**Aluminum and LCW at JLab**

From: C. Jones

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Our typical LCW systems at the lab are maintained at 0.5 micro-Siemen per centimater conductivity.  LCW (deionized water) continuously removes ions from metal surfaces.  The corrosion rate varies depending upon the metal (see the attached file).  Aluminum corrodes faster than stainless steel, but per the attached chart not significantly.  Stainless steel is the preferred metal for use with LCW, but as you know the lab and other labs use a lot of copper due to its other characteristics and lower cost in comparison to stainless steel.  LCW is significantly more corrosive to copper than it is to aluminum.  The Hall A and C beam dumps are aluminum so the cooling water conductivity target is 1.4 micro-Siemens per centimeter versus 0.5 micro-Siemens per centimeter, but the Hall A system tends to drop below the 1.4 micro-Siemens per centimeter target often.

In summary the aluminum water cooled pipe current leads will work, but will not last as long as it would if they were fabricated of stainless steel.  You would have to factor in the other pros and cons of the leads being made of aluminum.

For additional information or clarification, please contact me at 757-876-1778.

Sincerely,

Carroll W. Jones









