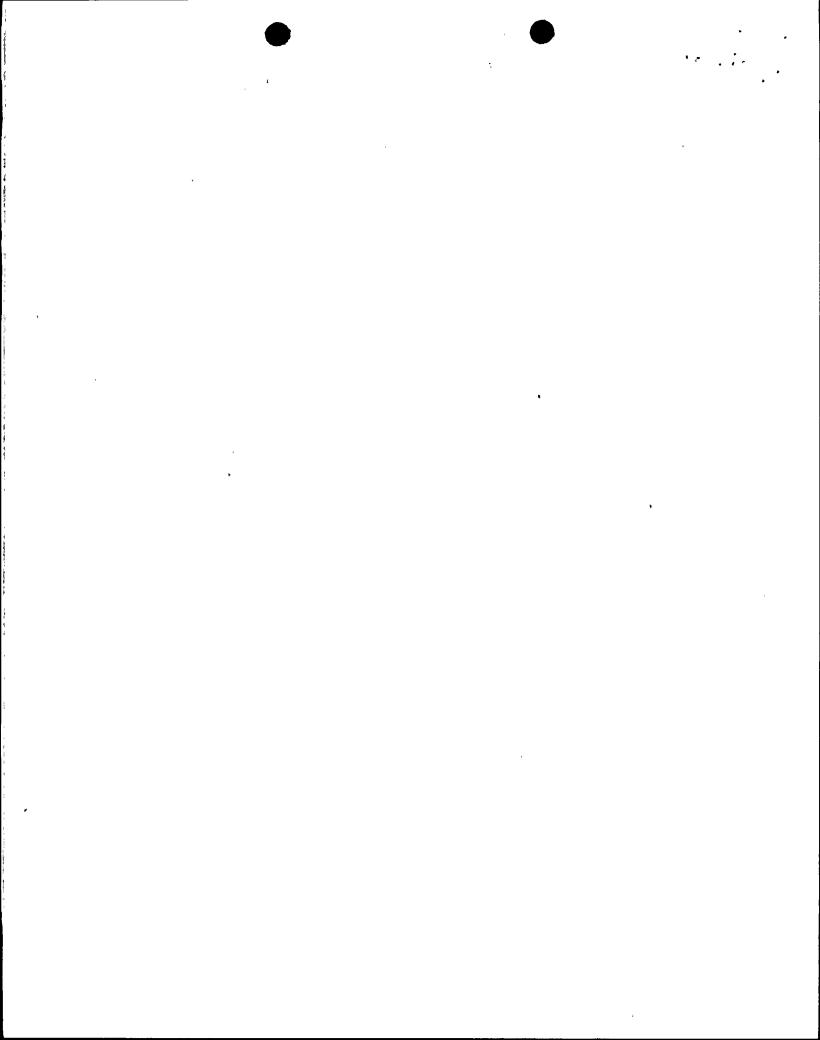
2004 (18 Month reloads and full core discharge capability).



## SUMMARY OF OPERATING EXPERIENCE FOR THE MONTH

DOCKET NO.	50-529
UNIT NAME	PVNGS-2
DATE	1/8/92
COMPLETED BY	K.A. Chavet
TELEBRONE	7602) 3/0-/718

December 199	<u>1</u>	
12/01	0000	Began the month in Mode 6 with core reload in progress.
12/12	1831	Entered Mode 5.
12/31	0501	Entered Mode 4.
12/31	2400	Unit ended the month in Mode 4 with RCS heat-up to Mode 3 in progress.



