

94 07605

Kc2-007A

PROCEDURE COVER SHEET

PROCEDURE NUMBER: SYS BG-201

REVISION: 24


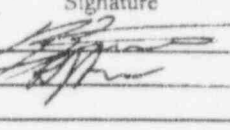
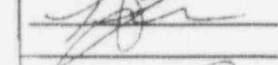
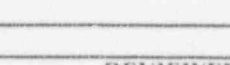
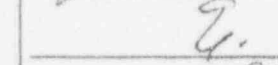
PROCEDURE TITLE: SHIFTING CHARGING PUMPS

SYSTEM STATUS DETERMINATION

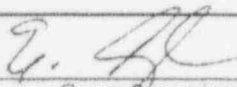
	INITIAL	DATE
Procedure Current (Changes Attached)	KA	10/24/94
Clearance Order Log Reviewed	KA	10/24/94
Current CKL Reviewed	KA	10/24/94
Procedure Review	KA	10/24/94
Equip Out Of Service Log Reviewed	KA	10/24/94
Temp Mod Log Reviewed	KA	10/24/94

REMARKS

PERFORMED BY

Signature	Date	Signature	Date	Signature	Date
	10/24/94		10-24-94		
	10-24-94		10-24-94		
	10/24/94				
	10-24-94				

REVIEWED BY


 Group Supervisor

 10-25-94
 Date

WOLF CREEK

NUCLEAR OPERATING CORPORATION

SYS BG-201

SHIFTING CHARGING PUMPS

Responsible Manager

Manager Operations

Revision Number	24
Use Category	Continuous
Administrative Controls Procedure	No
Infrequently Performed Procedure	No
Program Number	21D

DC4 9/15/94

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 1 of 21

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	PURPOSE	2
2.0	SCOPE	2
3.0	REFERENCES	2
4.0	PRECAUTIONS/LIMITATIONS	2
5.0	PREREQUISITES	4
6.0	PROCEDURE	5
6.1	Shifting From PDP To CCP A	5
6.2	Shifting From PDP To CCP B	9
6.3	Shifting From Either CCP To PDP	12
6.4	Shifting From CCP A To CCP B	17
6.5	Shifting From CCP B To CCP A	19
7.0	RECORDS	20
ATTACHMENT A	PRIMING THE PDP	21

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 2 of 21

1.0 PURPOSE

- 1.1 This procedure provides instructions for shifting between charging pumps.

2.0 SCOPE

- 2.1 This procedure provides instructions for shifting from the PDP to either CCP and adjusting letdown flow to 120 gpm.
- 2.2 This procedure provides instructions for shifting from either CCP to the PDP and adjusting letdown flow to 75 gpm.
- 2.3 This procedure provides instructions for shifting from one CCP to the other CCP.

3.0 REFERENCES

- 3.1 M-12BG03 (Q)
- 3.2 Vendor Information: Drawing 300-B49739, Section 8
- 3.3 Disposition to MWR 3990-92
- 3.4 Letter EN 93-0170
- 3.5 WM 90-0013 Updated response to NRC Bulletin 88-04, Engineering Disposition CWR 01404-90, Rev. 1 (Low Flow Cavitation)

4.0 PRECAUTIONS/LIMITATIONS

- 4.1 WHEN starting a charging pump, THEN ensure component cooling water is being supplied to the oil cooler.
- 4.2 Immediately stop a centrifugal charging pump if any of the following occur:
- * Oil leaving thrust bearing exceeds 160°F.
 - * Sudden drop in discharge pressure.
 - * Loss of component cooling water to a running pump.
 - * Lube oil pressure drops to zero.
- 4.3 Immediately stop the positive displacement pump if any of the following occur:
- * Pump bearing oil temperature reaches 180°F.
 - * Gyrol fluid drive temperature reaches 220°F.
 - * Pump bearing oil pressure drops to zero.
 - * Gyrol fluid level falls below 1/4 in sightglass.

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 3 of 21

4.4 IF RCS temperature is greater than or equal to 200°F, THEN the CCP Discharge Header FCV-121 Inlet Isolation valve for the pump NOT aligned to the charging header must be locked closed. This does not apply during the time required to shift between CCPs.

- * BG-V8483A for CCP A
- * BG-V8483C for CCP B

4.5 WHEN any RCS cold leg temperature is less than 350°F, THEN only one CCP may be operable. This does not apply during the time required to shift between CCPs or when the reactor vessel head is removed. Refer to Technical Specification 3.5.3.

4.6 CCP A pump flow must be greater than or equal to 175 gpm for continuous operation. (115 gpm charging flow plus 60 gpm recirc flow). CCP B pump flow must be greater than or equal to 173 gpm for continuous operation. (117 gpm charging flow plus 56 gpm recirc flow). Refer to Standing Order 17 for flow rates less than continuous flow values. The time involved in switching pumps does not count toward the low flow cavitation limits. [Commitment Step 3.5]

4.7 IF instrument air is lost to BG FCV-121 OR BG HV-182 when both CCPs are running, THEN close either BG HIS-8105 or BG HIS-8106 and stop either CCP.

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 4 of 21

		INIT/DATE
5.0	<u>PREREQUISITES</u>	
5.1	CVCS is operating in accordance with SYS BG-120, CHEMICAL AND VOLUME CONTROL SYSTEM STARTUP.	<u>N/A 11/24/14</u>
5.2	<u>IF</u> starting CCP B, <u>THEN</u> CCP B aux lube oil pump has run between 30 minutes and 60 minutes. N/A if emergency start required.	<u>N/A</u>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 5 of 21

INIT/DATE

6.0 PROCEDURE

6.1 Shifting From PDP To CCP A

- 6.1.1 Verify Centrifugal Charging Pump Flow Control valve is in manual and set at 20%.
 - o BG FK-121 - IN MANUAL AND SET AT 20% ☒
- 6.1.2 Verify CCP A Recirc Valve is open.
 - o BG HIS-8110 - OPEN ☒
- 6.1.3 Verify component cooling water is being supplied to CCP A. ☒ *Initials*

NOTE

When BG-V8483A is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

- 6.1.4 Lock open CCP A Discharge Header FCV-121 Inlet Isolation valve.

- o BG-V8483A - LOCKED OPEN

Verified

- 6.1.5 Ensure CCP A Aux Lube Oil Pump in auto.

- o BG HIS-1AX - IN AUTO ☐

- 6.1.6 Start CCP A.

- o BG HIS-1A - STARTED ☐

- 6.1.7 Open CCP A Discharge PI-118 Isolation valve.

- o BG-V090 - OPEN ☐

- 6.1.8 IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP B Discharge Header FCV-121 Inlet Isolation valve is locked closed.

