Hall C User Howto

Hall-C Base Equipment Checklist

H. Fenker

April 4, 2003

Abstract

This document provides the shift checklist covering the Hall-C base equipment. This checklist should be filled out at least once per eight-hour shift during experiment data-taking shifts, and at least once per 24-hour period during *Standby* shifts.

Each experiment should modify and/or amend this checklist to satisfy its own particular needs.

The checklist itself composes Section 2. You should make multiple copies of the pages of that section for shift workers to fill out. When all the columns on a printed copy have been filled in, the shift-checker should scan the pages into an hclog entry and file the paper copies in the checklist binder. The remaining sections provide guidance for filling out the checklist.

Considerable effort was required to format the checklist tables for the printed version of this document. The tables do not reproduce well in the web version. To view the tables, get the postscript or pdf version of this document and print it.

1 Related *Howtos*

- Monitoring HMS "Utilities" Systems. [1]
- Drift Chamber Gas System [2]

- Monitoring the SOS Magnet System [?]
- Monitoring the HMS Magnet System [?]
- Reading the Ion Chambers and BLM's [?]
- Remote Rotation of the HMS and SOS [?]
- Hall-C Analyzer [?]

2 Base Equipment Checklist

2.1 Base Equipment Checklist – Page 1 of 2

DATE (month-day-year)	- - - - - -				
Time (24 hour clock)	- - - - - -				
Your Name	*Nominals*				
Beam Conditions from Overview Screen, DAQ, MEDMs, and Scalers					
Beam Energy (MeV)	- - - - - -				
Beam Current	- - - - - -				
Rates on BLMs	- - - - - -				
	- - - - - -				
	- - - - - -				
	- - - - - -				
	- - - - - -				
HMS Trigger Rate (vis. scalers)	- - - - - -				
SOS Trigger Rate (vis. scalers)	- - - - - -				
HMS Dead Time (vis. scalers)	- - - - - -				
SOS Dead Time (vis. scalers)	- - - - - -				
IPM3H00A position (medm)	- - - - - -				
IPM3H00B position (medm)	- - - - - -				
Fast Raster Radius$_{max}$,Ix,Iy (medm)	- - - - - -				
Slow Raster? (medm)	- - - - - -				
Møller Target	OUT				
Møller LHe/LN2 Levels	$> 70\%$	/	/	/	/
Stats of Recently Replayed Run from files in the current experiment's online replay directory, typically: ~cdaq/*experiment*/replay/scalers/)					
Run Number	- - - - - -				
HMS WC fiducial effi.	$> 90\%$				
SOS WC fiducial effi.	$> 90\%$				
Computer Deadtime	- - - - - -				
HMS Electronic Deadtime	- - - - - -				
SOS Electronic Deadtime	- - - - - -				
Walk-through of Electronics Room					
WC Thresholds HMS1/HMS2/SOS	5.5/5.5/5.2	/ /	/ /	/ /	/ /
Unser Monitor Temperature	$110 \pm 1^\circ\ C$				
HMS Trigger (e.g. 3/4*anything)	- - - - - -				
SOS Trigger (e.g. 3/4*electron)	- - - - - -				
Gas-Yard Checks (Gas Yard Key is #29					
Argon Manifold High/Low (PSI)	$> 200/30$	/	/	/	/
Ethane Manifold High/Low (PSI)	- - - - - -/> 20	/	/	/	/
Ethane Bottle Weights (lbs)	$> [Full - 30]$	/	/	/	/
Helium bottle Pressure/Flow	$> 200/1.5$	/	/	/	/
Gas-Shed Checks (Gas Shed Key is #29					
SOS Flows: Ar CH1/Eth CH2	0.15/0.15 *slpm*	/	/	/	/
HMS Flows: Ar CH3/Eth CH4	0.3/0.3 *slpm*	/	/	/	/
HMS/SOS Fridge (degC)	$2 \pm 1^\circ\ C$	/	/	/	/
Alcohol Bubbling? (HMS/SOS)	y / y	/	/	/	/

You can find this document as well as help for filling it out among the Hall-C *Howtos* [3].

