

FOR INFORMATION ONLY

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 1 of 9

DEPT. HEAD *J. M. Cole* DATE *2/5/86*
PRB/PRG/TRRG REVIEW *M. L. Pridemore* DATE *2-5-86*
APPROVED BY *J. M. Cole* DATE *2/5/86*
EFFECTIVE DATE *2/13/86* ^{*2/10/86*}

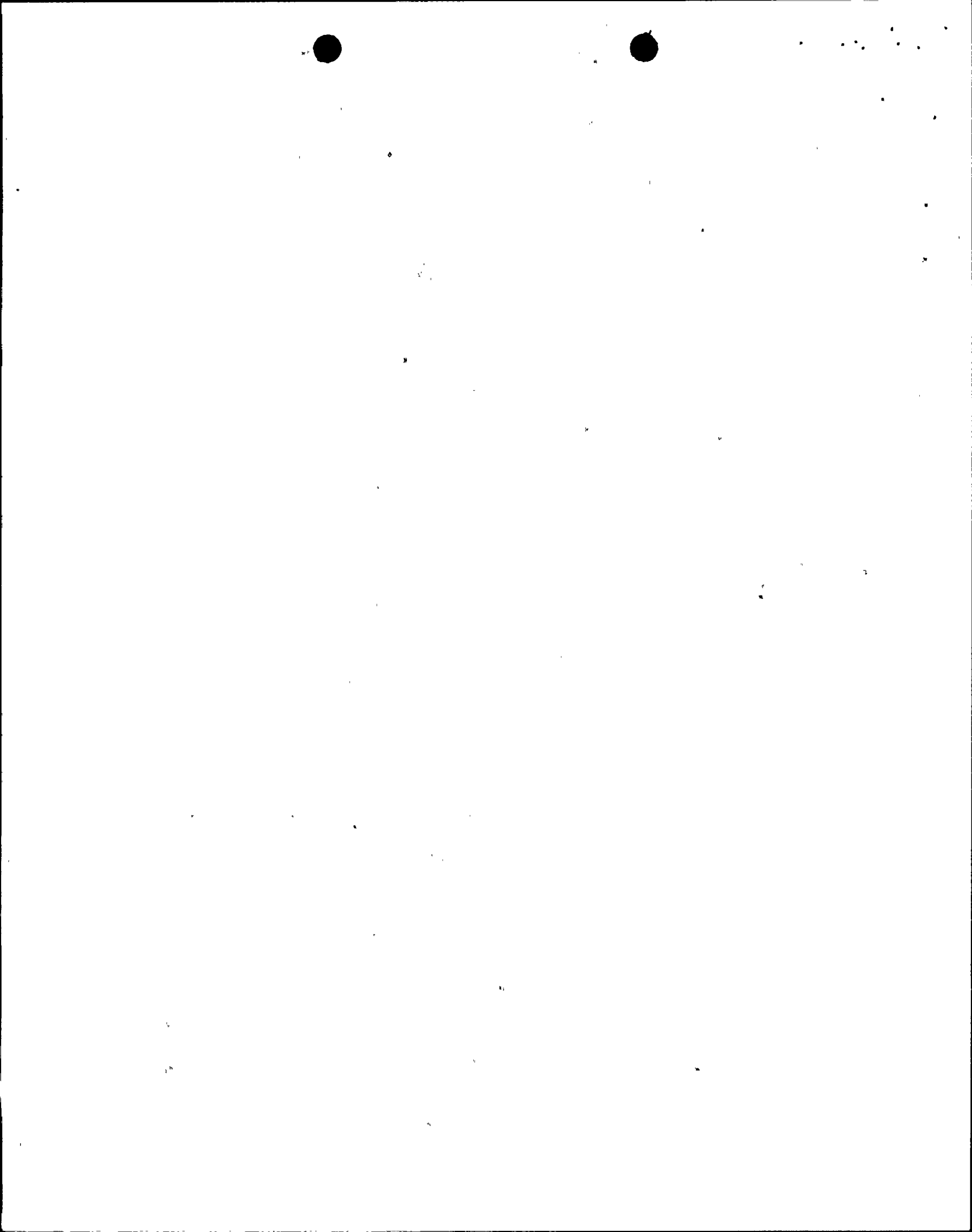
DN-5526C/0765C

8602260191 860224
PDR ADOCK 05000529
P PDR

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 2 of 9

REVISION HISTORY

Rev. No.	Date	Revised Pages	Comments
<u>1</u>	<u>8/13/86</u>	<u>2</u>	<u>Updated Revision History Pg.</u>
		<u>4</u>	<u>Rewrote steps 2.2 thru</u>
			<u>2.2.2.4 to ensure gravity</u>
			<u>flow path available</u>
		<u>5</u>	<u>Added caution before step.</u>
			<u>2.4.1 and rewrote 2.4.1.</u>
		<u>8</u>	<u>Added steps 2.14 and 2.15.</u>



