RUN 11 RHIC MACHINE/EXPERIMENTS MEETING

14 Mar 2011

Agenda:

- Status – cryo/budget
- Experiment priorities

RUN 11 RHIC MACHINE/EXPERIMENTS MEETING

DECISIONS

- 11/23/2010: Agreed to new APEX schedule, 12 hour sessions (0800-2400) every other week away from maintenance days.
- 2/25/2011: Beginning with physics store 15239, changed CNI Polarimeter analyzing power to agree with jet target polarization measurements …18% lower than before.

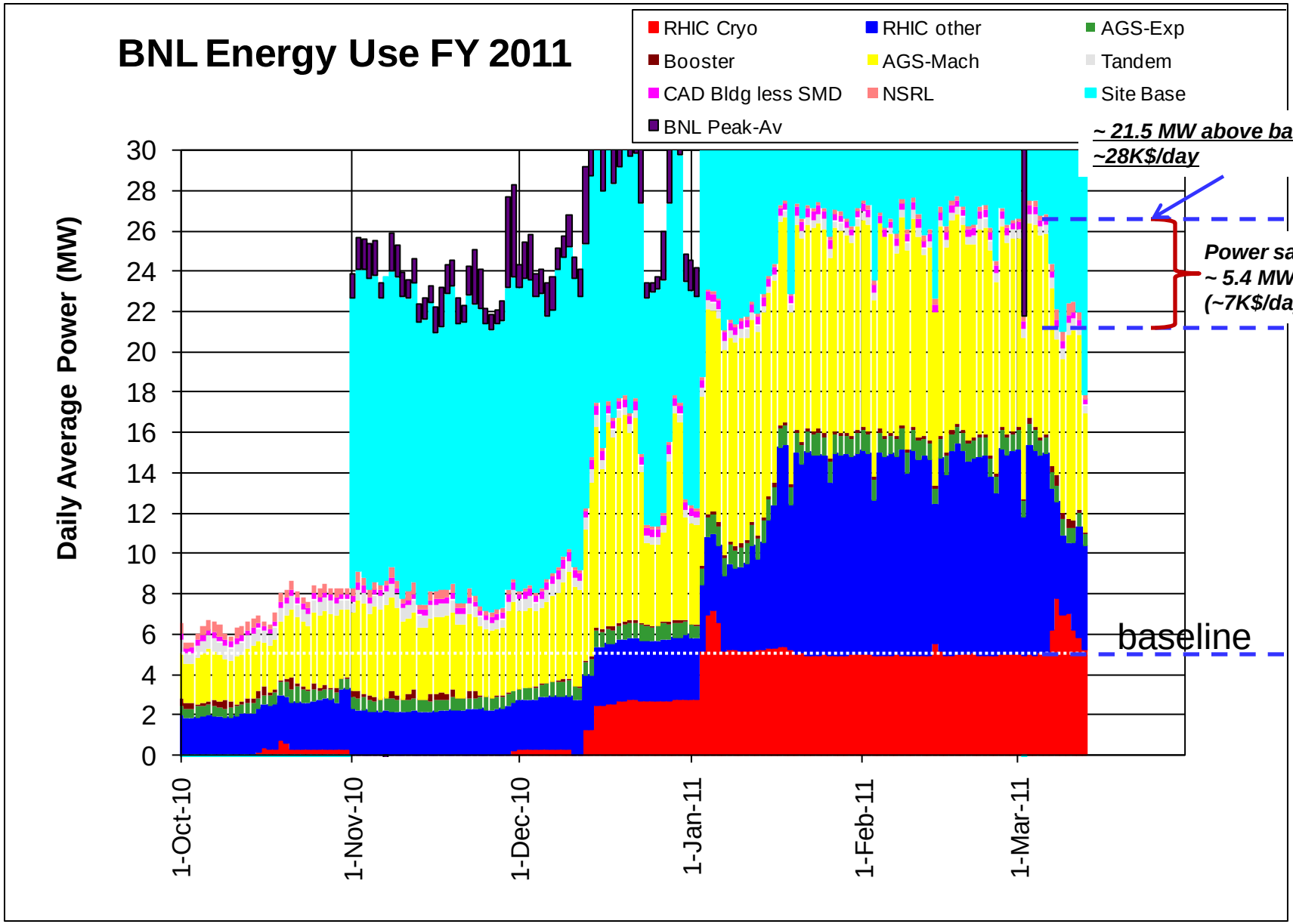
Run 11 Plan based on PAC recommendation/ALD Guidance and 28.3 weeks cryo operation 3/8/10 update

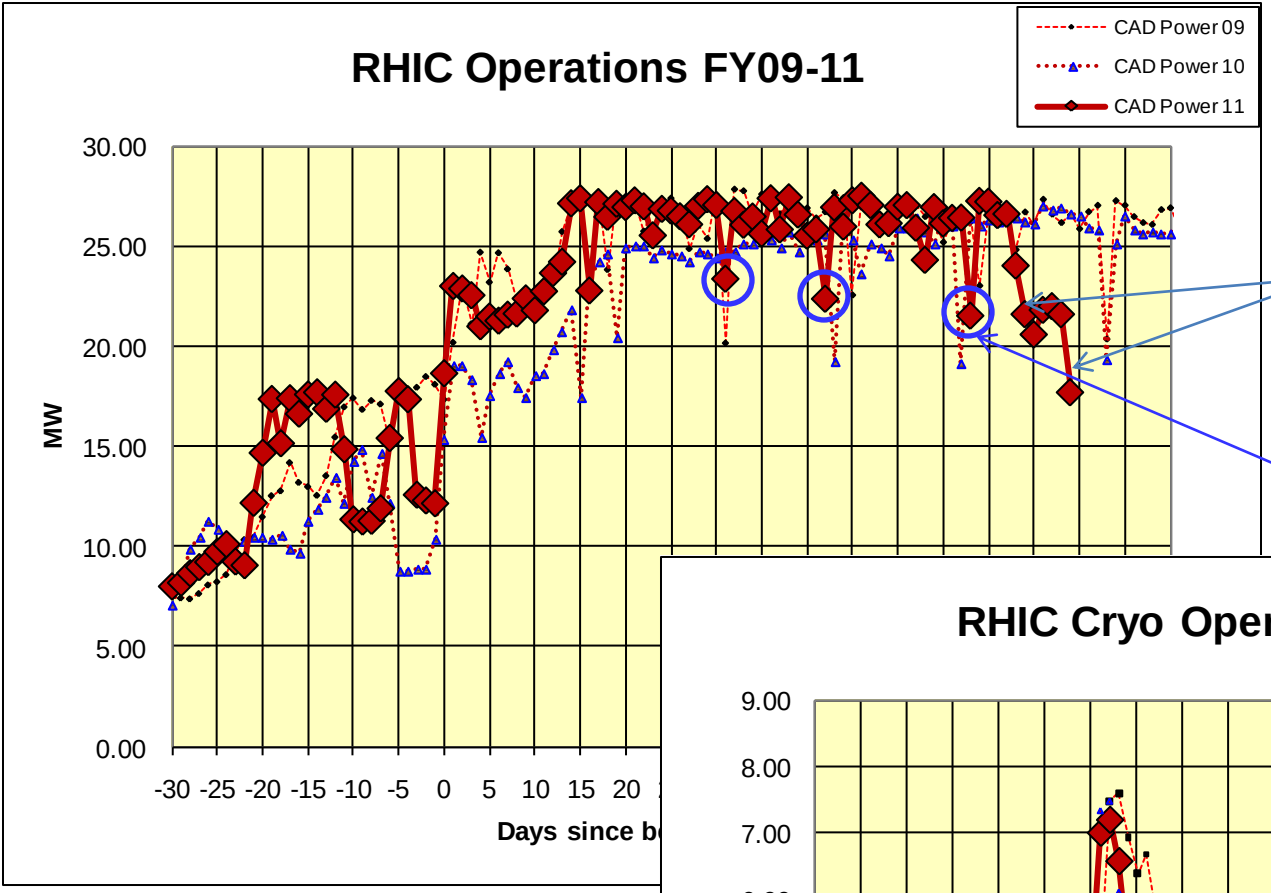
- 3 Jan, Begin cool-down to 4.5K
- 8 Jan, Cool-down to 4.5K complete in both rings, preliminary setup begins
- ~11 Jan, 2 ½ weeks beam setup for √s = 500 GeV pp in RHIC begins.
- 15 Jan, power supply work/DX training complete
- 17 Jan, first successful ramp
- 19 Jan, 1st maint day
- ~~27~~ 24 Jan, 1 week Ramp-up with 8 hr/night beam to experiments
- ~~3~~ **11 Feb (machine and ~experiments), begin 10(?) week physics run (√s = 500 GeV pp**)
- 16 Feb, AGS Jump Quads in routine operation for RHIC injection
- 24 Feb, 9 MHz cavity in routine operation
- 7 March, cryo troubles, extended maintenance
- ~~4~~ **18 March – Continuing Resolution Ends**
- **28 March – 1 April, PAC 2011**
- **14 Apr(?), end 10 week physics run at √s = 500 GeV pp run**
- 14 Apr, begin 1 week setup for √s = 200 AuAu
- 21 Apr, begin 1 week Ramp-up with 8 hr/night beam to experiments
- **28 Apr, begin 8 week physics run at (√s = 200 AuAu)**
- **23 Jun, end 8 week √s = 200 AuAu run**
- 23 Jun, begin setup for √s = 192 GeV UU
- **30 Jun, begin 1½ week physics run (√s = 192 UU)**
- **4 July – completed 26 weeks of cryo operation, may be out of $$'s**
- **10 Jul, end 1½ week physics run at √s = 192 GeV**
- 10 Jul, begin setup for √s = 18 GeV AuAu
- **11 Jul, begin 1 week physics run (√s = 18 AuAu)**
- **18 Jul, end 1 week physics run at √s = 18 GeV**
- 20 Jul, warm-up complete (28.3 weeks)

Possible additions:

