

RUN 11 RHIC MACHINE/EXPERIMENTS MEETING

1 Feb 2011

Agenda:

- Updates

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.

Run 11 Plan based on PAC recommendation/ALD Guidance and 28.3 weeks cryo operation 1/25/10 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 $\sqrt{s} = 500$ GeV pp in RHIC begins.
- 15 Jan, power supply work/DX training complete
- 17 Jan, first successful ramp
- 19 Jan, maint day
- ~~27~~ 24 Jan, 1 week Ramp-up with 8 hr/night beam to experiments
- **3 Feb, begin 10 week physics run ($\sqrt{s} = 500$ GeV pp)**
- **4 March – Continuing Resolution Ends**
- **28 March – 1 April, PAC 2011**
- **14 Apr, end 10 week physics run at $\sqrt{s} = 500$ GeV pp run**
- 14 Apr, begin 1 week setup for $\sqrt{s} = 200$ AuAu
- 21 Apr, begin 1 week Ramp-up with 8 hr/night beam to experiments
- **28 Apr, begin 8 week physics run at ($\sqrt{s} = 200$ AuAu)**
- **23 Jun, end 8 week $\sqrt{s} = 200$ AuAu run**
- 23 Jun, begin setup for $\sqrt{s} = 192$ GeV UU
- **30 Jun, begin 1½ week physics run ($\sqrt{s} = 192$ UU)**
- **4 July – completed 26 weeks of cryo operation, may be out of \$\$'s**
- **10 Jul, end 1½ week physics run at $\sqrt{s} = 192$ GeV**
- 10 Jul, begin setup for $\sqrt{s} = 18$ GeV AuAu
- **11 Jul, begin 1 week physics run ($\sqrt{s} = 18$ AuAu)**
- **18 Jul, end 1 week physics run at $\sqrt{s} = 18$ GeV**
- 20 Jul, warm-up complete (28.3 weeks)

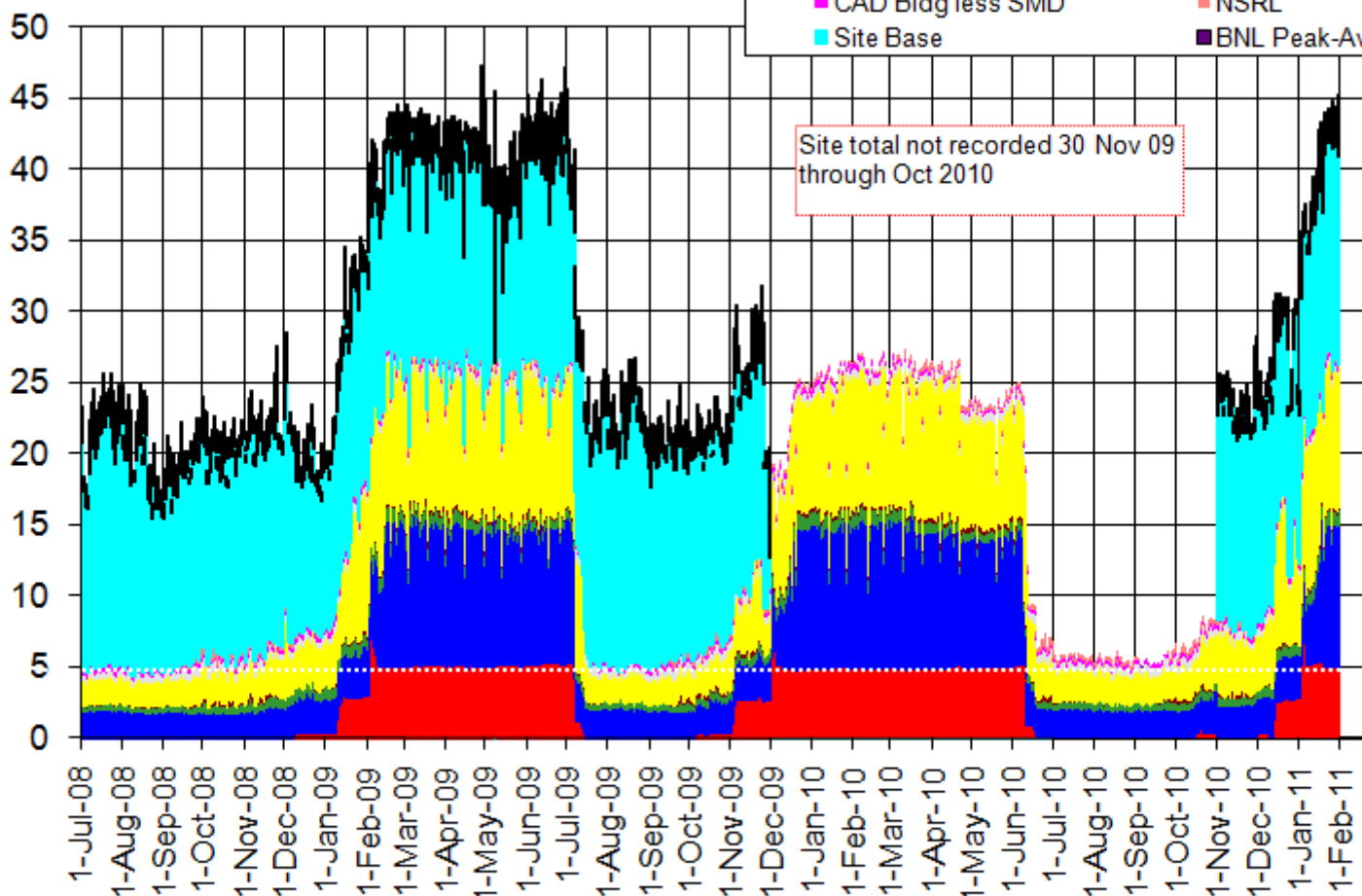
Possible additions:

