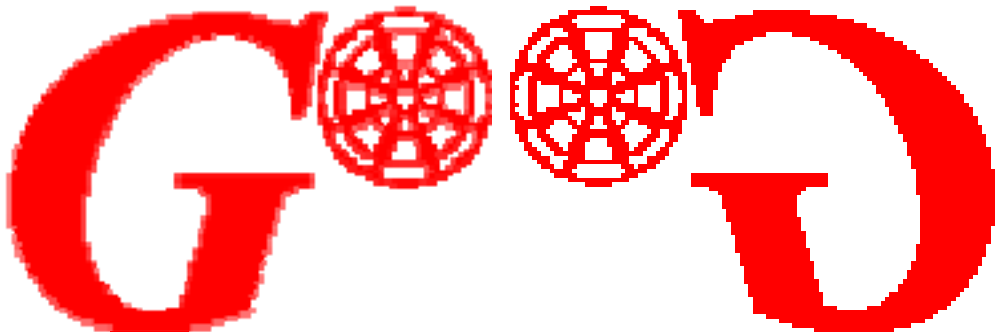
G0 Back Angle Installation Status

Dave Gaskell

Hall C Users Meeting

January 6, 2006

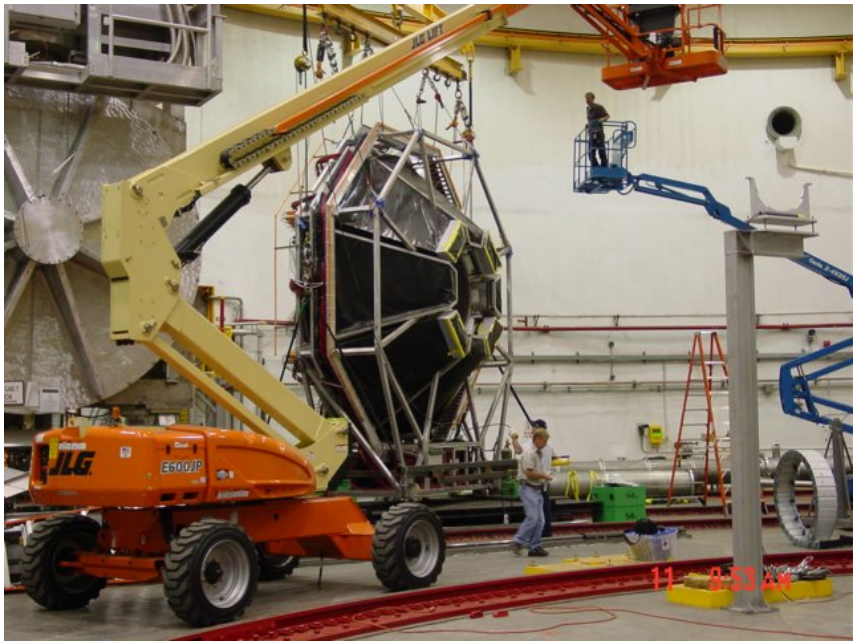
G0: from Forward to Backward



G0: from Forward to Backward

- Forward angle run – detect recoil protons
  - E_{beam} = 3 GeV
  - Q^2 = 0.1-1.0 GeV^2
- Back angle run – detect scattered electrons at 110 degrees
  - E_{beam} = 687, (360) MeV
  - Q^2 = 0.64, (0.23) GeV^2
- Old to new setup
  - Turn around Ferris Wheel, SMS
  - Install new detectors (Cryostat Exit Detectors and aerogel)
  - Modify target module (longer!)

