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SPECIFICATION NO:
D00000-01-08-S006

**TITLE: Hall D DIRC Water System Purity
Monitoring Plan**

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1.0 SCOPE – The DIRC water system is required to be optically clear in the 300-400 nm range. In order to accomplish this, the source water comes from JLAB Low Conductivity Water (LCW) Supply. This water is 2 Mohm/cm conductivity and is filtered to 5 microns. We then filter it to 1 micron before filling the holding tank (fig. 1). The polishing skid passes the water through UV sterilizers to kill the bacteria and then through a 0.2 micron filter to remove dead bacteria and other debris. A vacuum de-gassing membrane is used to remove dissolved gases before being pumped into the Optical Boxes. The water is continuously circulated to accomplish 2-3 water change outs per 24 hours. This specification defines the plan for monitoring the water optical clarity.

1.1 Statement of Work. Samples of water shall be taken and analyzed periodically to develop a baseline for optical clarity of the water. Analysis includes bacteria, minerals and metals included in section 3 as well as pH and dissolved gases. The laser monitoring system will be used throughout the life of the experiment to monitor the combination of water clarity and PMT efficiency.

1.2 Vendor supplied analysis

1.2.1 J R Reed and Associates will perform the bacteria, metals and mineral tests per the appropriate method given section 2.0. Hall D personnel will take samples in vendor supplied containers and deliver to vendor.

1.3 JLAB supplied analysis –

1.3.1 Dissolved gas analysis will be performed by Hall D staff using a suitable testing kit such as Hach test kit for CO₂ and O₂.

1.3.2 pH will be tested by Hall D staff using appropriate test strips.

2.0 APPLICABLE DOCUMENTS – The following codes and standards will be used to analyze the water samples;

2.1 Codes and Standards

2.1.1 EPA Method 200.7 Determination of metals and trace elements in water and waste by inductively coupled Plasma Atomic-Emission Spectroscopy.

2.1.2 SM 4500-SiC Standard Methods for the Examination of Water and Wastewater

3.0 TECHNICAL REQUIREMENTS

PARAMETER	METHOD	QUANTITATION
		LEVEL (mg/L)
Coliform (Present/Absent)	Colilert	Present/Absent
Boron	200.7	0.005
Nickel	200.7	0.005

Sodium	200.7	0.05
Copper	200.7	0.001
Aluminum	200.7	0.05
Iron	200.7	0.01
Chromium	200.7	0.001
Molybdenum	200.7	
Silica (Reactive)	SM 4500 SiC	2
CO2/O2	Hatch Kit	1.25
pH	Strips	7

4.0 TRAINING REQUIREMENTS

4.1 Mechanical Staff will be trained in the proper methods for taking samples as well as using dissolved gas test kits and pH strips.

5.0 SCHEDULE

5.1 Water samples will be analyzed as a minimum, prior to each run and immediately afterwards. In addition, if there is a change in the efficiency of the PMTs, an additional test will be required to determine if the water has changed. There is a 10 day turn around in receiving the results of the analysis.

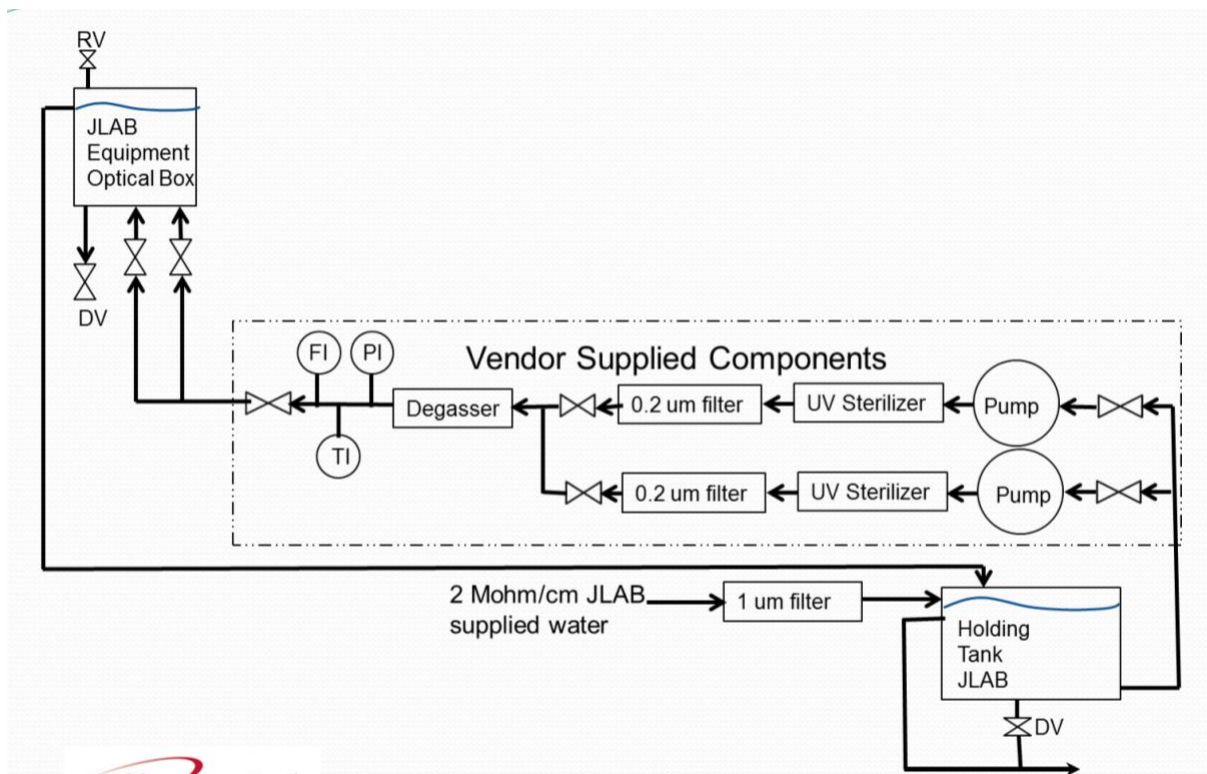


Figure 1 General flow schematic