- Low energy test run

Through 31 Jan 2011

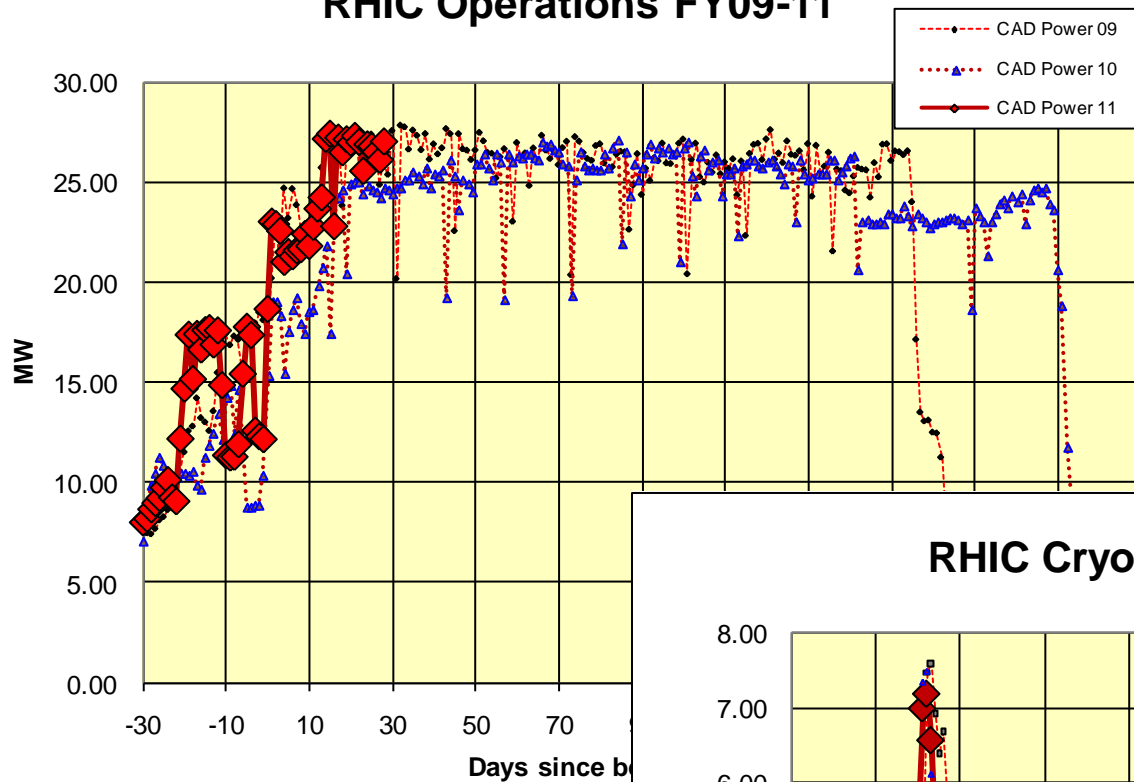
BNL Energy Use FY 2009-11

Daily Average Power (MW)



