Run 13 RHIC Machine/Experiments Meeting

26 March 2013

Agenda:

- Polarization update/issues (E. Aschenauer)
- Status Reports

Run 13 plan based on 20 weeks cryo operation

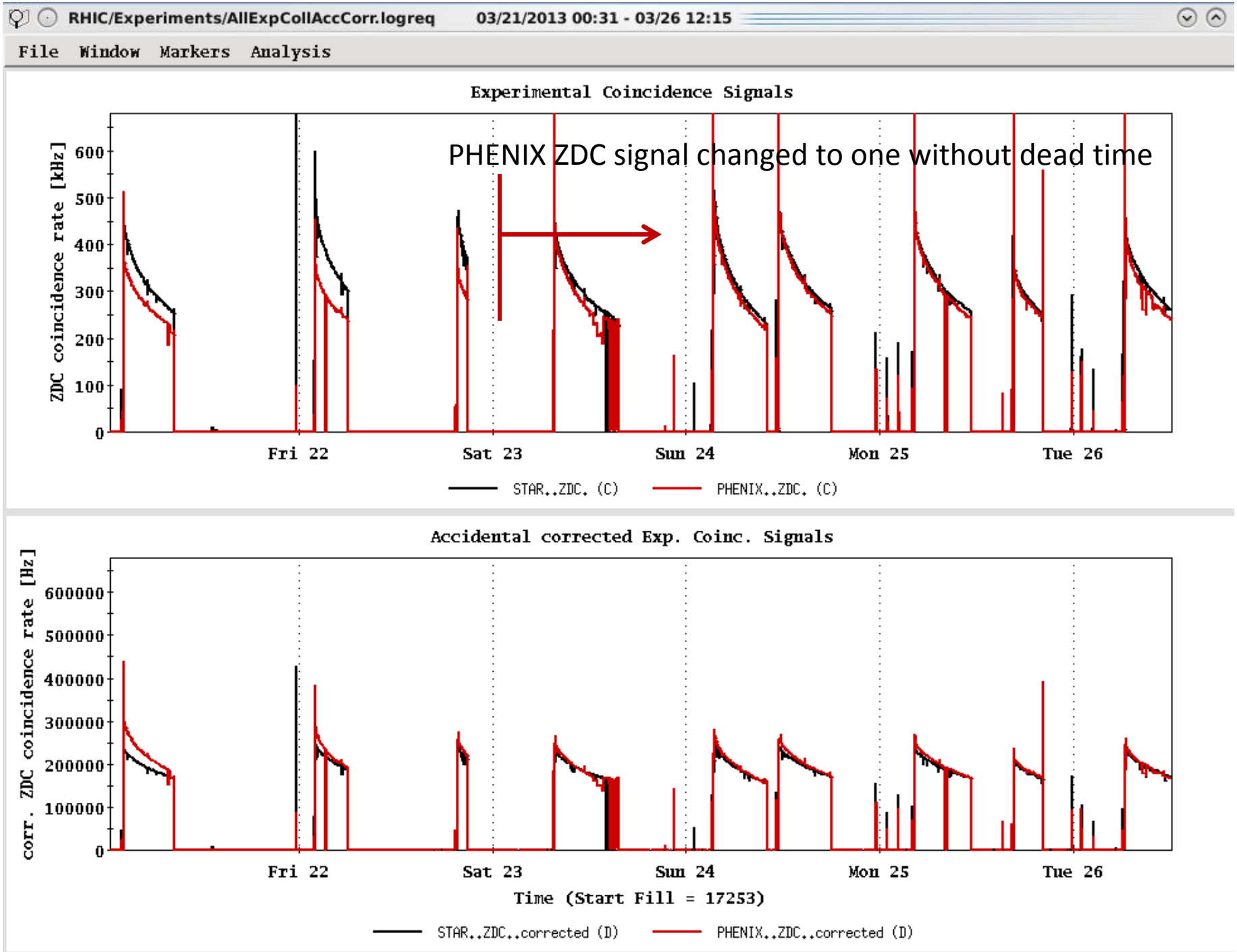
and Fischer et.al. RHIC Collider Projections (FY 2013 – FY 2017), 27 Sep 2012

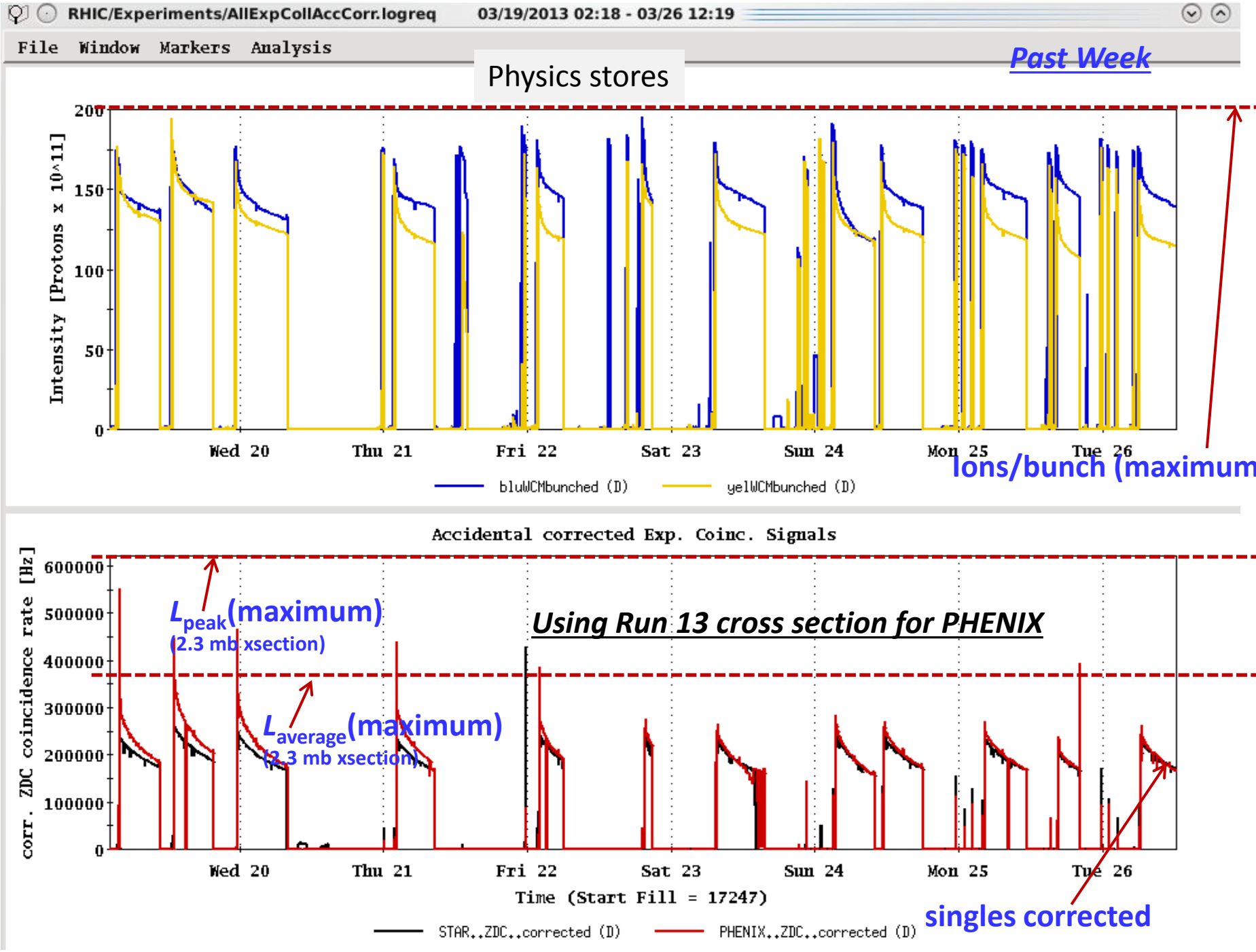
- ✓ 11 Feb, Begin cool-down to 4.5K
- ✓ 15 Feb, Cool-down to 4.5K in Blue and Yellow Ring complete, begin magnet setup
- ✓ 26 Feb, first collisions
- ✓ 15 Feb -1 Mar, RHIC √s = 510 GeV pp machine setup
- ✓ 1-8 Mar, machine ramp-up with 8 hr/night for experiment setup
- ✓ 9 Mar (store 17201), begin √s = 510 GeV pp physics run

today, 26 Mar…

- 27 May, end 15 cryo weeks.
- 6 Jun, switch to √s = 15 GeV/n AuAu if pp goals are met and end 12.7 week √s = 510 GeV pp physics run
- 27 Jun, end ~2.5 week √s = 15 GeV/n AuAu physics run or 15.9 week √s = 510 GeV pp physics run, begin cryo warm-up
- 30 June, cryo warm-up ~complete (19.9 cryo-weeks)

