

RUN 11 RHIC MACHINE/EXPERIMENTS MEETING

1 Mar 2011

Agenda:

- Status –
- Request from ANDY

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 2/15/10 update

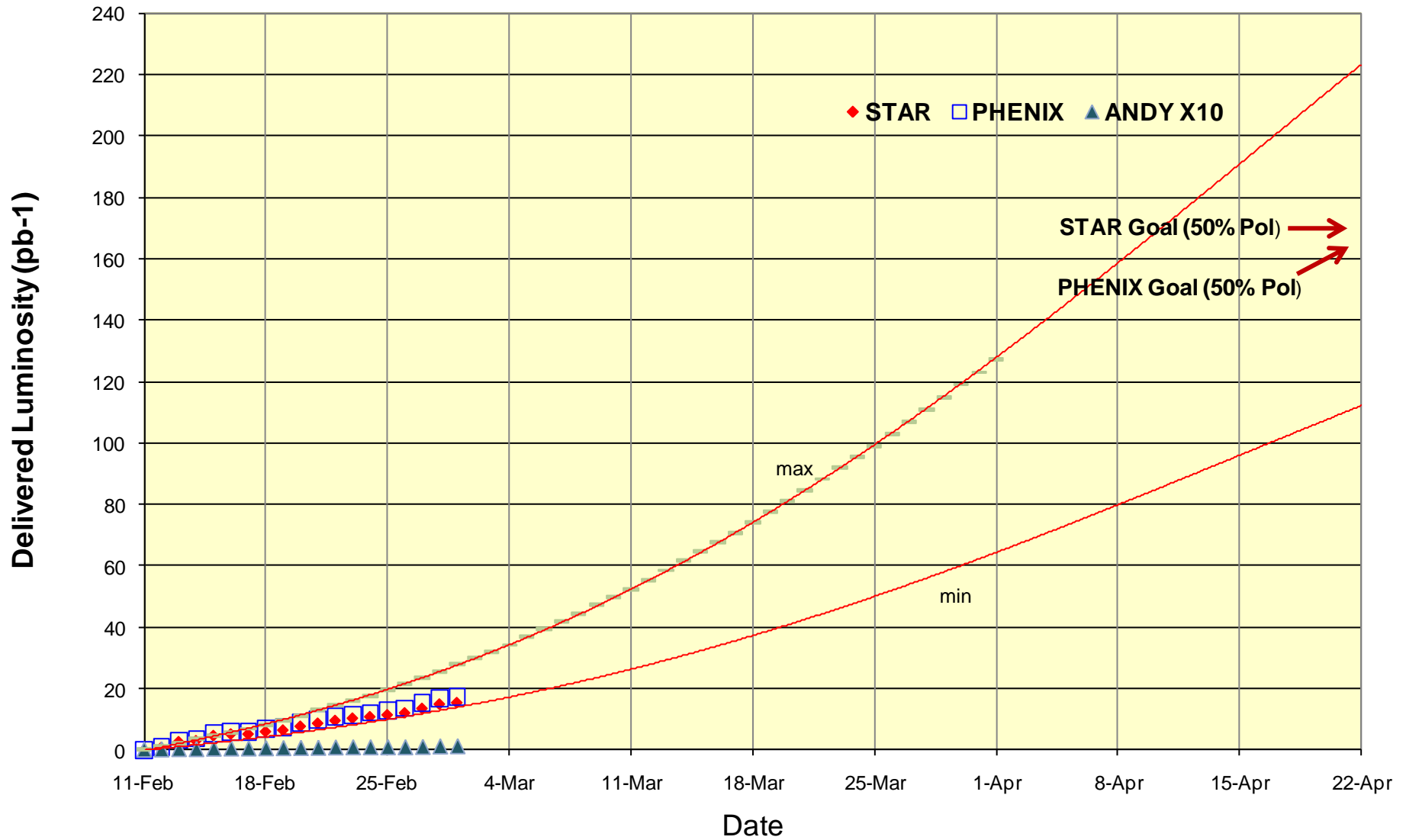
- 3 Jan, Begin cool-down to 4.5K
- 8 Jan, Cool-down to 4.5K complete in both rings, preliminary setup begins
- ~11 Jan, 2 ½ weeks beam setup for $\sqrt{s} = 500$ GeV pp in RHIC begins.
- 15 Jan, power supply work/DX training complete
- 17 Jan, first successful ramp
- 19 Jan, 1st maint day
- ~~27~~ 24 Jan, 1 week Ramp-up with 8 hr/night beam to experiments
- ~~3~~ **11 Feb (machine and ~experiments), begin 10(?) week physics run ($\sqrt{s} = 500$ GeV pp)**
- 24 Feb, 9 MHz cavity in routine operation
- **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:

Run 11 250 x 250 GeV pp, Luminosity

thru fill 15254, 1 Mar

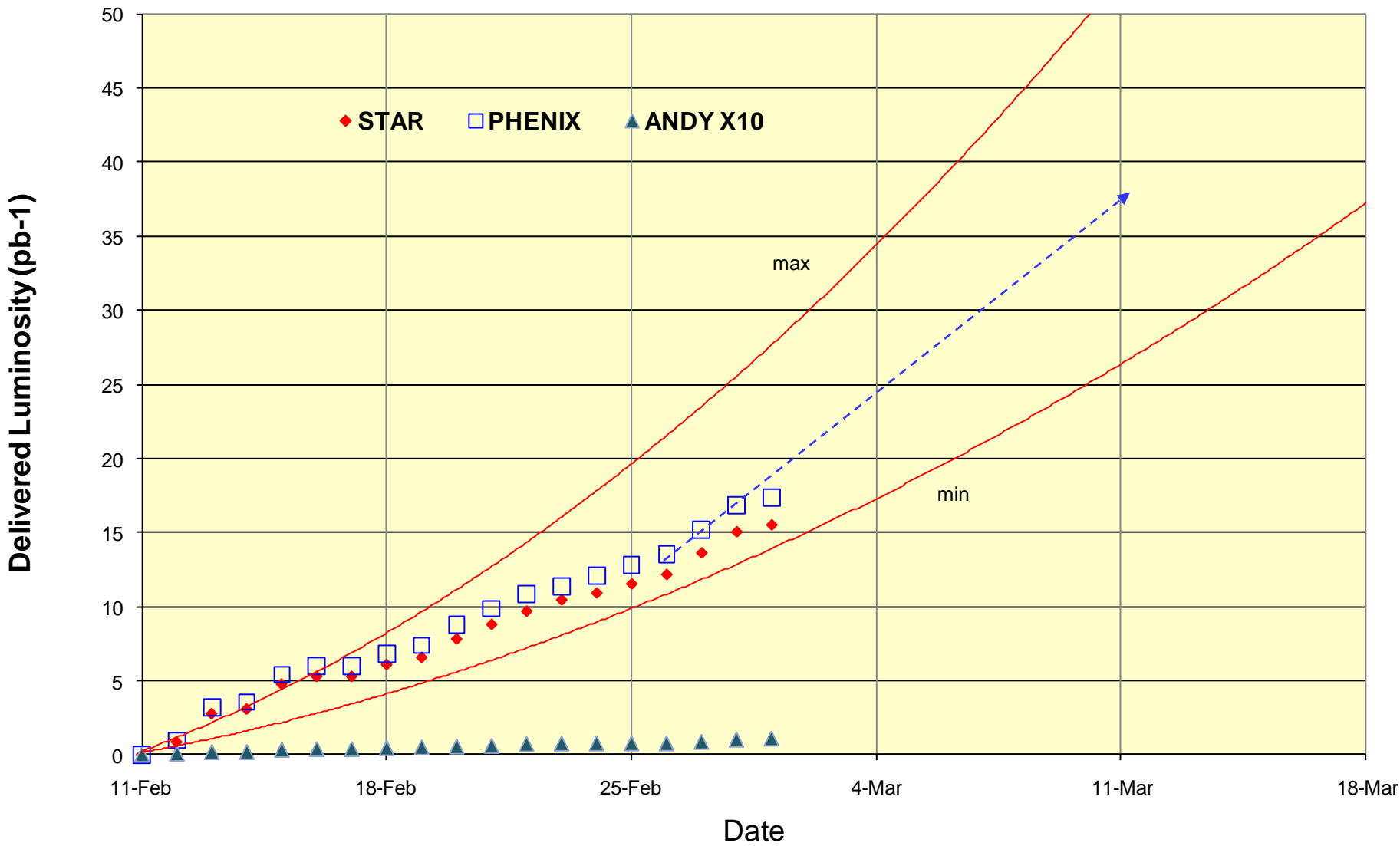
2.9 mb STAR, 2.7 mb PHENIX, 2.8 mb (not right) ANDY



