Subject: **Cooling Meeting Minutes - Sept. 7**
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Hi All,

Thanks for the productive meeting today. Here is a summary of the things we talked about and the actions that we will take. If I have missed anything, please let me know.

1. Current fittings test status:
Al/PEEK Luers (non-irradiated) have been tested through stage 5, irradiated Luers are just back from Livermore.
Al/Al Luers have been tested through stage 6 (thermal cycling). One of them passed the last VAC check at 1e-5, which is a little high, but still within spec.
Pressure testing setup is under construction. Tom W. has ordered parts and has two possible timers (one from Jon). He expects to have it working by middle of next week.

2. Luer final design:
I will speak with EB next week about what features to put on new luer fittings to make them laser weldable (is full penetration possible?). I will also find tube sizes that correspond to the correct ID's which are given in the cooling system specifications (reprinted at http://www-eng.lbl.gov/~hartman/pixel/cooling system tubing sizes.htm). We will discuss options for which different Luer sizes to make, and then Fred will draw up "final" drawings of the Luers for at least the sector size tubing. Fred should be able to start this within two weeks, after our meeting on the 19th.

3. Glue Testing:
Neat resin samples in dry can are back from Livermore, but have not been opened yet. They will only be opened when we can immediately weigh them. The samples will then be exposed to 100% RH in order to gauge their weight gain versus samples that were irradiated in C3F8.

4. Aluminum Problems:
Tom J. will be preparing test tubes (barbell swages) early next week for my trip to EB. These tubes will be lightly etched (before swaging) in order to try to reduce surface damage.
Jon has contacted a company named http://www.specialshapes.com/ about getting tubing of the original size, which it turns out we didn't change from. This tube will need to be etched, but it would duplicate the original process that resulted in good laser welds. There is a question about it being 3003 tubing, but I will follow up on this on Monday. If the company still has no answer as to material type by end of monday, I will order tubes anyway.
Tom W. and I are both looking for people at LBL who can do a compositional analysis of the original aluminum and the new aluminum. We will use the resource which is available earliest.
Tom J. will also make a bent tube that I can take to EB which is as close as possible to the real sector tubing shape. I will discuss this with him on monday.

5. Surface preparation and Production sequence:
It was generally agreed that the plan for surface preparation and production of the aluminum tubes should be as follows: the bare sector tubes (bent) will be anodized with the ends of the tubes masked off (all

of the tube that resides outside of the carbon structure in the finished sector). The strain reliefs will also be anodized, and then bonded to the tubes after anodization. The tube/strain relief assembly will then be laser welded to a fitting, which has already been plated as need be. The electrical connection to the tube will be made to the bare tube, on an unanodized area (there should be plenty).

The fittings (especially luers) will need to be plated in order to make sure that they don't gall when assembled. Gold plating and tin plating are two options (though the zinc underlayer, if present, is a question with tin). I am not sure who is looking into this (me?).

6. Variseal plans:

Given that the variseals are less massive than the Luers, we have decided to put the current variseal fittings back into the testing sequence, at step 1. The fittings will not be re-assembled or modified in any way - they will simply be tested in the new sequence, with the new (less stringent) leak specs. Tom W. has verified that we can test in the 5 scale with the He leak checker. The fittings to be retested are M,N,P,R,W,X,Y,Z. M,N,and R have already been irradiated, so we are ahead of the game there. P has not been, but I think we should just include it with the other controls, so that we don't waste time with it at Livermore.

7. Pre-production plans:

We are planning to release orders for both variseals and Luers for the sector pre-production run of 10 sectors, plus at least 10 samples for the final testing verification. Since we cannot decide on a fitting type yet, we will go ahead with both fittings equally. Plans are to place the order by end of september, unless evidence in the interim shows that one fitting or the other is the only choice.

8. Regular Meeting time:

Wednesday is busy in the conference room, so I am scheduling regular meetings for tuesday afternoons at 2 pm, in the 6208 conference room. I will be away on tuesdays the 2,9,16 of October, so we may need to make other plans then. I will update you in the future.

I think that covers it. Thanks again, and enjoy your weekends.

Neal