FOR INFORMATION ONLY

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 3 of 9

OBJECTIVE

This procedure provides instructions on venting hydrogen gas from the Charging Pumps in the event they should become gas bound and cannot provide makeup flow to the RCS. The Refueling Water Tank is used to provide the head for the venting operation.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NUMBER</u>
1.0 VERIFICATION OF CHARGING PUMP GAS BINDING	4
2.0 VENTING OPERATIONS	4

APPENDICES

Appendix A - References	9
-------------------------	---

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42AO-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 4 of 9

1.0 VERIFICATION OF CHARGING PUMP GAS BINDING

- 1.1 Charging Pumps are incapable of pumping even when the valve lineup has been determined to be correct.
- 1.2 The level in the Volume Control Tank is suspected of having dropped to near 0% prior to the Charging Pumps becoming gas bound.
- 1.3 Possible level deviation between the VCT level transmitters CH-LT-226 and CH-LT-227.

2.0 VENTING OPERATIONS

- 2.1 Place all Charging Pumps in the pull-to-lock position with their handswitches on B03.
- 2.2 Provide a gravity flow path from the RWT to the Charging Pump Suctions as follows:
 - 2.2.1 If VCT outlet valve CH-UV-501 can be verified closed, open CH-HV-536 on B03.

OR
 - 2.2.2 If VCT outlet valve CH-UV-501 cannot be verified closed perform the following line up.
 - 2.2.2.1 In Charging Pump room #1, close suction valve CH-V316 and open suction cross-tie valve CH-V755.
 - 2.2.2.2 In Charging Pump room #2, close suction valve CH-V319 and open suction cross-tie valve CH-V756.
 - 2.2.2.3 In Charging Pump room #3, close suction valve CH-V322 and open suction cross-tie valve CH-V757.
 - 2.2.2.4 In the East Penetration room, open the Safety Injection header isolation to Charging Pump suction, valve CH-V327.

FOR INFORMATION ONLY

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 5 of 9

- 2.3 START Aux. Bldg Ess AFU-HFA-J01/M05/M06 by placing HFA-HS-62 to the start position. Red light on handswitch comes on when fan motor starts and Auxiliary Building AFU supply damper HFA-M06 opens.

OR

START Aux. Bldg Ess AFU-HFB-J01/M05/M06 by placing HFB-HS-63 to the start position. Red light on handswitch comes on when fan motor starts and Auxiliary Building AFU supply damper HFB-M06 opens.

NOTE

If the vent receiving tank requires draining, then perform step 2.4. Otherwise, proceed to step 2.5.

- 2.4 Perform the following to drain the vent receiving tank located on the 88' level of the Aux. Building East side:

CAUTION

TO PREVENT AN UNMONITORED RELEASE OF HYDROGEN,
DO NOT COMPLETELY DRAIN THE VENT RECEIVER TANK.

- 2.4.1 Open vent receiving tank drain, valve CH-VY80, and observe tank level indication, LG-1001, until a low level is indicated.
- 2.4.2 Close valve CH-VY80.
- 2.5 At the vent receiving tank, located on the 88' level of the Aux. Building East side, open the tank inlet valve CH-VY78.
- 2.6 Close charging pump drain isolation to the Recycle Drain header, valve CH-VY77.

<p>PALO VERDE NUCLEAR GENERATING STATION MANUAL</p>	<p>PROCEDURE NO. 42A0-2ZZ50</p>	
<p>VENTING THE CHARGING PUMPS</p>	<p>REVISION 1</p>	<p>Page 6 of 9</p>

NOTE

Venting of the charging pumps will be complete when the local flow gages indicate solid flow and level in the vent receiving tank increases.

