Possible Run 10 plan based on 25 Nov Revised Plan

- Run10, 25 cryo-weeks (my guesses after Jan 2)
  - Dec. 1, Begin cooldown to 4.5K
  - Dec. 4, Cooldown to 4.5K complete in both rings!
  - Dec. 5, beam setup in RHIC begins.
  - Dec 16, 20 hr unplanned Maintenance day
  - Dec 20 (AM)-21(PM), blizzard 09 shut us down
  - Dec. 27, RHIC Setup complete, begin Ramp Up for Physics (was 14 Dec, late)
  - Dec 31 (midnight-store 11340), Machine **(and PHENIX?)** Physics declared $\sqrt{s}$=200 GeV/n Au-Au
  - Jan 2 (midnight) STAR in Physics Mode
  - Mar. 11, End 10 week $\sqrt{s}$ = 200 GeV/n Run, begin $\sqrt{s}$ = 62.4 GeV/n setup
  - Mar. 13, Begin 4 week $\sqrt{s}$ = 62.4 GeV/n run
  - Apr. 10, End 4 week $\sqrt{s}$ = 62.4 GeV/n Run, begin $\sqrt{s}$ = 39 GeV/n setup
  - Apr. 12, Begin 1.5 week $\sqrt{s}$ = 39 GeV/n run
  - Apr. 23, End 1.5 week $\sqrt{s}$ = 39 GeV/n Run, begin $\sqrt{s}$ = 7.7 GeV/n setup
  - Apr. 25, Begin 4 week $\sqrt{s}$ = 7.7 GeV/n run
  - May 20, End 4 week $\sqrt{s}$ = 7.7 GeV/n Run, begin $\sqrt{s}$ = 5.0 GeV/n setup
  - May 23, End 4 week $\sqrt{s}$ = 7.7 GeV/n Run, begin $\sqrt{s}$ = 5.0 GeV/n setup
  - May 25, begin 0.5 week beam studies at $\sqrt{s}$ = 5 GeV/n and $\nu \sim 0.67$ - – **25 CRYO WEEK**
  - **This is it unless we have $'s to run longer – revisit in March**
  - May 29, end 0.5 week studies
  - May 31, begin $\sqrt{s}$ = 11.5 GeV/n for STAR
  - Jun 15, end 2 week $\sqrt{s}$ = 11.5 GeV/n run
  - Jun 15 , Begin Cryo Warm-up
  - Jun 16, Warm-up complete, Run 10 ends – **28.2 CRYO WEEKS**

31 Dec 1st Physics Store

Injected Beam Statistics for Fill number 11340
Started filling RHIC: Thu Dec 31 22:51:52 2009, Fill complete: Thu Dec 31 22:59:50 2009, Minutes to fill: 7

Ring	Bunches /Cycles	Avg Bunch in RHIC (10^6 ions)	Avg Efficiency XCBM to RHIC	XCBM to Uxf1	*Uxf1 to Wxf*	*Wxf to Arc*	*Arc to RHIC*
Blue	56/56	909	0.836	1.056	*0.963*	*0.992*	*0.828*
Yellow	56/56	990	0.971	1.085	*0.962*	*0.959*	*0.970*

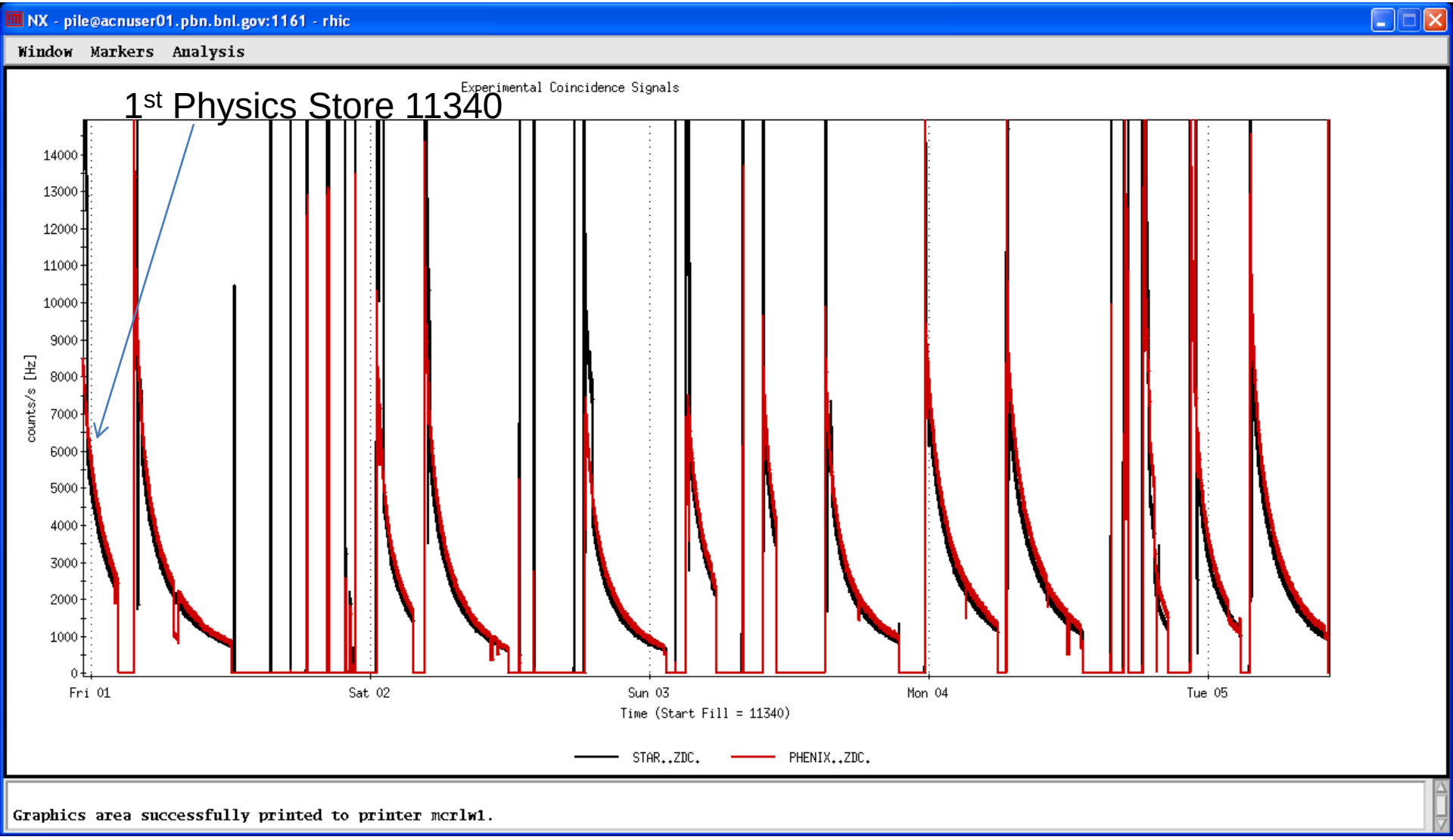
5 Jan Physics Store

Injected Beam Statistics for Fill number 11370
Started filling RHIC: Tue Jan 5 03:22:19 2010, Fill complete: Tue Jan 5 03:32:02 2010, Minutes to fill: 9

Ring	Bunches /Cycles	Avg Bunch in RHIC (10^6 ions)	Avg Efficiency XCBM to RHIC	XCBM to Uxf1	*Uxf1 to Wxf*	*Wxf to Arc*	*Arc to RHIC*
Blue	68/68	1031	0.906	1.053	*0.964*	*1.001*	*0.892*
Yellow	68/68	991	0.938	1.050	*0.964*	*0.993*	*0.934*

Run 10, 31 Dec through 5 Jan (AM)

Run 10, 31 Dec through 5 Jan (AM)