2.2 Base Equipment Checklist – Page 2 of 2

DATE (month-day-year)	- - - - - -				
Time (24 hour clock)	- - - - - -				
	Nominals				
HMS/SOS Slits	- - - - - -	/	/	/	/
Scattering Chamber Vacuum	$< 10^{-}5$				
Target (material, length)					
HMS Shutter Open?	yes				
HMS angle (TV/GUI)	- - -/- - -	/	/	/	/
SOS angle (TV/GUI)	- - -/- - -	/	/	/	/
Hall Survey (TV)	OK				
HMS Cer. Temp/Press (TV)	22 ± 3/- - -				
SOS Door Closed? (TV)	yes				
SOS Cerenkov Pressure (TV)	$\lvert P \rvert < 0.020$				
High Voltages: HV *ON* and GUI Alarm *Enabled?*					
HMS Hodoscopes / Drift Chambers	$\surd$ / $\surd$	/	/	/	/
HMS Cerenkovs: Gas / Aerogel	$\surd$ / $\surd$	/	/	/	/
HMS Pb-Glass	$\surd$				
SOS Hodoscopes / Drift Chambers	$\surd$ / $\surd$	/	/	/	/
SOS Cerenkovs: Gas / Aerogel	$\surd$ / $\surd$	/	/	/	/
SOS Pb-Glass / Lucite	$\surd$ / $\surd$				
Spectrometer Magnets					
HMS Q1 Current: $\pm$ setpt	- - - - - -				
HMS Q2 Current: $\pm$ /setpt	- - - - - -				
HMS Q3 Current: $\pm$ /setpt	- - - - - -				
HMS Q1 Hall Field: $\pm$ reading	- - - - - -				
HMS Q2 Hall Field: $\pm$ reading	- - - - - -				
HMS Q3 Hall Field: $\pm$ reading	- - - - - -				
HMS D Current: $\pm$ readback	- - - - - -				
HMS D NMR Field: $\pm$ readback	- - - - - -				
HMS Q1 N2/He Level (%)	> 70 / > 70				
HMS Q2 N2/He Level (%)	> 70 / > 70				
HMS Q3 N2/He Level (%)	> 70 / > 70				
HMS D N2/He Level (%)	> 70 / > 70				
SOS Q Current polarity/setpt	- - - - - -				
SOS B1 Current polarity/setpt	- - - - - -				
SOS B2 Current polarity/setpt	- - - - - -				
SOS Q Hall Field	- - - - - -				
SOS B1 Hall Field	- - - - - -				
SOS B2 Hall Field	- - - - - -				
Enter Screen Snapshots of the Following Screens in *hclog*					
BPM medm screen	$\surd$				
BCM medm screen	$\surd$				
Scan this sheet into *hclog* **when full.** $\longrightarrow$					
Check List Complete (*Initial*)	xyz				

You can find this document as well as help for filling it out among the Hall-C *Howtos* [3].

3 Help with Check List Items

3.1 Help with Page 1

What	Where to find it	How to do it
DATE (month-day-year)	As given by Run Control	Enter as MM/DD/YY
Time (24 hour clock)	As given by Run Control	Write the time into the cell
Your Name	As given by your parents	Write legibly
Beam Conditions from Overview Screen, DAQ, MEDMs, and Scalers		
Beam Energy (MeV)	Large TV monitor on top of console, displaying accelerator program.	Get the beam energy of Hall C and write it down
Beam Current	Xterm on the far top-left. Look for the BCM screen. The two values indicate two different measurements and should be similar.	Write the beam current in the cell.
Rates on BLM's	Check rates on Upstream and Downstream BLM. On cdaqs1: run scaler_display	Write down rates for the BLMs
HMS Trigger Rate (vis. scalers)	Red digital readouts in the right-center of the console.	How many HMS triggers occur over roughly 10 sec.? Divide by 10 and write down the result.
SOS Trigger Rate (vis. scalers)	Red digital readouts in the right-center of the console.	How many SOS triggers occur over roughly 10 sec.? Divide by 10 and write down the result.
HMS Dead Time (vis. scalers)	Red digital readouts in the right-center of the console.	Compute: 1-[(HMS trigger)/(HMS pretrigger)] Write it in the field.
SOS Dead Time (vis. scalers)	Red digital readouts in the right-center of the console.	Compute: 1-[(SOS trigger)/(SOS pretrigger)] Write it in the field.
IPM3H00A nominal? (medm)	Xterm on the fartop- left. Look for the BPM screen.	Record the displayed beam position. Compare it with the nominal position posted on the white board or sticky note.
IPM3H00B nominal? (medm)	Xterm on the fartop- left. Look for the BPM screen.	Record the displayed beam position. Compare it with the nominal position posted on the white board or sticky note.
Fast Raster R_{max},Ix,Iy (medm)	Xterm on the top of the right console. Look for the raster_hlc_FR window.	In the "set spiral magnet current" field, record: R_{max}= Radius(mm) Ix=MRAT301H Iy=MRAT301V
Slow Raster? (medm)		
Møller Target	Xterm on the top of the left console. Find the target section of the Møller Polarimeter controls screen.	Unless a Møller run is in progress, the target should be retracted (~ -3.85).
Møller LHe/LN2 Levels	Xterm on the top of the left console. Find the liquid levels on the Møller Cryogenics controls screen.	Record the helium and nitrogen liquid levels (percent). They should be near full if the Møller solenoid is being used.

