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SECTION 1

PROCEDURE TITLE AND NUMBER

SP 1106.16 CONDENSATE SYSTEM

REASON FOR CHANGE

IN ORDER TO PREVENT A POTENTIAL PROBLEM ECOLAIRE
 CONDENSER RECOMMENDS CLOSING THE ISOLATION VALVES TO
 SPARGING CONNECTION NO. 10 ON THE HOTWELL OF THE L.P. CONDENSER.
 THIS WILL PREVENT ACCIDENTAL OVERPRESSURIZATION OF THE
 HOTWELL STORAGE AREA DUE TO INADEQUATE VENTING TO
 THE H.P. CONDENSER SHELL.

REFER TO MEMO OF MAY 6, 1980 FILE: M-4A

CHANGE

See attached sheet.

8507300332 840912
 PDR ADOCK 05000346
 P PDR

IS PROCEDURE REVISION REQUIRED

Yes



No



If no, this modification is valid until _____

PREPARED BY

DATE

APPROVED BY

DATE

APPROVED BY

DATE

SUBMITTED BY (Section Head)

DATE

RECOMMENDED BY (SRB Chairman)

DATE

QA APPROVED BY (Manager of Quality Assurance)

DATE

APPROVED BY (Station Superintendent)

DATE

Sheet No. 13
of 17

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SP 1106.16.5

VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Hotwell Level Switch Source Valves	M-06A F-4	CD 595A	Open	
Hotwell Level Switch Source Valves	M-06A F-4	CD 595B	Open	
Hotwell Level Switch	M-06A F-4	LSL 595	In Service	
Hotwell Level Switch	M-06A F-4	LSLL 595	In Service	
HP Cond 1-1 Sparging Valve Inlet Isolation	M-06A F-2	AS 7	Open	
HP Cond 1-1 Sparging Line Drain	M-06A F-2	AS 200	Closed	
HP Cond 1-1 Sparging Control Valve	M-06A F-2	AS 418	In Service	
HP Cond 1-1 Sparging Control Valve Drain	M-06A F-2	AS 201	Closed	
HP Cond 1-1 Sparging Valve Outlet Isolation	M-06A F-3	AS 8 7	Closed Open	
Cond Crossover Sample Isolation	M-06A E-5	SS 11	Closed	
FW Cleanup Recirc Line to Condenser Drain	M-006A G-5	FW 200	Closed	
FW Cleanup Recirc Inlet	M-006A G-5	FW 523	Closed	
FW Cleanup Recirc to Condenser Isolation	M-006A G-5	FW 201	Closed	
LP Cond 1-2 Sparging Valve Outlet Isolation	M-06A F-8	AS 2 7	Closed Open	
LP Cond 1-2 Sparging Control Valve Drain	M-06A F-7	AS 202	Closed	
LP Cond 1-2 Sparging Control Valve	M-06A F-8	AS 419	In Service	
LP Cond 1-2 Sparging Valve Inlet Isolation	M-06A F-8	AS 1	Open	
LP Cond 1-2 Sparging Line Drain	M-06A F-7	AS 203	Closed	
Hotwell Level Gage Source Valve	M-06A E-7	CD 549A	Open	
Hotwell Level Gage Source Valve	M-06A E-7	CD 549B	Open	

~~*May be left closed until ready to heat hotwell.~~

Davis-Besse Nuclear Power Station

Unit No. 1

System Procedure SP 1106.16

CONDENSATE SYSTEM

Record of Approval and Changes

Prepared By	<u>S. Kensicki, B. Adney, V. Opfer</u>	<u>3/25/74</u> Date
Submitted By	<u>Terry D. Murray</u> Section Head	<u>3/28/74</u> Date
Recommended By	<u>NA</u> SRB Chairman	<u> </u> Date
QA Approved	<u>NA</u> Quality Assurance Director	<u> </u> Date
Approved By	<u>Jack Evans</u> Plant Manager	<u>3/29/74</u> Date

Revision No.	SRB Recommendation	Date	QA Approved	Date	Plant Manager Approval	Date
10	NA		NA		<i>[Signature]</i>	4/22/83

1. PURPOSE

This procedure provides guidance for the following modes of operation:

Section 4	Filling the System
Section 5	Normal Operation
Section 6	Abnormal Operation
Section 6.1	Isolation of a Condensate Pump
Section 6.2	Loss of One or Both Heater Drain Pumps and Cascading of High Pressure Heater Drains to the Condenser
Section 6.3	Bypassing Low Pressure Feedwater Heaters
Section 6.4	Contamination in the Hotwell
Section 6.5	Loss of a Condensate Pump
Section 7	Draining System
Section 8	Condensate Wet Lay Up for Mode 5 & 6

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System Description

Three condensate pumps are normally in operation to maintain 100% power. A seal water flow of 1-2 GPM with a pressure of 15-20 psig at the seals is taken from the discharge line of the pumps.

During start-up the seal water is supplied from the condensate storage tanks. Drain water from the seals flows by gravity to a drain tank which is on level control. Atmospheric pressure forces the water from the tank to the condenser.

The normal condensate flow path from the condensate pump is through the steam jet air ejector, steam packing exhaustor, number 1 feedwater heaters, condensate polishing demineralizers, number 2 feedwater heaters discharging to the deaerating heaters.

One condensate pump is capable of bringing station load up to 55% full power. In case the drains from one heater drain tank must be cascaded back to the condenser, two condensate pumps are capable of handling the total flow at turbine full power. Three pumps are required for the cascading of drains back to the condenser from one high pressure heater train or one high pressure plus one low pressure train at turbine full power. Three pumps are also required at full load if both LP heater drain pumps are out of service.

The steam jet air ejector requires a minimum condensate flow of 1000 GPM (0.5 MPPH) to maintain normal functioning. The full condensate flow of 13,360 GPM (6.6 MPPH) (normal full power) passes through the tubes.

The steam packing exhaustor requires a minimum flow of 2430 GPM (1.2 MPPH) at 120°F. The exhaustor is orificed so that only a portion of the full condensate flow passes through the tubes. Three pump operation requires bypassing a portion of the flow around the steam packing exhaustor since flow through the exhaustor should not exceed 14,300 GPM (7.1 MPPH).

7 | The condensate pump minimum flow recirculation control valve is designed to pass a minimum of 2670 GPM (1.3 MPPH).

The hotwell level is maintained at 51" by LIC 550 which controls the hotwell low level make-up valve CD550A and hotwell high level return valve CD550B. On low level, water is added to the condenser by atmospheric pressure and gravity from the condensate storage tanks through CD550A. If the hotwell level is above set point water is pumped from the condensate system to the condensate storage tank through CD550B.

The deaerator storage tanks are maintained at an operating level of 8' by means of individual level control valves. Total condensate flow to the deaerator is a function of the deaerator storage tank level demand.

Back pressure control valve CD 2796 in the condensate pump discharge line is used to protect against pump runout when starting the first pump and also when operating with only one pump in service. The valve maintains a minimum pressure of 230 psig in the condensate pump discharge line.

A hotwell cleanup drain valve CD 590 is provided for pumping water out of the hotwell into the circ. water system. This method of fast draining the hotwell could be used after a condenser hydrostatic test or if the water in the hotwell is contaminated to such an extent that it would overload the ion exchange capacity of the condensate polishers.

A steam sparger is located in each hotwell to heat the condensate to provide some deaeration. Live steam is supplied to each hotwell from the auxiliary steam system through individual temperature control valves. The condensate temperature is maintained at the saturation temperature corresponding to the saturation pressure at the HP condenser inlet.

Condensate Pump Data

7 Flow: Normal/Design	6680/7350 GPM (3.3/3.6 MPPH)
Flow: Temperature	80-125°F
Normal Discharge Pressure	270-275 psig
Motor RPM	1180
Full Load Amps	191
Condensate Storage Tanks (2)	250,000 gallons (each)
Deaerator Storage Tank (2)	53,000 gallons (each)
(Normal Operating Level)	
Hotwell	81,000 gallons

2. PRECAUTIONS AND LIMITATIONS

2.1 One condensate pump is designed for station load up to 55% full power.

- 2.2 Three condensate pumps are required to maintain normal hotwell level of 51" in the event of a loss of both heater drain pumps, or if one string of high pressure heater drains must go to the condenser.
- 7 | 2.3 The condensate minimum flow valve will pass 2670 GPM (1.3 MPPH).
- 2.4 Hotwell level should be at least 36" before starting and operating a condensate pump.
- 2.5 The water level in the condensate storage tanks should not fall below 40 ± 2 feet. The tanks can be filled from 40 feet to the high level alarm point of 47 feet in four (4) hours at a makeup flow of 200 GPM.
- 2.6 Hotwell level should be observed on control room indicator any time heater drains are discharged to the condenser.
- 2.7 If the differential pressure across the condensate demineralizers exceeds 33 PSID, the demineralizer bypass valve CD751 will open.
- 2.8 Each pump may be started twice in succession from ambient temperature or once from operating temperature. For subsequent starts, allow 30 minutes running time or 60 minutes idle time.
- 2.9 Ensure that the condensate minimum flow recirculation valve CD578 is open after starting a condensate pump. This applies only when the other pumps are not operating.
- 2.10 The low level trip on the condensate pump is set at 24" hotwell level.
- 2.11 When starting the first condensate pump (no pumps running) the condensate pump discharge header pressure control valve CD2796 must be operable to provide back pressure (230 psig) in the condensate pump discharge line to protect against pump runout when starting the first pump and also when operating with only one pump on the line.
- 7 | 2.12 The maximum flow through the steam packing exhaustor is 7.1 MPPH (14,300 GPM).
- 2.13 The Condensate Pump motor bearing temperatures will alarm at 180°F and should NOT be run above 212°F. The motor stator temperatures will alarm at 270°F and should not be allowed to exceed 302°F.
- 2.14 For pump and system protection, a minimum flow of 25% of total design flow for the operating Condensate Pumps is recommended. That is, 1838 GPM (1.0 MPPH) for one pump operation, 3675 GPM

(1.8 MPPH) for two pump operation, and 5513 GPM (2.7 MPPH) for three pump operation. Since Minimum Recirc Control Valve CD578 is designed for up to a maximum of 2670 GPM (1.3 MPPH) do NOT operate more than one pump while operating solely in the recirculation mode.

- (TS 2.15 During Hot Standby, Startup and Power Operations, the condensate storage facilities (condensate storage tank and deaerator storage tank) shall be OPERABLE with a minimum contained volume of 250,000 gallons of water.
- 3.7.1.3

3. REFERENCES

3.1 Drawings

1. Condensate System - M-006A
2. Feedwater System - M-006B
3. Turbine Condensate Demineralizers - M-008
4. Cooling Water System - M-009

3.2 System Descriptions and Operating Procedures

1. Pechtel Functional Description, Condensate System, BD 1106-16
2. USAR, Chapter 10 - Section 10.4.7
3. Condensate Demineralizer Operating Procedure, SP 1106.22
4. Deaerator Operating Procedure, SP 1106.17

3.3 Instruction Books

1. Ingersoll-Rand Instruction Manual for Centrifugal Pumps - Condensate Pumps
2. Steam Packing Exhauster, GEK-33819, Volume I
3. Babcock and Wilcox Water Chemistry Manual, B&W 1385

4. FILLING THE SYSTEM

The condensate system can be filled using the wet lay-up recirc pump (Section 4.2) or using a condensate pump (Section 4.3). Section 4.2 is the preferred method.

4.1 Prerequisites

- 4.1.1 To fill the entire condensate system, a minimum of 250,000 gallons of water must be available in the condensate storage tanks. A level of approximately 22 feet in each tank or approximately 44 feet in one tank will provide this water. This minimum does not apply if only a partial fill is desired.

NOTE: Prior to return of service, CST's must be returned to a level of greater than 40 feet in each tank.

4.1.2 The water quality must meet the following specifications:

Conductivity at 77°F	5 µmho/cm
pH at 77°F	5.8 - 8.0
Chloride, as Cl ⁻	1.0 PPM
Fluoride, as F ⁻	1.0 PPM
Turbidity	1 JTU
Suspended Solids	0.1 PPM
SiO ₂	0-15 PPB

4.2 Procedure using wet lay-up recirc pump.

4.2.1 Complete normal valve verification list A with the following exceptions:

AS2,	LP Cond 1-2 sparging valve inlet iso	closed
AS8,	HP Cond 1-1 sparging valve inlet iso	closed
CD7,	Cond. pump 1-1 discharge iso valve	closed
CD8,	Cond. pump 1-2 discharge iso valve	closed
CD9,	Cond. pump 1-3 discharge iso valve	closed
CD96,	Inlet to Cond. polishing demins	closed
CD751,	Cond. demins bypass (have C&HP do this)	open

NOTE: The hotwell level will increase to normal operating level of 51" when level control valve CD550A is placed in service.

4.2.2 Close FW102, SUFW pump 1-1 to HP condenser, FW106, SUFW pump 1-1 to MFW line iso, FW423, Dear. 1-2 to 1-1 motor operated crossover, and FW84, Dear. 1-1 to 1-2 manual crossover.

4.2.3 Open FW91, SUFW pump 1-1 suction valve, to start filling. Start the condensate system recirc pump.

4.2.4 While filling the system, vent the following components until a steady stream of water issues from the vent.

1. Bypass for the steam jet air ejector and gland seal condenser vent valve, CD70

- ____ 2. LP FW Heater 1-1-1 water box vent, CD91
- ____ 3. LP FW Heater 1-2-1 water box vent, CD92
- ____ 4. LP FW Heater 1-1-1 outlet heater vent, CD93
- ____ 5. FP FW Heater 1-2-1 outlet heater vent, CD94
- ____ 6. Condensate header vent, CD207
- ____ 7. LP FW Heater 1-1-2 water box vent, CD142
- ____ 8. LP FW Heater 1-2-2 water box vent, CD143
- ____ 9. LP FW Heater 1-1-2 outlet header vent, CD146
- ____ 10. LP FW Heater 1-2-2 outlet header vent, CD147
- ____ 11. Dear. 1-1 inlet header vent, FW205
- ____ 12. Dear. 1-2 inlet header vent, FW204

- ____ 4.2.5 Continue filling the system until the deaerator storage tanks each show a level of 6' as shown on LI202 for tank 1-1 and LI205 for tank 1-2 in the control room.

NOTE: The above level of 6' is 2' short of normal operating. This will allow for expansion during heatup or control valve leakage. If desired, the deaerator storage tanks could be filled to normal operating level of 8'. This low level will also reduce the amount of steam required for pegging steam.