- Low energy test run

Through 13 Mar 2011

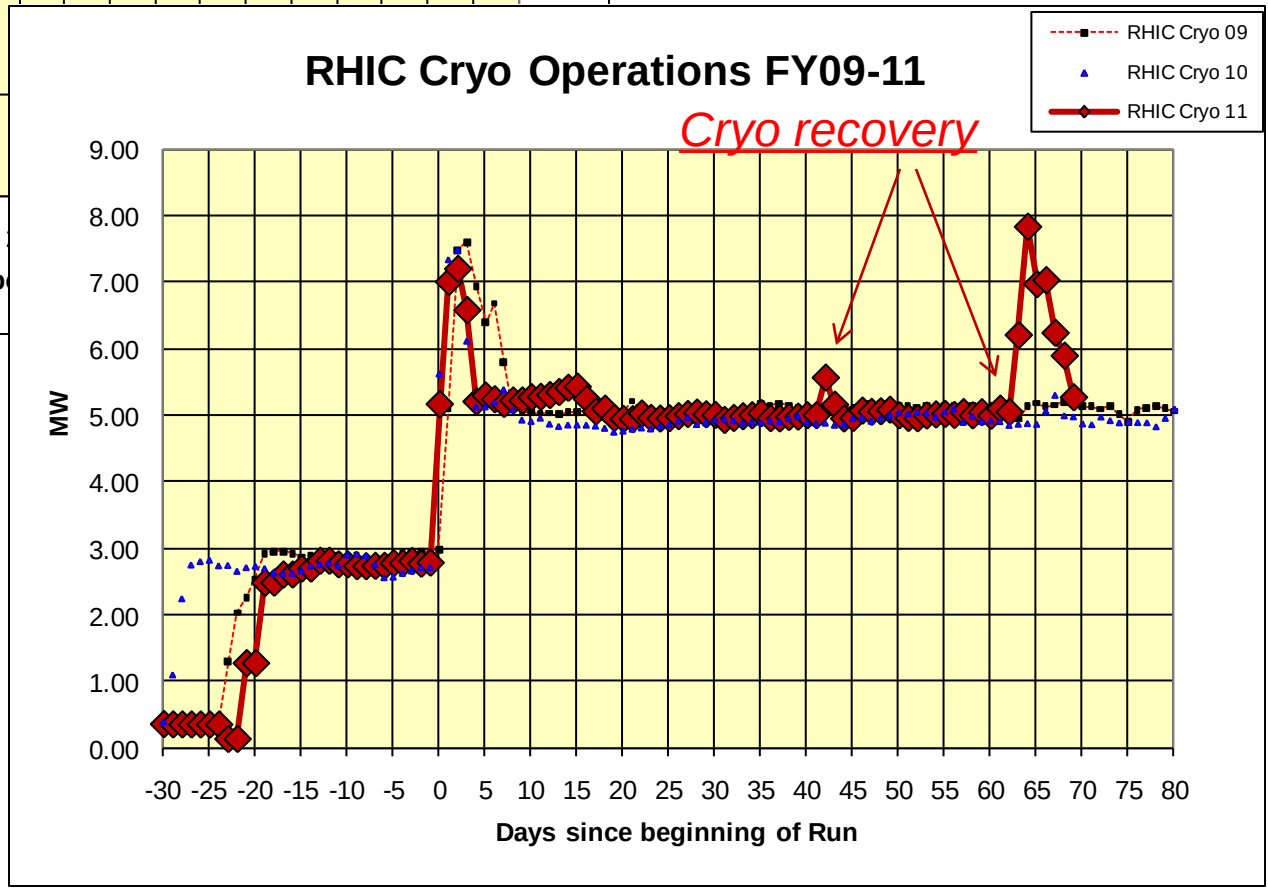




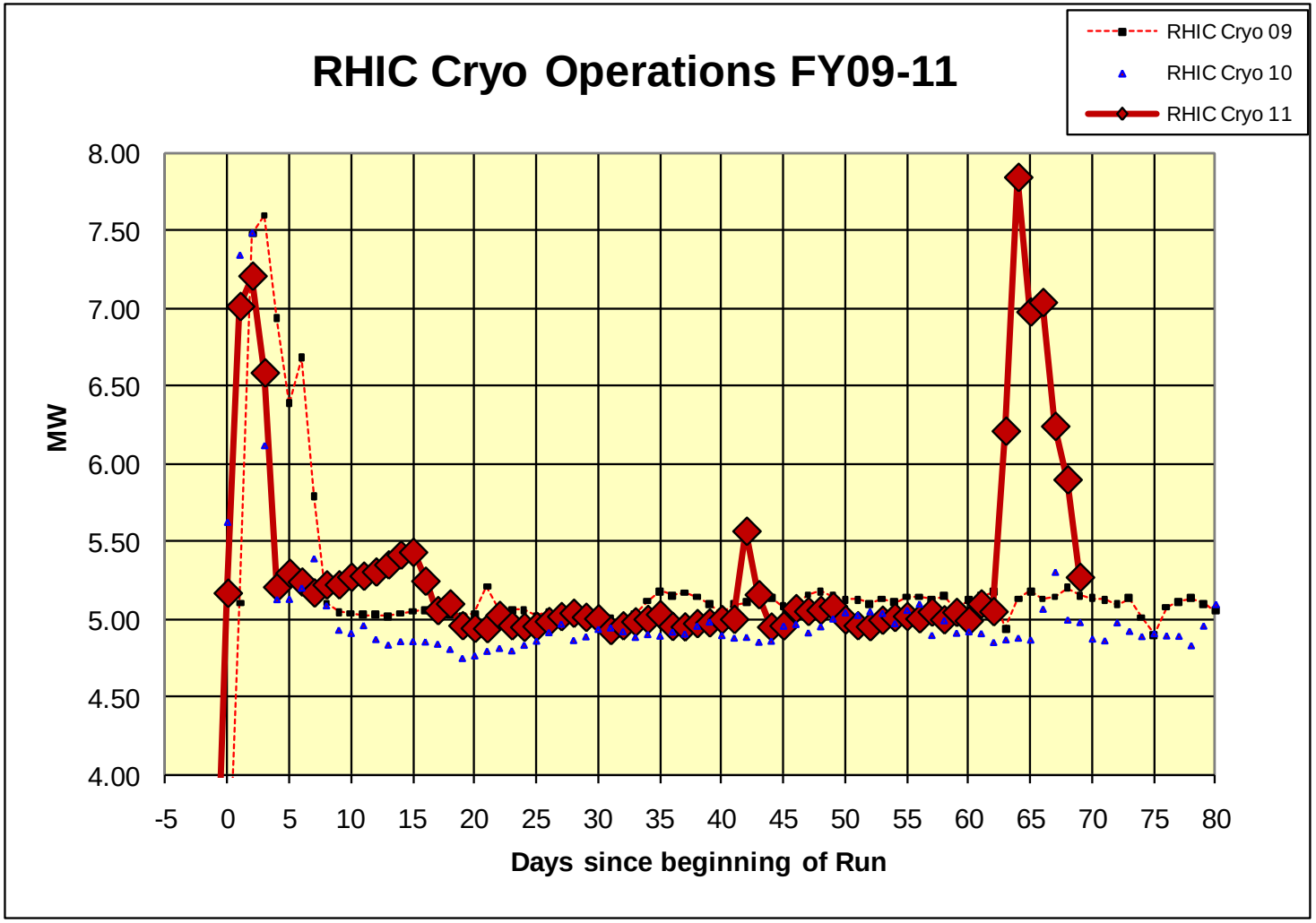
Through 13 Mar 2011

Extended shutdown

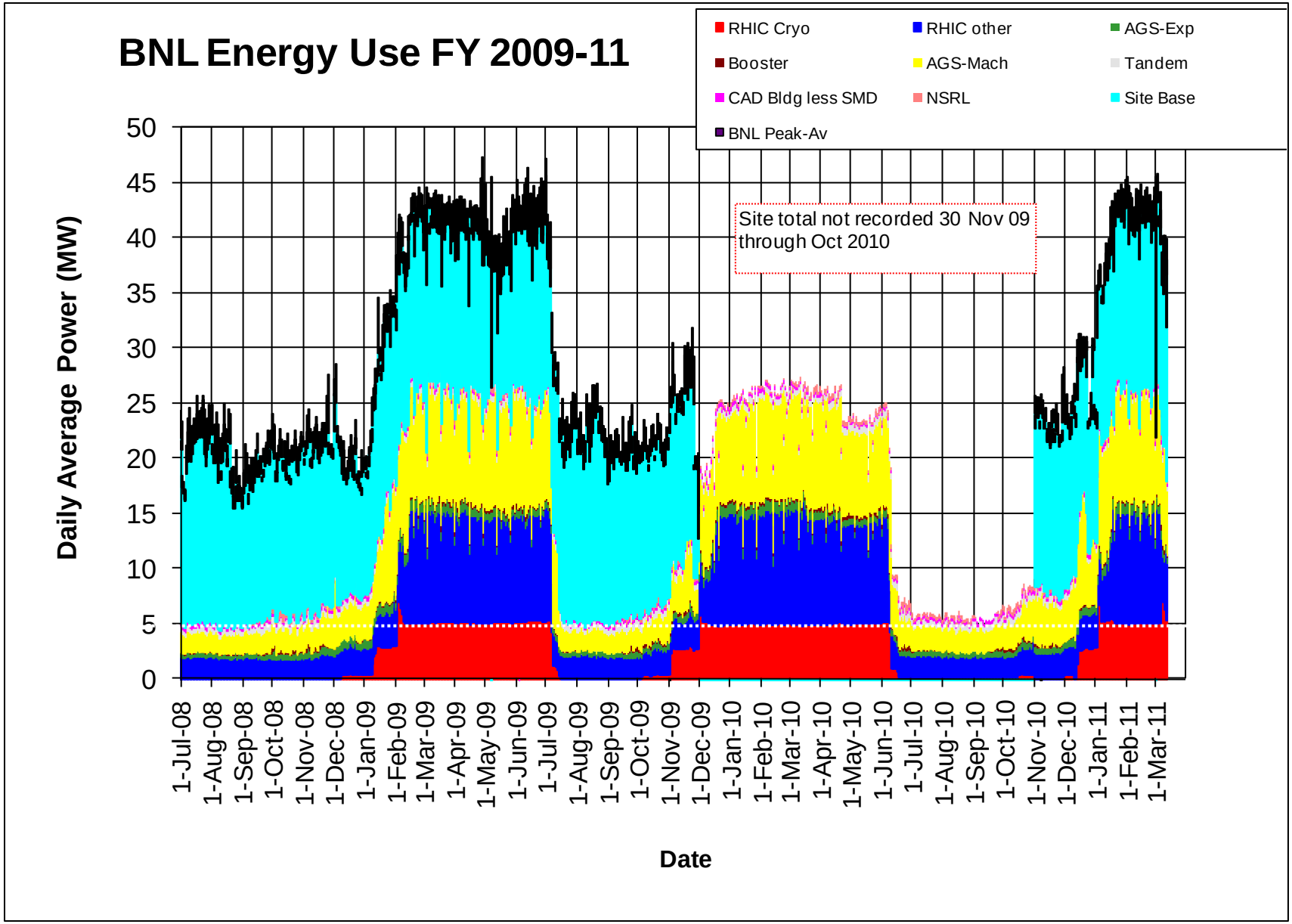
maint days



Through 13 Mar 2011