thru fill 15254, 1 Mar

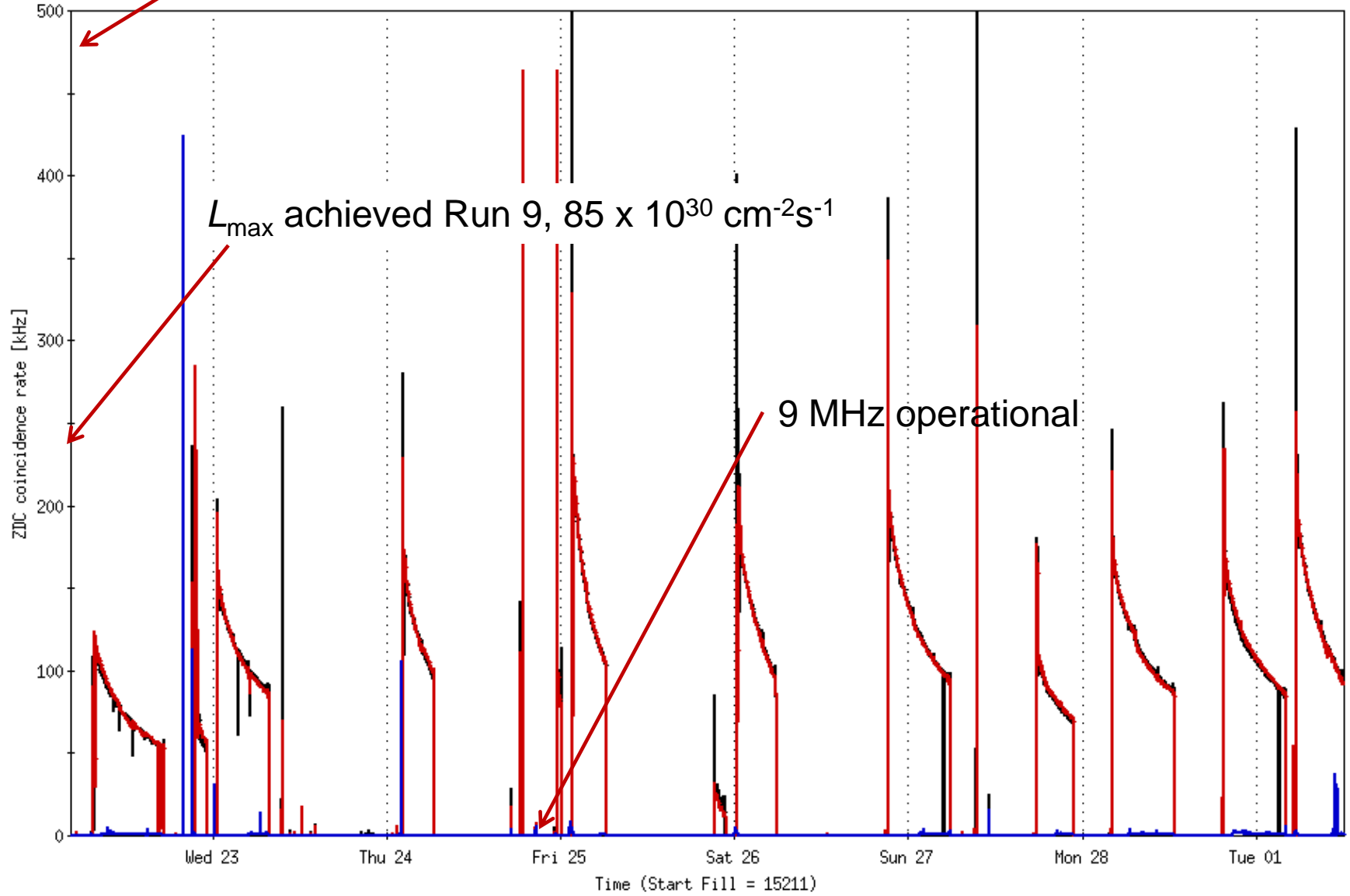
Run 11 250 x 250 GeV pp, Luminosity

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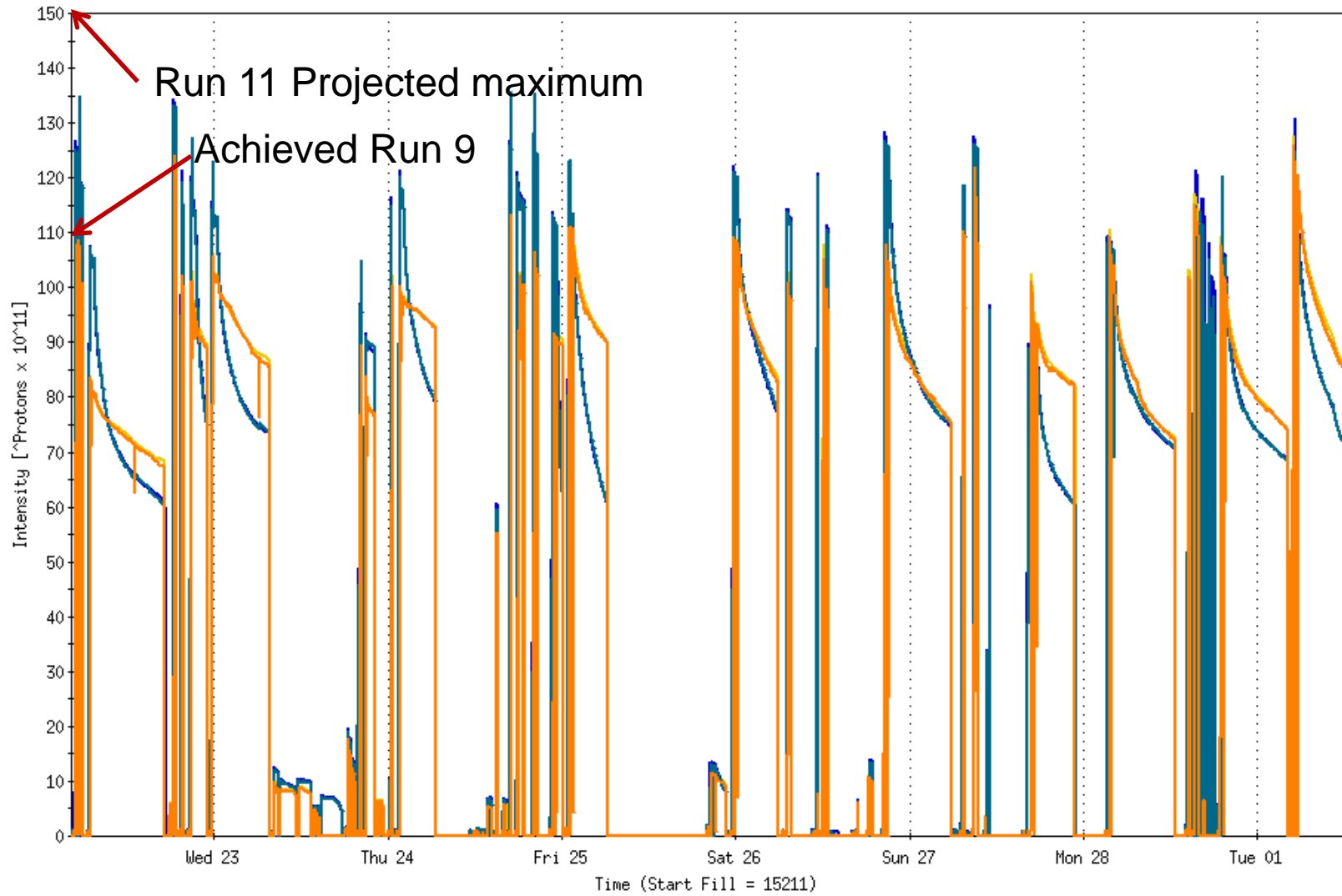
Physics Stores 15211 through 15255

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



— STAR..ZDC. (C) — PHENIX..ZDC. (C) — AnDY..ZDC. (C)

Physics Stores 15211 through 15255



bluDCCTtotal (C)

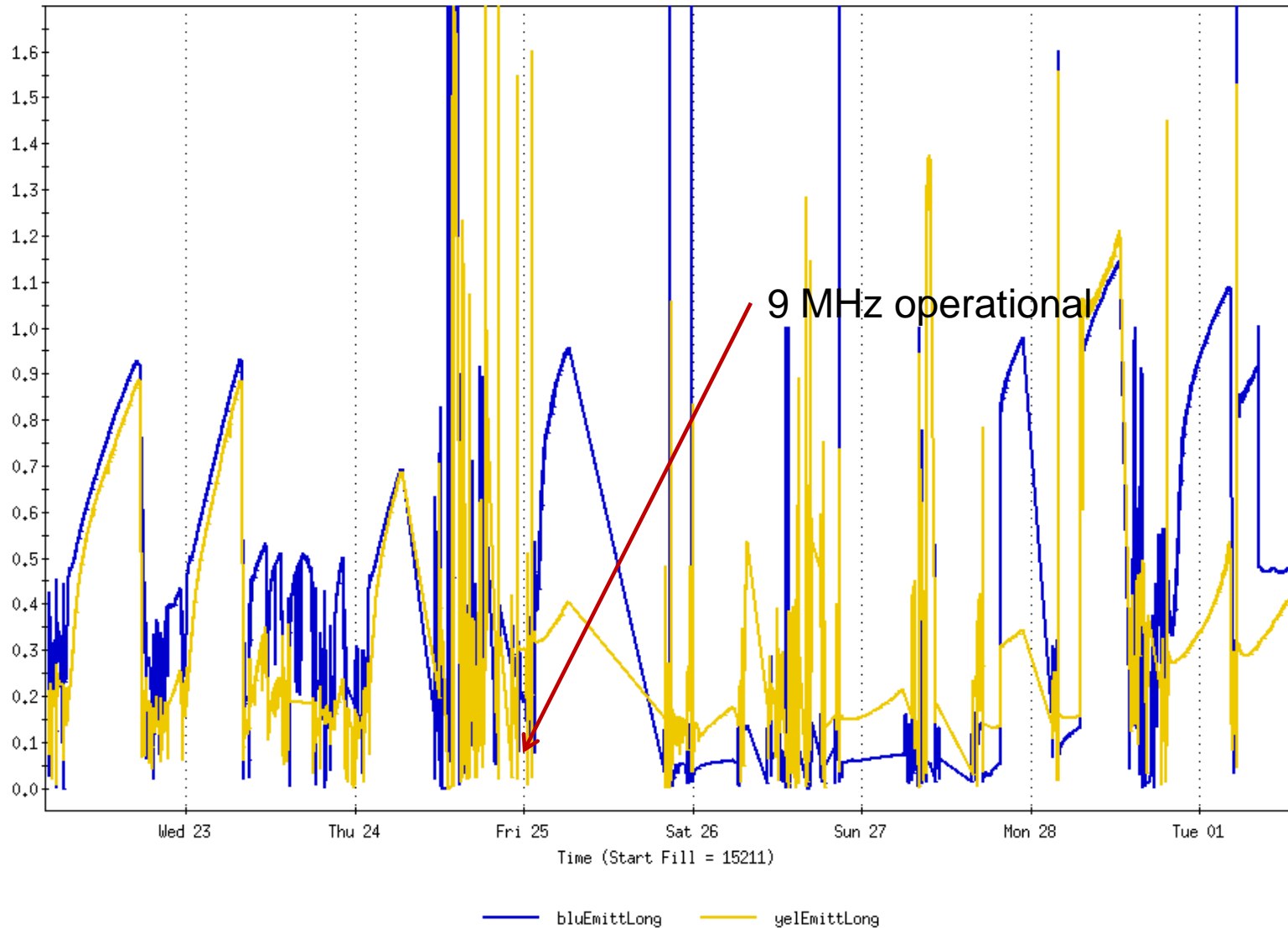
yellDCCTtotal (C)

