

**Fisher Space Systems, LLC**  
**Progress Report #10**  
**Inflated Beam**  
**02/25/2013 - 03/15/2013**

Monday, 02/25/2013 – Friday, 03/01/2013

I finished the electrical wiring in the lab. I accidentally cut into a live wire. Sparks flew everywhere and I ruined a good pair of cutters. Fortunately, I was prepared for the possibility. The cutters were insulated so, no lethal shock. I'm still alive.

I laid down carpet and worked on the construction beam theory.

Monday, 03/04/2013 – Friday, 03/08/2013

I worked on some more construction beam theory. The Kevlar fabric arrived. On Tuesday night, we had a big snow storm. Power was out until Saturday.

Monday, 03/11/2013

I cut the 2 mil drop cloth to 17 3/16" wide by 4' long. I used a 1" overlap to sand (16 grit), clean (denatured alcohol), and glue (Loctite construction glue). I cleaned off excess glue. I placed a 1/4" plywood (~4' long) on the glued section weighted down by 2, 10 lb weights and 1, 25 lb weight. I let it dry over 24 hrs.

I finished the paper on construction.

Tuesday, 03/12/2013

I had lunch with my brother in Baltimore. It is nice to be retired.

Wednesday, 03/13/2013

I finished the construction theory and updated my web site. I had a major problem with the Web Easy and had to reinstall the software.

I used too much glue on the 2 mil drop cloth. It did not set properly. For the next attempt, I used only a small bit of glue on both the drop cloth and Mylar. I sanded both down with 16 grit sandpaper and cleaned with denatured alcohol. I overlapped about an inch. I smoothed it down with my finger. I let it dry overnight.

Thursday, 03/14/2013

I checked the glue on the 2 mil drop cloth and Mylar. It seems to be setting up nicely. The bond is much stronger. I will let it dry over the weekend and do a pressure test on Monday.

I tried using the thermal sealer on the Mylar. It didn't work. The sealer is not hot

enough.

I worked on the forum input and did some background reading on graphene. Graphene has a theoretical modulus of 600 GPa and a tensile strength of 100 GPa. With a mass density of ~1300 kg/m<sup>3</sup>, Graphene may make an excellent inflated beam for the second generation tower. The only problem with using it now is that production is limited to small batches and it is expensive. However, due to the potentially large market for Graphene products, it is only a matter of time before these problems are solved.

Friday, 03/15/2013

Visited my daughter in Blacksburg, VA. It is nice to be retired.

### Summary

I put too much construction glue on the drop cloth. It appears smaller amounts work better. However, the glue takes forever to dry. A quicker way is needed.

Graphene may be a good material to use on the second generation tower. Improvements in production and reduction in cost are needed.

### Lessons Learned

Use small amounts of glue on 2 mil plastic drop cloth and Mylar.

Turn off power in whole house before cutting into electrical wiring.

If nothing works, reinstall the software.

No accidents this week except sparks when I cut into a live wire.