NOTE

If, during the venting operation, the vent receiver tank should require draining, stop the venting operation and reperform step 2.3 to reduce the vent receiver tank level prior to restarting the venting operation.

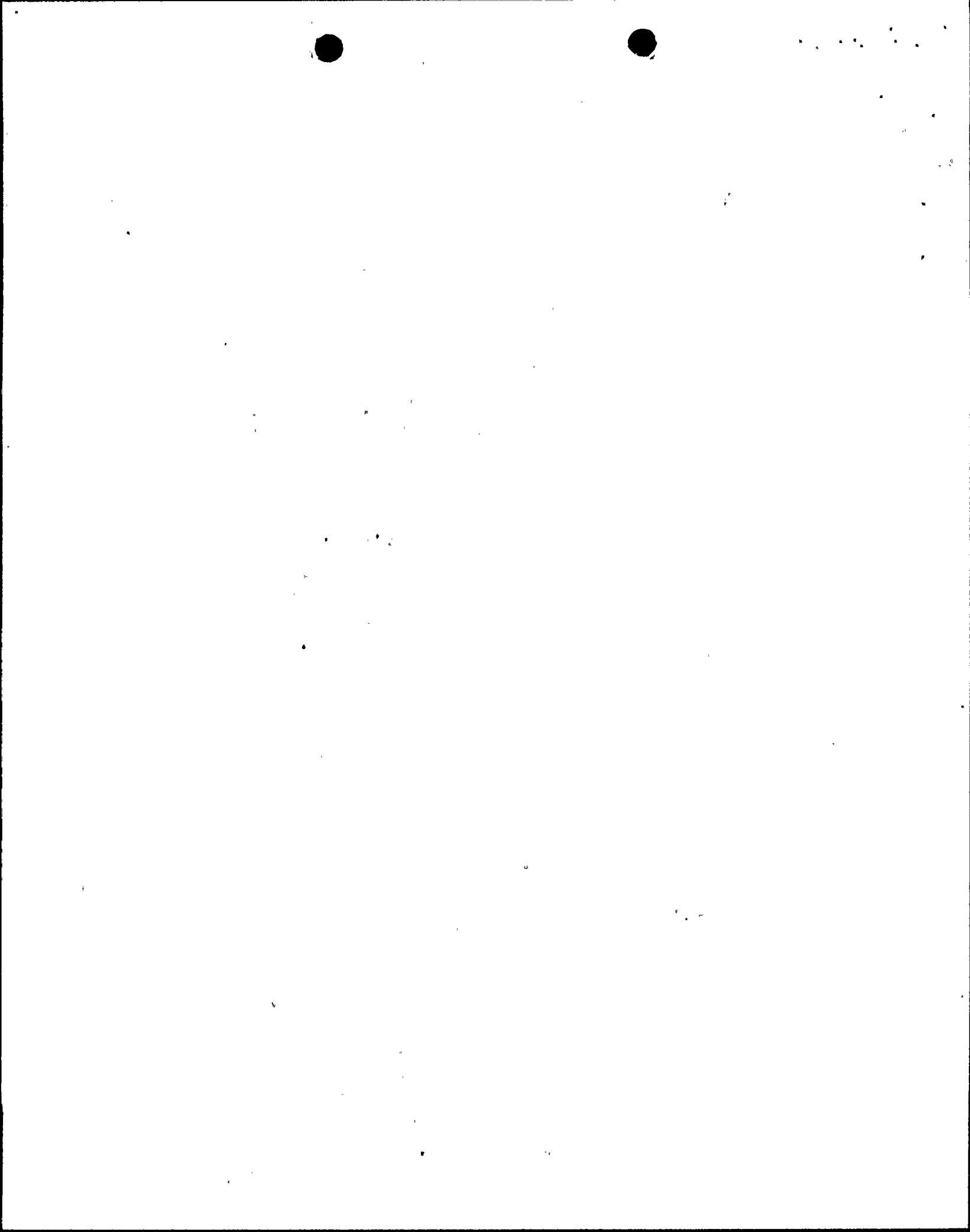
- 2.7 Establish communications between the Control Room, the Nuclear Operator at the Charging Pumps and the Nuclear Operator at the vent receiving tank.

NOTE

Perform step 2.8 if CHA-P01 is the pump to be vented. If CHB-P01 is to be vented, then proceed to step 2.9. If CHE-P01 is to be vented, then proceed to step 2.10.

