GlueX-doc-2047

31-Aug-2012

C. A. Meyer

**CDC Construction Status:**

Phase one of the CDC construction results in the chamber frame and inner shell assembled and mounted on the construction mandrill. This task is 100% complete.

Phase two is the installation of the straws in the CDC. This task is 100% complete. Phase three is the installation of gas lines and the outer shell. This task is 100% complete. Phase four is stringing of the chamber is 100% complete and phase five, the electrical hook up is about 70% complete and phase six, electrical testing is about 20% complete.

The following table lists the parts that are needed during the first two phases of construction of the CDC. Original estimates for delivery of parts (inner shell, straws and plastic donuts/feedthrus) were early be several weeks.

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| --- | --- | --- | --- |
| Part | Date at CMU | Status | Ready to Use |
| Al. Donuts | 1-Apr-2010 | Checked and cleaned | 6/20/10 |
| Al. Feedthrus | 1-Apr-2010 | Checked and cleaned | 6/20/10 |
| Plastic Donuts | October | Checked and cleaned | 11/24/10 |
| Plastic Feedthrus | October | Checked and cleaned | 11/24/10 |
| Pin holders | October | Check/clean (arrived 11/2) | 80% ready |
| Crimp pins | 7-June-2010 | Checked and in clean storage. | 6/15/10 |
| Al. Endplate | 1-May-2010 | Reamed, cleaned and ready. | 7/10/10 |
| Cfib. Endplate | 1-May-2010 | Reamed, cleaned and ready. | 6/22/10 |
| Support Rods | 1-May-2010 | Installed | 6/22/10 |
| Straws | 23-Sept-2010 | 1900 arrived, 100% checked | 10/20/10 |
| Straws | 29-July-2010 | 250 Sample Checked & Accepted | (250) now |
| Inner Shell (good)  Inner Shell (test)  Installed | 15-July-2010  20-July-2010  20-Sept-2010 | Cleaned, finished end  Glue tests completed  Installed | 7/15/10  8/15/10  9/20/10 |
| Stringing Mandrill | Made at CMU | Finished, cleaned | 7/10/10 |
| Frame Bolts | 10-Sept.-2010 | Installed | 10/15/10 |
| Spacer Rods | Made at CMU | Installed | 10/15/10 |
| Straws | 26-May-2011 | Installed | 15/06/11 |
| Swiss Cheese Plate | 02-Mar-2012 | Installed | 04/20/12 |
| Support rings | 15-Mar-2012 | Installed | 05/15/12 |
|  |  |  |  |

In the final steps leading up to the installation of the Swiss cheese plate, we discovered much of the non-magnetic hardware that we were planning to use was in fact magnetic. This includes the bolts, screws and washers to assemble the plenum as well as the short (four inch long) electrical hook-up wires for the CDC. Replacement bolts and washers have been ordered in silicon/brass and are expected in at the start of May. We are in the process of trying to locate a non-magnetic version of the RG316 coax that we have. We have located vendors that appear to have material used in MRI machines and are ordering samples. Before a decision can be made on this, we will need to check gas tightness, high-voltage capability and our ability to solder the new material. These tests are now in progress.

We have identified a vendor and have ordered sufficient wire for the outer half of the chamber. This wire finally arrived in August and will be used in the outer most two rings of connectors.

Finally, we are working to carry out a study of what the actual force will be on the 2000 feet of wire in the plenum if we are forced to stay with the existing wire. Results will be reported as soon as we have them.

We were able to perform a test in a 3T magnet and the forces are quite small.

As of 01 April 2012, all wires have been strung in the CDC. The tensions of all wires have been checked multiple times and are all within tolerance. Each wire has been tested to 500V and the electrical resistance of each wire has been measured.

During March 2012, about 200 holes were surveyed JLab personnel. These were holes that were surveyed on the original endplates when the arrived at Jefferson Lab. Final work is now completing to glue the pin holders to the feed-thrus to minimize risk of breakage when electrical hookup is done.

During March, the Swiss cheese plate arrived at CMU and needed to by polished so that during electrical hook up, it would be possible to see through it. This is done, and the plate is currently being cleaned (using a dental water pick).

The standoffs also arrived at CMU and have been modified to allow for an O-ring. These parts have been cleaned. The outer support bolts for the swiss cheese plate have been installed. The brash threaded inserts that hold the standoffs to the endplate turned out to be just slightly to long. Work is now under way to sand them down to the correct length. Once these are “fixed”, installation of the stand offs can be started.

Thermocouples are at CMU and read for installation in the gas plenums. They will be installed just prior to installation of the Swiss cheese plate.

The outer wall for the upstream plenum is done and in the clean room.

CMU supplied manpower on the project:

Project Scientist: Naomi Jarvis

Curtis Meyer

Paul Mattione (since August 2011)

Construction Manager: Gary Wilkin

Manpower billed to the project:

Technician: Amy Woodwell (since June 1)

Kaitlin Mueller (since August 15 ).

Current Undergraduate Students:

Rahul Kurl (50%) (November 2010 to August 2011)

Maddi Braumbaugh (since April 2011)

Former Undergraduate Students:

Tom Charley (100%) (May 15 to on July 30).

Devin McGuire (60%) (June 1 to June 30)

Elizabeth Keller (10%) (Nov-Dec 2010)

Mason Blaschak (10%) (Nov-Dec 2010)

Aleksandar Popstefanija (10%) (Nov-Dec 2010)