Subject: **Cooling Minutes for October 30th**
Date: Thu, 01 Nov 2001 15:58:42 -0800
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Hi All,

Sorry for the delay in sending out these minutes. I wanted to finish the mass calculations for the indium fittings, which I will briefly describe below.

1. I agreed to finish the mass calculation for the indium fitting. I took drawings from Marco and Eric V. and made solid models of them, and then scaled the fitting size to match the sector tube diameter (4.7 mm OD). This increased the volume of the fitting by 75%, but I believe this is fair, since the fittings I have drawings for are Cupro-Nickel, and I think that the super thin wall thicknesses will have to be increased (perhaps even more than I have assumed) in order to machine them from aluminum. In any case, the indium fittings are still much smaller than the variseal and luers, by as much as a factor of 6 or 7 (in mass). I think that we may need to try a "super-agressive" luer design which pares down all wall thicknesses to the minimum machinable. This may make the design less robust, but I think we should try it. See:
http://www-eng.lbl.gov/~hartman/pixel/Fitting Comparisons 01NOV01.pdf

2. I will propose to Marco that we decided upon a final set of tube sizes (such as the 4/8 mm proposal). We need to do this in order to make test fittings, which will slow us down if we don't start on soon.

3. I have sent a sketch of the luer design to EB, and am waiting for their response. They may have some input into the shape of the weld interface, though it is very similar to what they have been welding with the variseal. To recap information on the material testing, all of our "good" tubing tested to be 1060 Aluminum. However, EB did manage to weld the 3003, by protruding the tube from the weld somewhat, which allows preferential melting of the 3003, and thus a lower silicon content (I believe) in the overall weld alloy. The luer should lend itself to this design, so either the 1060 or 3003 should be possible materials. The supplier of the 1060 tubing was unaware that it was not 3003, as they had specified, but mentioned that they have very loose requirments on the alloy anyway. For the most part, they are interested only in its ability to be drawn through their dies. They will, however, try to find out why the discrepancy occurred.

4. Fred has cycled the luers through 10 more demating cycles (for 15 total). Results have been good, and he will now test them in C3F8 in order to determine if the seal is hurt by possible elimination of the vacuum grease from exposure to the flourocarbon. These will be irradiated to 25 Mrad while sitting in the C3F8 for at least a week.

5. Tom W. is ceasing work on the variseals at this point. 4 of 6 samples failed the first three tests of the new regimen. I will post these results soon.

6. After hearing from EB, Fred and I will discuss changing the luer design. Fred anticipates having new shop drawings within a few days of doing this.

7. I am having the 4/8 mm size tubing analyzed by Fti Anamet in order

to determine if it is 1060, 3003, or something else.

8. I will follow up with our alternate laser welder in the south bay, since we still need a backup vendor. I plan on visiting EB within a month.

Thanks alot for all of your time and effort. Check out my website for new information as it is posted.

Neal