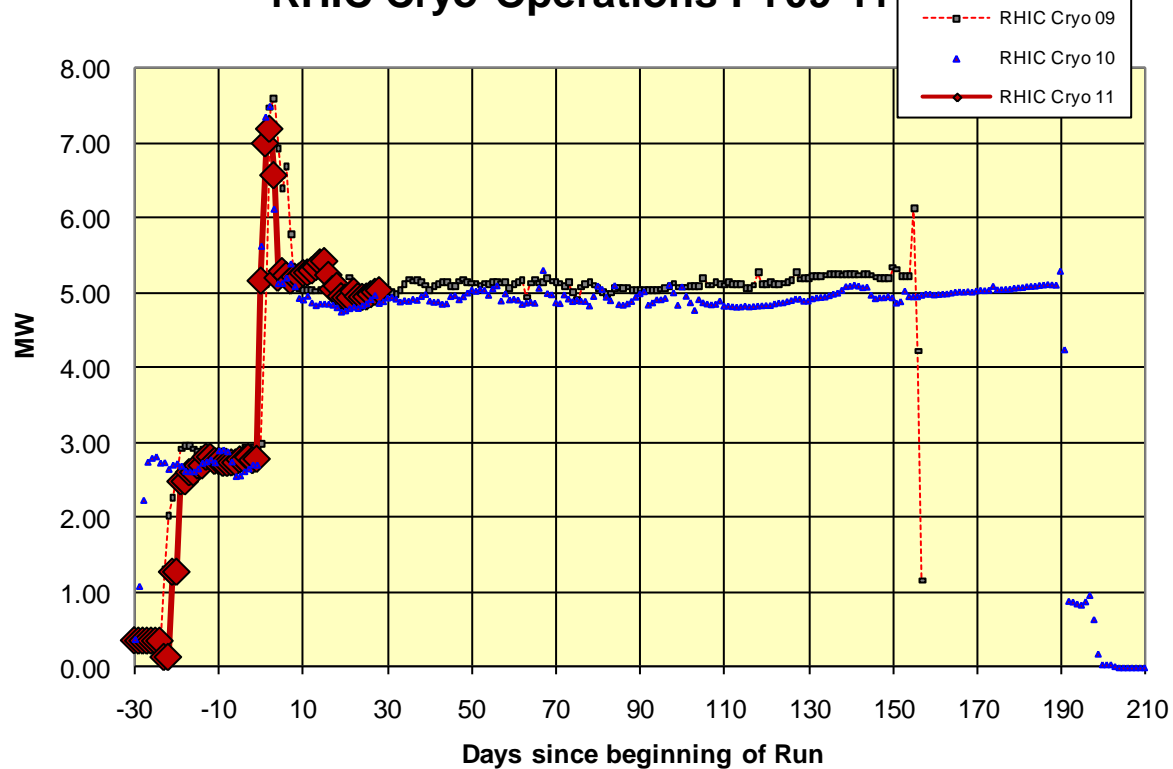
Date

RHIC Operations FY09-11

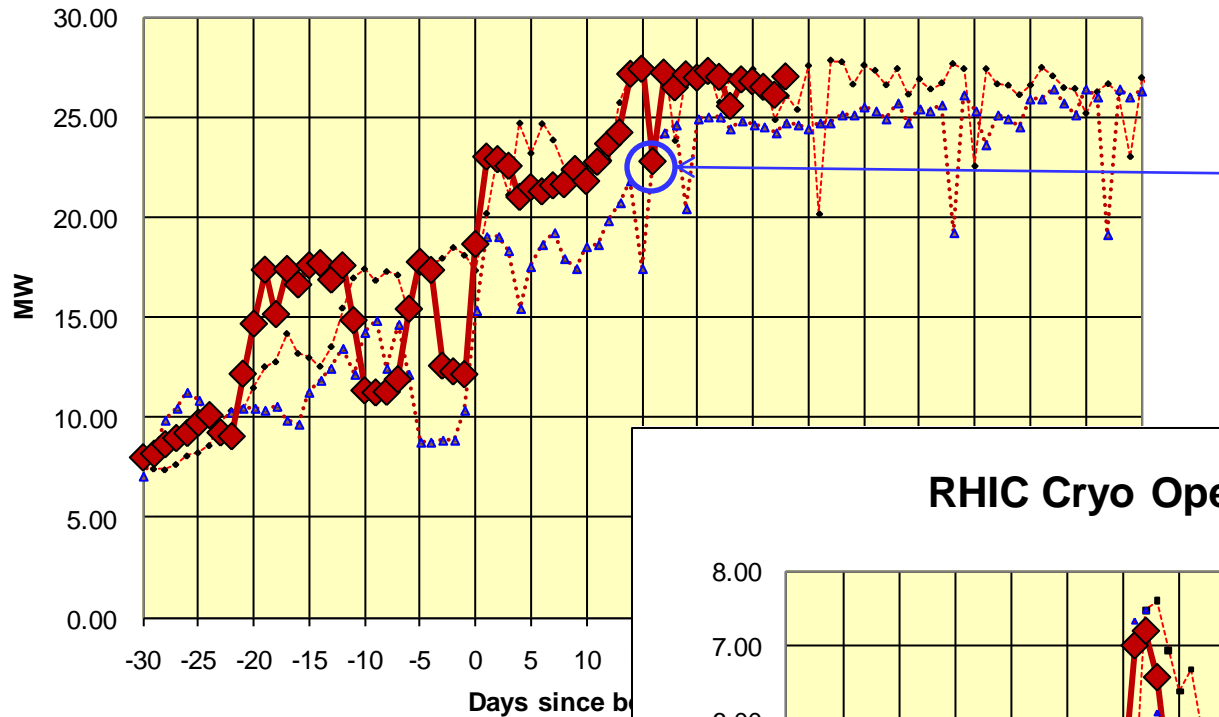


Through 31 Jan 2011

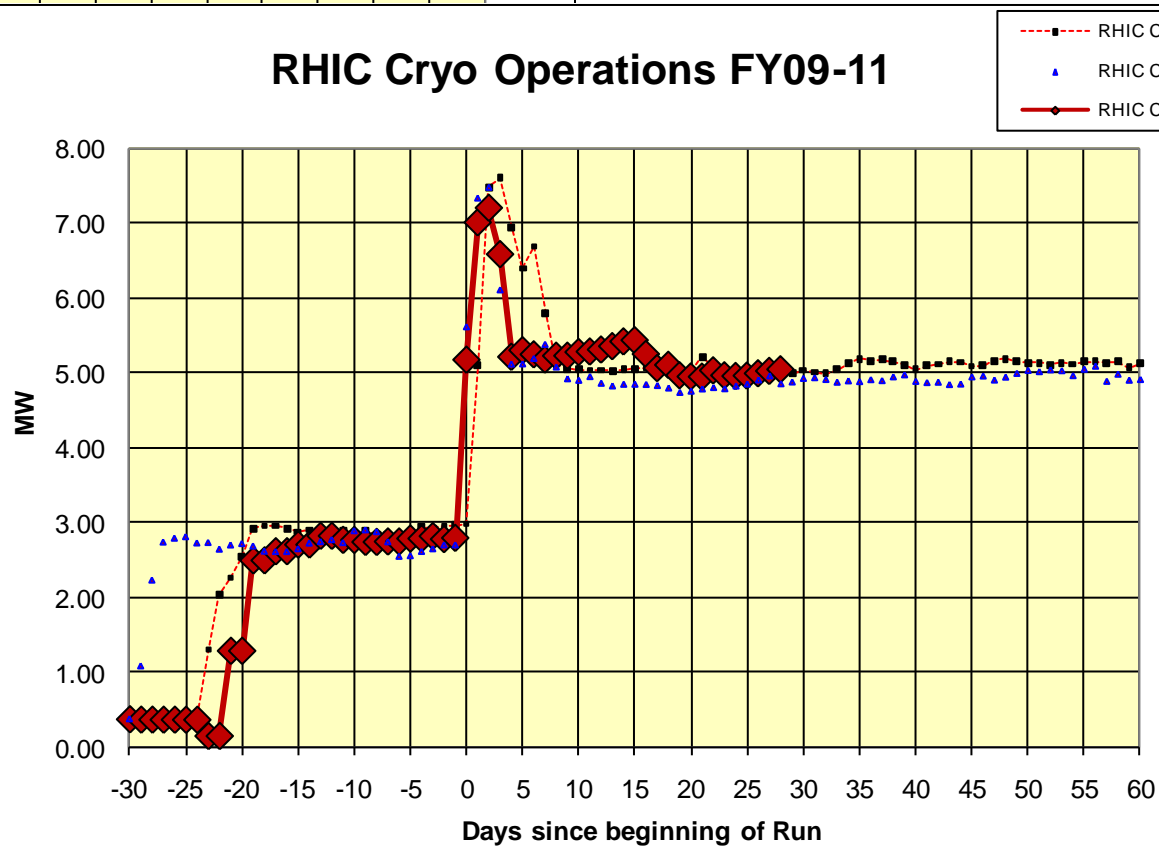