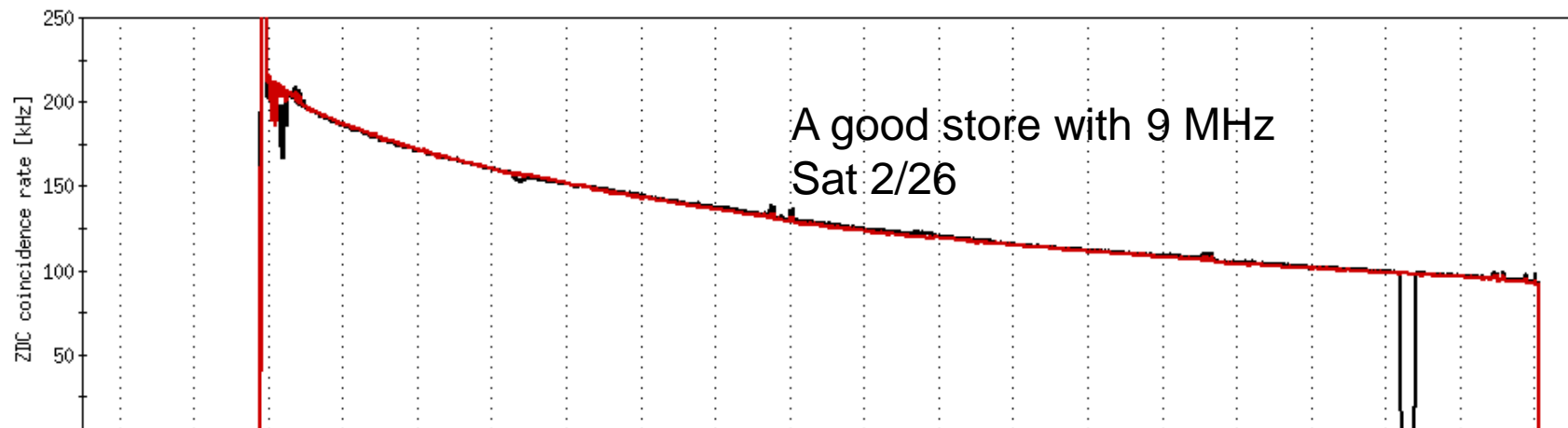
bluWCMbunched (C)

yellWCMbunched (C)

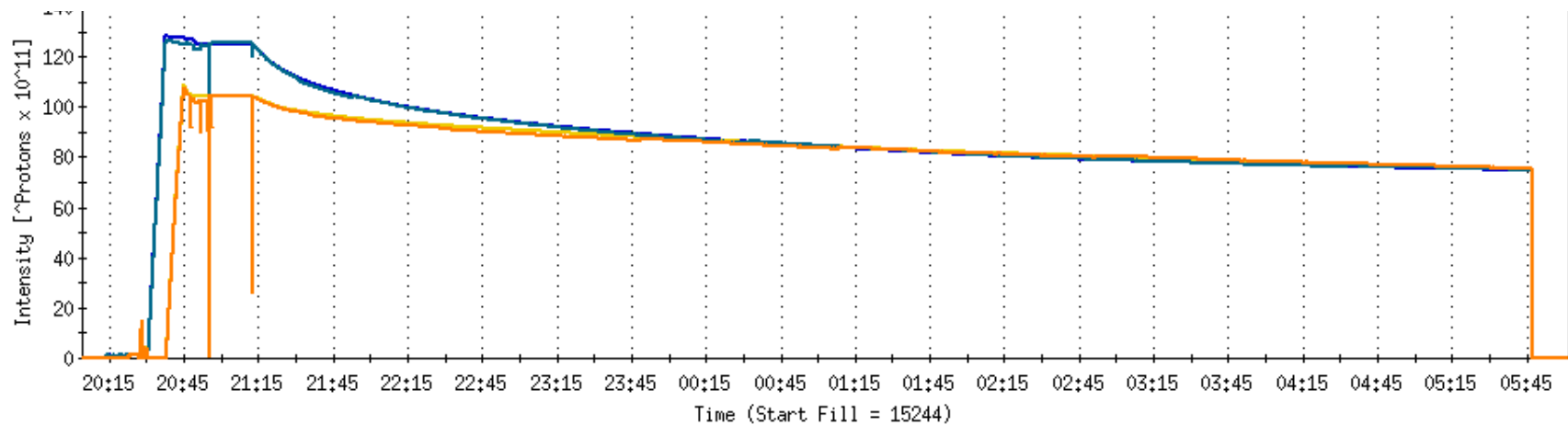
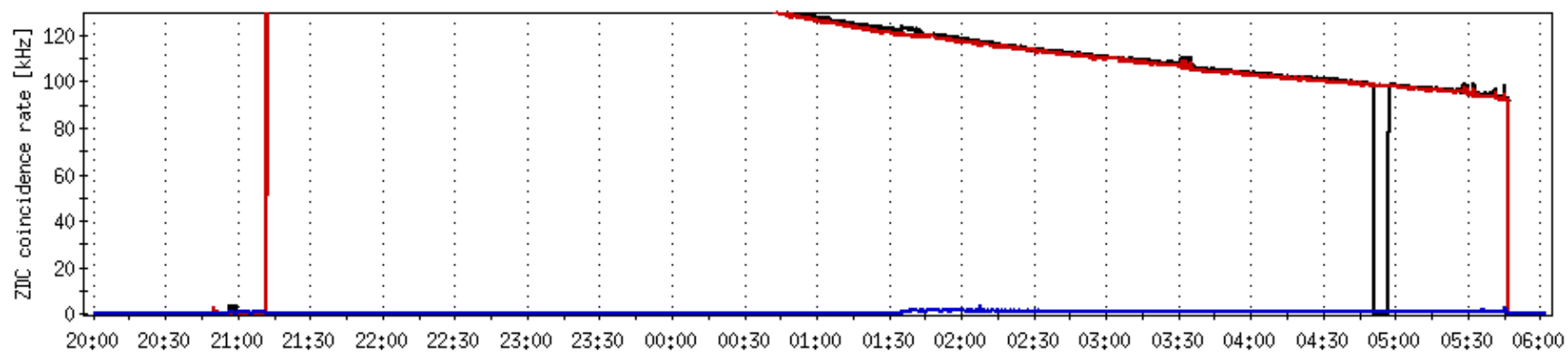
Physics Stores 15211 through 15255