FW and SMS Turnaround



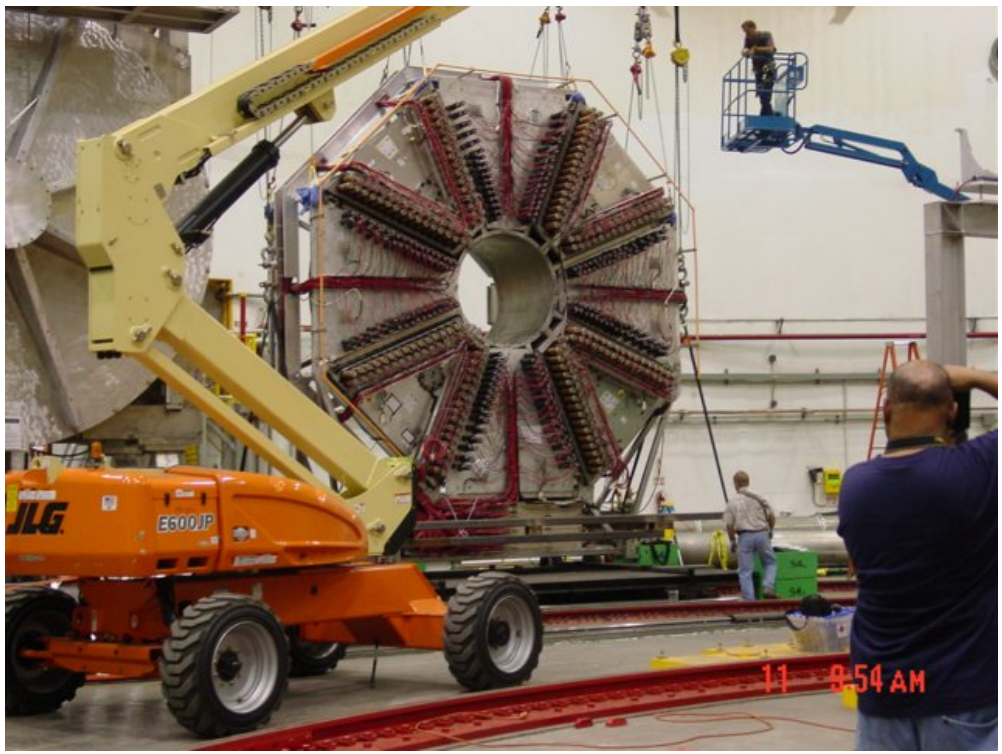
Rotation accomplished summer 2004!

Ferris Wheel Turnaround

•FW supported by 12 points
(8 above, 4 below)

• Scales were used to carefully measure load at each point and ensure vertical lift

