

Septa/Cryo Target Pre Beam Checklist

Last revised 3/25/10

Date _____ time _____

This checklist will be performed after every restricted access to Hall A that maintenance is performed

People checking list _____

Left Arm

Spectrometers

- ___ Check Intergen bottles for correct pressure
- ___ Ensure that Intergen alarm switch is in the normal position and the green light is on on the front panel

Vacuum

- ___ Turbo on at turbo controller in rack # 1H71B01
- ___ Pump valves open at valve controller in rack # 1H71B01 channel #2
- ___ Convectron gages read "0" millitorr
- ___ Cold cathode gauge in rack # 1H71B01 < 5×10^{-5}
- ___ Actual cold cathode reading _____
- ___ Entrance & exit vacuum windows functional

- ___ Ensure that Q1 lead heaters in rack 0Q172Q-C2 are on and operating
(4 blinking red lights)
- ___ Ensure that Q2, lead heaters are on, operating and at least 40 deg.
- ___ Ensure that Q3 lead heaters are on, operating and at least 40 deg.
- ___ Red rotating beacons on

Left Arm *Power supplies*

Q1:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- When all faults have been cleared, Ensure that power supply is in remote control

Q2:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- Turn on both sets of three pole breakers located on power supply
- Visually check power supply for faults
- When all faults have been cleared, lift lever on lower right side of supply
- Ensure that power supply is in remote control

Dipole:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- Turn on power lever on right upper side of supply
- Visually check power supply for faults on supply and at rack #
- When all faults have been cleared, Ensure that power supply is in remote control
- Ensure Kepco power supply is on
- Check power supply for proper polarity positive___ negative___
- NMR gradient compensation for proper polarity positive___ negative___

Q3:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- Turn on both sets of three pole breakers located on power supply
- Visually check power supply for faults
- When all faults have been cleared, lift lever on lower right side of supply
- Ensure that power supply is in remote control
- Ensure that the Q3 insulating vacuum pump is functioning and has sufficient oil
- Ensure the Q3 automatic valve is operational and open and it's the Convectron gage reads 0
- Ensure that spectrometer turbo backing pump is on, has sufficient oil and that the automatic valve is operational

Right Arm

Spectrometers

- ___ Check Intergen bottles for correct pressure
- ___ Ensure that Intergen alarm switch is in the normal position and the green light is on on the front panel

Vacuum

- ___ Turbo on at turbo controller in rack # 1H71B01
- ___ Pump valves open at valve controller in rack # 1H71B01 channel #2
- ___ Convectron gages read "0" millitorr
- ___ Cold cathode gauge in rack # 1H71B01 $< 5 \times 10^{-5}$
- ___ Actual cold cathode reading _____

- ___ Ensure that Q1 lead heaters in rack 0Q172Q-C2 are on and operating
(4 blinking red lights)
- ___ Ensure that Q2, lead heaters are on, operating and at least 40 deg.
- ___ Ensure that Q3 lead heaters are on, operating and at least 40 deg.
- ___ Ensure that Dipole lead heaters are on, operating and at least 40 deg.

- ___ Red rotating beacons on

Right Arm *Power supplies*

Q1:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- When all faults have been cleared, Ensure that power supply is in remote control.

Q2:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- Turn on both sets of three pole breakers located on power supply
- Visually check power supply for faults
- When all faults have been cleared, lift lever on lower right side of supply.
- Ensure that power supply is in remote control

Dipole:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- Turn on power lever on right upper side of supply.
- Visually, check power supply for faults on supply and at rack #OD172Q.
- When all faults have been cleared, Ensure that power supply is in remote control.
- Ensure Kepco power supply is on
- Check power supply for proper polarity positive___ negative___
- NMR gradient compensation for proper polarity positive___ negative___

Q3:

- Visual inspection of main current leads, dump resistor, and lead flags (for condition, visual shorts, etc.)
- Ensure that all doors and panels are closed and secured
- Unlock power disconnect switch and turn on AC power
- Turn on both sets of three pole breakers located on power supply
- Visually check power supply for faults.
- When all faults have been cleared, lift lever on lower right side of supply.
- Ensure that power supply is in remote control

- Ensure that the Dipole automatic valve is operational and open, that the Convectron gage reads 0 and that the backing pump is on, has sufficient oil
- Ensure that the Q3 automatic valve is operational and open, that the Convectron gage reads 0 and that the backing pump is on, and has sufficient oil
- Ensure that spectrometer turbo backing pump is on, has sufficient oil and that the automatic valve is operational

Left Arm

Magnet controls

Q1

___ Q1 full of liquid (60%) actual reading from computer _____
___ Open lead flows on Q1 to 80 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

Q2

___ Q2 full of liquid (80%) actual reading from computer _____
___ Open lead flows on Q2 to 60 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

D1

___ Dipole full of liquid (60%) actual reading from computer _____
___ Open lead flows on Dipole to 80 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

Q3

___ Q3 full of liquid (80%) actual reading from computer _____
___ Open lead flows on Q3 to 100 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

Right Arm

Magnet controls

Q1

___ Q1 full of liquid (60%) actual reading from computer _____
___ Open lead flows on Q1 to 60 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