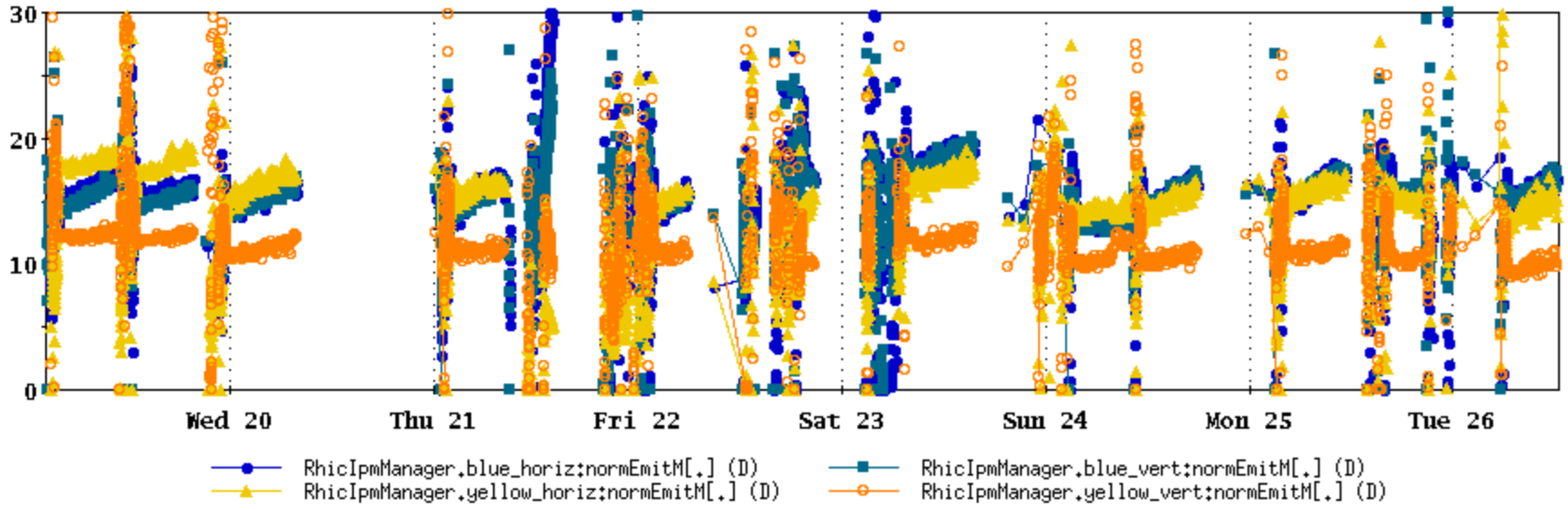
See http://www.rhichome.bnl.gov/AP/Spin2013/ for the Run Coordinator's detailed plan

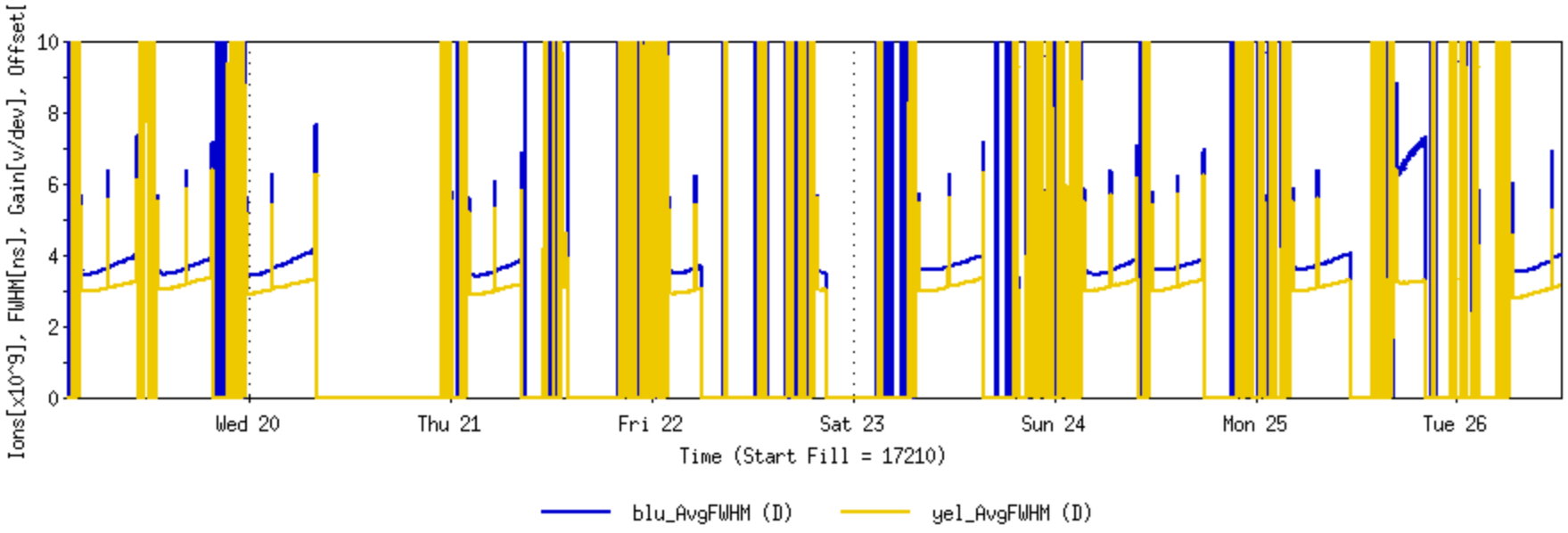

RHIC/Experiments/AllExpCollAccCorr.logreq
03/21/2013 00:31 - 03/26 12:15
File Window Markers Analysis
Experimental Coincidence Signals
PHENIX ZDC signal changed to one without dead time
ZDC coincidence rate [kHz]
0
100
200
300
400
500
600
Fri 22
Sat 23
Sun 24
Mon 25
Tue 26
STAR..ZDC. (C)
PHENIX..ZDC. (C)
Accidental corrected Exp. Coinc. Signals
corr. ZDC coincidence rate [Hz]
0
100000
200000
300000
400000
500000
600000
Fri 22
Sat 23
Sun 24
Mon 25
Tue 26
Time (Start Fill = 17253)
STAR..ZDC..corrected (D)
PHENIX..ZDC..corrected (D)


RHIC/Experiments/AllExpCollAccCorr.logreq
03/19/2013 02:18 - 03/26 12:19
File Window Markers Analysis
Physics stores
Past Week
Intensity [Protons x 10^11]
200
150
100
50
0
Wed 20
Thu 21
Fri 22
Sat 23
Sun 24
Mon 25
Tue 26
blueWCMbunched (D)
yelWCMbunched (D)
Ions/bunch (maximum)
Accidental corrected Exp. Coinc. Signals
corr. ZDC coincidence rate [Hz]
600000
500000
400000
300000
200000
100000
0
L_{peak} (maximum)
(2.3 mb xsection)
Using Run 13 cross section for PHENIX
$L_{average}$ (maximum)
(2.3 mb xsection)
Time (Start Fill = 17247)
STAR..ZDC..corrected (D)
PHENIX..ZDC..corrected (D)
singles corrected

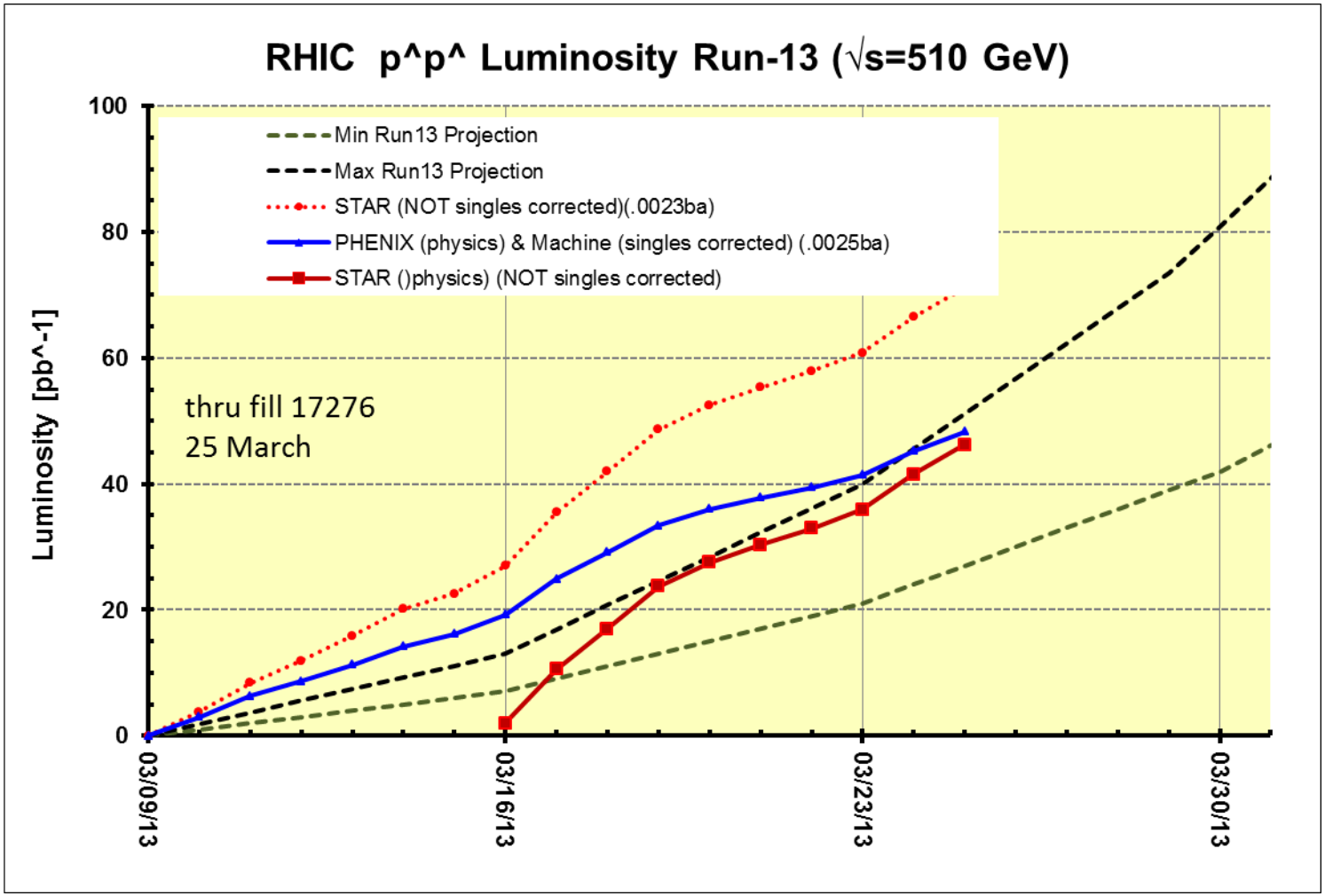
RHIC/Instrumentation/WCM/BunchLength.lvdisp 03/19/2013 02:18 - 03/26 12:27