- ____ 4.2.6 When the desired level is reached, stop the condensate system recirc pump and close FW91, open FW423 and FW84.

4.3 Procedure using a condensate pump.

NOTE: The condensate polishing demins should be bypassed and isolated to avoid damage to the vessel internals in event of a sudden pressure shock when the condensate pump is started.

- ____ 4.3.1 Complete normal valve verification list A with the following exceptions:

AS2, LP Cond. 1-2 sparging valve inlet iso Closed

AS8, HP Cond. 1-1 sparging valve inlet iso Closed
CD96, Inlet to Cond. polsihing demins Closed
CD751, Cond. demins bypass (have C&HP do this) Open

NOTE: The hotwell level will increase to normal operating level of 51" when level control valve CD550A is placed in service.

4.3.2 Fill the hotwell from the condensate storage tank by gravity feed through level control valve CD550A.

NOTE: The condensate system volume is approximately 250,000 gallons; this includes 53,000 gallons for each deaerator storage tank at normal operating level.

4.3.3 Complete Condensate Pump Startup Checklist, Enclosure III, in preparation to starting the single desired condensate pump from the Control Room using one of the following control switches located in the Control Room.

Condensate Pump 1-1	HIS 558
Condensate Pump 1-2	HIS 564
Condensate Pump 1-3	HIS 591

NOTE: Immediately upon starting the first condensate pump, open CD578 Diaphragm Vent Valve for fifteen (15) seconds; then shut the vent valve. This will open CD578, Condensate Pump Minimum Recirculation Valve, and prevent deadheading the Condensate Pump.

4.3.4 Maintain hotwell level by manual control of level control valve CD550A from the Control Room.

4.3.5 Ensure there is a minimum pump flow of 920 KPPH (1838 GPM) as shown on FI-578 and minimum pump discharge pressure is 230 PSIG as shown on PI 569 in the Control Room. Adjust pressure by manually controlling CD2796 to remain within pressure and flow limitations.

NOTE: It may be necessary to open Hotwell Makeup Bypass Valve CD190 to maintain hotwell level above 36 inches.

4.3.6 While filling the system, vent the following components until a steady stream of water issues from the vent.

- ____ 1. Bypass for the steam jet air ejector and gland seal condenser vent valve CD70
- ____ 2. Low pressure feedwater heater 1-1-1 water box vent, CD91
- ____ 3. Low pressure feedwater heater 1-2-1 water box vent, CD92
- ____ 4. Low pressure feedwater heater 1-1-1 outlet header vent CD93
- ____ 5. Low pressure feedwater heater 1-2-1 outlet header vent CD94
- ____ 6. Condensate header vent CD207
- ____ 7. Low pressure feedwater heater 1-1-2 water box vent, CD142
- ____ 8. Low pressure feedwater heater 1-2-2 water box vent, CD143
- ____ 9. Low pressure feedwater heater 1-1-2 outlet header vent CD146
- ____ 10. Low pressure feedwater heater 1-2-2 outlet header vent CD147
- ____ 11. Deaerator 1-1 inlet header vent FW205
- ____ 12. Deaerator 1-2 inlet header vent FW204
- ____ 4.3.7 Continue filling the system until the deaerator storage tanks each show a level of 6' as shown on LI202 for tank 1-1 and LI205 for tank 1-2 in the control room.

NOTE: The above level of 6' is 2' short of normal operating. This will allow for expansion during heatup or control valve leakage. If desired, the deaerator storage tanks could be filled to normal operating level of 8'. This low level will also reduce the amount of steam required for temperature-pressure steam pegging.

- ____ 4.3.8 Once the system is filled and vented, the operating condensate pump may be shut off by using the applicable control switch.

5. NORMAL OPERATION

This section provides guidance for startup, operation at power and system shutdown.

5.1 Prerequisites

- ____ 5.1.1 The condensate system is filled and vented per Section 4.2 of this procedure.
- ____ 5.1.2 The level in the hotwell must be greater than 36" before starting a condensate pump.
- 5.1.3 Instrument air is available to the following control valves:
 - ____ 1. Condensate pump min recirculation flow valve, CD578
 - ____ 2. Hotwell makeup control valve, CD550A
 - ____ 3. Hotwell high level return, CD550B
 - ____ 4. Condensate pump seal water drain tank level control valve CD2596
 - ____ 5. Hood spray control valve CD517
 - ____ 6. Deaerator 1-1 level control valve CD421
 - ____ 7. Deaerator 1-2 level control valve CD420
 - ____ 8. Condensate pump discharge header pressure control valve CD2796
- ____ 5.1.4 The condensate system valves lined up according to the attached normal valve verification List A.
- ____ 5.1.5 The condensate polishing demineralizer system valves lined up according to Valve Verification List A (Normal Lineup) in Condensate Demineralizer Operating Procedure, SP 1106.22.

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NOTE: The condensate polishing demineralizers should be bypassed (open CD751) and isolated (close CD96) to avoid damage to the vessel internals in the event of a sudden pressure shock when the first condensate pump is started. Contact C&HP for isolating and bypassing polishers.

- ____ 5.1.6 Prior to starting any condensate pump, complete Condensate Pump Checklist, Enclosure III.

Section 5.1 completed by _____ Date _____

5.2 Procedure - Start-up

- ____ 5.2.1 Start one condensate pump from the control room with one of the following control switches:

Condensate Pump 1-1	HIS 558
Condensate Pump 1-2	HIS 564
Condensate Pump 1-3	HIS 591

NOTE: Immediately upon starting the first condensate pump, open CD 578, Diaphragm Vent Valve for fifteen (15) seconds; then shut the vent valve. This will open CD578, Condensate Pump Minimum Recirculation Valve and prevent dead heading the condensate pump.

- ____ 5.2.2 After the condensate pump is started, fill the expansion joint water seal by opening CD71 for the low pressure condenser and CD72 for the high pressure condenser. Also fill the vapor interconnect water seal by opening CD73.

- ____ 5.2.3 When condenser vacuum is being established, the level in the deaerator should be closely monitored in the control room on LI202 and LI205.

NOTE: When establishing vacuum the condensate flow will be through the condensate pump recirculation line to provide cooling water to the steam jet air ejector and steam packing exhauster. If deaerator level control valve CD420 and CD421 should leak through the deaerator and deaerator storage tank could become pressurized beyond design limits of 100 psig.

- ____ 5.2.4 After vacuum is established and the feed pumps are started for feedwater cleanup the condensate system is in normal operation with the hotwell level being maintained at 51" by high level return valve 550B and low level makeup valve 550A and the deaerator level maintained at 8' by level control valves CD420 and CD421.

- ____ 5.2.5 Before starting feedwater cleanup, valves FW523 and FW201, Cleanup Recirculation Control and Isolation Valve, must be opened.

10 | Section 5.2 completed by _____ Date _____

5.3 Procedure - Shutdown

- ____ 5.3.1 The condensate system should not be shut down until the main feed pumps have been shut down.
- ____ 5.3.2 To shut down the condensate system, stop the desired condensate pumps from the control room.
- ____ 5.3.3 Isolate the steam sparger lines to both the LP and HP Condenser.
- ____ 5.3.4 When the condensate system is shut down, refer to Condensate, Demineralizer and Primary Water Transfer and Storage System Operating Procedure, SP 1106.21, Section 4.2.3 for adding water to condensate storage tanks.

10 | Section 5.3 completed by _____ Date _____

6. ABNORMAL OPERATION

6.1 Isolation of a condensate pump 1-1 (1-2) (1-3)

- ____ 1. Close the condensate pump suction isolation CD1, (CD2) CD3)
- ____ 2. Close the condensate pump discharge isolation CD7, (CD8) (CD9)
- ____ 3. Close the condensate pump suction vent CD10 (CD11) CD12)
- ____ 4. Close the condensate pump seal water supply CD32 (CD33) (CD34)
- ____ 5. Close the condensate pump seal water return CD35 (CD36) (CD 37)
- ____ 6. Close the condensate pump motor lube oil cooling water supply CW109 (CW110) (CW111)
- ____ 7. Close the condensate pump motor lube oil cooling water return CW200 (CW201) (CW202)
- ____ 8. Tag out pump as per Safety Tagging Procedure AD 1803.00
- ____ 9. Open and tag out the supply breaker AC210 (AD207) (AC207) as per Safety Tagging Procedure AD 1803.00

- 6.1.1 To return a pump to service. complete Condensate Pump Checklist, Enclosure III.

Section 6.1 completed by _____ Date _____

- 6.2 Three (3) condensate pump operation will be necessary to maintain hotwell level at the normal operating setpoint of 51" at full power in the event of a loss of both heater drain pumps, or if one string of high pressure feedwater heater drains must go to the condenser.

NOTE: If only one low pressure heater drain pump is out of service, full station power can be maintained with two (2) condensate pumps. See Enclosure I Condensate Flow Guidelines.

- 6.2.1 The Steam Packing Exhauster should be bypassed if condensate flow exceeds 7.15 MPPH. Open the bypass valve (CD69) to as close to full open as possible and maintain the dp at 6.5 to 8.5 PSID. If possible, maintain 6.5 PSID. This takes into account a +1.5 PSID error in the installed temporary dp gauge when the dp gauge is equalized.

6.3 Bypassing low pressure feedwater heaters

- 6.3.1 When bypassing low pressure feedwater heater the following Turbine power guidelines must be observed.

<u>Heater(s) Out</u>	<u>Max. Allowable Power</u>
1-1-1 or 1-1-2	95%
1-2-1 or 1-2-2	100%
1-1-1 & 1-2-1 or 1-1-2 & 1-2-2	50%

- 6.3.2 When bypassing low pressure feedwater heater 1-1 (1-2), isolate the dump valve from the steam seal regulator GS346 (GS957) to heater 1-1 (1-2).

- 6.3.3 To bypass low pressure feedwater heaters 1-1-1 (1-2-1) (water side)

1. Slowly open CD95 heater 1-1-1 and 1-2-1 bypass valve
2. Slowly close low pressure feedwater heater inlet, CD85 (CD86)
3. Slowly close low pressure feedwater heater outlet, CD87 (CD88)

_____ 4. Open low pressure feedwater heaters water box vent
CD91 (CD92)

6.3.4 To bypass low pressure feedwater heaters 1-1-2 (1-2-2)
(Water Side)

1 | _____ 1. Slowly open CD162 heater 1-1-2 and 1-2-2 bypass valve

_____ 2. Slowly close pressure feedwater heater inlet CD136
(CD137)

_____ 3. Slowly close low pressure feedwater heater outlet
CD148 (CD149)

_____ 4. Open low pressure feedwater heater water box vent
CD142 (CD143)

6.3.5 To bypass low pressure feedwater heaters 1-1-1 and
1-2-1 at the same time (water side)

1 | _____ 1. Slowly open CD95 heater 1-1-1 and 1-2-1 bypass valve

_____ 2. Slowly close CD85 inlet valve to 1-1-1

_____ 3. Slowly close CD86 inlet valve to 1-2-1

_____ 4. Close CD87 outlet valve to 1-1-1

_____ 5. Close CD88 outlet valve to 1-2-1

_____ 6. Open CD91 water box vent heater 1-1-1

_____ 7. Open CD92 water box vent heater 1-2-1

6.3.6 To bypass low pressure feedwater heaters 1-1-2 and
1-2-2 at the same time (water side)

1 | _____ 1. Slowly open CD162 heater 1-1-2 and 1-2-2 bypass valve

_____ 2. Slowly close CD136 heater 1-1-2 inlet valve

_____ 3. Slowly close CD137 heater 1-2-2 inlet valve

_____ 4. Close CD148 heater 1-1-2 outlet valve

_____ 5. Close CD149 heater 1-2-2 outlet valve

_____ 6. Open CD142 water box vent heater 1-1-2

7. Open CD143 water box vent heater 1-2-2

Section 6.3 completed by _____ Date _____

6.4 Contamination in the Hotwell

No signoff is required for this section.

The hotwell can be contaminated by either a primary to secondary leak or by condenser tube leakage.

6.4.1 Contamination can be detected by either:

1. Hand analysis by Chemistry and Health Physics
2. Analysis by sodium and cationic conductivity instrumentation located on Control Panel C-3401.

6.4.1 A small primary to secondary leak would have to be detected by Chemistry and Health Physics Analysis. A larger leak would be detected by the increase in specific conductivity and cationic conductivity of the hotwell pump discharge sample point or by alarming in the Control Room of the N-16 detectors from either main steam line or the Kel33 detector on the Steam Jet Air Ejector. Cationic conductivity high alarm point CAH-A159 located in the Control Room is set at 0.5 $\mu\text{mho/cm}$.

6.4.2 A small condenser leak would be detected by a rise in Sodium concentration of the hotwell pump discharge sample as the leak increased the cationic conductivity of the sample would start increasing.

6.4.3 In the event of a high conductivity alarm, refer to Emergency Procedure EP 1202.23 S/G Feedwater Chemistry Out of Specification and EP 1202.58, Condenser Tube Leak.

6.5 Loss of Condensate Pump

6.5.1 In the event of a loss of a condensate pump a stand-by pump should be placed in operation.

6.5.2 If a standby pump is not available and deaerator level falls to 48 inches, the ICS will automatically runback to 55% power.

7. DRAINING THE CONDENSATE SYSTEM

This section covers draining the three major components of the

condensate system, the hotwell, the deaerators and the low pressure feedwater heaters and associated piping.

7.1 Prerequisites

- ____ 7.1.1 The condensate pit sump flood pump must be operable and there is adequate space in the Transformer Collection Box (57,000 gallons) or means have been taken to empty it.

NOTE: If an alternate discharge path to the Collection Box or Settling Basin for the flood pump is available, it is desirable to use that path for larger quantities of water.

- ____ 7.1.2 Caution must be observed when draining the condensate system not to exceed the capacity of the sump pumps. Capacity of one condensate pit sump flood pump is 600 GPM.
- ____ 7.1.3 When draining to the condensate storage tank, ensure that there is adequate space available.

Section 7.1 completed by _____ Date _____

7.2 Draining the hotwell by gravity

- ____ 7.2.1 Open the vacuum breakers, VS634 and VS635 by using HIS634 located in the Control Room Panel C5721.
- ____ 7.2.2 Close Hotwell Makeup Control Valve Isolation Valve CD188 to prevent refill of the hotwell from the Condensate Storage Tank when level drops below 51 inches.
- ____ 7.2.3 Rack out Condensate Pump breakers AC210, AC207, and AD207.
- ____ 7.2.4 Close Condensate Pump discharge valves CD7, CD8, and CD9.
- ____ 7.2.5 Open the hotwell drain, CD39.
- ____ 7.2.6 Observe the hotwell level decrease by using the local level indication LG549 located on the hotwell.
- ____ 7.2.7 When the hotwell is drained, close the hotwell drain CD39.

