

Jefferson Lab Weekly Briefs

August 15, 2007

12 GeV Upgrade

On Aug. 2, the CHL Addition 100% Design and Safety Review Meeting was held with Dills Ainscough Duff's (A-E) design team and JLab representatives from Cryogenics, Facilities Management and the ESH&Q Division.

On Aug. 7, the construction management firm, Alpha, met with the Hall D Complex designers (HSMM) and JLab Facilities maintenance personnel to collect data for development of the Commissioning Plan for the mechanical, electrical, fire protection and material handling systems. Alpha will develop the functional performance checklists based on the testing requirements. Then, HSMM will incorporate these checklists into the specifications to define the commissioning requirements for the construction contractor.

Also, Alpha completed the validation of the designers' estimated costs for the CHL addition and the accelerator projects, and determined them to be reasonable.

Physics

In Hall C, the components of the Focal Plane Polarimeter (scintillators, wire chambers and CH2 analyzers) have been installed in the High Momentum Spectrometer hut. Concrete shielding walls have been built around the BigCal/GEp electronics located in the Hall.

Free-Electron Laser (FEL)

The FEL staff has made good progress toward getting the Gun Test Stand running, getting optical software developed and re-establishing a new laser personnel safety system for the labs. The staff also successfully integrated a user-friendly interface with the open source optics code OPC.

Environment, Safety, Health & Quality

Many of us have children who are getting ready to return to school. Along with new school clothes and textbooks come gadgets that use electricity. Make sure your children understand how to use their electrical devices safely and that they understand electrical dangers. Prevent electrical accidents by following these basic tips from Dominion Virginia Power:

- Take care not to overload outlets. If your television picture shrinks/flickers when appliances are turned on or if your circuit breakers trip, have your circuits and wiring checked.
- Don't carry small appliances or electrical hand tools by their cords.
- Run cords along walls, not under carpet or furniture. These cords can overheat and cause a fire.
- Give all electrical tools or appliances a quick visual check prior to using.
- Teach your children not to poke things into electrical outlets, toasters or any other appliances.
- Don't force plugs into outlets and make sure that you use all three prongs on your electrical plugs.
- Replace all frayed or worn cords immediately.

• **DOE Work Observation Tool** - Many Lab supervisors and managers are doing safety-related work observations after completing the DuPont Safety Leadership Training course. The DOE has developed a tool to assist those who are doing this type of safety and health-related activity. Some of the discussion is DOE-specific, but many points apply to any facility or operation. This document can be viewed at: http://www.hss.energy.gov/2007_Field_Observation_Guide.pdf

Cyber Security Changes

Web Content Developers, Users, Managers, should note that efforts to improve the Lab's cyber security practices are going to result in some important changes.

The Computer Center will begin restricting the use of executable code served through user's home directories. These areas are accessed through URLs of the form <http://www.jlab.org/~<username>/...> This form of URL is configured to retrieve content from a specially named directory (public_html) within a user's home directory.

Beginning on Sept. 4, the site web server (www.jlab.org) will be configured so it will no longer allow perl, php, or other executable code to be processed from directories of this type. Static html pages, images, etc. will still be served through this area, but server-side execution will be disabled.

If you maintain web applications in these areas, you must work toward moving this content to other areas. Most groups have a group-specific web server, with established application content areas. Executable applications running out of home directories will have to be migrated into these other areas prior to Sept. 4 in order to provide continued access to this content.

Battery Recall

Heads up Toshiba laptop owners, there's another battery recall in progress. For more information see:

<http://www.cpsc.gov/cpscpub/prerel/prhtml07/07267.html>

Ganni Cycle in the News

The Department of Energy posted an article about the "Ganni Cycle" on its website. The article tells how JLab research is helping other national labs reduce the energy consumption of cryogenic refrigeration systems. You can read the article at:

http://www.science.doe.gov/News_Information/News_Room/2007/Aug%208.html

Accelerator

A variety of maintenance and repair actions have taken place all over the accelerator. Some of the highlights:

- Planned rolling power outages were experienced throughout the accelerator site as the various unit transformer substations underwent maintenance. Much of this work was done in the mornings in order to avoid the worst heat of the very hot days.
- NL04 cryomodule installation work continued with alignment a priority.
- A vacuum bakeout of NL04 and the following leak check went very well.
- Vacuum leak checks in the 4A region found two leaks. These leaks were fixed by equipment replacement and resealing followed by pumping down the beam line.
- North and South access cranes passed their respective safety inspections.

Theory Center

The $1/N_c$ expansion is one of the very few methods we have for generating a systematic expansion of QCD at the energy scale relevant to hadron structure. The present formulation of this theory relies on 't Hooft's double-line notation for calculating the leading order of a diagram in the $1/N_c$ expansion, where the local $SU(N_c)$ gauge symmetry is substituted by a $U(N_c)$ symmetry and the associated $U(1)$ ghost field is ignored. In the recent publication [arXiv:0708.1019 \[hep-ph\]](https://arxiv.org/abs/0708.1019), members of the Theory Center demonstrated the insufficiency of this formulation for describing certain non-planar diagrams, and derived a more complete set of Feynman rules that include the $U(1)$ ghost field and provide a useful tool for calculating both color factors and $1/N_c$ orders of given color-singlet diagrams.

JLab's Safety Numbers

284 Days since last Recordable Accident; and
284 Days since last Lost Workday Accident
(JLab record: 455).