File Window Markers Analysis



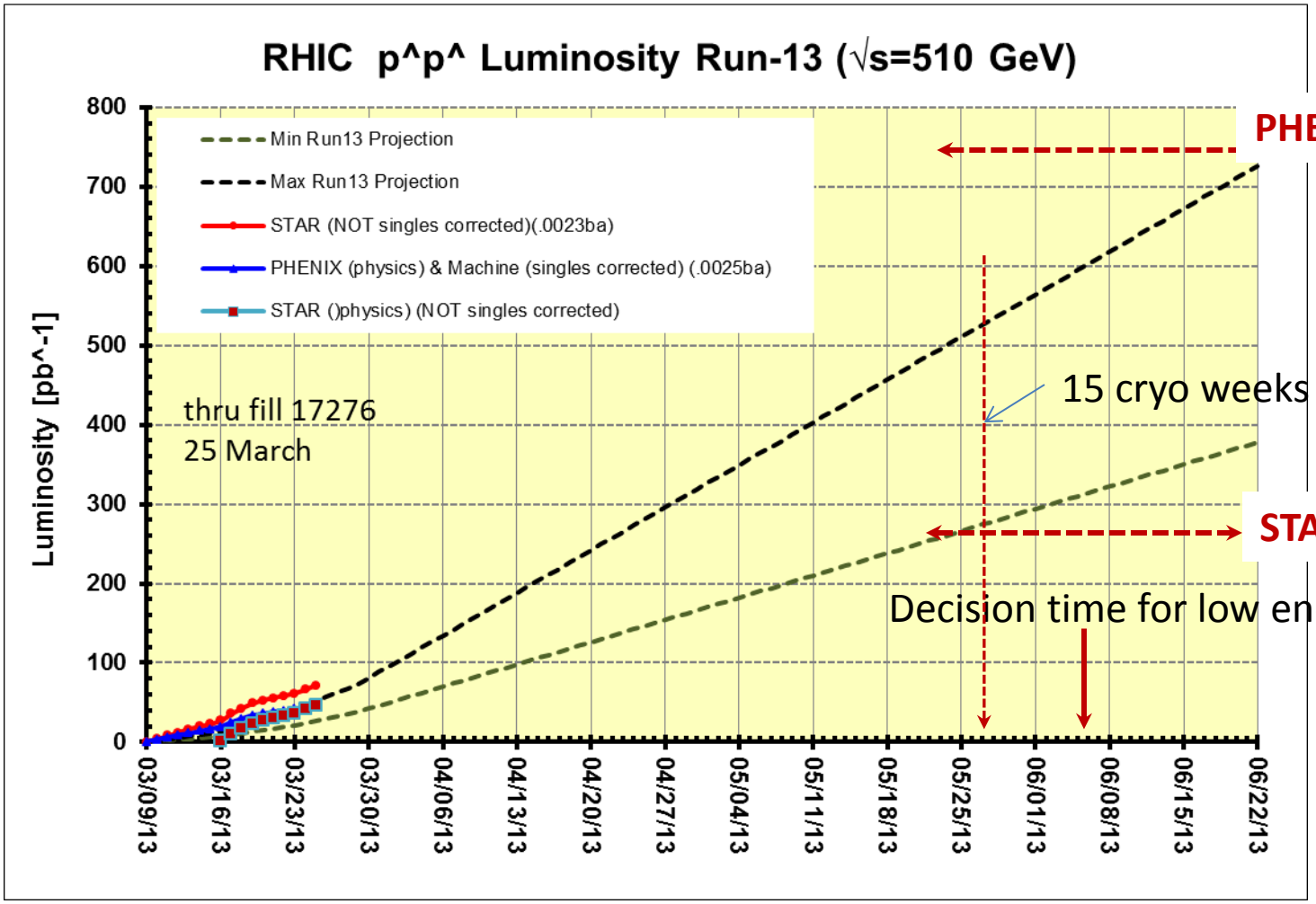


Preliminary, with Run 12 cross sections, PHENIX singles corrected, STAR not singles corrected with Run 13 cross sections



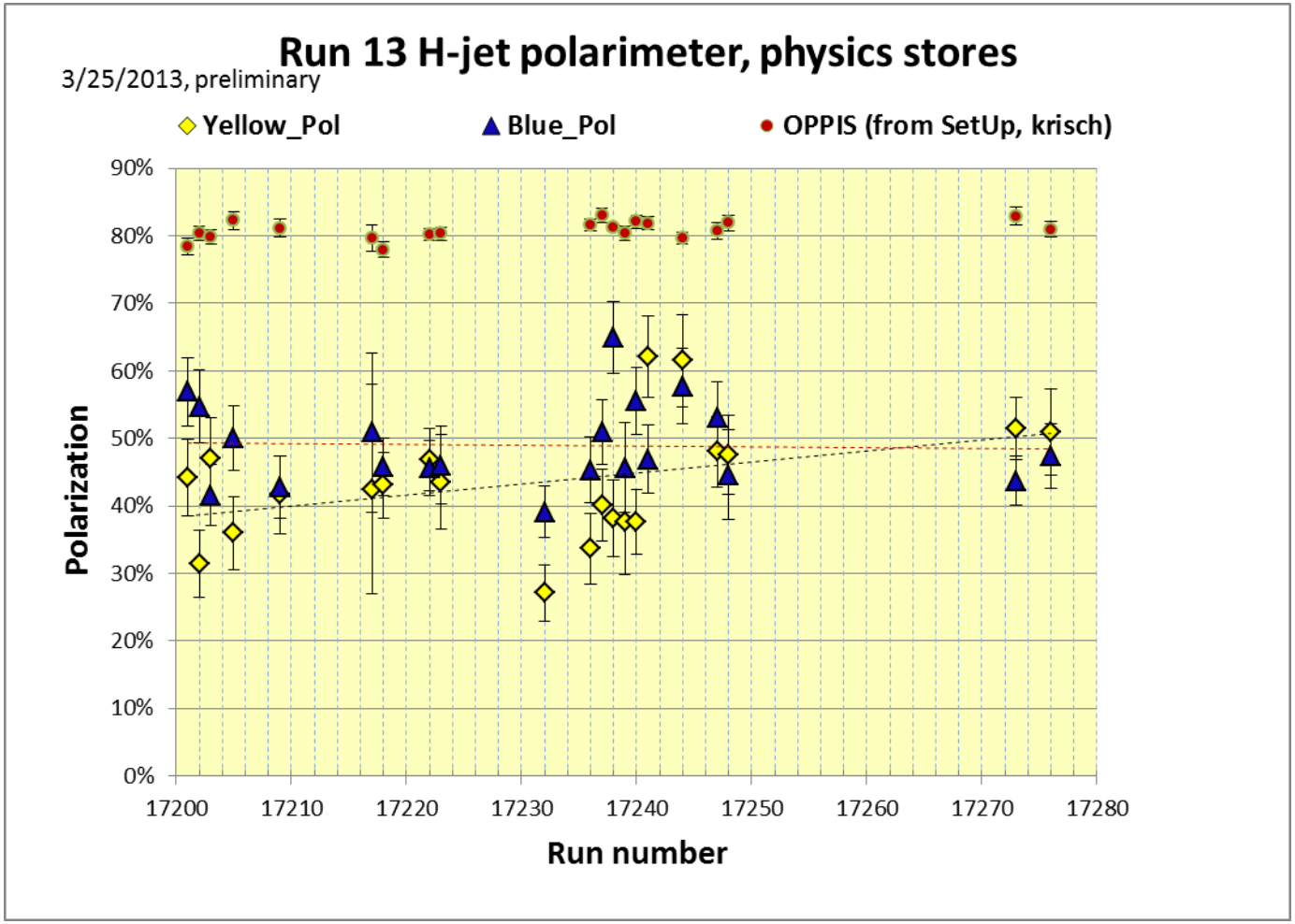
PHENIX Goal, 250 pb^{-1} recorded, 750 pb^{-1} delivered, ≥ 55% polarization