# SHUTDOWNS AND POWER REDUCTIONS December 1991

DOCKET NO	50-529 •		
UNIT NAME	PVNGS-2 ·		
DATE	1/8/92 .		
COMPLETED BY			
TELEPHONE	(602) 340-4718		

No.	Date	Type <sup>1</sup>	Outage Duration Hours		Method of Shutting Down Reactor <sup>3</sup>	LER No.	System Code <sup>4</sup>	Component Code <sup>5</sup>	Ac	and Corr ction to nt Recurr		
91-06	10/17/91	. s	744.0	С	4	N/A	N/A	N/A	Unit schedu	shut ıled refu	down	for

<sup>1</sup> F-Forced	<sup>2</sup> Reason:	<sup>3</sup> Method:	Exhibit F-Instructions
S-Scheduled	A-Equipment Failure(Explain)	1-Manual	for Preparation of the Data
	B-Maintenance or Test	2-Manual Scram	Entry Sheets for Licensee
	C-Refueling	3-Automatic Scram	Event Report (LER) File
	D-Regulatory Restriction	4-Continuation from	(NUREG 0161)
	E-Operator Training & License	Previous Month	·
	Examination	5-Reduction of 20% or	
	F-Administrative	Greater in the Past	<sup>5</sup> Exhibit H-Same Source
	G-Operational Error	24 Hours	
	H-Other (Explain)	9-Other-(Explain)	
		-	

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#### NRC MONTHLY OPERATING REPORT

DOCKET NO. 50-530

UNIT NAME PVNGS-3

DATE 1/8/92

COMPLETED BY K.A. Chavet

TELEPHONE (602) 340-4718

#### **OPERATING STATUS**

1. Unit Name: Palo Verde Nuclear Generating Station, Unit 3