• The FW turnaround was done by W. Kellner and Hall C techs

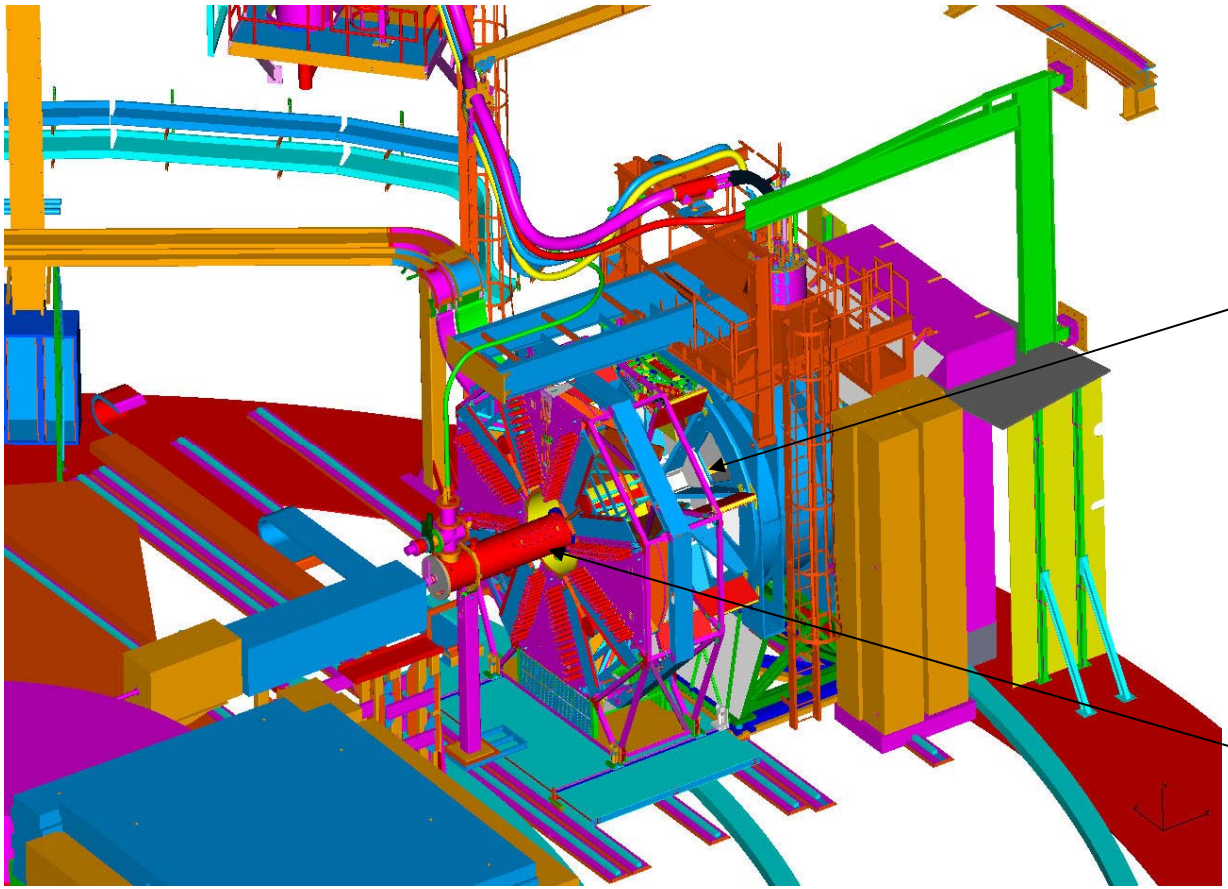


SMS Turnaround

- Lockwood set up and performed the rotation (with Hall C support) in 4 days

- "Back" plate removed to help balance and achieve vertical lift -> a little extra Counterbalance weight Still needed