Long Emitt from WCM





Experimental Coincidence Signals



bluDCCTtotal

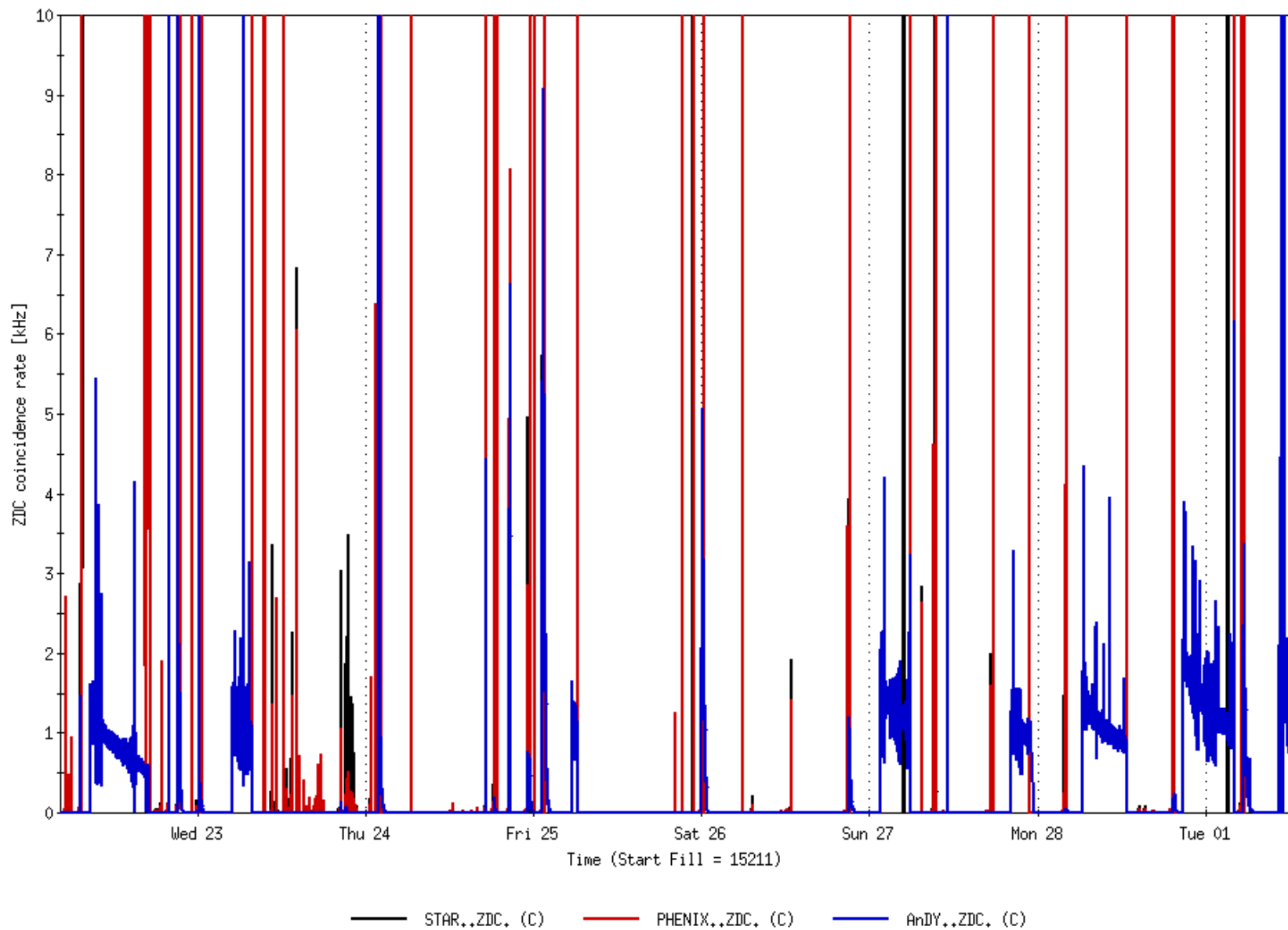
yelDCCTtotal

bluWCMbunched

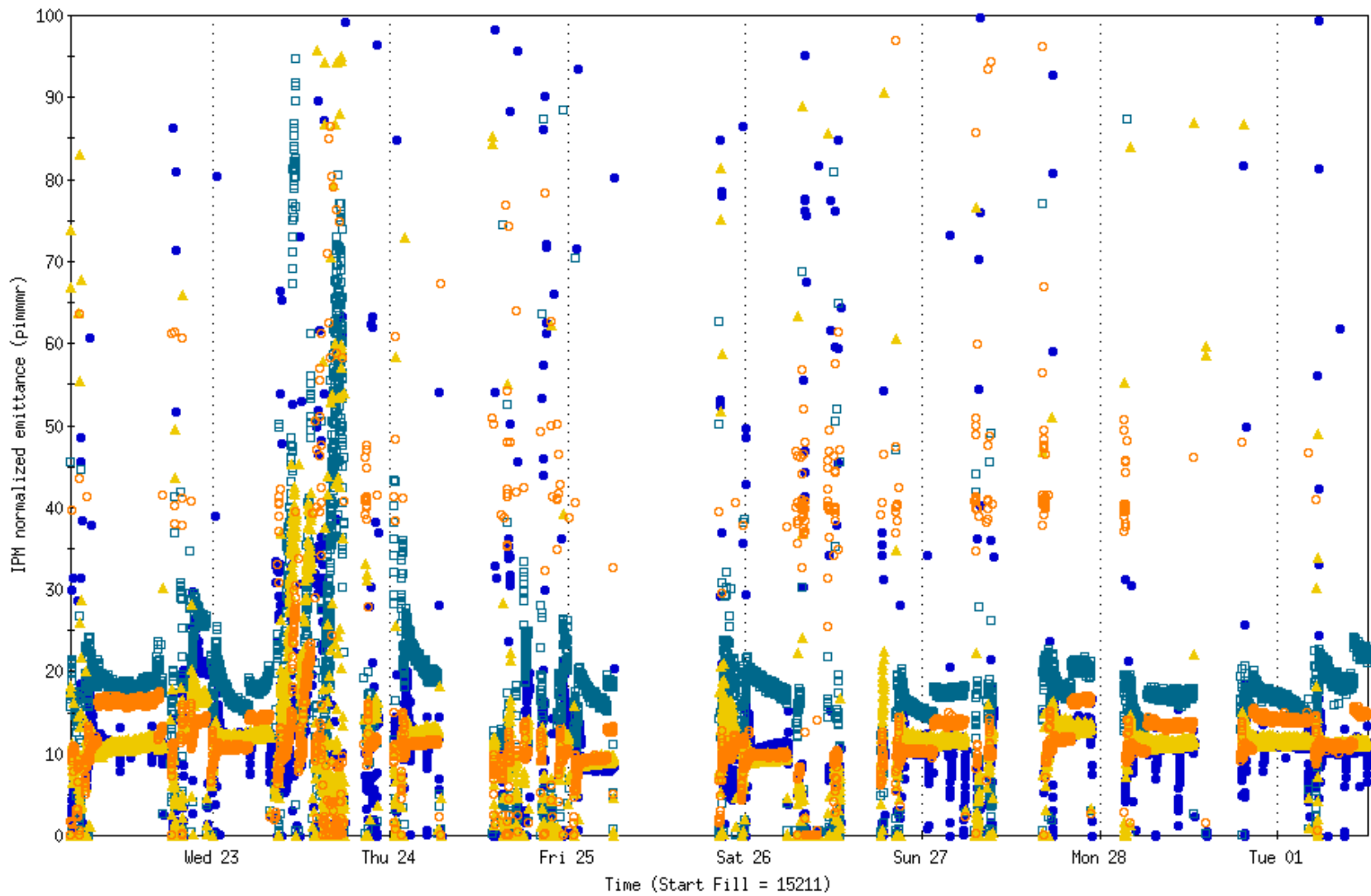
yelWCMbunched

ANDY Physics Stores 15211 through 15255

Experimental Coincidence Signals

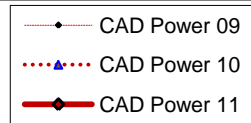


Physics Stores 15211 through 15255

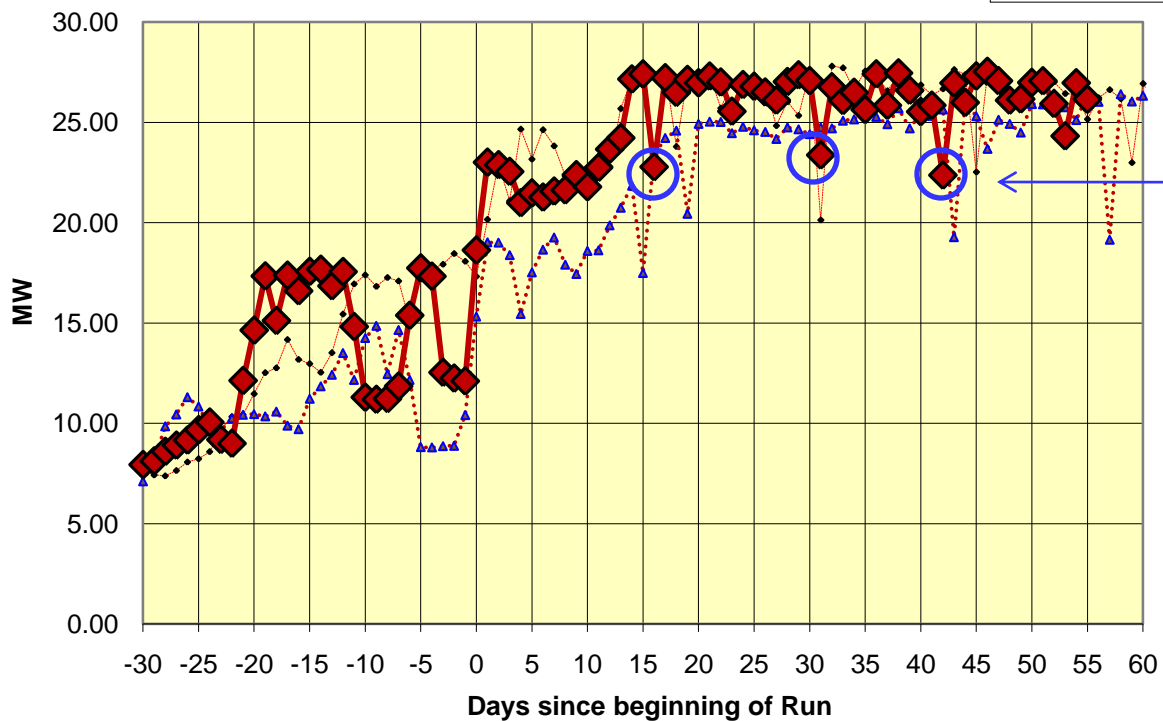


- RhicIpmManager.blue_horiz;normEmitM[.]
- RhicIpmManager.blue_vert;normEmitM[.]
- RhicIpmManager.yellow_horiz;normEmitM[.]
- RhicIpmManager.yellow_vert;normEmitM[.]

RHIC Operations FY09-11



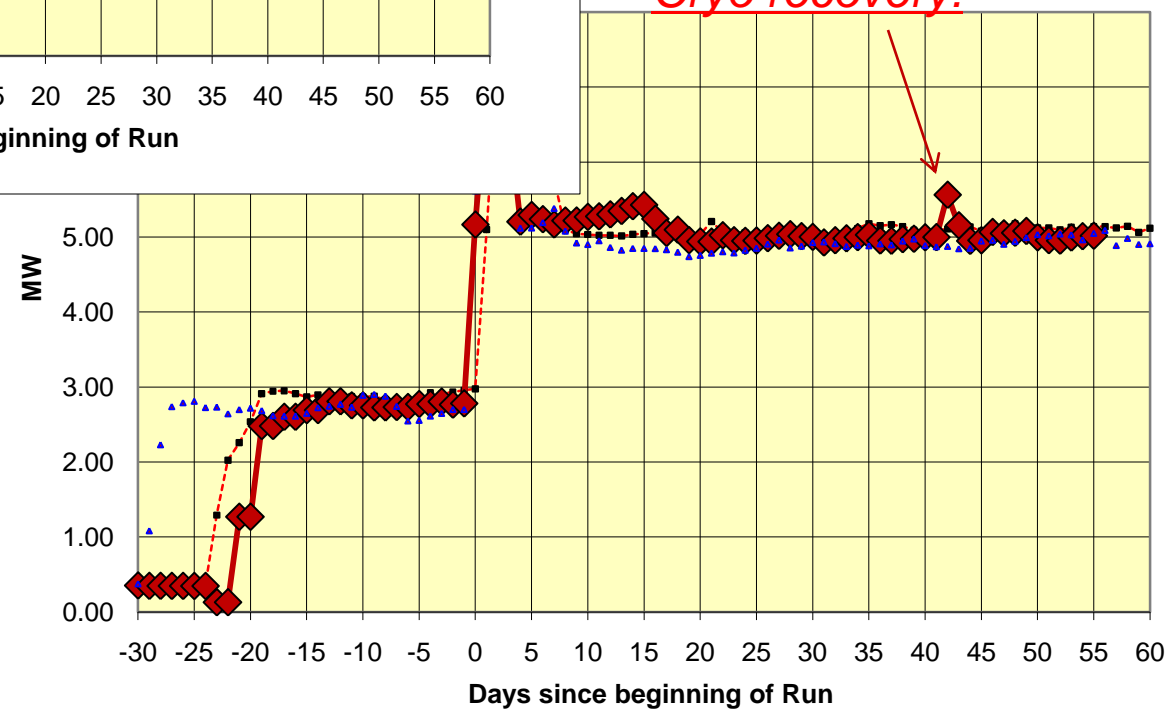
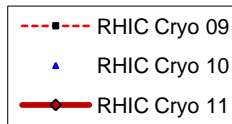
Through 27 Feb 2011



