INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

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1.0 PROTOCOL APPROVAL:

Signing of this approval page of Protocol indicates agreement with the qualification approach described in this document. If modification to the qualification approach becomes necessary, an addendum shall be prepared and approved .The protocol cannot be used for execution unless approved by the following authorities.

This Installation Qualification protocol of purified water storage & distribution system been reviewed and approved by the following persons:

FUNCTION	NAME	DEPARTMENT	SIGNATURE	DATE
PREPARED BY		QUALITY ASSURANCE		
REVIEWED BY		PROJECTS / ENGINEERING		
REVIEWED BY		PRODUCTION		
APPROVED BY		QUALITY ASSURANCE		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

2.0 OVERVIEW:

2.1 OBJECTIVE:

The objective of this protocol is to collect sufficient data pertaining to the purified water distribution system and define the installation qualification verification procedure and acceptance criteria for the purified water distribution system.

The installation qualification of purified water storage and distribution system has been completed on supplier documents.

2.2 PURPOSE:

The purpose of this document is to establish documentary evidence to ensure that the purified water storage & distribution system installed as per the design specification and also to ensure that it is complies the design specification.

2.3 SCOPE:

This document is applicable installation qualification of purified water storage & distribution system at services floor.

2.4 RESPONSIBILITY:

The following shall be responsible:

Quality Assurance officer/ Executive-Preparation of protocol its execution and support

Execution team –for execution of protocol

Projects / Engineering Head – For execution support and review of protocol/report

Production Head – For execution support and review of protocol/report

Quality Assurance Head – For adequacy and final approval

2.5 EXECUTION TEAM:

The satisfactory installation of the purified water storage & distribution system shall be verified by executing the qualification studies described in this protocol. The successfully executed protocol documents that the purified water storage & distribution system is installed satisfactorily.

Execution team is responsible for the execution of installation of purified water storage & distribution system, Execution team comprises of:

NAME	DEPARTMENT	DESIGNATION	SIGNATURE	DATE
	PROJECTS/ ENGINEERING			
	PRODUCTION			
	QUALITY ASSURANCE			

3.0 ACCEPTANCE CRITERIA:

3.1 The Purified water storage & distribution system shall meet the system description given in design qualification.

3.2 The Purified water storage & distribution system shall meet with the acceptance criteria mentioned under the topic “Identification of major components

3.3 The Purified water storage & distribution system shall be operated by PLC.

3.4 All material of constructions of the contact parts to be verified with test certificate as per the specifications.

3.5 The RPM of motor should be in the range of ±5%.

4.0 REQUALIFICATION CRITERIA:

The purified water storage & distribution system shall be re qualified if

- ☞ There are any major changes in system components which affect the performance of the system.
- ☞ After major breakdown maintenance is carried out.
- ☞ After change in the location
- ☞ As per revalidation date and schedule

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

5.0 INSTALLATION QUALIFICATION PROCEDURE:

5.1 SYSTEM DESCRIPTION:

Equipment Name	:	Purified Water Storage & Distribution System
Supplier/Manufacturer	:	…….
Capacity	:	7.5 KL
Location	:	…….

PROCESS EQUIPMENT DESCRIPTION:

PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM:

- 7.5 KL SS 316L Purified Water Storage Tank along with accessories
- Process Loop Pumps
- High intensity ultra violet unit
- User Points
- Flow Transmitter in return line
- Temperature Sensor cum Controller
- Conductivity Indicator cum Controller with Alarm
- Flow Diverter Valve

PURIFIED WATER STORAGE TANK ASSEMBLY:

The size of the tank is based on the feed flow rate of the Purified Water Storage & Distribution Loop and the peak load of the user points. Existing Purified Water Storage Tank assembly consists of following components:

1. Vertical Storage tank of working capacity 7.5 KL of SS 316L, Internally Electro Polished
2. Level Indicator cum Controller
3. Jacketed Vent Filter with Filter Cartridge
4. Spray Ball
5. Tank Drain Valve
6. Sanitary Diaphragm Valves
7. Compound Pressure Gauge

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

PURIFIED WATER DISTRIBUTION:

1 Centrifugal pump of capacity 12.5 m^3/hr. @ 75 mWC.

2 Interconnecting piping, instruments and diaphragm valves for various applications (i.e. Sampling, Controlling, and Isolation)