Section 7.2 completed by _____ Date _____

6 | 7.3 Draining the hotwell through CD590 (Hotwell Cleanup Drain Valve)

- ____ 7.3.1 Close CD85, the inlet valve to LP Feedwater Heater 1-1, and CD86, the inlet valve to LP Feedwater Heater 2-1.
- ____ 7.3.2 Close CD550B hotwell high level return valve and CD74 hotwell high level return valve isolation to prevent possible contamination of the condensate storage tanks.
- ____ 7.3.3 Close Hotwell Makeup Control Valve Isolation Valve CD188 to prevent refill of the hotwell from the Condensate Storage Tanks before level drops below 51 inches.
- ____ 7.3.4 Open CD590 hotwell cleanup drain to circulating water system.
- ____ 7.3.5 Pump the hotwell level down to 30 inches as shown on LI 538 in the main Control Room.
- ____ 7.3.6 If further dilution of the water in the hotwell is desirable, add makeup through normal makeup valve CD550A and continue pumping through CD590.
- ____ 7.3.7 After draining is complete, open CD85, CD86, CD550B and CD74. Close CD590.

Section 7.3 completed by _____ Date _____

7.4 Draining the deaerator storage tank 1-1 (1-2)

The deaerator storage tank can be drained to two places, the sump or to the condensate storage tanks.

- 7.4.1 Draining the deaerator storage tank 1-1 (1-2) to the sump
 - ____ 1. Close deaerator 1-1 (1-2) level control valve outlet isolation CD152 (CD153).
 - ____ 2. Open deaerator 1-1 (1-2) inlet header vent FW205 (FW204).
 - ____ 3. Open the deaerator storage tank 1-1 (1-2) drains FW220 and FW221 (FW222 and FW223).
 - ____ 4. After draining open CD152 (CD153):

7.4.2 Draining the 1-1 deaerator storage tank to the condensate storage tanks

- ___ 1. Open deaerator 1-1 inlet header vent, FW205.
- ___ 2. Verify deaerator storage tank 1-1 outlet isolation FW1 is open.
- ___ 3. Verify deaerator storage tank 1-1 to deaerator storage tank 1-2 outlet cross over FW84 is open.
- ___ 4. Close Deaerator Storage Tank 1-2 to Deaerator Storage Tank 1-1 cross over FW423 by using HIC423 located in the Control Room on Panel C5712.
- ___ 5. Open the auxiliary feed pump recirc to Condensate Storage 1-1 AF50 and Auxiliar Feed Pump Recirc to Condensate Storage 1-2 AF51.
- ___ 6. Open the Startup and auxiliary feed pump to Condensate Storage Tank FW105. The level will now decrease in the Deaerator Storage Tank and increase in the Condensate Storage Tanks.

7.4.3 Draining the 1-2 Deaerator Storage Tank to the Condensate Storage Tanks.

- ___ 1. Open the Deaerator 1-2 inlet header vent FW 204.
- ___ 2. Verify the Deaerator Storage Tank 1-2 outlet isolation FW 2 is open.
- ___ 3. Close the Deaerator Storage Tank 1-1 to Deaerator Storage Tank 1-2 outlet cross over, FW 84.
- ___ 4. Open the Deaerator Storage Tank 1-2 to Deaerator Storage Tank 1-1 cross over FW423 by using HIC423 located in the Control Room on Panel C5712.
- ___ 5. Open the Auxiliary Feed Pump recirc to Condensate Storage 1-1, AF50 and Auxiliary Feed Pump recirc to Condensate Storage 1-2 AF51.
- ___ 6. Open the Startup and Auxiliary Feed Pump to Condensate Storage Tank FW105. The level will now decrease in the Deaerator Storage Tank and increase in the Condensate Storage Tanks.

Section 7.4 completed by _____ Date _____

7.5 Draining the low pressure feedwater heaters and piping

____ 7.5.1 Verify that the deaerator storage tanks level control valves CD420 and CD421 are open, so the system can be properly vented.

____ 7.5.2 Open the Condensate Demin Bypass CD751.

____ 7.5.3 Close the Condensate Demin Inlet Isolation CD96.

____ 7.5.4 Close the Condensate Demin Outlet Isolation CD135.

____ 7.5.5 Open the Condensate Pump 1-1, (1-2), (1-3) discharge vent CD13, (CD14), (CD15).

NOTE: The LP Heaters can be drained into the Hotwell by opening Condensate Pump Minimum Recirc Bypass Valve CD81 or the Circ Water System by opening Hotwell Cleanup Drain CD590.

____ 7.5.6 Open the Condensate Pump 1-1, (1-2), (1-3), discharge drain CD16, (CD17), (CD18).

____ 7.5.7 Open the low pressure feedwater heater 1-1-1 water box drain CD89.

____ 7.5.8 Open the low pressure feedwater heater 1-2-1 water box drain CD90.

____ 7.5.9 Open the low pressure feedwater heater 1-1-2 water box drain CD140.

____ 7.5.10 Open the low pressure feedwater heater 1-2-2 water box drain CD141.

7.5.11 As the system drains, open

____ 1. Low pressure feedwater heater 1-1-2 outlet header vent CD146.

____ 2. Low pressure feedwater heater 1-2-2 outlet header vent CD147.

____ 3. Condensate header vent CD207.

____ 4. Low pressure feedwater heater 1-1-1 outlet header vent CD93.

____ 5. Low pressure feedwater heater 1-2-1 outlet header vent CD94.

7.5.12 As the heaters drain open

- ____ 1. Low pressure feedwater heater 1-1-2 water box vent CD142.
- ____ 2. Low pressure feedwater heater 1-2-2 water box vent CD143.
- ____ 3. Low pressure feedwater heater 1-1-1 water box vent CD91.
- ____ 4. Low pressure feedwater heater 1-2-1 water box vent CD92.

____ 7.5.13 As the gland seal condenser drains open the gland seal condenser bypass vent CD70.

Section 7.5 completed by _____ Date _____

10 | 8. CONDENSATE WET LAY UP FOR MODE 5 AND 6

This section covers the requirements and procedure to place the condensate system in wet lay up during Modes 5 and 6. A condensate wet lay up pump takes suction at a six inch chemical connection near FW 85 and discharges to CD 115, chemical addition inlet to steam jet air ejectors. (See Attachment 6) Recirculation occurs via steam packing exhauster 1-1, low pressure feedwater heaters, and deaerator storage tanks. In addition bypass lines are cracked open and condensate polishers are bypassed. Chemistry will increase hydrazine concentration to approximately 200 ppm to prevent corrosion.

8.1 Prerequisites

- ____ 8.1.1 It is anticipated that the plant will be in Mode 5 or 6 for greater than 7 days.
- ____ 8.1.2 Condensate Pumps are stopped per Section 5.
- ____ 8.1.3 A minimum of two feet of water in the deaerator storage tanks per LIC 421 and LIC 420 for monitoring system inventory.
- ____ 8.1.4 Condensate system is filled. If filling is required see Section 4.
- ____ 8.1.5 The condensate wet lay up pump is connected to FW 114, pump suction and FW 115, pump discharge. The condensate wet lay up pump is powered from 480 volt connector ZR 2401 powered by F32B, BF 3285, located by MEPT 1-1, elevation 585, west wall.

Section 8.1 completed by _____ Date _____

8.2 Procedure

NOTE: Majority of these valves are in their normal position per Valve Verification List A. Those valves being closed are to maintain system integrity. Bypass valves will be cracked open.

- ____ 8.2.1 Perform Valve Line Up Test B, Condensate Wet Lay Up for Mode 5 and 6, see Attachment 5.
- ____ 8.2.2 Verify that a minimum of 2 feet is available in both deaerator storage tanks. Water may be added per Step 8.2.8.
 - LIC 421 ____ feet
 - LIC 420 ____ feet
- ____ 8.2.3 Close then open one turn FW 116, Condensate Wet Lay Up Discharge.
- ____ 8.2.4 Start the condensate wet lay up pump using local skid breaker.

NOTE: Normal discharge pressure should be approximately 40 psig.
- ____ 8.2.5 Open FW 115.
- ____ 8.2.6 Vent condensate equipment if required per Step 4.2.4 of this procedure.
- ____ 8.2.7 Monitor LIC 421 and LIC 420. If required, increase water level by using P112, Condensate Polisher Demin Backwash Pump, located in east condenser pit, per Step 8.2.8.
- ____ 8.2.8 If water is required (deaerator level falls below 2 feet), then lineup and start the Condensate Polisher Demin Backwash Pump, (P112) as follows. Ensure CST level is sufficient.
 - ____ 1. Check Open CD163 (CD164) Outlet from CST 1-1 (1-2).
 - ____ 2. Check Open CD105, P112 suction valve.
 - ____ 3. Check Open CD338, P112 discharge valve.
 - ____ 4. Close CD6B, Conds Pol Demin Backwash Pump 1-1 discharge valve.

- ____ 5. Open (one to two turns) HD170 Htr Drain Pumps 1-1 and 1-2 to Condensate System Isolation.
- ____ 6. Start P112 using HIS 765.
- ____ 7. Open HD170 to obtain a discharge pressure of no less than 55 PSIG. Monitor LIC 421 (LIC 420) for increase level while CST 1-1 (1-2) LT 512 (LT 516) for decrease.
- ____ 8. After water level is greater than 4 feet (LIC 421, LIC 420) in the deaerator storage tank then stop P112 using HIS 765.
- ____ 9. Close HD170.
- ____ 8.2.9 Inform Chemistry that condensate system is in wet lay up and ready for hydrazine.

Section 8.2 completed by _____ Date _____

8.3 Return from Condensate Wet Lay Up

- ____ 8.3.1 Stop Condensate Wet Lay Up pump using local breaker and disconnect 480 volt supply.
- ____ 8.3.2 Perform Valve Lineup List C, return from Condensate Wet Lay Up.
- ____ 8.3.3 Notify C&HP that the Condensate Polishers are being bypassed and that they shall be placed in service per their discretion.

Section 8.3 completed by _____ Date _____

Condensate Flow Guidline (KPPH)

System Condition	Turbine Power		
	100%	75%	50%
Normal Condensate Flow (KPPM)	6500	5100	3650
1 LP Htr. String Drain to Condenser	7000	5450	3850
2 LP Htr. Strings Drain to Condenser	7500*	5800	4100
1 HP Htr. String Drain to Condenser	8100*	6250	4400
1 HP to 1 LP Htr. String Drain to Condenser	8600*	6600	4600

*Exceeds Steam Packing Exhauster Maximum Flow Limitation and Denotes Three (3) Pump Operation.

The design capacity of each condensate pump is 3700 KPPH.

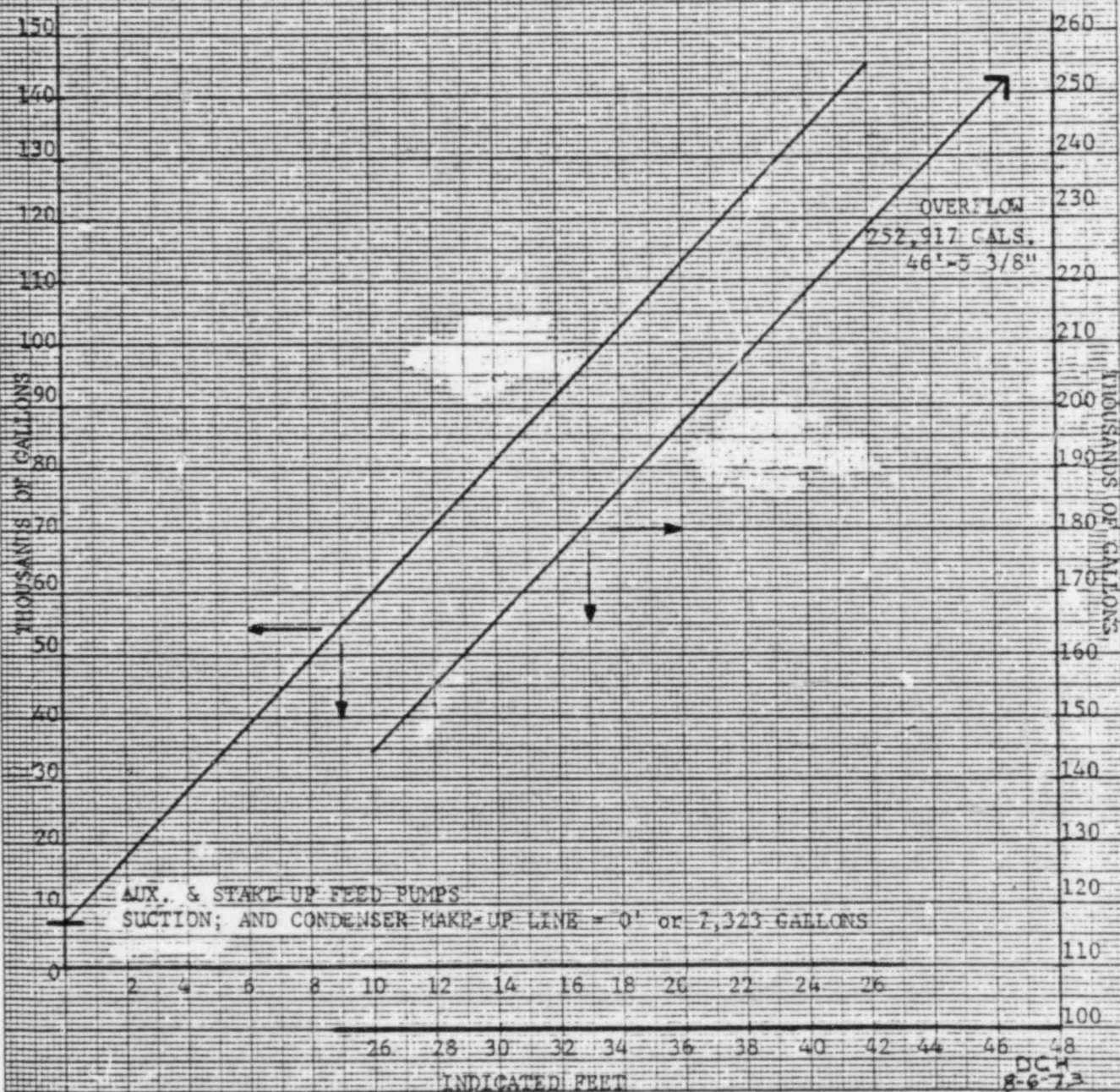
5 | NOTE: See Section 6.2.1 on bypassing the Steam Packing Exhauster.