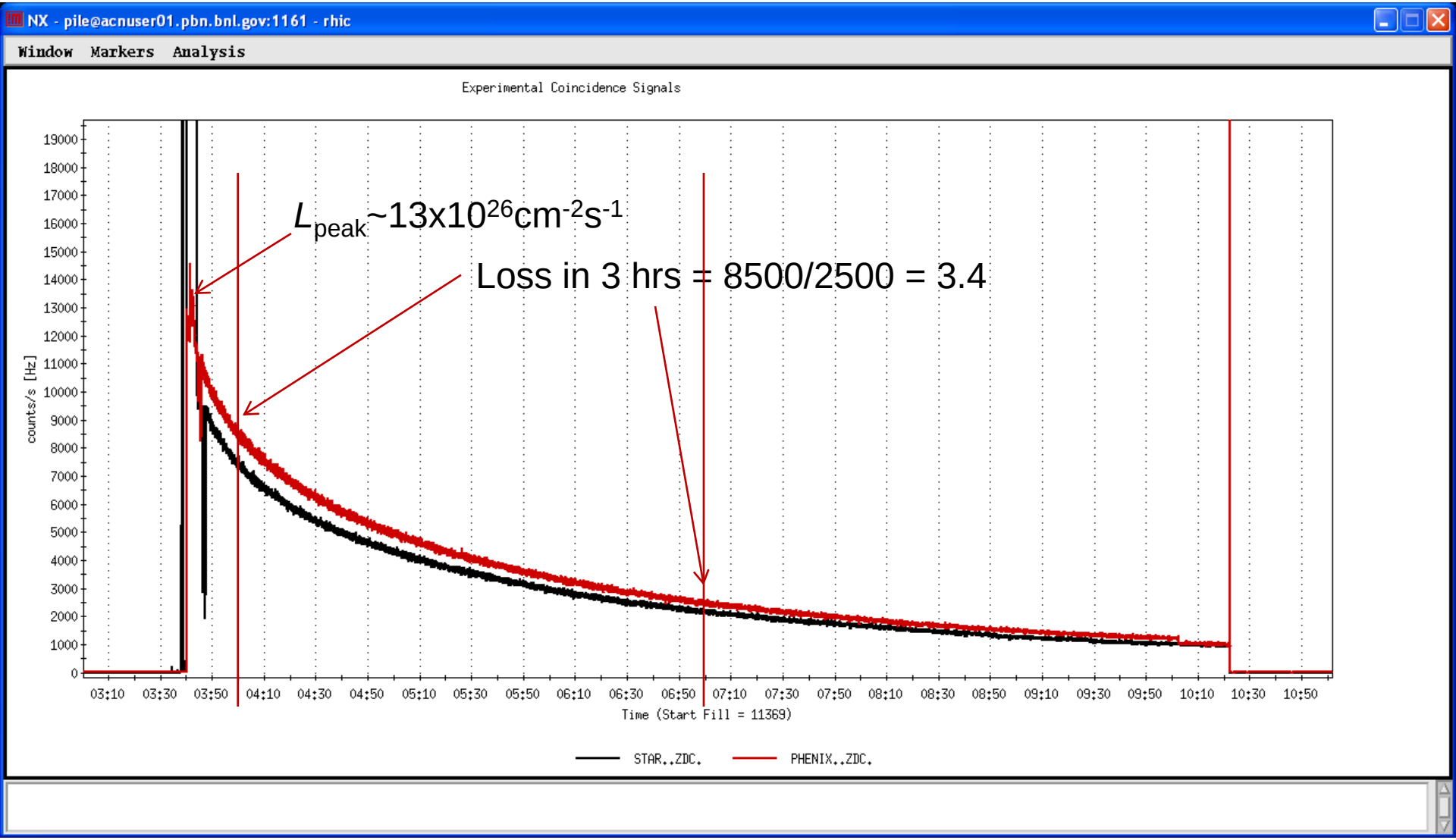


Fill 8849 Injected Beam Statistics from ELOG

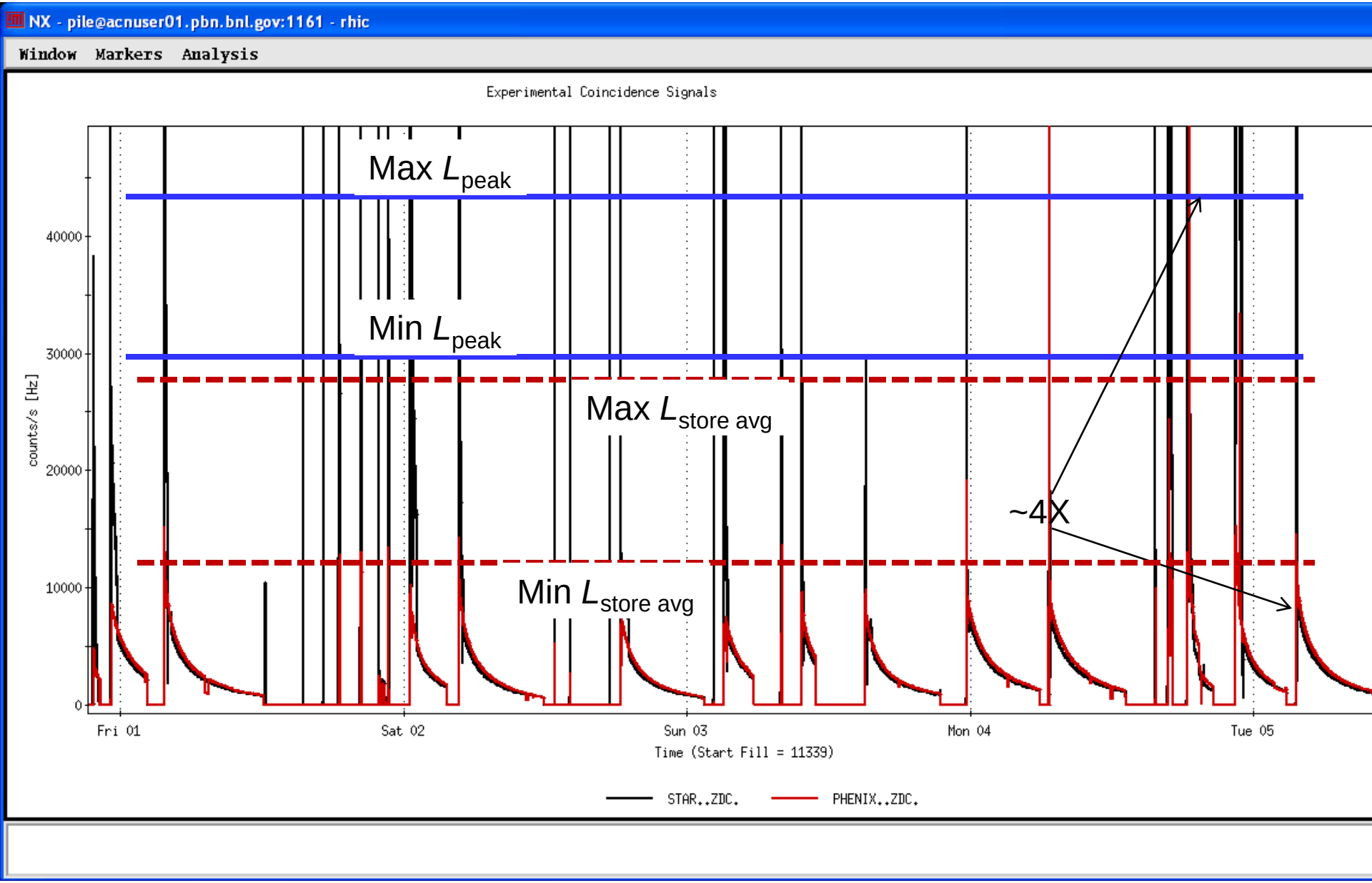
Blue = 68 bunches 1.03x10^9/bunch

Yellow= 68 bunches 0.99x10^9/bunch

Store 11370, 5 Jan



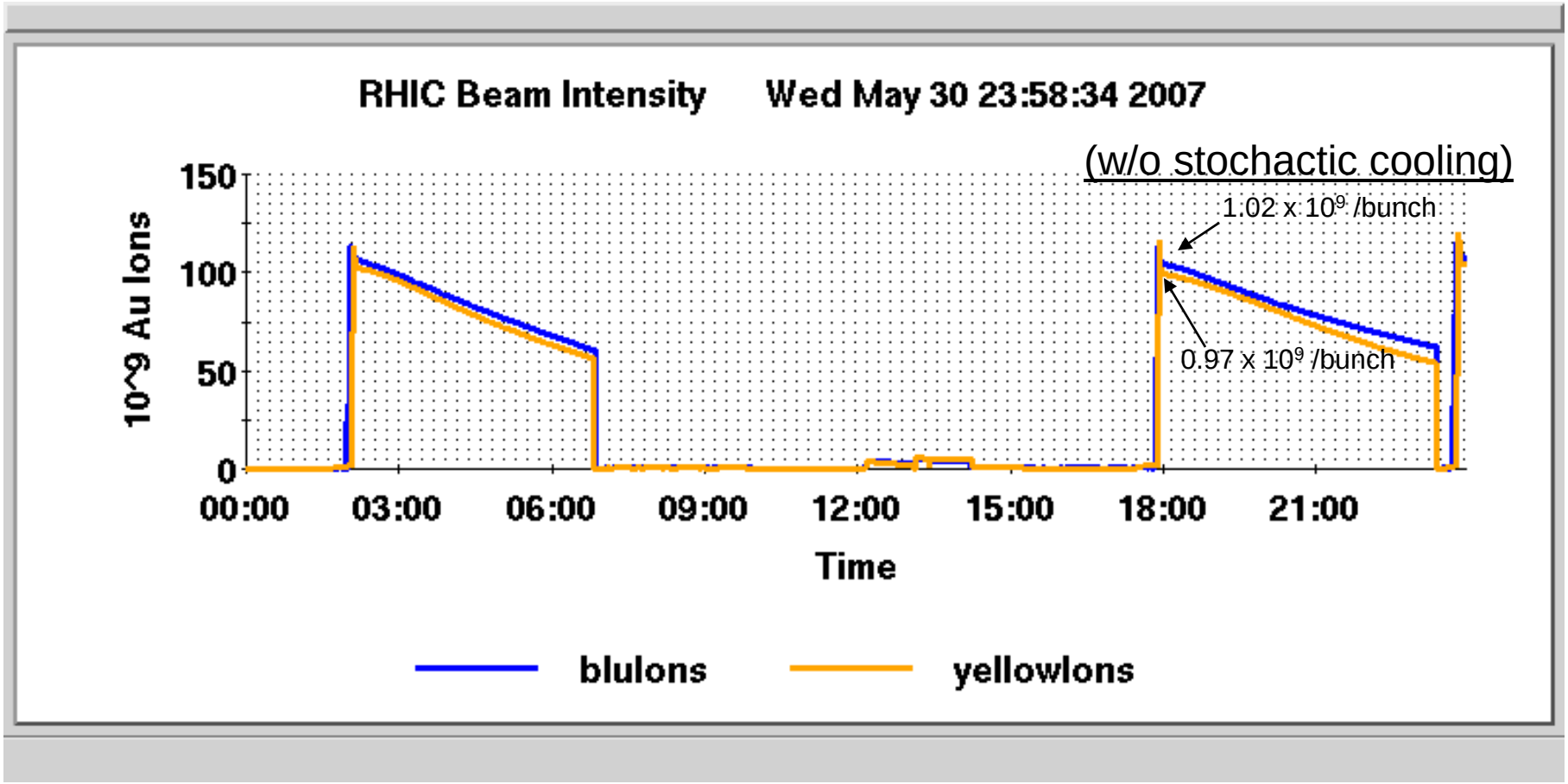
12/31-1/5 stores



Fill 8878 Injected Beam Statistics from ELOG

