

Hall C User Howto

Hall-C Base Equipment Checklist

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January 30, 2018

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.

Section 2 is comprised of the checklist itself. Make multiple copies of the pages of that section for shift workers to fill out. As a convenience to people on shift, it is helpful if .pdf and .ps versions of Section 2 are made readily available in some common directory (/u/group/hallc/documents/Checklist, for example). When all the columns on a printed copy have been filled in, the shift-checker should scan the pages into an hlog 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. [?]

- Drift Chamber Gas 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

Hall C Checklist for the 2017-2018 Run – Page 1 of 3

DATE (DD-MMM-YY)	-----				
Time (24 hour clock: HH:MM)	-----				
Your Name	<i>Nominals</i>				
Beam Conditions from Overview Screen, DAQ, MEDMs, and Scalers					
Beam Energy (GeV)	-----				
Beam Current (μA)	-----				
Beam position lock on?	yes				
Beam energy lock on?	yes				
HMS Trigger Rate (Hz)	-----				
SHMS Trigger Rate (Hz)	-----				
HMS Dead Time (CODA GUI)	-----				
SHMS Dead Time (CODA GUI)	-----				
IPM3H07A position (medm)	-----				
IPM3H07B position (medm)	-----				
IPM3H07C position (medm)	-----				
IPM3H08 position (medm)	-----				
IPM3H09 position (medm)	-----				
Fast Raster Setpoint	$(\Delta x, \Delta y)$ mm	/	/	/	/
Fast Raster Measured Currents	$(I_{x03H}, I_{x04H}) A$	/	/	/	/
	$(I_{y03V}, I_{y04V}) A$	/	/	/	/
Alarm Handler Running? / Sound?	✓ / ✓	/	/	/	/
HMS/SHMS Collimators	-----	/	/	/	/
Scattering Chamber Vacuum (mbar)	$< 10^{-5}$				
Target (material, length)					
Drift Ch. Mixer Flows: Ar/Eth	0.3/0.3 <i>slpm</i>	/	/	/	/
Drift Chamber Gas Delivery Press.	500 ± 5 Torr				
Drift Ch. Gas Isopropanol Temp.	$1 \pm 1^\circ C$				
SHMS Drift Chamber Threshold	4.5v				
HMS Drift Chamber Threshold	4.5v				
HMS Angle (TV/GUI)	---/---	/	/	/	/
SHMS Angle (TV/GUI)	---/---	/	/	/	/
HMS Cer. Temp/Press (TV)	22 ± 3 / ---	NOT YET	NOT YET	NOT YET	NOT YET
SHMS NGC Bubbles? (TV)	yes				
SHMS HGC Pressure (TV)	< 1 atm (<i>abs.</i>)				
Hall Survey (TV Cameras)	OK				
HMS/SHMS Shutter Open	yes/[yes NA]	/	/	/	/
HMS & SHMS Doors Closed? (TV)	yes				
TV Cameras returned HOME?	✓				
Walk-through of Electronics Room					
Unser Monitor Temperature	$110 \pm 1^\circ C$				
Gas-Yard Checks (Gas Yard Key is #29)					
Argon Manifold Hi/Lo (PSI)	$> 200/30$	/	/	/	/
Ethane Manifold Hi/Lo (PSI)	(20-400) / > 20	/	/	/	/
NGC gas bottle Pressure/Flow	$> 200/??$	/	/	/	/
Gas-Shed Checks (Gas Shed Key is #29)					
Alcohol Bubbling?	y				

