**Team Meeting Agenda 17/04/09**

*Thermal Cycling experiment completed on Fri 17/04/07*

-No visible delamination or issues after submitting test coupons to 1/3/5 full thermal cycles. All seemed to hold up well, if possible would like to generate more (more than simply 3 preferably to get some actual statistical data) coupons to run either another thermal cycling with LN2 or LOX if possible.

-Old module frame from crush test was also submitted to Thermal Cycling, this was submerged for ~10-15min, and the ring/module/adhesive all held up very well when submitted to LN2. Results promising, again, no visible delamination/damage/etc.

*Alex made contact with Robert Watzlovick (Guy from that website who did the DIY rocket that we went over in a meeting with Dr Jiao)*

-He said his LOX tank failed at cryo temps, we will maintain contact as he was interested in our project.

*Problems: Let’s make a list, as per suggestion by Gerry.*

* Obtaining Liner (in general). Get sheet/tubes here to be worked
* Etching is dangerous! (http://www.plasticsmag.com/features.asp?fIssue=jul/aug-01&aid=3284)
* Budget: need to spend all of it. Order more stuff, maybe order stuff for EFS if they need anything?
* Machining endcaps/rings, in house/sending off designs
* More stress analysis/calculations
* PTFE machining, PTFE problems...Effing PTFE….
* How do we machine our gaskets?
* Where can we get LOX? Can someone help us with this test? Where do we test?
* How do we perform stress analysis on the composite layers? (contact Ian Zabel)
* FACTOR OF SAFETY OF AT LEAST 2.0 (COLLECTIVE) + calcs to back up
* PRV/Fittings for end caps
* ..

*PTFE Machinability, how do we go about it? Create matrix and figure out our BEST working*

*option so that we can make the best possible decision to move forward with (as per suggestion by Erin)*

* Let’s iteratively work on this for a week or since we are waiting on the stupid tubes/rods anyway, and we are at least running tests with a bridge design using PTFE sheet instead. The matrix for analysis on the BEST possible method is on drive, so if we can formulate the matrix and then sit down and smash through it here in the next week or so that’d be great. This is in order to determine the BEST possible option of how to machine or turn down PTFE to a thickness/workable form that we want, rather than just moving forward with something that we think “yea this will probably work” & screwing ourselves.

*What else can we accomplish this week? What other decisions need to be made?*

-Alternate adhesive -> [ep21tcht-1](http://www.masterbond.com/articles/applications-research-labs-and-commercial-use-ep21tcht-1?utm_source=ep21tcht-1-researcharticle&utm_medium=email&utm_content=ep21tcht-1-researcharticle&utm_campaign=cart)

Recommended by Masterbond given our application (data sheet in materials folder)

-Will call Monday (Francesca) to request sample adhesive.

-Getting designs sent off to be machined

-Need to get this done by *Wed 17/04/12*. Let’s get rings/endcaps moving forward.

**Liner**

-Layup procedure with sheet as opposed to PTFE tube

-Bridge design idea or try to chamfer ptfe and adhere PTFE to PTFE? Likely would need a self etching we could do here to accomplish the latter.

-Investigating DIY PTFE etching procedure to save time

-Bonding primer/adhesive

<http://www.permabond.com/2015/06/10/bonding-ptfe-industrial-adhesive/>

-Customizable teflon bonding kit

<http://reltekllc.com/productlist/teflonbondingkit.aspx>

-Etch 3-4 ptfe tubes when they arrive in 2 weeks

-TO DO THIS WEEK: Order Permabond alternate etching and some virgin PTFE sheet (even just janky samples) to perform this ‘in house’ etching/adhesion

**CAD (Russell/Me(Neil), think you can jump on this and try and get it done by midweek?)**

- We need to finish CAD and send it off to a machine shop

-CHANGES: Offset portion, we do not need to have the offset on the lapping portion with a PTFE bridge design, can revert to the previous airframe ring design (ish)

-BRIDGE DESIGN: Needs to be finalized. A few different options are available, over/under design? How to adhere? Etc..

**Machining**

-Gaskets need to get machined.

-Designs sent off, practice machining in house.

*Looking forward*

-I’d like to get our first layup done here in 1.5-2 weeks. This means getting designs sent off, gaskets fabricated, hardware ordered (if changed), valves figured out, & a PTFE sheet mounting method finalized to try (if we want to do a layup with PTFE in it, otherwise we can do one without and do a burst test just on the CF tank layup.

-Perform stress analysis on endcap/fasteners/rings. Likely should do FEA & back of the envelope calculations to try and nail down factor of safety of at least 2 (per PSAS)

-Meeting with Erin/Andrew on Thursday 17/04/13 @ 1pm after our meeting with Dr Jiao, in the LiD. Erin will be walking us through a markdown format procedure for GIT. We will also discuss purchasing additional material that PSAS can use after our project is over. As well, we can take care of that first assignment for Gerry since we have to meet with our sponsor and write something up, so we need to prep that.

-Additionally, need to finalize a few items to give to PSAS for the leadership meeting on wed 17/04/12 so they can present some of the stuff we are doing.

-We still have a substantial budget. We need to spend **ALL OF IT**. Start ordering/organizing/thinking about additional/extra materials etc to burn through this remaining budget. Maybe even can order stuff for EFS team if they need something.

**TASKS**

-Neil/Russell-CAD (done)

-Neil - Prelim FEA on endcap stress analysis, Experimental write ups for past/future experiments (need proper documentation) (doneish)

-Alex -Ordering many things/Al Sheet for endcaps & test coupons, getting the ball rolling on sending designs off to be machined so it’s ready to go come CAD finalization, lab write up for thermal cycling of coupons (nearly done)

-Chris - emailing MELT to see if they are comfortable lasering PTFE, as well acrylic template for cutting for layups, formal quotes for PTFE etching, PTFE gasket machining (done)

-Weldon - back of the envelope stress analysis calcs for flat endcap/bolt sizing (???)

-Francesca - Heal up, can help Neil with FEA, talk about what else to get done during meeting tomorrow (Monday 17/10/04 with Neil/Russell) Convert current analysis to Jupyter notebooks, setup Jupyter/Git tutorial - transition to Git as primary team storage mechanism.Contact masterbond for sample adhesive. Research sprayon chemical insullation. (mostly done)