2. Reporting Period: December 1991

3. Licensed Thermal Power (MWt): 3800

4. Nameplate Rating (Gross MWe): 1403

5. Design Electrical Rating (Net MWe): 1270

6. Maximum Dependable Capacity (Gross MWe): 1303

7. Maximum Dependable Capacity (Net MWe): 1221

8. If Changes Occur In Capacity Ratings (Item Numbers 3 Through 7)

Since Last Report, Give Reasons: N/A

9. Power Level to Which Restricted, If Any (Net MWe): None

10. Reasons For Restrictions, If Any: N/A

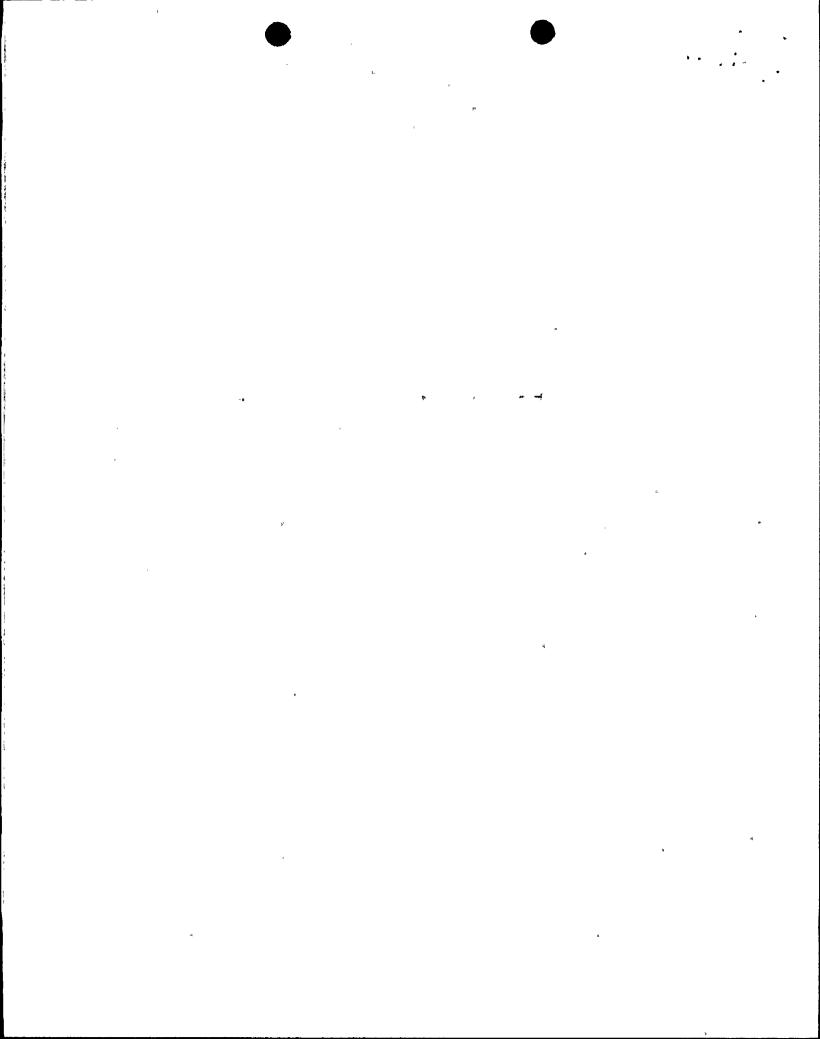
	UNIT 3 GENERATING STATISTICS	This Month	Yrto-Date	Cumulative
11.	Hours in Reporting Period	744	8,760	34,896
12.	Hours Reactor was Critical	744.0	6,418.0	23,997.7
13.	Reactor Reserve Shutdown Hours	0.0	0.0	0.0
14.	Hours Generator was On-Line	744.0	6,276.2	23,599.4
15.	Unit Reserve Shurdown Hours	0.0	0.0	0.0
16.	Gross Thermal Energy Generated (MWH)	2,813,447	22,905,182	86,511,409
17.	Gross Electrical Energy Generated (MWH)	992,700	8,010,400	30,318,700
18.	Net Electrical Energy Generated (MWH)	938,700	7,518,450	28,517,925
19.	Unit Service Factor (%)	100.0%	71.6%	67.6%
20.	Unit Availability Factor (%)	100.0%	71.6%	67.6%
21.	Unit Capacity Factor (Using MDC Net)	103.3%	70.3%	66.9%
22.	Unit Capacity Factor (Using DER Net)	99.3%	67.6%	64.3%
23.	Unit Forced Outage Rate (%)	0.0%	10.4%	9.2%