Blue = 103 bunches 1.04×10^9/bunch

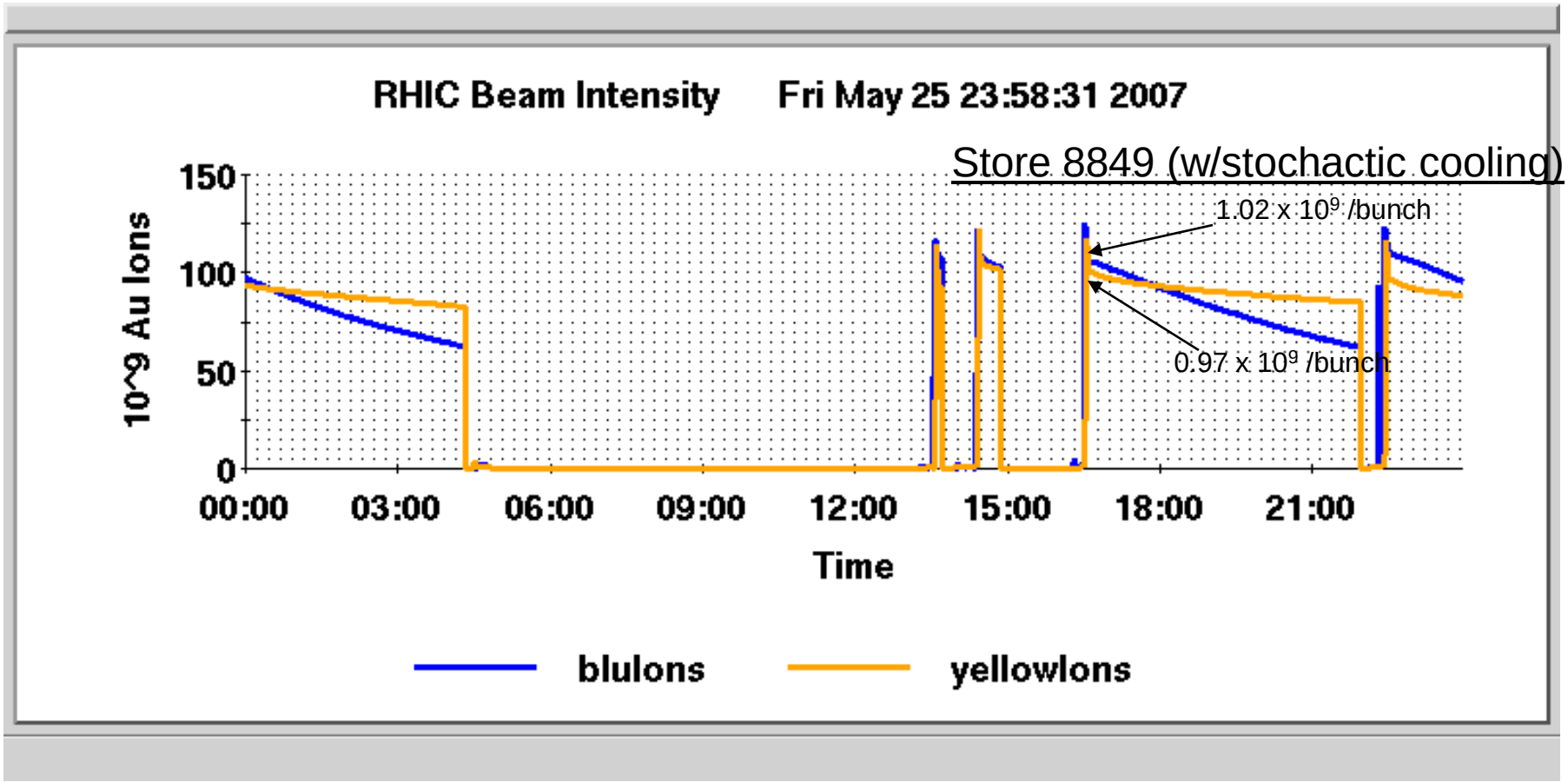
Yellow= 103 bunches 1.13×10^9/bunch

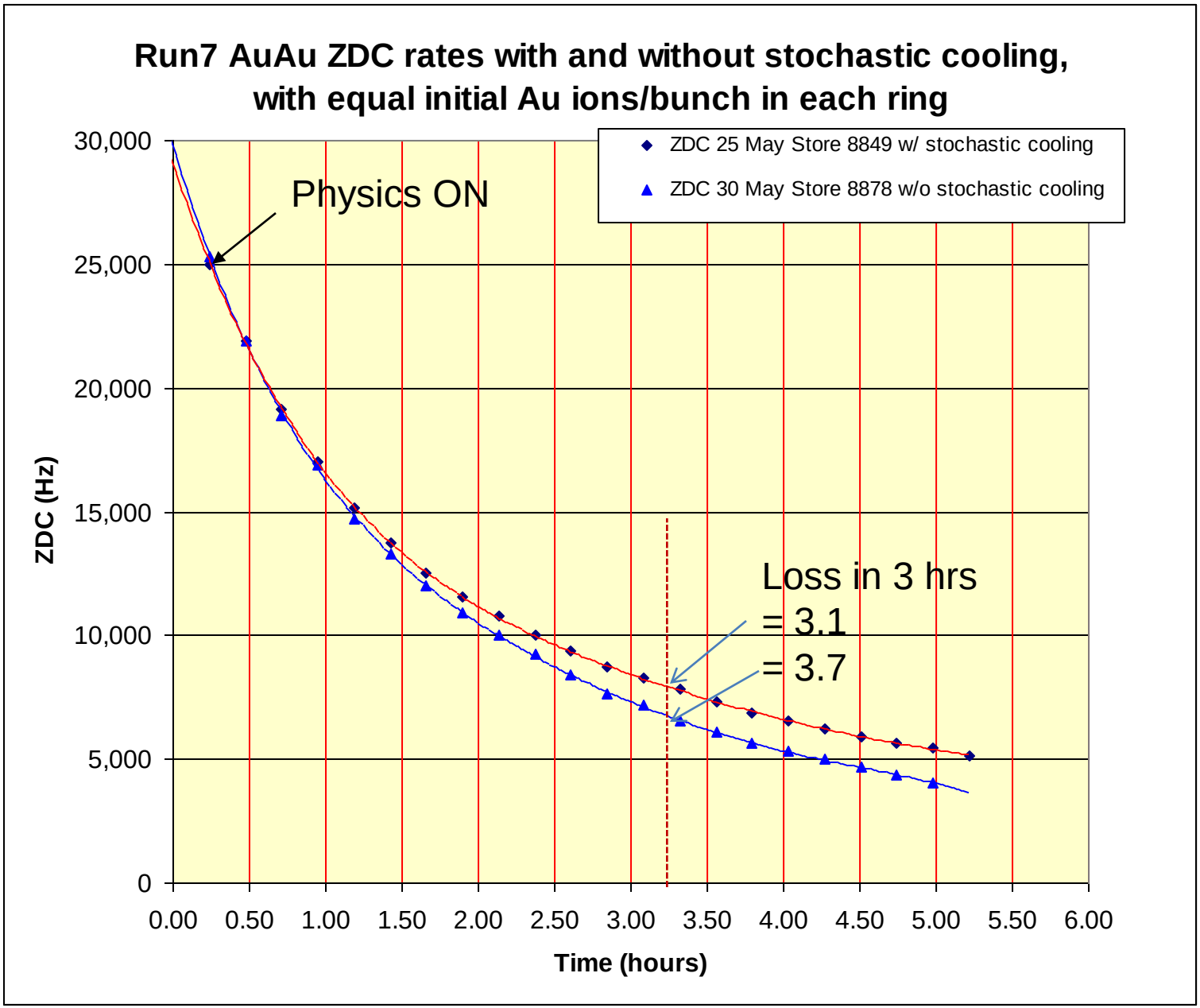


Fill 8849 Injected Beam Statistics from ELOG

Blue = 103 bunches 1.23×10^9/bunch

Yellow= 103 bunches 1.15×10^9/bunch



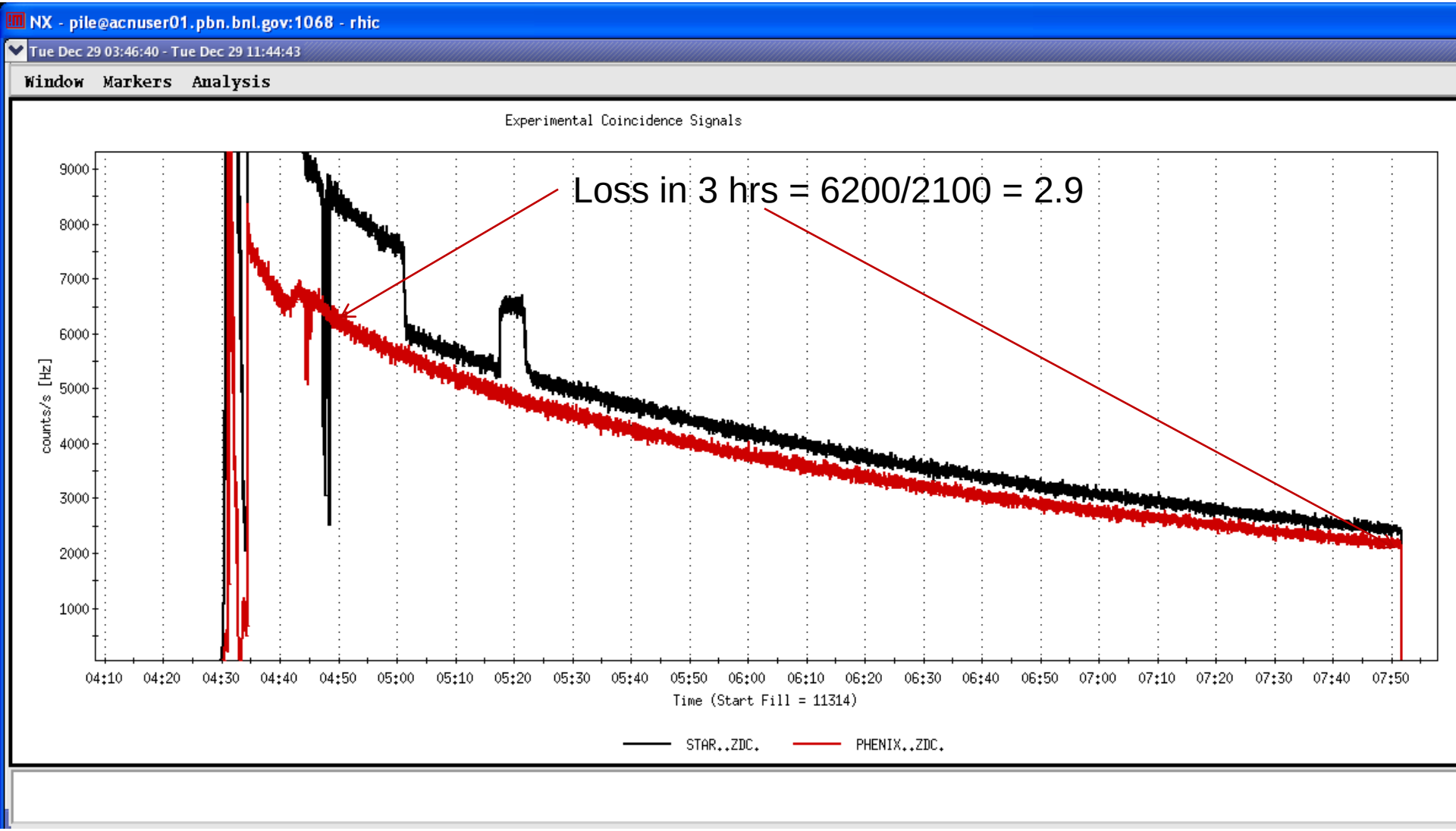

Run7 AuAu ZDC rates with and without stochastic cooling,
with equal initial Au ions/bunch in each ring
ZDC 25 May Store 8849 w/ stochastic cooling
ZDC 30 May Store 8878 w/o stochastic cooling
Physics ON
Loss in 3 hrs
= 3.1
= 3.7
ZDC (Hz)
30,000
25,000
20,000
15,000
10,000
5,000
0
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
Time (hours)

