SHMS-HMS Users Group Newsletter

March 2012

Newsletter edited by: M Jones

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SHMS-HMS User's Board News

It has been a while since the last newsletter. Several Board meetings have been convened since that time with the last meeting on Mar 23rd, 2012. The main focus of the Board has been in helping Steve to firm up the plan for initial set of experiments that Steve presented at the Hall C Users Meeting which was held on Jan 13-14, 2012. Steve will be presenting the plan to the PAC in June.

Planning has begun for the Hall C Summer Workshop. There was an underwhelming response to the poll for picking dates. The dates of June 22 and 23rd were chosen. There will not be a 12 GeV detector meeting scheduled adjacent to the Workshop. Instead the detector meeting will be held later in the summer. One session at the Workshop will be on software. Ideas for the other sessions are under discussion. If you have suggestions, then email them to the Board. Two board members will end their terms in September. Please email suggestions for candidates to run for the board to current board. We want to have nominations by the June Workshop and then have the election.

If you have any comments, ideas, news, or suggestions on topics related to Hall C at 12 GeV, for instance, on the SHMS-HMS, workshop organization, new grants for 12 GeV physics, student detector projects, or ideas for physics or equipment we would like to hear from you. Simply contact any SHMS-HMS User's Board Member listed below. You could even be featured in the next issue of this newsletter!

Members of the Board: John Arrington (johna@anl.gov), Donal Day (dbd@virginia.edu), Tanja Horn (hornt@cua.edu), Mark Jones(jones@jlab.org), Eric Christy (christy@jlab.org) and Pete Markowitz (markowit@fiu.edu)

As a reminder the detector team is:

Contact	Institution	Current Project
Howard Fenker	JLab, Hall C	12 GeV Assistant Project Manager
Donal Day	University of Virginia	Noble Gas Cerenkov
Dipangkar Dutta	Mississippi State University	Collimator
Tanja Horn	Catholic University of America	Aerogel Cerenkov
Garth Huber	University of Regina	Heavy Gas Cerenkov
Hamlet Mkrtchyan	NSL (Yerevan)	Calorimeter
Eric Christy Peter Monaghan	Hampton University	Drift Chambers
Ioana Niculescu	James Madison University	Scintillator Hodoscopes
Charles Perdrisat	College of William and Mary	Support Structure
Abdellah Amidouch Sam Danagoulian	North Carolina A&T	Quartz Hodoscope
Brad Sawatzky	JLab, Hall C	DAQ, Gas system

SHMS Project Update (provided by H Fenker)

Extrusion of the copper stabilizer for the conductor of Q2, Q3, and the dipole has been completed and the soldering of superconducting cable to this is roughly 1/3 done. Cryo-reservoirs have been completed and are en-route to or on-site at the various magnet vendors. A large contract for fabrication of the cryogenics system components was placed recently.

The replacement coil for the HB magnet has been wound and potted and is ready for testing. Testing will be delayed for some months because of a shortage of helium. The second Q1 coil form is complete and winding of the second coil was to begin about March 23. A 10-turn trial wind and design review for the dipole magnet went well. The vendor is procuring two winding tables to expedite production of both the dipole and the two quadrupoles. A delay in delivery of the Q2/Q3 quadrupoles has been proposed by the vendor after more careful study of the project. This will delay completion of the SHMS until about March, 2015. DOE Milestone CD4b remains unaffected at 7/1/15.

Many large steel fabrications for the support structure and shield house are now on site at JLab, and more arrive each week. Requisitions to procure lead and boron-carbide shielding materials and for the steel installation contract have been submitted. Details for the shield house design are nearing completion. Plans for the removal of legacy equipment from Hall-C have been made and carefully reviewed. This activity will commence as soon as the current run ends, allowing for major installations of new equipment to begin in November.

Figure 1 Delivery of SHMS steel fabrication for support structure

Hampton University recently received the first few large printed-circuit boards for the drift chambers. While there are minor issues to be resolved, they look quite good overall. Machining of the holding fixtures for the quartz bars and their phototubes is almost complete. Stands for the detectors have been designed and are being fabricated. An order for VME crates and controllers, flash ADC's, etc. has been placed. Despite the magnet delay, we still plan to install detectors in late 2013 - early 2014, beginning with the shower counter.

Progress on the 12GeV Software

As Steve Wood announced at the Winter Hall C meeting, a JLab initiated review of the data analysis software for all halls will be held at the beginning of June. The first software meeting was held on March 6th. At this meeting, volunteers agreed to oversee various activities which are listed in Table 1. Of course more volunteers (students and postdocs) are needed to carry out the work. A two prong approach to developing the data analysis software for 12 GeV experiments is being pursued. One prong is to build a new ROOT C++ analysis code based on the Hall A ROOT C++ code. The new C++ code will incorporate tracking and everything from the good old Fortran Hall C engine and be validated against the old Hall C ENGINE. The other prong is to update the Fortran Hall C ENGINE analyzer code to include the SHMS and updated routines needed for new types of DAQ modules. This will allow us to have a known code (especially the HMS part) that can be used to validate the new ROOT C++ Analyzer.