3 Sanitary Diaphragm Valves (ZDV)

4 Pressure Indicators

5 Temperature Transmitter

6 Conductivity Sensor with Flow Diverter Valve

7 Flow Transmitter

8 Sampling Valves

PURIFIED WATER DISTRIBUTION LOOP PIPING:

- The whole distribution loop shall be fabricated and installed as per standard norms complying with the Purified Water and to be fabricated out of SS 316L stainless steel tubes and tube fittings (sanitary type). The tubes shall have an inside surface Finish of Ra < 0.4µ.
- The fabrication shall be done by using **COBRA TIG** orbital welding machine with a closed head in an inert atmosphere of argon gas to give crevice free welds with the concavity and convexity of the weld well within permissible limits.
- Care shall be taken that there is minimum amount of dead leg in the fabricated Distribution System. (Less than 1.5D).
- The Distribution System on the whole shall be designed so as to give minimum load on the Purified Water Generation Plant, which reflects a good-engineered system taking care of the cost factors involving the initial set up cost as well as the maintenance and running cost.
- The distribution loop will consist of user points (as per requirement), which are located at various locations.
- The user point valves shall be of Zero Dead Leg Diaphragm Valve.
- The return line of the distribution loop shall be connected back to the top of the Purified Water Storage Tank with the Spray Ball provided inside the tank.
- The Loop temperature shall be maintained at ambient.
- In normal operating condition, a minimum velocity of 1.2 m/s shall be maintained in the return loop at peak consumption.

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

The Storage and Distribution System design shall be suitable for meeting the requirements stated above and shall comply with the following:

5.2 INSTRUCTION FOR FILLING THE CHECKLIST:

5.2.1 In case of identification of major component actual observation should be written in specified location.

5.2.2 In case of the compliance of the test actual observation should be written in specified location.

5.2.3 For identification of utilities actual observation should be written in specified location.

5.2.4 Give the detailed information in the summary and conclusion part of the installation Qualification report.

5.2.5 Actual observation of the component should be written in specified location

5.2.6 Whichever column is blank or not used 'NA' shall be used.

5.3 INSTALLATION CHECKLIST:

System shall be installed as following general Installation checklist:

S.No.	Statement	Method of Verification	Actual Observation	Checked By Sign/Date
1.	Verify the purchase order and note down the PO no. In observation.	PO number verified with PO copy.		
2.	Verify that the "As Built" drawing is complete and represents the design concept.	As built drawing shall be verified with design specification.		
3.	Verify that major components are securely anchored and shock proof.	All major component squirrelly anchored shall be verified by visual & heavy touching the components.		
4.	Verify that there is sufficient room provided for servicing.	Sufficient space shall be verified by moving the area.		
5.	Verify that all piping and electrical connections are done according to the drawings.	Piping electrical connection shall be verified with P&ID diagram.		
6.	All access ports are examined and cleared of any debris.	Shall be verified by visual observation.		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

S.No.	Statement	Method of Verification	Actual Observation	Checked By Sign/Date
7.	Safe electrical connections.	Electrical connection shall be verified by Visual/ Physical observation.		
8.	Equipment/instrument/components identification nameplate visible.	Equipment identification shall be verified by Visual/ Physical observation.		
9.	Units installed on foundation are secure in place as per manufacturer's recommendations.	All units shall be verified with skid & P& ID drawing.		
10.	Verify that there is no physical damage of the system.	Physical damages shall be verified by Visual/ Physical observation		

Inference: ----------

Reviewed by

(Sign/Date)

5.4 IDENTIFICATION & VERIFICATION OF MAJOR COMPONENTS:

Each major component shall be verified as per following procedure and same shall be recorded in respective column.

