Run Plan for g7 Test

List of g7 personal; RC – Mike Wood (Cellphone: 754–6672, home 989–0578)
           Dennis Weygand (870–4844)
           Clarisse Tur (873–9699)

List of CLAS experts:
   DAQ – 584–5444
   DC – 584–5247
   CC – 584–5492
   EC – 584–7196
   SC – 584–5568
   LAC – 584–5284
   EPICS – 584–5356
   Beamline – 584–5356
   Engineer – 584–5245 main, 584–5244 backup

1. Start–up checklist: (all gui’s are opened from clas_epics panel)
   (a) Turn off the DC HV from the dchvn gui.
   (b) Turn on tagger E–counter and T–counter HV. (Tagger HV button)
       Set the HV to zero for the E–counters from the list
   (c) Open up minitorus gui. (Magnet Supplies – Minitorus button)
       Turn on the magnet and set the current to 6000A (75% full value).
   (d) Open up beamline scalers gui (e2_scalers.adl).
   (e) Open up radiator gui.
      i. Use the medm window.
      ii. From the right corner of the window, click File then click Open.
      iii. Click on radiator.adl
      iv. Check that the radiators are out of the beam. The "Retract" button should be
          highlighted.
   (f) Open up collimator gui. (Motors and Obstructors – on map of beamline, click on
       collimator button)
       Check that the collimators are out of the beam. Motor position should read 0.000"

2. Look at the liquid target computer and verify that the liquid target cell is empty.
   From the solid target gui (e2_target.dal), check that the solid targets are out of the
   beam.

3. Tune up the electron beam:
   (a) Send 5nA of electron beam on to target using the e2 BPM settings.
        | X   | Y   |
      2C21A | ~0.0 | ~0.0
      2C24A | ~0.0 | ~0.0
      2H01  | ~0.1 | ~0.6
   (b) Check that Downstream and Upstream PMTs have the e2 values (look in the paper
       logbook).
   (c) Take harp scans and print copies for the g7 paper logbook.
(d) Record values of BPMs and CLAS scalers.

4. Turn off the electron beam and put in 2mm Active collimator into its nominal position.
   (a) Turn off the pmt HV for the active elements. Click on Beam HV in the clas_epics panel. Electron beam will destroy them.
   (b) Turn on the beam with a current of 1nA.
   (c) Move the collimator by 0.01" steps in either direction in X until there are a large number of counts in the Downstream PMTs. This indicates that the beam is hitting the wall of the collimator.
   (d) Move by 0.01" steps in the other direction until the other side of the collimator is hit by the beam.
   (e) Determine where the position of the collimator so it is lined up with the target. Position the collimator there.
   (f) Record the values of BPMs and CLAS scalers.
   (g) Record the collimator position.

5. Turn off the electron beam.
   (a) Call MCC to have the tagger magnet turned on.
   (b) Turn on the beam with a current of 1nA.
   (c) Turn on the tagger dump light and check the location of the beamspot. It should have no deviations in X, but the Y position should be 1 division high of the center mark.

6. Put in the $1 \times 10^{-4}$ radiator (either A or B).
   (a) Record the values of the Downstream PMTs and CLAS scalers.
   (b) Take a harp scan with 2H00. Use the 1mm wire. Arne has the instructions.

7. Test the daq. Take a run for a few minutes to see the event rate in the RunControl gui.
   To start the g7 configuration,
   (a) In RunControl gui, click "Configure"
   (b) Select the "G_PROD" configuration
   (c) After configuration is succeeded, click "Download"
   (d) Select the configuration file g7_test.cfg
   We are running with four triggers:
   (a) MOR (prescaled) – bit 1
   (b) MOR & 1-sector TOF (prescaled) – bit 3
   (c) MOR & 1-sector {EC & CC} – bit 5
   (d) MOR & 2-sectors {EC & CC} – bit 7

8. Turn on the DC HV.
   (a) Set DC to standby
      i. Select group type 0
      ii. Select all channels (the big oval in the picture). Left mouse click selects, right mouse click deselects.
      iii. Click Mode–Set–Standby
      iv. Click Mode–Set–On. DC has now been set to standby HV settings.
      v. Click Monitor is check that the wire currents (middle graph). If there are many
wires (>4) with currents greater than 3microA, turn off HV and wait 15min. Retry the standby procedure until the currents are lower than 3microA.

vi. When the currents are low enough, click "All On" to turn on the standard HV settings.

9. Determine the amount of photon flux lost due to the collimator.
   (a) Put in the CH2 target.
   (b) Take collimator out. Take a 15–min run. Record the CLAS scalers.
   (c) Put collimator in. Take a 15–min run. Record the CLAS scalers.

10. Set the electron beam current to 5nA.

11. Take a 15–minute run of background levels. Record the scaler rates from the beamline gui and ced.

<table>
<thead>
<tr>
<th>$I_{m}=0%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Put in Pb target. Leave minitorus current at 0.0A. Take a 15–min run and record the rates.

<table>
<thead>
<tr>
<th>$I_{m}=0%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

13. Raise minitorus current to 25%, take a 15–min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_{m}=25%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

14. Raise minitorus current to 50%, take a 15–min run, and record the rates.
<table>
<thead>
<tr>
<th>$I_m$=50%</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1−SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1−SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

15. Raise minitorus current to 75%, take a 15-min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m$=75%</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1−SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1−SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16. Raise electron beam current to 20nA. Lower minitorus current to 0.0A. Take a 15-min run and record the rates.

<table>
<thead>
<tr>
<th>$I_m$=0%</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1−SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1−SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

17. Raise minitorus current to 25%, take a 15-min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m$=25%</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1−SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1−SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. Raise minitorus current to 50%, take a 15-min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m$=50%</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1−SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1−SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$I_m=50%$</td>
<td>Sector 1</td>
<td>Sector 2</td>
<td>Sector 3</td>
<td>Sector 4</td>
<td>Sector 5</td>
<td>Sector 6</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

19. Raise minitorus current to 75%, take a 15-min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m=75%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

20. Raise electron beam current to 40nA. Lower minitorus current to 0.0A. Take a 15-min run and record the rates.

<table>
<thead>
<tr>
<th>$I_m=0%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. Raise minitorus current to 25%, take a 15-min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m=25%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. Raise minitorus current to 50%, take a 15-min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m=50%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
23. Raise minitorus current to 75%, take a 15–min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m=50%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. Remove Pb target and put Fe target. Set the minitorus current to 75%, take a 15–min run, and record the rates.

<table>
<thead>
<tr>
<th>$I_m=75%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25. Remove Fe target and pur in carbon target. Take a 15–min run and record the rates with the minitorus current at 75%.

<table>
<thead>
<tr>
<th>$I_m=75%$</th>
<th>Sector 1</th>
<th>Sector 2</th>
<th>Sector 3</th>
<th>Sector 4</th>
<th>Sector 5</th>
<th>Sector 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC1–SL1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC1–SL2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

26. After the rate tests are completed, fill the He–target cell and insert the Pb target. Take 1–hour runs to accumulate mock data.

27. Call MCC and have the tagger magnet turned off. Return to electron beam setup.