- 2.8 To vent CHA-P01, perform the following:

- 2.8.1 Close/check closed valves CH-V317, CH-V329 and CH-VY76.
- 2.8.2 Open CH-V069.
- 2.8.3 Begin venting operations by opening CH-VY75. Verify flow on flow gage CH-FG-999.
- 2.8.4 When venting is complete close CH-VY75 and CH-V069.
- 2.8.5 Ensure all gases are vented from the pump by opening discharge drain isolation valve CH-V329. Check for flow on flow gage CH-FG-1003.
- 2.8.6 When venting is complete, close valve CH-V329.



FOR INFORMATION ONLY

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 7 of 9

- 2.8.7 If venting of the charging pumps is complete, then proceed to step 2.11.
- 2.9 To vent CHB-P01, perform the following:
- 2.9.1 Close/Check Closed valves CH-V320, CH-V332 and CH-VY74.
 - 2.9.2 Open CH-V067.
 - 2.9.3 Begin venting operations by opening CH-VY73. Verify flow on flow gage CH-FG-998.
 - 2.9.4 When venting is complete close CH-VY73 and CH-V067.
 - 2.9.5 Ensure all gases are vented from the pump by opening discharge drain isolation valve CH-V332. Check for flow on flow gage CH-FG-1002.
 - 2.9.6 When venting is complete, close valve CH-V332.
 - 2.9.7 If venting of the charging pumps is complete, then proceed to step 2.11.
- 2.10 To vent CHE-P01, perform the following:
- 2.10.1 Close/Check Closed valves CH-V323, CH-V336 and CH-VY72.
 - 2.10.2 Open CH-V065.
 - 2.10.3 Begin venting operations by opening CH-VY71. Verify flow on flow gage CH-FG-997.
 - 2.10.4 When venting is complete close CH-VY71 and CH-V065.
 - 2.10.5 Ensure all gases are vented from the pump by opening discharge drain isolation valve CH-V336. Check for flow on flow gage CH-FG-1001.
 - 2.10.6 When venting is complete, close valve CH-V336.
 - 2.10.7 If venting of the charging pumps is complete, then proceed to step 2.11.
- 2.11 Open valve CH-VY77.

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42AO-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 1	Page 8 of 9

2.12 Close valve CH-VY78.

2.13 Start Charging Pumps as directed by the Shift Supervisor using 42OP-2CH01, CVCS Normal Operations, and verify flow on flow indicator CH-FI-212 on B03.