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
[1.0] PURIFIED WATER STORAGE TANK				
Make	HydroPure Systems	System make shall be verified with supplier documents, name plate & tank drawing.		
Quantity	One	Quantity shall be verified by visual / physical observation.		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
Type	Vertical, 1/3 limpeted tank with cladding	Type of tank shall be verified by visual / Physical observation.		
Grass capacity	7.5 KL	Tank volume shall be verified by geometrical calculation.		
Tank Internal Diameter	2100 mm	Internal diameter shall be verified with measuring tape /scale		
Tank Outer diameter	To be recorded	Outer diameter shall be verified with measuring tape /scale.		
Shell height	2100 mm	Total length of tank shall be verified with measuring tape /scale.		
Manhole	Φ 450mm ± 2 mm	Manhole shall be verified with measuring tape /scale.		
M.O.C. of Cladding & Limpet pipe	SS 304 for non-contact parts.	MOC of non-contact part of tank shall be verified with MOC test certificate.		
Vent filter housing/cartage	0.2 micron,10" long	Vent filter shall be verified with measuring tape /scale and with test certificate.		
Spray ball	Rotating type, SS316L,TC end connection	Spray ball shall be verified by visual observation and specification with reference documents.		
Light glass	Ǿ 100 mm, Flange end toughened glass	Light glass shall be verified by visual observation and diameter shall be verified with measuring tape /scale.		
Sight glass	Ǿ 100 mm, Flange end toughened glass	Sight glass shall be verified by visual observation and diameter shall be verified with measuring tape /scale.		
Tank installation location	Tank shall be installed after generation system	location shall be verified by visual observation and same mentioned in P &ID		
[2.0] PROCESS LOOP PUMP				
Make	Alfa Laval	Make of pump shall be verified from pump name plate.		
Model/Type	LKH35/Sanitary Centrifugal monobloc pump	Model/Type of pump shall be verified from pump name plate.		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
Quantity	02 Nos.	Quantity shall be verified by visual observation.		
Sr. No.	To be recorded	Sr. No. of pump shall be verified from pump name plate.		
MOC of Contact parts	SS 316L	MOC of pump shall be verified with test certificate.		
Pump specification	15HP,/11kw, 12.5 m^3/hr. 3520 rpm	Specification shall be verified with pump name plate.		
Location	Pump shall be installed after storage tank.	location shall be verified by visual observation and same mentioned in P &ID		
[3.0] HIGH INTENSITY ULTRA VIOLET SYSTEM				
Make	Ace hygiene	Make of HIUV shall be verified from HIUV name plate.		
No. of Unit	One	Quantity shall be verified by visual observation		
Flow Rate	12.5 m^3/hr.	Flow rate shall be verified with respective documents.		
Model No.	APi-70	Model of HIUV shall be verified from UV name plate.		
Test Pressure	180 psi for 30 mins.	Test pressure shall be verified with hydro test certificate		
Diameter of UV chamber	To be recorded	Chamber diameter shall be verified with measuring tape/scale.		
Length of UV chamber	To be recorded	Chamber length shall be verified with measuring tape/scale.		
Height of UV chamber	To be recorded	Chamber height shall be verified with measuring tape/scale.		
Intensity of UV Element	254 nm	Intensity of UV element shall be verified with test certificate.		
No. of Lamps	2 nos.	No. of lamp shall be verified by visual observation.		
Make of Lamp	ACE hygiene products pvt.ltd.	Make of lamp shall be verified with reference document and visual observation or name printing on tube.		
MOC of Housing	SS316L internally EP to <0.8 Ra	MOC of housing shall be verified with test certificate.		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
MOC of cabinet	Mild steel	MOC of cabinet shall be verified with test certificate.		
Inlet/Outlet size	2" TC End Connection	Inlet/outlet size shall be verified with vernier caliper.		
Intensity Monitor / Hour Meter				
Make	Ace hygiene	Make of monitor shall be verified with name plate on monitor.		
Model	APi-70,UVM2000	Model of monitor shall be verified with name plate on monitor.		
S.No.	To be recorded	Serial no. of monitor shall be verified with name plate on monitor.		
Steam trap				
Make	Forbes marshall	Make of monitor shall be verified with name plate on monitor.		
Size	15 NB	Size of Steam trap shall be verified with measuring tape /scale.		
Location	Bottom Jacket of T-201	Location of stream trap shall be verified visually.		
Manual Ball Valve In steam Safety valve Ass.				
Make	Racer Engg.	Make of monitor shall be verified with name plate on monitor.		
Size	8 mm	Size of Manual ball valves shall be verified with measuring tape /scale.		
Location	In steam safety valve ass. BV-201	Location of stream trap shall be verified visually.		
Manual Ball Valve In steam trap assembly				
Make	Racer Engg.	Make of monitor shall be verified with name plate on monitor.		
Size	15 mm	Size of Manual ball valves shall be verified with measuring tape /scale.		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
Qty.	02	Quantity shall be verified visually		
Location	In steam safety valve ass. BV-202,BV-203	Location of stream trap shall be verified visually.		
[4.0] PIPING & PIPE FITTINGS & VALVES				
4.1 Tube				
Make	Rensa/wooseoksts	Tube make shall be verified with reference documents		
Size	50.8 ± 0.05 mm	Size of tube shall be verified with vernier caliper		
Thickness	(1.60 ± 0.05 mm)	Thickness of tube shall be verified with vernier caliper		
MOC	SS 316L	MOC shall be verified with test certificate.		
4.2 Bend				
Make	Alfa Laval	Make shall be verified with valve name plate		
Size	50.8 ± 0.05 mm	Size of bend shall be verified with vernier caliper		
Thickness	(1.60 ± 0.05 mm)	Thickness of tube shall be verified with vernier caliper		
MOC	SS 316L	MOC shall be verified with test certificate.		
4.3 TC House Nipple				
Make	Hydro Pure	Make shall be verified with reference documents.		
Size	2.0''	Size of TC house shall be verified with vernier caliper		
MOC of TC gasket	Food grade silicon rubber	MOC shall be verified with test certificate.		
MOC	SS316L	MOC shall be verified with test certificate.		
4.4 Diaphragm valve Suction line of T-201,DV-202				
Make	AVCON	Make shall be verified with valve name plate		
Size	65 mm	Size of TC house shall be verified with vernier caliper		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
MOC	SS316L	MOC shall be verified with test certificate.		
4.5 Diaphragm valve Discharge line of T-201,DV-203				
Make	AVCON	Make shall be verified with valve name plate		
Size	50 mm	Size of TC house shall be verified with vernier caliper		
MOC	SS316L	MOC shall be verified with test certificate.		
4.6 Actuated angle seat ON/OFF valve				
Make	AVCON	Make shall be verified with valve name plate		
Size	40 mm	Size of TC house shall be verified with vernier caliper		
MOC	SS304	MOC shall be verified with test certificate.		
Location	Plant steam inlet line AV-201	Location of valve shall be verified visually.		
4.7 Actuated angle seat ON/OFF valve				
Make	AVCON	Make shall be verified with valve name plate		
Size	40 mm	Size of TC house shall be verified with vernier caliper		
MOC	SS304	MOC shall be verified with test certificate.		
Location	Plant chilled water inlet line AV-202	Location of valve shall be verified visually.		
4.8 Globe valve				
Make	Forged steel	Make shall be verified with valve name plate		
Size	40 mm	Size of TC house shall be verified with vernier caliper		
Location	Plant steam inlet line GV-201	Location of valve shall be verified visually.		

