

RC Report

S. Malace

Nov. 2 -9 2016

Wednesday Nov. 2 - Swing

- Lost rates from LHRS S2m 5 R (part of trigger); called Bogdan and took an escorted access to diagnose the problem

The discriminator channel that S2m 5 R was plugged into malfunctioned

The discriminator channel for S2m 16 was used to restore trigger from paddle 5

A permanent fix was deferred until an opportunistic access could be made to replace the discriminator module

- Resumed production without triggers from paddle 16

Thursday Nov. 3 - Owl

- Production for GMp and DVCS

Thursday Nov. 3 - Day

- Before 9:00 am instabilities in the warm return caused trips of magnets power supplies in both spectrometers; warm return was moved from CHL to ESR or so we thought – Heidi found out today that we stayed on CHL
- Magnets were ramped up and we resumed production with LHRS by 10:30 am and by 17:30 pm with RHRS (slow ramp-up for the dipole)

Thursday Nov. 3 - Swing

- Production for GMp and DVCS

Friday Nov. 3 - Owl

- Production for GMp and DVCS

Friday Nov. 3 - Day

- Lost UPS on the RHRS which led to loss of RHRS slow controls for magnets and detectors
- DVCS continued production
- GMp running was affected: as it turns out Q2 and Q3 ramped down + there was no way to regulate the magnets

Friday Nov. 3 - Swing

- We took an escorted/controlled access to replace the LHRS S2m discriminator module (Bogdan, Barak, Vardan) and to replace the RHRS UPS (Jack, Ethan) to restore slow controls; the current readback for the dipole could not be restored through the reboot of iocsoftha2 but the software regulator is working and the power supply responds to commands

Saturday, Sunday Nov. 4,5 – Owl, Day, Swing

- Smooth running, production for DVCS, GMp

DATE: Saturday November 5, 2016

SHIFT: Owl

TEAM: Merz, Anthony, McClure

PROGRAM: 4th Pass to Hall A

	Sched.	Actual	ABU	BANU
Hall A (DVCS/GMp)	8.0	7.1	7.0	0.1

DATE: Saturday November 5, 2016

SHIFT: Day

TEAM: Carlino, Richardson, Comer

PROGRAM: 4th Pass to Hall A

	Sched.	Actual	ABU	BANU
Hall A (DVCS/GMp)	8.0	7.3	7.0	0.3

DATE: Saturday November 5, 2016

SHIFT: Swing

TEAM: Forman, Freeman, McCaughan

PROGRAM: 4th Pass to Hall A

	Sched.	Actual	ABU	BANU
Hall A (DVCS/GMp)	8.0	7.3	7.3	0.1

DATE: Sunday November 6, 2016

SHIFT: Owl

TEAM: Merz, Surles-Law, McClure

PROGRAM: 4th Pass to Hall A

	Sched.	Actual	ABU	BANU
Hall A (DVCS/GMp)	8.0	8.4	8.2	0.1

DATE: Sunday November 6, 2016

SHIFT: Day

TEAM: Carlino, Richardson, Comer

PROGRAM: 4th Pass to Hall A

	Sched.	Actual	ABU	BANU
Hall A (DVCS/GMp)	8.0	6.5	6.4	0.1

DATE: Sunday November 6, 2016

SHIFT: Swing

TEAM: Forman, Moser, McCaughan

PROGRAM: 4th Pass to Hall A

	Sched.	Actual	ABU	BANU
Hall A (DVCS/GMp)	8.0	7.3	6.8	0.5



?