RHIC Cryo Operations FY09-11



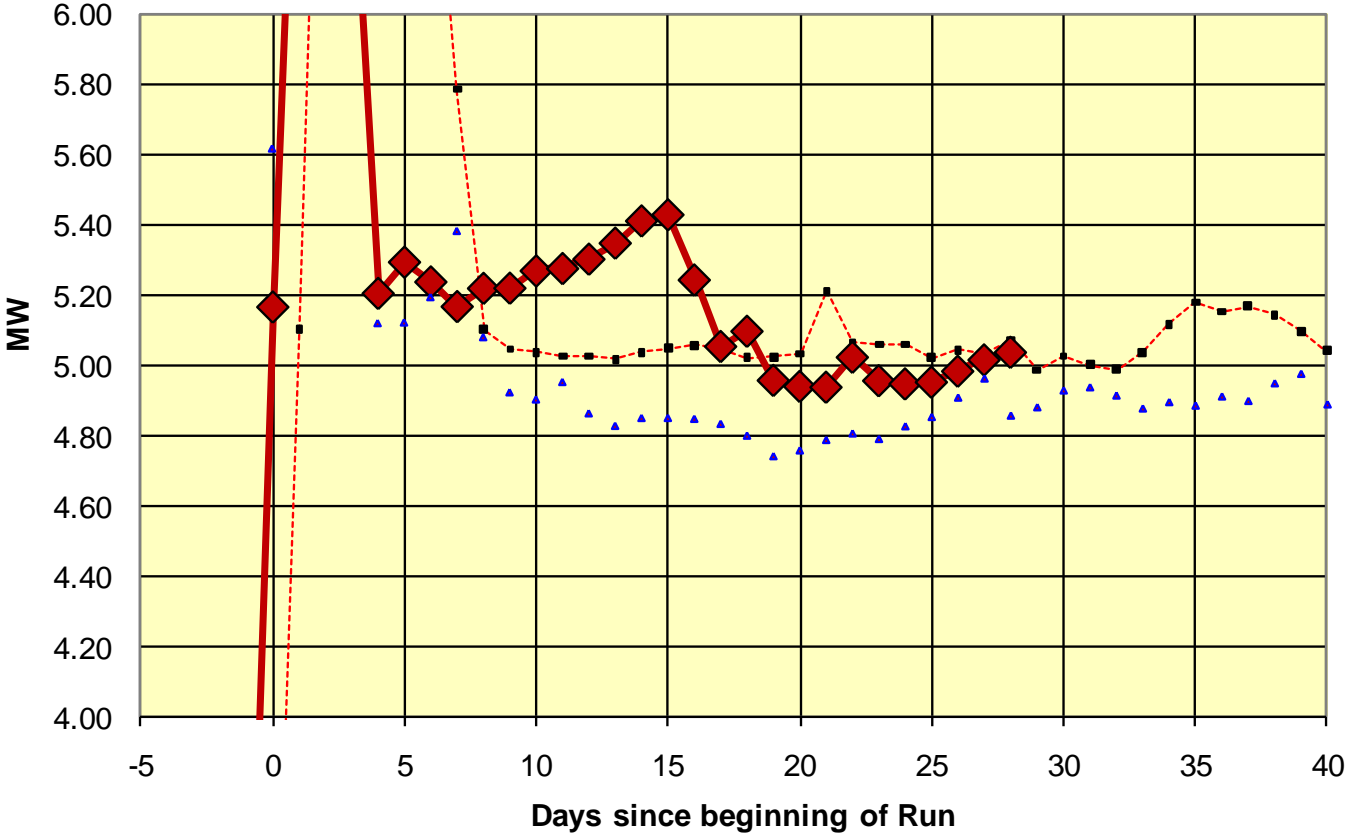
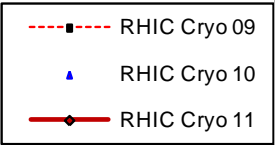
RHIC Operations FY09-11