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
4.9 Flow diverter valve				
Make	IDMC	Make shall be verified with reference document provided by supplier		
Size	25 mm	Size shall be verified with reference document provided by supplier		
MOC	SS316L	MOC shall be verified with test certificate.		
Location	Permeate line of post UF,FDV-201	Location of valve shall be verified visually.		
4.10 Flow diverter valve				
Make	IDMC	Make shall be verified with reference document provided by supplier		
Size	50 mm	Size shall be verified with reference document provided by supplier		
MOC	SS316L	MOC shall be verified with test certificate.		
Location	Return line of PW loop,FDV-202	Location of valve shall be verified visually.		
4.11 Sampling valve				
Make	AVCON	Make shall be verified with reference document provided by supplier		
Size	8 mm	Size shall be verified with reference document provided by supplier		
Quantity	03 Nos.	Quantity shall be verified with visual observation.		
MOC	SS316L	MOC shall be verified with test certificate.		
4.12 Safety valves				
Make	Venus engineering Co.	Make shall be verified with test certificate		

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System Parameters	Specification	Method of Verification	Actual Observation/ Reference docs.	Checked by Sign/Date
Size	0.5 inch	Size shall be verified with reference document provided by supplier		
MOC	SS304	MOC shall be verified with test certificate.		
Location	In steam safety valve ass. SV-201	Location of valve shall be verified visually.		
4.13 Diaphragm valve Drain line of T-201 ,DV-201				
Make	AVCON	Make shall be verified with reference documents		
Size	25 mm	Size shall be verified with reference document provided by supplier		
MOC	SS316L	MOC shall be verified with test certificate.		
4.14 Zero dead leg valves				
Make	Crane	Make shall be verified with reference document provided by supplier		
Size	50 mm	Size shall be verified with reference document provided by supplier		
MOC	SS316L	MOC shall be verified with test certificate.		
Location	In PWD system at user point ZDV-201 to 235	Location of valve shall be verified visually.		
4.15 Non return valve				
Make	INOXPA	make shall be verified with reference documents		
Size	40 mm	Size of TC house shall be verified with vernier caliper		
MOC	SS316L	MOC shall be verified with test certificate.		