maint days

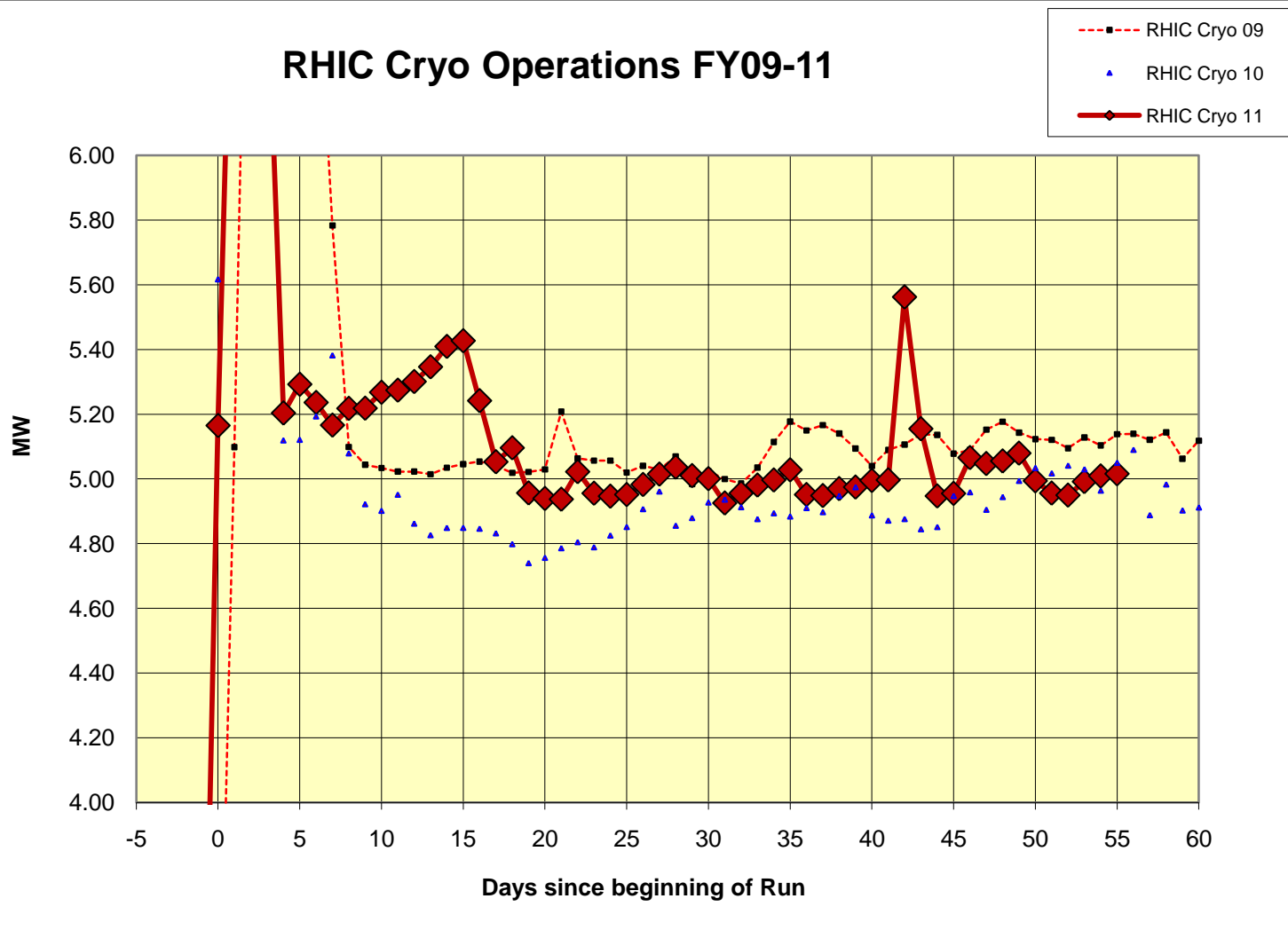
Operations FY09-11

Cryo recovery!