Stats of Recently Replayed Run (from files in the current experiment's online replay directory, typically: ~cdaq/*experiment*/replay/scalers/)		
Run Number	See the RunControl window for the current run. Record items below for a recently taken and analyzed run.	Enter the run number which gives the results noted in the next few lines.
HMS WC fiducial effi.	grep effic stats*run_number*.txt	Record the number on the line labeled "fid effic"
SOS WC fiducial effi.	grep effic stats*run_number*.txt	Record the number on the line labeled "fid effic"
Computer Deadtime	grep 'D.T.' hms*run_number*.txt	Record the Computer deadtime.
HMS Electronic Deadtime	grep 'D.T.' hms*run_number*.txt	Record the Elec. deadtime.
SOS Electronic Deadtime	grep 'D.T.' hms*run_number*.txt	Record the Elec. deadtime.
Walk-through of Electronics Room		
WC Thresholds HMS1/HMS2/SOS	Rack CH03B10. Three digital voltage readouts. Should be 5.5 v for both HMS chambers. 4.0 for SOS.	Record the values.
Unser Monitor Temperature	top of rack CH03B12, LED digits. Nominal 110 degrees.	Record the reading.
HMS Trigger (e.g. 3/4*anything)	CH03B07. NIM crate, third crate from top. Rightmost logic module. Top half.	Where is the coincidence level pin located?
SOS Trigger (e.g. 3/4*anything)	CH03B05. NIM crate, third crate from top. Rightmost logic module. Top half.	Where is the coincidence level pin located?
Gas-Yard Checks (Gas Yard Key is #29		
Argon Manifold High/Low (PSI)	Outside gas shed, under roof, right-center.	Record the two pressure gauge readings on the argon gas manifold.
Ethane Manifold High/Low (PSI)	Outside gas shed, under roof, on the right.	Record the two pressures on the ethane gas manifold.
Ethane Bottle Weights (lbs)	Outside gas shed, under roof, on the right.	Record the two bottle weights (digital scales).
Helium bottle Pressure/Flow	Outside gas shed, under roof, on the left.	Record the bottle pressure and the flowmeter reading.
Gas-Shed Checks (Gas Shed Key is #29		
SOS Flows: Ar CH1/Eth CH2	Inside gas shed, on the CRT display - channels 1 and 2.	Record the values on the "Actual flow" line
HMS Flows: Ar CH3/Eth CH4	Inside gas shed, on the CRT display - channels 3 and 4.	Record the values on the "Actual flow" line
HMS/SOS Fridge (degC)	Inside gas shed, digital temperature displays near top of left rack.	Record the temperatures.
Alcohol Bubbling? (HMS/SOS)	Inside gas shed, within refrigerator (left=SOS, right=HMS).	QUICKLY open/close door, verify that gas is bubbling through the alcohol inside the glass dome.