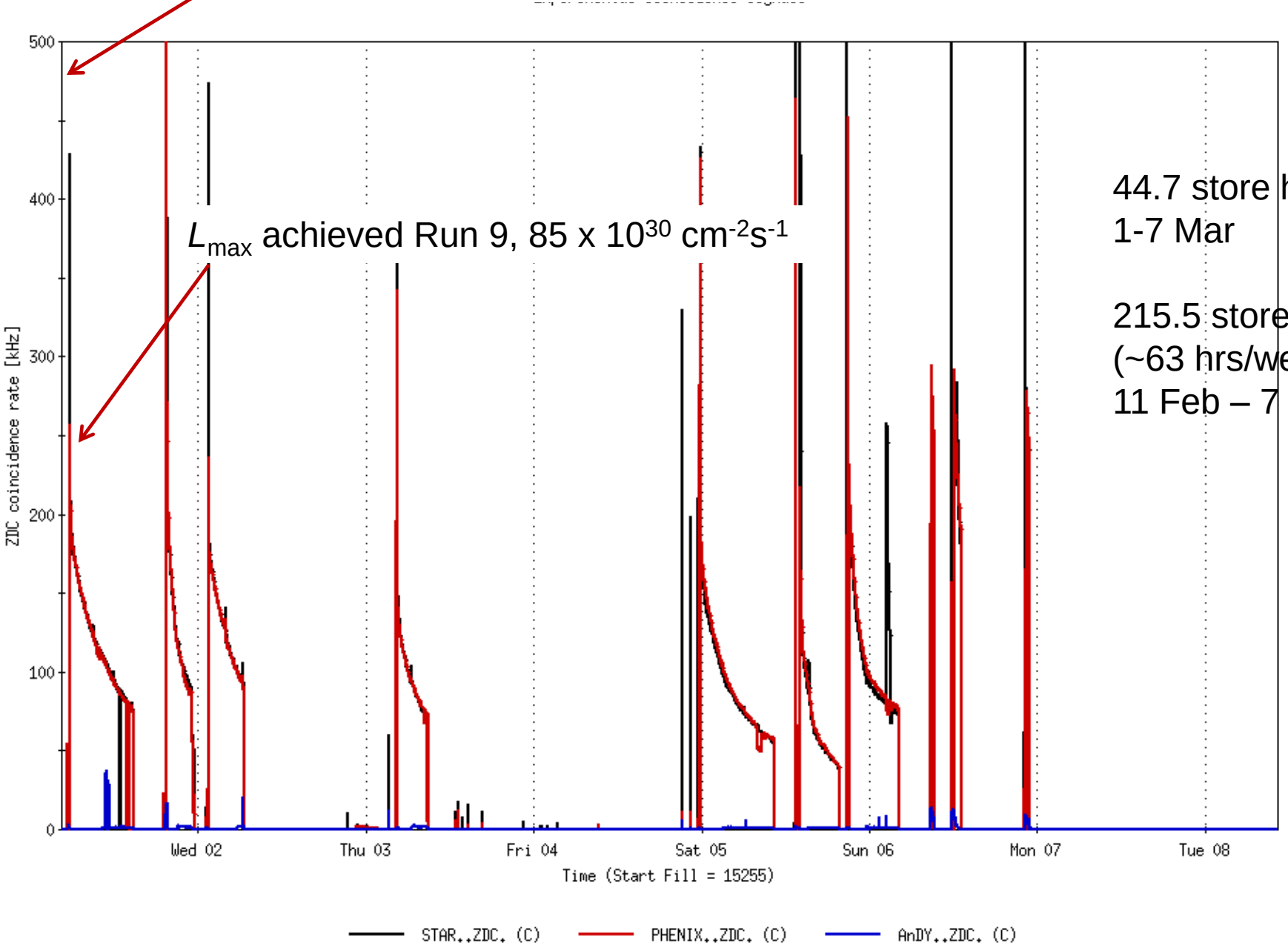
Through 13 Mar 2011



Old information

Physics Stores 15255 through 15288

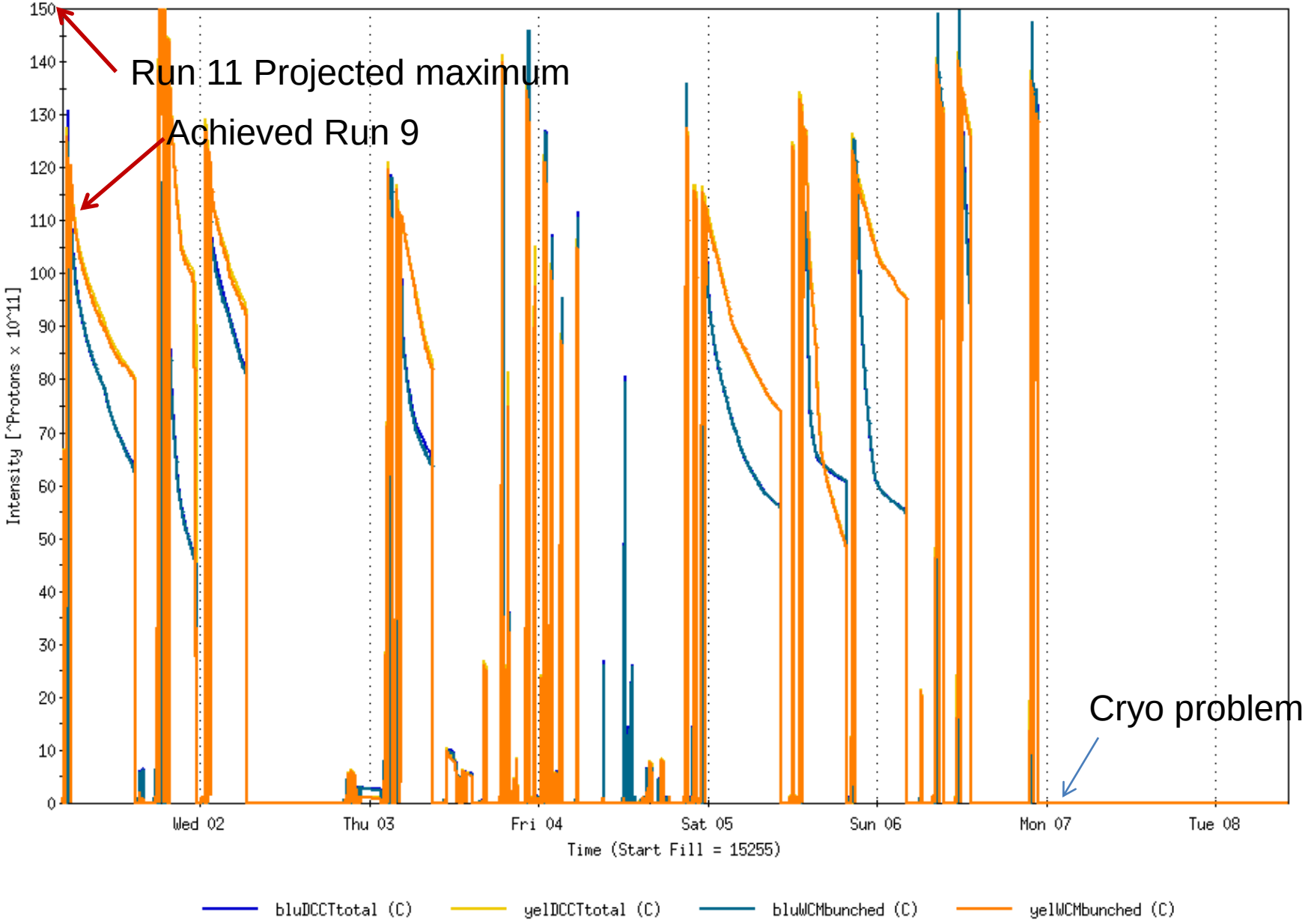
L_{max} = 170 x 10^{30} $cm^{-2}s^{-1}$ (projection with 2.8 mb xsection)