DAVIS-BESSE UNIT NO. 1

CONDENSATE STORAGE TANKS T 31-182

NO. OF GALLONS VS.
INDICATED LEVEL IN FEET

(ONE INCH OF TANK LEVEL
CHANGE IS EQUIVALENT TO
440 GALLONS)



Condensate Pump Startup Checklist

1. Backpressure control valve CD2796 must be operative with pressure sensing valve CD569 open. Ensure valve CD2796 is closed prior to starting the first pump (or cracked open if handwheel is engaged).

2. Pump electrical breaker is racked in.

Pump 1-1	Pump 1-2	Pump 1-3
AC-210	AD-207	AC-207

3. Check for proper oil level in the pump and motor oil sight indicators.

4. Establish cooling water to motor oil coolers. Open the following valves:

Pump 1-1	Pump 1-2	Pump 1-3
CW109	CW110	CW111
CW200	CW201	CW202

NOTE: Cooling water inlet isolation to condensate pump bearing oil coolers CW108 must be open.

5. Establish sealing water to the stuffing box. Open the following valves:

Pump 1-1	Pump 1-2	Pump 1-3
CD-32	CD-33	CD-34
CD-35	CD-36	CD-37
CD-560	CD-565	CD-985

Sealing water comes from pump discharge header through CD29, CD587 (pressure regulator) and CD31 when condensate pumps are operating and from condensate storage tanks through CD187 for startup.

6. Verify sealing water flow visually from seal and sealing water pressure of 15-20 psig on sealing water inlet line pressure gauge.

7. Open the discharge and suction vent valves.

Pump 1-1	Pump 1-2	Pump 1-3
CD-10	CD-11	CD-12
CD-13	CD-14	CD-15

Condensate Pump Startup Checklist

- ___ 8. Open the pump suction, discharge, and alarm pressure source valves:

Pump 1-1	Pump 1-2	Pump 1-3
CD-557	CD-568	CD-982
CD-576	CD-577	CD-588
CD-561	CD-567	CD-984

- 1 | ___ 9. Fully open the suction valve slowly. Allow the pump and discharge valve to fill.

Pump 1-1	Pump 1-2	Pump 1-3
CD-1	CD-2	CD-3

- ___ 10. Open the discharge valve slowly.

Pump 1-1	Pump 1-2	Pump 1-3
CD-7	CD-8	CD-9

- ___ 11. Verify operating status of minimum flow recirculation valve CD578.

- 1 | ___ 12. After the pump is started, check that discharge pressure is at least 230 psig on the local pressure indication.

- ___ 13. Close the discharge vent valve. The suction valve remains open during operation.

Pump 1-1	Pump 1-2	Pump 1-3
CD-13	CD-14	CD-15

- ___ 14. Observe pump for excess vibration and monitor pump seal for excessive temperature.

Completed by _____ Date _____ For Pump # _____

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
BEGIN EL 623				
HP Condenser Test Press Gage Source Valve	M-06A A-2	CD 2591C	Closed	
HP Condenser Test Press Gage Source Valve	M-06A A-2	CD 2591D	Closed	
LP Feedwater Heater 1-2-1 Outlet	M-06A D-4	CD 88	Open	
LP Feedwater Heater 1-1-1 Outlet	M-06A D-2	CD 87	Open	
HP Cond Test Press Gage Source Valve	M-06A A-4	CD 2592C	Closed	
HP Cond Test Press Gage Source Valve	M-06A A-4	CD 2592D	Closed	
HP Cond Test Press Gage Source Valve	M-06A A-6	CD 2593C	Closed	
LP Cond Test Press Gage Source Valve	M-06A A-6	CD 2593D	Closed	
LP Cond Test Press Gage Source Valve	M-06A A-7	CD 2594C	Closed	
LP Cond Test Press Gage Source Valve	M-06A A-7	CD 2594D	Closed	
Hood Spray Strainer Drain	M-06A B-7	CD 45	Closed	
Hood Spray Press Indicator	M-06A B-7	PI 519	In Service	
Hood Spray Press Switch	M-06A B-7	PDSY 518	In Service	
Hood Spray Press Source Valve	M-06A B-7	CD 518	Open	
Hood Spray Throttle Valve	M-06A B-7	CD 43	Open	
Hood Spray Press Source Valve	M-06A B-7	CD 519	Open	
LP Cond Test Press Gage Source Valve	M-06A A-7	CD 2594A	Closed	
LP Cond Test Press Gage Source Valve	M-06A A-7	CD 2594B	Closed	
LP Cond Press Switch	M-06A B-7	PSH 2253	In Service	
LP Cond Press Switch	M-06A B-7	PSH 2252B	In Service	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
LP Cond Press Switch	M-06A B-7	PSH 2252A	In Service	
LP Cond Press Switch Source Valve	M-06A B-7	CD 2252A	Open	
LP Cond Test Press Gage Source Valve	M-06A A-6	CD 2593A	Closed	
LP Cond Test Press Gage Source Valve	M-06A A-6	CD 2593B	Closed	
HP Cond Test Press Gage Source Valve	M-06A A-4	CD 2592A	Closed	
HP Cond Test Press Gage Source Valve	M-06A A-4	CD 2592B	Closed	
HP Cond Press Indicator	M-06A B-4	PI 967	In Service	
HP Cond Press Transmitter	M-06A B-4	PT 530	In Service	
HP Cond Press Switch	M-06A B-4	PSH 553	In Service	
LP Cond Press Transmitter	M-06A B-5	PT 541	In Service	
LP Cond Press Switch	M-06A B-5	PSH 554	In Service	
LP Condenser Press Indicator	M-06A B-5	PI 968	In Service	
HP Cond Press Switch Source Valve	M-06A B-3	CD 2234A	Open	
HP Cond Press Switch	M-06A B-3	PSH 2234A	In Service	
HP Cond Press Switch	M-06A B-3	PSH 2234B	In Service	
HP Cond Press Switch	M-06A B-3	PSH 2235	In Service	
HP Condenser Test Press Gage Source Valve	M-06A A-2	CD 2591A	Closed	
HP Condenser Test Press Gage Source Valve	M-06A A-2	CD 2591B	Closed	
Deaer Htr 1-1-3 Level Control Outlet Isolation	M-06A C-10	CD 152	Open	
Deaer Htr 1-1-3 Inlet Header Sample Isolation	M-06A B-10	SS 98	Open	
Deaer Htr 1-1-3 Inlet Heater Service Drain	M-06A B-9	CD 154	Closed	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Deaer Htr 1-1-3 Level Control Valve	M-06A B-10	CD 421	In Service	
Deaer Htr 1-1-3 Level Control Inlet Isolation	M-06A B-10	CD 150	Open	
LP Feedwater Heater 1-2-2 Bypass	M-06A C-8	CD 162	Closed	
Deaer Htr 1-2-3 Level Control Inlet Isolation	M-06A B-12	CD 151	Open	
Deaer Htr 1-2-3 Level Control Valve	M-06A B-12	CD 420	In Service	
Deaer Htr 1-2-3 Inlet Header Service Drain	M-06A B-12	CD 155	Closed	
Deaer Htr 1-2-3 Inlet Header Sample Isolation	M-06A C-11	SS 99	Open	
Deaer Htr 1-2-3 Level Control Outlet Isolation	M-06A B-12	CD 153	Open	
LP Feedwater Heater 1-2-2 Outlet Isolation	M-06A B-9	CD 149	Open	
LP Feedwater Htr 1-2-2 Outlet Header Vent	M-06A B-9	CD 147	Closed	
Deaer Htr 1-2-3 Level Control Valve Bypass	M-06A B-10	CD 156	Closed	
Cond Header Press Source Valve	M-06A B-9	CD 974	Open	
Deaer Htr 1-1-3 Level Control Valve Bypass	M-06A B-9	CD 157	Closed	
LP Feedwater Htr 1-1-2 Outlet Isolation	M-06A A-8	CD 148	Open	
LP Feedwater Htr 1-1-2 Outlet Header Vent	M-06A A-9	CD 146	Closed	
BEGIN RM 604				
Deaer 1-2 Sample Isolation	M-006B B-10	SS 44	Open	
Deaer 1-2 Level Switch Low Low	M-006B B-12	LSLL 435	In Service	
Deaer 1-2 Level Switch High	M-006B B-12	LSH 435	In Service	
Deaer 1-2 Level Switch Low	M-006B B-11	LSL 435	In Service	
Deaer 1-2 Level Switch Source Valve	M-006B B-11	FW 435A	Open	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Deaer 1-2 Level Gage Source Valve	M-06A D-13	CD 424A	Open	
Deaer 1-2 Level Transmitter Source Valve	M-06A D-13	CD 420A	Open	
Deaer 1-2 Level Switch High High	M-006B B-13	LSHH 405	In Service	
Deaer 1-2 Level Transmitter	M-06A C-13	LT 420	In Service	
Deaer 1-2 Level Transmitter Source Valve	M-06A D-13	CD 205A	Open	
Deaer 1-2 Level Transmitter Source Valve	M-06A C-13	LT 205	In Service	
Deaer 1-1 Sample Isolation	M-006B B-3	SS 43	Open	
Deaer 1-1 Level Transmitter	M-06A C-9	LT 202	In Service	
Deaer 1-1 Level Transmitter Source Valve	M-06A D-9	CD 202A	Open	
Deaer 1-1 Level Transmitter	M-06A C-8	LT 421	In Service	
Deaer 1-1 Level Switch High High	M-006B B-2	LSHH 407	In Service	
Deaer 1-1 Level Transmitter Source Valve	M-06A C-8	CD 421A	Open	
Deaer 1-1 Level Gage Source Valve	M-06A D-9	CD 434A	Open	
Deaer 1-1 Level Switch Source Valve	M-006B B-2	FW 425A	Open	
Deaer 1-1 Level Switch Low	M-006B B-2	LSL 425	In Service	
Deaer 1-1 Level Switch High	M-006B B-2	LSH 425	In Service	
Deaer 1-1 Level Switch Low Low	M-006B B-1	LSLL 425	In Service	
BEGIN RM 702				
Deaer 1-2 Level Switch Source Valve	M-006B A-11	FW 435B	Open	
FW Warmup to Deaer 1-2 Vent	M-06A C-11	FW 204	Closed	
Deaer 1-2 Level Gage Source Valve	M-06A C-13	CD 424B	Open	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Deaer 1-2 Level Transmitter Source Valves	M-06A C-13	CD 420B	Open	
Deaer 1-2 Level Transmitter Source Valve	M-06A C-12	CD 205B	Open	
FW Warmup to Deaer 1-2	M-06A C-11	FW 202	Closed	
FW Warmup to Deaer 1-1 Vent	M-06A C-10	FW 203	Closed	
FW Warmup to Deaer 1-1 Vent	M-06A C-10	FW 205	Closed	
Deaer 1-1 Level Transmitter Source Valve	M-06A C-9	CD 202B	Open	
Deaer 1-1 Level Transmitter Source Valve	M-06A C-8	CD 421B	Open	
Deaer 1-1 Level Gage Source Valve	M-06A C-9	CD 434B	Open	
Deaer 1-1 Level Switch Source Valve	M-006B A-2	FW 425B	Open	
BEGIN EL 603				
SPE 1-1 Condenser Inlet Press Indicator	M-06A K-11	PI 573	In Service	
SPE 1-1 Conds Inlet Press Ind Source Valve	M-06A K-11	CD 573	Open	
SPE 1-1 Condenser Outlet Press Test Src Vlv	M-06A K-11	CD 589	Closed*	
SPE 1-1 Conds Inlet	M-06A K-11	CD 66	Open	
SPE 1-1 Conds Outlet	M-06A K-11	CD 67	Open	
SPE 1-1 Vent Valve	M-006A K-11	CD 342	Closed	
SPE 1-1 Drain Valve	M-006A K-11	CD 341	Closed*	
SPE 1-1 Condenser Bypass Vent	M-06A K-11	CD 70	Closed	
SPE 1-1 Conds Bypass	M-06A K-11	CD 69	Closed	
Hood Spray Control Inlet Isolation	M-06A B-8	CD 40	Open	

* if ΔP gage is hooked up and operable.