STAR Goal, 165 pb^{-1} recorded, 275 pb^{-1} delivered, ≥ 55% polarization



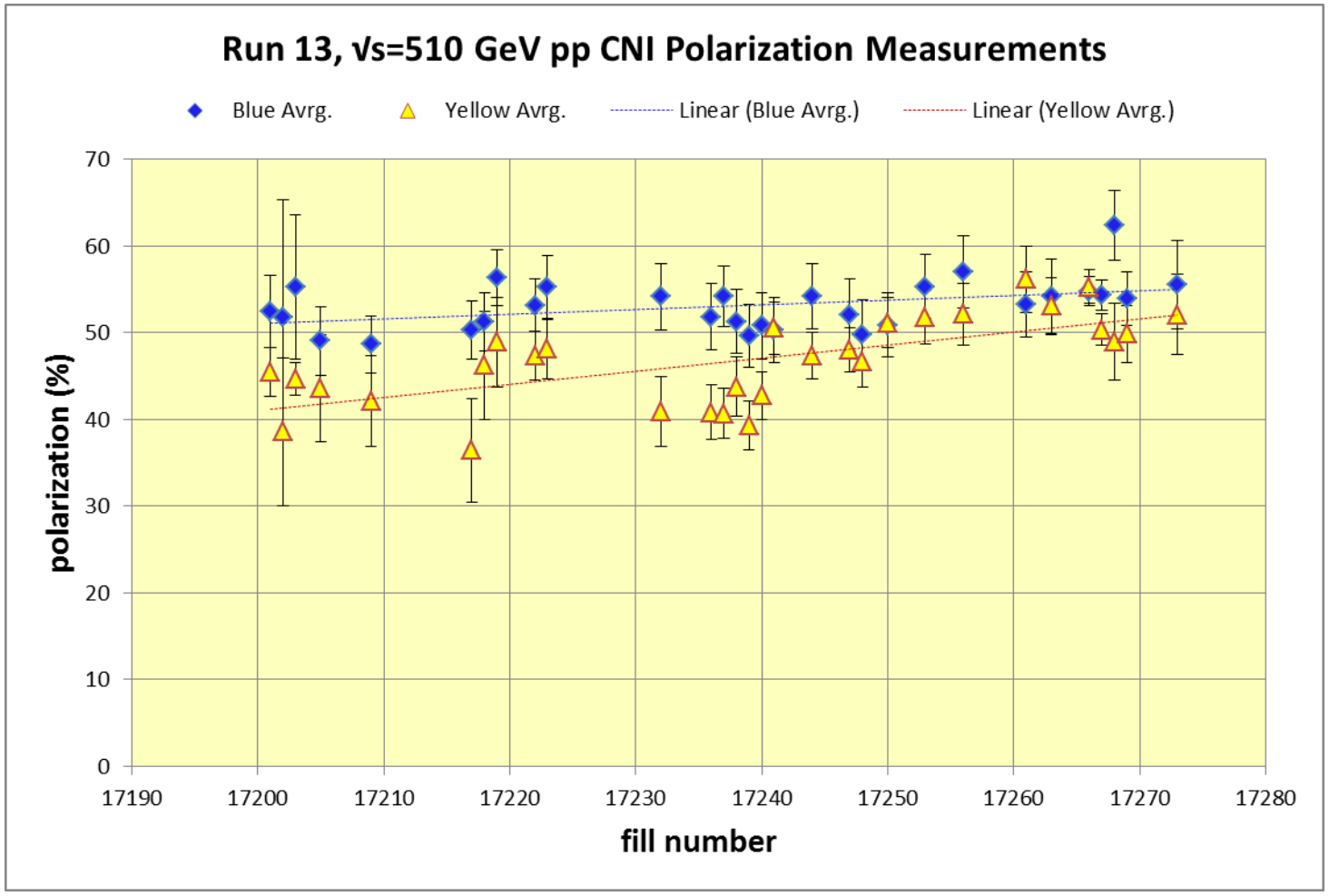
Preliminary, with Run 12 cross sections, PHENIX singles corrected, STAR not singles corrected