- o BG-V8483C LOCKED CLOSED

Verified

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 6 of 21

		INIT/DATE
6.1.9	Place PDP Speed Controller in manual.	
	o BB SK-459A - IN MANUAL	<input type="checkbox"/>
6.1.10	Decrease PDP speed while maintaining a constant charging header flow by performing the following simultaneously:	
	o Lower PDP Speed to 30% output.	
	o BB SK-459A - LOWERED TO 30%	<input type="checkbox"/>
	AND	
	o Adjust CCP Flow control valve as necessary to maintain constant charging header flow.	
	o BG FK-121 - ADJUSTED	<input type="checkbox"/>
6.1.11	WHEN PDP speed at 30%, THEN stop the PDP.	
	o BG HIS-3 - STOPPED	<input type="checkbox"/>
6.1.12	Adjust CCP Discharge Flow Control valve as necessary to maintain PZR level at program.	
	o BG FK-121 - ADJUSTED TO MAINTAIN PZR LEVEL	<input type="checkbox"/>
6.1.13	Adjust Charging Header Back Pressure Control valve as necessary to maintain RCP seal injection flow between 8 gpm and 13 gpm. N/A if not required.	
	o BG FR-157 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
	o BG FR-156 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
	o BG FR-155 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
	o BG FR-154 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
6.1.14	Increase letdown flow to 120 gpm: N/A if not required.	
	1. Increase charging flow to 120 gpm.	
	o BG FI-121A - AT 120 GPM	<input type="checkbox"/>
	2. Place Letdown HX Outlet Pressure Controller in manual.	
	o BG PK-131 - IN MANUAL	<input type="checkbox"/>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 7 of 21

		INIT/DATE
3.	Adjust Letdown HX Outlet Pressure Controller to between 90% and 100% output.	
	o BG PK-131 - ADJUSTED TO BETWEEN 90% AND 100%	<input type="checkbox"/>
4.	Open Letdown Orifice A Valve.	
	o BG HIS-8149AA - OPEN	<input type="checkbox"/>
5.	Adjust Letdown HX Outlet Pressure Controller as necessary to establish Letdown HX Outlet Pressure at 350 psig.	
	o BG PI-131 - AT 350 PSIG	<input type="checkbox"/>
6.	Place Letdown HX Outlet Pressure Controller in auto.	
	o BG PK-131 - IN AUTO	<input type="checkbox"/>
7.	Verify Letdown HX Outlet Flow is 120 gpm.	
	o BG FI-132 - AT 120 GPM	<input type="checkbox"/>
6.1.15	Place CCP Discharge Flow Control valve in automatic.	
	o BG FK-121 - IN AUTO	<input type="checkbox"/>
6.1.16	Adjust PZR Level Master Controller for 120 gpm letdown: N/A if not required.	
1.	Place PZR Level Master Controller in manual.	
	o BB LK-459 - IN MANUAL	<input type="checkbox"/>
2.	Adjust PZR Level Master Controller to establish 120 gpm charging flow.	
	o BB LK-459 - ADJUSTED TO ESTABLISH 120 GPM CHARGING FLOW	<input type="checkbox"/>
3.	Place PZR Level Master Controller in auto.	
	o BB LK-459 - IN AUTO	<input type="checkbox"/>
6.1.17	IF charging flow is less than 115 gpm, THEN refer to Standing Order 17.	<input type="checkbox"/>

Revision: 24

SHIFTING CHARGING PUMPS

SYS BG-201

Continuous Use

Page 8 of 21

INIT/DATE

6.1.18 Verify pressurizer level is being
maintained automatically.



6.1.19 Section 6.1 complete.

1

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 9 of 21

		INIT/DATE
6.2	<u>Shifting From PDP To CCP B</u>	
6.2.1	Verify Centrifugal Charging Pump Flow Control valve is in manual and set at 20%.	
	o BG FK-121 - IN MANUAL AND SET AT 20%	<input checked="" type="checkbox"/>
6.2.2	Verify CCP B Recirc Valve is open.	
	o BG HIS-8111 - OPEN	<input checked="" type="checkbox"/>
6.2.3	Verify component cooling water is being supplied to CCP B.	<input checked="" type="checkbox"/>
<p>NOTE</p> <p>When BG-V8483C is manipulated, it should be logged in the Locked Valve Log for tracking purposes.</p>		
6.2.4	Lock open CCP B Discharge Header FCV-121 Inlet Isolation valve.	
	o BG-V8483C - LOCKED OPEN	
	Verified	<u>EA 1/10/24</u> <u>TH 1/10/24</u>
6.2.5	Ensure CCP B Aux Lube Oil Pump in auto.	
	o BG HIS-2AX - IN AUTO	<input checked="" type="checkbox"/>
6.2.6	Start CCP B.	
	o BG HIS-2A - STARTED	<input checked="" type="checkbox"/>
6.2.7	Open CCP B Discharge PI-119 Isolation valve.	
	o BG-V094 - OPEN	<input checked="" type="checkbox"/>
6.2.8	IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP A Discharge Header FCV-121 Inlet Isolation valve is locked closed.	
	o BG-V8483A LOCKED CLOSED	
	Verified	<u>EA 1/10/24</u> <u>TH 1/10/24</u>
6.2.9	Place PDP Speed Controller in manual.	
	o BB SK-459A - IN MANUAL	<input checked="" type="checkbox"/>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 10 of 21

		INIT/DATE
6.2.10	Decrease PDP speed while maintaining a constant charging header flow by performing the following simultaneously:	
	o Lower PDP Speed to 30% output.	
	o BB SK-459A - LOWERED TO 30%	<input checked="" type="checkbox"/>
	AND	
	o Adjust CCP Flow control valve as necessary to maintain constant charging header flow.	
	o BG FK-121 - ADJUSTED	<input checked="" type="checkbox"/>
6.2.11	WHEN PDP speed at 30%, THEN stop the PDP.	
	o BG HIS-3 - STOPPED	<input checked="" type="checkbox"/>
6.2.12	Adjust CCP Discharge Flow Control valve as necessary to maintain PZR level at program.	
	o BG FK-121 - ADJUSTED TO MAINTAIN PZR LEVEL	<input checked="" type="checkbox"/>
6.2.13	Adjust Charging Header Back Pressure Control valve as necessary to maintain RCP seal injection flow between 8 gpm and 13 gpm. N/A if not required.	
	o BG FR-157 - BETWEEN 8 GPM AND 13 GPM	<input checked="" type="checkbox"/>
	o BG FR-156 - BETWEEN 8 GPM AND 13 GPM	<input checked="" type="checkbox"/>
	o BG FR-155 - BETWEEN 8 GPM AND 13 GPM	<input checked="" type="checkbox"/>
	o BG FR-154 - BETWEEN 8 GPM AND 13 GPM	<input checked="" type="checkbox"/>
6.2.14	Increase letdown flow to 120 gpm: N/A if not required.	
	1. Increase charging flow to 120 gpm.	
	o BG FI-121A - AT 120 gpm	<input checked="" type="checkbox"/>
	2. Place Letdown HX Outlet Pressure Controller in manual.	
	o BG PK-131 - IN MANUAL	<input checked="" type="checkbox"/>
	3. Adjust Letdown HX Outlet Pressure Controller to between 90% and 100% output.	
	o BG PK-131 - ADJUSTED TO BETWEEN 90% AND 100%	<input checked="" type="checkbox"/>