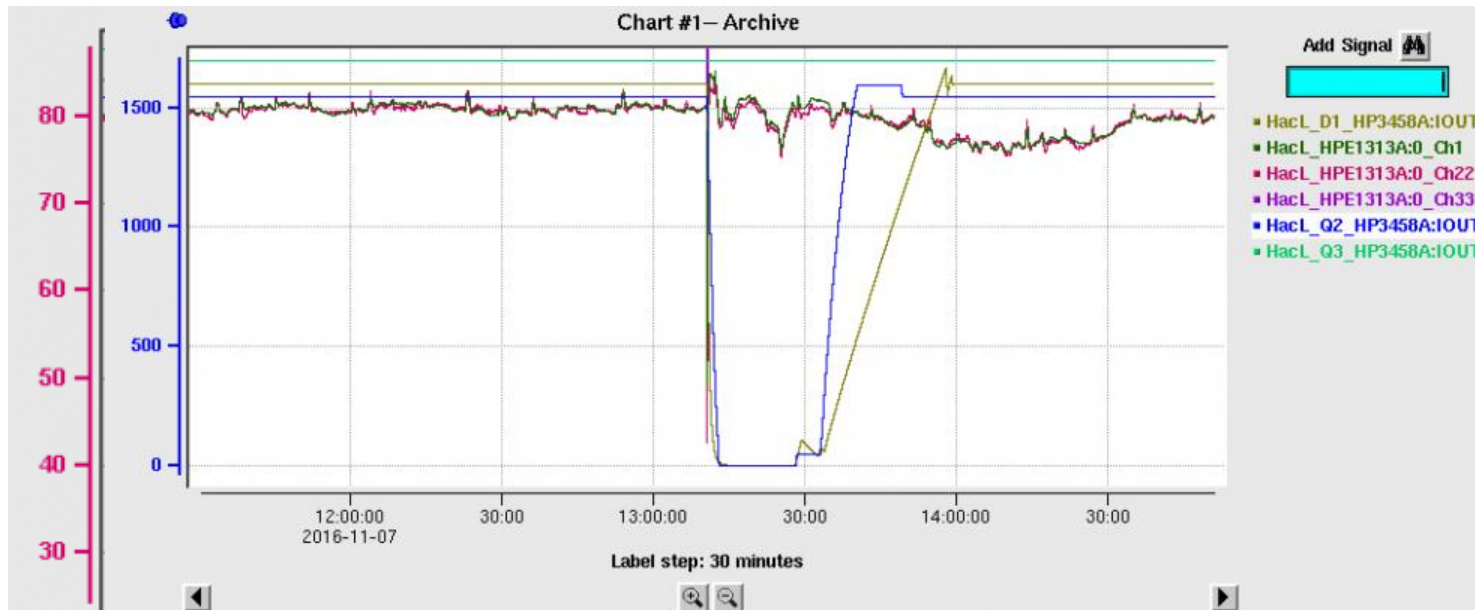
Config. change

Monday Nov. 7 - Owl

- Production for GMP and DVCS

Monday Nov. 7 - Day

- Hall B magnet dumped (unplanned) which led to the Hall A magnet power supplies for Q2 and the dipole in LHRS and RHRS to shut off when the leads could not be cooled sufficiently (same problem as Thursday)



We recovered the LHRS in less than 1 h; for RHRS recovery hall access would be needed – we asked guidance from Thia on whether to make an access sooner than Thursday to restore production for GMP