24. Shutdowns Scheduled Over Next 6 Months (Type, Date and Duration of Each): N/A

25. If Shutdown At End of Report Period, Estimated Date of Start-up: N/A

INITIAL CRITICALITY
INITIAL ELECTRICITY
COMMERCIAL OPERATION

Forecast 07/87 07/87 09/87 Achieved 10/25/87 11/28/87 01/08/88



### AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO.

UNIT NAME DATE

TELEPHONE

29 \_\_\_\_\_\_1267

31 \_\_\_\_\_\_1271

1268

50-530 PVNGS-3

1/8/92

(602) 340-4718

COMPLETED BY K.A. Chavet

ONTH:	December 1991		
DAY	AVERAGE DAILY POWER LEVEL	DAY	AVERAGE DAILY POWER LEVEL
1 _	1109	17	1268
2 _	1262	18	1266
3 _	1270	19	1269
4 _	1271	20	1271
5 _	1270	21	1269
6	1269	22	1269
7 _	1269	23	1270
8	1267	24	1268
9 _	1265	25	1269
10 _	1264	26	1269
11 _	1266	27	1260
12	1270	28	1241

13 \_\_\_\_\_

15 \_\_\_\_\_\_1270

16 \_\_\_\_\_ 1268

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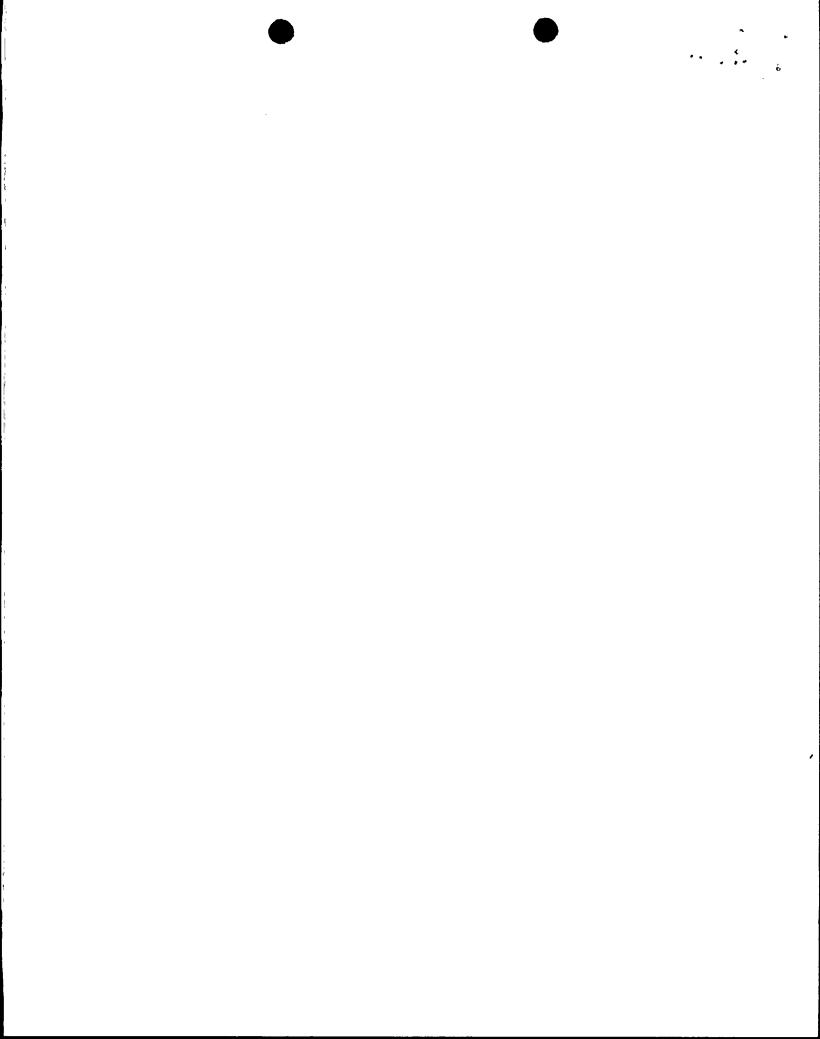
### REFUELING INFORMATION

DOCKET NO.

UNIT NAME

50-530 PVNGS-3

	DATE 1/8/92 COMPLETED BY K.A. Chavet TELEPHONE (602) 340-4718						
1.	Scheduled date for next refueling shutdown.						
	09/15/92, 3rd refueling						
2.	Scheduled date for restart following refueling.						
	11/14/92						
3.	Will refueling or resumption of operation thereafter require a Technical Specification change or other license amendment?						
	The need for a Technical Specification change or other license amendment has not yet been determined.						
4.	Scheduled date for submitting proposed licensing action and supporting information.						
	N/A						
5.	Important Licensing considerations associated with refueling, e.g., new or different fuel design or supplier, unreviewed design or performance analysis methods, significant changes in fuel design, and new operating procedures.						
	A Technical Specification change request was submitted to the NRC on December 20, 1991 to allow the use of advanced zircaloy-based cladding alloys instead of Zircaloy-4 on up to 80 fuel rods in two fuel assemblies.						
6.	The number of fuel assemblies.						
	a) In the core. 241 b) In the spent fuel storage pool. 192						
7:	Licensed spent fuel storage capacity1329						
	Intended change in spent fuel storage capacity. None						
8.	Projected date of last refueling that can be discharged to spent fuel storage pool assuming present capacity.						
	2005 (18 Month reloads and full core discharge capability).						



