



STANDARD OPERATING PROCEDURE

Department: Engineering

TITLE: Operation of PLC based Water System

SOP No.		Revision No.	
Effective Date		Supersedes No.	
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1.0 Objective

The purpose of this SOP is:

- 1.1 To describe the procedure for operation of PLC based Water System.

2.0 Scope

- 2.1 This SOP is applicable for the procedure for operation of PLC based Water System at

3.0 RESPONSIBILITY:

3.1 The Maintenance Operator shall be responsible:

- 3.1.1 Responsible for operation of PLC based Water System.
- 3.1.2 Responsible to record the data and alarm history once in 24 hours.
- 3.1.3 Responsible for running the system in manual mode in case of PLC failure. And such Data's to be recorded in the log sheet.
- 3.1.4 Responsible for maintaining the performance logbook of UV purifier for purified water distribution loops.

3.2 The Maintenance Engineer shall be responsible:

- 3.2.1 Responsible to ensure proper operation of water system.
- 3.2.2 Responsible to take corrective action if any deviation observed.

4.0 Accountability

Head –Engineering Services



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4.1 STARTING PROCEDURE:

- 4.1.1 Select the HMI Display Go to Auto/ manual mode.
- 4.1.2 Select the Operating Mode.
- 4.1.3 Now check all set values of conductivity and temperature of the respective loops as per requirements.
- 4.1.4 Select the respective pumps of all loops.
- 4.1.5 Select Go to AUTO mode.

4.2 MONITORING AND RECORDING:

- 4.2.1 The system runs in auto mode and the parameters are recorded are recorded manually.
- 4.2.2 In case of any alarm which is indicated audio-visually, the operator acknowledges it by pressing the ERR. ACK touching Screen. The operator checks the alarm displayed on the HMI and gets it rectified.
- 4.2.3 The operator should be recording of running Parameters Hourly basis in the Performance log-sheet file.

4.3 STOPPING PROCEDURE:

- 4.3.1 To stop the system in any mode (auto/manual) unselect touch screen.
- 4.3.2 In case of any emergency stop the system by pressing the 'EMERGENCY STOP' Push Button.

4.4 OPERATION OF THE SYSTEM IN CASE OF PLC FAILURE:

- 4.4.1 Select the HMI display go to manual mode.
- 4.4.2 Select the Operating mode.
- 4.4.3 Start the respective feed pumps of all loops by touching the pump selector screen to running mode.
- 4.4.4 Monitor the conductivity, temperature and flow of all loops by respective local display. If any deviation in the same, stop the system by pressing the EMERGENCY STOP push button provided in the control panel.
- 4.4.5 If any deviation in conductivity drain out all loop and storage system and then regenerate



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the Mixed Beds as per SOP.

4.4.6 If any deviation in temperature and flow, observe the problem and sort it out.

4.4.7 Those data's should be recorded in the water system logbook.

RO> – REVERS OSMOSIS

M.B>-D.M WATER GENERATION SYSTEM

LOOP>1 – PURIFIED WATER DISTRIBUTION SYSTEM (C.B)

LOOP>2 – PURIFIED WATER DISTRIBUTION SYSTEM (G.B)

WFI> - DISTILLED WATER DISTRIBUTION SYSTEM (C.B)

LOOP>1

This page will provide the information related to LOOP.

PUMP >

MBFP-31	RUN/STOPED
PWDP-09	RUN/STOPED

VALVE>

XV18	OPEN/CLOSED
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NOTE-> If the valve or pump is on they will start blinking. And if they are off they will not blinking, i.e.

MBFP-31 is on then this pump will start blinking. This condition is same for all loops.

Tank level is also shown by same method, i.e. if tank is full than LOW, MID & HIGH LEVEL will Blink. Operator will also get the current value Conductivity of INLET and OUTLET.

LEVEL OF LOOP >1 TANK

LOW, MID, HIGH.

By Screen touch<<Back the operator can go back to Loop Operation.

LOOP>2

This page will provide the information related to LOOP>2.