3.2 Help with Page 2

What	Where to find it	How to do it
DATE (month-day-year)	See what you wrote on page 1.	Enter it here, too.
Time (24 hour clock)	See what you wrote on page 1.	Enter it here, too.
HMS/SOS Slits	telnet hctsv7 2003 (HMS) or hctsv5 2005 (SOS). See instructions posted above “SLOW CONTROLS” Xterm or see the Collimators *Howto* [4].	Determine and record the slit position as either PION or SIEVE or SMALL or LARGE.
Scattering Chamber Vacuum	Target cryo screen. Ask target operator if needed.	Record the reading.
Target (material, length)	Ask target operator.	Record which target is in the beam.
HMS Shutter Open?	See the LEDs labeled “HMS SHUTTER” located above the “DATA ACQUISITION” terminal.	Shutter must be “OUT” when taking beam.
HMS angle (TV/GUI)	TV Monitor 4 and Spectrometer Rotation GUI	Read the angle and write it down. TV and GUI should agree.
SOS angle (TV/GUI)	TV Monitor and Spectrometer Rotation GUI	Read the angle and write it down. TV and GUI should agree.
Hall Survey (TV)	Scan all the cameras in the hall looking for anything unusual.	Verify that you performed the inspection by checking off the box.
HMS Cer. Temp/Press (TV)	Two LED readouts visible on TV monitor #7. Select the camera labeled “HMS CERENK”.	Record the values.
SOS Door Closed? (TV)	Note this while doing hall TV survey.	SOS Door should be closed when using SOS.
SOS Cerenkov Pressure (TV)	TV Monitor button labeled *SOS Cerenkov*	Record the differential pressure. If it is outside the range +0.020 to -0.020 psid, notify an SOS Cerenkov expert as the windows may be damaged.
High Voltages: HV ***ON*** **and GUI Alarm** *Enabled?*		
All HMS Detectors	HMS HV GUI on SLOW CONTROLS xterm.	Verify that GUI is “RUNNING” and not indicating any bad channels.
All SOS Detectors	SOS HV GUI on SLOW CONTROLS xterm.	Verify that GUI is “RUNNING” and not indicating any bad channels.

Spectrometer Magnets		
HMS Q1,2,3 and D Currents: ± setpt	PC Monitor in center of control console. See HMS magnet controls *Howto* [?] for how to navigate.	Write down current polarities and setpoints.
HMS Q1, Q2, Q3 Hall Fields: ± reading	On TV monitor #5. Button labeled HMS NMR (it's really a Hall probe). Top to bottom, the three numbers are Hall Probe readings for HMS Q1, Q2, Q3.	Write down the three numbers including sign.
HMS D NMR Field: ± readback	PC Monitor in center of control console. See HMS magnet controls *Howto* [?] for how to navigate.	Write down the NMR readout.
HMS Q1Q2, Q3, D N2/He Level	PC Monitor in center of control console. See HMS magnet controls *Howto* [?] for how to navigate.	Record He and N2 levels from their respective screens.
SOS Q, B1, B2 Current polarity/setpt	telnet VMEC19 and run the program `sos` (see posted instructions for username and password)	Record the readings for `Polarity` and `Current Setpoint`
SOS Q, B1, B2 Hall Field	telnet VMEC19 and run the program `sos` (see posted instructions for username and password)	Record the readings for `Hall probe field`
Enter Screen Snapshots in *hclog*	Xterm on upper left of console.	Start an `hclog` entry. Use the `Grab Screen` and `Grab 2nd Picture` buttons to add the required `MEDM` displays to the log entry.
Scan this sheet into *hclog* when full.	Any Xterm booted on `cdaqh1`	Place the sheet to be scanned on the scanner in rack CH03B08. Start an `hclog` entry. Use the `ScanIt!` button to scan the page, then use the `Grab Screen` button to grab the display of the scan.

References

[1] H. Fenker. Monitoring hms "utilities" systems. `http://hallcweb.jlab.org/document/howtos/HKS/hms_detector_monitoring/`. HKS User Howto.

[2] H. Fenker. Drift chamber gas system operation. `http://hallcweb.jlab.org/document/howtos/HKS/drift_gas_system/`. HKS Expert Howto.

[3] H. Fenker. Hall-c base equipment checklist. `http://hallcweb.jlab.org/document/howtos/HKS/base_equip_checklist/`. HKS User Howto.

[4] Dave Gaskell. How to set the hms and sos collimators. `http://hallcweb.jlab.org/document/howtos/HKS/slits/`. HKS User Howto.