RHIC Cryo Operations FY09-11



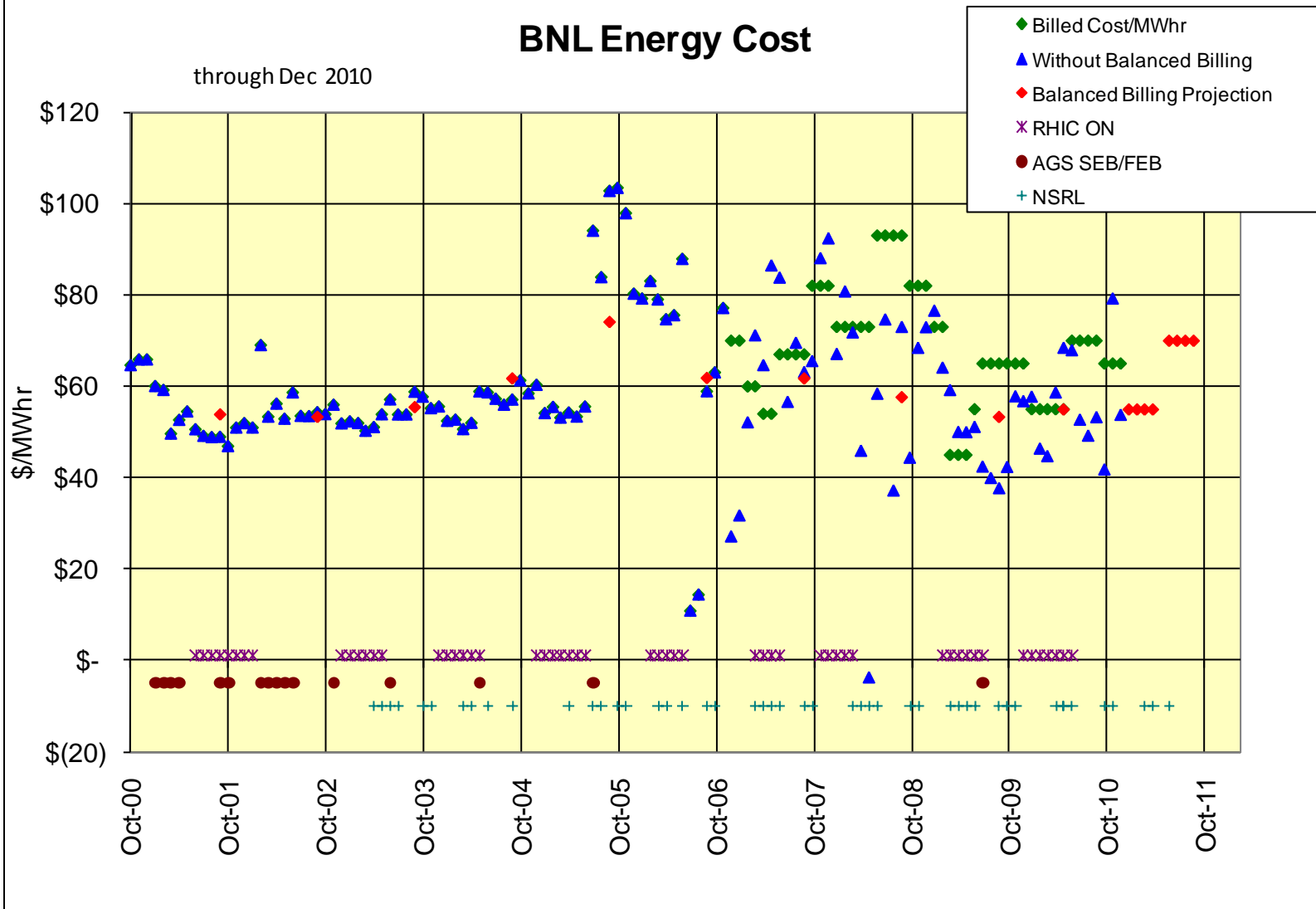
RHIC Cryo Operations FY09-11



Old information

BNL Energy Cost

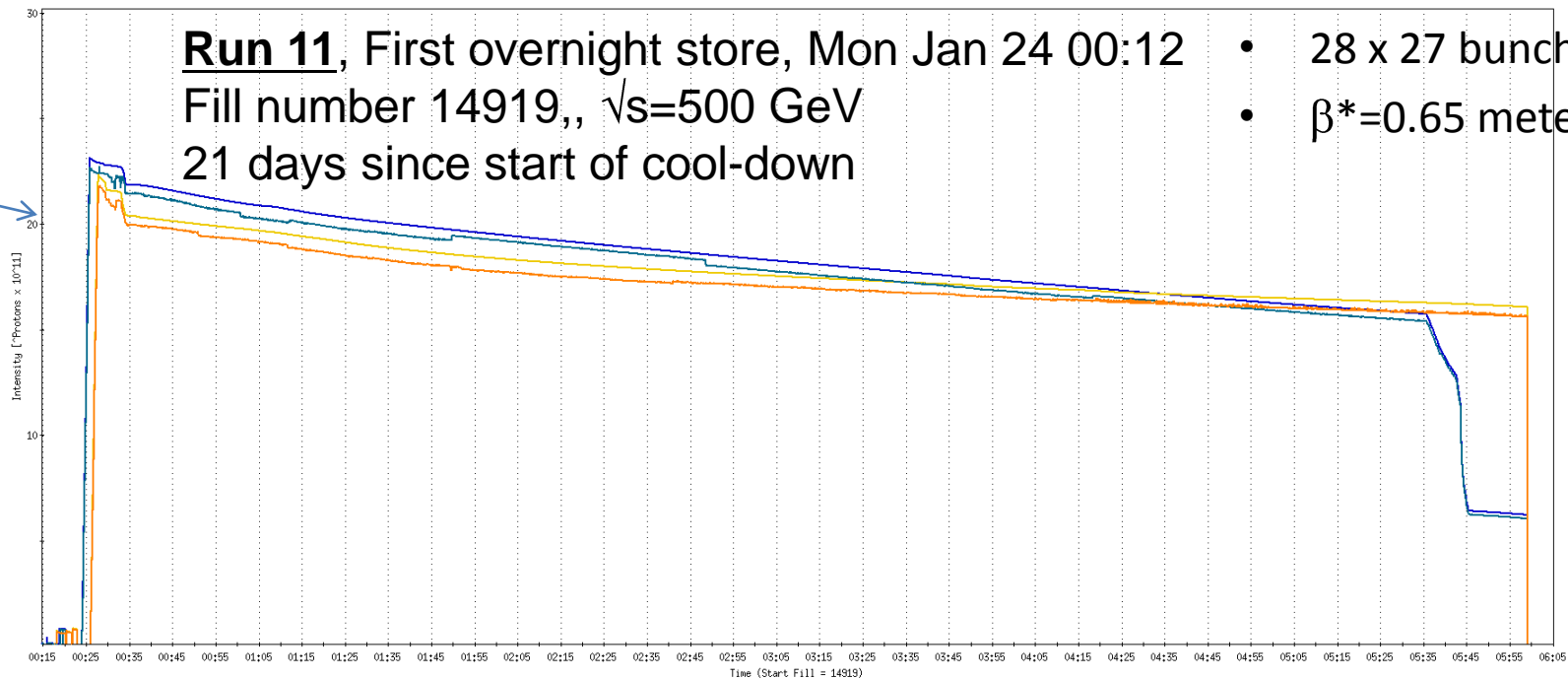
through Dec 2010



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

- 28 x 27 bunches
- $\beta^*=0.65$ meters