Future Topics

- Toward Smaller beta* - new quad triplets – D. Trbojevic

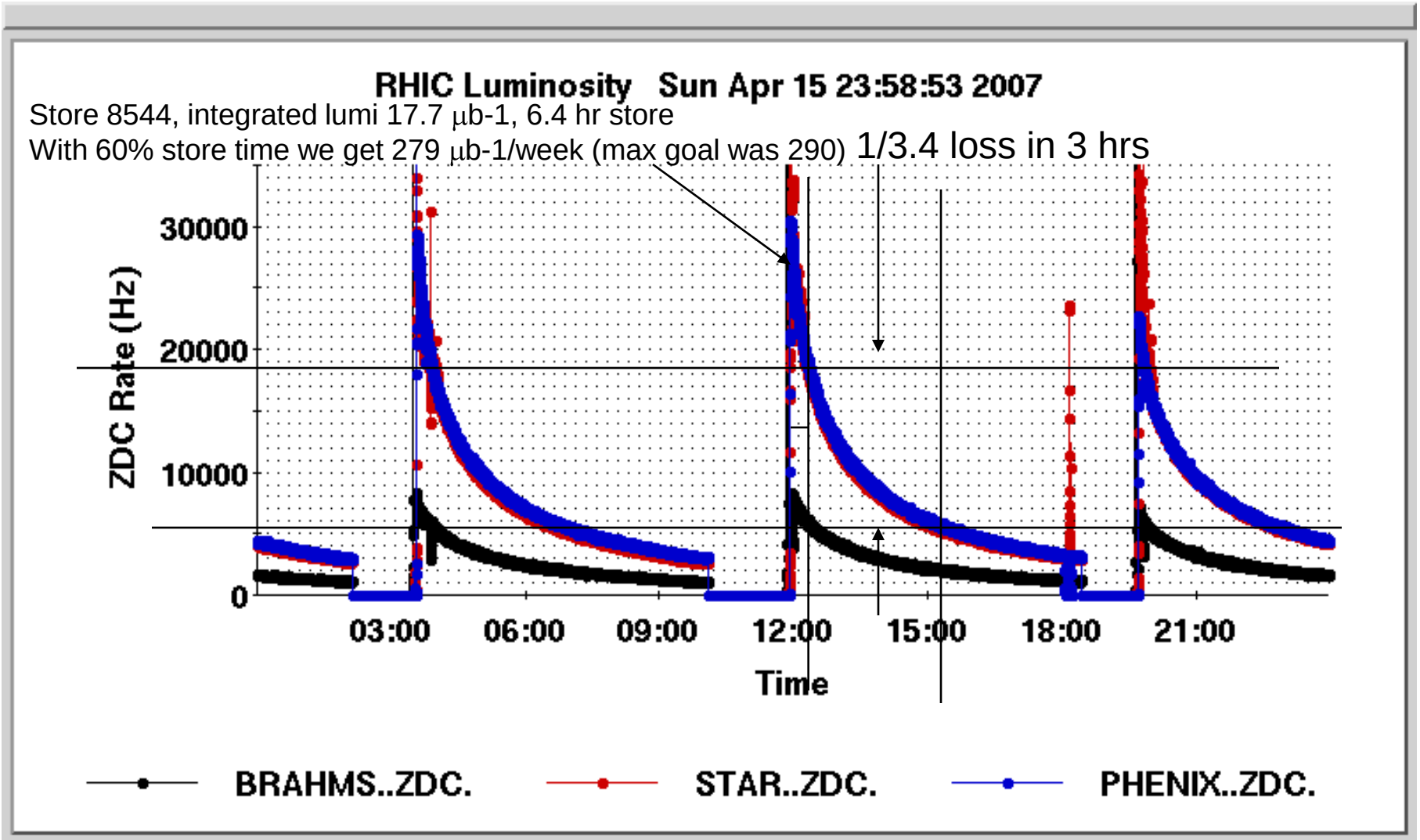
Archive

12/29/09 morning store



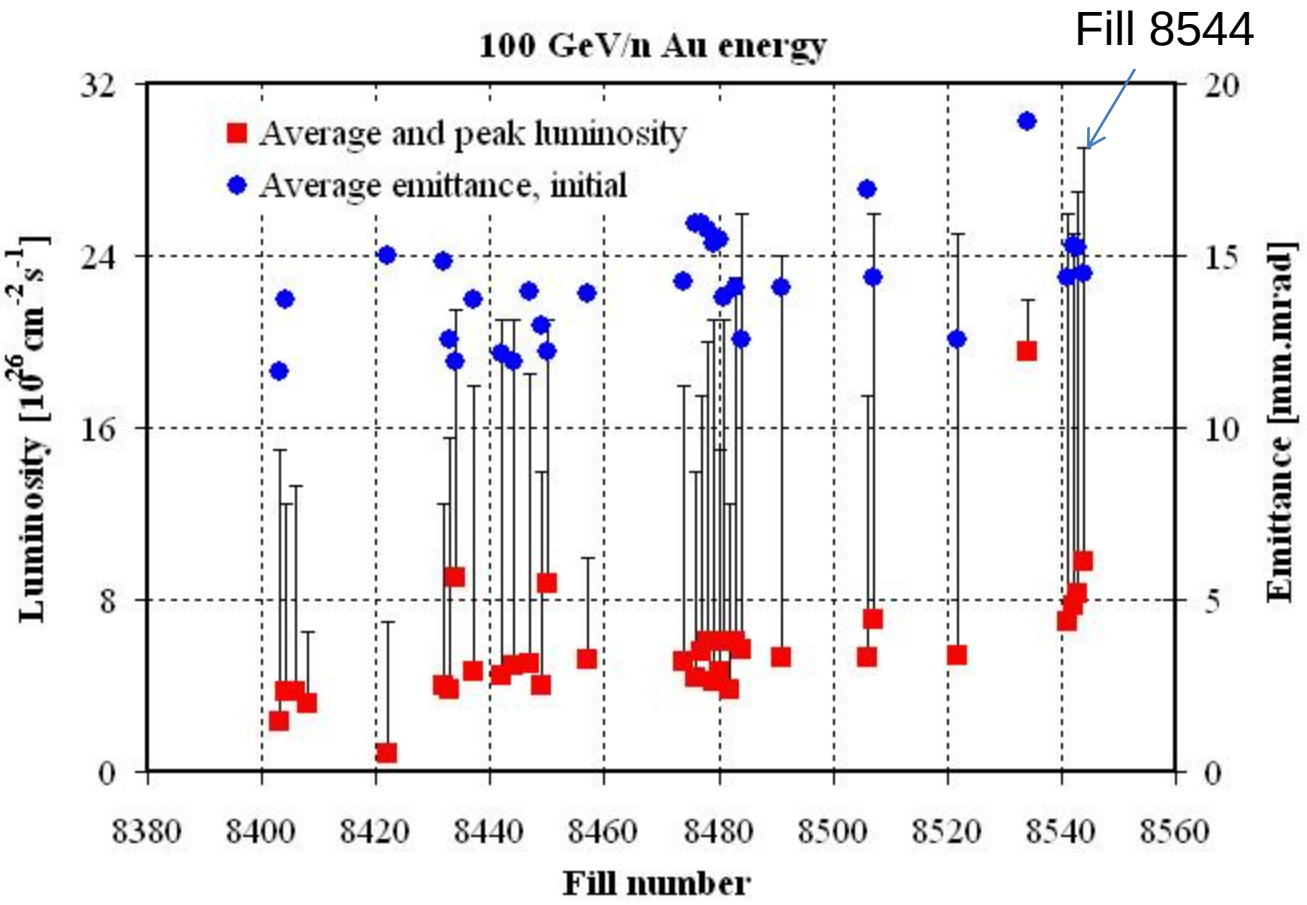
RUN7

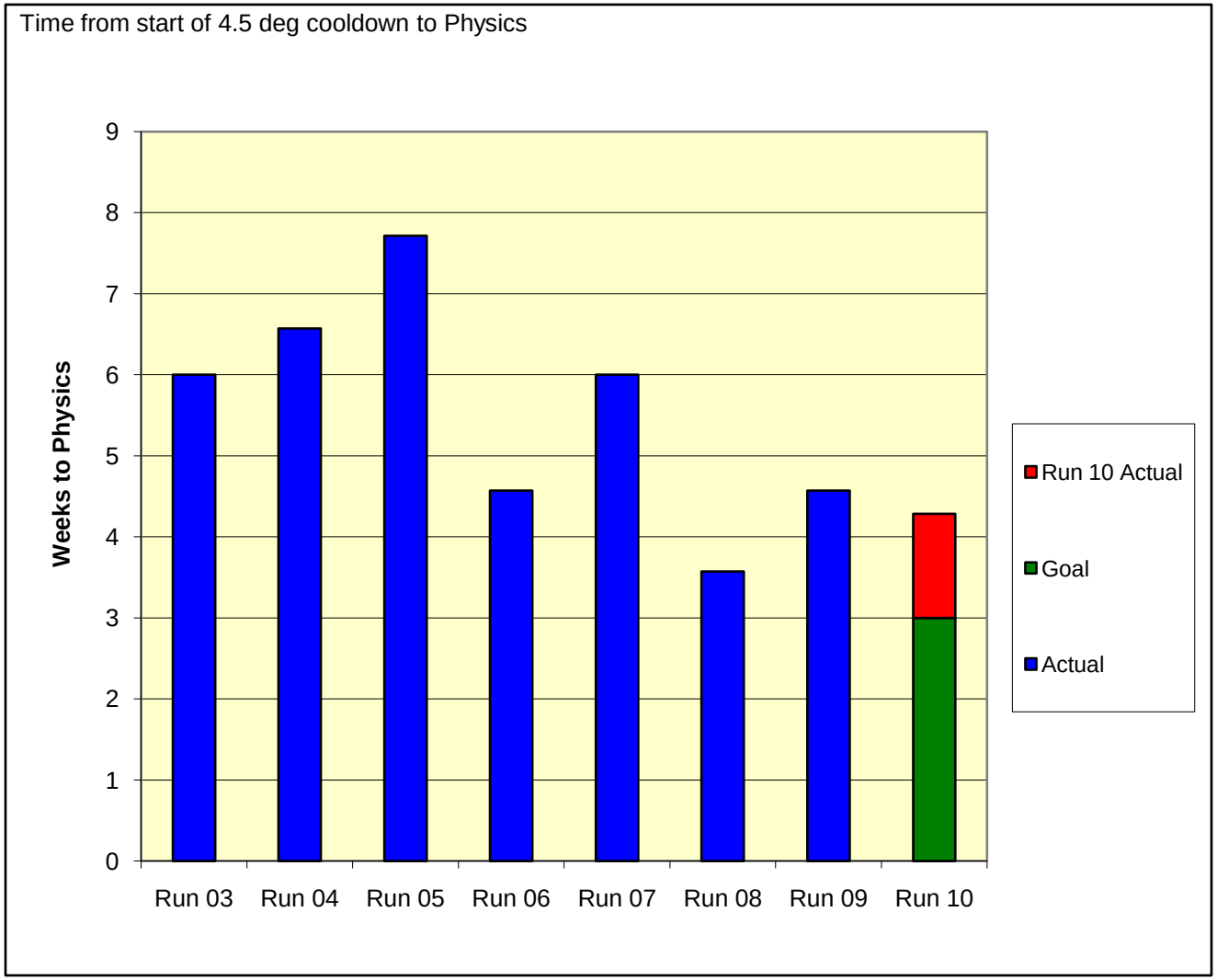
111 x 111 bunches
No stochastic cooling
Initially 1.05/0.95x10^9 p/bunch



L [10^{26} cm^{-2} s^{-1}] = ZDC[kHz]