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Hood Spray Control Valve	M-06A B-8	CD 517	In Service	
Hood Spray Control Outlet Isolation	M-06A B-8	CD 41	Open	
Hood Spray Control Valve Bypass	M-06A B-8	CD 42	Closed	
LP Cond Press Detector Source Valve	M-06A B-5	CD 541	Open	
LP Cond Press Switch Source Valve	M-06A B-5	CD 554	Open	
Cond Pump Min Recirc Bypass	M-06A H-10	CD 81	Closed	
Cond Pump Min Recirc Flow Vlv Outlet Iso	M-06A H-10	CD 80	Open	
Cond Pump Min Recirc	M-06A H-10	CD 578	In Service	
Cond Pump Min Recirc Drain	M-06A H-10	CD 202	Closed	
Cond Pump Min Recirc Flow Vlv Inlet Iso	M-06A H-10	CD 79	Open	
Cond Flow Transmitter Source Valve	M-06A H-11	CD 578A	Open	
Cond Flow Transmitter Source Valve	M-06A H-11	CD 578B	Open	
Cond Flow Transmitter	M-06A H-11	FT 578	In Service	
Low Press Feedwtr Htr Inlet Press Indicator	M-06A G-8	PI 526	In Service	
Cond Desup Wtr Press Ctrl Vlv Inlet Iso	M-003 A-6	CD 230	Open	
Low Press Feedwtr Htrs Inlet Press Ind Src Vlv	M-06A G-8	CD 526	Open	
Hotwell Cleanup Drain	M-06A H-8	CD 590	Closed	
LP Feedwater Heater 1-2-1 Inlet	M-06A F-7	CD 86	Open	
LP Feedwater Htr 1-2-1 Outlet Header Vent	M-06A D-7	CD 94	Closed	
LP Feedwtr Htr 1-2-1 Outlet Hdr Press Test Src	M-06A D-7	CD 547	Closed	
LP Feedwater Heater 1-2-1 Service Drain	M-06A E-7	CD 210	Closed	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
LP Feedwtr Htr 1-2-1 Inlet Hdr Press Test Src	M-06A E-7	CD 551	Closed	
LP Feedwater Heater 1-2-1 Waterbox Vent	M-06A E-7	CD 92	Closed	
LP Feedwater Heater 1-2-1 Waterbox Drain	M-06A E-7	CD 90	Closed	
LP Feedwater Htr 1-2-1 Outlet Flow Src Vlv	M-06A D-4	CD 536A	Open	
LP Feedwater Htr 1-2-1 Outlet Flow Src Vlv	M-06A D-4	CD 536B	Open	
LP Feedwater Heater 1-1-1 Inlet	M-06A E-3	CD 85	Open	
Cond Supply to Vac Breaker Stem Packing	M-06A H-12	CD 201	Open	
Vacuum Breaker Stem Seal Isolation	M-06A D-7	CD 203	Open	
Vacuum Breaker Stem Seal Isolation	M-06A D-3	CD 204	Open	
LP Feedwater Htr 1-2-1 Outlet Flow Transmitter	M-06A D-4	FT 536	In Service	
LP Feedwater Htr 1-1-1 Water Box Drain	M-06A E-2	CD 89	Closed	
LP Feedwater Htr 1-1-1 Water Box Vent	M-06A D-2	CD 91	Closed	
LP Feedwtr Htr 1-1-1 Outlet Press Test Src Vlv	M-06A D-2	CD 535	Closed	
LP Feedwater Htr 1-1-1 Inlet Service Drain	M-06A E-2	CD 206	Closed	
LP Feedwater Htr 1-1-1 Press Test Src Vlv	M-06A E-2	CD 537	Closed	
LP Feedwater Htr 1-1-1 Outlet Vent	M-06A D-2	CD 93	Closed	
LP Feedwater Htr 1-1-1 Bypass	M-06A G-2	CD 95	Closed	
Cond Demin Inlet Diff Press Source Valve	M-008 A-3	CD 2C	Open	
Cond Header Vent Downstream of FW Htr 1-2-1	M-06A D-3	CD 207	Closed	
Cond Demin Inlet Press Source Valve	M-008 A-3	CD 750	Open	
Cond Demin Inlet Sample	M-008 B-3	SS 5	Open	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Cond Demin Bypass Inlet Isolation	M-008 A-4	CD 97	Open	
Cond Demin Bypass Valve	M-008 A-4	CD 751	In Service	
Cond Demin Bypass Outlet Isolation	M-008 A-3	CD 98	Open	
Cond Demin Inlet Press Indicator	M-008 A-3	PI 750	In Service	
Cond Demin Inlet Press Indicator	M-008 A-3	PI 751	In Service	
Cond Demin Inlet Press Transmitter	M-008 A-3	PT 751	In Service	
Cond Demin Inlet Diff Press Transmitter	M-008 A-3	PDT CD2	In Service	
Hydrazine Injection Isolation	M-008 A-11	SC 6	Closed	
Ammonia Injection Isolation	M-008 A-11	SC 8	Closed	
Cond Demin Outlet Sample	M-008 A-12	SS 183	Open	
Cond Demin Outlet Isolation	M-008 A-12	CD 135	Open	
Cond Demin Outlet Diff Press Source Valve	M-008 A-13	CD 2D	Open	
Cond Demin Inlet Isolation	M-008 B-4	CD 96	Open	
HP Cond Press Switch Source Valve	M-06A B-4	CD 553	Open	
HP Cond Press Detector Source Valve	M-06A B-4	CD 530	Open	
LP Feedwater Htr 1-1-2 Outlet Flow Src Vlv	M-06A B-1	CD 527A	Open	
LP Feedwater HTR 1-1-2 Outlet Flow Src Vlv	M-06A B-1	CD 527B	Open	
LP Feedwater Htr 1-1-2 Outlet Flow Transmtr	M-06A B-1	FT 527	In Service	
Cond Heater Press Indicator	M-06A B-9	PI 974	In Service	
LP Feedwater Htr 1-1-2 Water Box Drain	M-06A C-2	CD 140	Closed	
LP Feedwater Htr 1-1-2 Water Box Vent	M-06A B-2	CD 142	Closed	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
LP Feedwtr Htr 1-1-2 Outlet Press Test Src Vlv	M-06A B-2	CD 529	Closed	
LP Feedwater Htr 1-1-2 Inlet Header Drain	M-06A C-2	CD 138	Closed	
Cond Expansion Joint Wtr Seal Supply	M-06A B-4	CD 72	Closed	
Condenser Expansion Joint Water Seal Drain (HP Condenser)	M-06A B-3	CD 158	Closed	
LP Feedwater Htr 1-1-2 Inlet Isolation	M-06A C-2	CD 136	Open	
Cond Heater Press Indicator	M-06A C-2	PI 543	In Service	
LP Feedwater Heater 1-1-2 Inlet Press Test Source Valve	M-06A C-2	CD 532	Closed	
LP Feedwater Htr 1-2-2 Inlet Isolation	M-06A C-7	CD 137	Open	
LP Feedwater Htr 1-2-2 Inlet Header Drain	M-06A C-7	CD 139	Closed	
LP Feedwater Heater 1-2-2 Inlet Press Test Source	M-06A C-7	CD 546	Closed	
Condenser Expansion Water Joint Seal Drain (LP Condenser)	M-06A B-7	CD 159	Closed	
Cond Steam Side Vapor Interconnect Water Seal Level Gage Source Valve (LP)	M-06A B-5	CD 2881B	Open	
Cond Steam Side Vapor Interconnect Water Seal Level Gage Source Valve (LP)	M-06A B-5	CD 2881A	Open	
Cond Steam Side Vapor Interconnect Water Seal Level Gage Source Valve (HP)	M-06A B-4	CD 2602B	Open	
Cond Steam Side Vapor Interconnect Water Seal Level Gage Source Valve (HP)	M-06A B-4	CD 2602A	Open	
Cond Expansion Joint Water Seal Supply	M-06A B-5	CD 71	Closed	
Cond Steam Side Vapor Interconnect Water Seal Supply	M-06A B-5	CD 73	Closed	
LP Feedwater Htr 1-2-2 Water Box Drain	M-06A C-7	CD 141	Closed	
LP Feedwater Htr 1-2-2 Water Box Vent	M-06A C-7	CD 143	Closed	
LP Feedwater Htr 1-2-2 Outlet Press Test Source	M-06A B-8	CD 544	Closed	
Cond Header Press Indicator Source Downstream of Demin	M-06A C-2	CD 543	Open	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
LP Feedwater Htr 1-1-2 Outlet Header Drain	M-06A A-8	CD 144	Closed	
LP Feedwater Htr 1-2-2 Outlet Flow Xmitter	M-06A C-8	FT 540	In Service	
LP Feedwater Htr 1-2-2 Outlet Flow Source Vlv	M-06A C-8	CD 540A	Open	
LP Feedwater Htr 1-2-2 Outlet Flow Source Vlv	M-06A C-8	CD 540B	Open	
LP Feedwater Htr 1-2-2 Outlet Header Drain	M-06A C-8	CD 145	Closed	
BEGIN EL 585				
Cond Pump Disch Header Press Control Valve	M-06A K-9	CD 2796	In Service	
Cond Pump Runoff Protection Controller	M-06A K-9	PIC 2796	In Service	
Ammonia Injection to Conds Pump Disch	M-06A K-7	SC 2	Closed	
Hydrazine Injection to Conds Pump Disch	M-06A J-9	SC 4	Closed	
Conds Pump Supply to Chemical Injection/Equip	M-06A K-7	CD 60	Closed	
Cond Pump Disch Supply to Aux Boiler Deaer	M-020 F-10	CD 19	Open*	
Stm Jet Air Ejector Inlet Chemical Clng Iso	M-06A J-9	CD 115	Closed	
Steam Jet Air Ejector Inlet	M-06A K-10	CD 64	Open	
Steam Jet Air Ejector Vent Valve	M-006A K-10	CD 340	Closed	
Steam Jet Air Ejector Bypass	M-06A K-10	CD 68	Closed	
Steam Jet Air Ejector Outlet	M-06A K-10	CD 65	Open	
Steam Jet Air Ejector Drain Valve	M-006A K-10	CD 339	Closed	
Steam Packing Ex Drain Tank Level Control Inlet Isolation	M-022 C-12	GS 18	Open	
SPE Drain Tank Level Control Valve Bypass	M-022 C-12	GS 20	Closed	

*CD 19 may be left open or closed per Shift Supervisor.

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
SPE Drain Tank Level Control Valve	M-022 C-12	GS 1991	In Service	
SPE Drain Tank Level Control Outlet Isolation	M-022 C-12	GS 19	Open	
Hotwell Cleanup Drain Test Connection	M-006A H-8	CD 591	Closed	
Hotwell Cleanup Drain Throttle Valve	M-006A H-8	CD 592	Throttled*	
LP Feedwater Htr 1-1-1 Inlet Service Drain	M-06A G-7	CD 200	Closed	
LP Feedwater Htr 1-1-1 Inlet Flow Src Valve	M-06A G-3	CD 533A	Open	
LP Feedwater Htr 1-1-1 Inlet Flow Src Valve	M-06A G-3	CD 533B	Open	
Hotwell Makeup Flow from Demin Pmps Hdr Drain	M-06A D-5	CD 160	Closed	
Hotwell Makeup Valve from Demin Pumps	M-06A D-5	CD 586	In Service	
Hotwell Makeup Valve Pressure Switch Source	M-006A D-5	CD 586A	Open	
Hotwell Makeup Valve from Demin Pump Isolation	M-06A D-5	CD 161	Open	
LP Feedwater Htr 1-1-1 Inlet Flow Xmitter	M-06A G-3	FT 533	In Service	
Cond to Demin Backwash Pump	M-008 E-1	HD 170	Closed	
BEGIN EL 565				
Hotwell Hi Level Return Outlet Isolation	M-06A G-10	CD 75*	Open	
Hotwell Hi Level Return Service Drain	M-06A G-10	CD 77	Closed	
Hotwell Hi Level Return	M-06A G-10	CD 550B	In Service	
Hotwell Hi Level Return Inlet Isolation	M-06A G-10	CD 74	Open	
Hotwell Hi Level Return Bypass	M-06A G-10	CD 76	Closed	
Hotwell Makeup Control Valve Bypass	M-06A F-9	CD 190	Closed	

*May be left closed during feedwater cleanup to prevent putting bad water into CSTs.

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Hotwell Makeup Inlet Isolation	M-06A F-9	CD 188	Open	
Hotwell Makeup Control Valve	M-06A F-9	CD 550A	In Service	
Hotwell Makeup Control Valve Service Drain	M-06A F-9	CD 191	Closed	
Hotwell Cleanup Drain Throttle Valve	M-006A H-8	CD 592	Throttled*	
Hotwell Makeup Outlet Isolation	M-06A F-9	CD 189	Open	
Conds to Aux Blr Makeup Pump Line Vent	M-06A F-9	CD 171	Closed	
Hotwell Level Transmitter	M-06A F-7	LT 550	In Service	
Hotwell Level Transmitter Source Valve	M-06A F-7	CD 550D	Open	
Hotwell Level Transmitter Source Valve	M-06A F-7	CD 550C	Open	
Hotwell Makeup Flow from Demin Pumps Xmitter	M-06A D-5	FT 624	In Service	
Hotwell Makeup Pressure Indicator	M-06A D-5	PI 586	In Service	
Hotwell Makeup Valve Press Switch	M-06A D-5	PS 586	In Service	
Hotwell Makeup Flow from Demin Pumps Source Valve	M-06A D-5	CD 624A	Open	
Hotwell Makeup Flow from Demin Pumps Source	M-06A D-5	CD 624B	Open	
Hotwell Level Gage Source Valve (HP Condenser)	M-06A F-4	CD 539A	Open	
Hotwell Level Gage Source Valve (HP Condenser)	M-06A F-4	CD 539B	Open	
Hotwell Level Indicator Source Valves	M-06A E-4	CD 538A	Open	
Hotwell Level Indicator Source Valves	M-06A E-4	CD 538B	Open	
Hotwell Level Indicator Transmitter	M-06A E-4	LT 538	In Service	
Hotwell Level Indicator Switch	M-06A E-5	LSH 538	In Service	

*May be left closed during feedwater cleanup to prevent putting bad water into CSTs.

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Hotwell Level Switch Source Valves	M-06A F-4	CD 595A	Open	
Hotwell Level Switch Source Valves	M-06A F-4	CD 595B	Open	
Hotwell Level Switch	M-06A F-4	LSL 595	In Service	
Hotwell Level Switch	M-06A F-4	LSLL 595	In Service	
HP Cond 1-1 Sparging Valve Inlet Isolation	M-06A F-2	AS 7	Closed	
HP Cond 1-1 Sparging Line Drain	M-06A F-2	AS 200	Closed	
HP Cond 1-1 Sparging Control Valve	M-06A F-2	AS 418	In Service	
HP Cond 1-1 Sparging Control Valve Drain	M-06A F-2	AS 201	Closed	
HP Cond 1-1 Sparging Valve Outlet Isolation	M-06A F-3	AS 8	Closed	
Cond Crossover Sample Isolation	M-06A E-5	SS 11	Closed	
FW Cleanup Recirc Line to Condenser Drain	M-006A G-5	FW 200	Closed	
FW Cleanup Recirc Inlet	M-006A G-5	FW 523	Closed	
FW Cleanup Recirc to Condenser Isolation	M-006A G-5	FW 201	Closed	
LP Cond 1-2 Sparging Valve Outlet Isolation	M-06A F-8	AS 2	Closed	
LP Cond 1-2 Sparging Control Valve Drain	M-06A F-7	AS 202	Closed	
LP Cond 1-2 Sparging Control Valve	M-06A F-8	AS 419	In Service	
LP Cond 1-2 Sparging Valve Inlet Isolation	M-06A F-8	AS 1	Closed	
LP Cond 1-2 Sparging Line Drain	M-06A F-7	AS 203	Closed	
Hotwell Level Gage Source Valve	M-06A E-7	CD 549A	Open	
Hotwell Level Gage Source Valve	M-06A E-7	CD 549B	Open	
Cnds Pump Seal Water Drain Tank Return to Cond	M-06A H-7	CD 38	Open	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Cond Supply to MFP Seals & MFP Drn Pmp Seals	M-06A J-9	CD 24	Open	
Cnds Pump Motor Lube Oil Cooling Wtr Supply	M-009 J-7	CW 108	Open	
Cnds Pump 1-1 Outlet Press Indicator	M-06A J-6	PI 576	In Service	
Cnds Pump 1-1 Disch Press Switch	M-06A J-6	PSL 561	In Service	
Cnds Pump 1-1 Seal Water Press Indicator	M-06A J-5	PI 560	In Service	
Cond Pump Disch Press Switch	M-06A K-7	PSH 2519	In Service	
Cond Pump Disch Press Switch	M-006A K-7	PSL 2519	In Service	
Cnds Pump 1-2 Seal Water Press Indicator	M-06A J-4	PI 565	In Service	
Cond Pump Disch Press Ind	M-06A K-7	PI 570	In Service	
Cond Pump Disch Press Xmitter	M-06A K-7	PT 569	In Service	
Cnds Pmp Motor Lube Oil Cooler Supply Vent	M-006A K-6	CD 116	Closed	
Cnds Pump 1-2 Disch Press Switch	M-06A J-4	PSL 567	In Service	
Cnds Pump 1-2 Outlet Press Indicator	M-06A J-4	PI 577	In Service	
Cnds Pump 1-3 Outlet Press Indicator	M-06A J-3	PI 588	In Service	
Cnds Pump 1-3 Disch Press Switch	M-06A J-3	PSL 984	In Service	
Cnds Pump 1-3 Sela Water Press Indicator	M-06A J-2	PI 985	In Service	
Cond Pump Disch Press Ind Source Valve	M-06A K-7	CD 570	Open	
Cond Pump Disch to Sample system	M-06A K-7	SS 9	Open	
Cond Pump Disch Press Xmitter Source Valve	M-06A K-7	CD 569	Open	
Cnds Pump Seal Water Control Valve Press Sensing Isolation	M-06A K-6	CD 25	Open	
Cnds Pump Seal Water Supply Press Control	M-06A K-6	CD 587	In Service	