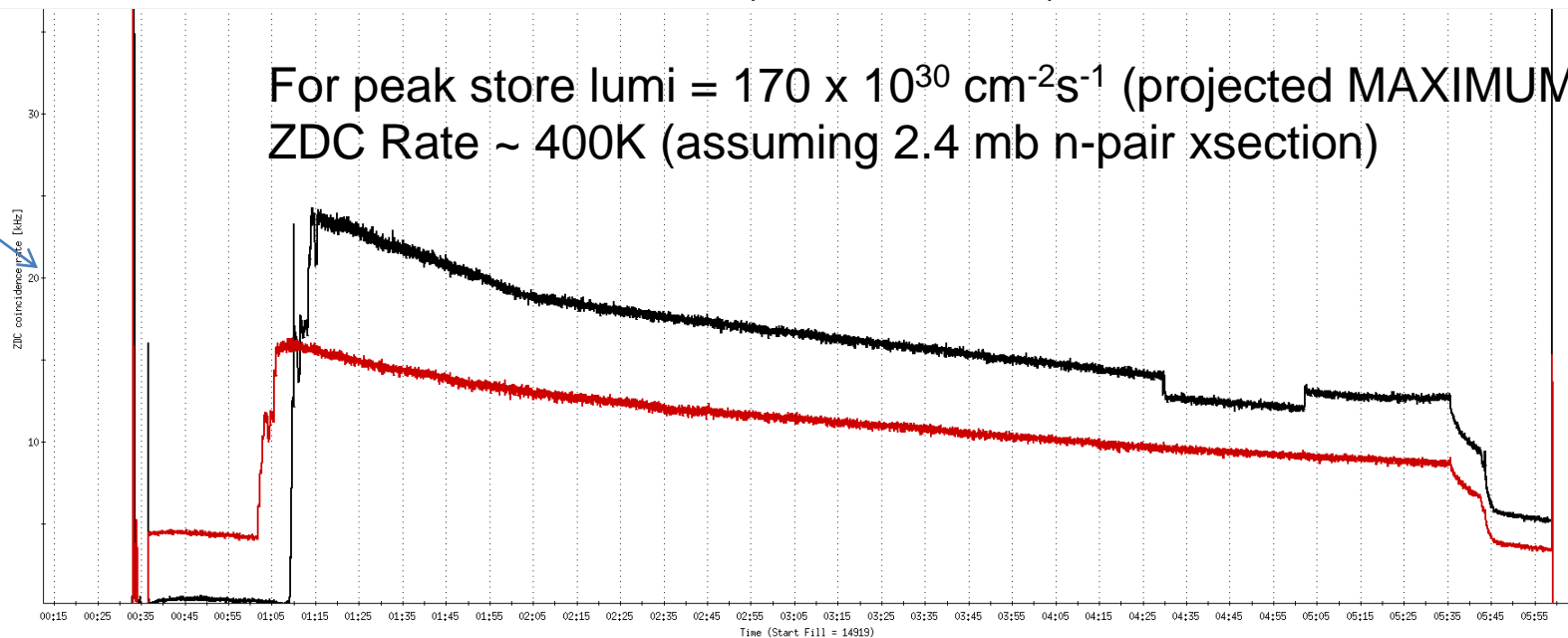
20 x 10¹¹



bluDCCTtotal (C) yelDCCTtotal (C) bluDCBunched yelDCBunched

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

20K



STAR_ZDC (C) PHENIX_ZDC (C)

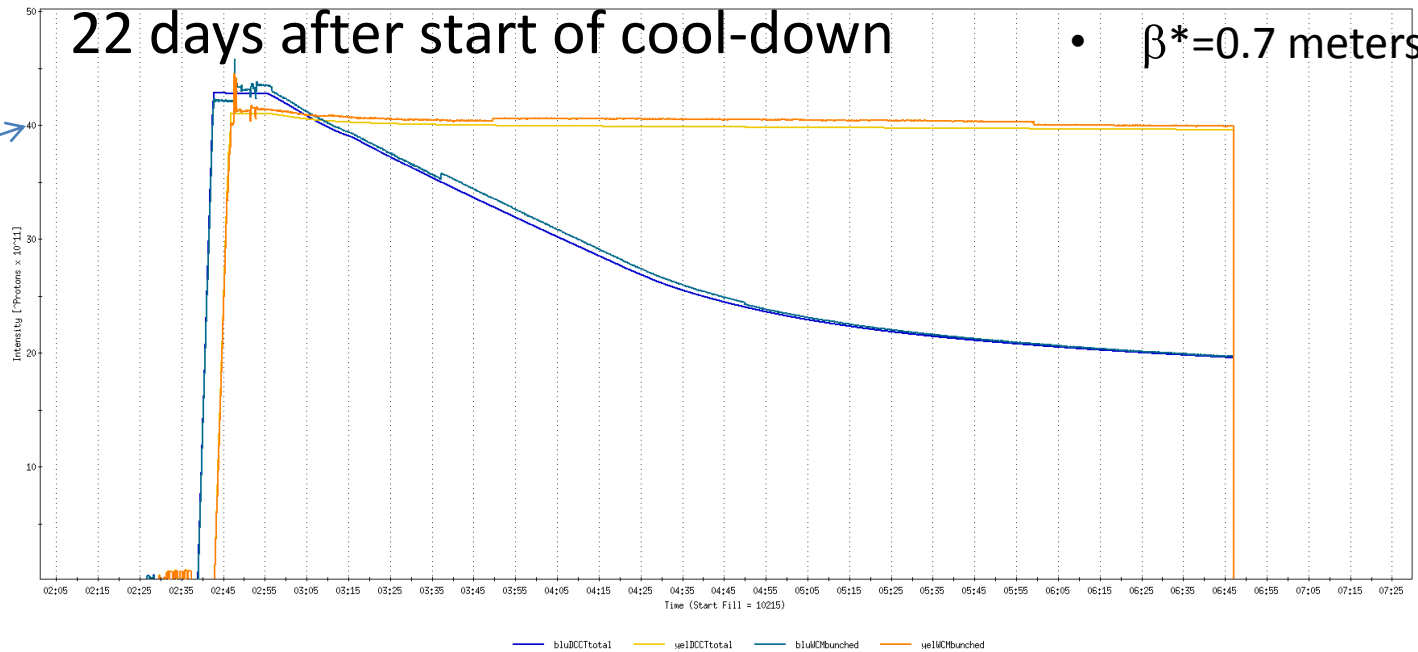
Run 9, First overnight store at $\sqrt{s}=500$ GeV