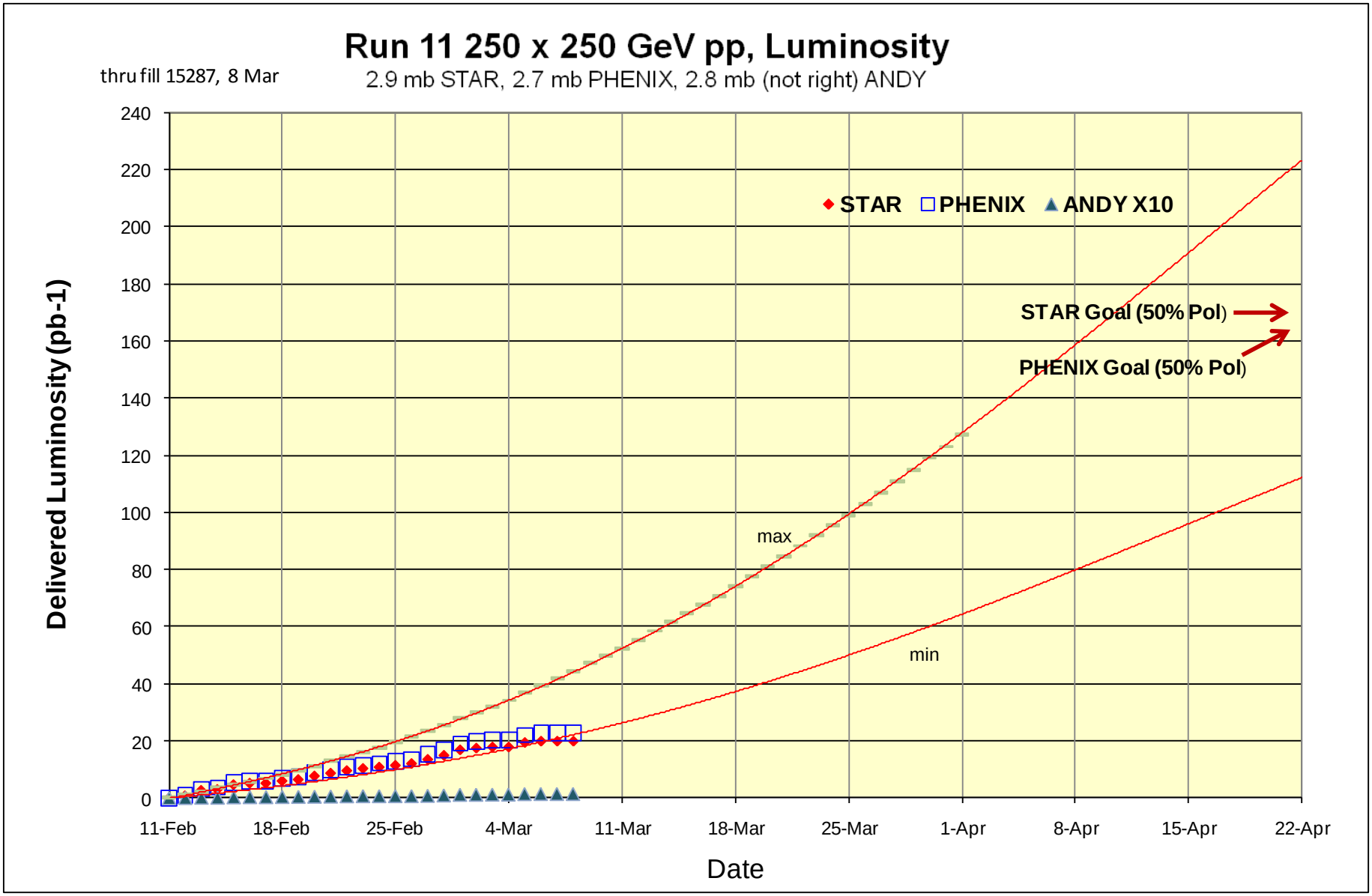


44.7 store hrs
1-7 Mar

215.5 store hrs
(~63 hrs/week)
11 Feb – 7 Mar

Physics Stores 15255 through 15288

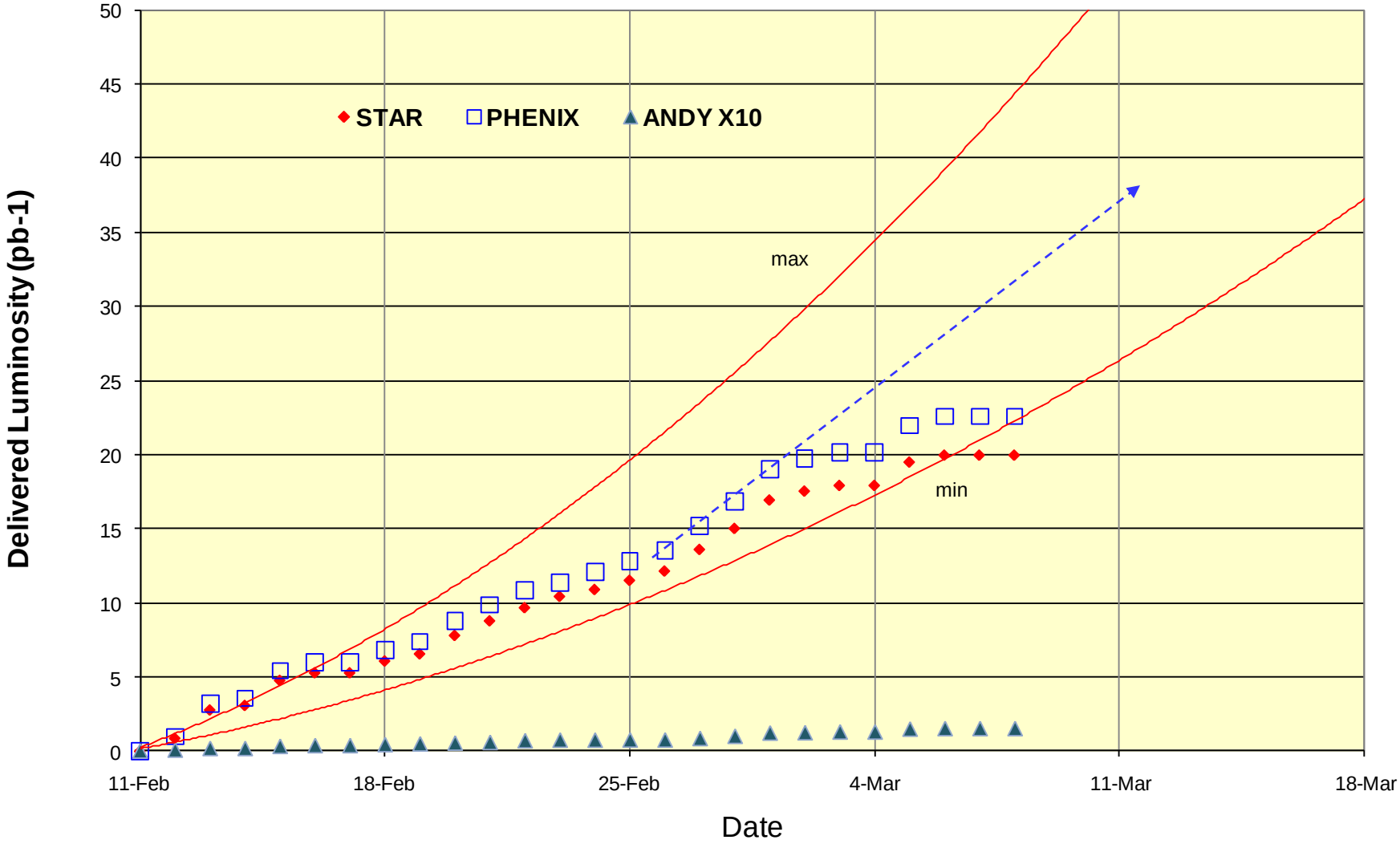


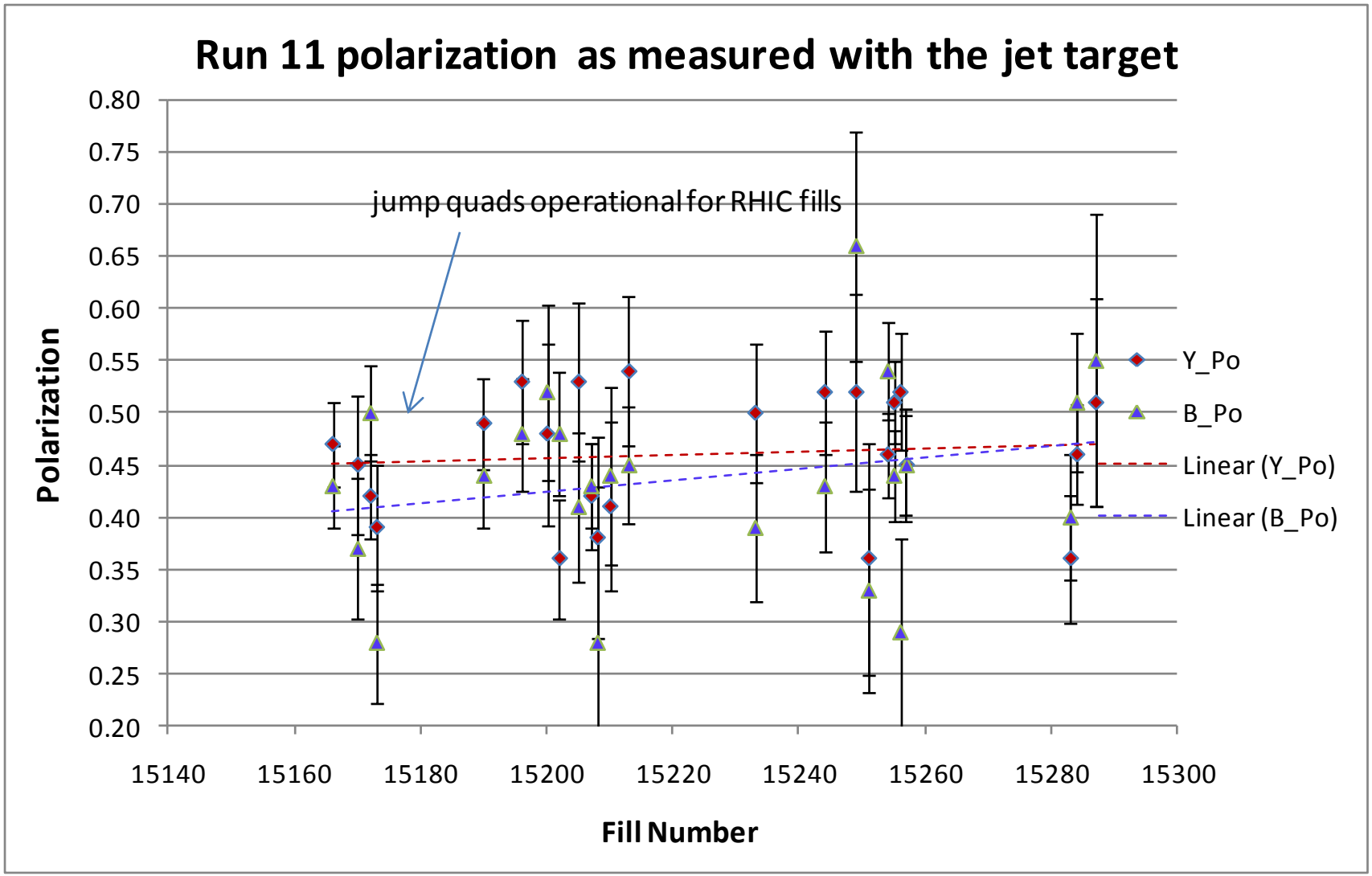

Run 11 250 x 250 GeV pp, Luminosity
thru fill 15287, 8 Mar
2.9 mb STAR, 2.7 mb PHENIX, 2.8 mb (not right) ANDY
Delivered Luminosity (pb-1)
240
220
200
180
160
140
120
100
80
60
40
20
0
STAR
PHENIX
ANDY X10
STAR Goal (50% Pol)
PHENIX Goal (50% Pol)
max
min
11-Feb
18-Feb
25-Feb
4-Mar
11-Mar
18-Mar
25-Mar
1-Apr
8-Apr
15-Apr
22-Apr
Date