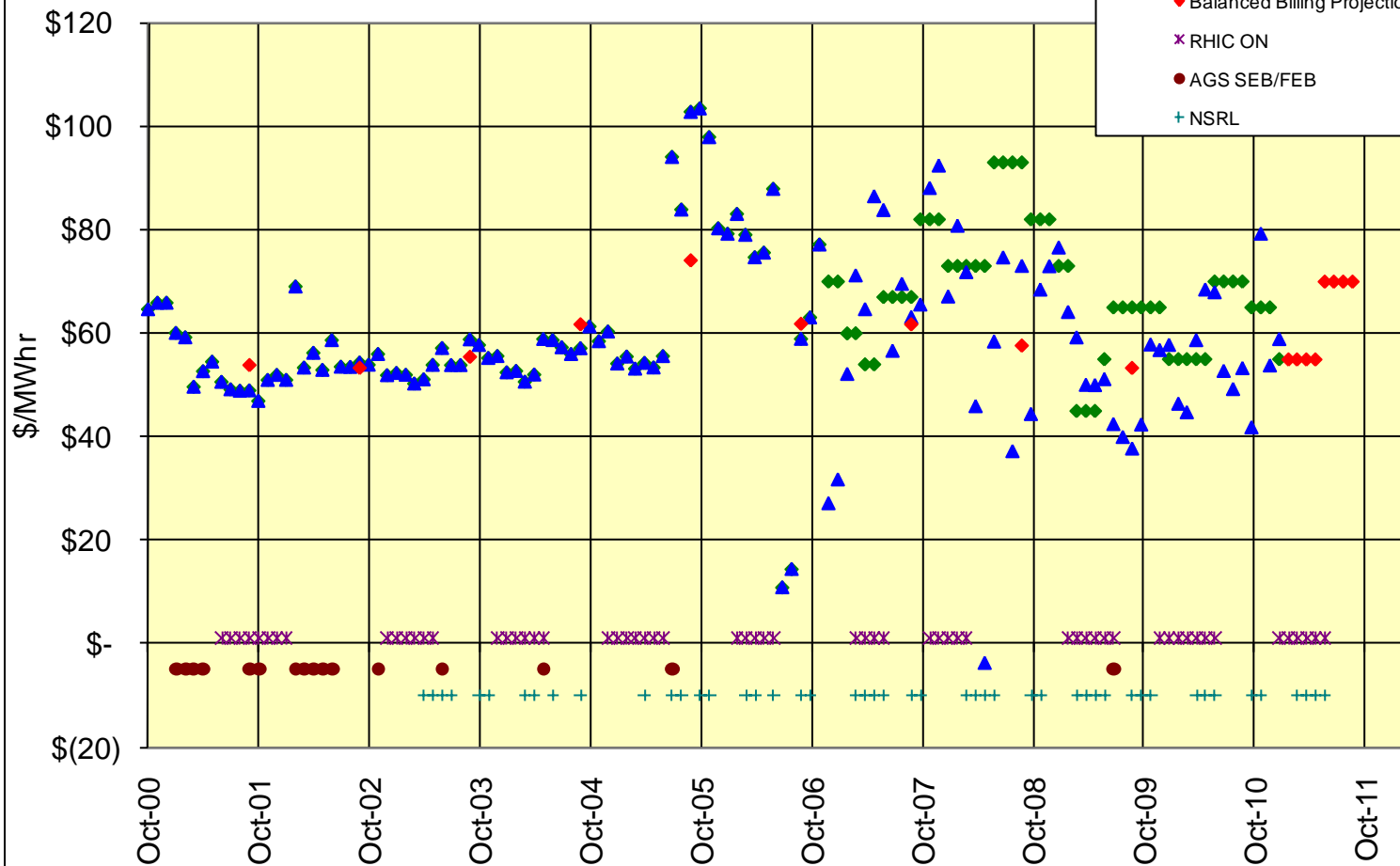
Through 27 Feb 2011

RHIC Cryo Operations FY09-11

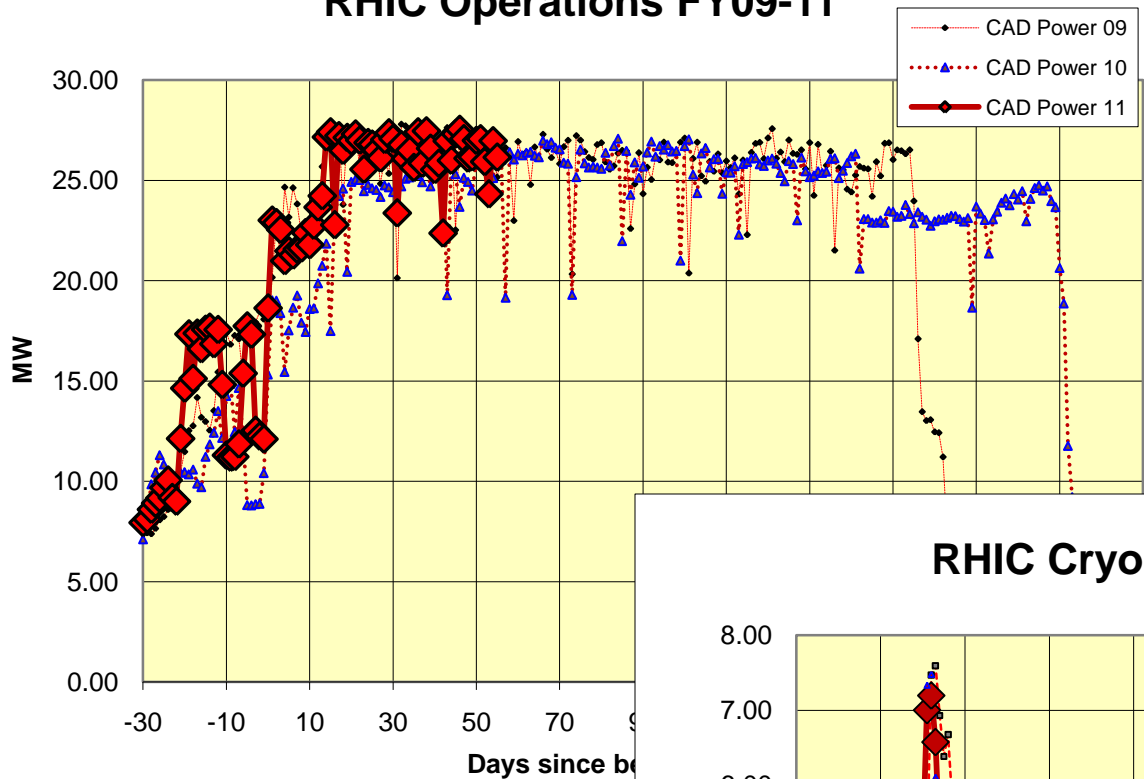


BNL Energy Cost

through Jan 2011

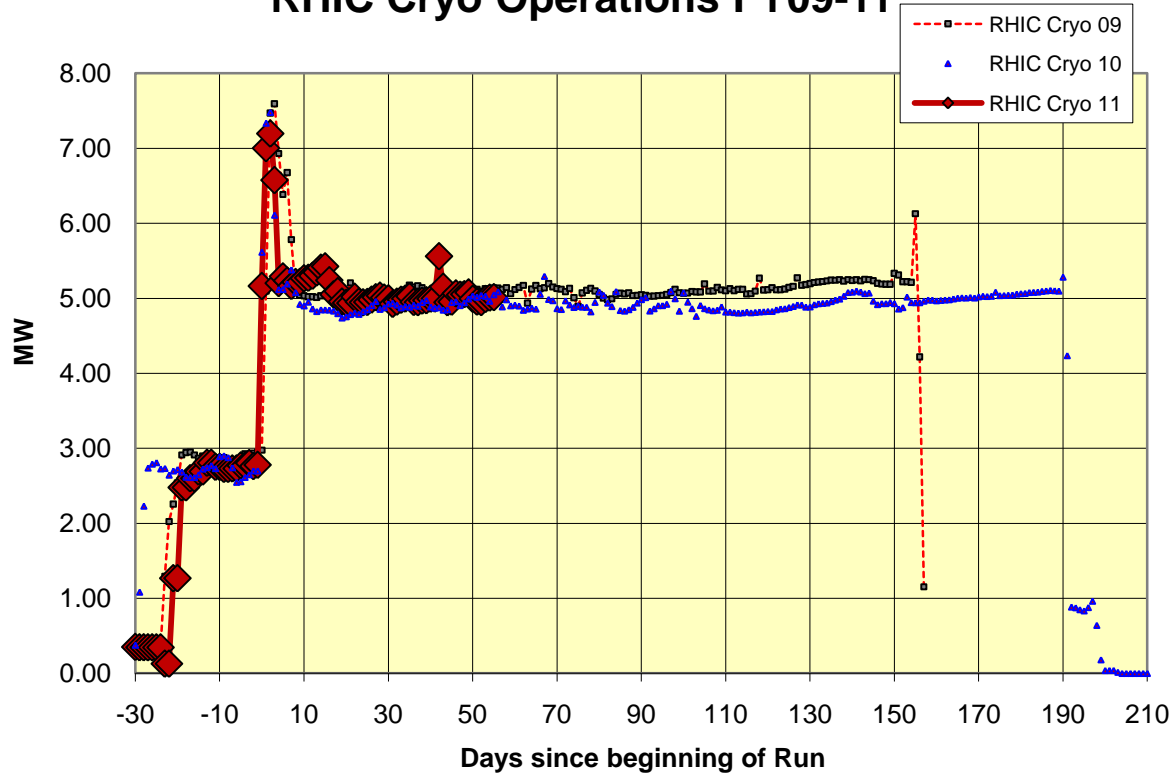


RHIC Operations FY09-11



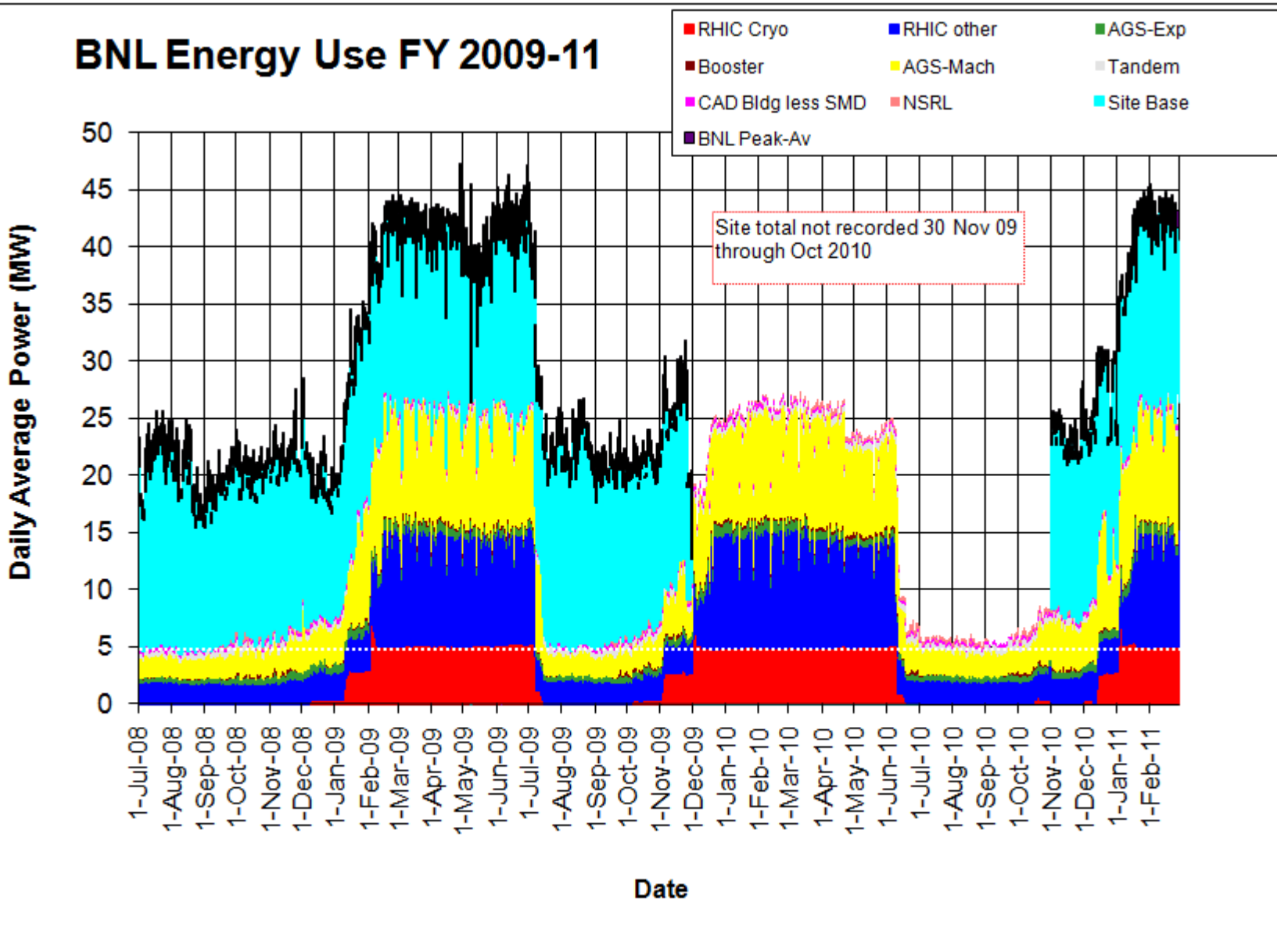
Through 27 Feb 2011

RHIC Cryo Operations FY09-11



Through 27 Feb 2011

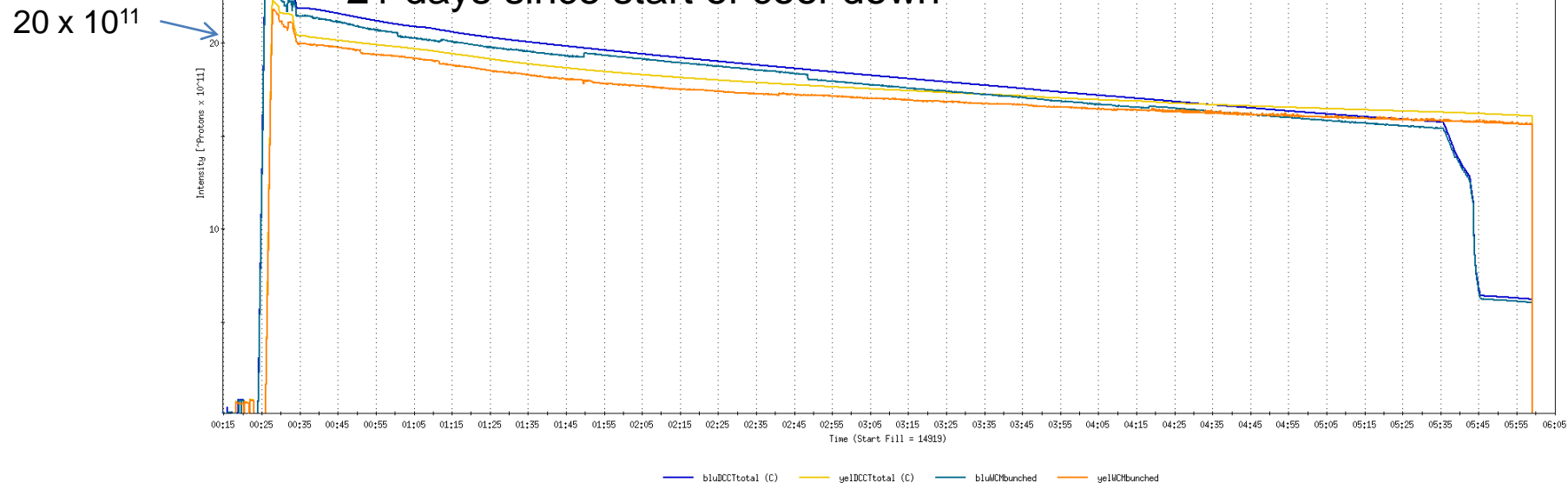
BNL Energy Use FY 2009-11



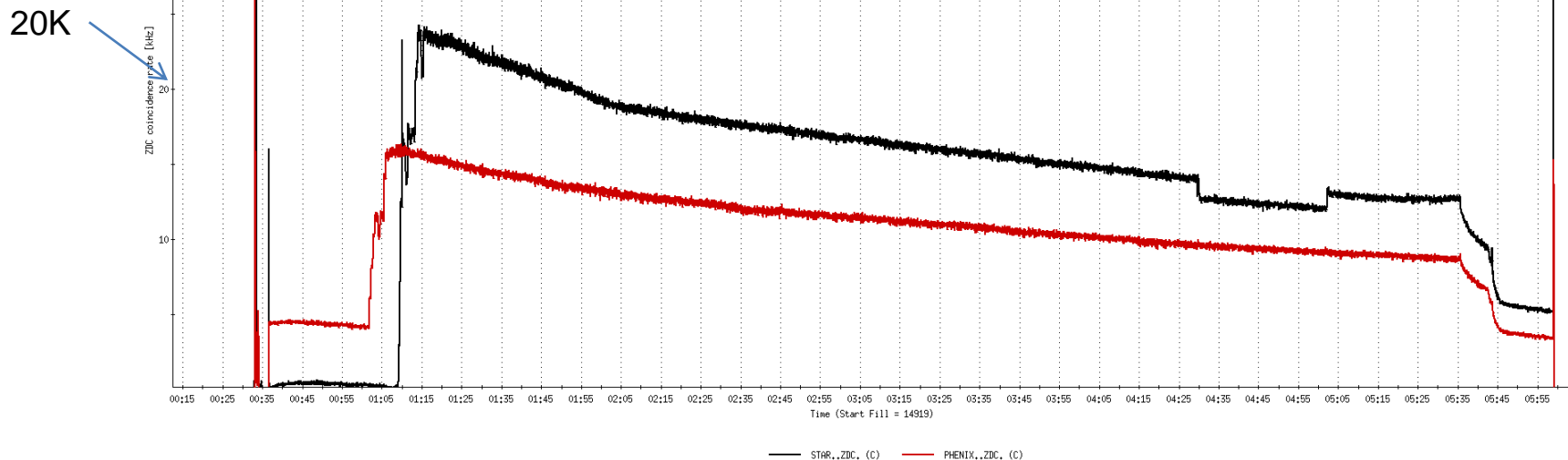
Old information

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



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)