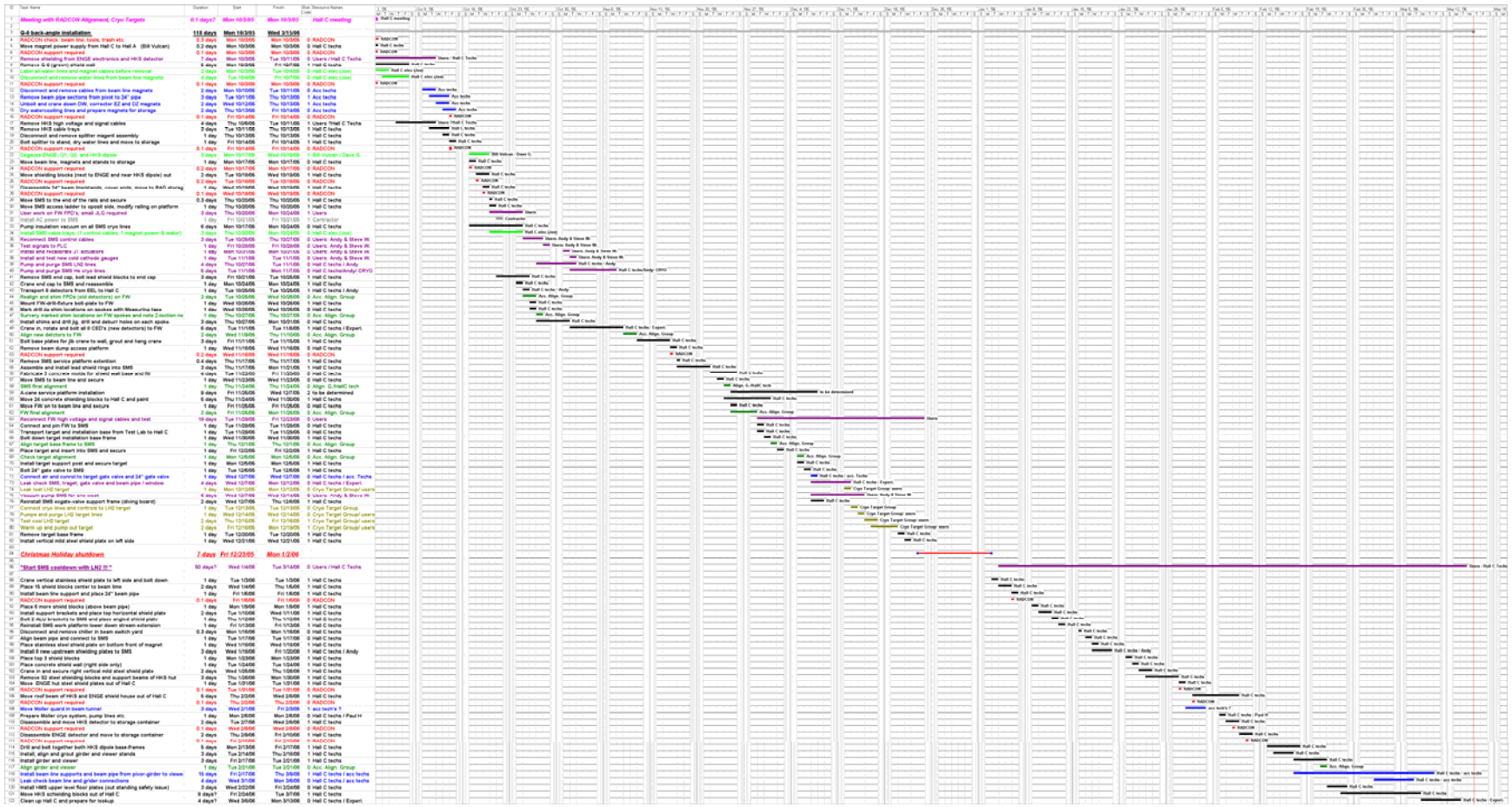
G0 Back Angle Layout



CED's mount between FW and magnet

Target module extends through FW into magnet

G0 Back Angle Installation: 2005-2006



G0 Back Angle Installation Overview

- Oct. 3-Oct. 21
  - HKS de-installation, G0 wall removal
- Oct. 24-Nov. 11 (?)
  - CED installation
- Mid-November – Dec. 15
  - Begin shielding related work, target installation, A-can platform installation, target test cool-down
- Jan. 3-March 13, 2006
  - Start cooling SMS, complete shielding installation, install beamline (upstream and downstream)

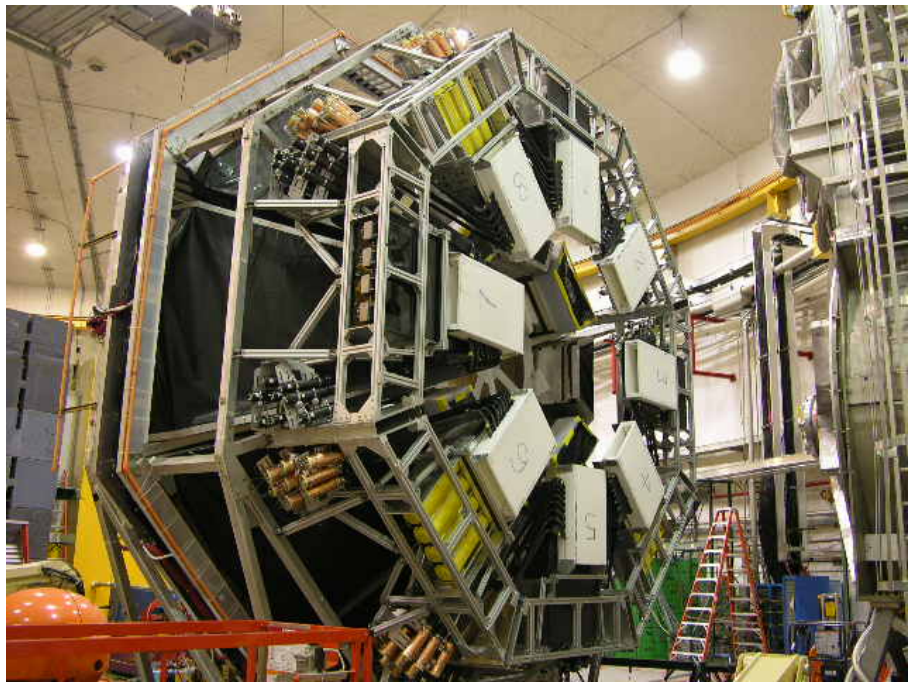
http://www.jlab.org/~gaskelld/g0/schedules/