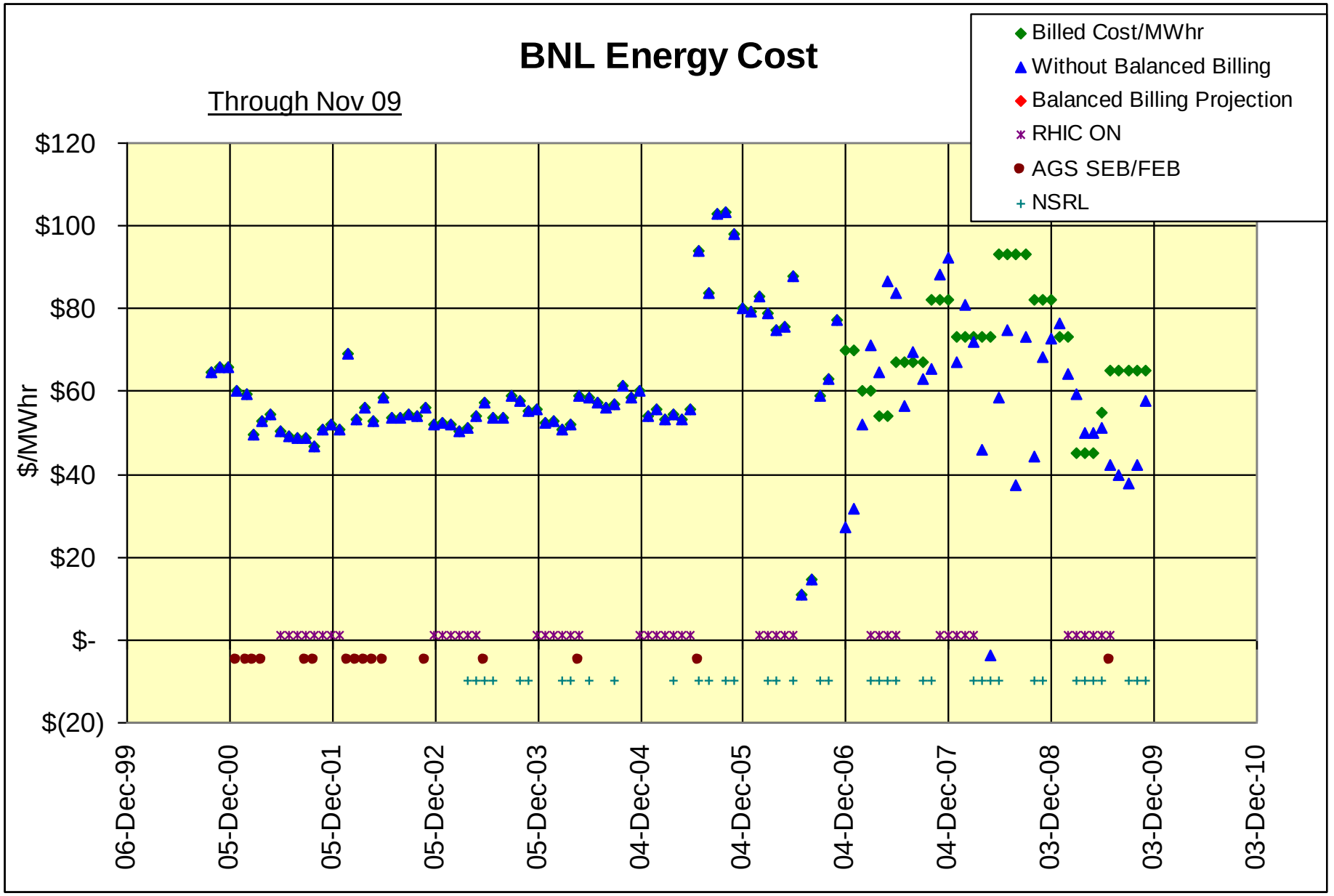
Run 7

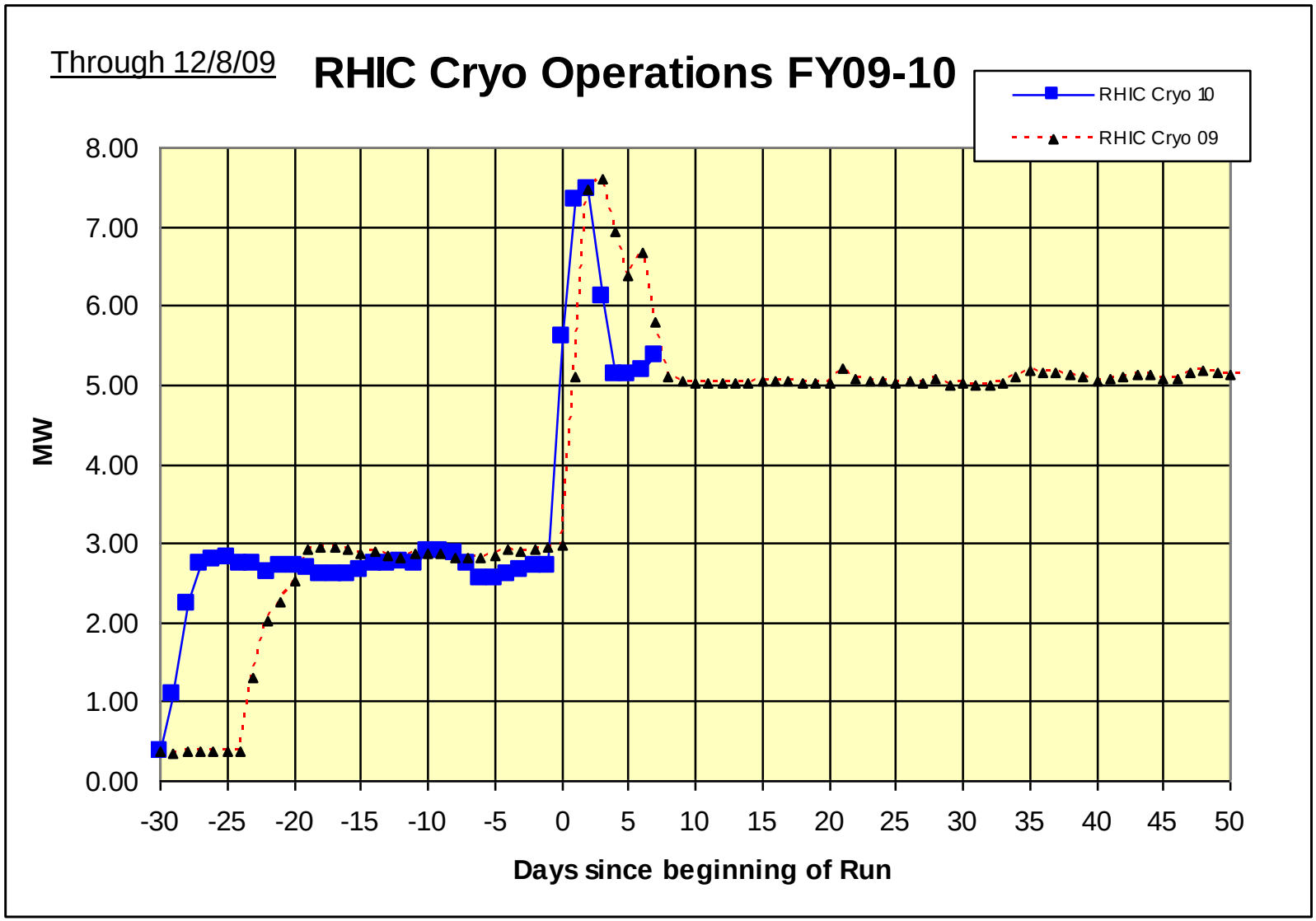

Fill 8544
100 GeV/n Au energy
Average and peak luminosity
Average emittance, initial
Luminosity [10^26 cm^-2 s^-1]
Emittance [mm.mrad]
Fill number
32
24
16
8
0
20
15
10
5
0
8380
8400
8420
8440
8460
8480
8500
8520
8540
8560