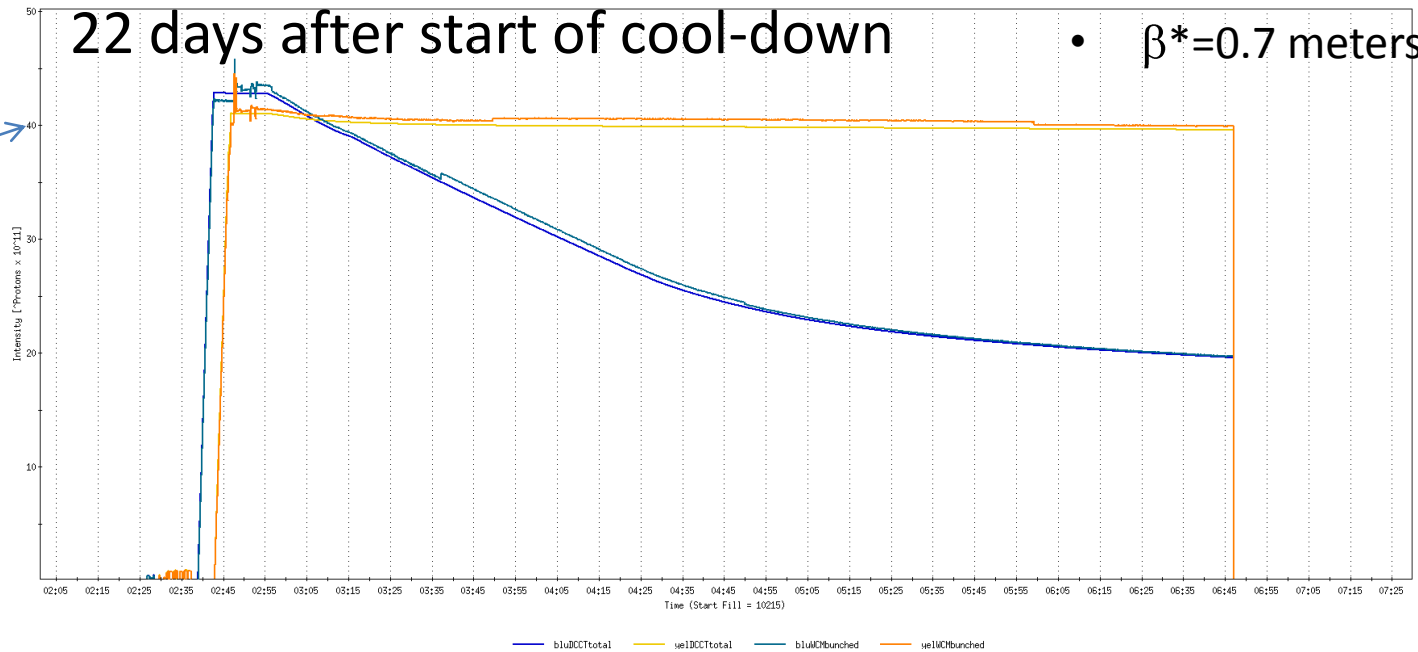
Run 9, First overnight store at $\sqrt{s}=500$ GeV