9
 10-24-04
 N/A
☒

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 11 of 21

		INIT/DATE
	4. Open Letdown Orifice A Valve. o BG HIS-8149AA - OPEN	7 10-24-94 N/A <input type="checkbox"/>
	5. Adjust Letdown HX Outlet Pressure Controller as necessary to establish Letdown HX Outlet Pressure at 350 psig. o BG PI-131 - AT 350 PSIG	<input checked="" type="checkbox"/>
	6. Place Letdown HX Outlet Pressure Controller in auto. o BG PK-131 - IN AUTO	7 10-24-94 N/A <input type="checkbox"/>
	7. Verify Letdown HX Outlet Flow is 120 gpm. o BG FI-132 - AT 120 GPM	<input checked="" type="checkbox"/>
6.2.15	Place CCP Discharge Flow Control valve in automatic. o BG FK-121 - IN AUTO	7 10-24-94 N/A <input type="checkbox"/>
6.2.16	Adjust PZR Level Master Controller for 120 gpm letdown: N/A if not required.	
	1. Place PZR Level Master Controller in manual. o BB LK-459 - IN MANUAL	N/A <input type="checkbox"/>
	2. Adjust PZR Level Master Controller to establish 120 gpm charging flow. o BB LK-459 - ADJUSTED TO ESTABLISH 120 GPM CHARGING FLOW	<input type="checkbox"/>
	3. Place PZR Level Master Controller in auto. o BB LK-459 - IN AUTO	<input checked="" type="checkbox"/>
6.2.17	IF charging flow is less than 117 gpm, THEN refer to Standing Order 17.	N/A <input type="checkbox"/>
6.2.18	Verify PZR level is being maintained automatically.	7 10-24-94 N/A <input type="checkbox"/>
6.2.19	Section 6.2 complete.	7 10-24-94 N/A <input type="checkbox"/>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 12 of 21

INIT/DATE

5.3 Shifting From Either CCP To PDP

NOTE

To fill the seal tank, 2 Operators should be utilized to prevent inadvertant overflow of seal tank. Seal tank should be considered contaminated.

- 6.3.1 Locally ensure the PDP seal tank is full. ☐
- 6.3.2 Verify component cooling water is being supplied to the PDP. ☐
- 6.3.3 On the PDP speed increaser, verify the Air Pressure Trip Valve is reset. ☐
- 6.3.4 Open PDP Recirc Valve. ☐
 - o BG HIS-8109 - OPEN
- 6.3.5 Place PDP Speed Controller in manual. ☐
 - o BB SK-459A - IN MANUAL
- 6.3.6 Adjust PDP Speed Controller to 38% output. ☐
 - o BB SK-459A - AT 38%

NOTE

If PDP is started during normal working hours, contact BG System Engineer to check if pump start needs to be observed.
[Commitment Step 3.5]

- 6.3.7 Start the PDP. ☐
 - o BG HIS-3 - STARTED
- 6.3.8 IF the PDP output shaft does NOT begin rotating after pump start, THEN stop the PDP and prime the PDP using Attachment A. ☐

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 13 of 21

		INIT/DATE
6.3.9	IF the PDP is being started for pump seal run in. after maintenance, THEN perform the following:	
	1. Adjust PDP speed to desired speed as directed by System Engineering.	
	o BB SK-459A - ADJUSTED TO DESIRED SPEED	<input type="checkbox"/>
	2. Run the PDP for the amount of time desired by System Engineering.	<input type="checkbox"/>
	3. Pump seal run in complete.	<input type="checkbox"/>
6.3.10	Adjust PDP speed controller output to 38%.	
	o BB SK-459A - AT 38%	<input type="checkbox"/>
6.3.11	Decrease letdown flow to 75 gpm: N/A if not required.	
	1. Close Letdown Orifice A Valve.	
	o BG HIS-8149AA - CLOSE	<input type="checkbox"/>
	2. Place Letdown HX Outlet Pressure Controller in manual.	
	o BG PK-131 - IN MANUAL	<input type="checkbox"/>
	3. Adjust Letdown HX Outlet Pressure Controller as necessary to establish Letdown HX Outlet Pressure at 350 psig.	
	o BG PI-131 - AT 350 PSIG	<input type="checkbox"/>
	4. Place Letdown HX Outlet Pressure Controller in auto.	
	o BG PK-131 - IN AUTO	<input type="checkbox"/>
	5. Verify Letdown HX Outlet Flow is 75 gpm.	
	o BG FI-132 - AT 75 GPM	<input type="checkbox"/>
6.3.12	Place CCP Discharge Flow Control valve in manual.	
	o BG FK-121 - IN MANUAL	<input type="checkbox"/>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 14 of 21

		INIT/DATE
6.3.13	Adjust CCP Discharge Flow Control valve to maintain pressurizer level. o BG FK-121 - ADJUSTED TO MAINTAIN PZR LEVEL	<input type="checkbox"/>
6.3.14	<u>WHEN</u> the PDP has run 3 minutes, <u>THEN</u> close PDP Recirc valve. [Commitment Step 3.5] o BG HIS-8109 - CLOSED	<input type="checkbox"/>
6.3.15	Increase PDP speed while maintaining charging header flow between 80 gpm and 100 gpm by performing the following simultaneously: o Increase PDP speed to maintain flow. o BB SK-459A - ADJUSTED	<input type="checkbox"/>
	<u>AND</u> o Lower CCP Discharge flow control valve to 20% output. o BG FK-121 - AT 20%	<input type="checkbox"/>
6.3.16	<u>WHEN</u> CCP Discharge Flow Controller output is at 20%, <u>THEN</u> ensure the PDP is supplying the charging header by increasing PDP speed until an increase in charging header flow is observed. o BB SK-459A - INCREASED UNTIL CHARGING FLOW INCREASED	<input type="checkbox"/>
6.3.17	<u>IF</u> CCP B is being stopped, <u>THEN</u> place CCP B aux lube oil pump hand switch to stop. o BG HIS-2AX - IN STOP	<input type="checkbox"/>

INIT/DATE

NOTE

BG FCV-121 should be left partially OPEN to ensure continuous RCP Seal Injection Flow in the event of PDP TRIP concurrent with CCF AUTO-START and loss of CCW to RCP Thermal Barriers (e.g. SI Signal).

