

RHIC Run 6 Summary

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P. Pile 27 June 06
28 Jun, revised slides 3,4,7,8

RHIC Run 6 as run

6/27/06

- 1 Feb – Cool-down begins
- 7 Feb – 1st beam in blue ring
- 12 Feb – 1st beam in yellow beam
- 5 Mar – Machine Physics Mode declared (4.6 weeks into run)
- 8 Mar – **PHENIX** in Physics Mode – radial pol (5 weeks into run – on schedule)
- 12 Mar – **STAR** in Physics Mode – long pol (5.6 weeks into run)
- 12 Mar – begin 11.0 weeks of $\sqrt{s}=200$ GeV pp (0.6 weeks behind schedule)
- 6 Apr – **STAR** switch to trans pol
- 14 April – unscheduled shutdown (incr. power use at ~50% of full operations)
- 21 April – unscheduled shutdown ends – lost ~ 7 days
- 22 April – **PHENIX** back on (lost 8 days)
- 24 April – **STAR** back on (lost 10 days)
- 26 Apr – **PHENIX** completed radial polarization, switched to longitudinal
- 10 May – **STAR** switched to longitudinal polarization
- 5 Jun – 1400, end 13.1 weeks $\sqrt{s}=200$ GeV pp, begin 1 day $\sqrt{s}=22$ GeV development
- 6 Jun – 1400, begin setup $\sqrt{s}=62$ GeV pp – add **BRAHMS**
- 8 June - Physics Mode for all experiments declared
- 20 Jun – 1700, end 2 week $\sqrt{s}=62$ GeV pp (13 days physics), begin $\sqrt{s}=500$ GeV development
- 26 Jun – 1802, end 0.9 weeks $\sqrt{s}=500$ GeV development, begin warm-up to LN2 at ~2400
- 30 Jun – RHIC Cryo switch to LN2 complete, end 21.2 weeks of cryo operation

Experiment Goals and delivered/Sampled luminosities (~final)

Exp	pp \sqrt{s} energy	Pol	Goal			Actual			Average Pol	
			% Pol	Sampled L pb ⁻¹	Delivered L pb ⁻¹	Sampled L pb ⁻¹	Delivered L pb ⁻¹			
PHENIX	200 GeV	R	50%	4-7	10-17	3.1	14.4	52.9%		
	200 GeV	L	60%	10	30	7.5	31.1	60.5%		
	62.4 GeV	T+L	N/A	0.15	0.60	0.1	0.39	N/A		
	62.4 GeV	T	50%			.025	0.16	**	49.8%	
	62.4 GeV	L	55%	0.10	0.4	.075	0.24		47.5%	
STAR	200 GeV	T	50%	3.00	15	3.34	18.9	57.6%		
	200 GeV	L part 1##				2.1	7.87	51.8%		
		L part 2				6.39	19.4	61.2%		
		L total	50%	10	30	8.49	27.3	59.0%		
	62.4 GeV	T	N/A	N/A	0.5	.084	0.34	**	48.3%	
BRAHMS	62.4 GeV	T	50%	0.85	1.4	0.21	0.36	#	48.2%	

Exp	pp \sqrt{s} energy	Pol	FOM Goal		FOM Actual		% of Goal		
			Sampled L pb ⁻¹	Delivered L pb ⁻¹	Sampled L pb ⁻¹	Delivered L pb ⁻¹	Sampled	Delivered	
PHENIX	200 GeV	R	1-1.8	2.5-4.3	0.87	*	4.03	87%	161%
	200 GeV	L	1.3	3.9	1.00	*	4.19	78%	108%
	62.4 GeV	T+L	N/A	N/A	N/A		N/A	67%	66%
	62.4 GeV	T	N/A	N/A	0.0062	*	0.039		
	62.4 GeV	L	0.009	0.037	0.0038	*	0.012	42%	33%
STAR	200 GeV	T	0.8	3.8	1.11	*	6.25	148%	167%
	200 GeV	L part 1##			0.15	*	0.57		
		L part 2			0.90	*	2.72		
		L total	0.6	1.9	1.03	*	3.30	165%	176%
	62.4 GeV	T	N/A	N/A	0.020	*	0.079	N/A	68%
BRAHMS	62.4 GeV	T	0.21	0.35	0.049	*	0.083	23%	24%

* ppile estimate from PHENIX and STAR input

** missing first physics store 7998 (estimated)

*** to be revised once jet target data is analyzed

assumes BRAHMS Lumi 1.05 x STAR for stores through 12 June

taken during STAR tune-up phase

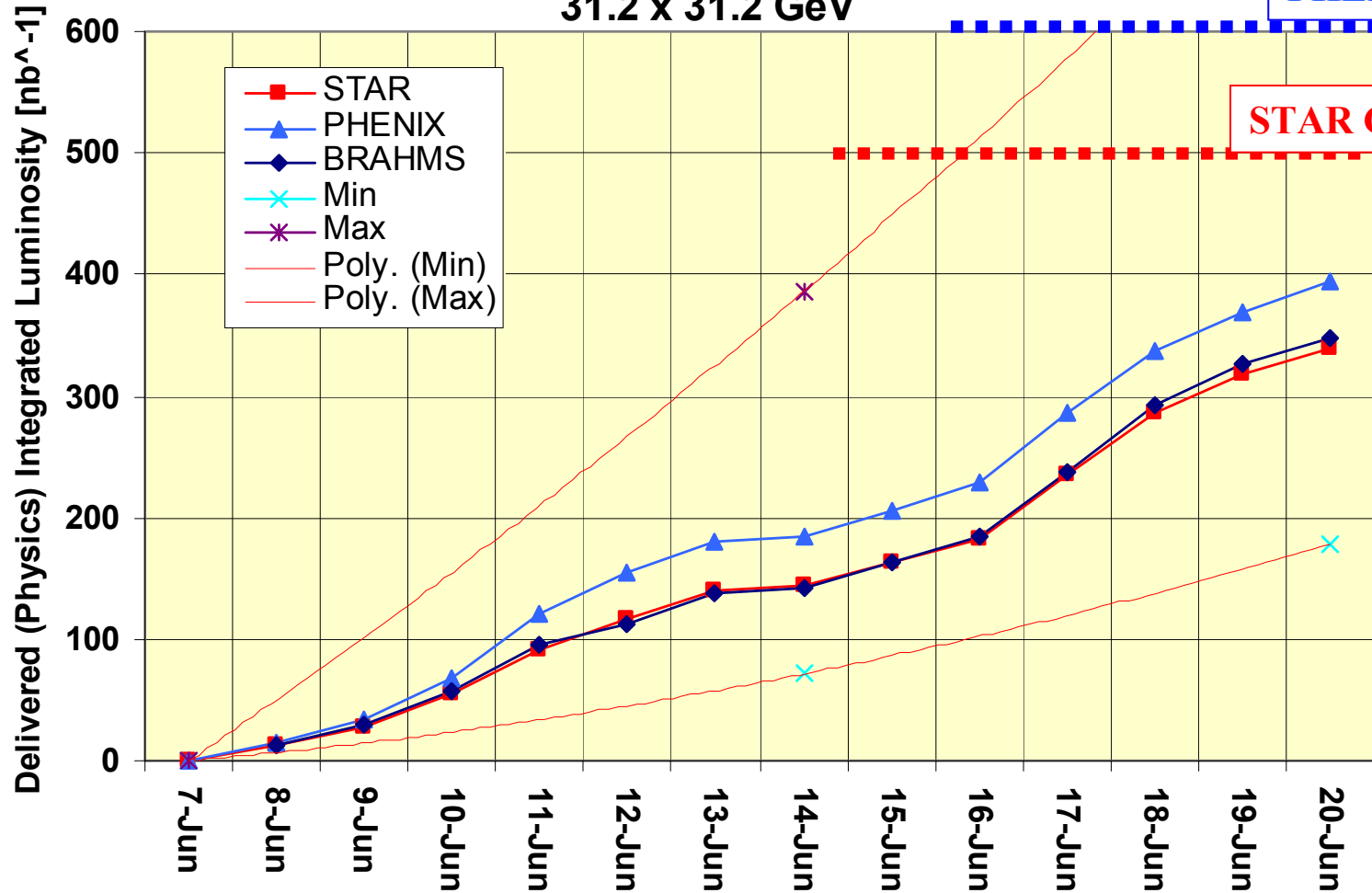
BRAHMS Goals = 1400 nb⁻¹

Run6 RHIC pp Integrated Luminosity for Physics (Final)