Monday Nov. 7 - Swing

- Production for DVCS

Tuesday Nov. 8 - Owl

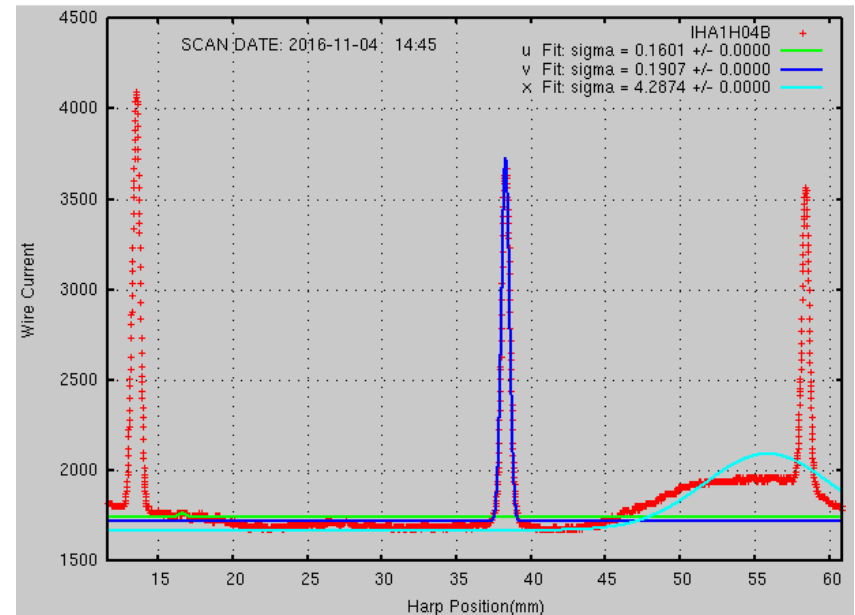
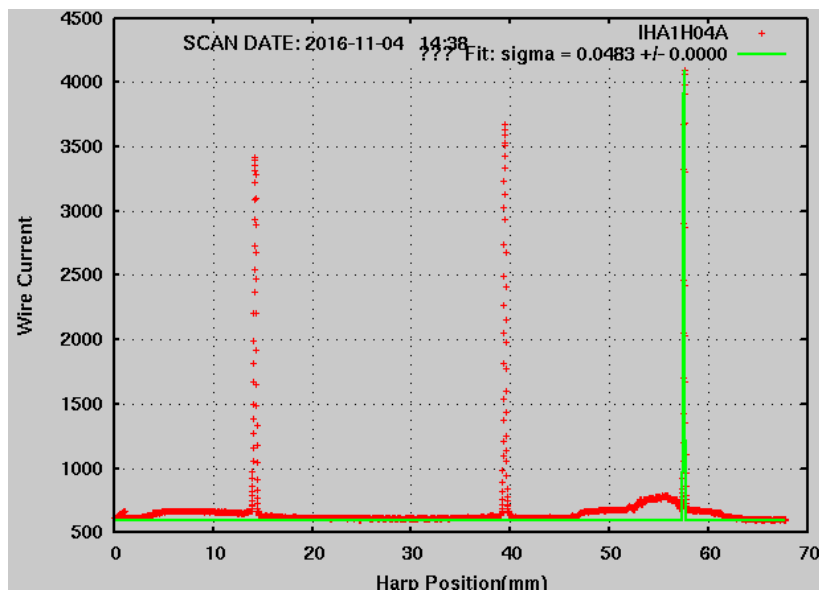
- Production for DVCS

Tuesday Nov. 8 - Day

- It was decided to have a short escorted access to restore the RHRS dipole and production for GMp; access planned for 10:30 am
- Accelerator went down around 9:30 am and they let us know that this could be a longer down
- Jack came in sooner (thanks!) to make the access to minimize the loss of available beam
- In the end NO AVAILABLE BEAM WAS LOST – the accelerator will be down through the day and swing shifts today and owl shift tomorrow

Items That Need Attention

- Beam profile



Yves 2) is it an artifact of the electronics or real pieces of beam ?

3) is it synchrotron radiation photons arising from the last compton dipole since its a straight line shot and we are in direct view of it ?

- Instabilities in the warm return for Hall A magnets leading to power supply trips

→ Happened twice this RC week

→ As of now Hall A and B warm returns have been separated so we are not affected by the Hall B magnet tests; Hall A in on CHL, however, so instabilities are possible

Data Taken So Far

DVCS

DVCS Kinematics													
Name		Kin_36_1	Kin_36_2	Kin_36_3	Kin_48_1	Kin_48_2	Kin_48_3	Kin_48_4	Kin_60_1	Kin_60_2	Kin_60_3	Kin_60_4	TOTAL
Pass		3	4	5	2	4	4	5	4	4	5	5	
kBeam	(GeV)	6.63	8.84	11.02	4.48	8.84	8.84	11	8.84	8.84	11.02	11.02	
Q2	(GeV ²)	3.2	4	4.75	2.7	4.365	5.3338	6.9	5.54	6.1	8.02	9	
xBj		0.36	0.36	0.36	0.48	0.48	0.48	0.48	0.6	0.6	0.6	0.6	
Days	approved	3	2	1	5	4	4	7	13	16	13	20	88
Charge [Cb]	approved	1.3	1.5	1.2	2.1	3	4.7	8.3	5.6	12.1	15.4	34.2	89.4
Charge [Cb]	on tape	1.3	1.5	0	2	1.7	3.6	5.3	3.2	0	0	0	24.6
Charge (%)	on tape	100	100	0	95	57	76	64	57	0	0	0	20.80%