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Cnds Pump Disch Seal Water Supply Press Control Inlet Isolation	M-06A K-6	CD 29	Open	
Cnds Pump 1-1 Disch	M-06A J-7	CD 7	Open	
Cnds Pump 1-1 Seal Water Return to Drain Tank	M-06A J-6	CD 35	Open	
Cnds Pump 1-1 Outlet Press Indicator Source	M-06A J-6	CD 576	Open	
Cnds Pump Seal Str Supply from Storage Tank	M-06A K-5	CD 187	Open	
Cnds Pump Discharge Seal Water Supply Press Control Outlet Isolation	M-06A K-6	CD 31	Open	
Cnds Pump 1-1 Disch Drain	M-06A J-7	CD 16	Closed	
Cnds Pump 1-1 Disch Press Switch Source Valve	M-06A J-6	CD 561	Open	
Cnds Pump 1-1 Disch Vent	M-06A H-6	CD 13*	Closed	
Cnds Pump 1-1 Seal Water Supply	M-06A J-6	CD 32	Open	
Cnds Pump 1-1 Seal Water Press Indicator Source Valve	M-06A J-5	CD 560	Open	
Cnds Pump 1-1 Suction Vent	M-06A H-6	CD 10	Open	
Cnds Pump 1-2 Suction	M-06A H-3	CD 2	Open	
Cnds Pump 1-2 Inlet Press Switch Source Valve	M-06A J-4	CD 568	Open	
Cnds Pump 1-2 Inlet Press Indicator	M-06A J-4	PS 568	In Service	
Cnds Pump 1-2 Inlet Press Switch	M-06A J-4	PI 53	In Service	
Cnds Pump 1-2 Seal Wtr Return to Drain Tank	M-06A J-4	CD 36	Open	
Cnds Pump 1-2 Outlet Press Indicator Source	M-06A J-4	CD 577	Open	
Cnds Pump 1-2 Disch Press Switch Source Valve	M-06A J-4	CD 567	Open	
Cnds Pump 1-2 Disch Drain	M-06A J-5	CD 17	Closed	

7 | *May be open when the pump is shut down.

VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Cnds Pump 1-2 Disch	M-06A J-5	CD 8	Open	
Cnds Pump 1-2 Seal Water Supply	M-06A J-4	CD 33	Open	
Cnds Pump 1-2 Disch Vent	M-06A H-4	CD 14*	Closed	
Cnds Pump 1-2 Seal Water Press Indicator Source Valve	M-06A J-4	CD 565	Open	
Cnds Pump 1-3 Seal Wtr Return to Drain Drain	M-06A J-2	CD 37	Open	
Cnds Pump 1-3 Disch Press Switch Source Vlv	M-06A J-3	CD 984	Open	
Cnds Pump 1-3 Disch Drain	M-06A J-3	CD 18	Closed	
Cnds Pump 1-3 Disch	M-06A J-3	CD 9	Open	
Cnds Pump 1-3 Disch Vent	M-06A H-2	CD 15*	Closed	
Cnds Pump 1-3 Seal Water Supply	M-06A J-2	CD 34	Open	
Cnds Pump 1-3 Outlet Press Indicator Source	M-06A J-3	CD 588	Open	
Cnds Pump 1-3 Seal Water Press Indicator Source Valve	M-06A J-2	CD 985	Open	
Cnds Pump 1-3 Suction Vent	M-06A H-2	CD 12	Open	
Cnds Pump 1-3 Inlet Press Switch Source Vlv	M-06A J-2	CD 982	Open	
Cnds Pump 1-3 Inlet Press Indicator	M-06A J-2	PI 982	In Service	
Cnds Pump 1-3 Inlet Press Switch	M-06A J-2	PS 982	In Service	
Cnds Pump 1-2 Suction Vent	M-06A H-4	CD 11	Open	
Cnds Pump 1-3 Suction	M-06A H-1	CD 3	Open	
Cnds Pump 1-1 Motor Lube Oil Cooler Water Supply	M-06A J-6	CW 109	Open	
Cnds Pump 1-1 Motor Lube Oil Cooling Water Returns	M-06A H-6	CW 200	Open	

*NOTE: Valve may be open when the pump is shut down.

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VALVE VERIFICATION LIST A

Condensate System Normal Operation

Verification List Only - Consult Shift Supervisor Prior to Repositioning Valve

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Cnds Pump 1-2 Motor Lube Oil Cooling Water Supply	M-06A J-4	CW 110	Open	
Cnds Pump 1-2 Motor Lube Oil Cooling Water Returns	M-06A H-4	CW 201	Open	
Cnds Pump 1-3 Motor Lube Oil Cooling Water Supply	M-06A J-2	CW 111	Open	
Cnds Pump 1-3 Motor Lube Oil Cooling Water Returns	M-06A H-2	CW 202	Open	
Condensate Pump #1-1 Suction	M-06A H-5	CD 1	Open	
Cnds Pump Seal Water Drain Tank Level Control Valve	M-06A J-8	CD 2596	In Service	
Cnds Pump Seal Wtr Drain Tank Level Switch	M-06A J-7	LSL 2425	In Service	
Cnds Pump Seal Wtr Drain Tank Level Controller	M-06A J-8	CD 2595A	Open	
Cnds Pump Seal Water Drain Tank Level Gage	M-06A J-8	LG 2595	In Service	
Cnds Pump Seal Wtr Drain Tank Level Controller	M-06A J-8	CD 2595B	Open	
Cnds Pump Seal Wtr Drain Tank Level Switch	M-06A J-7	LSH 2425	In Service	
Cnds Pump Seal Wtr Drain Tank Level Controller	M-06A J-8	LC 2596	In Service	
Cnds Pump 1-1 Inlet Press Switch Source Valve	M-06A J-5	CD 557	Open	
Cnds Pump 1-1 Inlet Press Switch	M-06A J-5	PS 557	In Service	
Cnds Pump 1-1 Inlet Press Indicator	M-06A J-5	PI 557	In Service	
Hotwell Drain to Sump	M-06A G-6	CD 39	Closed	

Reviewed by _____ Date _____
Shift Supervisor or Assistant Shift Supervisor

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VALVE LINEUP LIST B

Condensate Wet Layup for Modes 5 and 6

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
<u>EL. 565', CONDENSATE PIT (RM. 253)</u>				
Cnds-Pmp 1-1 Discharge Iso Valve	M-06A J-7	CD 7	CLOSED	
Cnds-Pmp 1-2 Discharge Iso Valve	M-06A J-5	CD 8	CLOSED	
Cnds-Pmp 1-3 Discharge Iso Valve	M-06A J-3	CD 9	CLOSED	
Cnds-Pmp Seal Water Isolation Valve	M-06A K-6	CD 29	CLOSED	
Seal Water for MFP and MFPT's	M-06A J-9	CD 24	CLOSED	
<u>EL. 565', EAST CONDENSER PIT (RM. 246)</u>				
Hotwell High Level Return Inlet Isolation	M-06A G-10	CD 74	CLOSED	
Hotwell High Level Return Bypass	M-06A G-10	CD 76	CLOSED	
Htr Drn Pmp 1-1 Disch Iso	M-04A H-2	HD 7	CLOSED	
Htr Drn Pmp 1-1 Disch Control Vlv Bypass	M-04A J-1	HD 59	CLOSED	
Htr Drn Pmp 1-2 Disch Iso	M-04A K-9	HD 8	CLOSED	
Htr Drn Pmp 1-2 Disch Control Vlv Byass	M-04A K-9	HD 60	CLOSED	
Heater Drain Pumps 1-1 and 1-2 to Cond Sys Iso	M-008 F-1	HD 170	CLOSED	
<u>EL. 585', WEST SIDE OF CONDENSER (X-MASSTREE)</u>				
SU Feedpump 1-1 to HP Condenser	M-06B F-7	FW 102 ¹	CLOSED	
Dear Sto Tk 1-1 to Booster Feed Pump Suc	M-06B D-2	FW 3	CLOSED	
Dear Sto Tanks to HP Condenser	M-06B F-7	FW 104	CLOSED	
Startup FP 1-1 to Condensate Sto Tank	M-06B F-8	FW 105	CLOSED	
Dear Strg Tk 1-1 to 1-2 Outlet Manual Crossover	M-06B D-3	FW 84	OPEN	
Dear Storage Tank 1-2 to Booster Feed Pump Suction	M-06B F-11	FW 4	CLOSED	
SUFP Suction from Dear Sto Tk	M-06B J-5	FW 32	CLOSED	

¹Located by Aux FW Pmp Door

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VALVE LINEUP LIST B

Condensate Wet Layup for Modes 5 and 6

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Dear Sto Tk to Aux and Startup Feedpump Suction	M-06B H-6	FW 85 ¹	LOCKED CLOSED	
Dear Strg Tk 1-2 to 1-1 Out Motor Operator X-Over	M-06B G-10	FW 423	OPEN	
Cond Rec Wet Lay Up Pmp Isolation	2	FW 114	OPEN	
Cond Rec Wet Lay Up Pump Suction	2	FW 115	OPEN	
Cond Rec Wet Lay Up Pump Discharge	2	FW 116	OPEN	
Cond Rec Wet Lay Up Pump to Condenser EL. 585', NORTH SIDE OF CONDENSER (RM. 334)	2	FW 117	CLOSED	
Makeup to Aux Boiler from Cond Pmp Discharge	M-020 H-10	CD 19	CLOSED	
Conds Pump Discharge Hdr Chem Cleaning Aux Iso	M-06A J-9	CD 115	OPEN	
Steam Jet Air Ejector Inlet	M-06A K-10	CD 64	OPEN	
Steam Jet Air Ejector Outlet	M-06A K-10	CD 65	OPEN	
Steam Jet Air Ejector Bypass EL. 501', NORTH SIDE CONDENSER (RM. 431)	M-06A K-11	CD 68	OPEN ²	
Flash Tank Pump Recirc Control Valve	M-020 F-8	AS 2080	OPEN	
Steam Packing Exhauster Inlet	M-06A K-11	CD 66	OPEN	
Steam Packing Exhauster Outlet	M-06A K-11	CD 67	OPEN	
Steam Packing Exhauster Bypass	M-06A K-10	CD 69	OPEN ³	
Cnds Pump Min Recirc Flow Valve Inlet Iso	M-06A H-10	CD 79	CLOSED	
Cnds Pump Min Recirculation Bypass	M-06A H-10	CD 81	CLOSED	
Hood Spray Control Inlet Isolation	M-06A B-8	CD 40	CLOSED	

¹Controlled per AD 1839.02, Lock Valve AD

²These valves are not located on a P&ID, see Attachment 6

³Crack open until valve is off seat

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VALVE LINEUP LIST B

Condensate Wet Layup for Modes 5 and 6

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
Hood Spary Control Valve Bypass	M-06A B-8	CD 42	CLOSED	
Desup Heating Water from Cond Sept Inlet EL. 603', EAST SIDE OF CONDENSER (RM. 431)	M-03C D-9	CD 230	CLOSED	
Cond Pump Discharge to Circ Water	M-06A H-8	CD 590	CLOSED	
L.P. Feedwater Heater 1-2-1 Inlet	M-06A F-7	CD 86	OPEN	
Condensate Supply to Vacuum Breaker Valves Stem Packing	M-06A H-12	CD 201	CLOSED	
L.P. Feedwater Heater 1-1-2 Inlet	M-06A E-3	CD 85	OPEN	
L.P. Feedwater Heater 1-2-1 Outlet	M-06A D-4	CD 88	OPEN ¹	
L.P. Feedwater Heater 1-1-1 Outlet	M-06A D-2	CD 87	OPEN ¹	
Cnds Demineralizers Bypass Inlet Iso	M-008 A-4	CD 97	OPEN	
Cnds Demineralizers Bypass Outlet Iso	M-008 A-4	CD 98	OPEN	
Cnds Demineralizers Bypass	M-008 A-4	CD 751	OPEN ²	
L.P. Feedwater Heater 1-1-1 Bypass	M-006A G-2	CD 95	OPEN ³	
Cnds Polishing Demin Outlet EL. 603', WEST SIDE OF CONDENSER	M-008 A-12	CD 135	CLOSED	
L.P. Feedwater Heater 1-1-2 Inlet	M-06A C-2	CD 136	OPEN	
L.P. Feedwater Heater 1-2-2 Inlet	M-06A C-7	CD 137	OPEN	
Water Seal Supply to Boot on L.P. Cond	M-06A B-5	CD 71	CLOSED	
Water Seal Supply to Boot on H.P. Cond	M-06A B-4	CD 72	CLOSED	
Water Seal Supply to Vapor Interconnector	M-06A B-5	CD 73	CLOSED	