Hall C Checklist for the 2017-2018 Run – Page 2 of 3

DATE (DD-MMM-YY)	-----				
Time (24 hour clock)	-----				
	<i>Nominals</i>				
Detector High Voltages: ON					
HMS Hodoscopes / Drift Chambers	√ / √	/	/	/	/
HMS Cerenkovs: Gas / Aerogel	√ / √	/	/	/	/
HMS Calorimetry: Pre / Shower	√ / √	/	/	/	/
SHMS Hodoscopes /Drift Chambers	√ / √	/	/	/	/
SHMS Gas Cerenkovs: NGC/HGC	√ / √	/	/	/	/
SHMS Aerogel:	√				
SHMS Calorimetry: Pre / Shower	√ / √	/	/	/	/
Spectrometer Magnets Note: “±” indicates that you should record both the sign and magnitude.					
HMS Momentum Set (GeV/c) & Charge (E _{electron} or P _{proton})	-----				
HMS Q1 Hall Field: ± reading	-----	N/A	N/A	N/A	N/A
HMS Q2 Hall Field: ± reading	-----	N/A	N/A	N/A	N/A
HMS Q3 Hall Field: ± reading	-----	N/A	N/A	N/A	N/A
HMS Q1 Set Current: ± setpt (A)	-----				
HMS Q2 Set Current: ± setpt (A)	-----				
HMS Q3 Set Current: ± setpt (A)	-----				
HMS D Current: ± reading (A)	-----				
HMS D NMR Field: ± readback	-----				
HMS Q1 N2/He Level (%)	50 to 75%	/	/	/	/
HMS Q2 N2/He Level (%)	50 to 75%	/	/	/	/
HMS Q3 N2/He Level (%)	50 to 75%	/	/	/	/
HMS D N2/He Level (%)	50 to 75%	/	/	/	/
SHMS Momentum Set (GeV/c) & Charge (E _{electron} or P _{proton})					
SHMS HB Hall Field: ± reading	-----				
SHMS Q1 Hall Field: ± reading	-----				
SHMS Q2 Hall Field: ± reading	-----				
SHMS Q3 Hall Field: ± reading	-----				
SHMS HB Set Current: ± setpt (A)	-----				
SHMS Q1 Set Current: ± setpt (A)	-----				
SHMS Q2 Set Current: ± setpt (A)	-----				
SHMS Q3 Set Current: ± setpt (A)	-----				
SHMS D Set Current: ± setpt (A)	-----				
SHMS D NMR Field: ± readback	-----				
SHMS HB He Level (%) [no N2]	50 to 75%	xxx /	xxx /	xxx /	xxx /
SHMS Q1 N2/He Level (%)	50 to 75%	/	/	/	/
SHMS Q2 N2/He Level (%)	50 to 75%	/	/	/	/
SHMS Q3 N2/He Level (%)	50 to 75%	/	/	/	/
SHMS D N2/He Level (%)	50 to 75%	/	/	/	/

Hall C Checklist for the 2017-2018 Run – Page 3 of 3

DATE (DD-MMM-YY)	-----				
Time (24 hour clock)	-----				
	<i>Nominals</i>				
Stats of Recently Replayed Run from files in the current experiment's online replay directory.					
Run Number	-----				
HMS WC fiducial effi.	> 90%				
SHMS WC fiducial effi.	> 90%				
Computer Deadtime	-----				
HMS Electronic Deadtime	-----				
SHMS Electronic Deadtime	-----				
Scan this sheet into <i>hclog</i> when full. →					
Check List Complete (<i>Initial</i>)	xyz				

Help with Check List Items

Help with Page 1

What	Where to find it	How to do it
DATE (day-month-year)	As given by Run Control	Enter as DD-MMM-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)	This summary screen should already be displayed on the wall. If not, do <i>jmenu</i> → <i>Operations</i> → <i>WallMenu</i>	Get the beam energy of Hall C and write it down.
Beam Current	Same as above	MPS and Hall C BCM readings should be similar. Record the reading.
Beam position lock on?	Use <i>JMenu</i> and search for 'lock'.	Write yes or no in the cell.
Beam energy lock on?	Use <i>JMenu</i> and search for 'lock'.	Write yes or no in the cell.
HMS Trigger Rate	On the CODA GUI screen	Record the typical instantaneous rate.
SHMS Trigger Rate	On the CODA GUI screen	Record the typical instantaneous rate.
HMS Dead Time	On the CODA GUI screen	Record the value shown.
SHMS Dead Time	On the CODA GUI screen	Record the value shown.
IPM3H07,8, and 9 BPM positions nominal?	See the summary screen .	Record the displayed beam position. Compare it with the nominal position posted on the white board or sticky note.
Fast Raster Setpoints for Width, Height (mm), and the measured currents I _x ,I _y (A)	Use “jmenu” and search for <i>raster</i> . Screen is “Hall C Raster Controls”	Record the Set sizes in the “Set Raster Size” box, and the four Measured currents (I _x and I _y for two H and two V coils) from the “Raster measured current” box.
Alarm Handler Running? / Sound?	The <i>Alarm Handler</i> process must be running and <i>always visible</i> on one of the desktop machines.	Verify that it is running, and that the alarm sound is NOT silenced. (N.B.: this is not the old legacy high-voltage alarm.)
HMS/SHMS Collimators	use “jmenu → Standalone Menus → HallC”. On the Hall C Operations Menu under “Experiment Specific” are HMS Coll. Motion Control and SHMS Coll. Motion Control.	Determine and record the collimator position(s). For physics runs, HMS should be either PION or LARGE. SHMS should be “COLLIMATOR”.