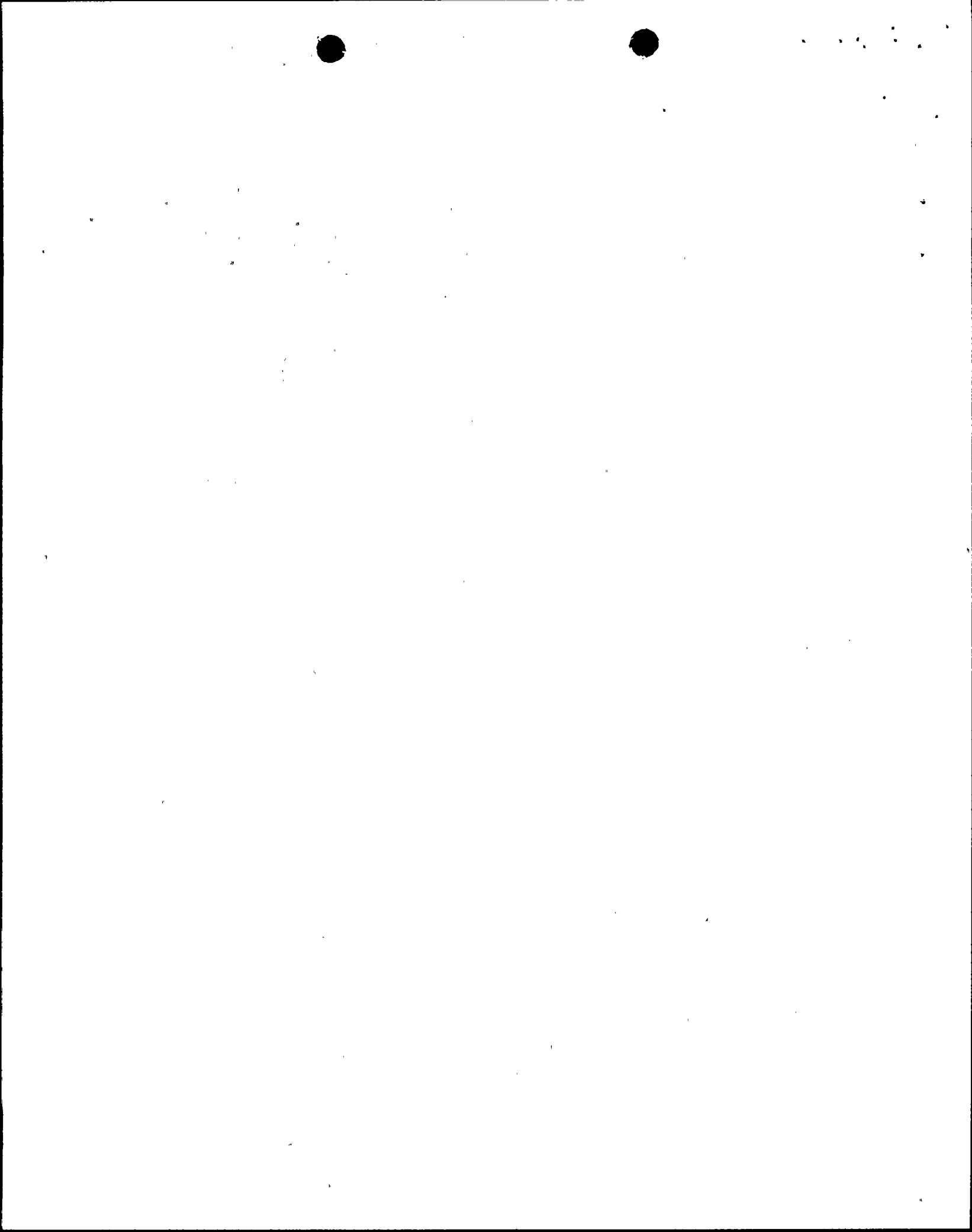
2.14 Stop the Aux Bldg Ess. AFU started in step 2.3.

HFA-J01/M05/M06

OR

HFB-J01/M05/M06

2.15 When conditions have stabilized, restore CVCS system to normal operating conditions at the discretion of the Shift Supervisor, per 42OP-2CH01, CVCS Normal Operations.



PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	APPENDIX A Page <u>1</u> of 1
VENTING THE CHARGING PUMPS	REVISION 1	Page 9 of 9

REFERENCES

1.0 Implementing

1.1 42OP-2CH01, CVCS Normal Operations

2.0 Developmental

2.1 NUREG 0857 Supplement 9, Dec. 1985.

2.2 DCP 20N-CH-226.

2.3 P & ID's:

02-M-CHP-002, Rev 4 - DCN's 15, 24, 30, 113, 121, 124

02-M-CHP-003, Rev 3 - DCN's 19, 20, 33, 36, 42, 46, 124, 129, 130,
134, 136, 146, 148, 149.

Attachment 3

Operations Procedure for Venting of the Charging Pumps
(42A0-2ZZ50, Revision 2)



THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY
5408 S. UNIVERSITY AVENUE
CHICAGO, ILLINOIS 60637

FOR INFORMATION ONLY

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 2	Page 1 of 9

DEPT. HEAD JM Allen DATE 2/21/86
PRB/PRG/TRRG REVIEW RZ Williams DATE 12/21/86
APPROVED BY JM Allen DATE 2/21/86
EFFECTIVE DATE 2/21/86

DN-5526C/0765C

8602260194 860224
PDR ADCK 05000529
P PDR

<p>PALO VERDE NUCLEAR GENERATING STATION MANUAL</p>	<p>PROCEDURE NO. 42A0-2ZZ50</p>	
<p>VENTING THE CHARGING PUMPS</p>	<p>REVISION 2</p>	<p>Page 3 of 9</p>

OBJECTIVE

This procedure provides instructions on venting hydrogen gas from the Charging Pumps in the event they should become gas bound and cannot provide makeup flow to the RCS. The Refueling Water Tank is used to provide the head for the venting operation.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE NUMBER</u>
1.0 VERIFICATION OF CHARGING PUMP GAS BINDING	4
2.0 VENTING OPERATIONS	4

APPENDICES

Appendix A - References	9
-------------------------	---

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 2	Page 4 of 9

1.0 VERIFICATION OF CHARGING PUMP GAS BINDING

- 1.1 Charging Pumps are incapable of pumping even when the valve lineup has been determined to be correct.
- 1.2 The level in the Volume Control Tank is suspected of having dropped to near 0% prior to the Charging Pumps becoming gas bound.
- 1.3 Possible level deviation between the VCT level transmitters CH-LT-226 and CH-LT-227.