Yellow average = 42.4 ± 1.2%
Blue average = 48.1 ± 1.1%

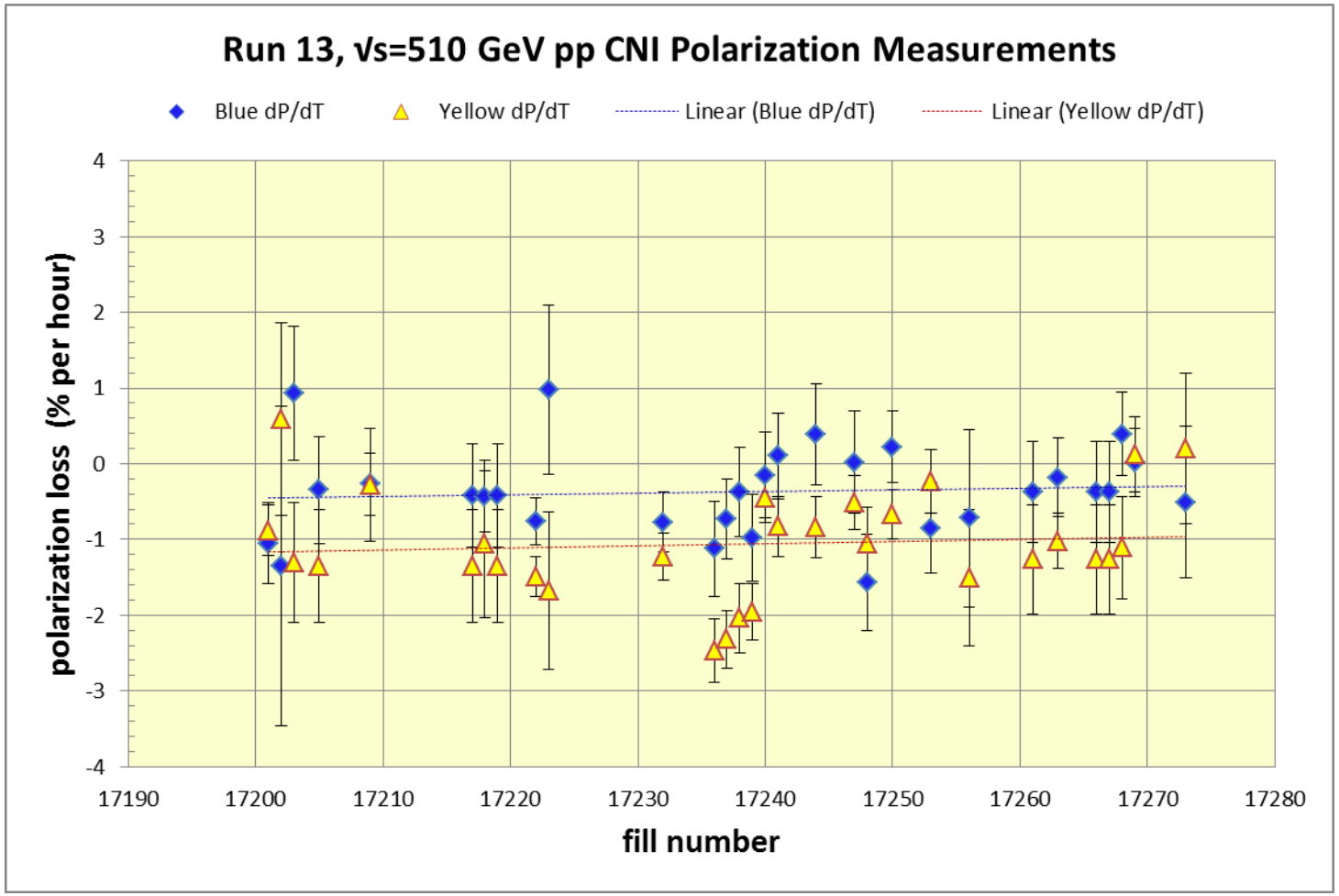


https://wiki.bnl.gov/rhicspin/Polarimetry/H-jet/Run13

Yellow average = 45.7 ± 0.6%
Blue average = 53.3 ± 0.6%

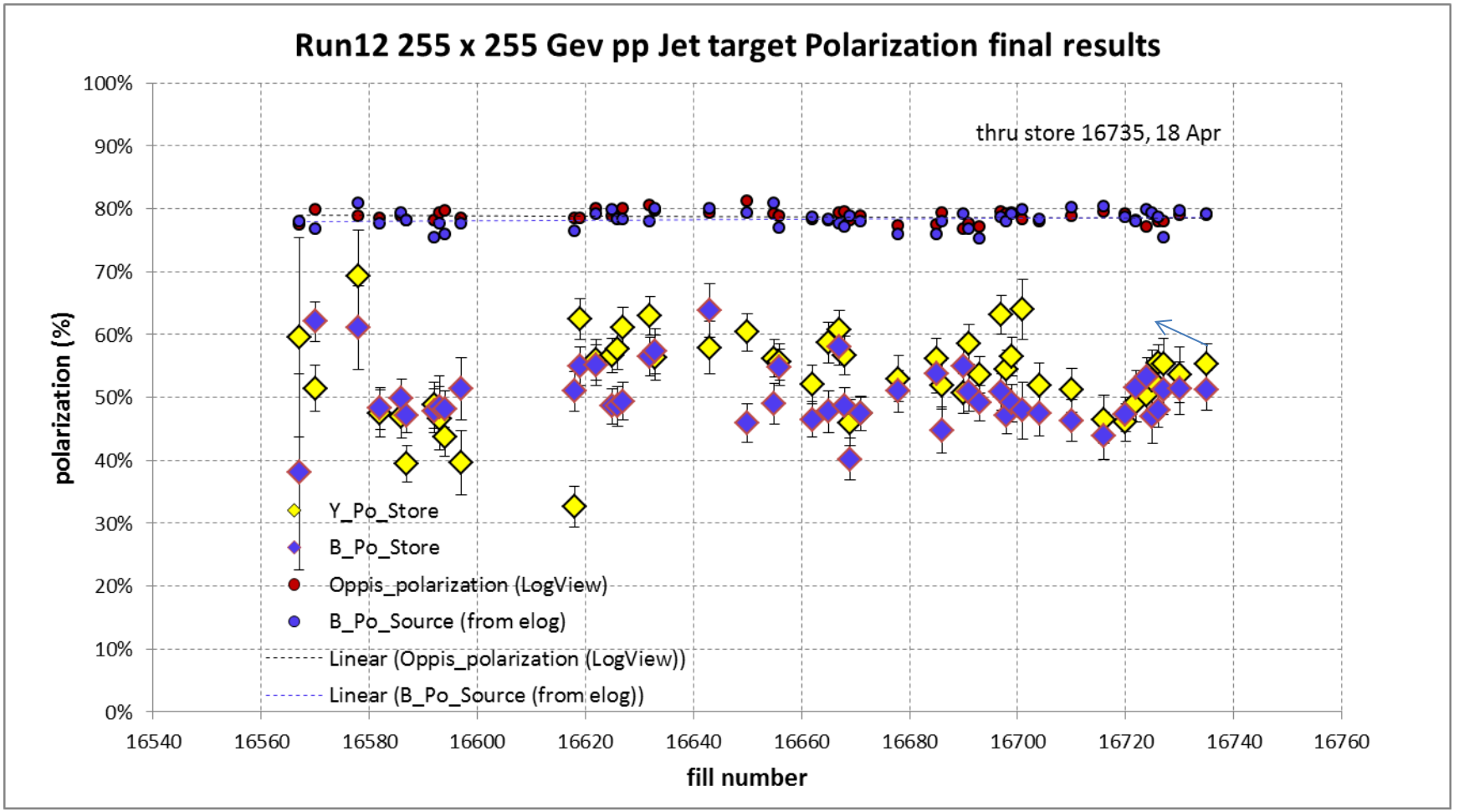


http://www.phy.bnl.gov/cnipol/fills/



http://www.phy.bnl.gov/cnipol/fills/

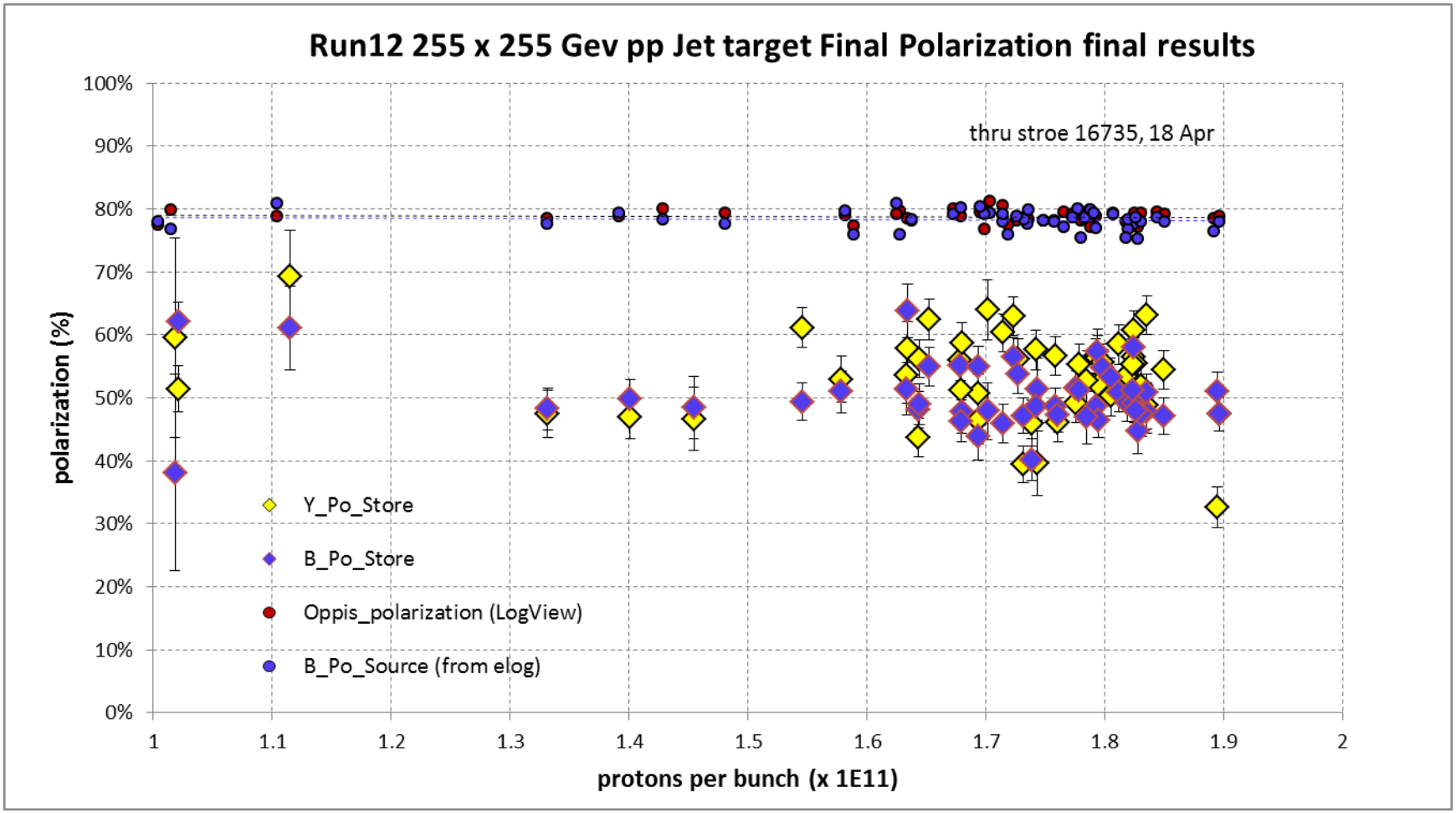
Additional Information



And Yellow beam at injection jet target Run 12 result = 63.0 ± 4.4%

Blue jet target weighted average = 50.3% ± 0.5%

Yellow jet target weighted average = 53.4% ± 0.5%

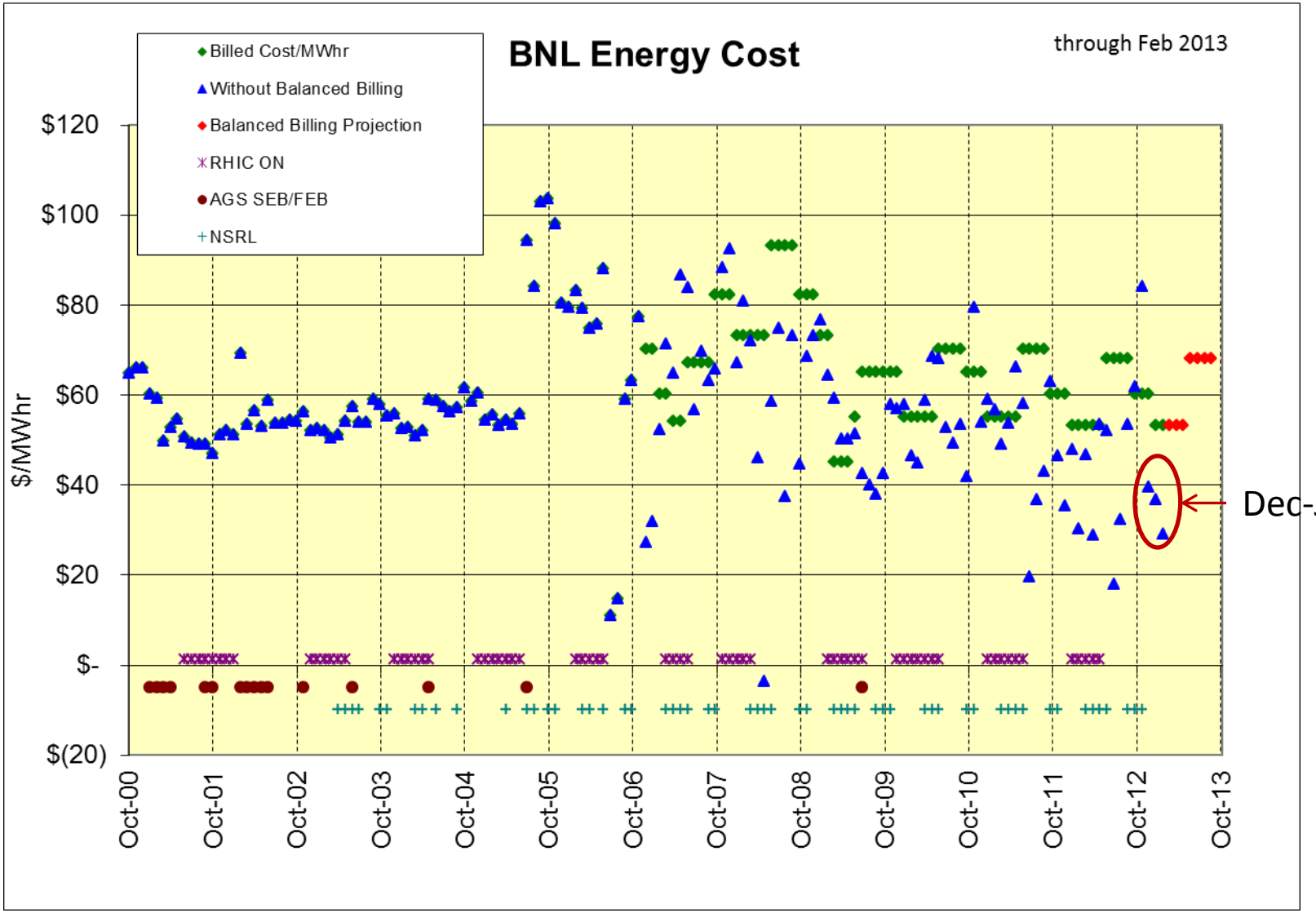

Run12 255 x 255 Gev pp Jet target Final Polarization final results
thru stroe 16735, 18 Apr
polarization (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
protons per bunch (x 1E11)
Y_Po_Store
B_Po_Store
Oppis_polarization (LogView)
B_Po_Source (from elog)

