

North Texas Chapter of NANT
12th Annual Symposium

Water Treatment Systems: What you need to know

Documentation, Actions, and Alarms

2011 November 20

Burke A. West, P.E., CWS-VI

- Presentation is oriented to clinical nurses and others who use the water treatment system

- Picture of water treatment system

- Picture of water treatment system

Water treatment equipment operators are not expected to be water treatment experts – they are expected to know how to use the water treatment equipment

- TDH ESRD Facility Rules September 2003
- 117.33 b
- **(5) Written policies and procedures for the operation of the water treatment system must be developed and implemented. Parameters for the operation of each component of the water treatment system must be developed in writing and known to the operator. Each major water system component shall be labeled in a manner that identifies the device; describes its function, how performance is verified and actions to take in the event performance is not within an acceptable range.**

Water Treatment System operators need to know and understand the water treatment system labeling

Water Treatment System Labeling

- . Equipment Labels
- . Parameter Verification Labels
- . 510 (k) compliance document
- . Valve Chart
- . Annual DI letter

Water Treatment System Labeling

. Equipment Labels

Water Treatment System Labeling

CARBON FILTER

6 FT³ 12X40 GAC ACID WASHED

REMOVES ORGANIC AND
OXIDANTS FROM WATER

$$EBCT = \frac{7.48 \text{ BED SIZE (FT}^3\text{)}}{\text{FLOW (GPM)}} \text{ MIN}$$

$$=5.44 \text{ MIN}$$

Nelson Environmental Technologies, Inc.
813 E. Fir
McAllen, TX 78501
956-618-0375

Water Treatment System Labeling

- . Equipment Labels
- . Parameter Verification Sheet

Water Treatment System Labeling

SYSTEM PARAMETER VERIFICATION SHEET

LOCATION: After worker carbon tank (SP#1)

PARAMETER: Total chlorine

TEST PROCEDURE:

1. Run RO for a minimum of 15 minutes.
2. Draw sample through SP #1
3. Perform DPD test for total chlorine per test kit instructions
4. If any chlorine detected, draw a sample through SP#2. Advise Director of results after logging them.
5. If no chlorine detected, log results.

ACCEPTIBLE RANGE: 0 mg/L to 0.1 mg/L

ACTION LEVEL: Any detect level.

ACTION: Advise Director immediately. Call water vendor

Nelson Environmental Technologies, Inc.
Pager: 713-719-5984
Office: 281-208-0080
Mobile: 713-927-5371

Water Treatment System Labeling

- . Equipment Labels
- . Parameter Verification Sheet
- . System 510 (k) Certification

Water Treatment System Labeling

NELSON WATER SYSTEMS FOR HEMODIALYSIS

DOCUMENT OF CERTIFICATION

This document certifies that this Water Treatment System for Hemodialysis complies with Nelson Water Systems for Hemodialysis' FDA 510 (k) Number K993877. Nelson Water Systems for Hemodialysis is registered with the Food and Drug Administration as a Medical Device Manufacturer and Accessory Supplier for Water Treatment Subsystems 78FIP Class II.

Facility:

Burke A. West, P.E.

Water Treatment System Labeling

- . Equipment Labels
- . Parameter Verification Sheet
- . System 510 (k) Certification
- . Valve Chart