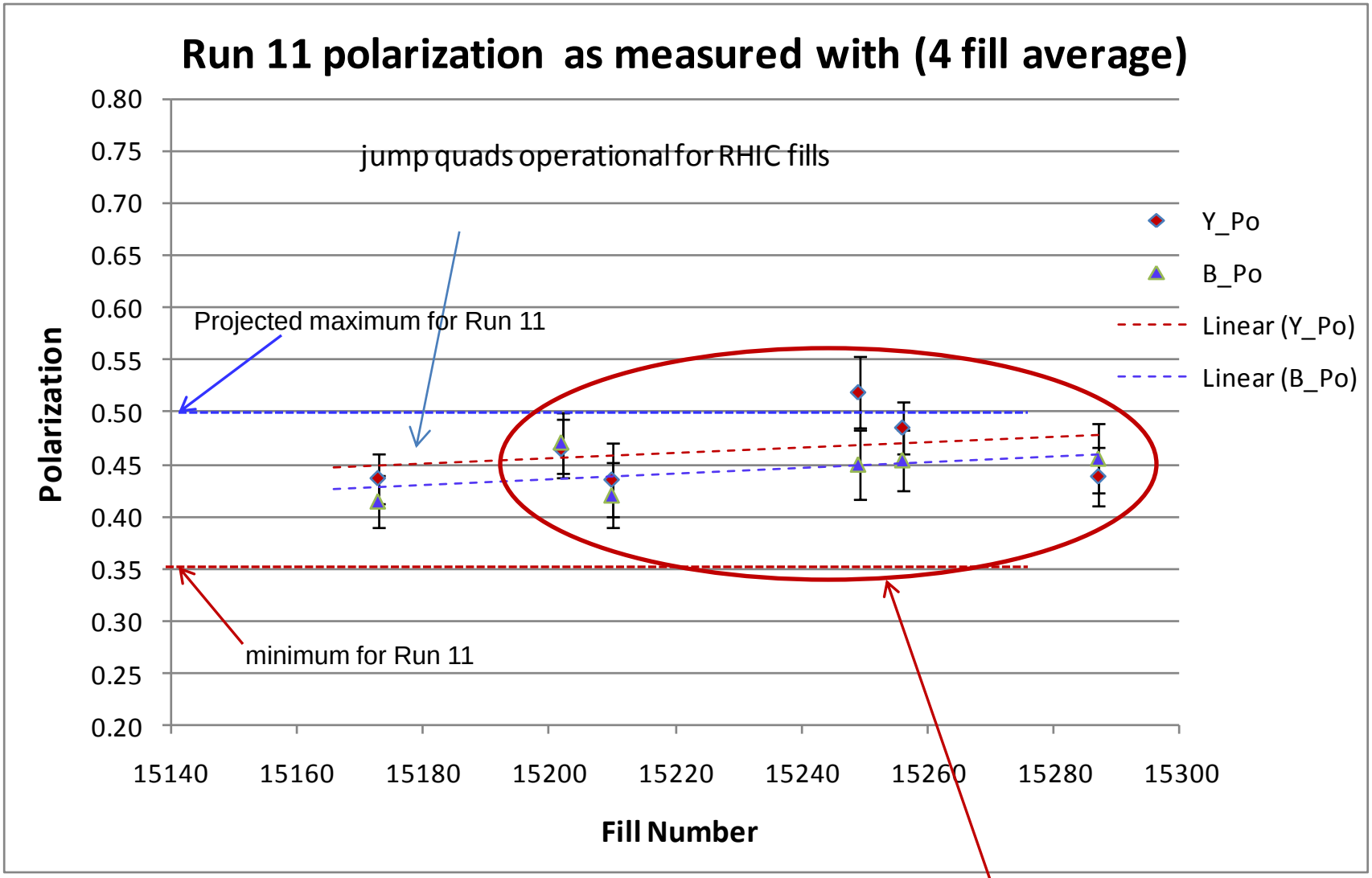
thru fill 15287, 8 Mar

Run 11 250 x 250 GeV pp, Luminosity

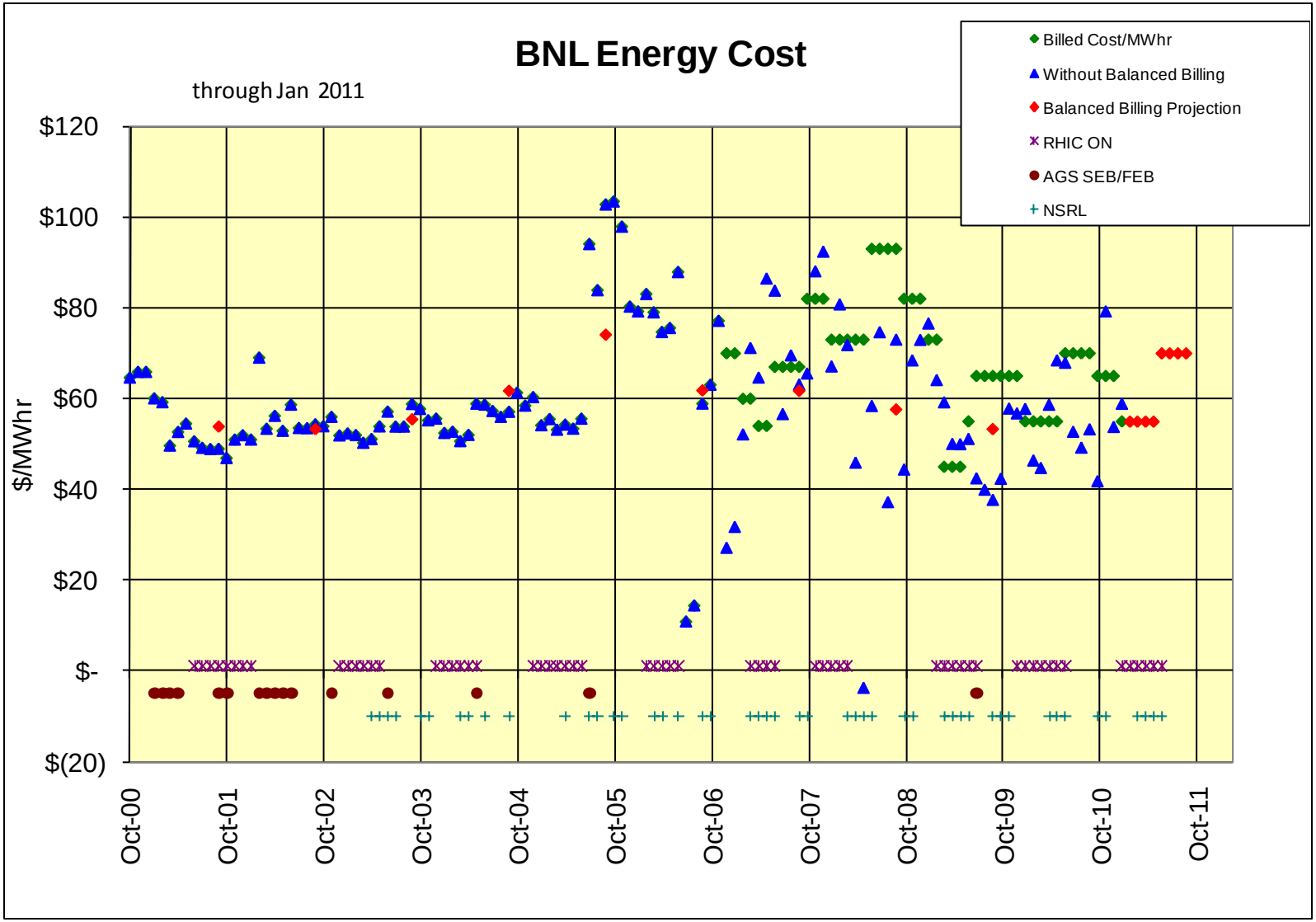
2.9 mb STAR, 2.7 mb PHENIX, 2.8 mb (not right) ANDY

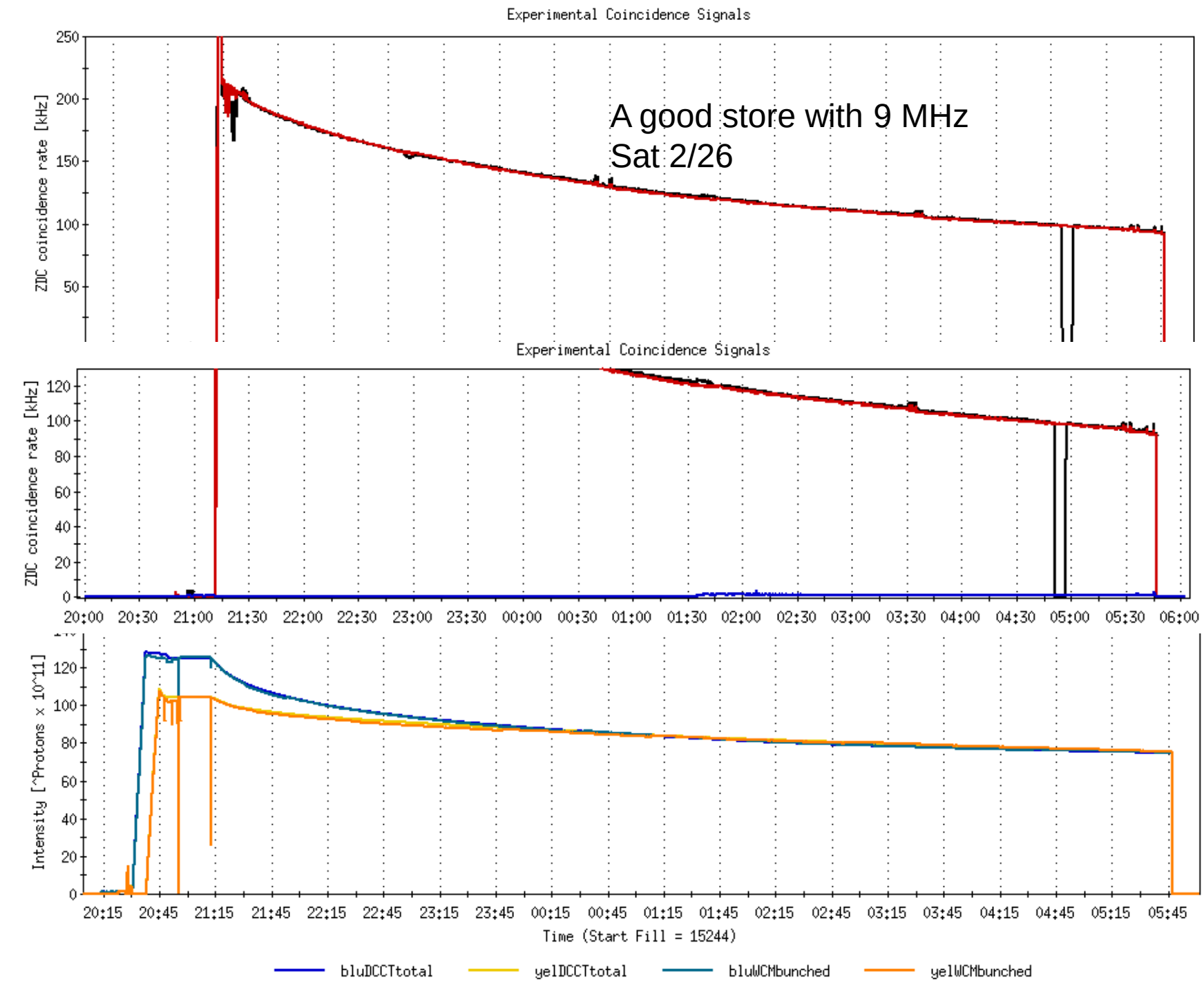



Run 11 polarization as measured with the jet target
jump quads operational for RHIC fills
Polarization
Fill Number
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
15140
15160
15180
15200
15220
15240
15260
15280
15300
Y_Po
B_Po
Linear (Y_Po)
Linear (B_Po)



