

## Attachment J-C21.2

### CLOSED WATER LOOP PARAMETERS

- Closed Loop Water Systems located at Glenn Research Center shall be maintained to the water quality listed in the table below. Corrosion Coupons shall monitor corrosion within the systems.

**Table A: Water Quality Requirements for Closed Loop Water Systems\***

Property of Water	Required Levels
pH	7.5 to 8.5 Chilled/Geo Water 9-10.5 Hot Water
Hardness	<15ppm CaCO3
Alkalinity	100-500 ppm CaCO3
Soluble Copper	0.2 ppm Max
Total Dissolved Solids (TDS)	800 ppm Max
Turbidity	< 15 NTU
Silica	150 ppm Max
Biomass	<25 RLU
Steel Corrosion**	<1.5 mpy
Copper Corrosion**	<0.1 mpy

\*Unless specified differently from equipment manufacturer

\*\*Confirmed through use of corrosion coupons

**Table B: Closed Loop Systems**

LOCATION	ASSET #	EQUIPMENT DESCRIPTION	SYSTEM SIZE
<b>CLOSED LOOP WATER GLYCOL SYSTEMS</b>			
4	1112974	CHILLER RECIPROCATING	
007	1123719	AIR COOLED CHILLER	
55	1113216	AIR COOLED CHILLER	
77	1123857	AIR COOLED CHILLER	
309	1123098	AIR COOLED CHILLER	
309	1111912	CHILLER RECIPROCATING	
402	1006698	AIR COOLED CHILLER	
<b>CHILLED WATER SYSTEMS</b>			
009-001	CENTRAL CHILLED	CENTRIFIGAL WATER COOLED CHILLERS	2850 TONS
094-001	CENTRAL CHILLED	CENTRIFIGAL WATER COOLED CHILLERS	2850 TONS
016-3	CHILLED		
016-4	CHILLED		
301	CHILLED		
302-001-	CHILLED		
333-001-128	CHILLED		
<b>HOT WATER DISTRIBUTION SYSTEMS</b>			
004-	HOT		

005	HOT		
<b>HOT WATER DISTRIBUTION SYSTEMS</b>			
005-OFFICE	HOT		
006-128	HOT		
007-OFFICES	HOT		
014-OFFICES	HOT		
015-NORTH	HOT		
015-SOUTH	HOT		
016-1	HOT		
016-2	HOT		
021 OFFICES	HOT		
021/ANNEX	HOT		
049	HOT		
050	HOT		
051	HOT		
054	HOT		
060	HOT		
077-1	HOT		
077-2	HOT		
077-3	HOT		
086-1	HOT		
086-2	HOT		
100	HOT		
105/SPACE	HOT		
105/PERIMETER	HOT		
106	HOT		
110	HOT		
301	HOT		
333	HOT		
<b>PROCESS WATER SYSTEMS</b>			
016	PROCESS		
049	PROCESS		
105	PROCESS		
106	PROCESS		
<b>GEOHERMAL WATER SYSTEMS</b>			
152	GEOHERMAL		
154	GEOHERMAL		
351	GEOHERMAL		

2. Water Quality Assurance Testing

I. Hot Water Systems

- i. Quarterly testing of low and medium temperature systems shall be completed and recorded for the following parameters

pH	
Nitrite or Molybdate	_____ ppm

- ii. Monthly Testing of High Temperature Hot water systems shall be completed and recorded for the following parameters

pH	
Sulfite	_____ ppm
Hardness	_____ ppm

II. Chilled/Process/Geo Systems

- i. Quarterly testing of Chilled/Process/Geo systems shall be completed and recorded for the following parameters

pH	
Nitrite or Molybdate	_____ ppm
Conductivity	_____ micromho/cm
Iron (total, as Fe (2) O(3))	_____ ppm
Written Evaluation Summary	