Q2

___ Q2 full of liquid (80%) actual reading from computer _____
___ Open lead flows on Q2 to 60 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

D1

___ Dipole full of liquid (60%) actual reading from computer _____
___ Open lead flows on Dipole to 80 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

Q3

___ Q3 full of liquid (80%) actual reading from computer _____
___ Open lead flows on Q3 to 80 slm as read from the Hall A Tools page
___ Actual lead flows A_____ B_____

Controls check from the computer console

- ___ Pull up the Hall A tools page
- ___ Ensure that all of the lead flows are in the green
- ___ Ensure that all liquid levels are in the green
- ___ Ensure that all polarities are correct

- ___ Using the current button open the control page to **left Q1**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Using the current button open the control page to **left Q2**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**
- ___ Using the current button open the control page to **left Q3**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Using the current button open the control page to **left Dipole**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Using the current button open the control page to **right Q1**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Using the current button open the control page to **right Q2**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Using the current button open the control page to **right Q3**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Using the current button open the control page to **right Dipole**
- ___ Clear all faults and turn on magnet with correct polarity
- ___ Ramp magnet to **100 amps**

- ___ Open the controls page to **Big Box power supply for the septum**
- ___ Clear all faults and turn on magnet
- ___ Ramp magnet to **100 amps**

Target

- ___ Cctv cameras “on” and focused
- ___ Target light “on”
- ___ Backing pump “on” at pump
- ___ Ensure roughing is closed
- ___ Turbo “on” at rack # 1H75B09
- ___ Turbo valve “open” at rack # 1H75B09 channel # 1 upper & #2 lower
- ___ Ensure target **convectron** set point is **5 torr**
- ___ Gages operational
- ___ Convectron “0” millitorr at rack # 1H75B09
- ___ **Cold cathode < 5x10⁻⁴** at rack # 1H75B08
- ___ Actual cold cathode reading _____

Exit beam tube

- ___ **Diffuser cooler on**
- ___ **Diffuser water level ok**
- ___ close flow valve and observe flow meter (drops to 0)
- ___ open flow valve and observe flow meter (rises to 1 GPM) Actual GPM_____
- ___ Backing pump is “on” and operational
- ___ Valve “open” at pump
- ___ Turbo “on” at rack # 1H75B09
- ___ Gages operational
- ___ **Convectron “<5” millitorr** at rack # 1H75B09
- ___ Actual convectron gage reading _____

Entrance beam tube

- ___ Ensure that beam line girder turbo is on and running
- ___ Ensure that there is cooling water flow to the Moeller Dipole
- ___ Ensure that E P turbo is on and running
- ___ Instrument air compressor functioning normally

- ___ **All beam line vacuum valves “open” (VBV1H04 B and C upstream and down stream of the target visually checked at the valve)**

- ___ Call MCC, get the name of the person you talked to _____ and say “I am doing the Hall A pre beam checklist, Please Ensure that the Hall A beam line valves are set to close” after they say that they are, say “I am turning the control key from maintenance to operational are you ready” after they say yes, turn key and tell them **“you have control could you please open the valves so that we can verify operability make an e-log entry”**

Septum magnet

- ___ Ensure that there is cooling water flow to the septum magnet
- ___ Ensure that the septum magnet electrical guards are all on place
- ___ note the position of the sieves in the downstream target box In ___ or Out ___
- ___ Ensure that there is cooling water flow Big Box power supply
- ___ Ensure that the septum magnet electrical guards are all on place
- ___ Ensure that the magnetic field bounty and signs are in place around septum
- ___ Ensure that the magnetic field warning light is operational
- ___ note the position of the shutter in the left collimator In ___ or Out ___
- ___ note the position of the shutter in the right collimator In ___ or Out ___
- ___ **Ensure that the septum magnet is on and operational**

Hall

- ___ **All interlocks in rack # 1H75B08 indicate green**
- ___ Check **3 Moeller power supplies** for **on** and in **remote**
- ___ Ensure installation of Ion chambers at EP, and target
- ___ Correct LCW flow and pressure (120 psi supply and 40 psi return)
- ___ Cctv monitors at X terminal off
- ___ Clear of unnecessary equipment
- ___ Man lift and Forklift in truck ramp.
- ___ **Ensure that all lifting slings and safety harnesses are correctly stored and that the storage cage is at least 90 deg from the beam dump and at least 60 ft from the target**
- ___ Perform pre sweep of run safe boxes.

- ___ **Ensure polar crane is positioned over the entrance beam pipe, and that power is off at the power disconnect switch**

- ___ **Ensure that detector VDC covers are removed (not for this experiment)**

- ___ Ensure operability of shield house doors
- ___ Deliver checklist to work coordinator

- ___ Make the following entries into the HALOG
 “The tech on call at startup is _____”
 Sieve positions are In ___ or Out ___
 Left collimator In ___ or Out ___
 Right collimator In ___ or Out ___
 Note any outstanding issues not completed on the checklist
 Note any special requirements or restrictions

- ___ Name of person checklist was delivered to _____