2.0 VENTING OPERATIONS

- 2.1 Place all Charging Pumps in the pull-to-lock position with their handswitches on B03.
- 2.2 Provide a gravity flow path from the RWT to the Charging Pump Suctions as follows:
 - 2.2.1 If VCT outlet valve CH-UV-501 can be verified closed, open CH-HV-536 on B03.
 - OR
 - 2.2.2 If VCT outlet valve CH-UV-501 cannot be verified closed perform the following line up.
 - 2.2.2.1 In Charging Pump room #1, close suction valve CH-V316 and open suction cross-tie valve CH-V755.
 - 2.2.2.2 In Charging Pump room #2, close suction valve CH-V319 and open suction cross-tie valve CH-V756.
 - 2.2.2.3 In Charging Pump room #3, close suction valve CH-V322 and open suction cross-tie valve CH-V757.
 - 2.2.2.4 In the East Penetration room, open the Safety Injection header isolation to Charging Pump suction, valve CH-V327.

<p>PALO VERDE NUCLEAR GENERATING STATION MANUAL</p>	<p>PROCEDURE NO. 42A0-2ZZ50</p>	
<p>VENTING THE CHARGING PUMPS</p>	<p>REVISION 2</p>	<p>Page 5 of 9</p>

2.3 Start Aux. Bldg Ess AFU-HFA-J01/M05/M06 by placing HFA-HS-62 to the start position. Red light on handswitch comes on when fan motor starts and Auxiliary Building AFU supply damper HFA-M06 opens.

OR

Start Aux. Bldg Ess AFU-HFB-J01/M05/M06 by placing HFB-HS-63 to the start position. Red light on handswitch comes on when fan motor starts and Auxiliary Building AFU supply damper HFB-M06 opens.

NOTE

If the vent receiving tank requires draining, then perform step 2.4. Otherwise, proceed to step 2.5.

2.4 Perform the following to drain the vent receiving tank located on the 88' level of the Aux. Building East side:

CAUTION

TO PREVENT AN UNMONITORED RELEASE OF HYDROGEN, DO NOT COMPLETELY DRAIN THE VENT RECEIVER TANK.

2.4.1 Open vent receiving tank drain, valve CH-VY80, and observe tank level indication, LG-1001, until a low level is indicated.

2.4.2 Close valve CH-VY80.

2.5 At the vent receiving tank, located on the 88' level of the Aux. Building East side, open the tank inlet valve CH-VY78.

2.6 Close charging pump drain isolation to the Recycle Drain header, valve CH-VY77.

PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 42A0-2ZZ50	
VENTING THE CHARGING PUMPS	REVISION 2	Page 6 of 9

2.7 Establish communications between the Control Room, the Nuclear Operator at the Charging Pumps and the Nuclear Operator at the vent receiving tank.

2.7.1 During the venting operation, the Nuclear Operator at the vent receiver tank should try to maintain the level in the tank at approximately 50%. This is accomplished by throttling open the vent receiver tank drain valve, CH-VY-80, and throttling closed the vent receiver tank inlet valve, CH-VY-78, as necessary.

If the level in the vent receiver tank should increase above 75%, the Operator at the tank should stop the venting process by closing inlet valve, CH-VY-78, and then informing the Operator at the Charging Pumps that venting has been momentarily stopped. When the tank level has been lowered sufficiently, venting should be resumed by reopening inlet valve, CH-VY-78, and informing the Operator at the Charging Pumps.

NOTE

Perform step 2.8 if CHA-P01 is the pump to be vented. If CHB-P01 is to be vented, then proceed to step 2.9. If CHE-P01 is to be vented, then proceed to step 2.10.

NOTE

Venting of the charging pumps will be complete when the local flow gages indicate solid flow and level in the vent receiving tank increases.