¹Located on platform from 623 lvl under MSR

²Request C&HP to open this valve

³Crack open until valve is off seat

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of 4

VALVE LINEUP LIST B

Condensate Wet Layup for Modes 5 and 6

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
<u>EL. 623', HEATER BAY (RM. 514)</u>				
Dear Storage Tank 1-2 Outlet	M-06B C-10	FW 2	OPEN	
Dear Heater 1-2-3 Outlet Isolation	M-06A B-12	CD 153	OPEN	
Dear Heater 1-2-3 Inlet	M-06A B-12	CD 420	OPEN	
Dear Heater 1-2-3 Inlet Isolation	M-06A B-12	CD 151	OPEN	
L.P. Feedwater Heater 1-2-2 Outlet	M-06A B-9	CD 149	OPEN	
L.P. Feedwater Heater 1-2-2 Bypass	M-006A C-8	CD 162	OPEN ¹	
Dear Heater 1-2-3 Bypass	M-06A B-10	CD 156	OPEN ¹	
Dear Heater 1-1-3 Inlet Bypass	M-06A B-9	CD 157	OPEN ¹	
L.P. Feedwater Heater 1-1-2 Outlet	M-06A B-9	CD 148	OPEN	
Dear Heater 1-1-3 Inlet Isolation	M-06A B-10	CD 150	OPEN	
Dear Heater 1-1-3 Inlet	M-06A B-9	CD 421	OPEN	
Dear Heater 1-1-3 Outlet Isolation		CD 152	OPEN	
Dear Storage Tank 1-1 Outlet	M-06B C-3	FW 1	OPEN	
<u>EL. 567' HEATER BAY</u>				
Flash Tank to Dear Stg Tk 1-1 Control Vlv	M-06A D-10	AS 2076	CLOSED	
Flash Tank to Dear Stg Tk 1-2 Control Vlv	M-06A D-11	AS 2597	CLOSED	

¹Crack open until valve is off seat

Reviewed by _____ Date _____
Shift Supervisor or Assistant Shift Supervisor

Sheet No. 1
of 2

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SP 1106.16.10

VALVE LINEUP LIST C

Return from Condenser Wet Lay Up

VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
<u>EL. 565', CONDENSATE PIT</u>				
Cnds-Pmp 1-1 Discharge Iso Valve	M-06A J-7	CD 7	OPEN	
Cnds-Pmp 1-2 Discharge Iso Valve	M-06A J-5	CD 8	OPEN	
Cnds-Pmp 1-3 Discharge Iso Valve	M-06A J-3	CD 9	OPEN	
Cnds-Pmp Seal Water Isolation Valve	M-06A K-6	CD 29	OPEN	
Seal Water for MFP and MFPT's <u>EL. 565'</u>	M-06A J-9	CD 24	OPEN	
Hotwell High Level Return Isolation	M-06A G-10	CD 74	OPEN	
Htr Drn Pmp 1-1 Disch Iso	M-04A H-2	HD 7	OPEN	
Htr Drn Pmp 1-2 Disch Iso	M-04A K-9	HD 8	OPEN	
<u>EL. 585, WEST SIDE OF CONDENSER</u>				
Dear Sto Tk 1-1 to Booster Feed Pump Suc	M-06B D-2	FW 3	OPEN	
Dear Sto Tk 1-2 to Booster Feed Pump Suc	M-06B F-11	FW 4	OPEN	
Cond Rec Wet Lay Up Pmp Isolation	1	FW 114	CLOSED	
Cond Rec Wet Lay Up Pmp Suction	1	FW 115	CLOSED	
Cond Rec Wet Lay Up Pmp Discharge	1	FW 116	CLOSED	
<u>EL. 585', NORTH SIDE OF CONDENSER (RM. 334)</u>				
Makeup to Aux Boiler from Cond Pmp Discharge	M-020 H-10	CD 19	OPEN	
Cnds-Pmp Discharge Hdr Chem Cleaning Con Iso	M-06A J-9	CD 115	CLOSED	
Steam Jet Air Ejector Bypass	M-06A K-11	CD 68	CLOSED ²	

¹These valves are not located on P&ID, see Attachment 6

²This valve was cracked open, expect 1 to 2 turns to close.

Sheet No. 2
of 2

VALVE LINEUP LIST C

Return from Condenser Wet Lay Up

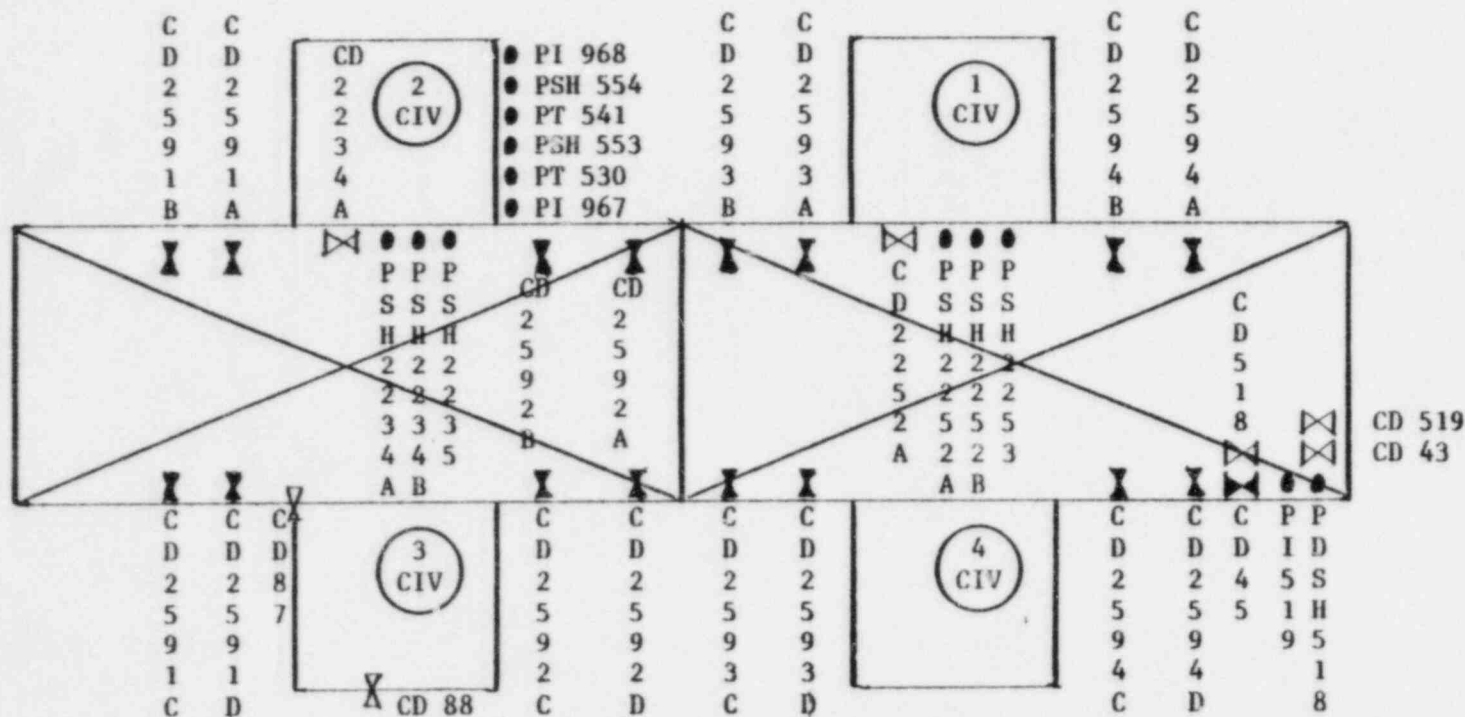
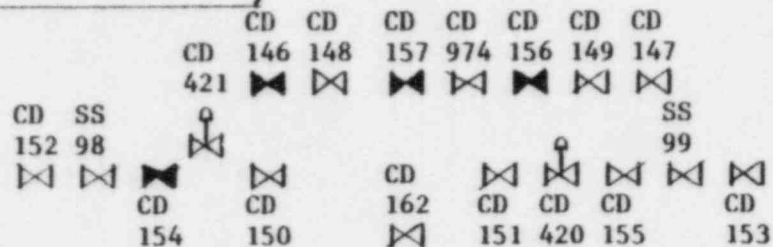
VALVE DESCRIPTION	P&ID No. Coord.	VALVE NUMBER	VALVE POSITION	VERIFY BY
<u>EL. 601, NORTH SIDE OF CONDENSER (RM. 431)</u>				
Flash Tank Pump Recirc Control Valve	M-020 F-8	AS 2080	CLOSED	
Steam Packing Exhauster Bypass	M-06A K-10	CD 69	CLOSED ¹	
Cnds Pump Min Recirc Flow Valve Inlet	M-06A H-10	CD 79	OPEN	
Hood Spray Control Inlet Isolation	M-06A B-8	CD 40	OPEN	
Desup Heating Water from Cond Sept Inlet	M-03C D-9	CD 230	OPEN	
<u>EL. 603', EAST SIDE OF CONDENSER (RM. 431)</u>				
Condensate Supply to Vacuum Breaker Valve Stem Packing	M-06A H-12	CD 201	OPEN	
L.P. Feedwater Heater 1-1-1 Bypass	M-06A G-10	CD 95	CLOSED	
Cnds Polishing Demin Outlet	M-008 A-12	CD 135	OPEN	
<u>EL. 623', HEATER BAY</u>				
L.P. Feedwater Heater 1-2-2 Outlet	M-06A C-8	CD 162	CLOSED ¹	
Dear Heater 1-2-3 Bypass	M-06A B-10	CD 156	CLOSED ¹	
Dear Heater 1-1-3 Bypass	M-06A B-9	CD 157	CLOSED ¹	
<u>EL. 657', HEATER BAY</u>				
Flash Tank to Dear Stg Tk 1-1 Control Vlv	M-06A D-10	AS 2076	OPEN	
Flash Tank to Dear Stg Tk 1-2 Control Vlv	M-06A D-11	AS 2597	OPEN	

¹This valve was cracked open, expect 1 to 2 turns to close

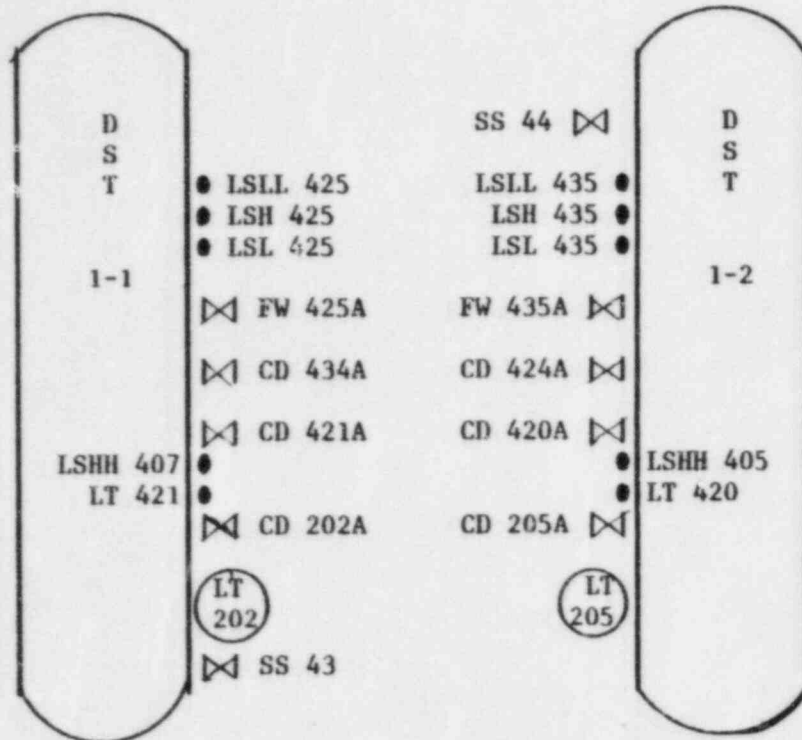
Reviewed by _____ Date _____
Shift Supervisor or Assistant Shift Supervisor