Blue average = 45.1 +/- 1.4%
Yellow Average = 46.9 +/- 1.3%

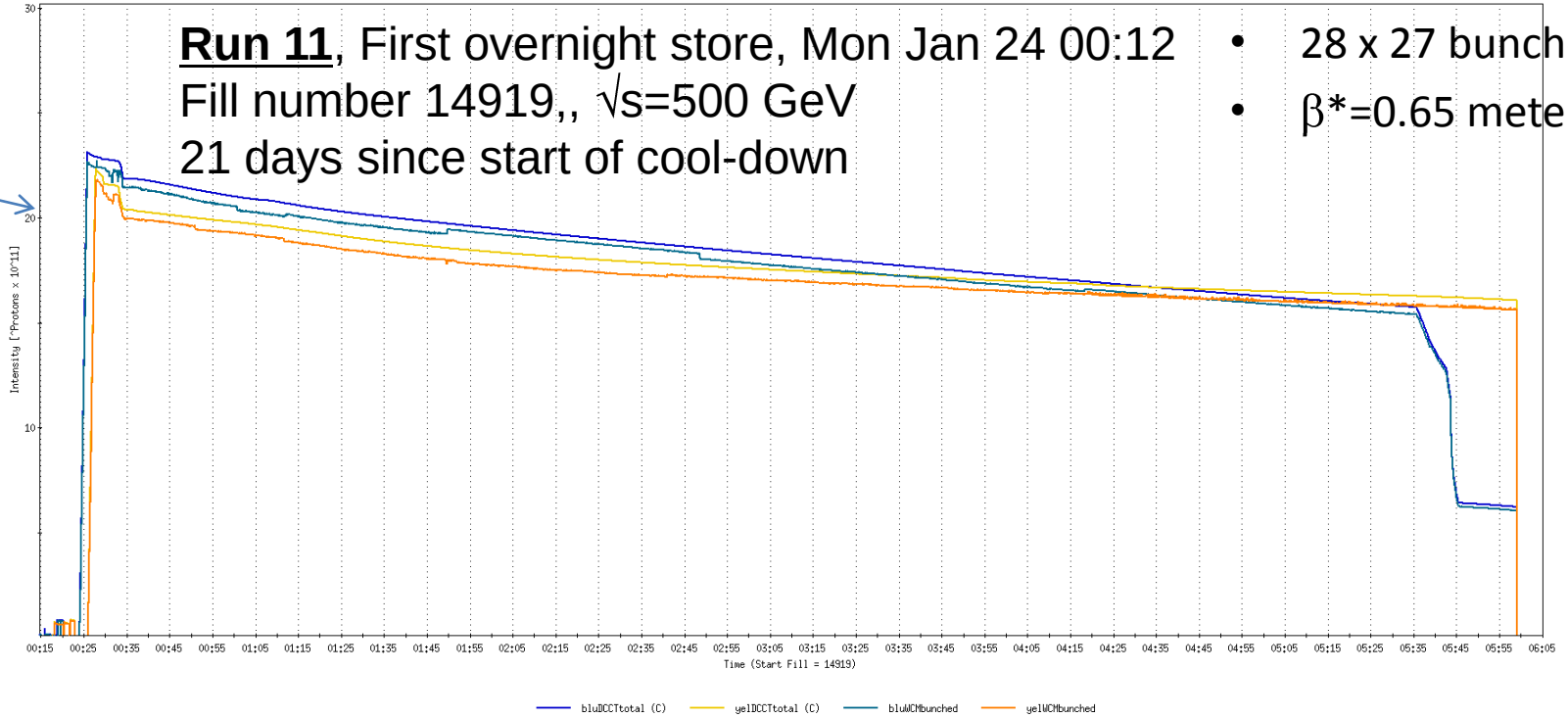

BNL Energy Cost
through Jan 2011
Billed Cost/MWhr
Without Balanced Billing
Balanced Billing Projection
RHIC ON
AGS SEB/FEB
NSRL
$120
$100
$80
$60
$40
$20
$-
$(20)
$/MWhr
Oct-00
Oct-01
Oct-02
Oct-03
Oct-04
Oct-05
Oct-06
Oct-07
Oct-08
Oct-09
Oct-10
Oct-11


Experimental Coincidence Signals
ZDC coincidence rate [kHz]
250
200
150
100
50
A good store with 9 MHz
Sat 2/26
Experimental Coincidence Signals
ZDC coincidence rate [kHz]
120
100
80
60
40
20
0
20:00
20:30
21:00
21:30
22:00
22:30
23:00
23:30
00:00
00:30
01:00
01:30
02:00
02:30
03:00
03:30
04:00
04:30
05:00
05:30
06:00
Intensity [^Protons x 10^11]
120
100
80
60
40
20
0
20:15
20:45
21:15
21:45
22:15
22:45
23:15
23:45
00:15
00:45
01:15
01:45
02:15
02:45
03:15
03:45
04:15
04:45
05:15
05:45
Time (Start Fill = 15244)
bluDCCTtotal
yelDCCTtotal
bluWCMbunched
yelWCMbunched

Run 11, First overnight store, Mon Jan 24 00:12
Fill number 14919,, √s=500 GeV
21 days since start of cool-down

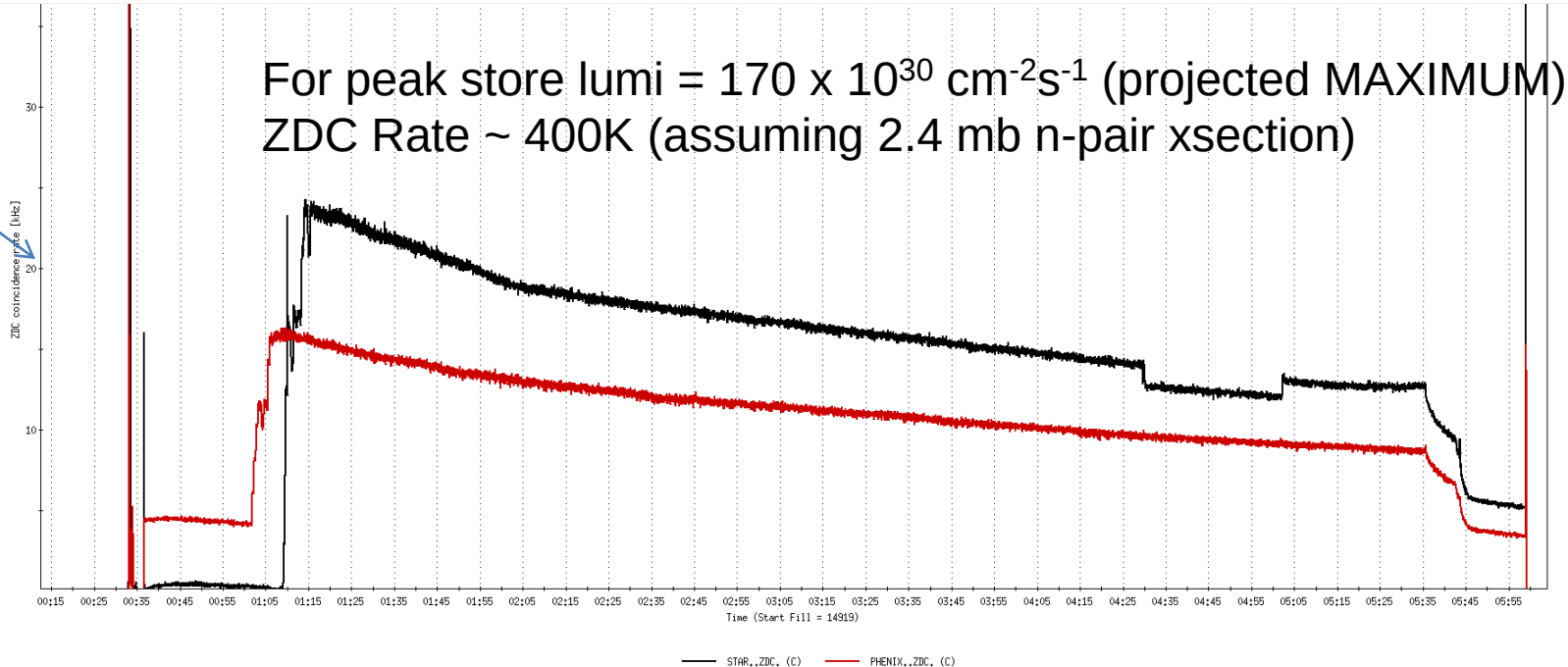
- 28 x 27 bunches
- β*=0.65 meters

20 x 10^{11}



For peak store lumi = 170 x 10^{30} $cm^{-2}s^{-1}$ (projected MAXIMUM)
ZDC Rate ~ 400K (assuming 2.4 mb n-pair xsection)