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.
Drift Gas Flows: Ar/Eth and Drift Gas isopropanol Temp.	Do “go_munin” and select “gas_shed” under Categories on the left side of the page.	Record “Argon Flow”, “Ethane Flow”, and “Ar:Eth Pressure”. Record the “Isopropanol Fridge” temperature.
Drift Chamber Thresholds HMS/SHMS	Execute “jmenu” and search for “threshold”.	Record the Hall C drift chamber threshold voltages.
HMS angle (TV/GUI)	Use “go_cameras” to bring up a TV image of the angle scale on the floor. Also use the Rotation GUI.	Read the angle and write it down. TV and GUI should agree.
SHMS angle (TV/GUI)	Use “go_cameras” to bring up a TV image of the angle scale on the floor. Also use the Rotation GUI.	Read the angle and write it down. TV and GUI should agree.
HMS Cer. Temp/Press (TV)	- Cerenkov pressures aren't remotely readable yet...	Record the values.
SHMS NGC Bubbles? (TV)	View the “NGC Outflow” bubbler using the TV camera in the SHMS detector room.	If the NGC is not in use or is not installed, write “NA”.
SHMS HGC Pressure	- Cerenkov pressures aren't remotely readable yet...	This will soon be an EPICS read-back.
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 Shutter Open?	Use TV camera on HMS side of the hall to inspect the indicator light on the control box outside the HMS shield house door.	Shutter must be “OPEN” when taking data in the HMS.
SHMS Shutter Open?	Open/Closed status is indicated on the “ Magnets ” GUI on the far right of the SHMS magnets menu bar. Alternate method: pan the HCCAM04 (SHMS bubblers) camera to the small mirror on the left; if you can see the bolts on the vacuum flange, the shutter is open.	If the shutter is installed it must be “OPEN” when taking data in the SHMS. If the Noble Gas Cerenkov is in use then the shutter is not installed; in this case write “NA” on the checklist.
HMS & SHMS Doors Closed? (TV)	Note this while doing hall survey with TV cameras.	ALL shield house doors should be closed when taking beam.
TV Cameras returned HOME?	Return TV cameras to <i>HOME</i> positions. Note: cameras may be left in a different position if there is a specific need.	Check the box to indicate that cameras were returned to desired positions.
Walk-through of Electronics Room		
Unser Monitor Temperature	top of rack CH03B12, LED digits. Nominal 110 degrees.	Record the reading.

Gas-Yard Checks (Gas Yard Key is #29)		
Argon Manifold High/Low (PSI) {Supplies drift chambers and NGC}	Outside gas shed, under roof, right-center. Pressure in the gas bottle, and pressure being delivered into the gas shed.	Record the two pressure gauge readings on the argon gas manifold. For the high pressure reading, be sure to read the gauge above the bottle on the right or left as indicated by the arrow on the automatic changeover valve.
Ethane Manifold High/Low (PSI) {Supplies drift chambers}	Outside gas shed, under roof, on the right. Pressure in the gas bottle, and pressure being delivered into the gas shed.	Record the two pressures on the ethane gas manifold. Read bottle pressure in the bottle pointed to by the arrow on the automatic changeover valve. Note that the bottle pressure is temperature dependent and cannot be used as an indication of the bottle content (except when it is empty!).
NGC gas bottle Pressure/Flow {Nominally Neon. It gets mixed with argon to supply NGC.}	Outside gas shed, under roof, on the left.	Record the bottle pressure and the flowmeter reading.
Gas-Shed Checks (Gas Shed Key is #29)		
Alcohol Bubbling? (Drift Chamber)	Inside gas shed, within refrigerator.	QUICKLY open/close door, verify that gas is bubbling through the alcohol inside the glass dome.