Inference: ----------

Reviewed By
(Sign/Date)

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

5.5 IDENTIFICATION & VERIFICATION MEASURING COMPONENTS:

The measuring components has been identified by visual observation with their location and same shall be recorded as per given table.

S. No.	Name of Components	Range / Specification	Location	Observation / Reference Document No.	Checked By Sign & Date
1.	Pressure gauge	0 -7 kg/cm^2	In steam safety valve ass. (PG-201)		
2.	Pressure gauge	0 -10 kg/cm^2	Supply line of purified water loop (PG-202)		
3.	Pressure gauge	0 -10 kg/cm^2	Return line of PW loop (PG-203)		
4.	Compound gauge	-1-9 kg/cm^2	On top of Purified Water Storage Tank (CPG-201)		
5.	Conductivity indicator cum controller	0 – 10 µs/cm	In return line of Purified Water Loop (CIC-201)		
6.	Temperature trans meters	PT-100 (RTD) 0-200˚C	In return line of Purified Water Distribution System (TT-203)		
7.	Temperature trans meters	PT-100 (RTD) 0-200˚C	In Bottom of Purified Water Storage Tank (TT-202)		
8.	Temperature trans meters	PT-100 (RTD) 0-200˚C	In Vent Filter Housing(TT-201)		
9.	Level indicator cum controller	2350 mm,4-20mA	On top of Storage tank (LT-201)		
10.	Flow transmitter	1.1-11 m^3/hr. 4-20mAO/P	Return line of PW loop (FT-201)		

Inference: ----------

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(Sign/Date)

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5.6 Identification of provided interlocking / safety feature:

S.No.	Interlock/Safety Feature Description	Location	Method of Verification	Observation	Verified by Sign & Date
1.	High-high level sensor	High-high level sensor provided at top of tank.	Interlocking sensor shall be verified by visual observation		
2.	High level sensor	High level sensor provided at top of tank.	Interlocking sensor shall be verified by visual observation		
3.	Low-low level sensor	Low-low level sensor provided at bottom of tank.	Interlocking sensor shall be verified by visual observation		
4.	Low level sensor	Low level sensor provided at bottom of tank.	Interlocking sensor shall be verified by visual observation		
5.	Low temperature in return loop during sanitization	Low temperature sensor provided in return line loop.	Interlocking sensor shall be verified by visual observation		
6.	High temperature in return loop during sanitization	High temperature sensor provided in return line loop.	Interlocking sensor shall be verified by visual observation		
7.	High conductivity in return line	High conductivity sensor provided in return line loop.	Interlocking sensor shall be verified by visual observation		
8.	Emergency stop	Emergency button provided on control panel.	Interlocking sensor shall be verified by visual observation		

Inference: ----------

Reviewed by

(Sign/Date)

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

5.7 Verification of Material of Construction:

The material of construction shall be verified with test certificate. If test certificate is not available material of construction shall be verified with molybdenum test kit.

Name of Components	Material of Construction	Method of Verification	Observation	Checked by Sign/Sate
Storage tank	SS 316L	Shall be verified with test certificate		
Level transmitter	SS 316	Shall be verified with test certificate		
Vent filter housing MOC	SS 316L	Shall be verified with test certificate		
Distribution pump	SS 316L	Shall be verified with test certificate		
Ultra violet purifier Vessel MOC	SS 316L	Shall be verified with test certificate		
Spray ball	SS316L	Shall be verified with test certificate		
Conductivity sensor	SS 316L	Shall be verified with test certificate		
Diaphragm valve Body material	SS316L	Shall be verified with test certificate		
SS tubes & fittings	SS 316L	Shall be verified with test certificate		
Pump contact part	SS 316L	Shall be verified with test certificate		
Zero dead leg sampling valve	SS 316L	Shall be verified with test certificate		