31.2 x 31.2 GeV

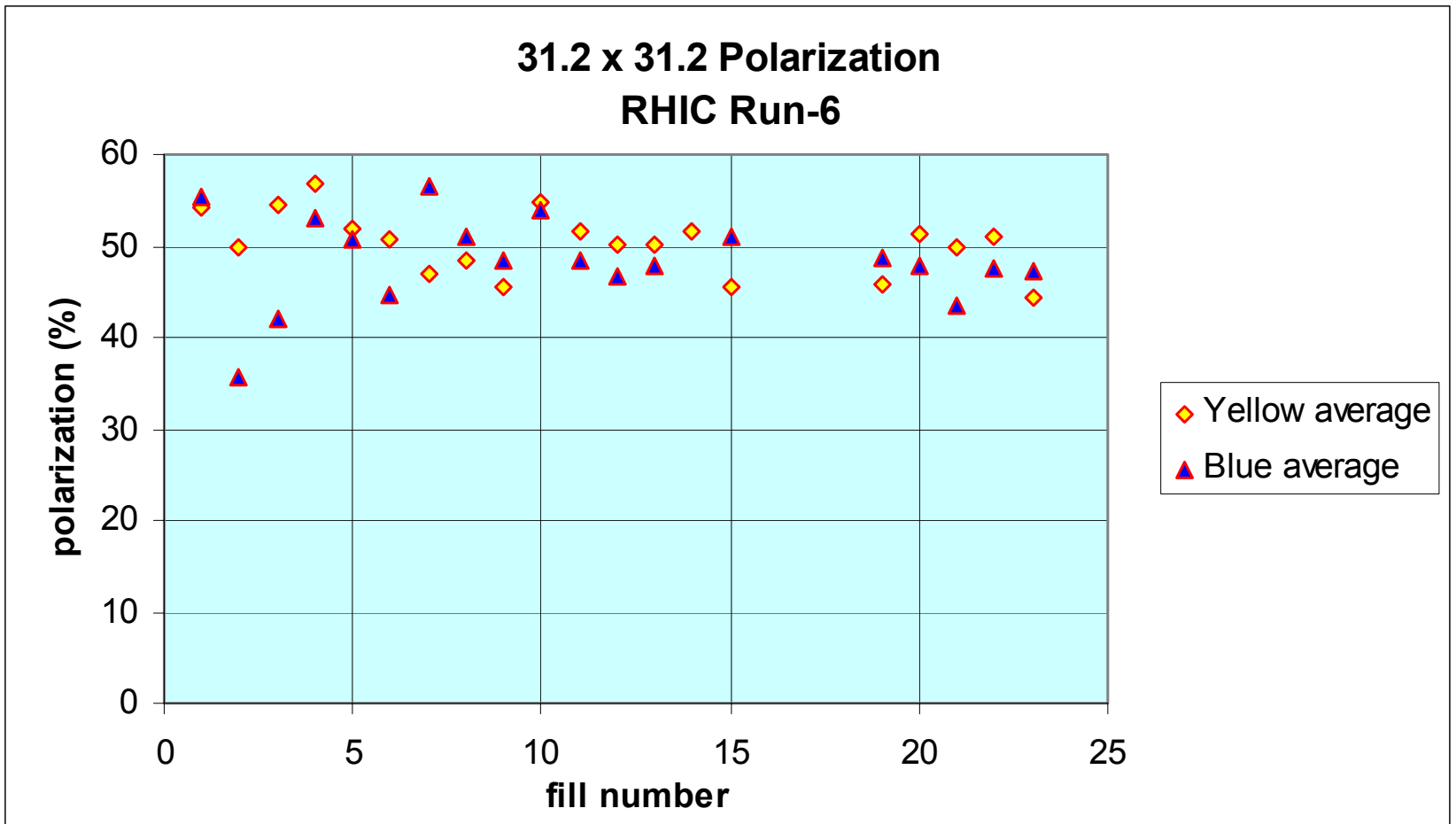
PHENIX GOAL

STAR GOAL

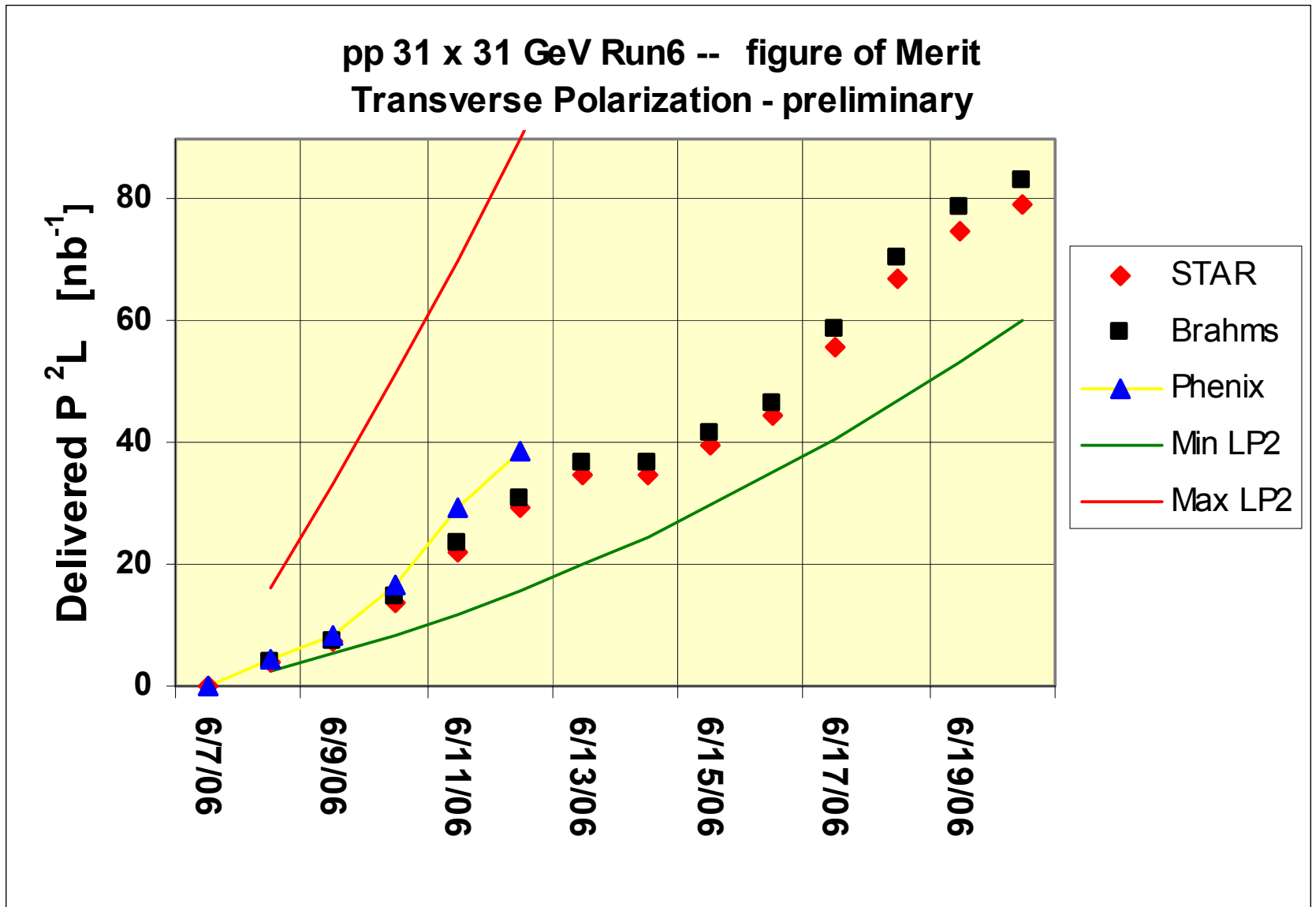


revised 6/28/06

Goal was 100 GeV polarization ~ 60%
To be revised once jet target data is analyzed

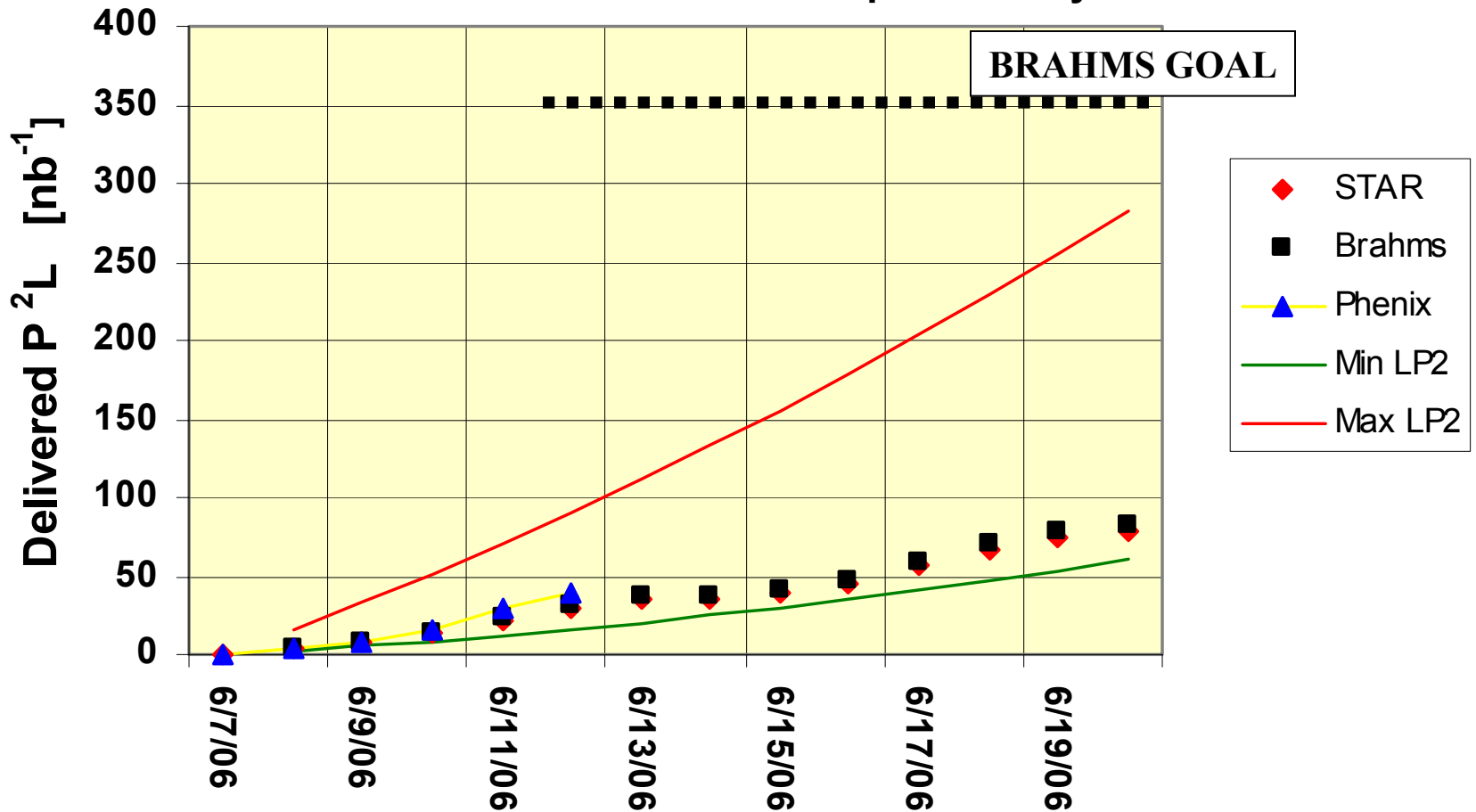


Collider Min/Max projections assume 60% polarization



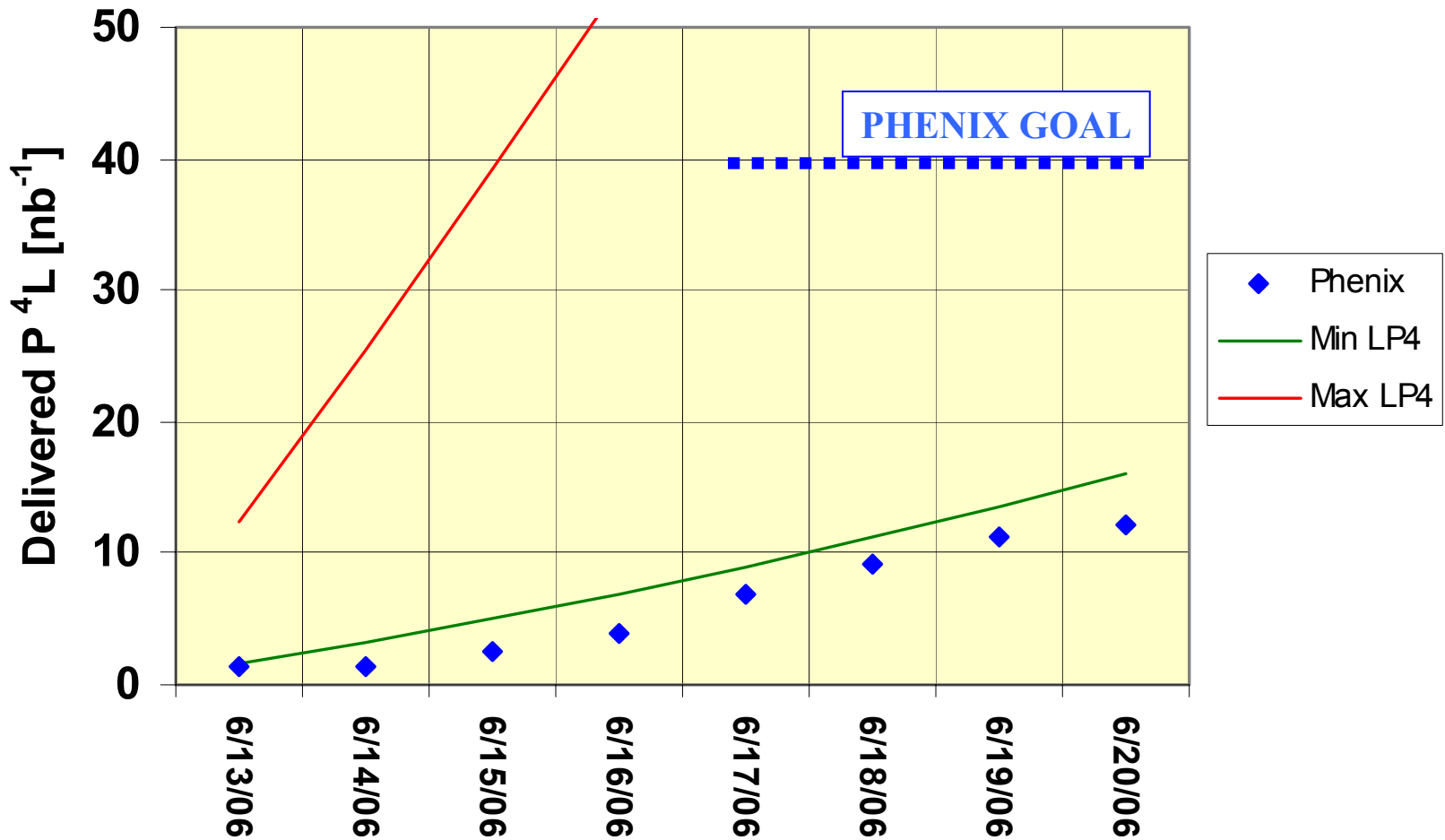
Collider Min/Max projections assume 60% polarization
Experiments goals assumed 50% polarization