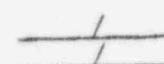
6.3.18 STOP the running centrifugal charging pump.
N/A other pump.

- * BG HIS-1A for CCP A - STOPPED
- * BG HIS-2A for CCP B - STOPPED



6.3.19 Ensure CCP Discharge Flow Controller is in manual with 20% output.

- o BG FK-121 - IN MANUAL AT 20% Verified



6.3.20 Adjust PDP Speed Controller to maintain PZR level at program.

- o BB SK-459A - ADJUSTED TO MAINTAIN PZR LEVEL



6.3.21 Place PDP Speed Controller in auto.

- o BB SK-459A - IN AUTO



6.3.22 Adjust PZR Lev Master Controller for 75 gpm letdown: N/A if not required.

1. Place PZR Level Master Controller in manual.

- o BB LX-459 - IN MANUAL



2. Adjust PZR Level Master Controller to establish 75 gpm charging flow.

- o BB LK-459 - ADJUSTED TO ESTABLISH 75 GPM CHARGING FLOW



3. Place PZR Level Master Controller in auto.

- o BB LK-459 - IN AUTO



Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 16 of 21

		INIT/DATE
6.3.23	Adjust Charging Header Back Pressure Control valve as necessary to maintain RCP seal injection flow between 8 gpm and 13 gpm. N/A if not required.	
	<ul style="list-style-type: none"> o BG FR-157 - BETWEEN 8 GPM AND 13 GPM o BG FR-156 - BETWEEN 8 GPM AND 13 GPM o BG FR-155 - BETWEEN 8 GPM AND 13 GPM o BG FR-154 - BETWEEN 8 GPM AND 13 GPM 	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
6.3.24	Verify pressurizer level is being maintained automatically.	<input type="checkbox"/>
6.3.25	Close the previously running CCP Discharge Gauge Isolation Valve. N/A other valve.	
	* BG-V090 for CCP A - CLOSED	<input type="checkbox"/>
	<u>OR</u>	
	* BG-V094 for CCP B - CLOSED	<input type="checkbox"/>
6.3.26	Section 6.3 complete.	<u>1</u>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 17 of 21

INIT/DATE

6.4 Shifting From CCP A To CCP B

6.4.1 Verify CCP B Recirc Valve is open.

o BG HIS-8111 - OPEN



6.4.2 Verify component cooling water is being supplied to CCP B.



NOTE

When BG-V8483C is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.4.3 Lock open CCP B Discharge Header FCV-121 Inlet Isolation valve.

o BG-V8483C - LOCKED OPEN

Verified

6.4.4 Ensure CCP B Aux Lube Oil Pump in auto.

o BG HIS-2AX - IN AUTO



6.4.5 Start CCP B.

o BG HIS-2A - STARTED



NOTE

Notify Results Engineering if CCP A is to be run at less than 175 gpm or CCP B less than 173 gpm. [Commitment Step 3.5]

6.4.6 Monitor charging header flow, seal water injection flow, and ~~cc~~ Discharge Flow Controller BG FK-121 for proper operation.



6.4.7 STOP CCP A.

o BG HIS-1A - STOPPED



6.4.8 Open CCP B Discharge PI-119 Isolation valve.

o BG-V094 - OPEN



Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 18 of 21

INIT/DATE

6.4.9 Close CCP A Discharge PI-118 Isolation valve.

o BG-V090 - CLOSED



NOTE

When BG-V8483A is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.4.10 IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP A Discharge Header PCV-121 Inlet Isolation valve is locked closed.

o BG-V8483A LOCKED CLOSED

Verified

6.4.11 Ensure pressurizer level, charging header flow, and seal water injection flow are being maintained normally.

6.4.12 Section 6.4 complete.

[Signature] 10-24-94

[Signature] 10-29-94



[Signature] 11-24-94

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 19 of 21

INIT/DATE

6.5 Shifting From CCP B To CCP A

6.5.1 Verify CCP A Recirc Valve is open.

o BG HIS-8110 - OPEN



6.5.2 Verify component cooling water is being supplied to CCP A.



NOTE

When BG-V8483A is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.5.3 Lock open CCP A Discharge Header FCV-121 Inlet Isolation valve.

o BG-V8483A - LOCKED OPEN

Verified

1/10-24-97

6.5.4 Ensure CCP A Aux Lube Oil Pump in auto.

o BG HIS-1AX - IN AUTO



6.5.5 Start CCP A.

o BG HIS-1A - STARTED



NOTE

Notify Results Engineering if CCP A is to be run at less than 175 gpm or CCP B less than 173 gpm. [Commitment Step 3.5]

6.5.6 Monitor charging header flow, seal water injection flow, and CCP Discharge Flow Controller BG FK-121 for proper operation.



6.5.7 IF CCP B is being stopped, THEN place CCP B aux lube oil pump handswitch to stop.

o BG HIS-2AX - IN STOP



6.5.8 STOP CCP B.

o BG HIS-2A - STOPPED



Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 20 of 21

INIT/DATE

6.5.9 Open CCP A Discharge PI-118 Isolation valve.

o BG-V090 - OPEN



6.5.10 Close CCP B Discharge PI-119 Isolation valve.

o BG-V094 - CLOSED



NOTE

When BG-V8483C is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.5.11 IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP B Discharge Header FCV-121 Inlet Isolation valve is locked closed.

o BG-V8483C LOCKED CLOSED

Verified

6.5.12 Ensure pressurizer level, charging header flow, and seal water injection flow are being maintained normally.

6.5.13 Section 6.5 complete.

7.0 RECORDS

7.1 The following QA records are generated by this procedure:

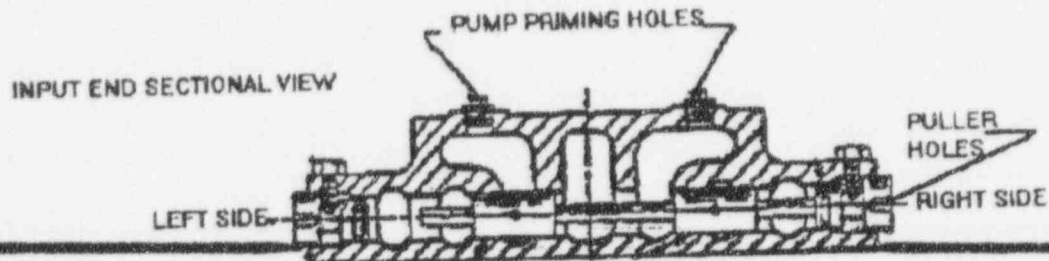
7.1.1 Section 5.0

7.1.2 Section 6.0

-END-

ATTACHMENT A
(Page 1 of 1)
PRIMING THE PDP

- 1) Check oil level and add oil if necessary.
- 2) Prime the pump.