20K

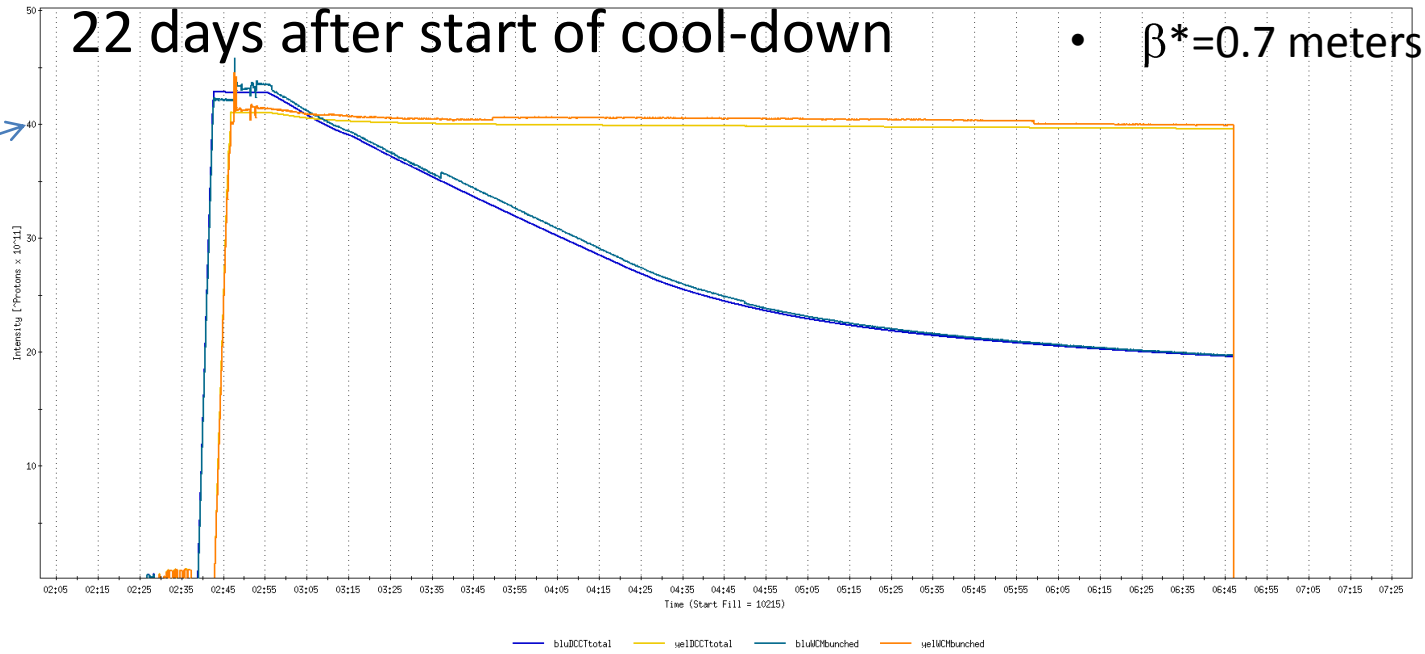


Run 9, First overnight store at √s=500 GeV

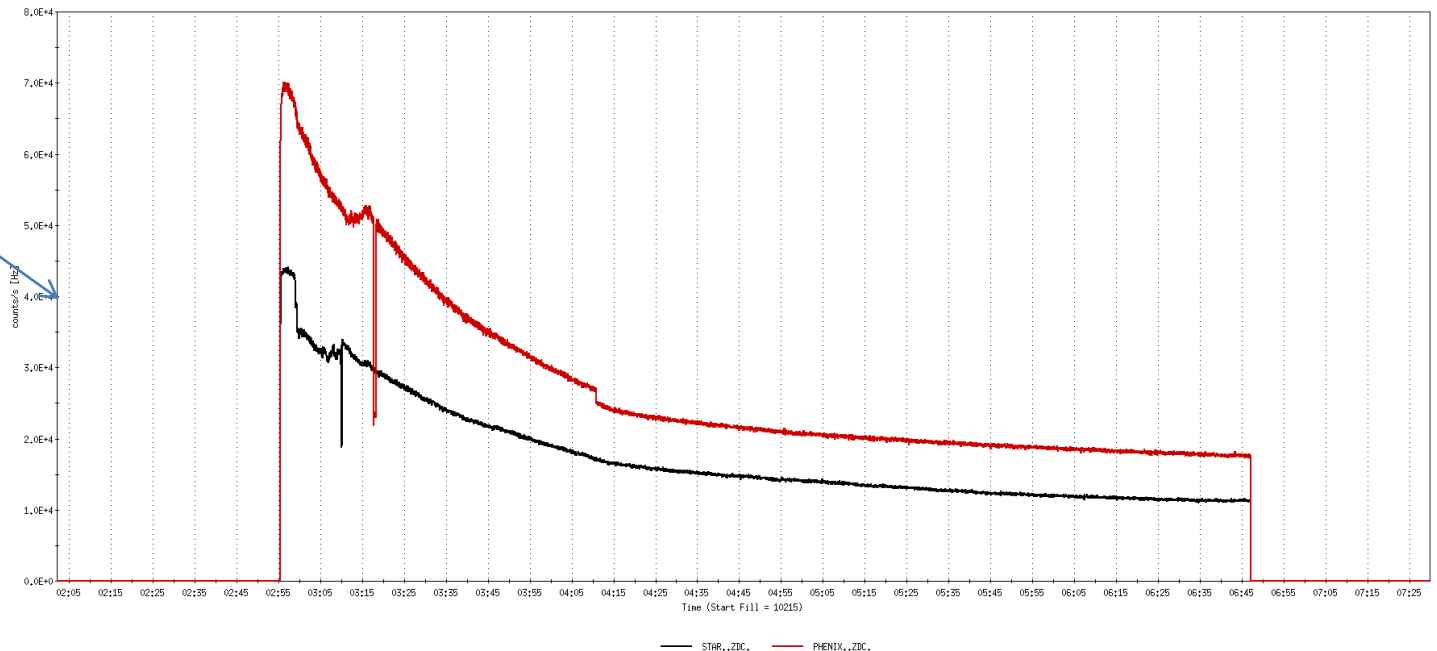
22 days after start of cool-down

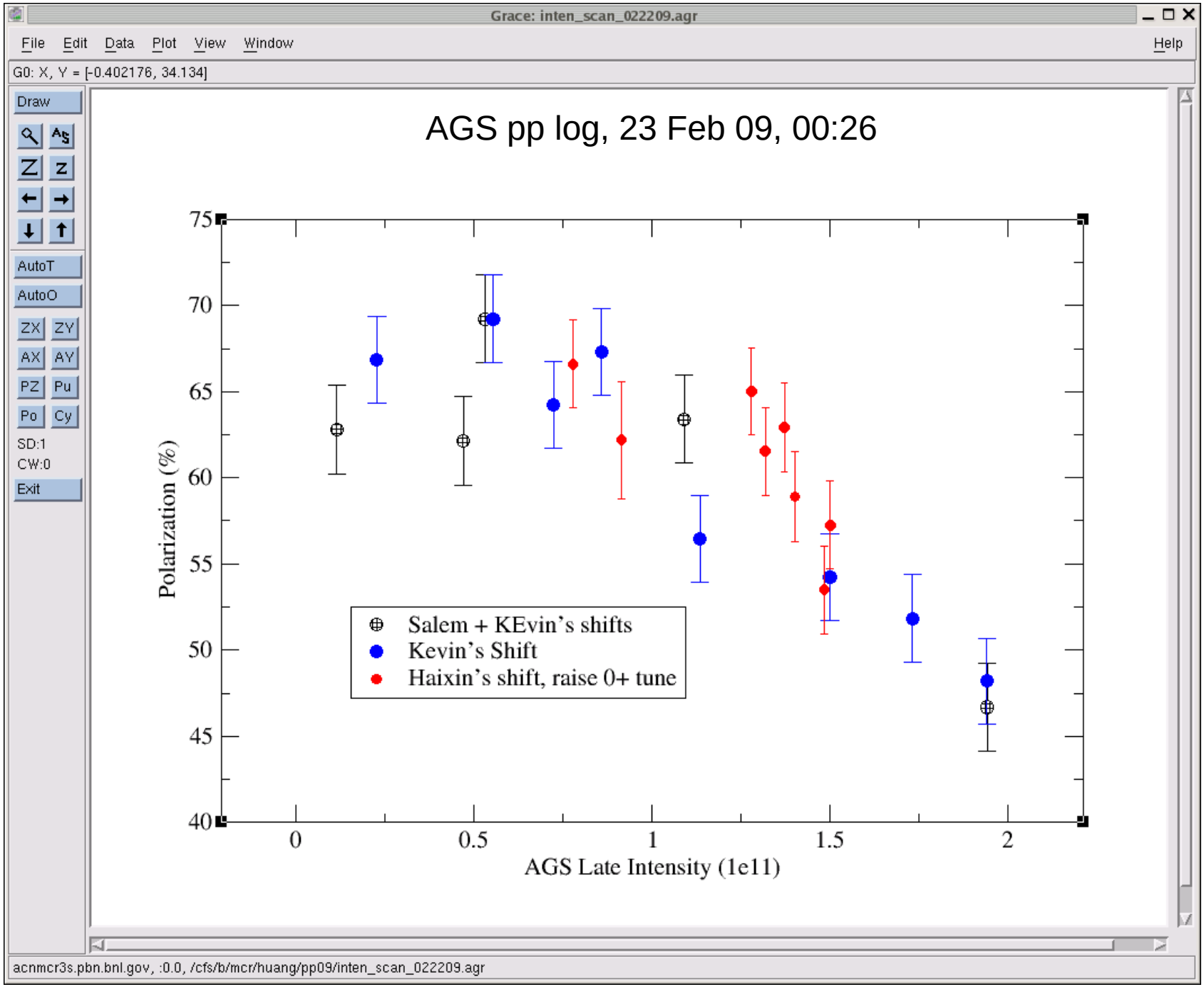
- 56 x 56 bunches
- β*=0.7 meters

40 x 10^{11}



40K



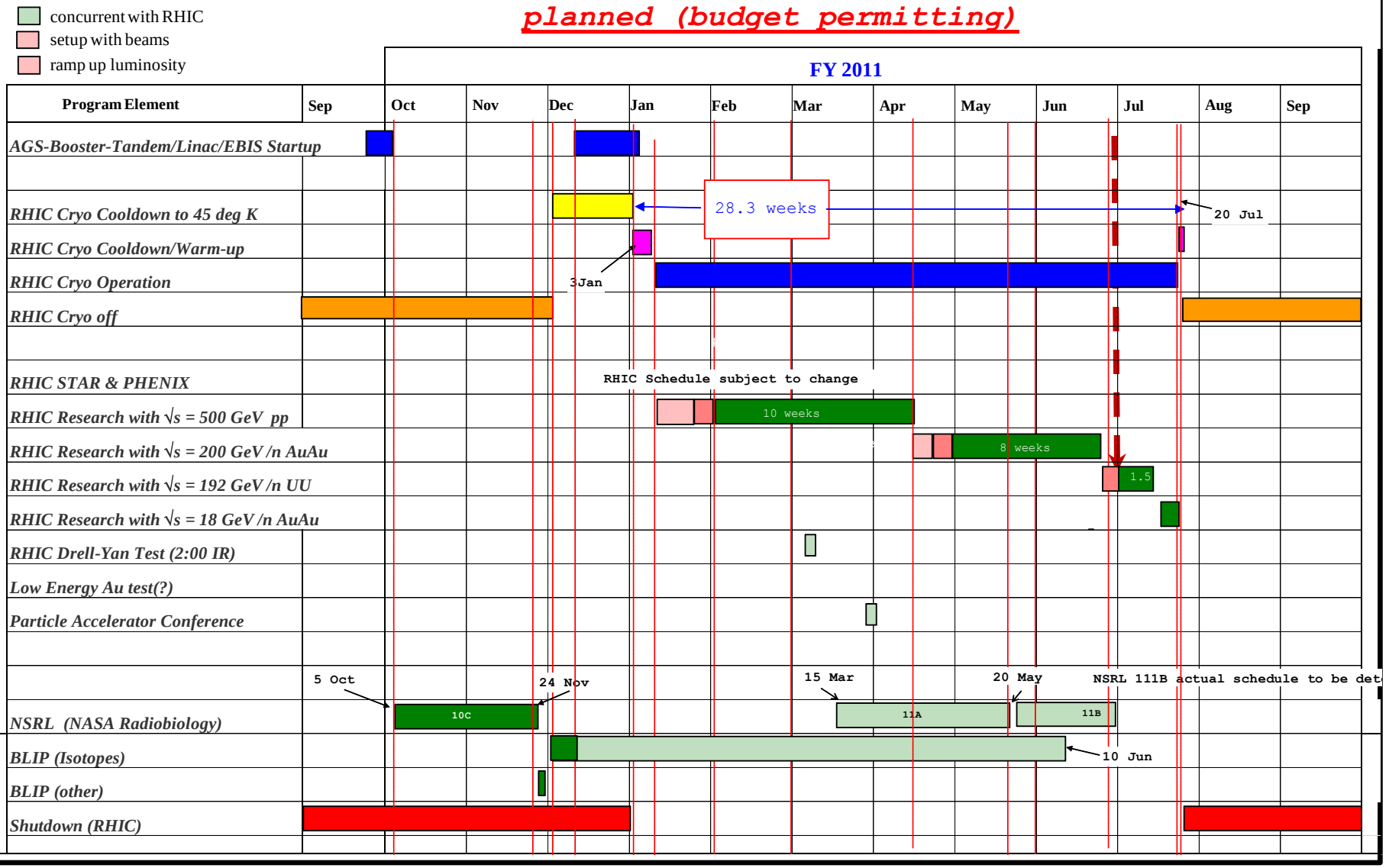

Grace: inten_scan_022209.agr
File Edit Data Plot View Window Help
G0: X, Y = [-0.402176, 34.134]
Draw
AutoT
AutoO
ZX ZY
AX AY
PZ Pu
Po Cy
SD:1
CW:0
Exit
AGS pp log, 23 Feb 09, 00:26
Polarization (%)
AGS Late Intensity (1e11)
Salem + KEvin's shifts
Kevin's Shift
Haixin's shift, raise 0+ tune
acnmcr3s.pbn.bnl.gov, :0.0, /cfs/b/mcr/huang/pp09/inten_scan_022209.agr

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