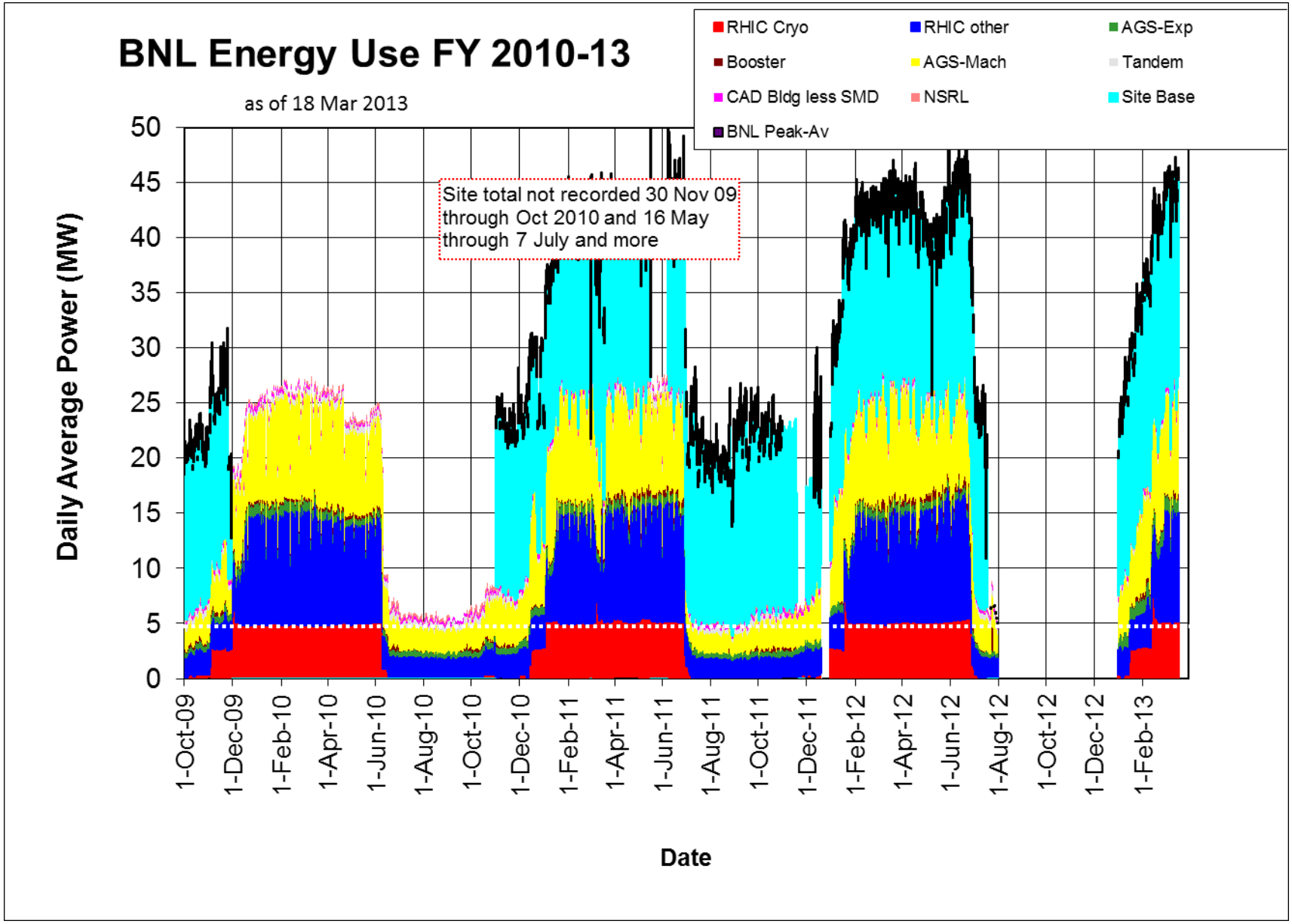
Feb 2013 bill

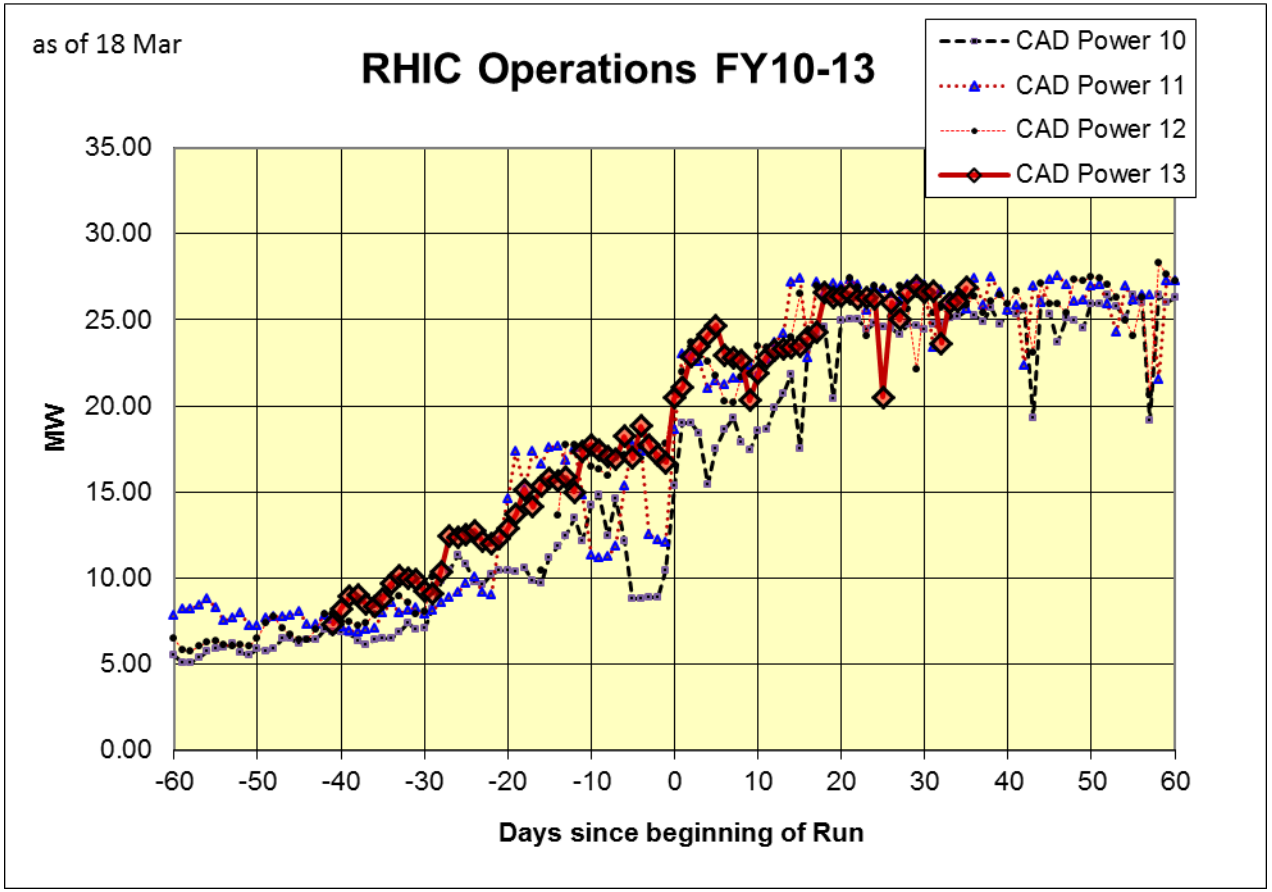
$28.89 actual

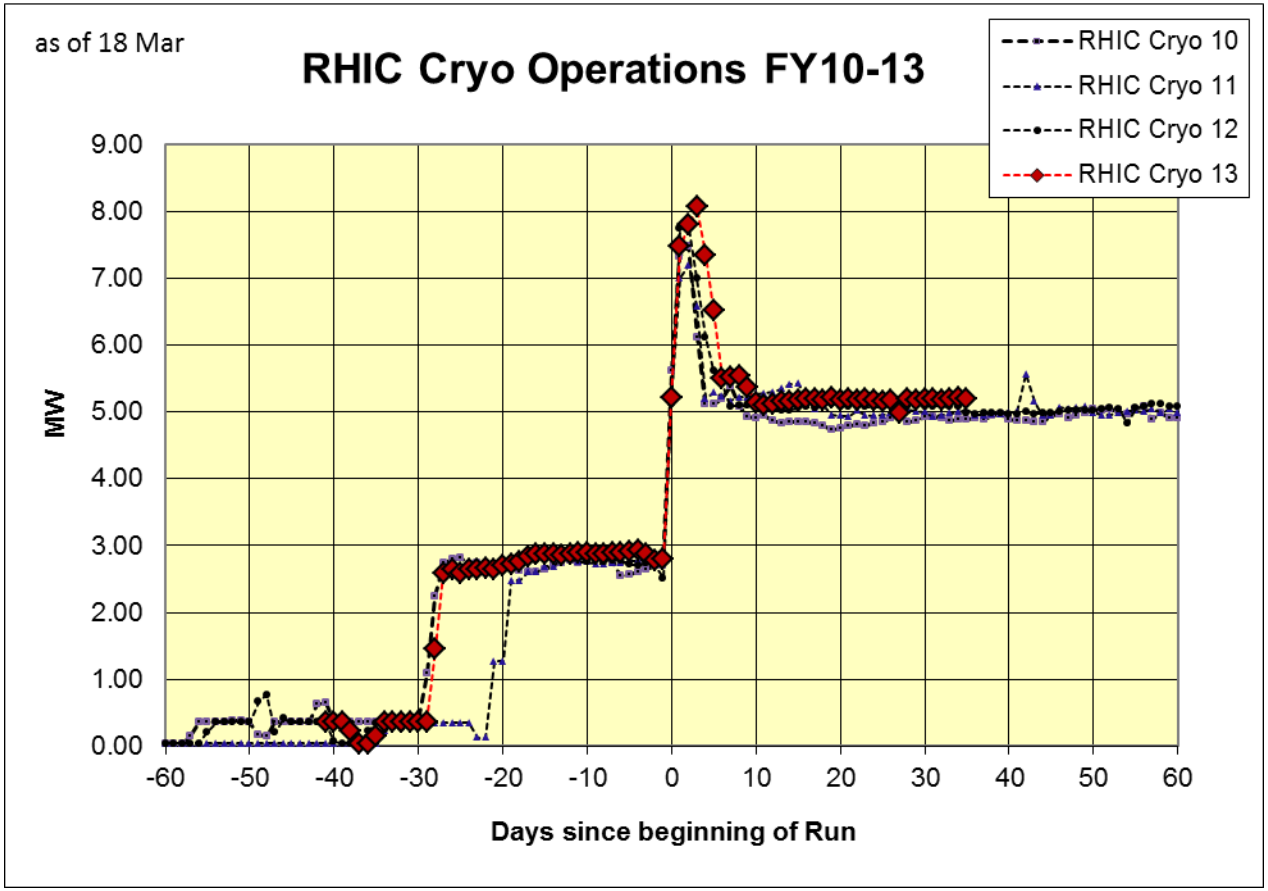
billed at $53/Mwhr

+$1,132K in BNL bank through Feb 2013



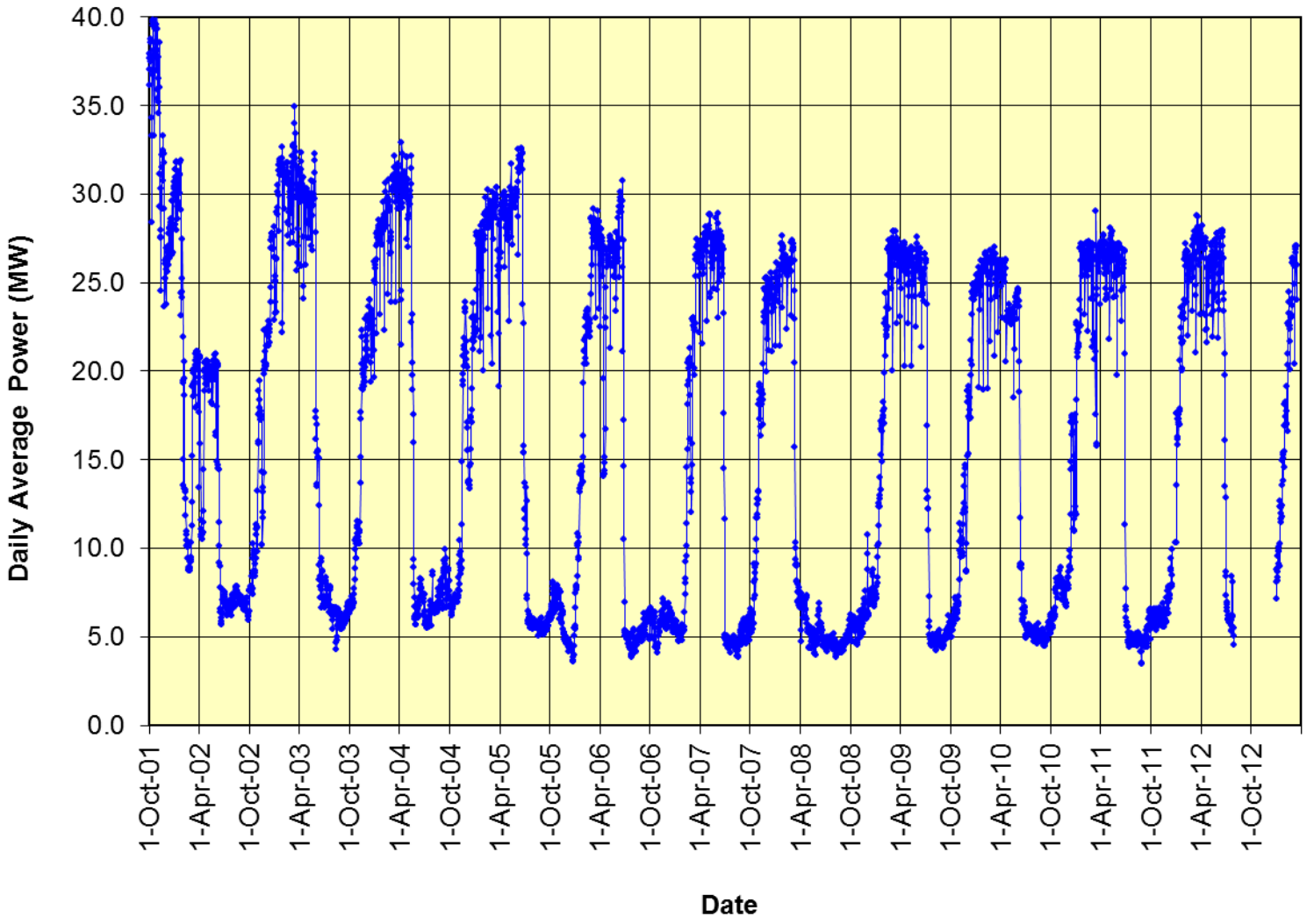

BNL Energy Use FY 2010-13
as of 18 Mar 2013
RHIC Cryo
RHIC other
AGS-Exp
Booster
AGS-Mach
Tandem
CAD Bldg less SMD
NSRL
Site Base
BNL Peak-Av
Site total not recorded 30 Nov 09 through Oct 2010 and 16 May through 7 July and more
Daily Average Power (MW)
0
5
10
15
20
25
30
35
40
45
50
1-Oct-09
1-Dec-09
1-Feb-10
1-Apr-10
1-Jun-10
1-Aug-10
1-Oct-10
1-Dec-10