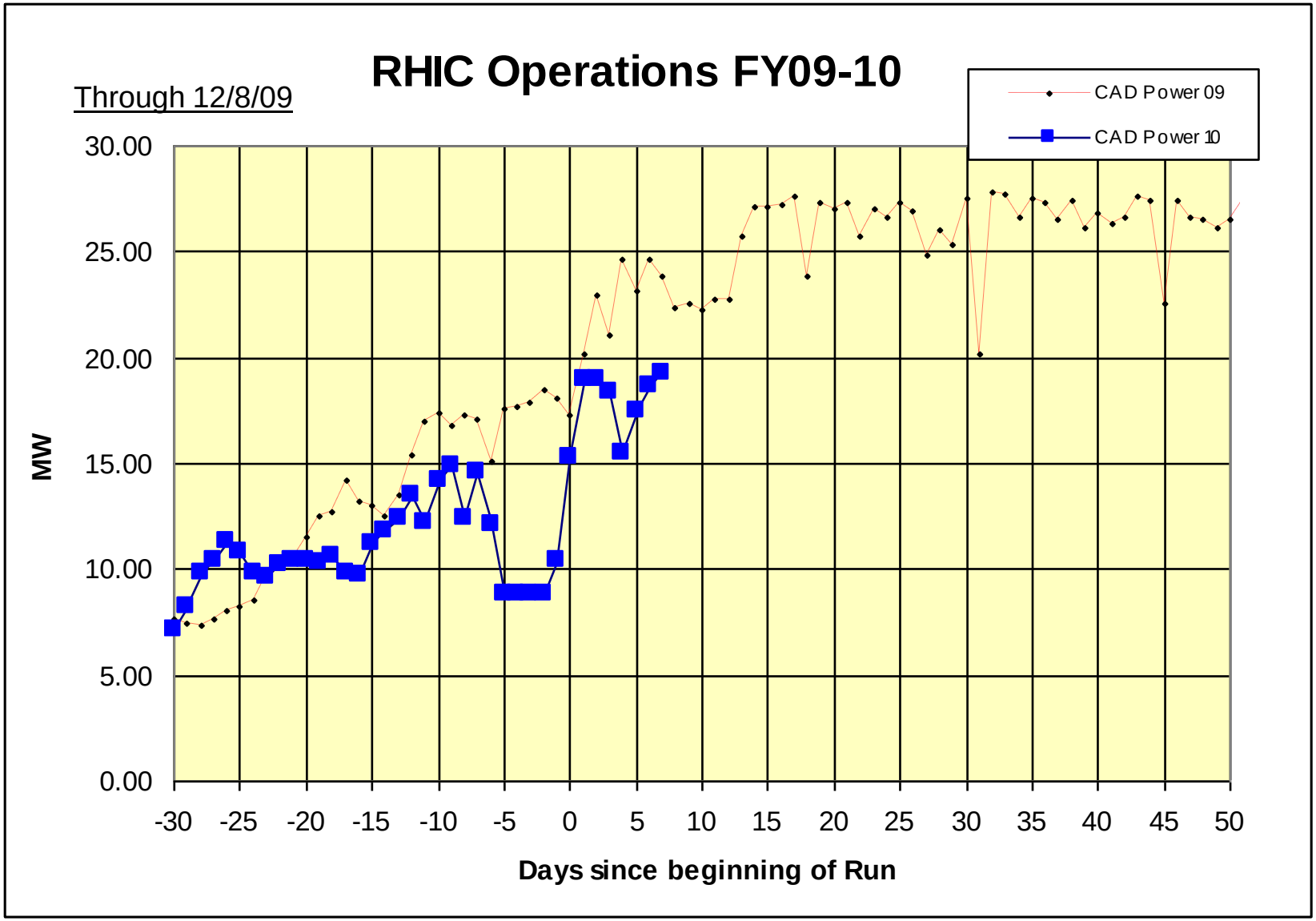

Time from start of 4.5 deg cooldown to Physics
Weeks to Physics
0
1
2
3
4
5
6
7
8
9
Run 03
Run 04
Run 05
Run 06
Run 07
Run 08
Run 09
Run 10
Run 10 Actual
Goal
Actual

Revised Run 10 Plan, Nov 25, 2009

	Physics production or beam studies weeks	
$\sqrt{s_{NN}}$ (GeV)	25-cryoweek run	27-cryoweek run
200	10	10
62.4	4	4
39	1.5	1.5
27	0	0
18	0	0
11.5 @ STAR	0	2
7.7	4	4
Beam studies @ 5 GeV and @ $\nu \approx 0.67$	0.5	0.5


BNL Energy Cost
Through Nov 09
Billed Cost/MWhr
Without Balanced Billing
Balanced Billing Projection
RHIC ON
AGS SEB/FEB
NSRL
$120
$100
$80
$60
$40
$20
$-
$(20)
$/MWhr
06-Dec-99
05-Dec-00
05-Dec-01
05-Dec-02
05-Dec-03
04-Dec-04
04-Dec-05
04-Dec-06
04-Dec-07
03-Dec-08
03-Dec-09
03-Dec-10


Through 12/8/09
RHIC Cryo Operations FY09-10
RHIC Cryo 10
RHIC Cryo 09
MW
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
45
50
Days since beginning of Run


RHIC Operations FY09-10
Through 12/8/09
CAD Power 09
CAD Power 10
30.00
25.00
20.00
15.00
10.00
5.00
0.00
MW
-30
-25
-20
-15
-10
-5
0
5
10
15
20
25
30
35
40
45
50
Days since beginning of Run

Run 10 Au-Au Goals

11/19/09

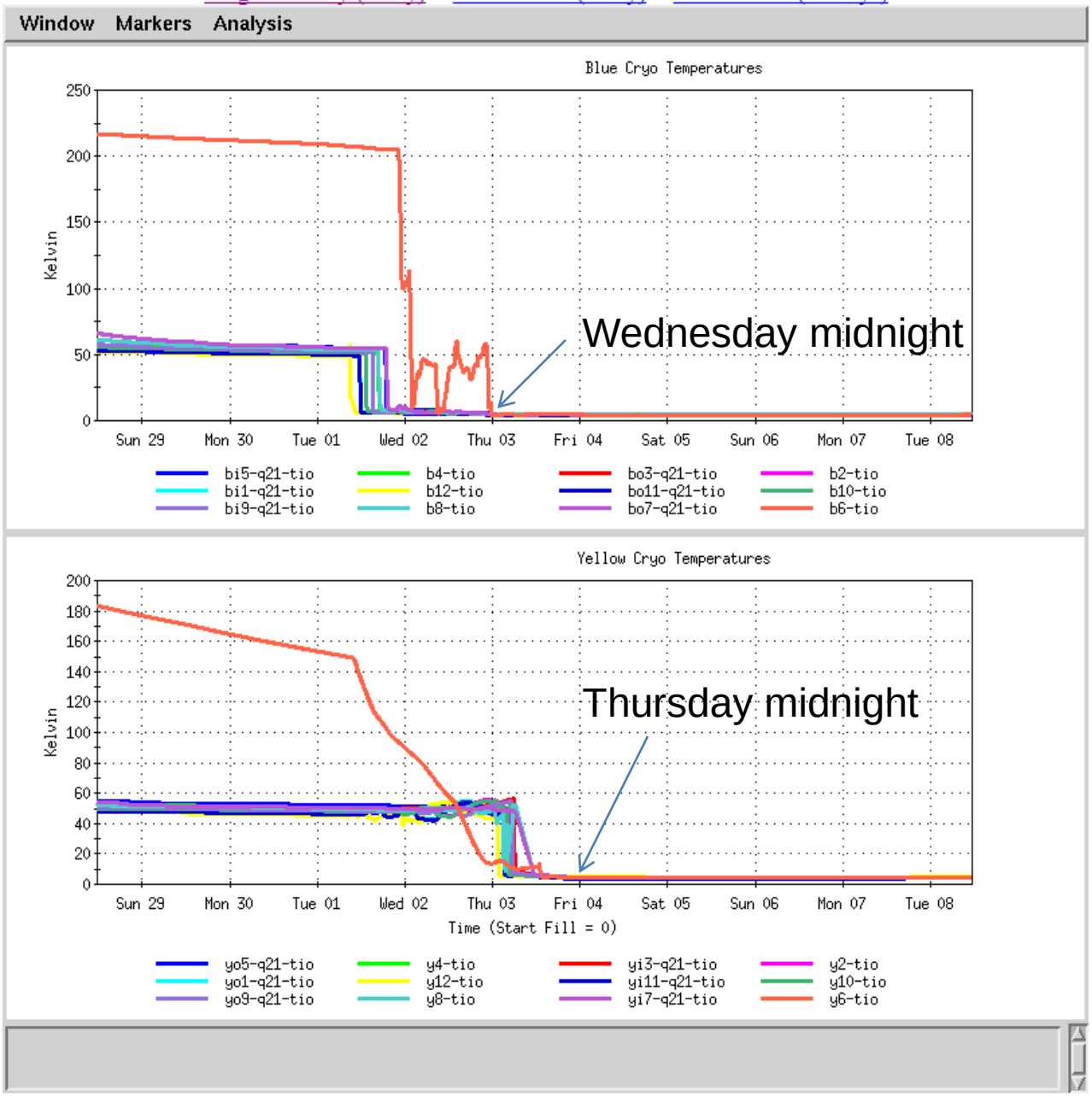
- STAR
  - $\sqrt{s}$ = 200 GeV/n
    - Luminosity Sampled/Delivered = 2/4 nb^{-1}
    - 250M Central Events
    - 300M Min-bias events
- PHENIX
  - $\sqrt{s}$ = 200 GeV/n
    - Luminosity Recorded/Delivered = 1.4/>6 nb^{-1}
    - Minimum Goal:
      - Luminosity Recorded/Delivered = 1.1/3.9 nb^{-1}