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.
Detector High Voltages <i>ON</i>		
All HMS Detectors	HMS HV GUI	Verify that GUI is "RUNNING" and not indicating any 'OFF' or bad channels.
All SHMS Detectors	SHMS HV GUI	Verify that GUI is "RUNNING" and not indicating any 'OFF' or bad channels.

Spectrometer Magnets		
HMS Momentum Set and particle charge	The HMS magnets Momentum setpoint ($P0$) and particle polarity (E or P) are displayed on the magnet controls screen.	Write down $P0$ and either E for electron or P for proton. If GUI shows Using Non-Standard Tune you must verify that the magnet Set Currents match the momentum specified in the Run Coordinator's Run-Plan.
HMS Q1, Q2, Q3 Hall Fields: \pm reading	The HMS magnets Hall Probe readings are displayed on the magnet controls Overview screen.	Write down the three Hall Probe readings, including sign, for the HMS magnets. (If readings are not present, write N/A.)
HMS Q1,2,3 and D Current Setpoints: \pm setpt	Use the screens available from the "go_magnets" command. The magnet Set Currents , with sign, are on the individual PSU screens.	Write down the Set Current polarities and values. ($\pm xxxx.xx$ Amps.)
HMS D NMR Field: \pm read-back	Use the screens available from the "go_magnets" command. Bring up the <i>NMR</i> screen.	Write down the NMR readout.
HMS Q1, Q2, Q3, D N2/He Level	Use the screens available from the "go_magnets" command.	Record He and N2 levels from their respective screens.
SHMS Momentum Set and particle charge	The SHMS magnets Momentum setpoint ($P0$) and particle polarity (E or P) are displayed on the magnet controls screen.	Write down $P0$ and either E for electron or P for proton. If GUI shows Using Non-Standard Tune you must verify that the magnet Set Currents match the momentum specified in the Run Coordinator's Run-Plan.
SHMS HB,Q1, Q2, Q3, D Hall Fields: \pm reading	The SHMS magnets Hall Probe readings are displayed on the magnet controls Overview screen.	Write down the five Hall Probe readings, including sign, for the SHMS magnets.
SHMS HB,Q1,2,3 and D Current Setpoints: \pm setpt	Use the screens available from the "go_magnets" command. The magnet Set Currents , with sign, are on the individual PSU screens.	Write down the Set Current polarities and values. ($\pm xxxx.xx$ Amps.)
DHMS D NMR Field: \pm read-back	Use the screens available from the "go_magnets" command. Bring up the SHMS Dipole <i>NMR</i> screen.	Write down the NMR readout.
SHMS HB, Q1, Q2, Q3, D N2/He Level	Use the screens available from the "go_magnets" command.	Record He and N2 levels from their respective screens.

Help with Page 3

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.

Stats of Recently Replayed Run (from files in the current experiment's online replay directory.)		
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.	TO BE REVISED. grep effi statsrun_number.txt	Record the number on the line labeled "fid effi"
SHMS WC fiducial effi.	TO BE REVISED. grep effi statsrun_number.txt	Record the number on the line labeled "fid effi"
Computer Deadtime	TO BE REVISED. grep 'D.T.' hmsrun_number.txt	Record the Computer deadtime.
HMS Electronic Deadtime	TO BE REVISED. grep 'D.T.' hmsrun_number.txt	Record the Elec. deadtime.
SHMS Electronic Deadtime	TO BE REVISED. grep 'D.T.' hmsrun_number.txt	Record the Elec. deadtime.
Scan this sheet into <i>hclog</i> when full.	TO BE REVISED. Maybe photograph the checklist on your cellphone and email it to yourself? Rumor has it that there is a scanner on the 2nd floor of the counting house.	It can be very useful to have the checklist images recorded in the electronic logbook for future reference. Identify the entry with the tag: " Checklist ".