- 1) Remove the pipe plugs from the two pump priming holes on top of the input end bell.
 - 2) Pour oil into either hole until the oil rises to the other hole and remains there.
 - 3) Replace and tighten the pipe plugs.
- END-

94 07605 K2-07A

PROCEDURE COVER SHEET

PROCEDURE NUMBER: SYS BG-201

REVISION: 24

PROCEDURE TITLE: SHIFTING CHARGING PUMPS

SYSTEM STATUS DETERMINATION

	INITIAL	DATE
Procedure Current (Changes Attached)	NA	10/24/94
Clearance Order Log Reviewed	NA	10/24/94
Current CKL Reviewed	NA	10/24/94
Procedure Review	NA	10/24/94
Equip Out Of Service Log Reviewed	NA	10/24/94
Temp Mod Log Reviewed	NA	10/24/94

REMARKS

PERFORMED BY

Signature	Date	Signature	Date	Signature	Date
<i>[Signature]</i>	11/24/94				
<i>[Signature]</i>	10/20/94				
<i>[Signature]</i>	10/24/94				
<i>[Signature]</i>	10-24-94				

REVIEWED BY

[Signature] 10/24/94
 Date

Group Supervisor

WOLF CREEK

NUCLEAR OPERATING CORPORATION

SYS BG-201

SHIFTING ~~CHARGING~~ PUMPS

Responsible Manager

Manager Operations

Revision Number	24
Use Category	Continuous
Administrative Controls Procedure	No
Infrequently Performed Procedure	No
Program Number	21D

DC4 9/15/94

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 1 of 21

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1.0	PURPOSE	2
2.0	SCOPE	2
3.0	REFERENCES	2
4.0	PRECAUTIONS/LIMITATIONS	2
5.0	PREREQUISITES	4
6.0	PROCEDURE	5
6.1	Shifting From PDP To CCP A	5
6.2	Shifting From PDP To CCP B	9
6.3	Shifting From Either CCP To PDP	12
6.4	Shifting From CCP A To CCP B	17
6.5	Shifting From CCP B To CCP A	19
7.0	RECORDS	20
ATTACHMENT A	PRIMING THE PDP	21

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 2 of 21

1.0 PURPOSE

1.1 This procedure provides instructions for shifting between charging pumps.

2.0 SCOPE

2.1 This procedure provides instructions for shifting from the PDP to either CCP and adjusting letdown flow to 120 gpm.

2.2 This procedure provides instructions for shifting from either CCP to the PDP and adjusting letdown flow to 75 gpm.

2.3 This procedure provides instructions for shifting from one CCP to the other CCP.

3.0 REFERENCES

3.1 M-12BG03 (Q)

3.2 Vendor Information: Drawing 300-B49739, Section 8

3.3 Disposition to MWR 3990-92

3.4 Letter EN 93-0170

3.5 WM 90-0013 Updated response to NRC Bulletin 88-04, Engineering Disposition CWR 01404-90, Rev. 1 (Low Flow Cavitation)

4.0 PRECAUTIONS/LIMITATIONS

4.1 WHEN starting a charging pump, THEN ensure component cooling water is being supplied to the oil cooler.

4.2 Immediately stop a centrifugal charging pump if any of the following occur:

- * Oil leaving thrust bearing exceeds 160°F.
- * Sudden drop in discharge pressure.
- * Loss of component cooling water to a running pump.
- * Lube oil pressure drops to zero.

4.3 Immediately stop the positive displacement pump if any of the following occur:

- * Pump bearing oil temperature reaches 180°F.
- * Gyro fluid drive temperature reaches 220°F.
- * Pump bearing oil pressure drops to zero.
- * Gyro fluid level falls below 1/4 in sightglass.

Revision: 24	SHIFTING CHARGING PUMPS	SYS EG-201
Continuous Use		Page 3 of 21

4.4 IF RCS temperature is greater than or equal to 200°F, THEN the CCP Discharge Header FCV-121 Inlet Isolation valve for the pump NOT aligned to the charging header must be locked closed. This does not apply during the time required to shift between CCPs.

- * BG-V8483A for CCP A
- * BG-V8483C for CCP B

4.5 WHEN any RCS cold leg temperature is less than 350°F, THEN only one CCP may be operable. This does not apply during the time required to shift between CCPs or when the reactor vessel head is removed. Refer to Technical Specification 3.5.3.

4.6 CCP A pump flow must be greater than or equal to 175 gpm for continuous operation. (115 gpm charging flow plus 60 gpm recirc flow). CCP B pump flow must be greater than or equal to 173 gpm for continuous operation. (117 gpm charging flow plus 56 gpm recirc flow). Refer to Standing Order 17 for flow rates less than continuous flow values. The time involved in switching pumps does not count toward the low flow cavitation limits. [Commitment Step 3.5]

4.7 IF instrument air is lost to BG PCV-121 OR BG HV-182 when both CCPs are running, THEN close either BG HIS-8105 or BG HIS-8106 and stop either CCP.

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 4 of 21

		<u>INIT/DATE</u>
5.0	<u>PREREQUISITES</u>	
5.1	CVCS is operating in accordance with SYS BG-120, CHEMICAL AND VOLUME CONTROL SYSTEM STARTUP.	<u> / </u>
5.2	<u>IF</u> starting CCP B, <u>THEN</u> CCP B aux lube oil pump has run between 30 minutes and 60 minutes. N/A if emergency start required.	<u> / </u>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 5 of 21

		<u>INIT/DATE</u>
6.0	<u>PROCEDURE</u>	
6.1	<u>Shifting From PDP To CCP A</u>	
6.1.1	Verify Centrifugal Charging Pump Flow Control valve is in manual and set at 20%.	
	o BG FK-121 - IN MANUAL AND SET AT 20%	<input checked="" type="checkbox"/>
6.1.2	Verify CCP A Recirc Valve is open.	
	o BG HIS-8110 - OPEN	<input checked="" type="checkbox"/>
6.1.3	Verify component cooling water is being supplied to CCP A.	<input checked="" type="checkbox"/>
<p>NOTE</p> <p>When BG-V8483A is manipulated, it should be logged in the Locked Valve Log for tracking purposes.</p>		
6.1.4	Lock open CCP A Discharge Header FCV-121 Inlet Isolation valve.	
	o BG-V8483A - LOCKED OPEN	
	Verified	<i>TA 11/02/94</i> <i>RD 11/02/94</i>
6.1.5	Ensure CCP A Aux Lube Oil Pump in auto.	
	o BG HIS-1AX - IN AUTO	<input checked="" type="checkbox"/>
6.1.6	Start CCP A.	
	o BG HIS-1A - STARTED	<input checked="" type="checkbox"/>
6.1.7	Open CCP A Discharge PI-118 Isolation valve.	
	o BG-V090 - OPEN	<input checked="" type="checkbox"/>
6.1.8	IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP B Discharge Header FCV-121 Inlet Isolation valve is locked closed.	
	o BG-V8483C LOCKED CLOSED	
	Verified	<i>TA 11/02/94</i> <i>RD 11/02/94</i>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 6 of 21