pp 31 x 31 GeV Run6 -- figure of Merit
Transverse Polarization - preliminary

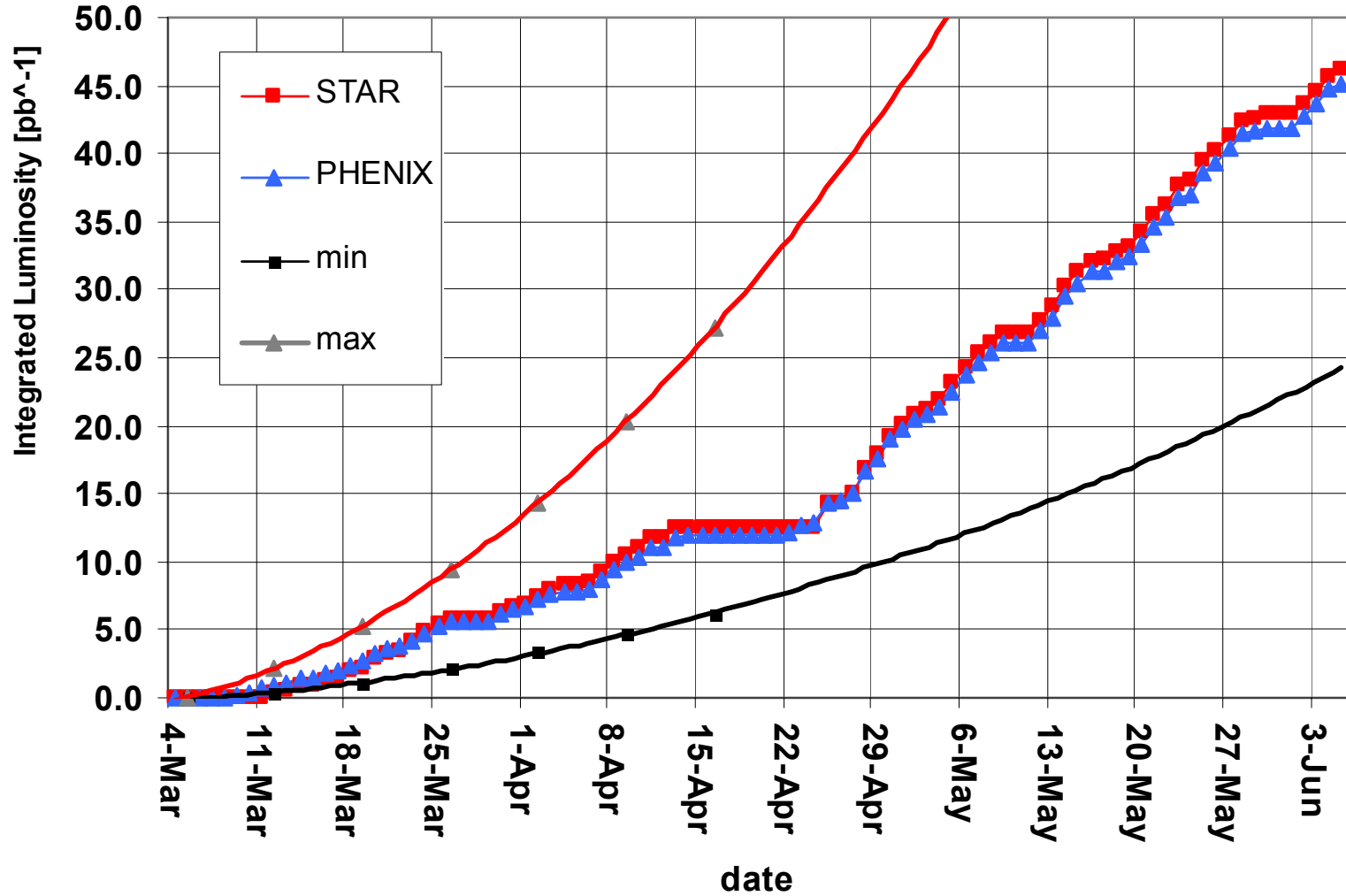


Collider Min/Max projections assume 60% polarization
PHENIX goals assumed 55% polarization

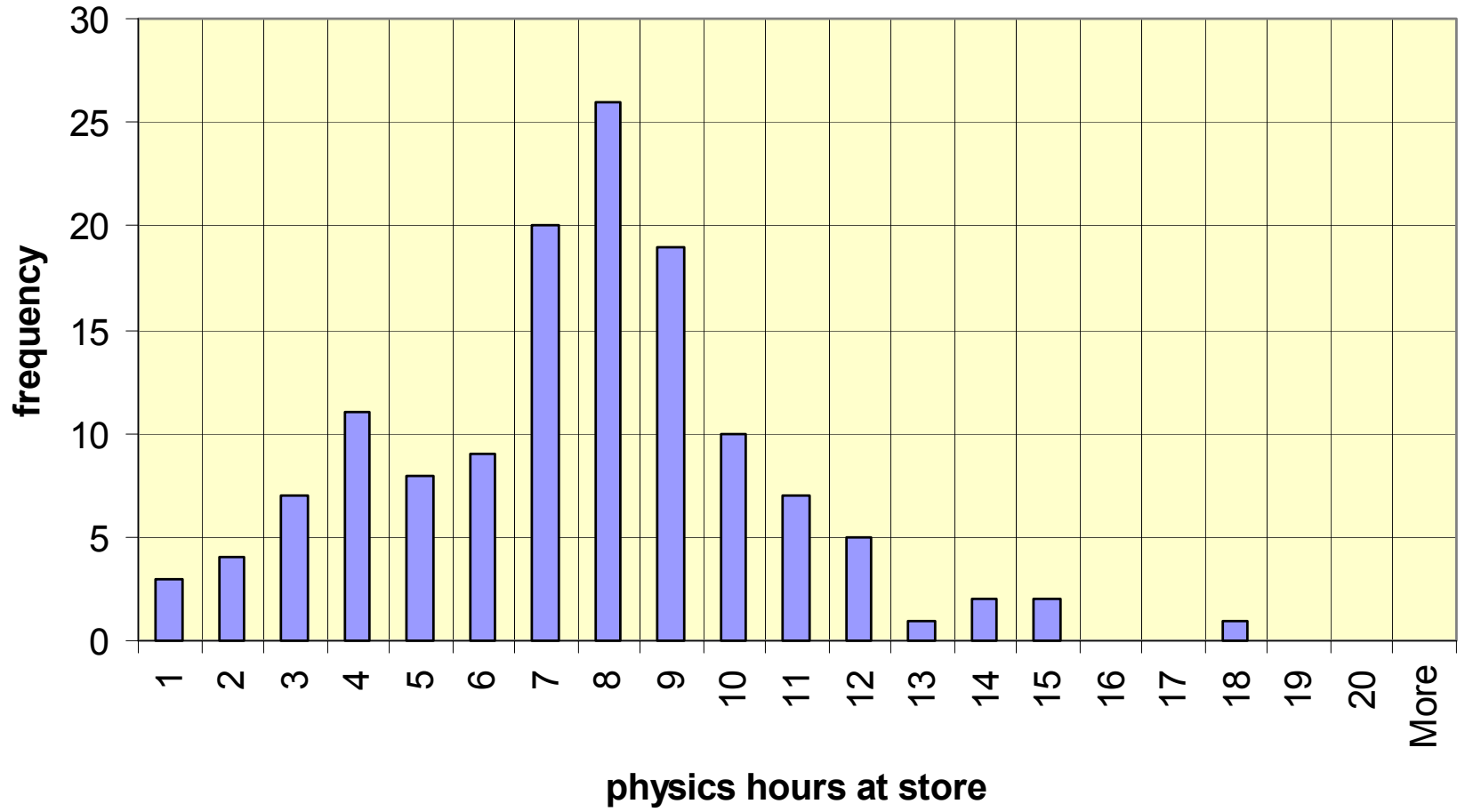
31 x 31 GeV pp Run6 -- Phenix figure of Merit Longitudinal Polarization - preliminary



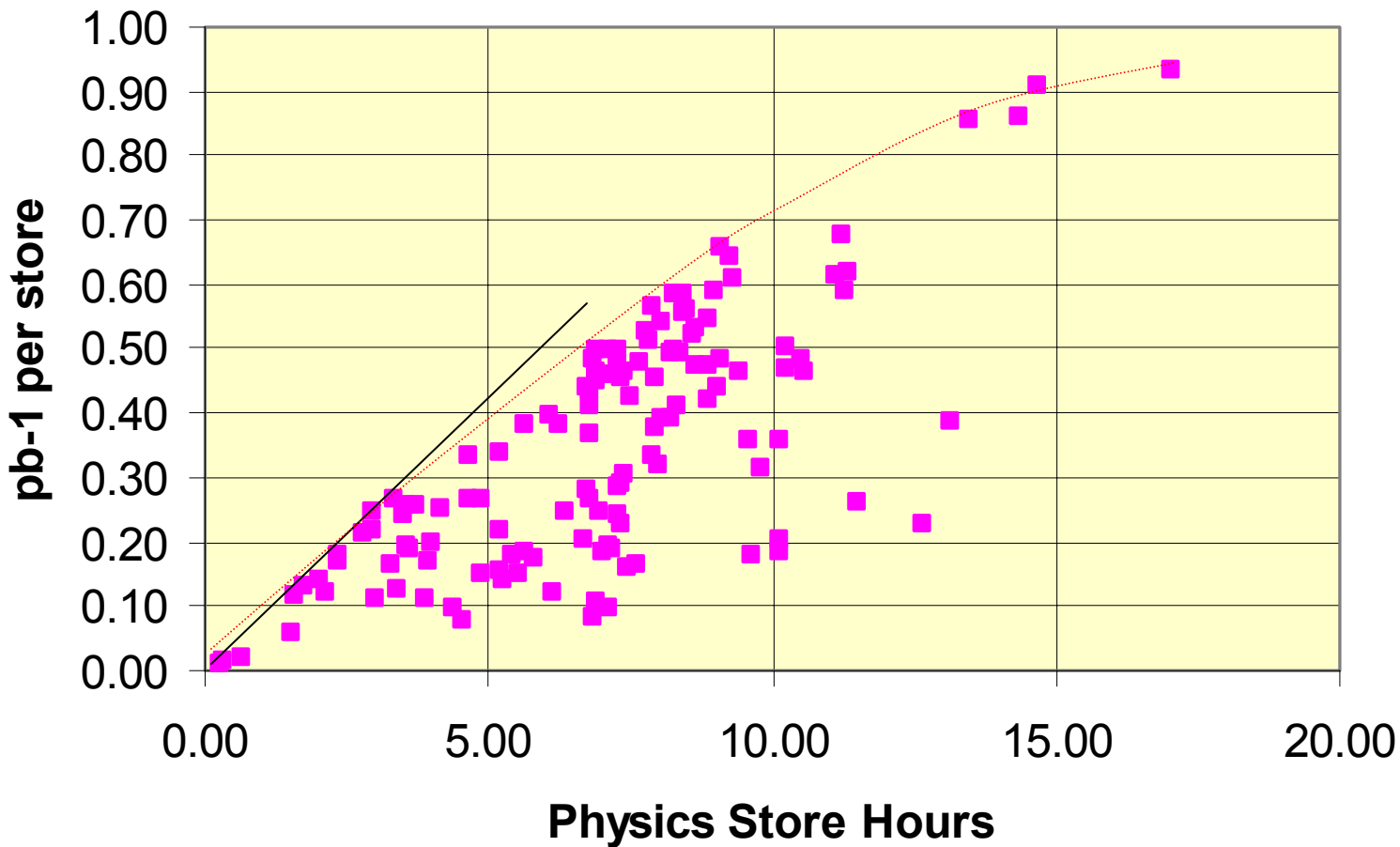
Run6 100 x 100 GeV pp Integrated Luminosity (Final Delivered) for Physics