1-Feb-11
1-Apr-11
1-Jun-11
1-Aug-11
1-Oct-11
1-Dec-11
1-Feb-12
1-Apr-12
1-Jun-12
1-Aug-12
1-Oct-12
1-Dec-12
1-Feb-13
Date

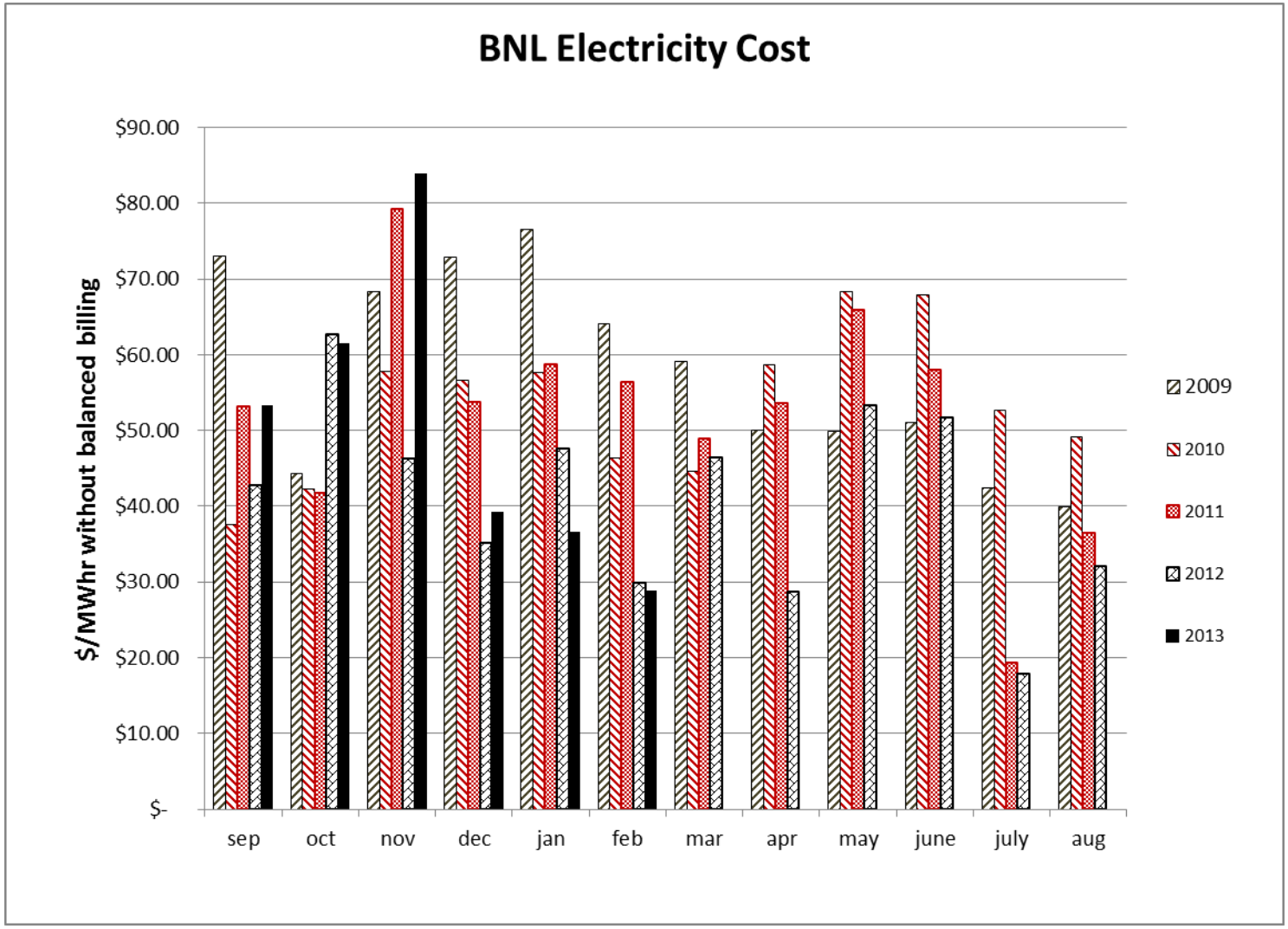

as of 18 Mar
RHIC Operations FY10-13
CAD Power 10
CAD Power 11
CAD Power 12
CAD Power 13
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
MW
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
Days since beginning of Run


as of 18 Mar
RHIC Cryo Operations FY10-13
RHIC Cryo 10
RHIC Cryo 11
RHIC Cryo 12
RHIC Cryo 13
MW
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-60
-50
-40
-30
-20
-10
0
10
20
30
40
50
60
Days since beginning of Run