		INIT/DATE
6.1.9	Place PDP Speed Controller in manual. o BB SK-459A - IN MANUAL	<input checked="" type="checkbox"/>
6.1.10	Decrease PDP speed while maintaining a constant charging header flow by performing the following simultaneously: o Lower PDP Speed to 30% output. o BB SK-459A - LOWERED TO 30%	<input checked="" type="checkbox"/>
	<u>AND</u> o Adjust CCP Flow control valve as necessary to maintain constant charging header flow. o BG FK-121 - ADJUSTED	<input checked="" type="checkbox"/>
6.1.11	<u>WHEN</u> PDP speed at 30%, <u>THEN</u> stop the PDP. o BG HIS-3 - STOPPED	<input checked="" type="checkbox"/>
6.1.12	Adjust CCP Discharge Flow Control valve as necessary to maintain PZR level at program. o BG FK-121 - ADJUSTED TO MAINTAIN PZR LEVEL	<input checked="" type="checkbox"/>
6.1.13	Adjust Charging Header Back Pressure Control valve as necessary to maintain RCP seal injection flow between 8 gpm and 13 gpm. N/A if not required. o BG FR-157 - BETWEEN 8 GPM AND 13 GPM o BG FR-156 - BETWEEN 8 GPM AND 13 GPM o BG FR-155 - BETWEEN 8 GPM AND 13 GPM o BG FR-154 - BETWEEN 8 GPM AND 13 GPM	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
6.1.14	Increase letdown flow to 120 gpm: N/A if not required. 1. Increase charging flow to 120 gpm. o BG FI-121A - AT 120 GPM 2. Place Letdown HX Outlet Pressure Controller in manual. o BG PK-131 - IN MANUAL	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>

INIT/DATE

3. Adjust Letdown HX Outlet Pressure Controller to between 90% and 100% output.
 - o BG PK-131 - ADJUSTED TO BETWEEN 90% AND 100% ☒
4. Open Letdown Orifice A Valve.
 - o BG HIS-8149AA - OPEN ☒
5. Adjust Letdown HX Outlet Pressure Controller as necessary to establish Letdown HX Outlet Pressure at 350 psig.
 - o BG PI-131 - AT 350 PSIG ☒
6. Place Letdown HX Outlet Pressure Controller in auto.
 - o BG PK-131 - IN AUTO ☒
7. Verify Letdown HX Outlet Flow is 120 gpm.
 - o BG FI-132 - AT 120 GPM ☒
- 6.1.15 Place CCP Discharge Flow Control valve in automatic.
 - o BG FK-121 - IN AUTO ☒
- 6.1.16 Adjust PZR Level Master Controller for 120 gpm letdown: N/A if not required.
 1. Place PZR Level Master Controller in manual.
 - o BB LK-459 - IN MANUAL ☒
 2. Adjust PZR Level Master Controller to establish 120 gpm charging flow.
 - o BB LK-459 - ADJUSTED TO ESTABLISH 120 GPM CHARGING FLOW ☒
 3. Place PZR Level Master Controller in auto.
 - o BB LK-459 - IN AUTO ☒
- 6.1.17 IF charging flow is less than 115 gpm, THEN refer to Standing Order 17. ☒

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 8 of 21

		INIT/DATE
6.1.18	Verify pressurizer level is being maintained automatically.	N/A <input type="checkbox"/>
6.1.19	Section 6.1 complete.	RA 10/24/84

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 9 of 21

		INIT/DATE
6.2	<u>Shifting From PDP To CCP B</u>	
6.2.1	Verify Centrifugal Charging Pump Flow Control valve is in manual and set at 20%.	
	o BG FK-121 - IN MANUAL AND SET AT 20%	<input type="checkbox"/>
6.2.2	Verify CCP B Recirc Valve is open.	
	o BG HIS-8111 - OPEN	<input type="checkbox"/>
6.2.3	Verify component cooling water is being supplied to CCP B.	<input type="checkbox"/>
<p>NOTE</p> <p>When BG-V8483C is manipulated, it should be logged in the Locked Valve Log for tracking purposes.</p>		
6.2.4	Lock open CCP B Discharge Header FCV-121 Inlet Isolation valve.	
	o BG-V8483C - LOCKED OPEN	<u> / </u>
	Verified	<u> / </u>
6.2.5	Ensure CCP B Aux Lube Oil Pump in auto.	
	o BG HIS-2AX - IN AUTO	<input type="checkbox"/>
6.2.6	Start CCP B.	
	o BG HIS-2A - STARTED	<input type="checkbox"/>
6.2.7	Open CCP B Discharge PI-119 Isolation valve.	
	o BG-V094 - OPEN	<input type="checkbox"/>
6.2.8	IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP A Discharge Header FCV-121 Inlet Isolation valve is locked closed.	
	o BG-V8483A LOCKED CLOSED	<u> / </u>
	Verified	<u> / </u>
6.2.9	Place PDP Speed Controller in manual.	
	o BB SK-459A - IN MANUAL	<input type="checkbox"/>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 10 of 21

		INIT/DATE
6.2.10	Decrease PDP speed while maintaining a constant charging header flow by performing the following simultaneously:	
	o Lower PLP Speed to 30% output.	
	o BB SK-459A - LOWERED TO 30%	<input type="checkbox"/>
	AND	
	o Adjust CCP Flow control valve as necessary to maintain constant charging header flow.	
	o BG FK-121 - ADJUSTED	<input type="checkbox"/>
6.2.11	WHEN PDP speed at 30%, THEN stop the PDP.	
	o BG HIS-3 - STOPPED	<input type="checkbox"/>
6.2.12	Adjust CCP Discharge Flow Control valve as necessary to maintain PZR level at program.	
	o BG FK-121 - ADJUSTED TO MAINTAIN PZR LEVEL	<input type="checkbox"/>
6.2.13	Adjust Charging Header Back Pressure Control valve as necessary to maintain RCP seal injection flow between 8 gpm and 13 gpm. N/A if not required.	
	o BG FR-157 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
	o BG FR-156 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
	o BG FR-155 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
	o BG FR-154 - BETWEEN 8 GPM AND 13 GPM	<input type="checkbox"/>
6.2.14	Increase letdown flow to 120 gpm: N/A if not required.	
	1. Increase charging flow to 120 gpm.	
	o BG FI-121A - AT 120 gpm	<input type="checkbox"/>
	2. Place Letdown HX Outlet Pressure Controller in manual.	
	o BG PK-131 - IN MANUAL	<input type="checkbox"/>
	3. Adjust Letdown HX Outlet Pressure Controller to between 90% and 100% output.	
	o BG PK-131 - ADJUSTED TO BETWEEN 90% AND 100%	<input type="checkbox"/>