CED Installation
Step 1: Clean Room to Hall C

CED's were assembled in
EEL clean room
(Gary Rutledge, Stephanie Bailey,
Michael Gericke, ……)

CED Installation
Step 2: Attach jig and lift

CED Installation
Step 3: Attach to FW

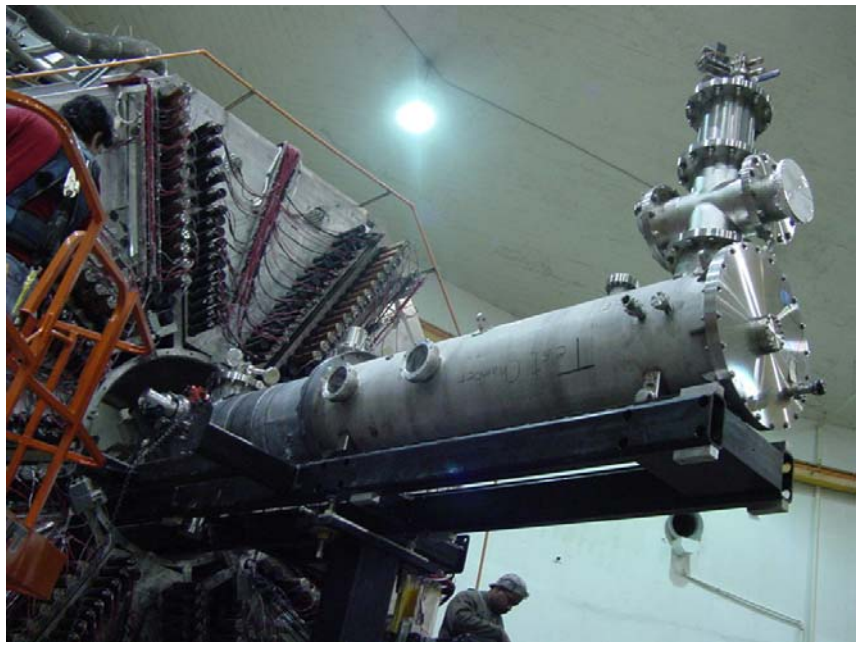


Michael Gericke, Larry Lee,
Des Ramsay + Hall C Techs
+ a lot of support from Survey
and Alignment

CED Cabling

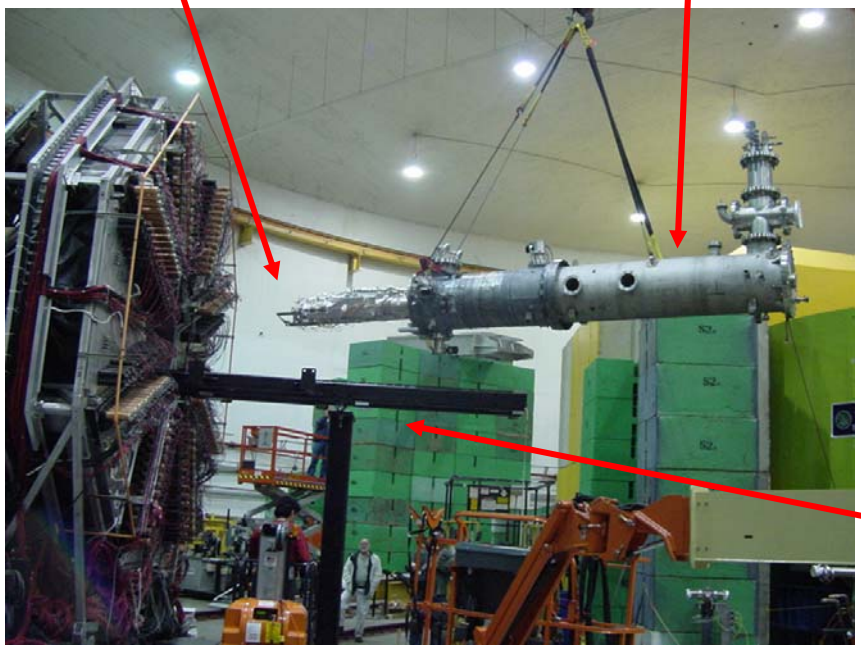
- Cabling of the new detectors began in December
- All high voltage cables connected (Grenoble, Michael G.)
- French CED's cabled (Louis Bimbot, Glen M.)
- North American CED cables connectorized this week – should be cabled soon
- Cerenkov detectors still need to be cabled