• 56 x 56 bunches

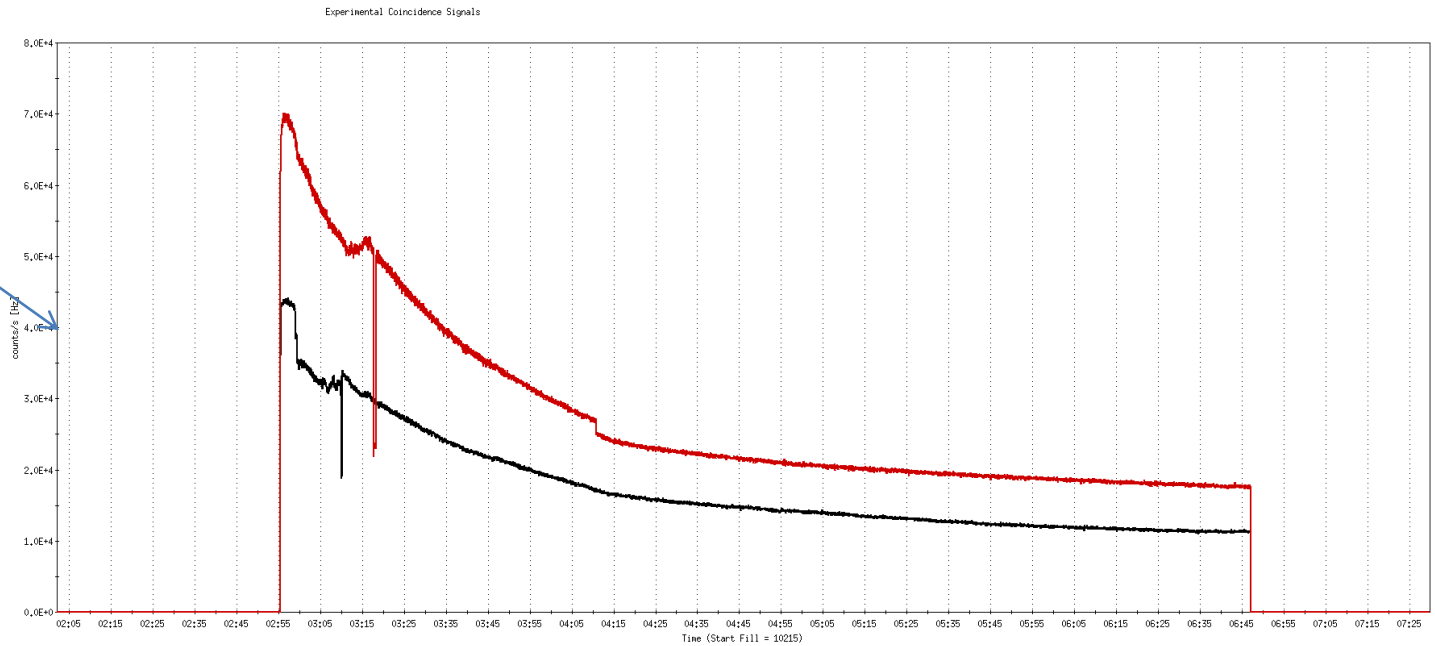
• $\beta^*=0.7$ meters

22 days after start of cool-down

40×10^{11}

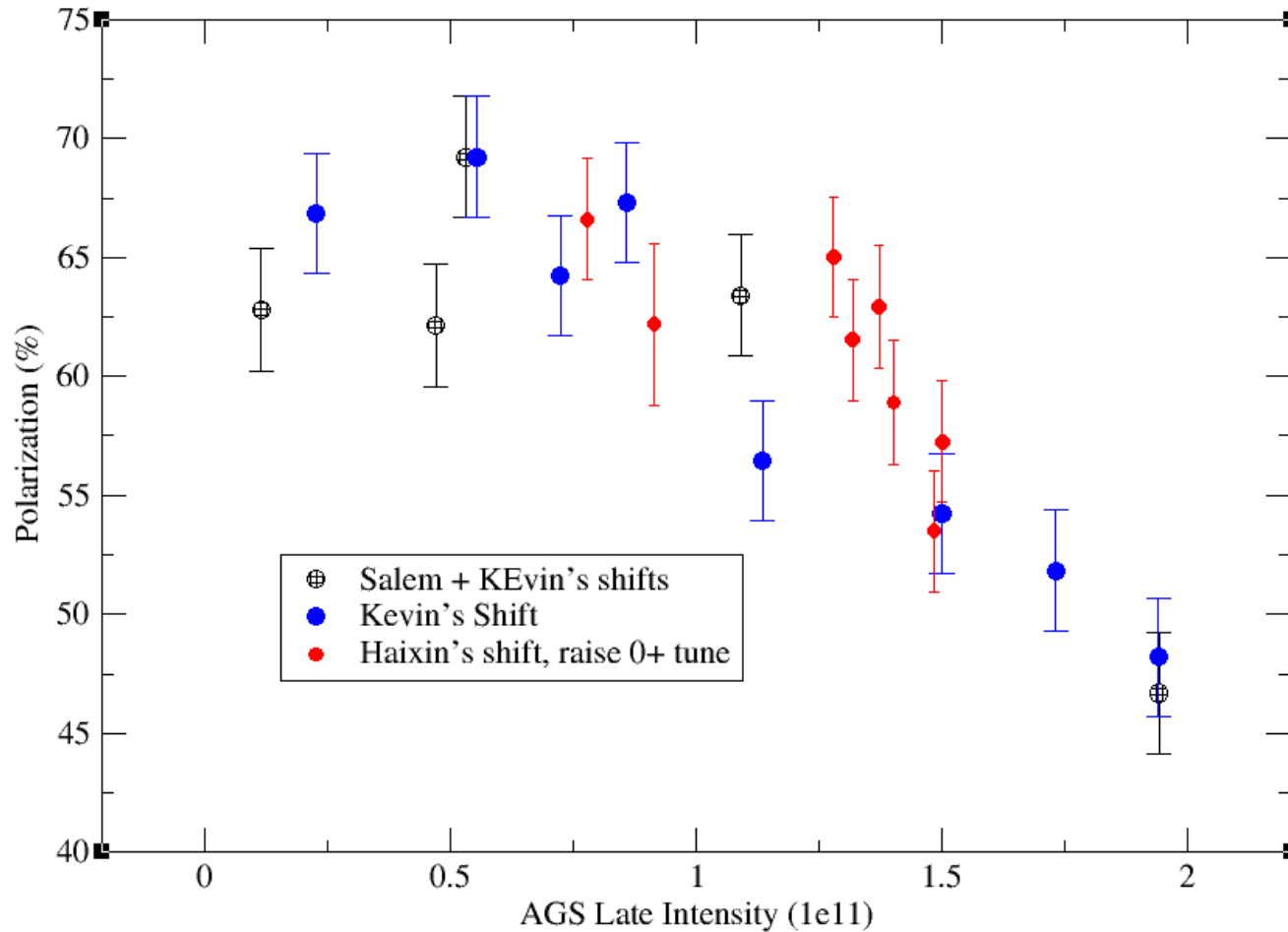


40K



G0: X, Y = [-0.402176, 34.134]