Revision: 24	SHIPTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 11 of 21

		INIT/DATE
	4. Open Letdown Orifice A Valve.	
	o BG HIS-8149AA - OPEN	<input type="checkbox"/>
	5. Adjust Letdown HX Outlet Pressure Controller as necessary to establish Letdown HX Outlet Pressure at 350 psig.	
	o BG PI-131 - AT 350 PSIG	<input type="checkbox"/>
	6. Place Letdown HX Outlet Pressure Controller in auto.	
	o BG PK-131 - IN AUTO	<input type="checkbox"/>
	7. Verify Letdown HX Outlet Flow is 120 gpm.	
	o BG FI-132 - AT 120 GPM	<input type="checkbox"/>
6.2.15	Place CCP Discharge Flow Control valve in automatic.	
	o BG FK-121 - IN AUTO	<input type="checkbox"/>
6.2.16	Adjust PZR Level Master Controller for 120 gpm letdown: N/A if not required.	
	1. Place PZR Level Master Controller in manual.	
	o BB LK-459 - IN MANUAL	<input type="checkbox"/>
	2. Adjust PZR Level Master Controller to establish 120 gpm charging flow.	
	o BB LK-459 - ADJUSTED TO ESTABLISH 120 GPM CHARGING FLOW	<input type="checkbox"/>
	3. Place PZR Level Master Controller in auto.	
	o BB LK-459 - IN AUTO	<input type="checkbox"/>
6.2.17	<u>IF</u> charging flow is less than 117 gpm, <u>THEN</u> refer to Standing Order 17.	<input type="checkbox"/>
6.2.18	Verify PZR level is being maintained automatically.	<input type="checkbox"/>
6.2.19	Section 6.2 complete.	<u>1</u>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 12 of 21

INIT/DATE

6.3 Shifting From Either CCP To PDP

NOTE

To fill the seal tank, 2 Operators should be utilized to prevent inadvertant overflow of seal tank. Seal tank should be considered contaminated.

- 6.3.1 Locally ensure the PDP seal tank is full. ☒
- 6.3.2 Verify component cooling water is being supplied to the PDP. ☒
- 6.3.3 On the PDP speed increaser, verify the Air Pressure Trip Valve is reset. ☒
- 6.3.4 Open PDP Recirc Valve.
 - o BG HIS-8109 - OPEN ☒
- 6.3.5 Place PDP Speed Controller in manual.
 - o BB SK-459A - IN MANUAL ☒
- 6.3.6 Adjust PDP Speed Controller to 38% output.
 - o BB SK-459A - AT 38% ☒

NOTE

If PDP is started during normal working hours, contact BG System Engineer to check if pump start needs to be observed.
[Commitment Step 3.5]

- 6.3.7 Start the PDP.
 - o BG HIS-3 - STARTED ☒
- 6.3.8 IF the PDP output shaft does NOT begin rotating after pump ~~start~~, THEN stop the PDP and prime the PDP using Attachment A. ☒

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 13 of 21

INIT/DATE

6.3.9 IF the PDP is being started for pump seal run in after maintenance, THEN perform the following:

1. Adjust PDP speed to desired speed as directed by System Engineering.

o BB SK-459A - ADJUSTED TO DESIRED SPEED

2. Run the PDP for the amount of time desired by System Engineering.

3. Pump seal run in complete.

6.3.10 Adjust PDP speed controller output to 38%.

o BB SK-459A - AT 38%

6.3.11 Decrease letdown flow to 75 gpm: N/A if not required.

1. Close Letdown Orifice A Valve.

o BG HIS-8149AA - CLOSE

2. Place Letdown HX Outlet Pressure Controller in manual.

o BG PK-131 - IN MANUAL

3. Adjust Letdown HX Outlet Pressure Controller as necessary to establish Letdown HX Outlet Pressure at 350 psig.

o BG PI-131 - AT 350 PSIG

4. Place Letdown HX Outlet Pressure Controller in auto.

o BG PK-131 - IN AUTO

5. Verify Letdown HX Outlet Flow is 75 gpm.

o BG FI-132 - AT 75 GPM

6.3.12 Place CCP Discharge Flow Control valve in manual.

o BG FK-121 - IN MANUAL

INIT/DATE

6.3.13 Adjust CCP Discharge Flow Control valve to maintain pressurizer level.

- o BG FK-121 - ADJUSTED TO MAINTAIN PZR LEVEL



6.3.14 WHEN the PDP has run 3 minutes, THEN close PDP Recirc valve. [Commitment Step 3.5]

- o BG HIS-8109 - CLOSED



6.3.15 Increase PDP speed while maintaining charging header flow between 80 gpm and 100 gpm by performing the following simultaneously:

- o Increase PDP speed to maintain flow.

- o BB SK-459A - ADJUSTED



AND

- o Lower CCP Discharge flow control valve to 20% output.

- o BG FK-121 - AT 20%



6.3.16 WHEN CCP Discharge Flow Controller output is at 20%, THEN ensure the PDP is supplying the charging header by increasing PDP speed until an increase in charging header flow is observed.

- o BB SK-459A - INCREASED UNTIL CHARGING FLOW INCREASED



6.3.17 IF CCP B is being stopped, THEN place CCP B aux lube oil pump hand switch to stop.

- o BG HIS-2AX - IN STOP



Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 15 of 21

INIT/DATE

NOTE

BG PCV-121 should be left partially OPEN to ensure continuous RCP Seal Injection Flow in the event of PDP TRIP concurrent with CCP AUTO-START and loss of CCW to RCP Thermal Barriers (e.g. SI Signal).