623 TURBINE FLOOR

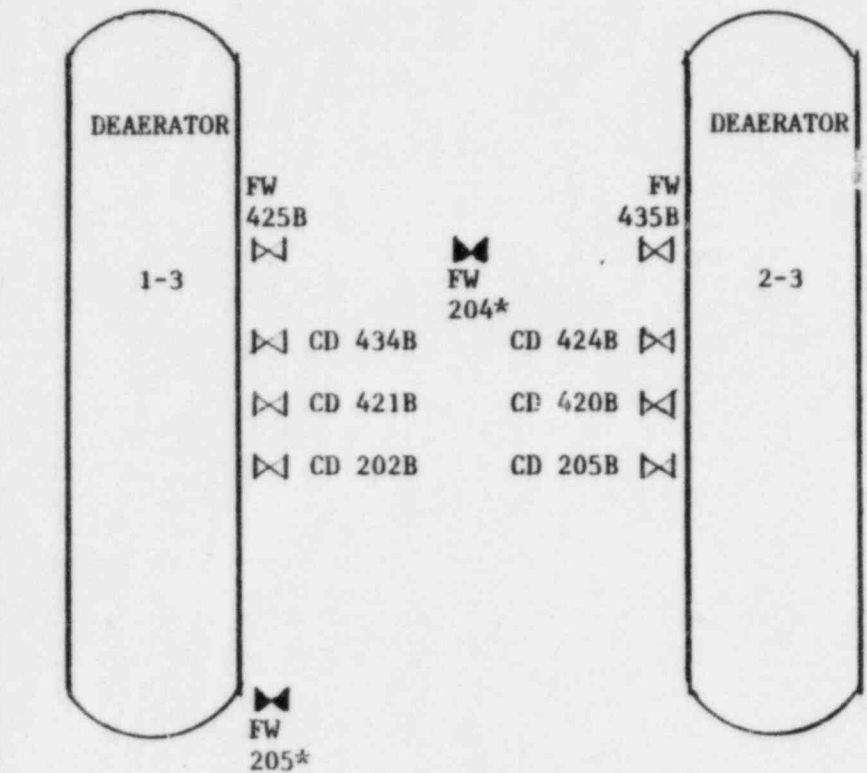
F.W. HTR



HEATER BAY AREA
604



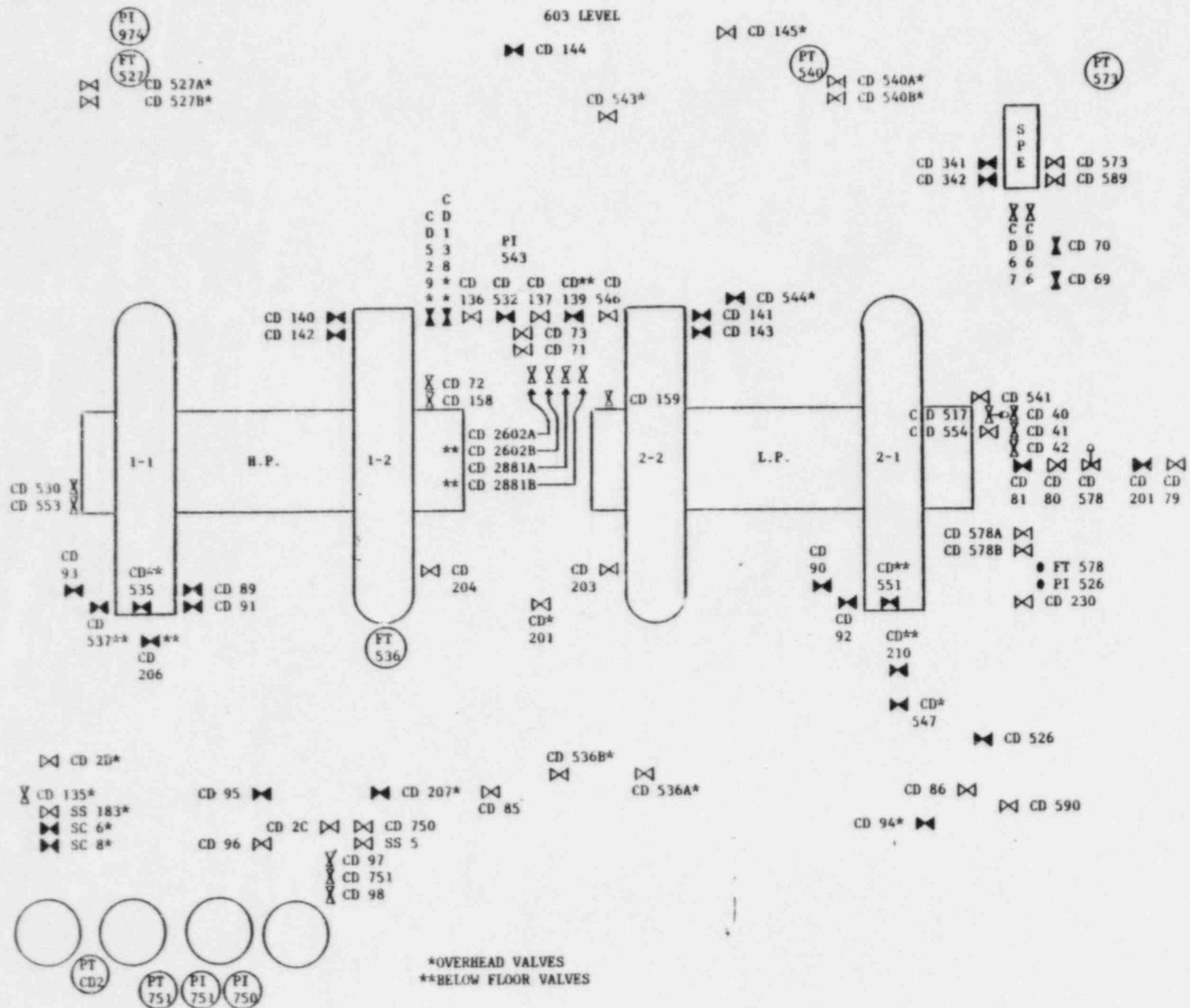
HEATER BAY AREA
702



FW 203

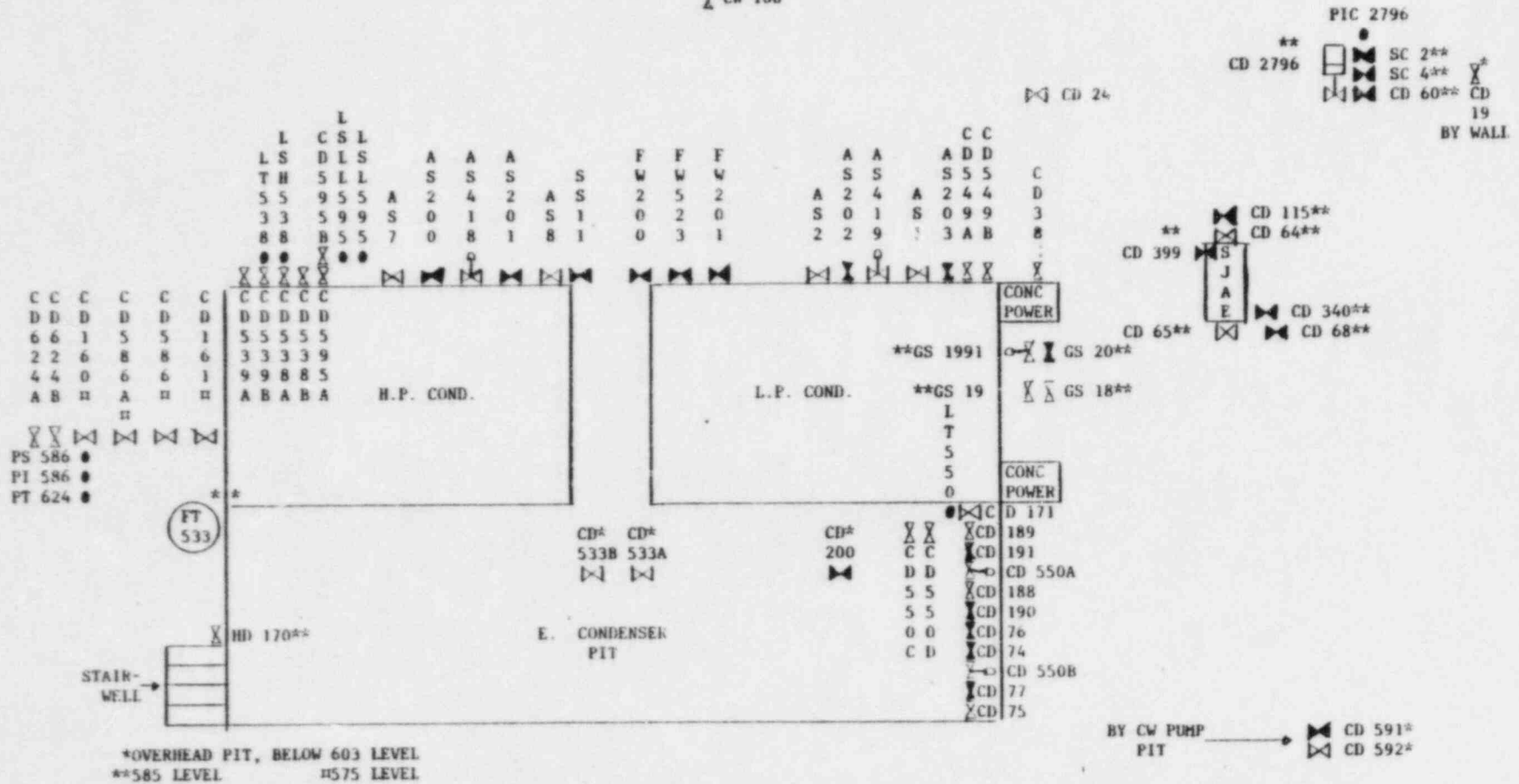
FW 202

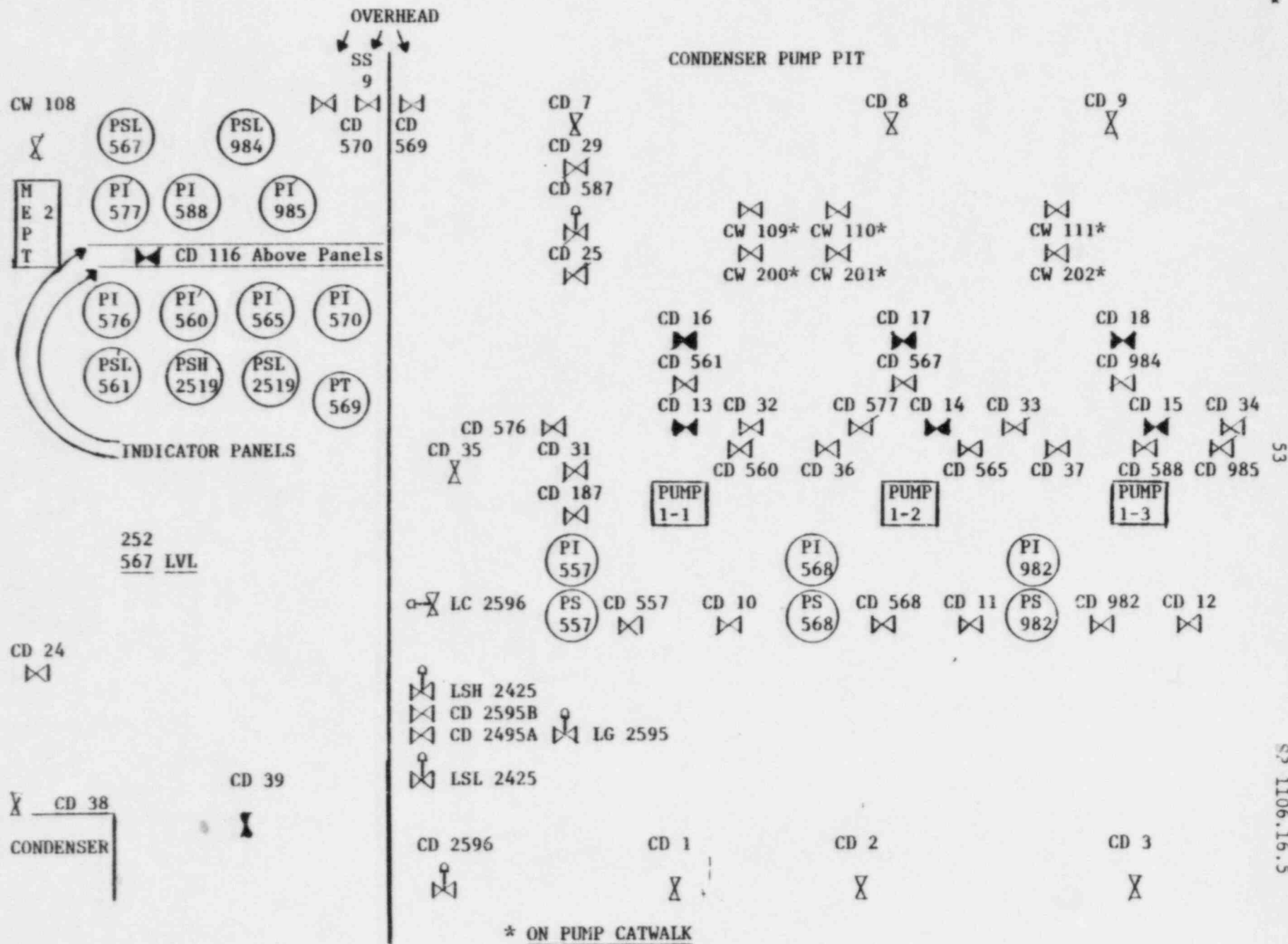
*OVERHEAD VALVES



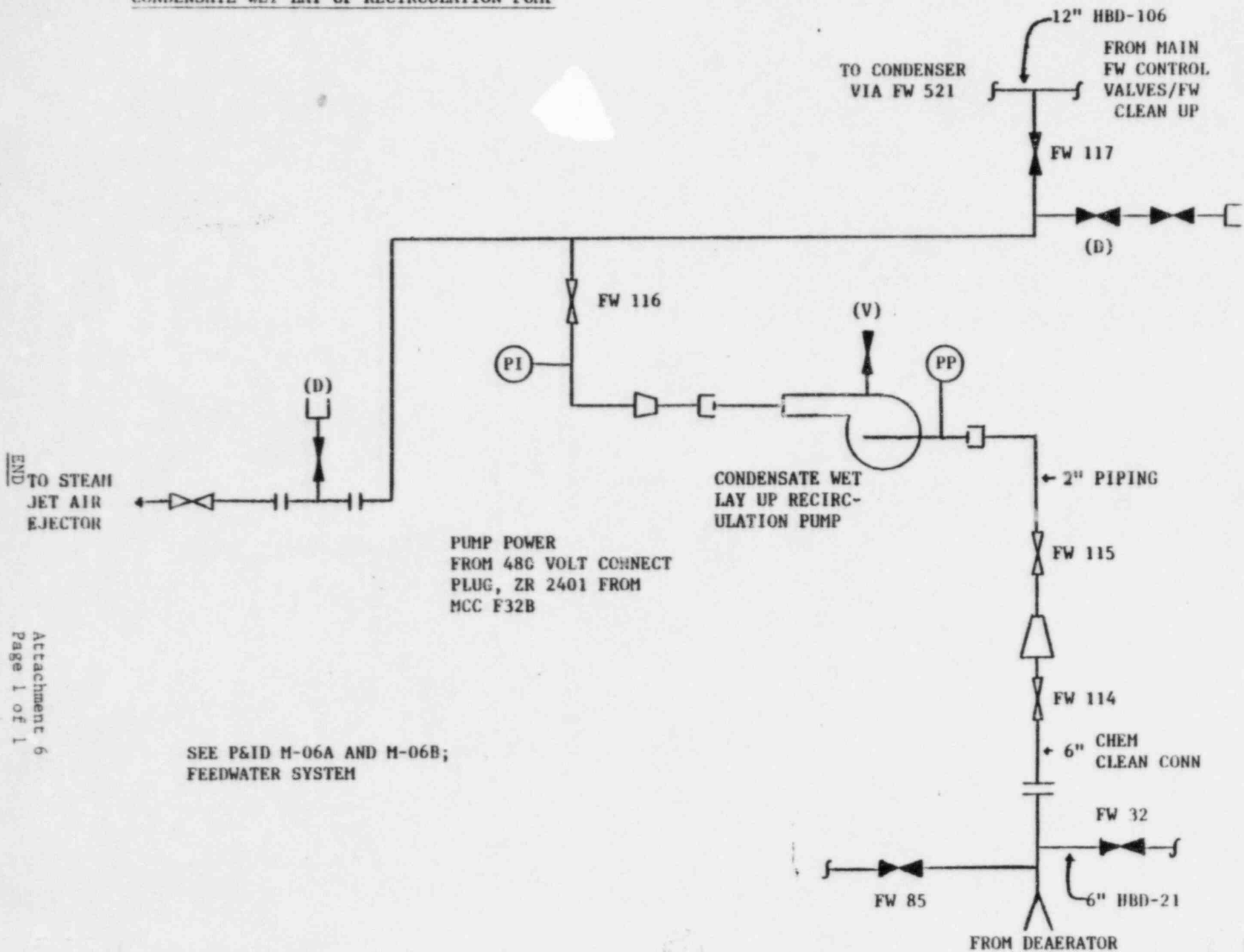
TURBINE AREA - 567 & 585 LEVELS

Y CW 108





CONDENSATE WET LAY UP RECIRCULATION PUMP



END