### SUMMARY OF OPERATING EXPERIENCE FOR THE MONTH

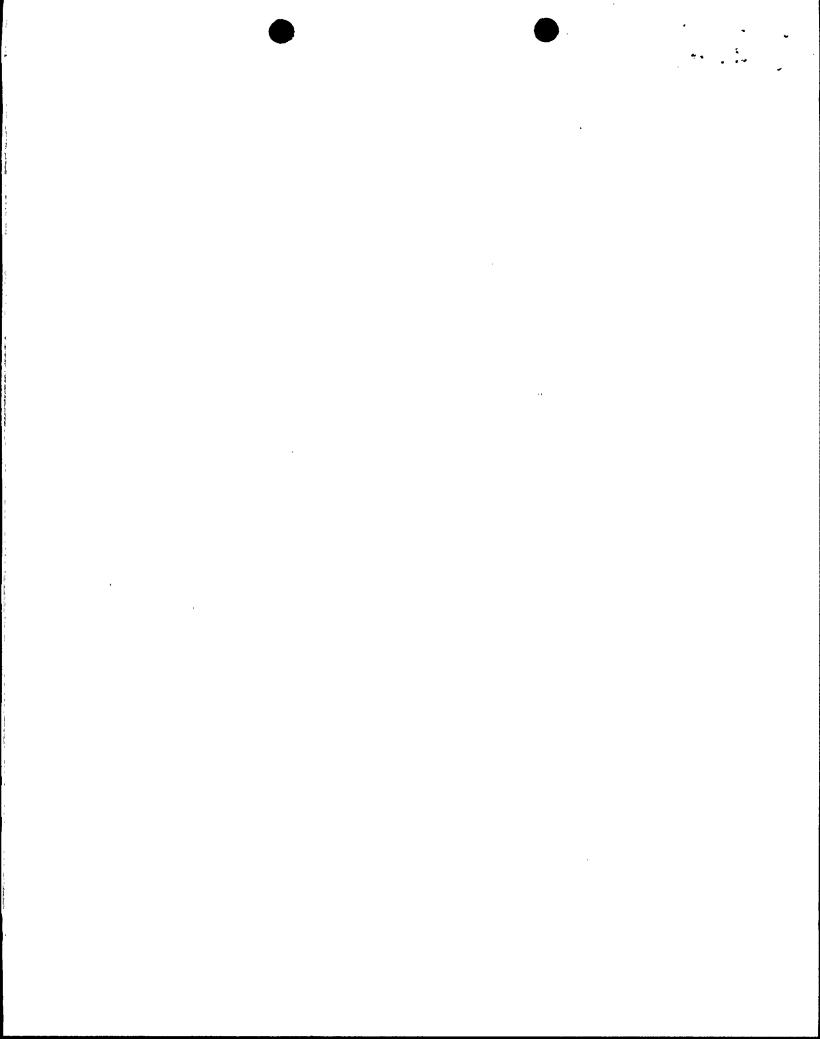
DOCKET NO. 50-530
UNIT NAME PVNGS-3
DATE 1/8/92
COMPLETED BY K.A. Chavet
TELEPHONE (602) 340-4718

December 1991

12/01 0000 Unit began the month in Mode 1; 70% RX power.

12/01 1709 RX power at 100%.

12/31 2400 Ended the month in Mode 1; 100% RX power.



## SHUTDOWNS AND POWER REDUCTIONS December 1991

DOCKET NO 50-530 / VINIT NAME PVNGS-3 - 1/8/92 - COMPLETED BY K.A. Chavet TELEPHONE (602) 340-4718

			Outage		Method of		_	-	Cause and Corrective	
No.	Date	Type <sup>1</sup>	Duratio Hours	n Reason <sup>2</sup>	Shutting Down Reactor <sup>3</sup>	LER No.	System Code <sup>4</sup>	Component Code <sup>5</sup>	Action to Prevent Recurrence	

No reactor shutdowns or significant power reductions occurred during the month.

<sup>1</sup> F-Forced	<sup>2</sup> Reason:	<sup>3</sup> Method:	<sup>4</sup> Exhibit F-Instructions
S-Scheduled	A-Equipment Failure(Explain)	1-Manual	for Preparation of the Data
	B-Maintenance or Test	2-Manual Scram	Entry Sheets for Licensee
	C-Refueling	3-Automatic Scram	Event Report (LER) File
	D-Regulatory Restriction	4-Continuation from	(NUREG 0161)
	E-Operator Training & License	Previous Month	
	Examination	5-Reduction of 20% or	
	F-Administrative	Greater in the Past	<sup>5</sup> Exhibit H-Same Source
	G-Operational Error	24 Hours	
	H-Other (Explain)	9-Other-(Explain)	