6.3.18 STOP the running centrifugal charging pump.
N/A other pump.

- * BG HIS-1A for CCP A - STOPPED
- * BG HIS-2A for CCP B - STOPPED



6.3.19 Ensure CCP Discharge Flow Controller is in manual with 20% output.

- o BG FK-121 - IN MANUAL AT 20%

Verified

MS 12/14/97
DA 1/18/98

6.3.20 Adjust PDP Speed Controller to maintain PZR level at program.

- o BB SK-459A - ADJUSTED TO MAINTAIN PZR LEVEL



6.3.21 Place PDP Speed Controller in auto.

- o BB SK-459A - IN AUTO

N/A

6.3.22 Adjust PZR Lev Master Controller for 75 gpm letdown: N/A if not required.

1. Place PZR Level Master Controller in manual.

- o BB LK-459 - IN MANUAL



2. Adjust PZR Level Master Controller to establish 75 gpm charging flow.

- o BB LK-459 - ADJUSTED TO ESTABLISH 75 GPM CHARGING FLOW



3. Place PZR Level Master Controller in auto.

- o BB LK-459 - IN AUTO



Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 16 of 21

		INIT/DATE
6.3.23	Adjust Charging Header Back Pressure Control valve as necessary to maintain RCP seal injection flow between 8 gpm and 13 gpm. N/A if not required.	
	<ul style="list-style-type: none"> o BG FR-157 - BETWEEN 8 GPM AND 13 GPM o BG FR-156 - BETWEEN 8 GPM AND 13 GPM o BG FR-155 - BETWEEN 8 GPM AND 13 GPM o BG FR-154 - BETWEEN 8 GPM AND 13 GPM 	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black;"></div> </div>
6.3.24	Verify pressurizer level is being maintained automatically.	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black;"></div> </div>
6.3.25	Close the previously running CCP Discharge Gauge Isolation Valve. N/A other valve.	
	* BG-V090 for CCP A - CLOSED	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black;"></div> </div>
	OR	
	* BG-V094 for CCP B - CLOSED	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black;"></div> </div>
6.3.26	Section 6.3 complete.	<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 20px; border: 1px solid black; margin-right: 5px;"></div> <div style="width: 20px; height: 20px; border: 1px solid black;"></div> </div>

Revision: 24	SHIFTING CHARGING PUMPS	SYS BG-201
Continuous Use		Page 17 of 21

INIT/DATE

6.4 Shifting From CCP A To CCP B

6.4.1 Verify CCP B Recirc Valve is open.

o BG HIS-8111 - OPEN



6.4.2 Verify component cooling water is being supplied to CCP B.



NOTE

When BG-V8483C is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.4.3 Lock open CCP B Discharge Header PCV-121 Inlet Isolation valve.

o BG-V8483C - LOCKED OPEN

Verified

AC 11/02/91
AC 11/02/91

6.4.4 Ensure CCP B Aux Lube Oil Pump in auto.

o BG HIS-2AX - IN AUTO



6.4.5 Start CCP B.

o BG HIS-2A - STARTED



NOTE

Notify Results Engineering if CCP A is to be run at less than 175 gpm or CCP B less than 173 gpm. [Commitment Step 3.5]

6.4.6 Monitor charging header flow, seal water injection flow, and CCP Discharge Flow Controller BG FK-121 for proper operation.



6.4.7 STOP CCP A.

o BG HIS-1A - STOPPED



6.4.8 Open CCP B Discharge PI-119 Isolation valve.

o BG-V094 - OPEN



Revision: 24

SHIFTING CHARGING PUMPS

SYS BG-201

Continuous Use

Page 18 of 21

INIT/DATE

6.4.9 Close CCP A Discharge PI-118 Isolation valve.

o BG-V090 - CLOSED



NOTE

When BG-V8483A is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.4.10 IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP A Discharge Header FCV-121 Inlet Isolation valve is locked closed.

o BG-V8483A LOCKED CLOSED

Verified

6.4.11 Ensure pressurizer level, charging header flow, and seal water injection flow are being maintained normally.

6.4.12 Section 6.4 complete.

② 1/10/24/94
② 1/10/24/94
② 1/10/24/94

INIT/DATE6.5 Shifting From CCP B To CCP A

6.5.1 Verify CCP A Recirc Valve is open.

o BG HIS-8110 - OPEN ☐6.5.2 Verify component cooling water is being supplied to CCP A. ☐NOTE

When BG-V8483A is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.5.3 Lock open CCP A Discharge Header FCV-121 Inlet Isolation valve.

o BG-V8483A - LOCKED ~~OPEN~~ OPENVerified /

6.5.4 Ensure CCP A Aux Lube Oil Pump in auto.

o BG HIS-1AX - IN AUTO ☐

6.5.5 Start CCP A.

o BG HIS-1A - STARTED ☐NOTE

Notify Results Engineering if CCP A is to be run at less than 175 gpm or CCP B less than 173 gpm. [Commitment Step 3.5]

6.5.6 Monitor charging header flow, seal water injection flow, and CCP Discharge Flow Controller BG FK-121 for proper operation. ☐6.5.7 IF CCP B is being stopped, THEN place CCP B aux lube oil pump handswitch to stop.o BG HIS-2AX - IN STOP ☐

6.5.8 STOP CCP B.

o BG HIS-2A - STOPPED ☐

INIT/DATE

6.5.9 Open CCP A Discharge PI-118 Isolation valve.

o BG-V090 - OPEN



6.5.10 Close CCP B Discharge PI-119 Isolation valve.

o BG-V094 - CLOSED

**NOTE**

When BG-V8483C is manipulated, it should be logged in the Locked Valve Log for tracking purposes.

6.5.11 IF RCS temperature is greater than or equal to 200°F, THEN ensure CCP B Discharge Header FCV-121 Inlet Isolation valve is locked closed.

o BG-V8483C LOCKED CLOSED

Verified

6.5.12 Ensure pressurizer level, charging header flow, and seal water injection flow are being maintained normally.



6.5.13 Section 6.5 complete.

7.0 RECORDS

7.1 The following QA records are generated by this procedure:

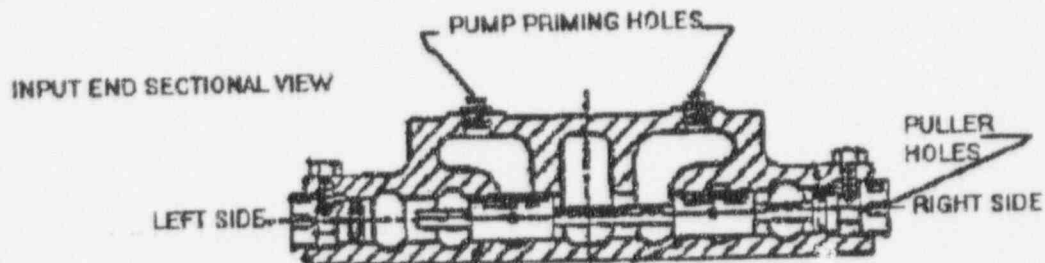
7.1.1 Section 5.0

7.1.2 Section 6.0

-END-

ATTACHMENT A
(Page 1 of 1)
PRIMING THE PDP

- 1) Check oil level and add oil if necessary.
- 2) Prime the pump.



- 1) Remove the pipe plugs from the two pump priming holes on top of the input end bell.
- 2) Pour oil into either hole until the oil rises to the other hole and remains there.
- 3) Replace and tighten the pipe plugs.

-END-