Target Installation



New extension piece
(old test module)

Target cell

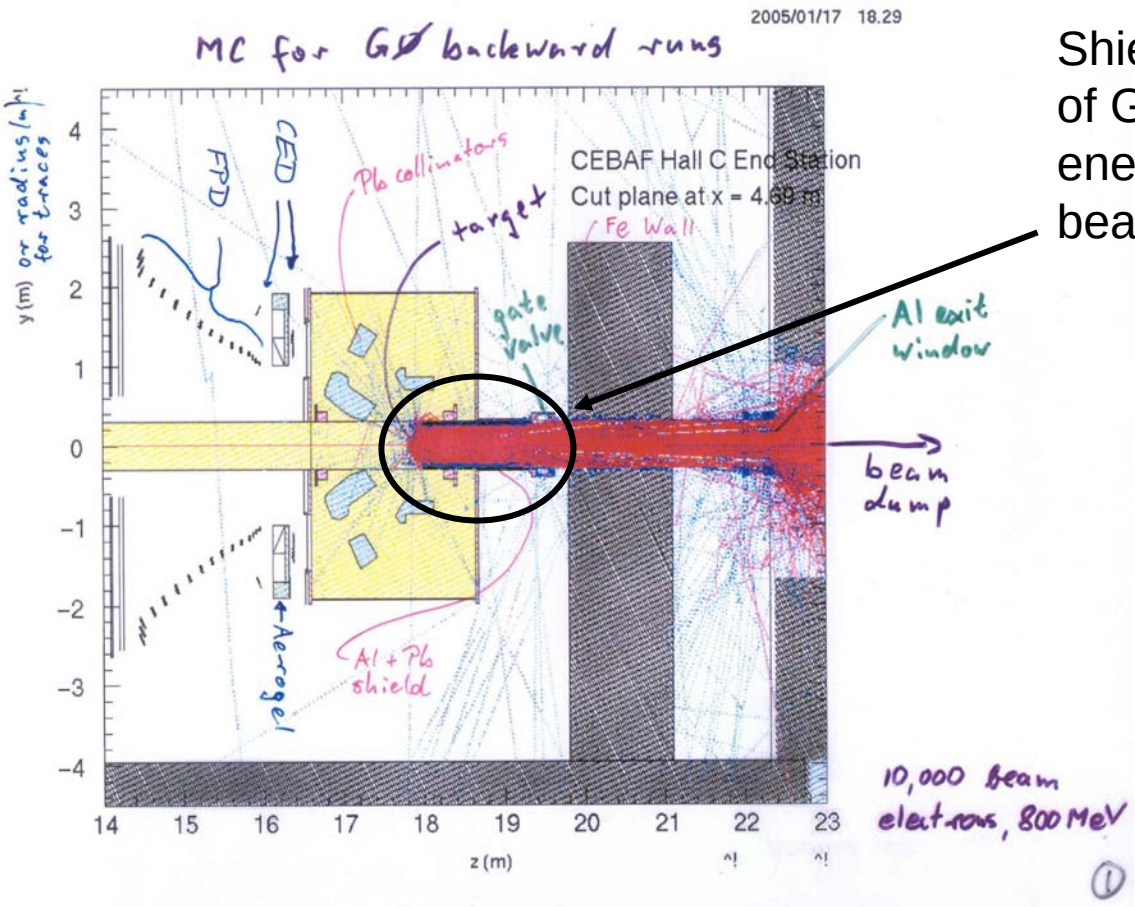


Target rail system

Target Test Cooldown

- Target and magnet share common vacuum – target problem means we would have to open up magnet!
- Performed test cooldown Dec.15 to ensure target is ok before we start cooling SMS
- Greg S. + CalTech + Target group performed cooldown Dec. 15
  - Deuterium only (most likely to be problematic)
  - Target cooled, fan worked
  - Small issues identified, no major problems