• 56 x 56 bunches

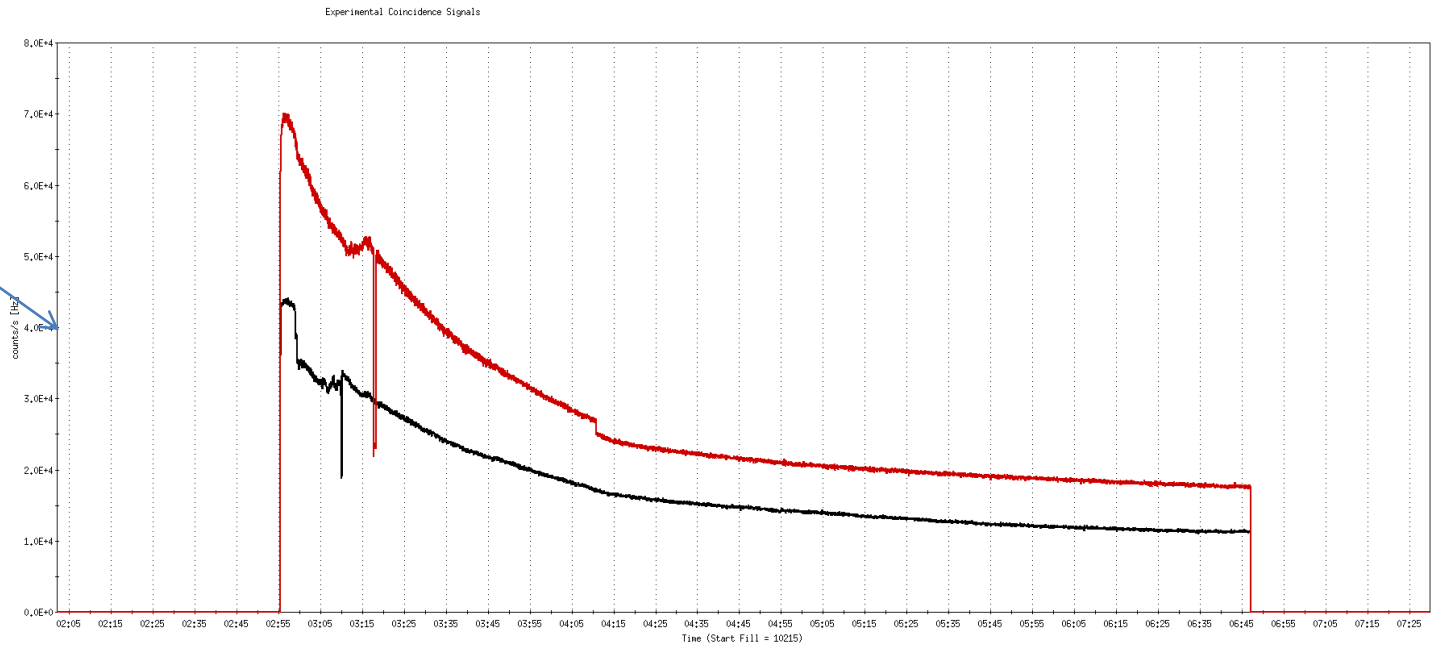
• $\beta^*=0.7$ meters

22 days after start of cool-down

40×10^{11}

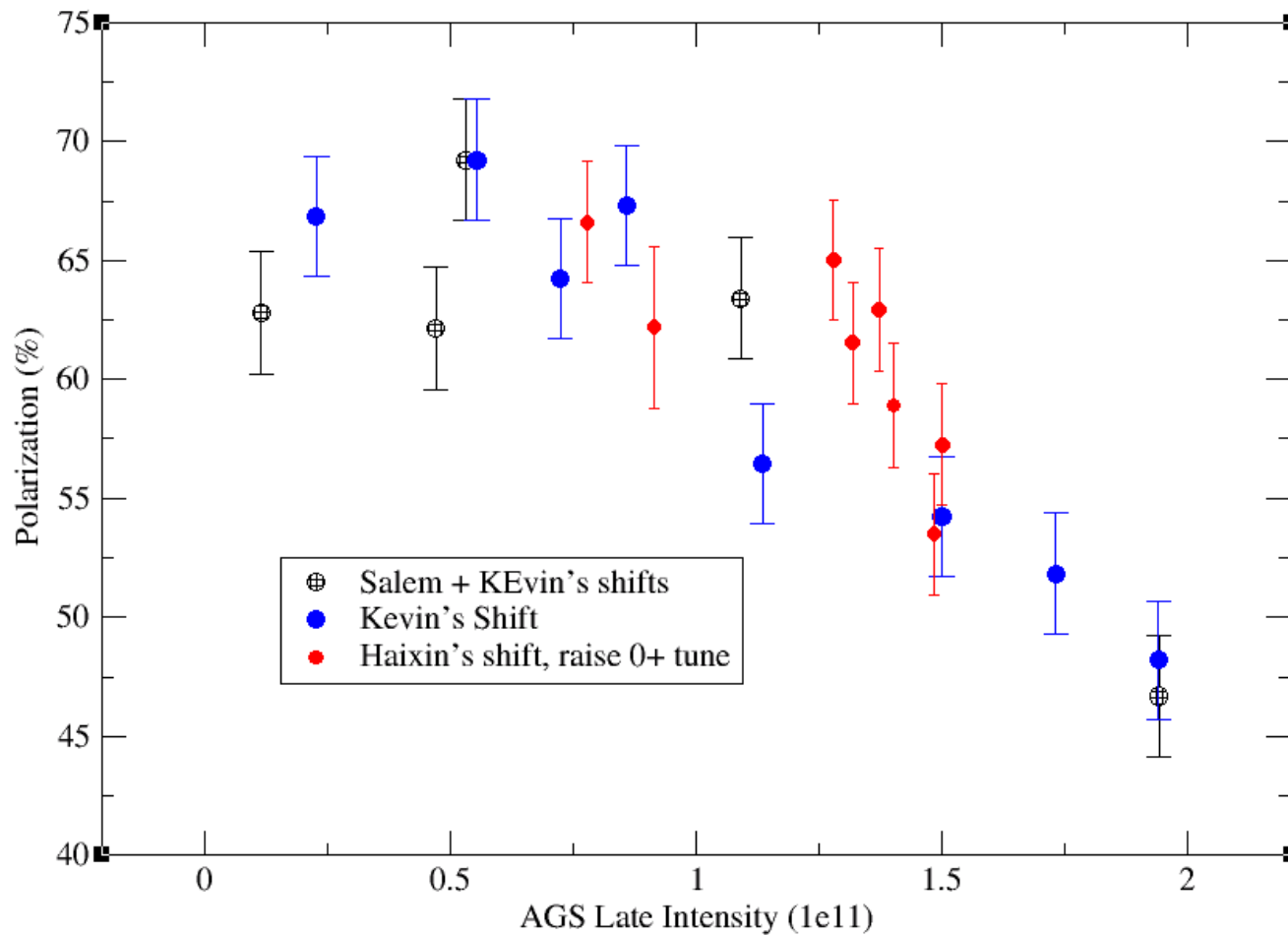


40K



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

AGS pp log, 23 Feb 09, 00:26

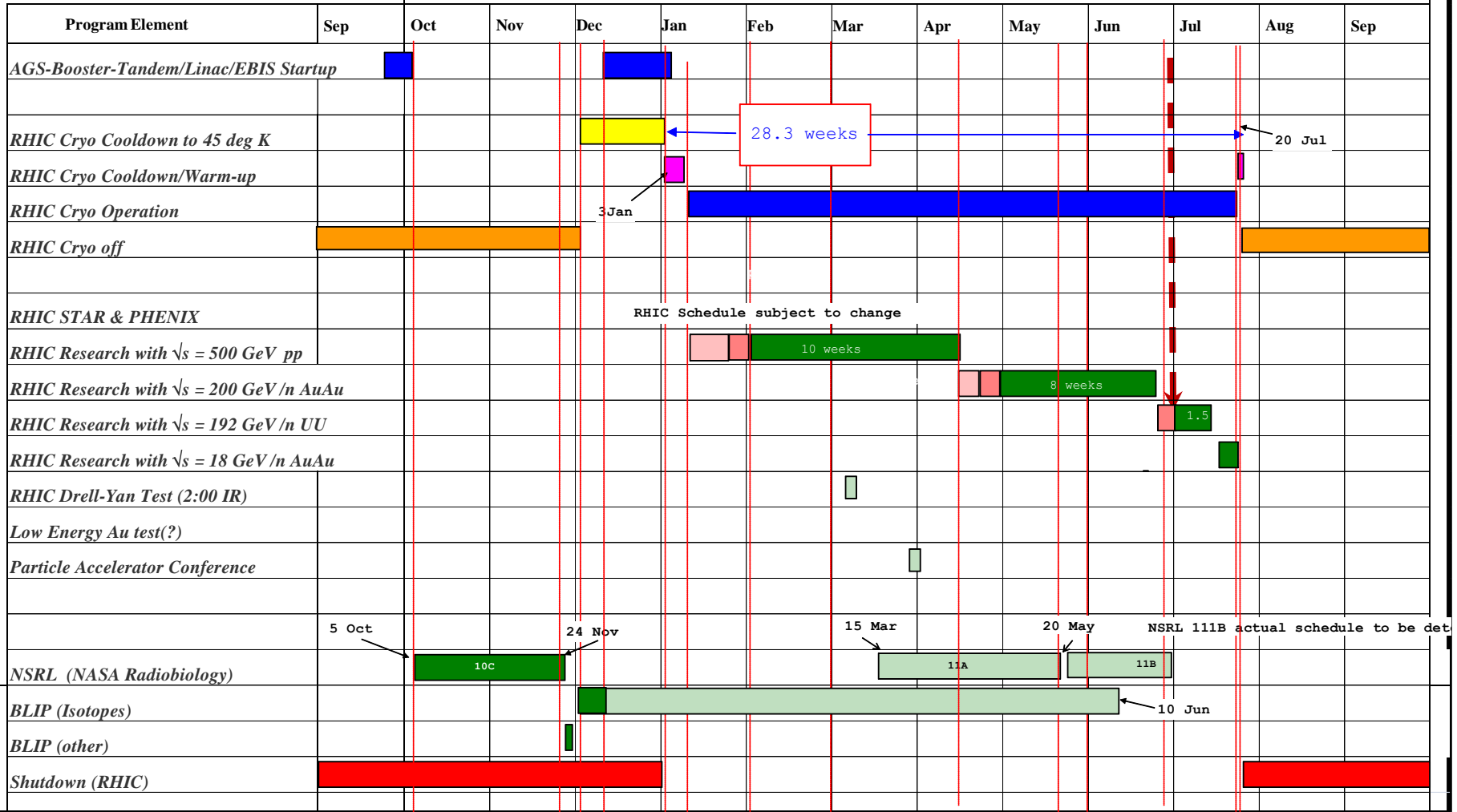


C-A Operations-FY11

planned (budget permitting)

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

FY 2011



28.3 weeks

3Jan

RHIC Schedule subject to change

10 weeks

8 weeks

1.5

5 Oct

24 Nov

15 Mar

20 May

NSRL 111B actual schedule to be det

10c

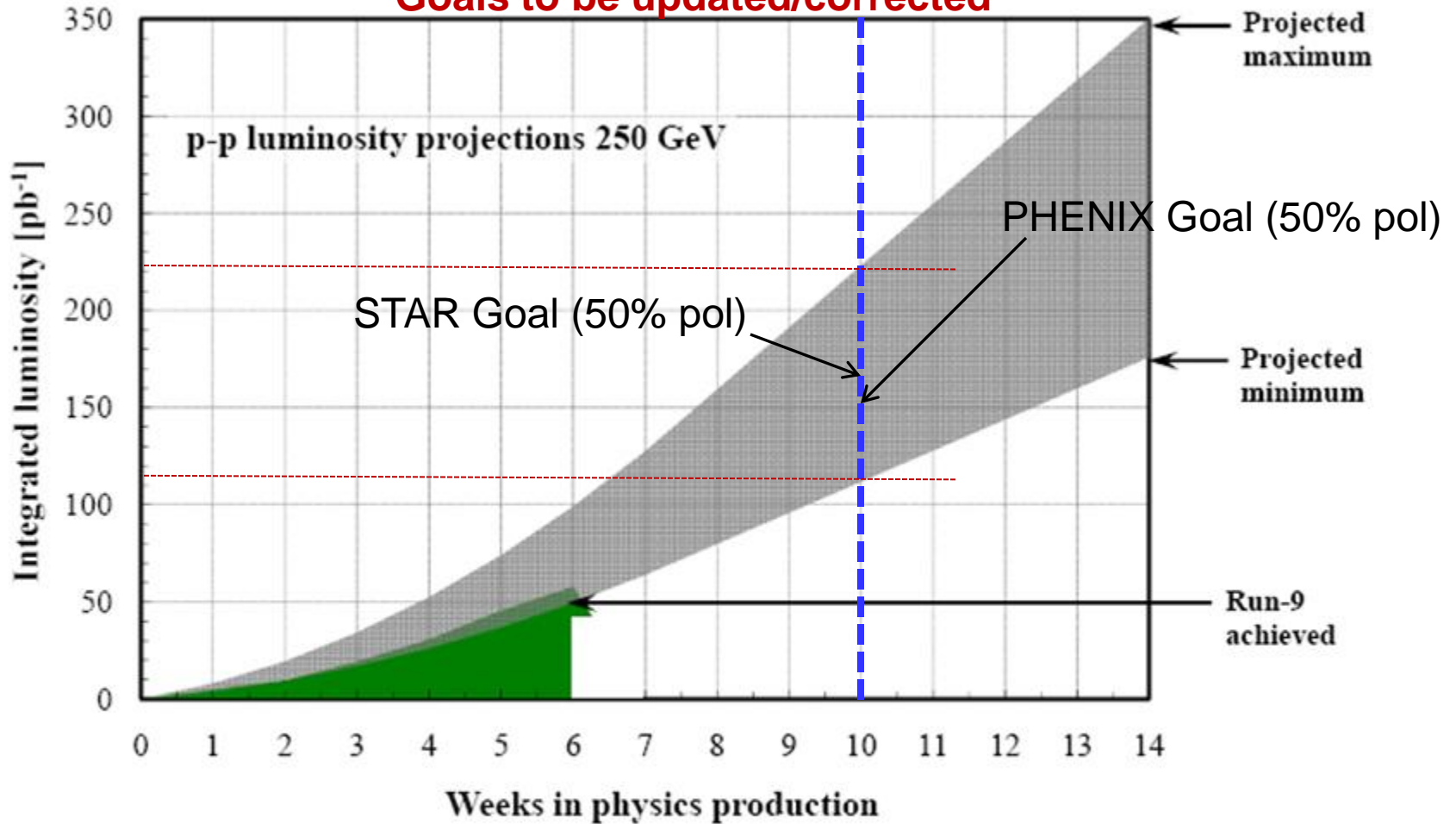
11A

11B

10 Jun

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

Goals to be updated/corrected

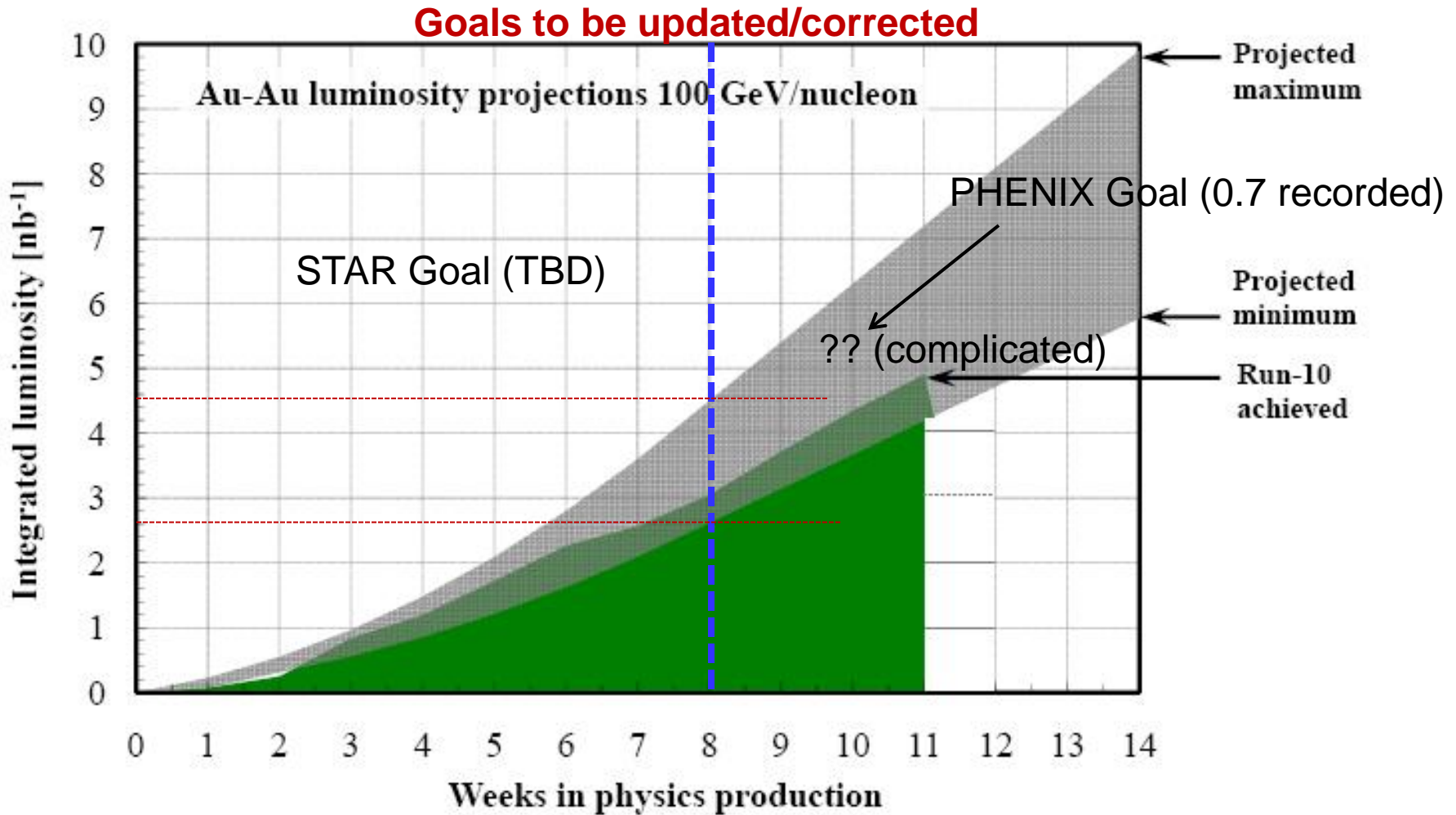


Assume 8 weeks to ramp-up for max.

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]