C-A Operations-FY11

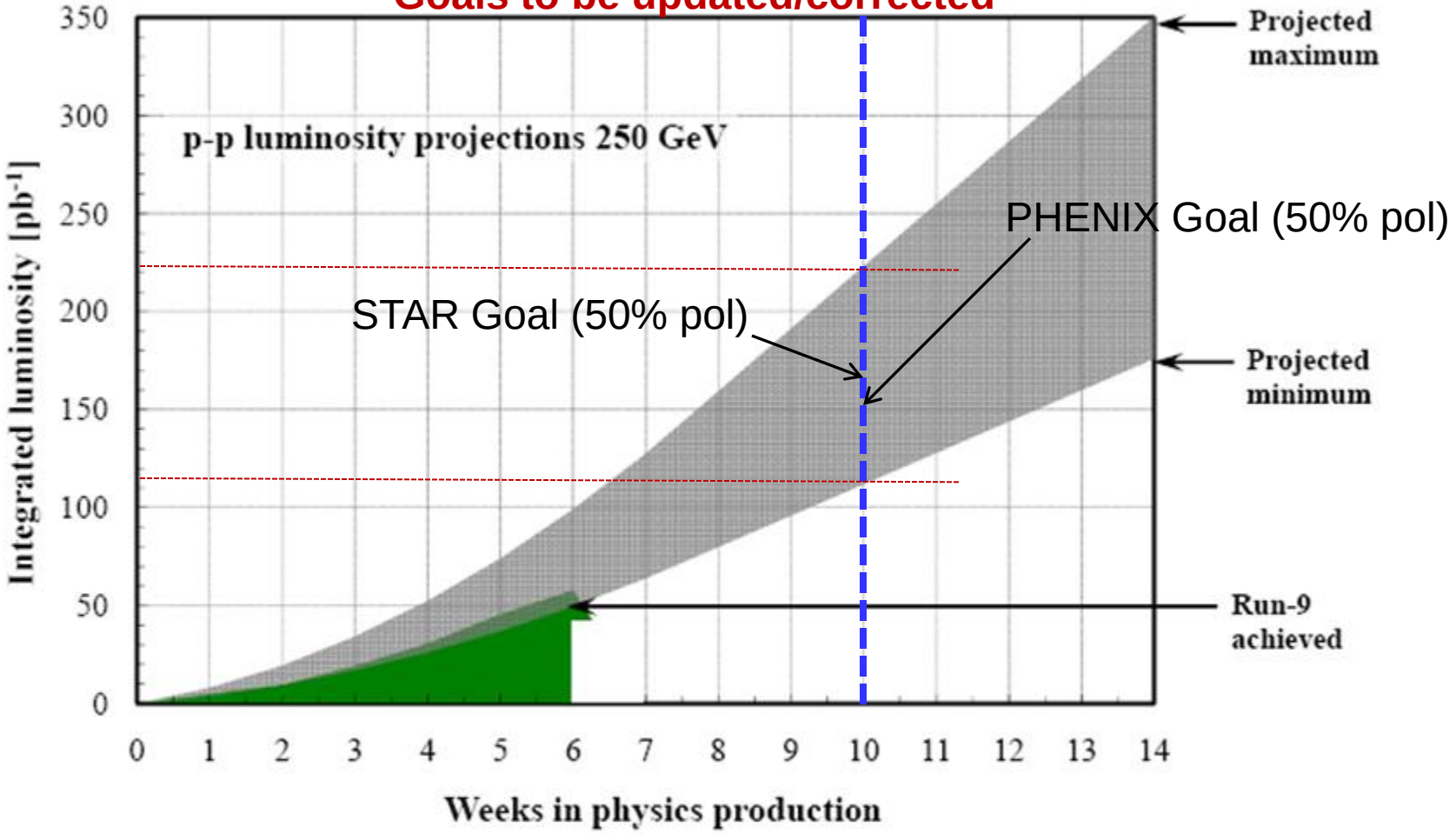
26 Jan 11

planned (budget permitting)



Run-11 p↑-p↑ luminosity projections

Goals to be updated/corrected



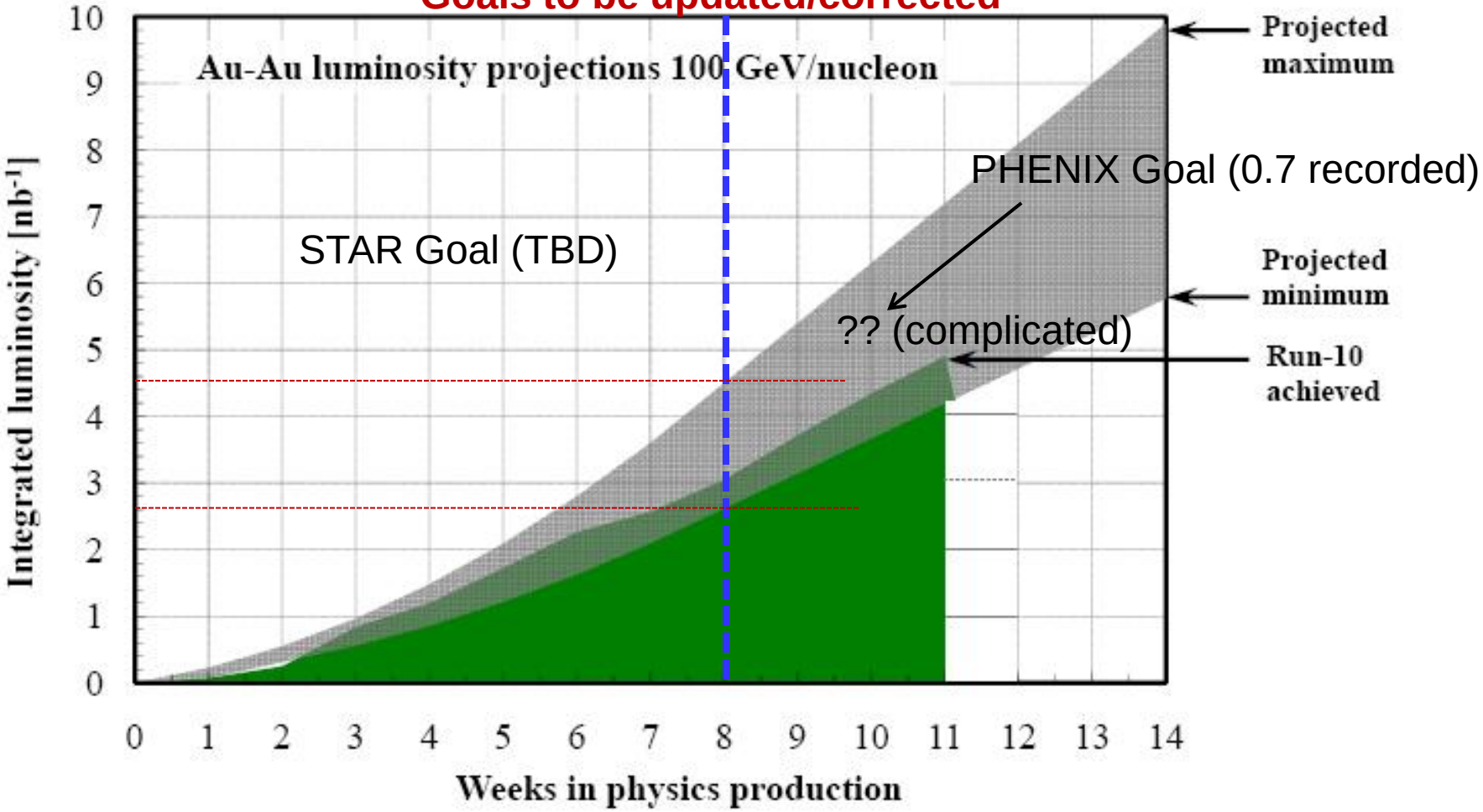
Assume 8 weeks to ramp-up for max.

Expect store P_{avg} = 35-50%, L_{avg} up to 100x10^{30}cm^{-2}s^{-1} (+80%).

[from Run-9 to max projection: β^* = 0.7 → 0.6 m, N_b = 1.1 → 1.4x10^{11}]

Run-11 Au-Au luminosity projections 100 GeV/nucleon

Goals to be updated/corrected



Assume 6 weeks to ramp-up for min, and 8 weeks for max (stoch. cooling re-commissioning).

Expect L_{avg} up to 25x10^{26}cm^{-2}s^{-1} (+25%).

[from Run-10 to max: β^* = 0.75 ➔ 0.65 m, N_b = 1.1 ➔ 1.1x10^9, more cooling]