PUMP>

PWDP-10	RUN/STOPED
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VALVE>

XV22	OPEN/CLOSED
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LEVEL OF LOOP>2 TANK

LOW, MID, HIGH

Current value of PH, CONDUCTIVITY, FLOW and TEMPERATURE will be shown on display.

By pressing screen touch <<Back the operator can go back to Loop Operation.

WFI>

This page will provide the information related to LOOP>WFI.

PUMP>

WFIDP02 RUN/STOPE

VALVE>

XV25 OPEN/CLOSED

LEVEL OF WFI TANK

LOW, MID, HIGH

Current value of Conductivity, Flow and Temperature will be shown on display.

By pressing screen touch <<Back the operator go to mode.

To set the parameters touch screen it will ask. Now if the operator will then only can navigate to this page. The operator can set the low and high set points conductivity & temperature.

SET POINT LIMIT>

Conductivity 0-20

Temperature 0-100

Operator should the set points for all loops. If the running values go beyond the set points, flow-diverting valve of the respective loop will operate and the flow will be diverted to drain.

ACCEPTANCE CRITERIAS FOR THE LOOPS:

LOOP >1(Purified Water Distribution System):

Conductivity 1.3 μ s/cm at 25 degree Celsius.

Temperature 45 - 55

Flow 3 vfm

LOOP>2 (Purified Water Distribution System):

Conductivity 1.3 μ s/cm at 25 degree Celsius.



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Temperature 45 - 55

Flow 3 vfm

LOOP>WFI (Distilled Water Distribution System)

Conductivity 0 - 1 μ s/cm at 25 degree Celsius.

Temperature 80 - 90

Flow 2 vfm

Press Screen touch<<Back to go back to Loop Operation & Loop1, Loop2 & WFI Loop Cycle running mode.

PUMP SELECTION>

Press mode Loop1/2 & WFI Loop-3 Cycle running.

This way the operator can select pump for all loops.

Screen touch the select cycle running mode start.

RUN DATA

HMI display shows the running values of Conductivity, Flow and Temperature of all loops at a glance.

Loop Operation.

G.B/C.B RUN PARAMETER. (RUN PARAMETER OF GENERAL BLOCK)

From this page the operator can view the current ON/OFF status of all Outputs and also can view the status of PUMP and VALVES.

Here the operator can view the trends of following parameter.

R2> FLOW TRENDS

R3> pH TRENDS

R5> CONDUCTIVITY TRENDS

R7> TEMPERATURE TRENDS

R1> BACK TO MAIN MENU.

The operator can view the trends for all loops. For e.g. to see the trends of pH press R3. This will lead you to trends of pH for main loop. Now press NEXT to see the view of other loops pH.

PROCEDURE TO ENTER THE PASSWORD

Press MENU KEY this will navigate you to following page.



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Type the correct password by pressing the MOD key, & press R8 for ESC. Only if the password is correct, one will be able to access the EDIT DATA page.

4.5 REASON FOR REVISION:

4.5.1 Accountability is redefined.

5.0 ANNEXURES:

Annexure –1: Specimen for water system running parameters.

Annexure–2: Performance Logbook of UV water purifier for PW distribution Loop - 01

Annexure–3: Performance Logbook of UV water purifier for PW distribution Loop - 02

7.0 References (S)

Nil

8.0 Glossary

SOP : Standard Operating procedure

No : Number



PHARMA DEVILS
ENGINEERING DEPARTMENT

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ANNEXURE- I

TIME	M.B OUTLET		LOOP-1			LOOP-2			WFI LOOP		
HRS	Flow	CIC μ/S	CIC μ/S	Temp. Degc	Velo	CIC μ/S	Temp. Degc	Velo	CIC μ/S	Temp Degc	Velo

DATE:

TIME:

Operator's signature	Engineer signature
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ANNEXURE III

Date	Lamp indication ON/OFF										Hour meter working/not working		Operator's sign.	Remarks	Engineer's sign.
	LAMP-I		LAMP-II		LAMP-III		LAMP-IV		LAMP-V		Yes	No			
	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF					

ACCEPTANCE CRITERIA

Indicators of all lamps Should be ON	Hour meter should be Operational
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