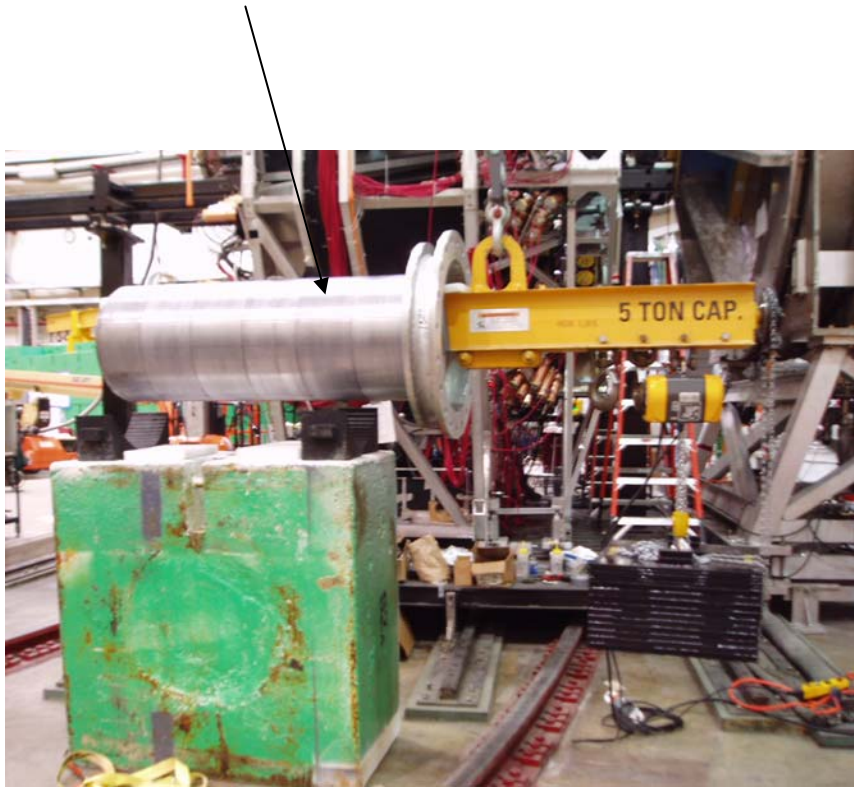
Lead Doughnut Shielding Insert



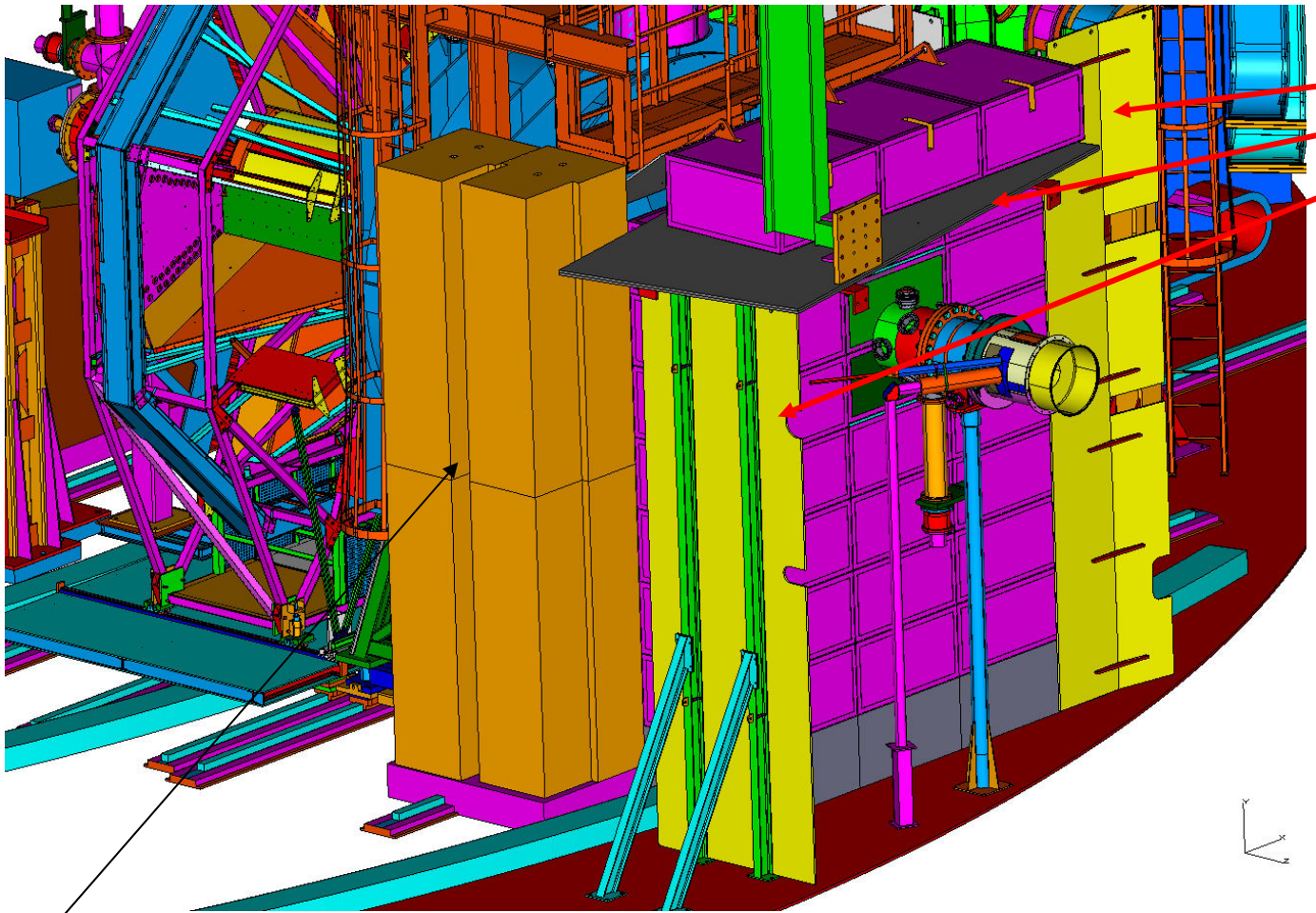
Shielding insert downstream of G0 target “funnels” low energy background to the beam dump

Shielding Insert Installation

Lead doughnuts



Downstream Shielding



Concrete Shield Wall

Fabrication of new concrete blocks for shield wall complete

New crane required for block installation (outside of overhead crane range of motion)

Upcoming Work

- The remainder of the installation will focus on
  - Starting the SMS cooldown (next week)
  - Complete the G0 shielding installation
  - Beamline installation (upstream and downstream)
  - Detector/DAQ checkout
- If time remains, may do some more HKS de-installation or work for GEP(?)

G0 Installation Summary

- Crucial installation tasks for Fall 2005 have been accomplished
  - CED installation
  - Target installation and test cooldown
  - Begin SMS cooldown (soon)
- Some shielding installation work has slipped
  - New crane installation proved tricky
  - Repair of shielding insert ate up some time
- Should be enough slop in schedule to allow us to begin on time in mid-March