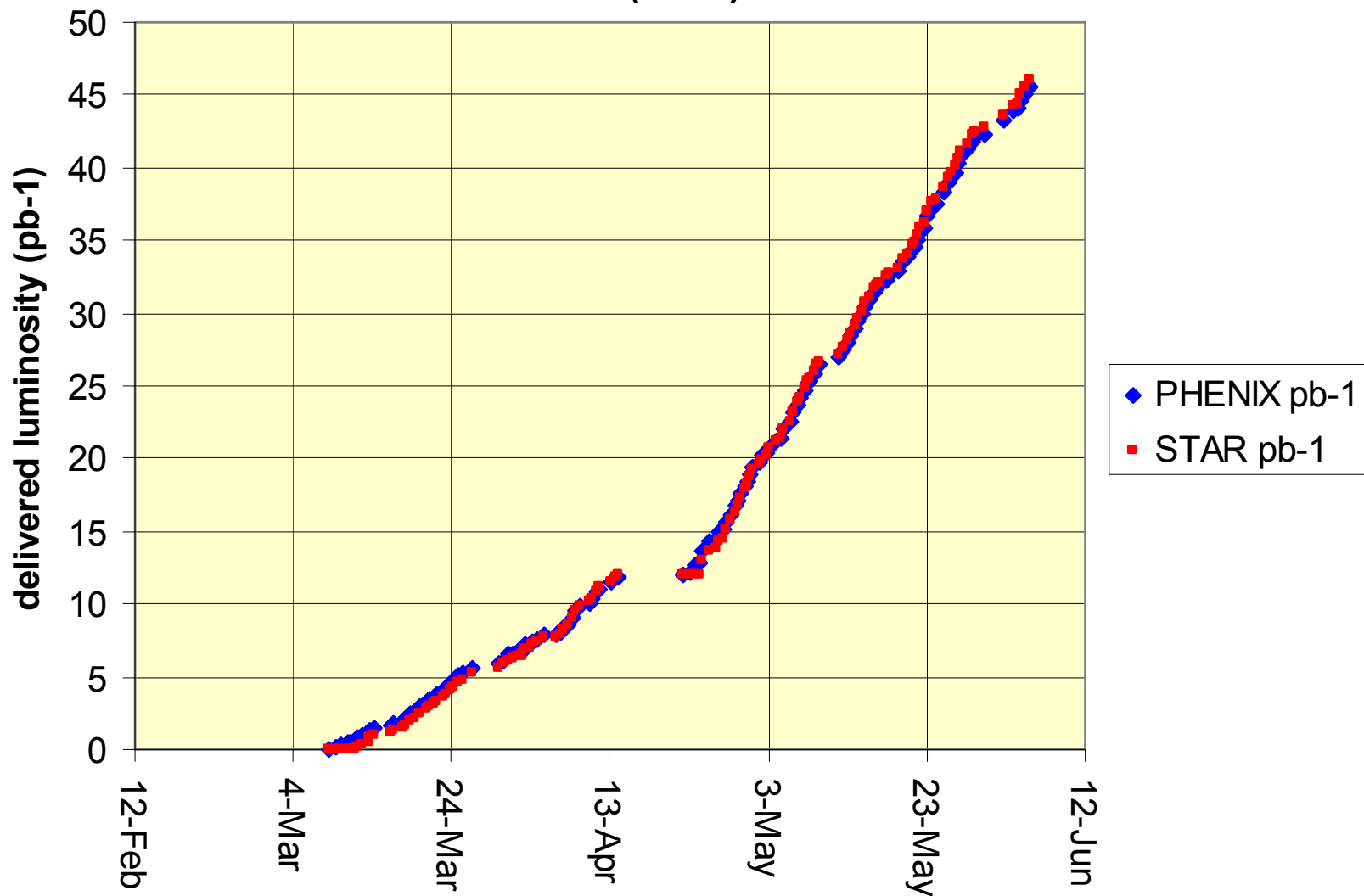
100 x 100 GeV pp RHIC Run6



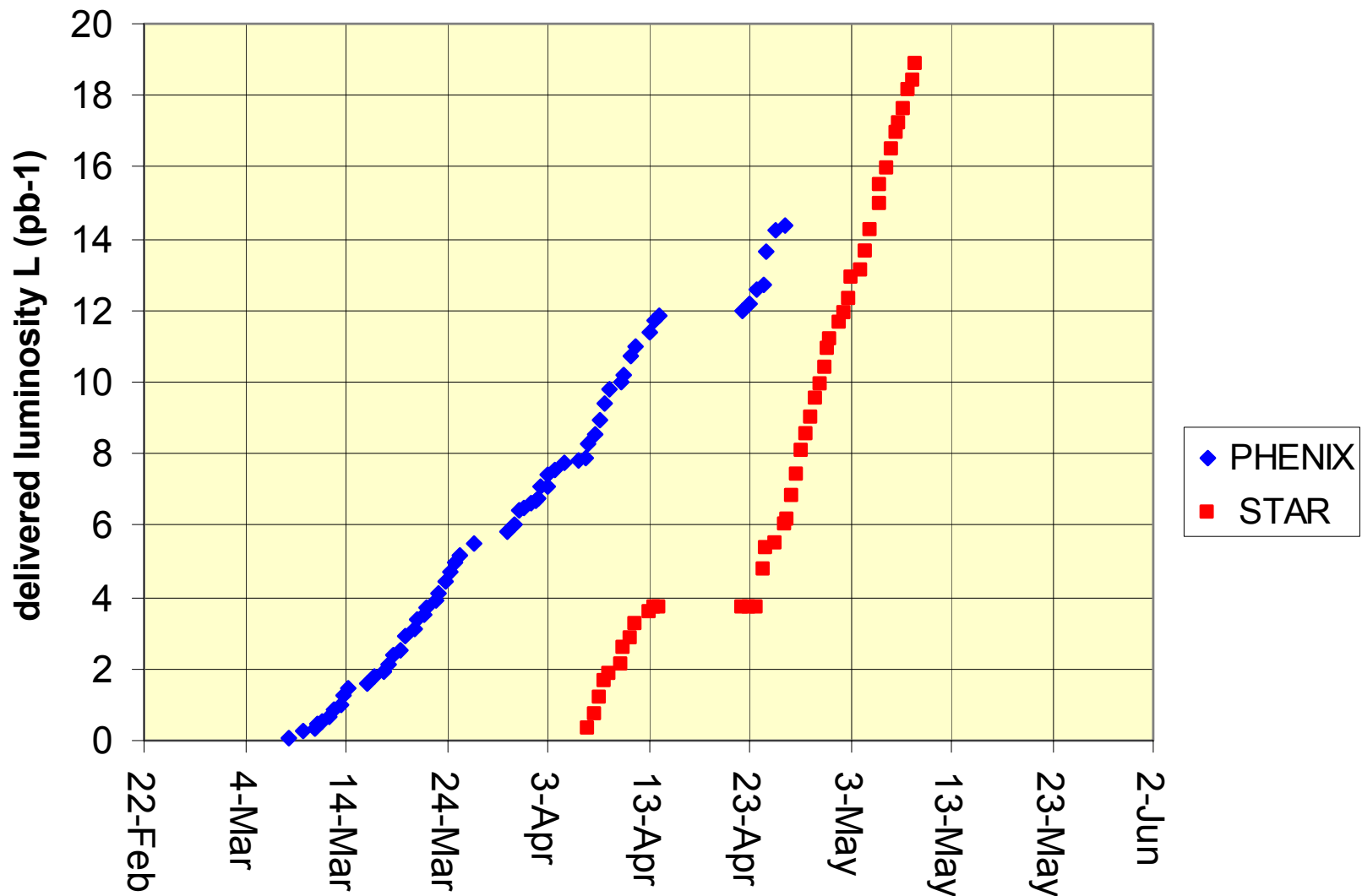
100 x 100 GeV pp run-6
store time vs integrated luminosity per store



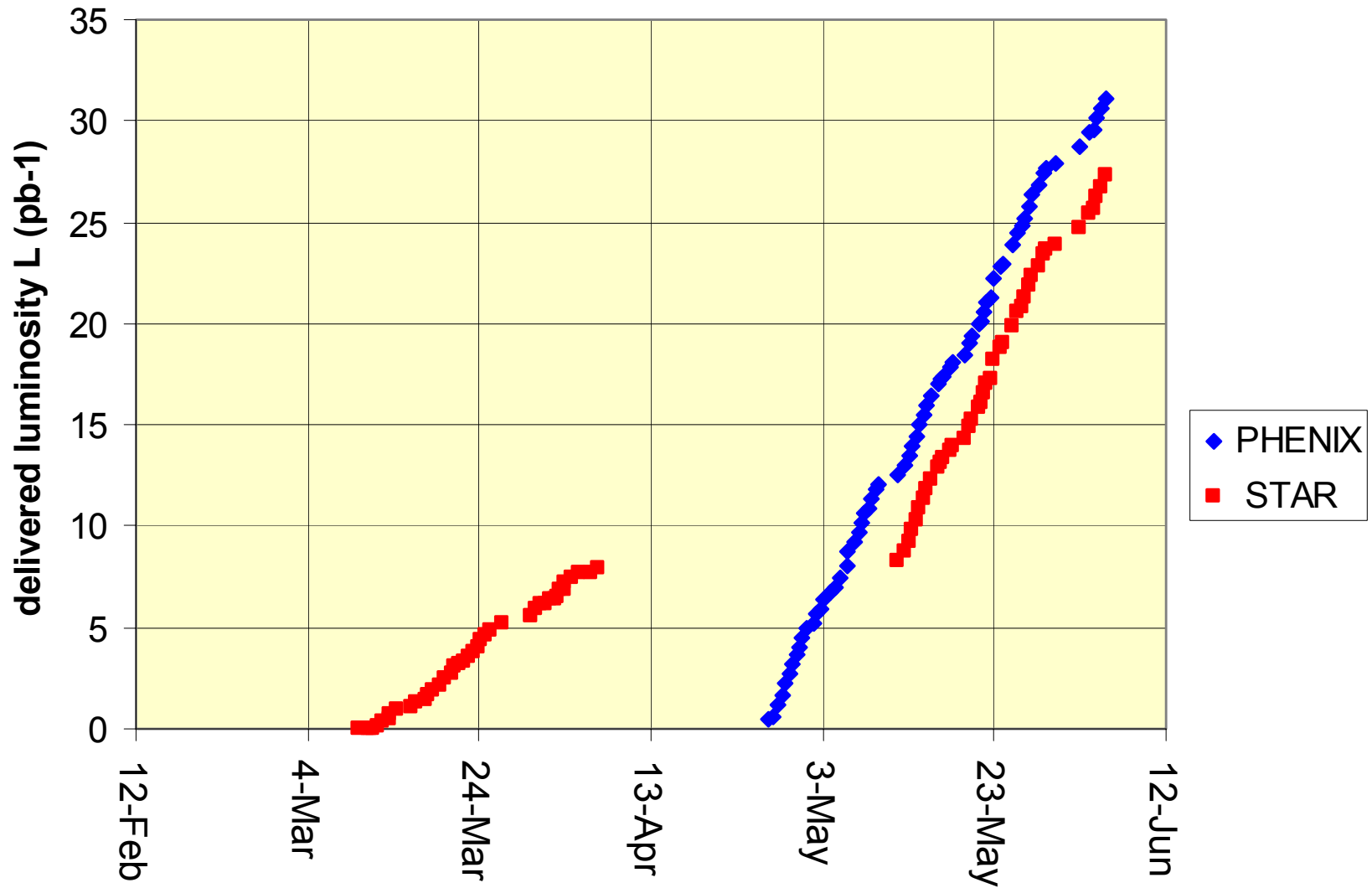
100 x 100 GeV pp RUN-6 integrated Luminosity (final)



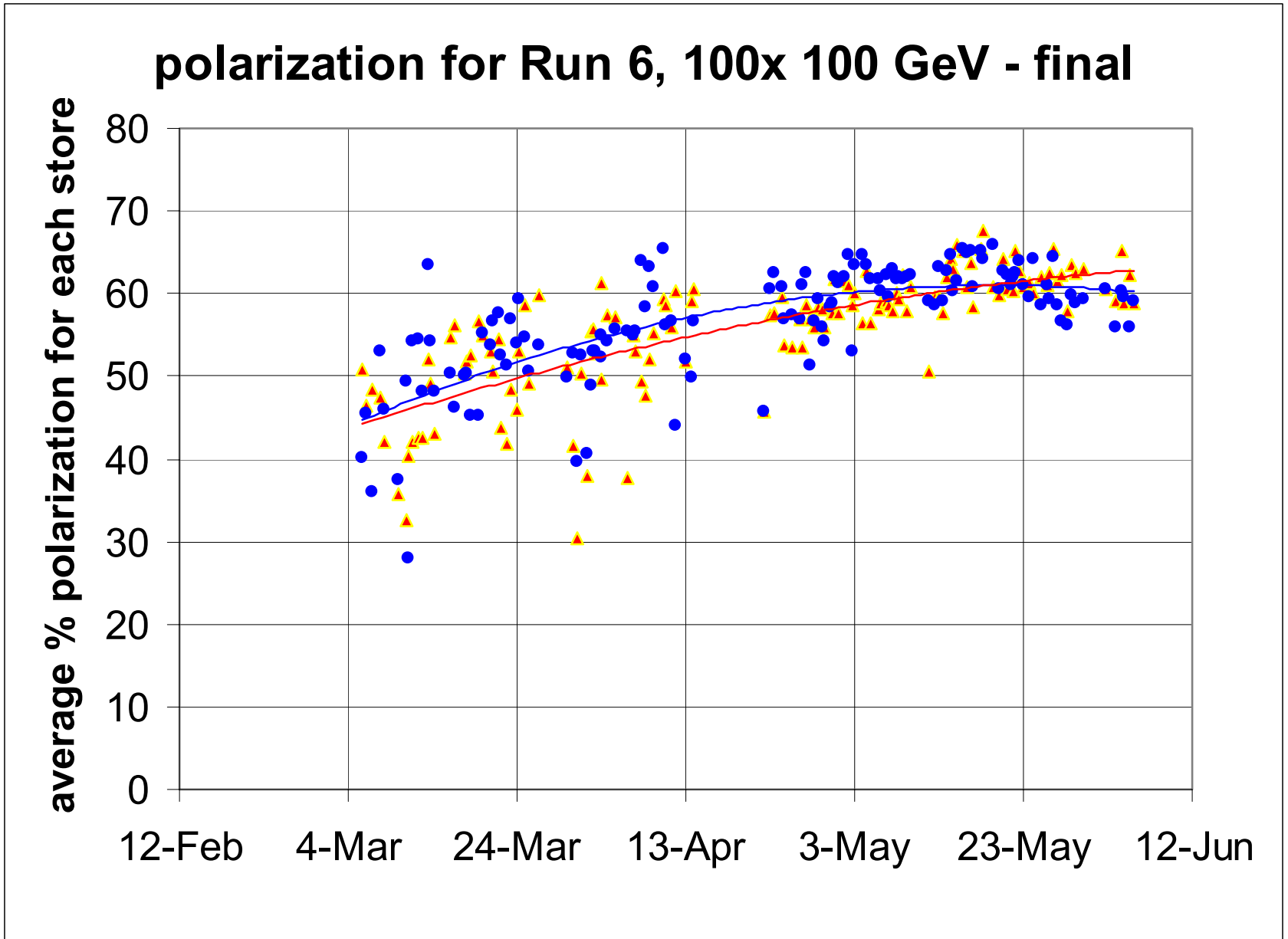
100 x 100 GeV pp RUN-6 final integrated Luminosity for Transverse/Radial Polarization