as of 18 Mar 2013

C-AD Energy Use FY 2002-13

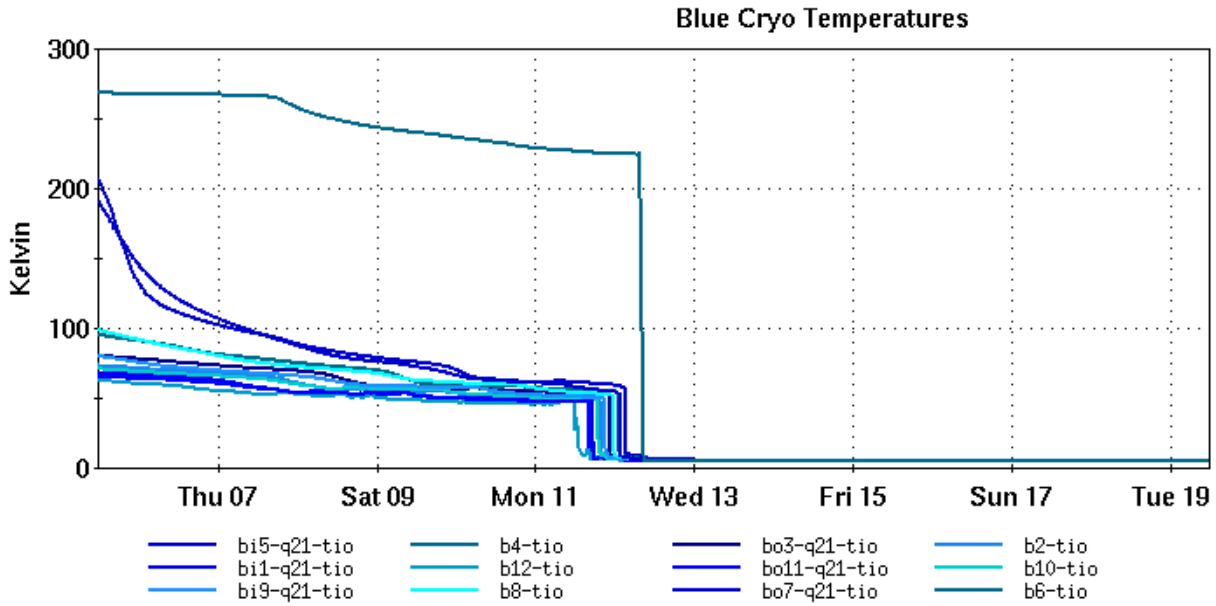


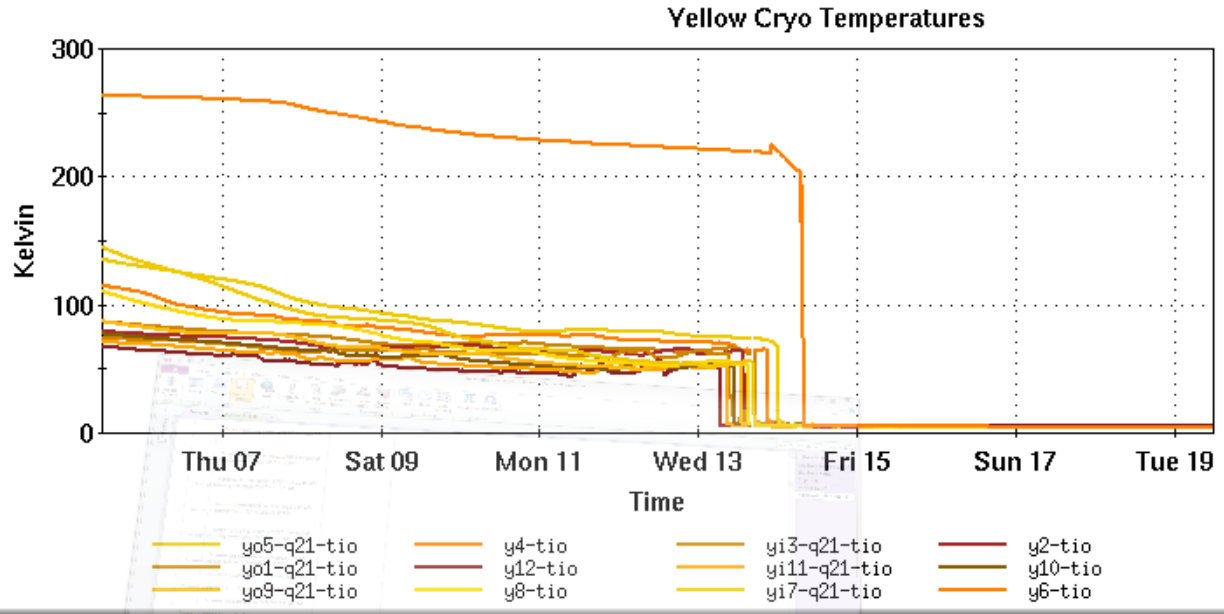

BNL Electricity Cost
$/MWhr without balanced billing
$90.00
$80.00
$70.00
$60.00
$50.00
$40.00
$30.00
$20.00
$10.00
$-
sep
oct
nov
dec
jan
feb
mar
apr
may
june
july
aug
2009
2010
2011
2012
2013

Cryogenic Blue & Yellow Rings (14 days)

Ring Summary (1 day) Sector Plots (1 day) Sector Plots (14 days)

File Window Markers Analysis





http://www.bnl.gov/cad/esfd

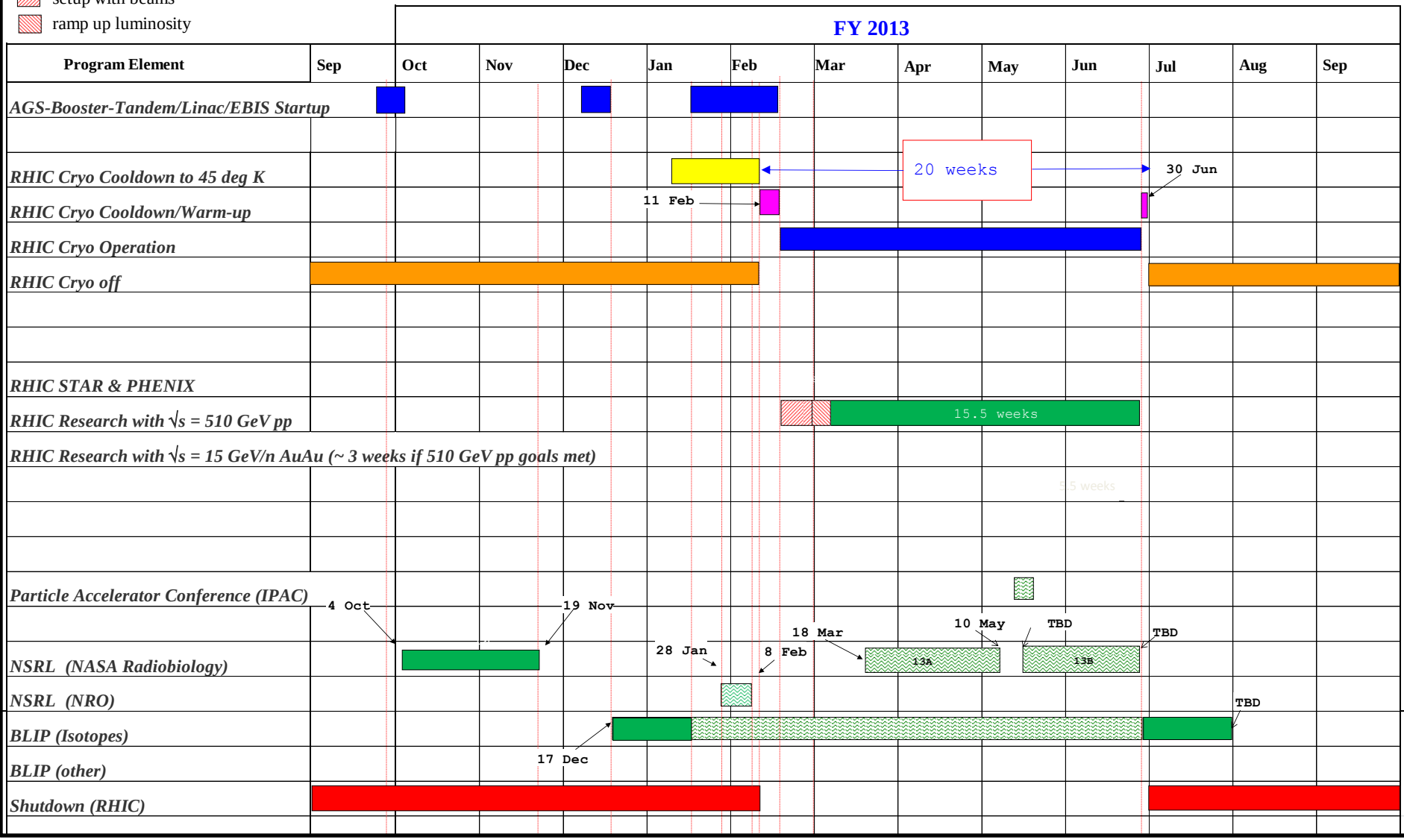
Scheduling Physicist: Andrei Poblaguev

C-A Operations-FY13

4 Feb 13

planned, budget permitting, Preliminary

concurrent with RHIC
setup with beams
ramp up luminosity



For Run 13 the PAC recommends the following (*in order of priority*):

1. Running with polarized proton collisions at 500 GeV to provide an integrated luminosity of 750 pb^{-1} at an average polarization of 55%.

2. Depending on the amount of running time remaining after priority #1
   a. If less than 3 weeks remain, a week of 200 GeV Au+Au collisions.
   b. If at least 3 weeks of running time remain, 3 weeks of 15 GeV Au+Au collisions.

3. 8 days of 62 GeV p+p collisions.

4. At the discretion of the ALD, 4 days of low-luminosity running to accomplish the pp2pp goals.