Inference: ----------

Reviewed by
(Sign/Date)

5.8 IDENTIFICATION OF SUPPORTING UTILITIES:

The required utility connection shall be verified with visual observation

Name of Utility	Requirements	Method of Verification	Observation	Checked by Sign & Date
Electricity:	3 phase, 440V, 50H supply with neutral and proper Earthing	Provided electricity shall be verified with clamp meter		
Compressed air	6-7 Kg/cm^2	Provided compressed air shall be verified pressure gauge		
Steam	At 142 ^0C Temp (approx), 3-4 Kg/cm^2	provided steam shall be verified with steam pressure gauge		

Inference: ----------

Reviewed by

(Sign/Date)

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

5.9 Identification & verification of sampling & user points:

Following sampling & user point has been identified & verified by visual observation &manual counting and same shall be identified in P & ID also.

S.No.	Sampling ID No.	Name of Sampling & User Point	Observation/Reference Document No.	Verified by Sign & Date

Inference: ----------

Reviewed by
(Sign/Date)

5.10 IDENTIFICATION / VERIFICATION OF STANDARD OPERATING PROCEDURE (SOP):

The following Standard Operating Procedures were identified as important for effective performance of Purified water distribution system operation.

S.No.	SOP Title	Status	Verified by Sign& Date

Inference: ----------

Reviewed by
(Sign/Date)

5.11 VERIFICATION OF WELDING JOINT OF PURIFIED WATER DISTRIBUTION LOOPS:

Welder should be qualified and during welding joint it training & certificate should be available. All loops shall be welded with orbital welding only.

Welding Started on	Completed on	Welded Sample Approval	Welding Done By	Welding Report No.	Checked By Sign & Date

Inference: ----------

Reviewed by
(Sign/Date)

5.12 VERIFICATION OF BOROSCOPY OF WELDING JOINTS:

Boroscopy shall be done approx 10% of total number of welding joints and all boroscopy photographs should be clearly identified and same shall be marked in Isometric drawing.

Total No. of Welding joints	Total No. of Boroscopy Done	Boroscopy Done By	Isometric Drawing No.	Boroscopy Reference Report No.	Checked By Sign & Date

Inference: ----------

Reviewed by
(Sign/Date)

5.13 VERIFICATION OF DRAWING & DOCUMENTS:

Following documents & drawing shall be verified but not limited to:

S.No.	Title of Drawing and Document	Reference Document No.	Checked By Sign & Date

Inference: ----------

Reviewed by
(Sign/Date)

5.14 Annexure (s):

All IQ attachments shall be attached as per below list

S.No.	Annexure No.	Details of annexure

5.15 ABBREVIATIONS:

Following Abbreviations are used in the installation qualification protocol of Purified water storage & distribution system

mm : Millimeter

m/sec : Meter/second

P&ID : Piping & instrumentation diagram

PW : Purified water

NMT : Not more than

NLT : Not less than

HMI : Human machine interface

µS/cm : Micro Siemens per centimeter

PWD : Purified water distribution

PIQ : Protocol for Installation qualification

RIQ : Report for installation qualification

5.16 DEFICIENCY AND CORRECTIVE ACTION (S) REPORT (S) :

Following deficiency was verified and corrective actions taken in consultation with the Engineering Department.

Description of Deficiency: --

Corrective Action(s) taken: ---

Reviewed by
Sign & Date

INSTALLATION QUALIFICATION PROTOCOL FOR PURIFIED WATER STORAGE & DISTRIBUTION SYSTEM

6.0 INSTALLATION QUALIFICATION FINAL REPORT:

The installation qualification final summary & conclusion shall be written in below given space.

6.1 Summary: ----------

6.2 Conclusion:----------

Reviewed By
Sign & Date

6.3 FINAL REPORT APPROVAL:

It has been verified that all tests required by this protocol are completed, reconciled and attached to this protocol or included in the qualification summary report. Verified that all amendments and discrepancies are documented, approved and attached to this protocol, (if applicable)

Signatures in the block below indicate that all items in this qualification report of Purified water storage & distribution system have been reviewed and found to be acceptable and that all variations or discrepancies have been satisfactorily resolved.

NAME	DESIGNATION	DEPARTMENT	SIGNATURE	DATE
		PROJECTS / ENGINEERING		
		PRODUCTION		
		QUALITY ASSURANCE		