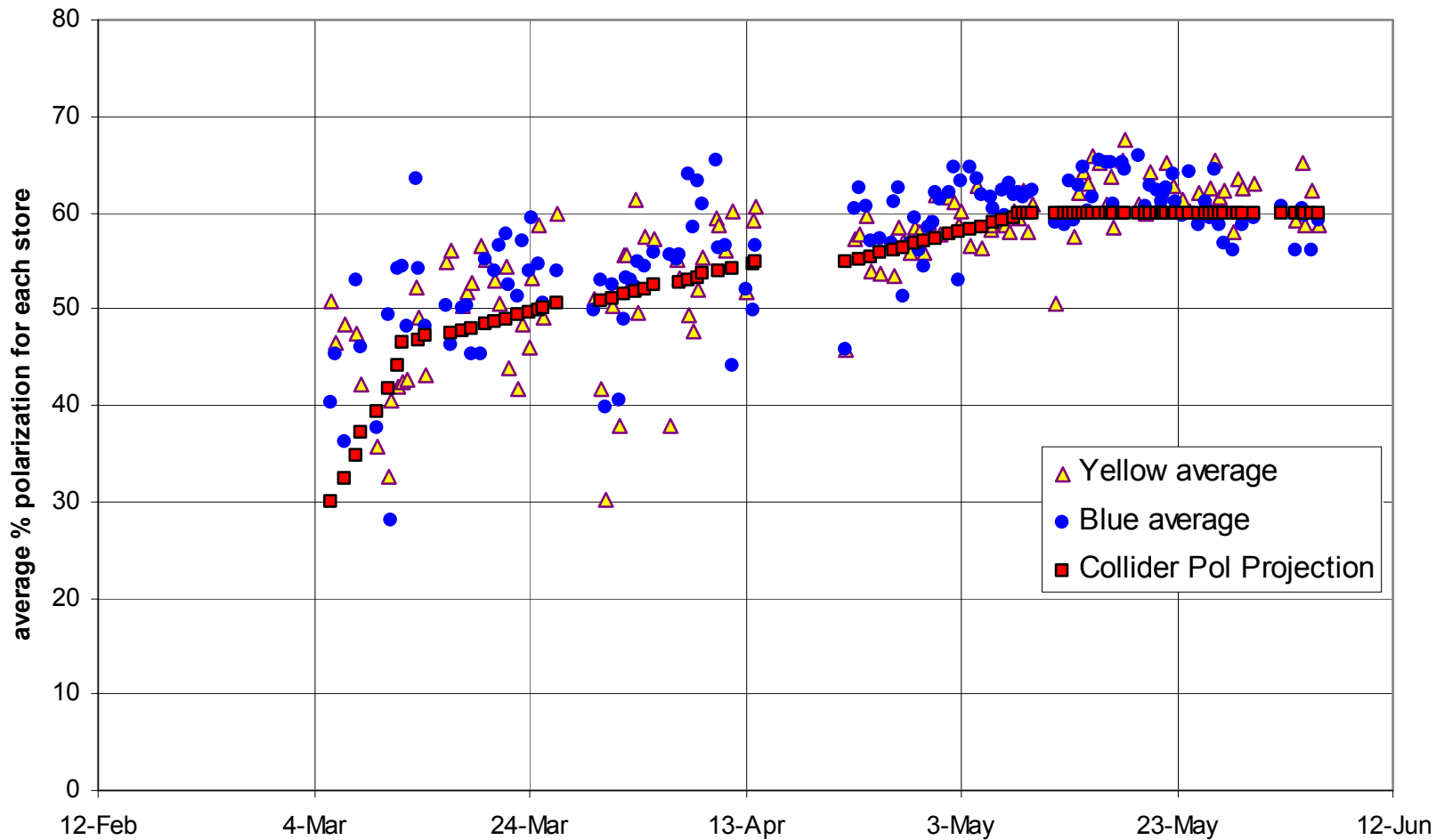
100 x 100 GeV pp RUN-6 final integrated Luminosity for Longitudinal Polarization



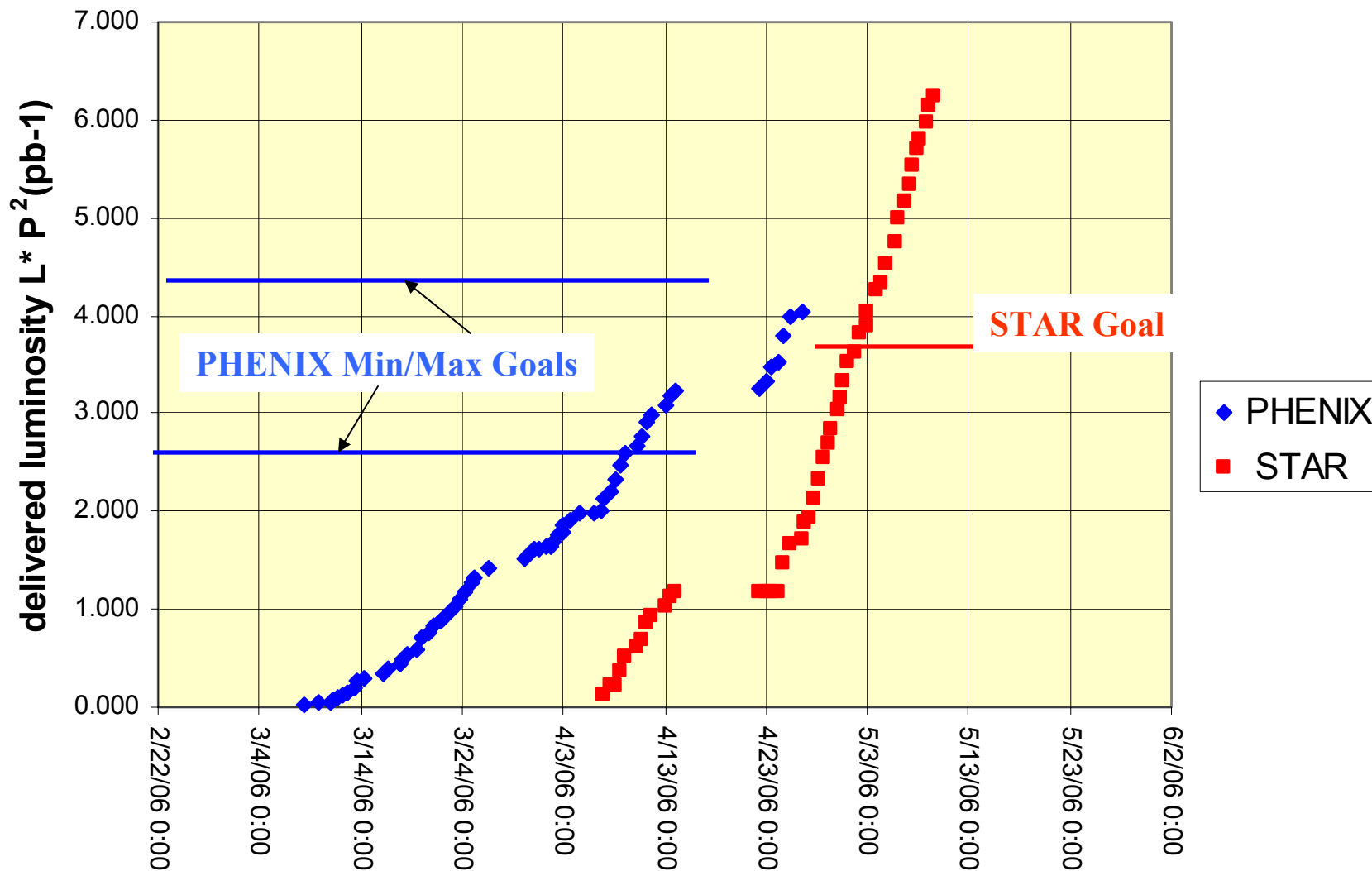
Goal was 30% initial to 60% in ~ 8-9 weeks



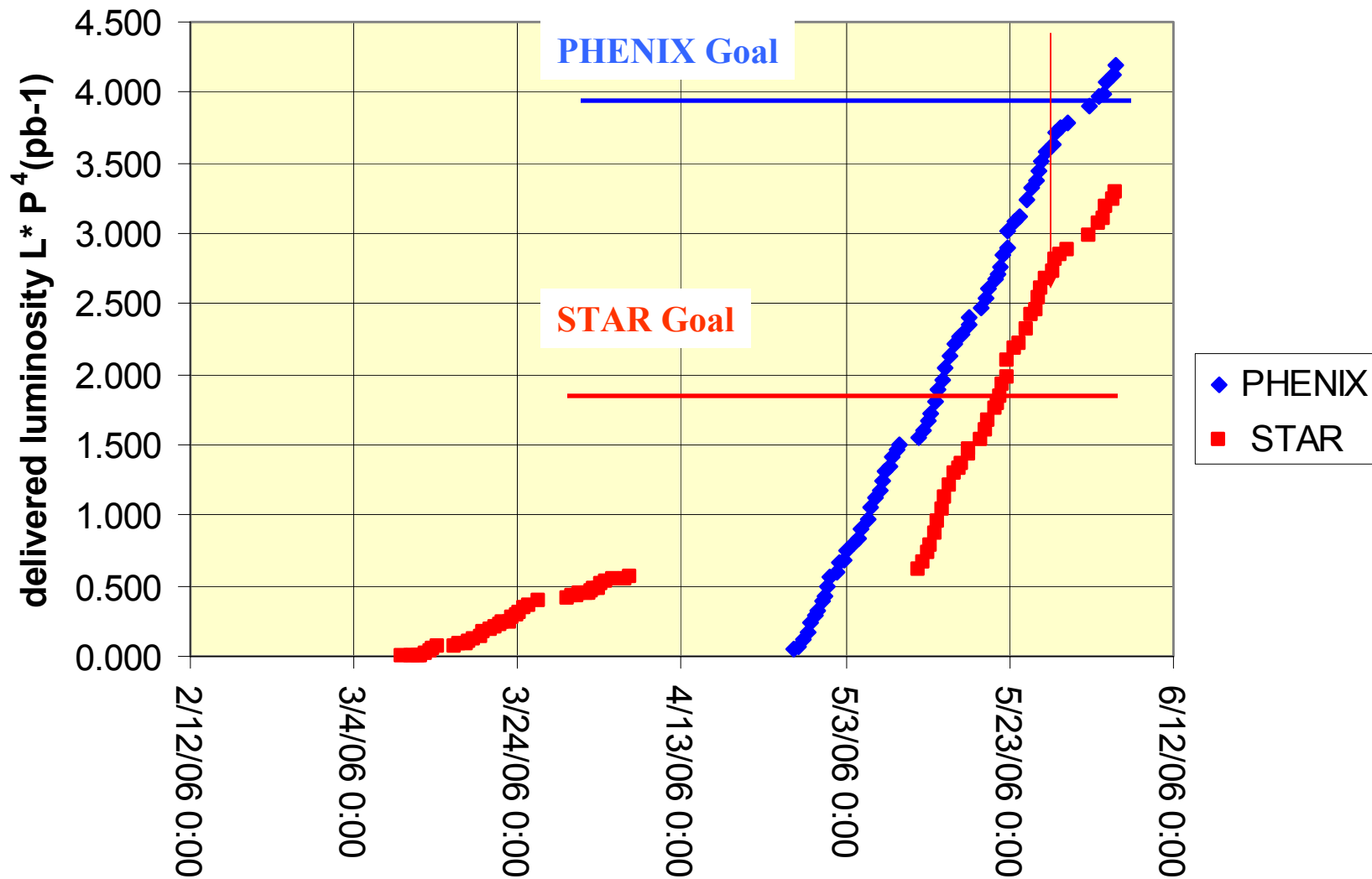
polarization for Run 6, 100x 100 GeV - final