Run 10 Setup

- Oct. 5, N2 scrubbing
- Oct. 30, Temp. Control devices in and ready (required for 45 K wave cooldown).
- Nov. 2, 45 K wave begins.
- Nov. 12, AGS Testing.
- Nov. 12-13, APEX Workshop
- Nov. 16, beam setup in Booster and AGS
- Nov. 16-20, RHIC Dry Run
- Nov 22, Beam extracted from AGS to W dump

Cryogenic Blue & Yellow Rings (14 days)

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



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

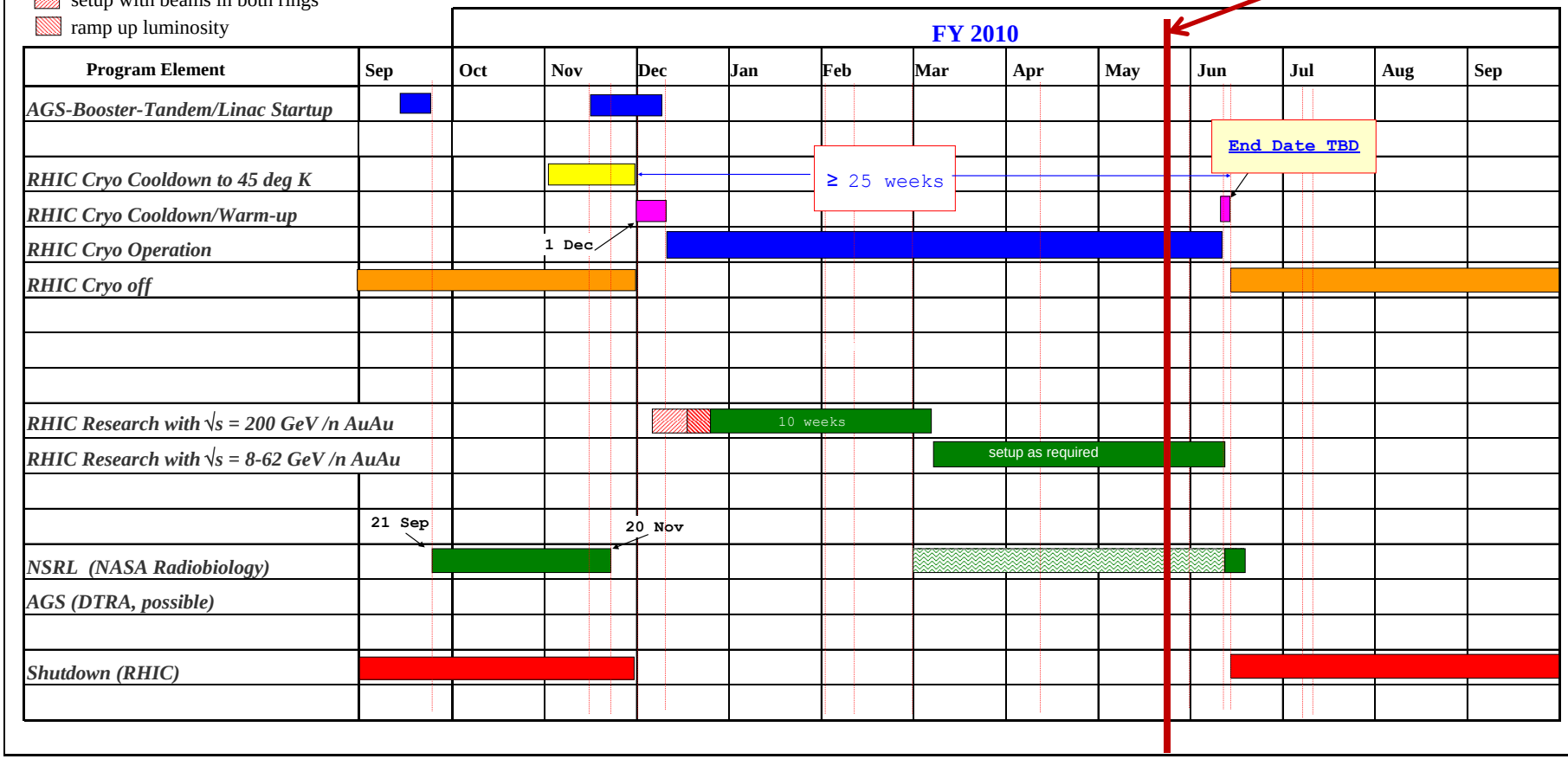
17 Nov 09

C-A Operations-FY10

Planned (budget permitting)

25 Cryo Weeks

concurrent with RHIC
setup with beams in both rings
ramp up luminosity



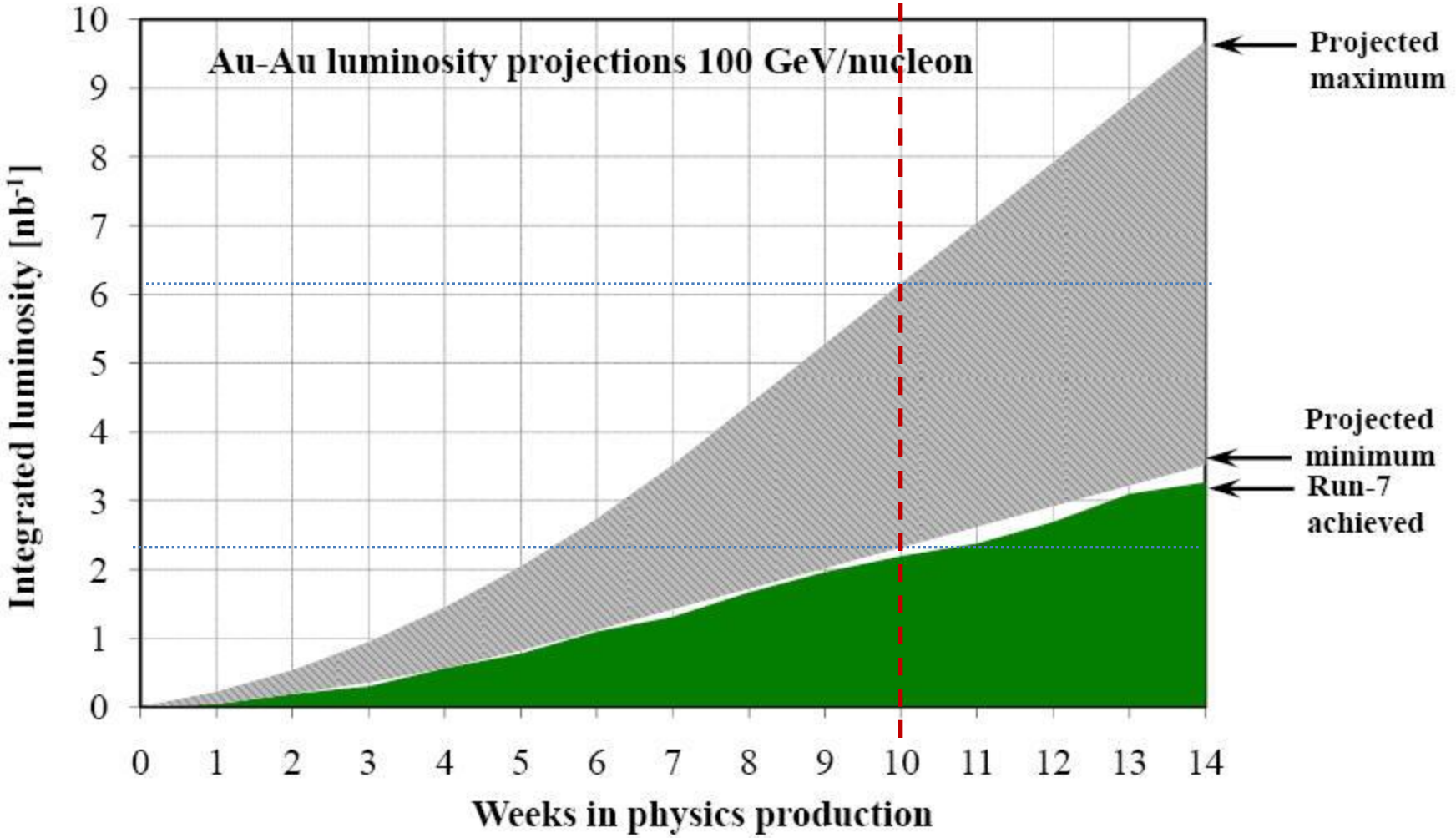


Figure 2: Projected minimum and maximum integrated luminosities for gold-gold collisions at 100 GeV beam energy, assuming linear weekly luminosity ramp-up in 6 weeks for the minimum and 8 weeks for the maximum.