AGS pp log, 23 Feb 09, 00:26

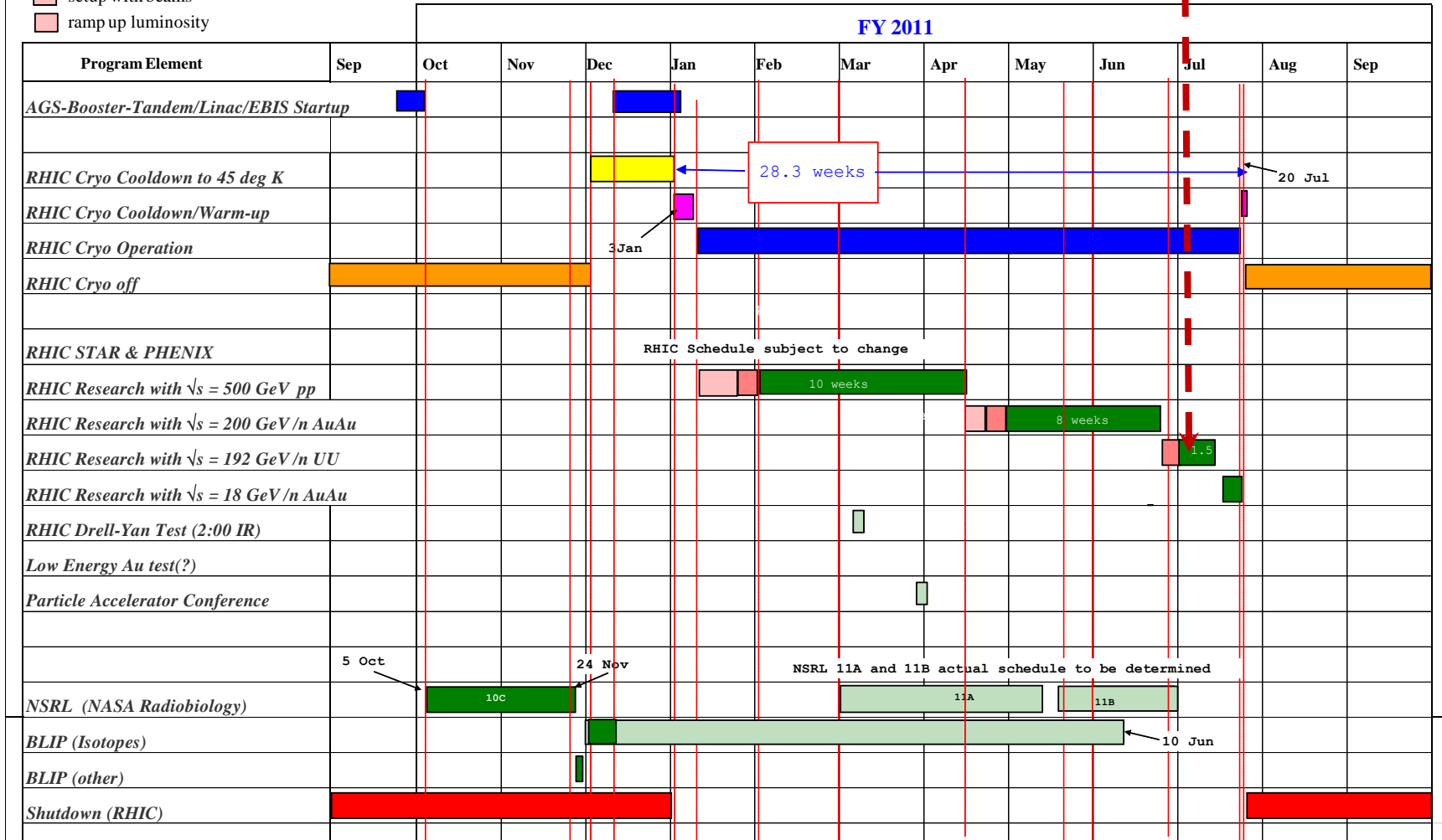


C-A Operations-FY11

26 weeks

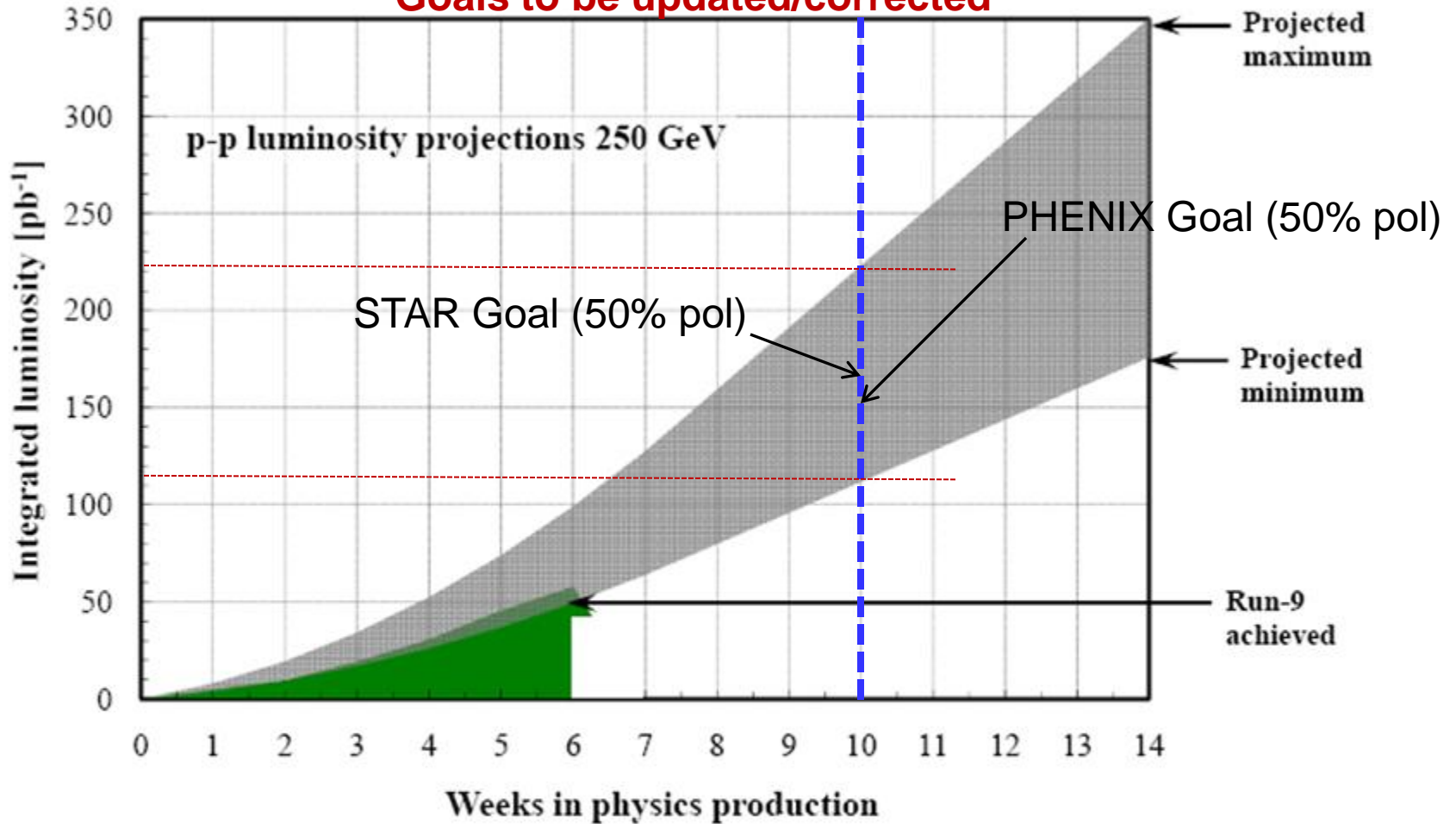
planned (budget permitting)

- concurrent with RHIC
- setup with beams
- ramp up luminosity



Run-11 p[↑]-p[↑] luminosity projections

Goals to be updated/corrected

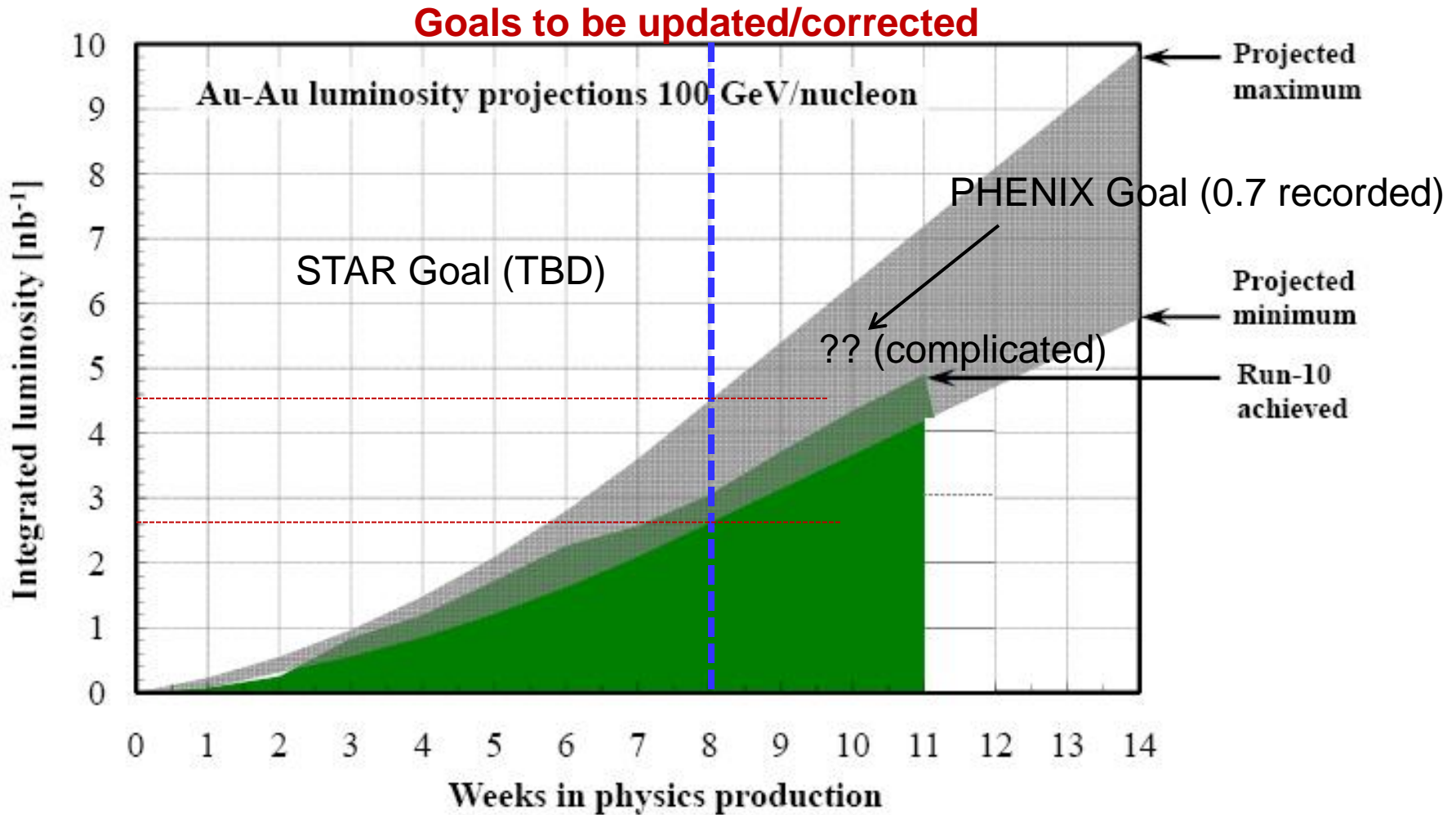


Assume 8 weeks to ramp-up for max.

Expect store $P_{\text{avg}} = 35\text{-}50\%$, L_{avg} up to $100 \times 10^{30} \text{cm}^{-2} \text{s}^{-1}$ (+80%).

[from Run-9 to max projection: $\beta^* = 0.7 \rightarrow 0.6 \text{ m}$, $N_b = 1.1 \rightarrow 1.4 \times 10^{11}$]

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



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

Expect L_{avg} up to $25 \times 10^{26} \text{cm}^{-2} \text{s}^{-1}$ (+25%).

[from Run-10 to max: $\beta^* = 0.75 \rightarrow 0.65$ m, $N_b = 1.1 \rightarrow 1.1 \times 10^9$, more cooling]