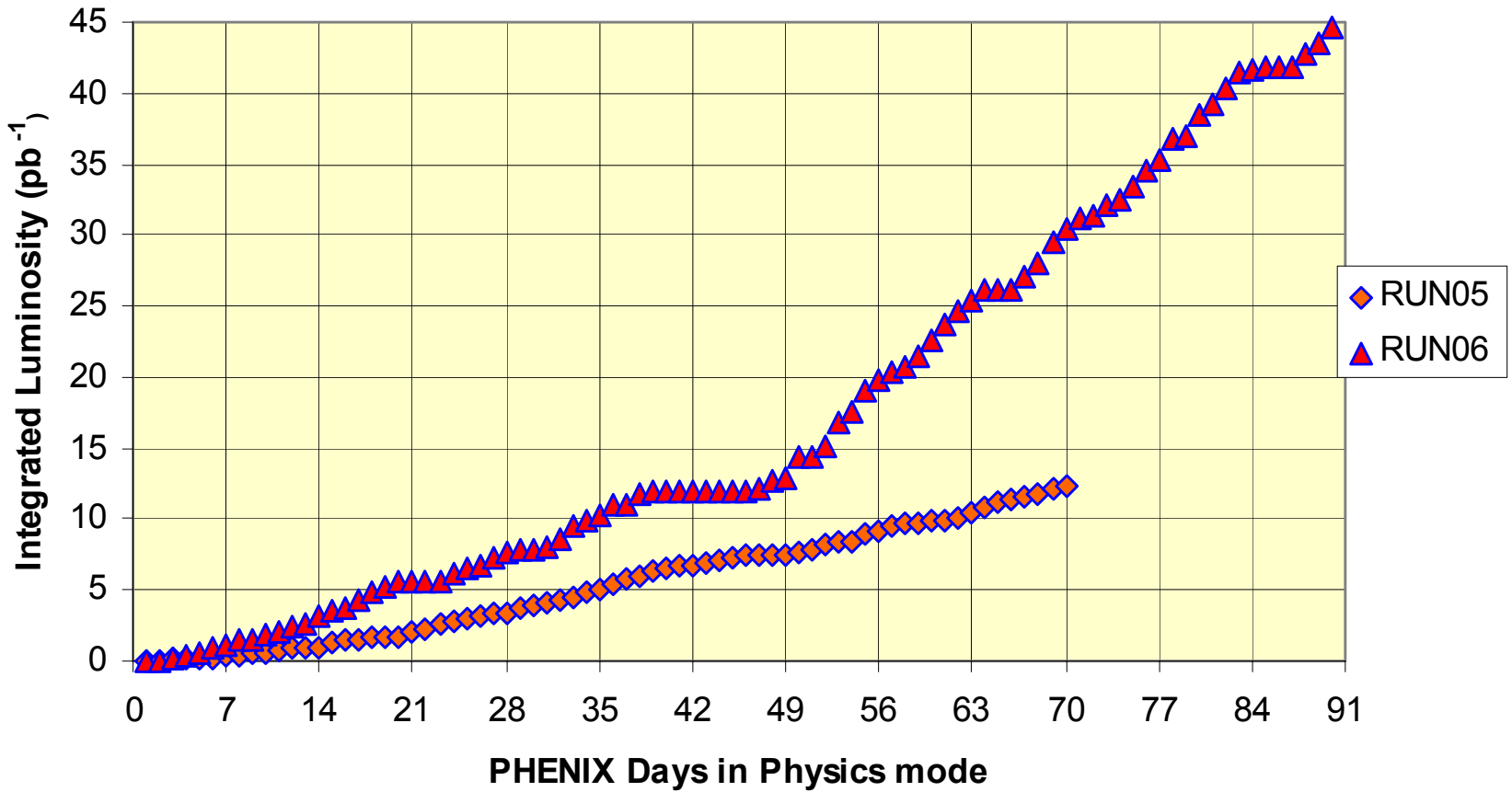
100 x 100 GeV pp RUN-6 integrated Luminosity for Transverse/Radial Polarization (P^2L) - final



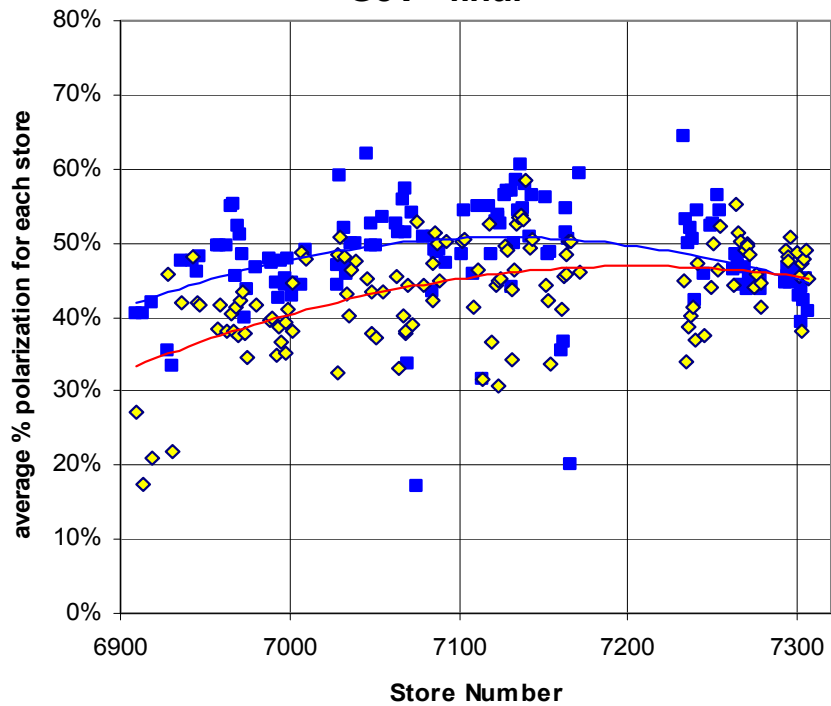
100 x 100 GeV pp RUN-6 final integrated Luminosity for Longitudinal Polarization (P^4L)



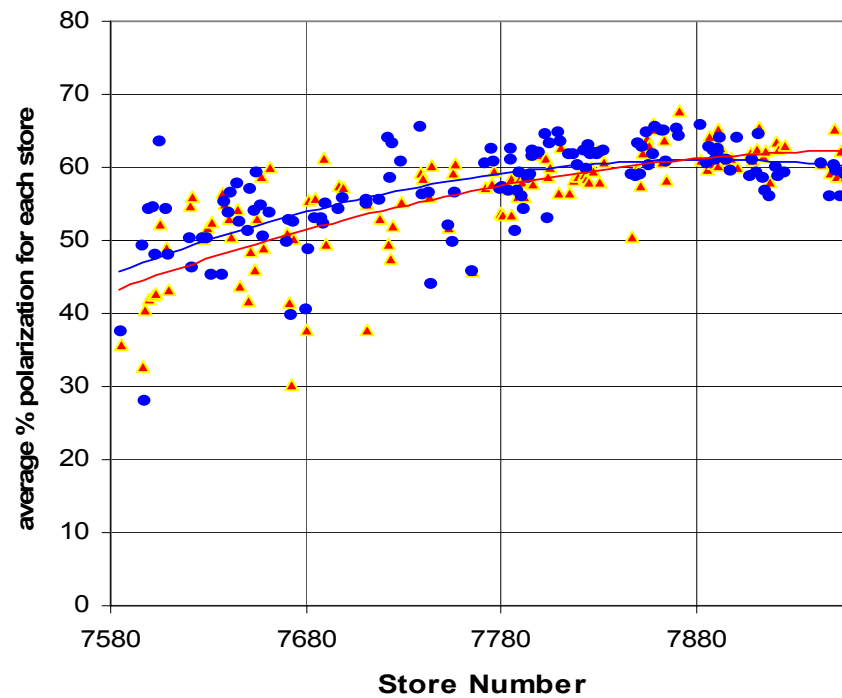
100 x 100 Gev pp RUN05-06, PHENIX Integrated Luminosity (final delivered)



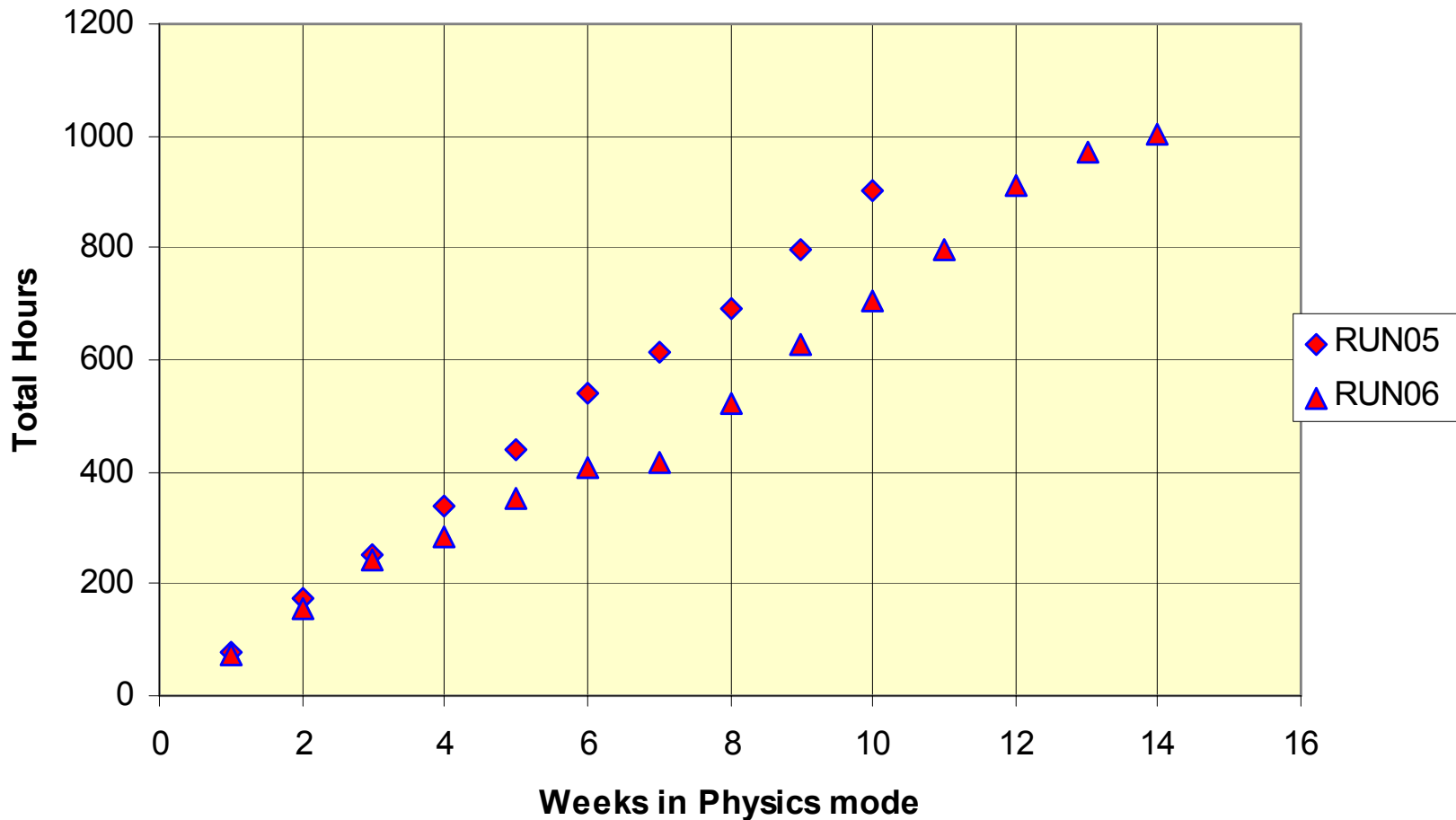
Polarization at store RUN 5, 100 x 100 GeV - final