From Fall'14 up to 11/7/16
(5.2% in the 10 day of Fall'16)

GMp

Fourth Pass:

Kinematic Q2 [GeV²] Statistics [Counts] Goal [Counts]

K4- <u>9</u>	<u>9.0</u>	38949 (0.51%)	40000 (0.5%)
K4- <u>10</u>	<u>9.8</u>	47638 (0.46%)	40000 (0.5%)
K4- <u>11</u>	<u>11.2</u>	18927 (0.73%)	40000 (0.5%)
K4- <u>12</u>	<u>12.1</u>	11008 (0.95%)	21000 (0.7%)

Third Pass:

Kinematic Q2 [GeV²] Statistics [Counts] Goal [Counts]

K3- <u>4</u>	<u>4.5</u>	30563 (0.57%)	60000 (0.41%)
K3- <u>6</u>	<u>5.9</u>	48632 (0.45%)	50000 (0.45%)
K3- <u>7</u>	<u>7.0</u>	41434 (0.49%)	40000 (0.5%)
K3- <u>8</u>	<u>8.0</u>	27192 (0.61%)	40000 (0.5%)
K3- <u>9</u>	<u>9.0</u>	11583 (0.93%)	31000 (0.57%)

Short Term Plans

- Going to 5 pass

GMp

Ebeam = 10.617

E' = 2.165 GeV/c

RHRS angle = 48.75 deg

Q² = 15.8 (GeV/c)²

Many thanks to: Jack, Heidi, Jessie, Andrew, ...

DVCS

Name	FY2017		
	Kin_36_1	Kin_36_2	Kin_36_3
Pass	3	4	5
kBeam (GeV)	6.663	8.517	10.617
Q2 (GeV ²)	3.200	3.600	4.470
xBj	0.360	0.360	0.360
MProton (GeV)	0.938	0.938	0.938
nu (GeV)	4.738	5.330	6.619
kScatt (GeV)	1.925	3.187	3.998
csThe	0.875	0.934	0.947
epsilon	0.484	0.621	0.631
the (deg)	28.926	20.985	18.675
snThq	0.184	0.202	0.184
Thq (deg)	10.592	11.635	10.618
CaloSetting (deg)	10.592	11.635	10.618
pMin (GeV/c)	0.422	0.422	0.422
1./(1.-eps)	1.938	2.639	2.712
qvec (GeV/c)	5.065	5.658	6.948
q' (GeV)	4.651	5.243	6.529
tmin (GeV ²)	-0.163	-0.165	-0.167
sqrt(tmin) (GeV)	0.404	0.406	0.409
CaloDist (m)	1.500	2.000	2.500
DOmega (sr)	6.16E-02	3.47E-02	2.22E-02
Th_gg_max (rad)	1.24E-01	9.31E-02	7.45E-02
q'_min (GeV)	4.37	5.04	6.33
tmax (GeV ²)	-0.69	-0.54	-0.54
tmin-tmax (GeV ²)	0.52	0.38	0.38
Th_calog deg	4.86	7.34	7.18
Calo_1stCol deg	6.01	8.20	7.87
Lumi /cm ² /s	1.86E+37	3.31E+37	5.17E+37
Beam Currer (muAmp)	4.9	8.8	13.7
d ⁴ sig(0deg) nb/GeV ⁴	8.21E-02	3.64E-02	1.92E-02
d ⁴ sig(180) nb/GeV ⁴	1.44E-02	7.80E-03	4.69E-03
Days	3.00	2	1
Charge Coulomb	1.3	1.5	1.2
Jacob_e GeV	1.95	3.67	4.62
counts in DeltaT bin	4.18E+04	7.07E+04	4.72E+04

We are here

Kin_60_1	
	4
	8.517
	5.541
	0.600
	0.938
	4.923
	3.594
	0.909
	0.663
	24.564
	0.274
	15.892
	15.892
	0.890
	2.963
	5.457
	4.570
	-0.661
	0.813
	1.500
	6.16E-02
	1.24E-01
	4.14
	-1.47
	0.81
	10.16
	11.31
	1.86E+37
	4.9
	1.16E-03
	5.91E-04
	13
	5.6
	7.46
	2.35E+04