Water Treatment System Labeling

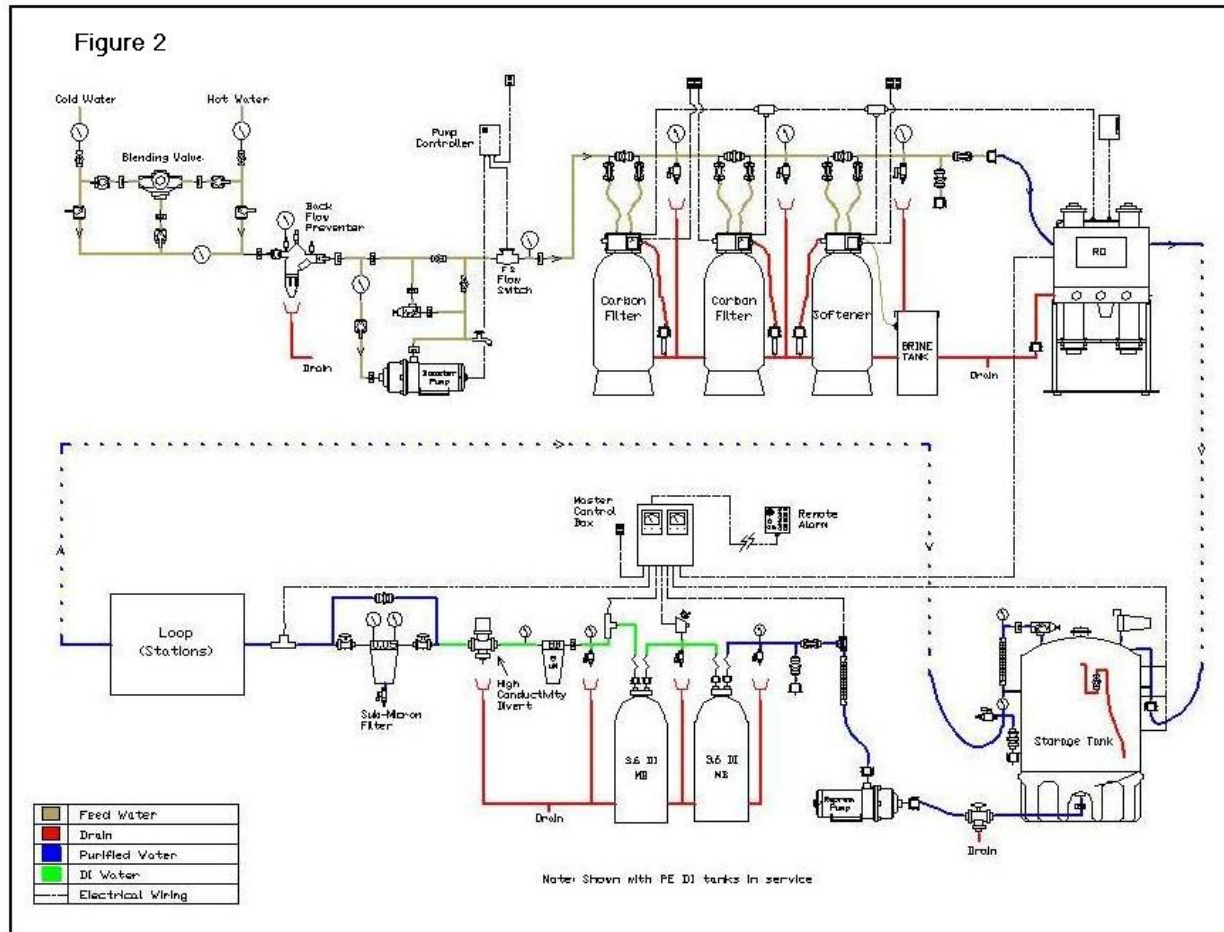
Valve Tag Sheet

<u>VALVE NO.</u>	<u>VALVE IDENTIFICATION</u>	<u>NORMAL OPERATION VALVE POSITION</u>
-	-	-
14	INLET VALVE – EMERGENCY WATER CONNECTION	NORMALLY CLOSED
15	INLET VALVE – BOOSTER PUMP	NORMALLY OPEN
16	RELIEF VALVE – BOOSTER PUMP OVER PRESSURE RELIEF	NORMALLY CLOSED
17	HOSE BIBB – HOSE BIBB FOR CARBON REBED USE	NORMALLY CLOSED
18	INLET VALVE – SEDIMENT FILTER	NORMALLY CLOSED
19	OUTLET VALVE – SEDIMENT FILTER	NORMALLY OPEN
20	BYPASS VALVE – SEDIMENT FILTER	NORMALLY CLOSED