2.8 To vent CHA-P01, perform the following:

2.8.1 Close/check closed valves CH-V317, CH-V329 and CH-VY76.

2.8.2 Open CH-V069.

2.8.3 Begin venting operations by opening CH-VY75. Verify flow on flow gage CH-FG-999.

2.8.4 When venting is complete close CH-VY75 and CH-V069.

2.8.5 Ensure all gases are vented from the pump by opening discharge drain isolation valve CH-V329. Check for flow on flow gage CH-FG-1003.

<p align="center">PALO VERDE NUCLEAR GENERATING STATION MANUAL</p>	<p>PROCEDURE NO. 42A0-2ZZ50</p>	
<p>VENTING THE CHARGING PUMPS</p>	<p>REVISION 2</p>	<p>Page 7 of 9</p>

2.8.6 When venting is complete, close valve CH-V329.

2.8.7 If venting of the charging pumps is complete, then proceed to step 2.11.

2.9 To vent CHB-P01, perform the following:

2.9.1 Close/Check Closed valves CH-V320, CH-V332 and CH-VY74.

2.9.2 Open CH-V067.

2.9.3 Begin venting operations by opening CH-VY73. Verify flow on flow gage CH-FG-998.

2.9.4 When venting is complete close CH-VY73 and CH-V067.

2.9.5 Ensure all gases are vented from the pump by opening discharge drain isolation valve CH-V332. Check for flow on flow gage CH-FG-1002.

2.9.6 When venting is complete, close valve CH-V332.

2.9.7 If venting of the charging pumps is complete, then proceed to step 2.11.

2.10 To vent CHE-P01, perform the following:

2.10.1 Close/Check Closed valves CH-V323, CH-V336 and CH-VY72.

2.10.2 Open CH-V065.

2.10.3 Begin venting operations by opening CH-VY71. Verify flow on flow gage CH-FG-997.

2.10.4 When venting is complete close CH-VY71 and CH-V065.

2.10.5 Ensure all gases are vented from the pump by opening discharge drain isolation valve CH-V336. Check for flow on flow gage CH-FG-1001.

2.10.6 When venting is complete, close valve CH-V336.

2.10.7 If venting of the charging pumps is complete, then proceed to step 2.11.

2.11 Open valve CH-VY77.

<p>PALO VERDE NUCLEAR GENERATING STATION MANUAL</p>	<p>PROCEDURE NO. 42A0-2ZZ50</p>	
<p>VENTING THE CHARGING PUMPS</p>	<p>REVISION 2</p>	<p>Page 8 of 9</p>

2.12 When the vent receiver tank is near empty, close CH-VY-80.

NOTE

Flow irregularities on CH-FI-212 may be caused by gas accumulating in the instrument lines. Inform I&C of the hazards involved, and have them vent the flow transmitter as required.

2.13 Close valve CH-VY78.

2.14 Start Charging Pumps as directed by the Shift Supervisor using 420P-2CH01, CVCS Normal Operations, and verify flow on flow indicator CH-FI-212 on B03.

2.15 Stop the Aux Bldg Ess. AFU started in step 2.3.

HFA-J01/M05/M06

OR

HFB-J01/M05/M06

2.16 When conditions have stabilized, restore CVCS system to normal operating conditions at the discretion of the Shift Supervisor, per 420P-2CH01, CVCS Normal Operations.

<p>PALO VERDE NUCLEAR GENERATING STATION MANUAL</p>	<p>PROCEDURE NO. 42A0-2ZZ50</p>	<p>APPENDIX A Page 1 of 1</p>
<p>VENTING THE CHARGING PUMPS</p>	<p>REVISION 2</p>	<p>Page 9 of 9</p>

REFERENCES

1.0 Implementing

1.1 420P-2CH01, CVCS Normal Operations

2.0 Developmental

2.1 NUREG 0857 Supplement 9, Dec. 1985.

2.2 DCP 20N-CH-226.

2.3 P & ID's:

02-M-CHP-002, Rev 4 - DCN's 15, 24, 30, 113, 121, 124

02-M-CHP-003, Rev 3 - DCN's 19, 20, 33, 36, 42, 46, 124, 129, 130,
134, 136, 146, 148, 149.

Attachment 4

Simplified Diagram of Charging Pump Vent Piping