Table 1

	Task
Mark Jones, Jefferson Lab	Software Manager
Gabriel Niculescu, James Madison University	C++ Root Analyzer Coordinator
Ed Brash, Christopher Newport University	Fortran Analyzer Coordinator
John Arrington, Argonne National Lab	Calibrations and Workflow
Pete Markowitz, Florida International University	Online Histograms
Dave Gaskell, Jefferson Lab	Monte Carlo Simulation

Progress on SHMS Scintillators (provided by M. Burton, JMU undergrad)

The group at James Madison University has been working on the plastic scintillator detectors for the time of flight system in the SHMS. Over the past fall of 2011, the group has been finishing up testing the last of the PMTs that are scheduled to be glued onto the final scintillator paddles. In order to test the PMTs a few key areas were focused on. First, the gain versus high voltage needed to be determined and compared with the factory specifications. As can be seen in figure 1 below, the gain versus high voltage graph agrees with the graph given by the manufacturer. Second, an understanding of the dark count rate of the PMTs as a function of high voltage also needed to be determined. No problems were seen in the PMTs at this point. After extensive tests of the dark count rate and gain at a multitude of voltages spread out around the recommended operating voltage of each respective PMT no problems could be found in the PMTs and work can now begin on gluing together the final paddles and PMTs as well as finishing testing on the completed detectors.

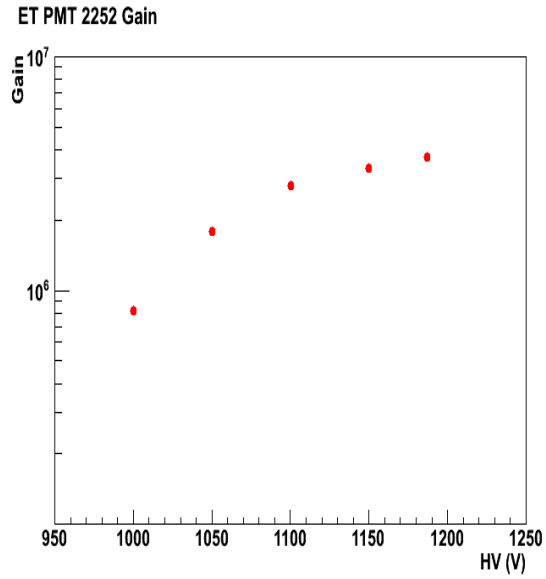

Fig. 1 *Typical Gain vs. High Voltage of PMT 2252*

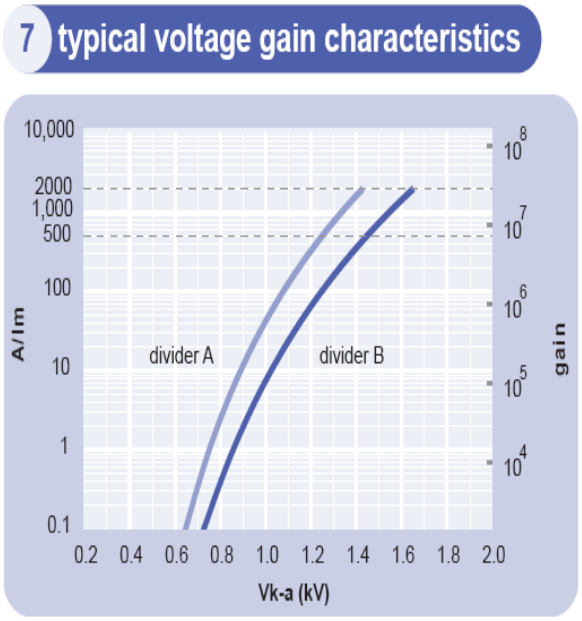

Fig. 2 *Manufacturers Typical Gain vs. High Voltage Graphs*

Useful Weblinks

Hall C Publications: https://hallcweb.jlab.org/publications/

Hall C Ph.D. Theses: http://www1.jlab.org/ul/generic_reports/thesis.cfm

Hall C Home Page: http://www.jlab.org/Hall-C/

Hall C Wiki: https://hallcweb.jlab.org/wiki/

Hall C 12 GeV Upgrade: http://www.jlab.org/Hall-C/upgrade/

SHMS-HMS Users Group: http://www.jlab.org/Hall-C/upgrade/shms_users_group.html

Previous Newsletters: http://www.jlab.org/Hall-C/upgrade/newsletter.html

Conference listing page: http://cnr2.kent.edu/~manley/BRAGmeetings.html