Water Treatment System Labeling

- . Equipment Labels
- . Parameter Verification Sheet
- . System 510 (k) Certification
- . Valve Chart
- . System Hydraulic Drawing

Water Treatment System Labeling



Water Treatment System Log

Log includes:

- . Parameters to document
- . Limits for parameters
- . Instructions for out-of-range parameters
- . Location to document issues
- . Location to add initials

Water Treatment System Log

Hemodialysis Water Treatment System Weekly Log		
NOTE: WATER SYSTEM MUST BE RUNNING FOR 15 MINUTES BEFORE RECORDING CHLORINE DATA		
Day	Monday	Tuesday
Date	/ /	/ /
Time RO Turned on in Flush Mode	/	/
Nurse or Technicians Initials		
Salt Level In Brine Tank (Y or N)	-	
Pre #1GAC Pressure, P1 (> 25 psi)		
Pre #2 GAC Pressure, P2 (> 25 psi)		
Pre-Softener Pressure, P3 (> 25 psi)		
Pre-RO Filter Pressure, PR1 (>20 psi)		
Post-RO Filter, PR2 (PR2 - PR1 < 10 psi)	/	/
RO Pump Pressure, PR3 (125 - 225 psi)		
RO Reject Pressure, PR4 (75 - 225 psi)		
RO Feed TDS (Cin on RO Screen), (us)		
RO Product TDS (Cout on RO Screen), (< 75 us) *Action Level : if Cout > 30 us		

Water Treatment System Log

RO Reject Pressure, PR4 (75 - 225 psi)	
RO Feed TDS (Cin on RO Screen), (us)	
RO Product TDS (Cout on RO Screen), (< 75 us) *Action Level : if Cout > 30 us	
R.O. Percent Rejection (>90%)	
Reject Flow (780 - 950 lph)	
Permeate Flow (> 600 lph)	

Water Treatment System Log

Be Careful (your signature is recorded)

- . Record exactly what you see (not what it should be)
- . Do not make an entry unless you have observed the reading
- . Make sure the reading is within the acceptable range. Just because it wasn't yesterday, doesn't mean that it is today

Water Treatment System Log

Use the log as a tool

- . Entering complete and accurate data is important.
- . Be proactive: Looking at the data differentiates the best operators from the rest. Identifying trends can save much reactive work later on.

Water Treatment System Alarms

Water treatment systems have alarms to alert the operator that either some event has occurred that needs immediate attention or some event may occur that needs attention.

Water Treatment System Alarms

TDH regulations require:

1. All alarms that are present as part of the water treatment system must also have a remote audio-visual alarm that is located near and in sight of the nurses' station;
2. If mutable, the alarm must re-set after 3 minutes

Water Treatment System Alarms

Operators must pay attention to alarms because they are designed into the system for a reason. Don't mute and ignore!

On the other hand, don't panic! Safeguards are designed into hemodialysis water treatment systems to protect the health and safety of patients.

Water Treatment System Alarms

Operators are responsible for knowing what each alarm is for and how to respond to each alarm.

Each alarm should be clearly labeled. However, the action to take for each alarm is not usually in the vicinity of the remote alarm. The operator must know where these instructions are located.

In Summary

1. Operators must know how to operate the water treatment system
 1. What each component does,
 2. the associated parameters,
 3. The acceptable range for each
 4. Action level and required action

In Summary

2. Operators are responsible for filling out the system log sheet:
 - .accurately
 - .Verify readings are within range
 - .Document actions taken if not within range

In Summary

3. Operators must pay attention to alarms:
 - .Know what each alarm is for
 - .Take appropriate action to resolve alarm condition
 - .Document event

Water Treatment System

When you have a question, or an issue, do not be afraid to call your water treatment vendor!!

We want to know about issues and problems as soon as they are detected, not after they become critical.

Be Proactive, your water treatment vendor is your partner for the water treatment system.