polarization for Run 6, 100x 100 GeV - final

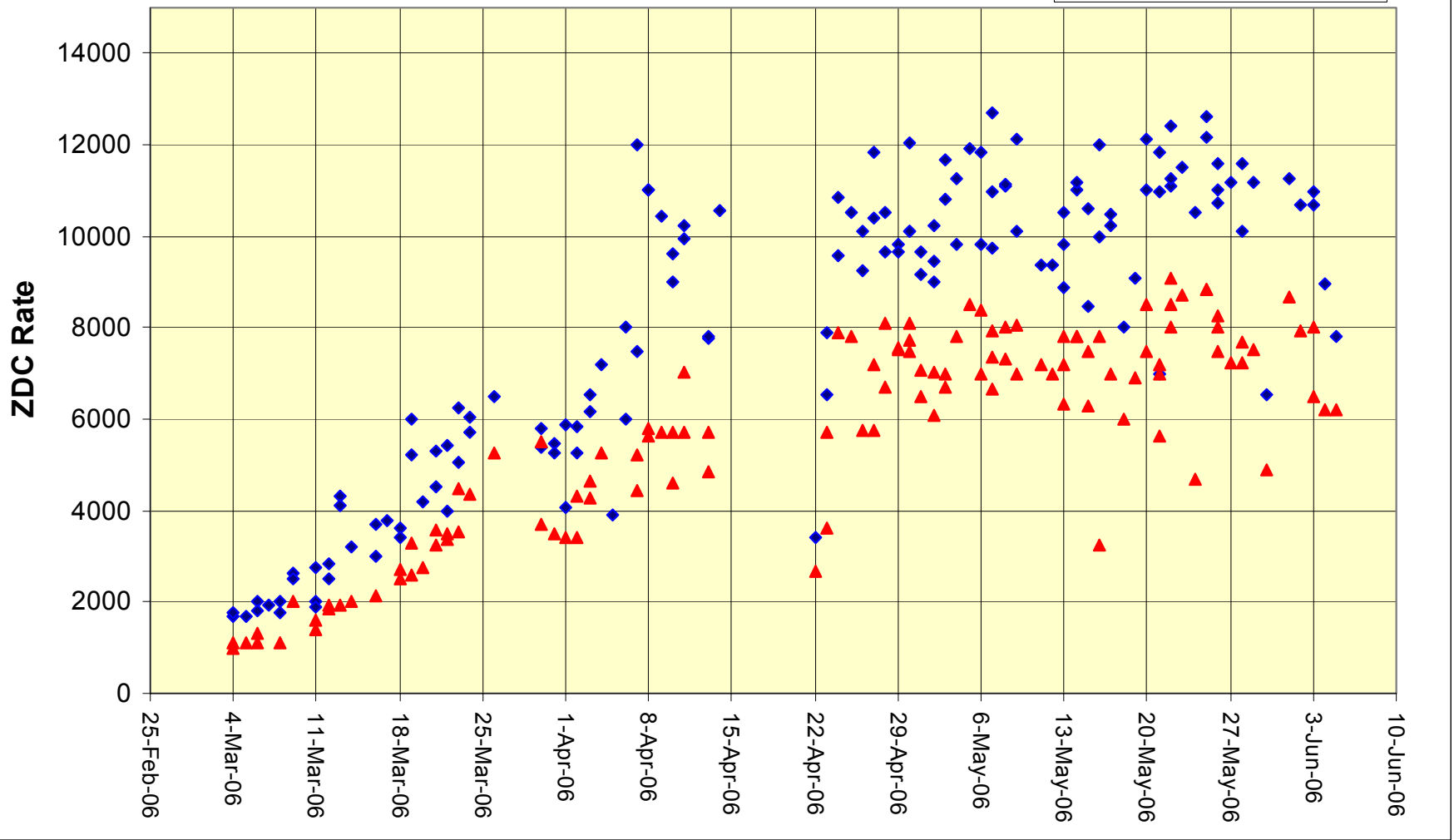


100x 100 GeV pp RUN05-06, hours at store (final)



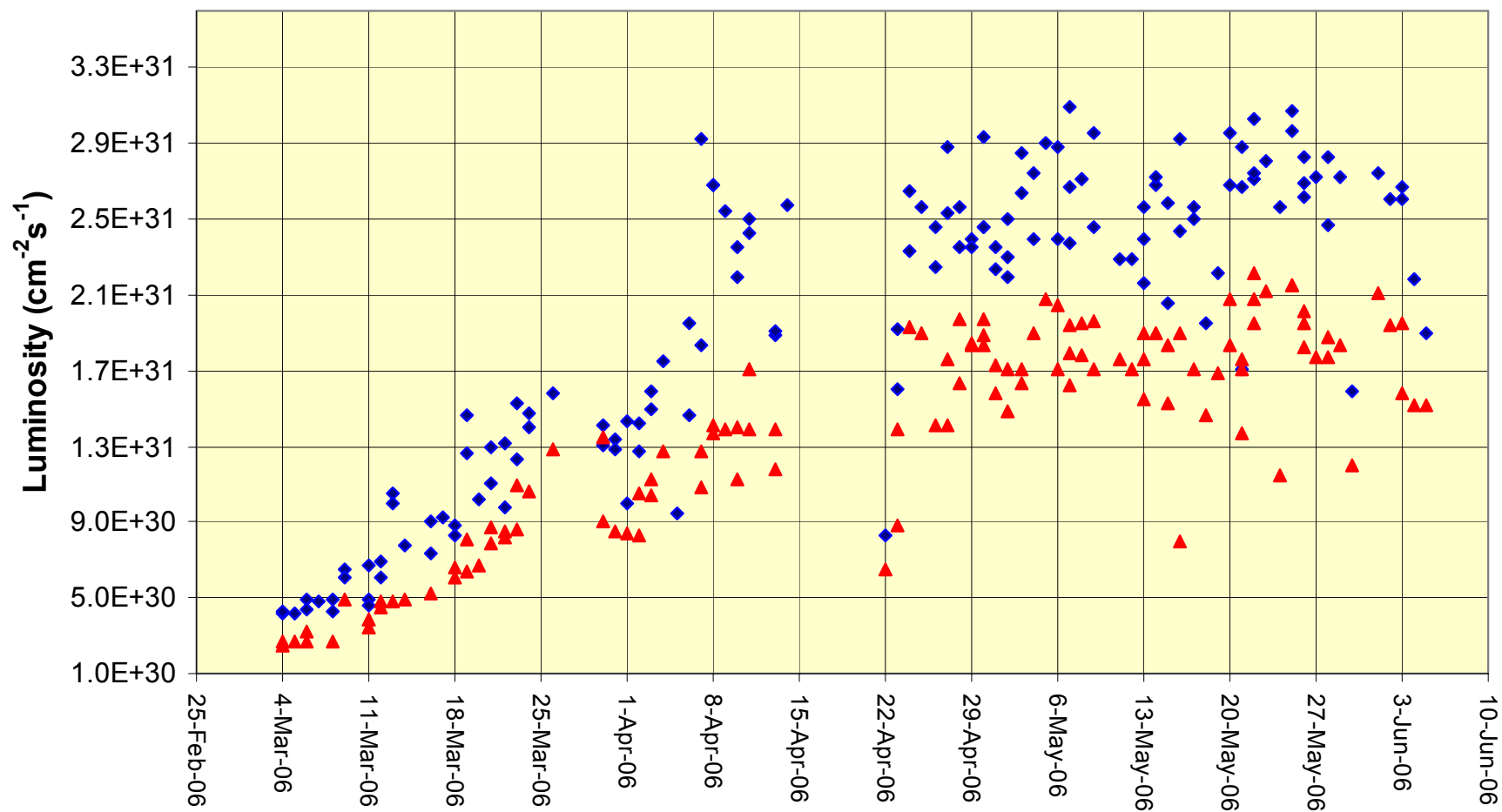
PHENIX ZDC Rate vs date - final

- ◆ PHENIX ZDC (Initial)
- ▲ PHENIX ZDC (+3 hrs)

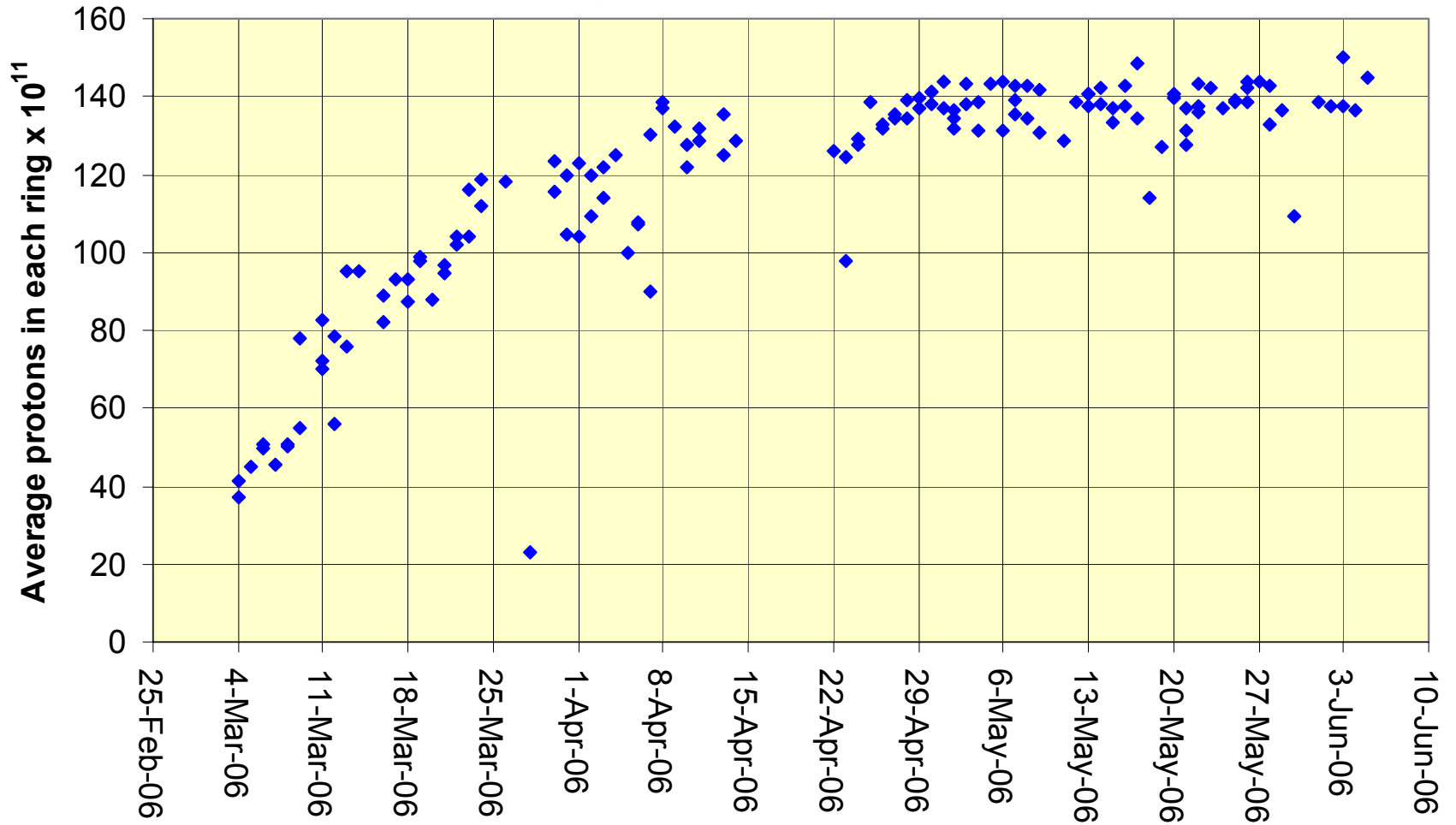


PHENIX Luminosity vs date - final

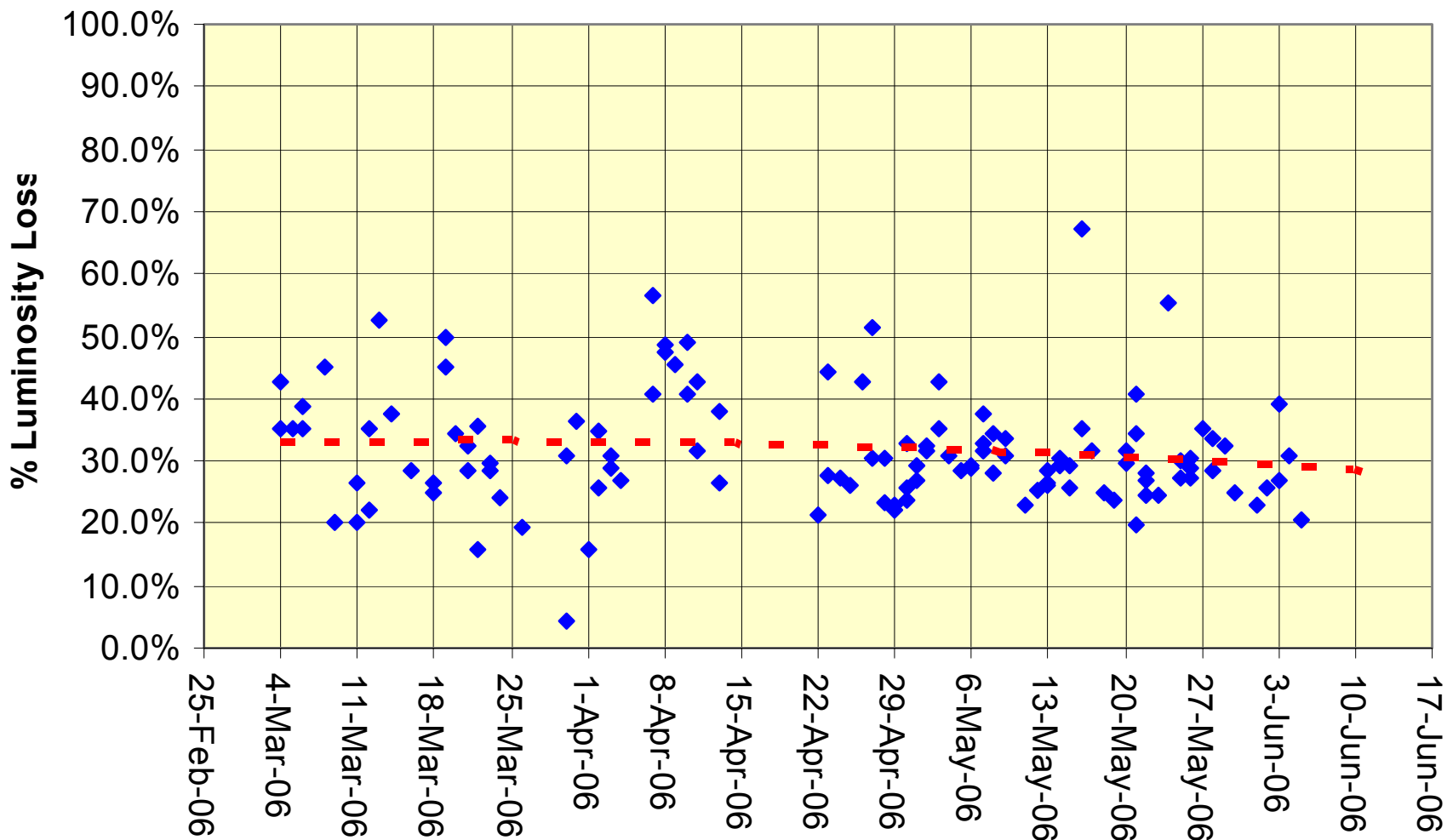
- ◆ PHENIX Lumi (initial)
- ▲ PHENIX Lumi (+3hrs)



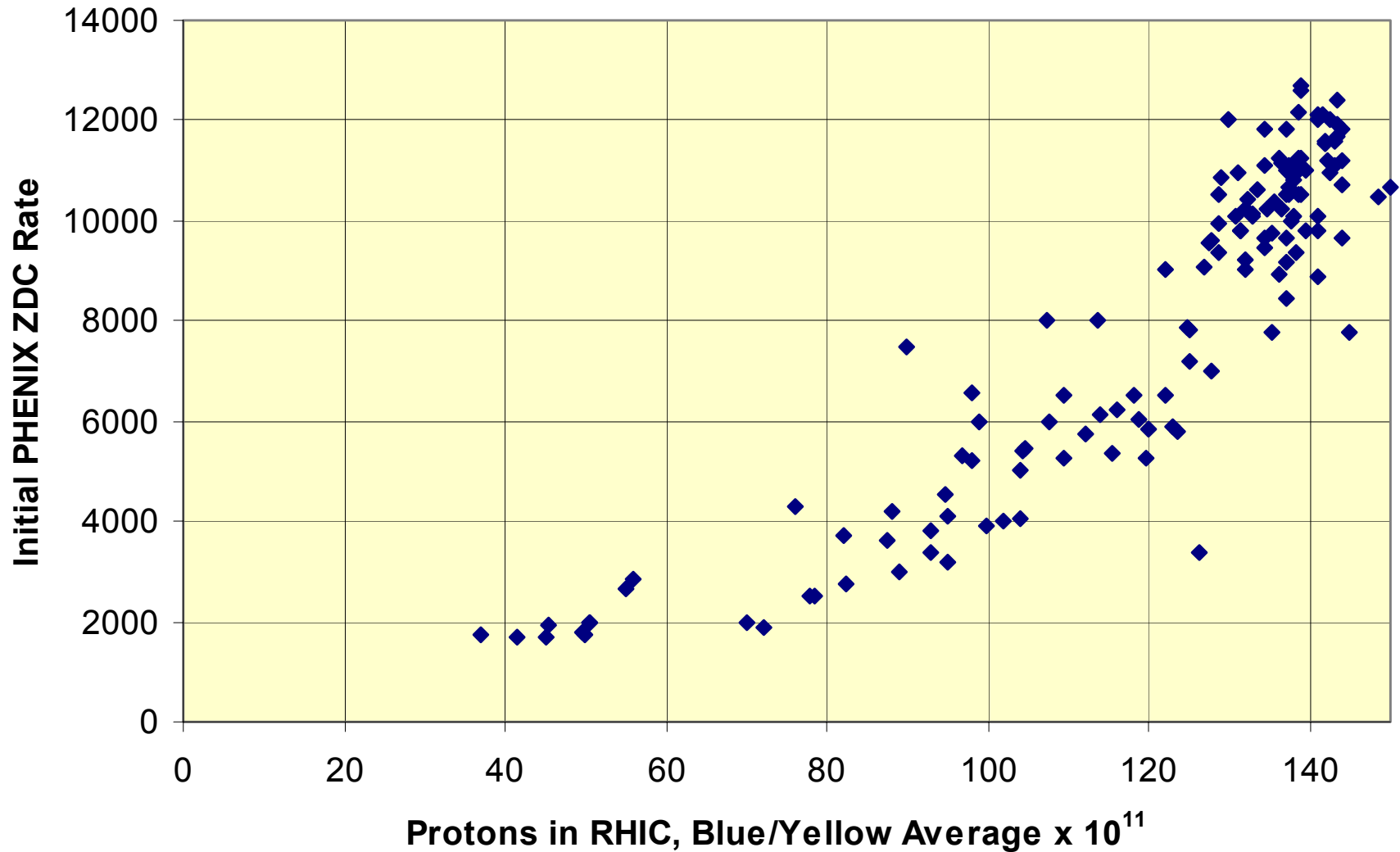
protons at beginning of physics store in RHIC vs date - final



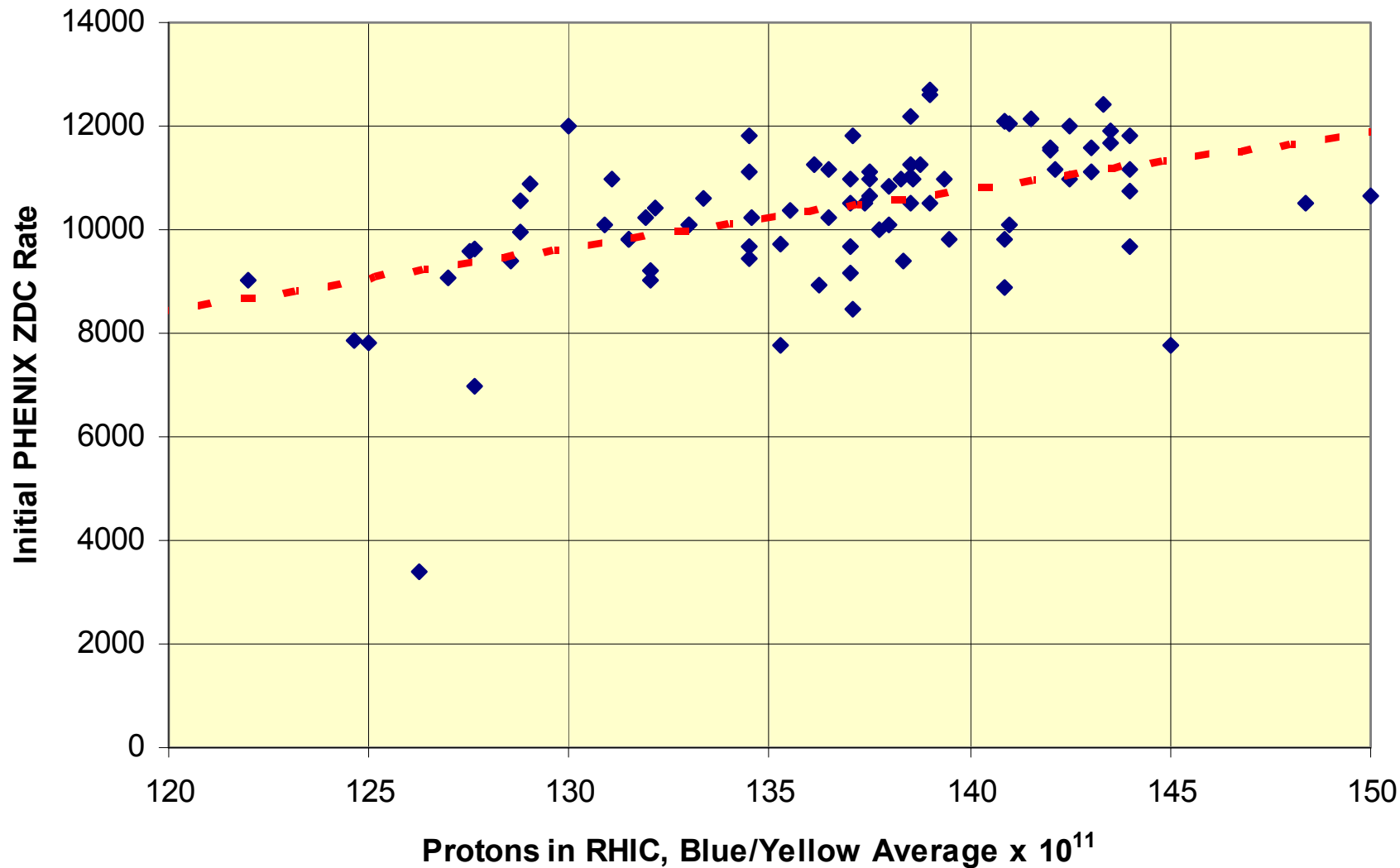
Luminosity loss 3 hrs into store vs date - final



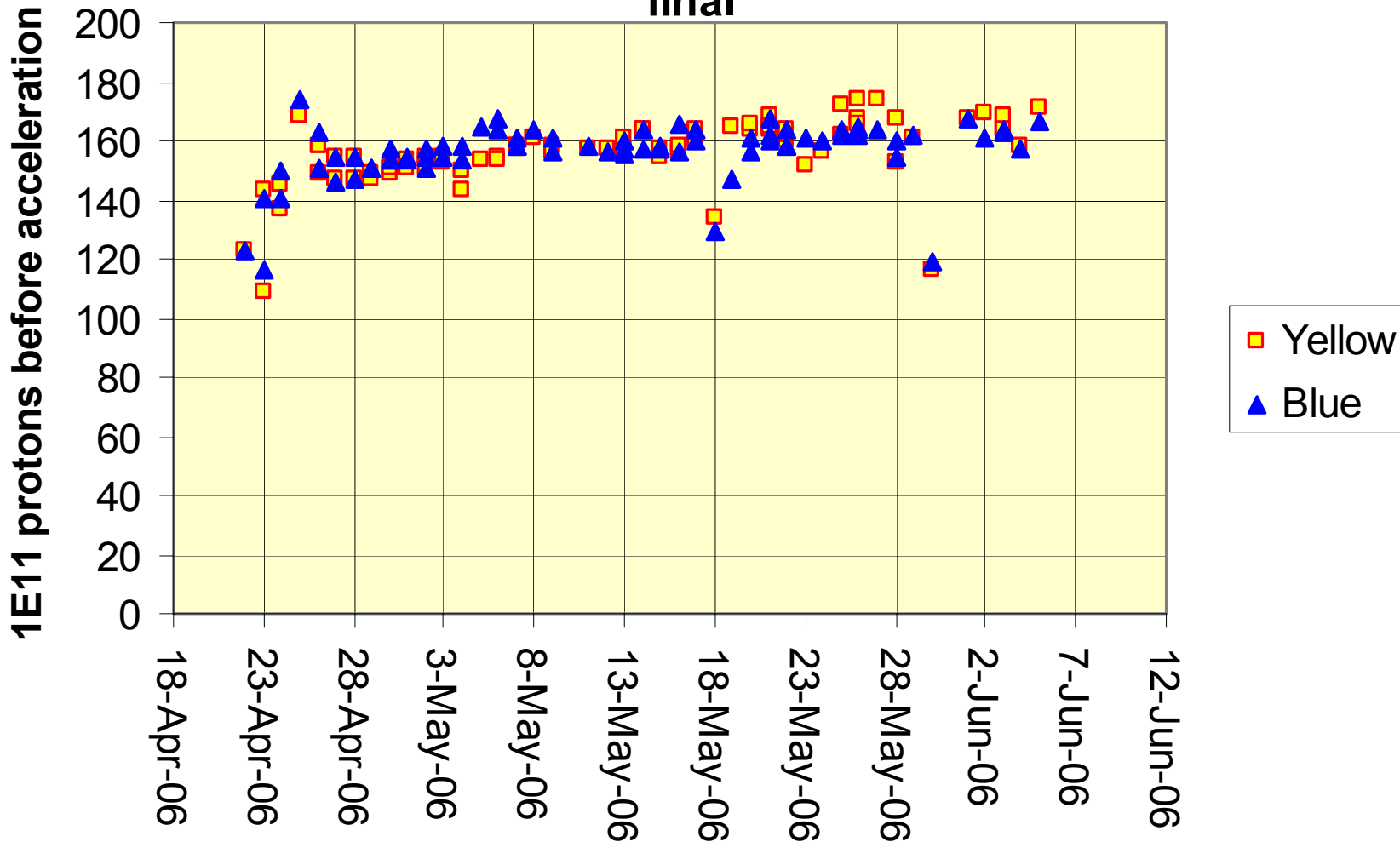
Phenix Initial ZDC Rate (for physics) vs Protons in RHIC - final



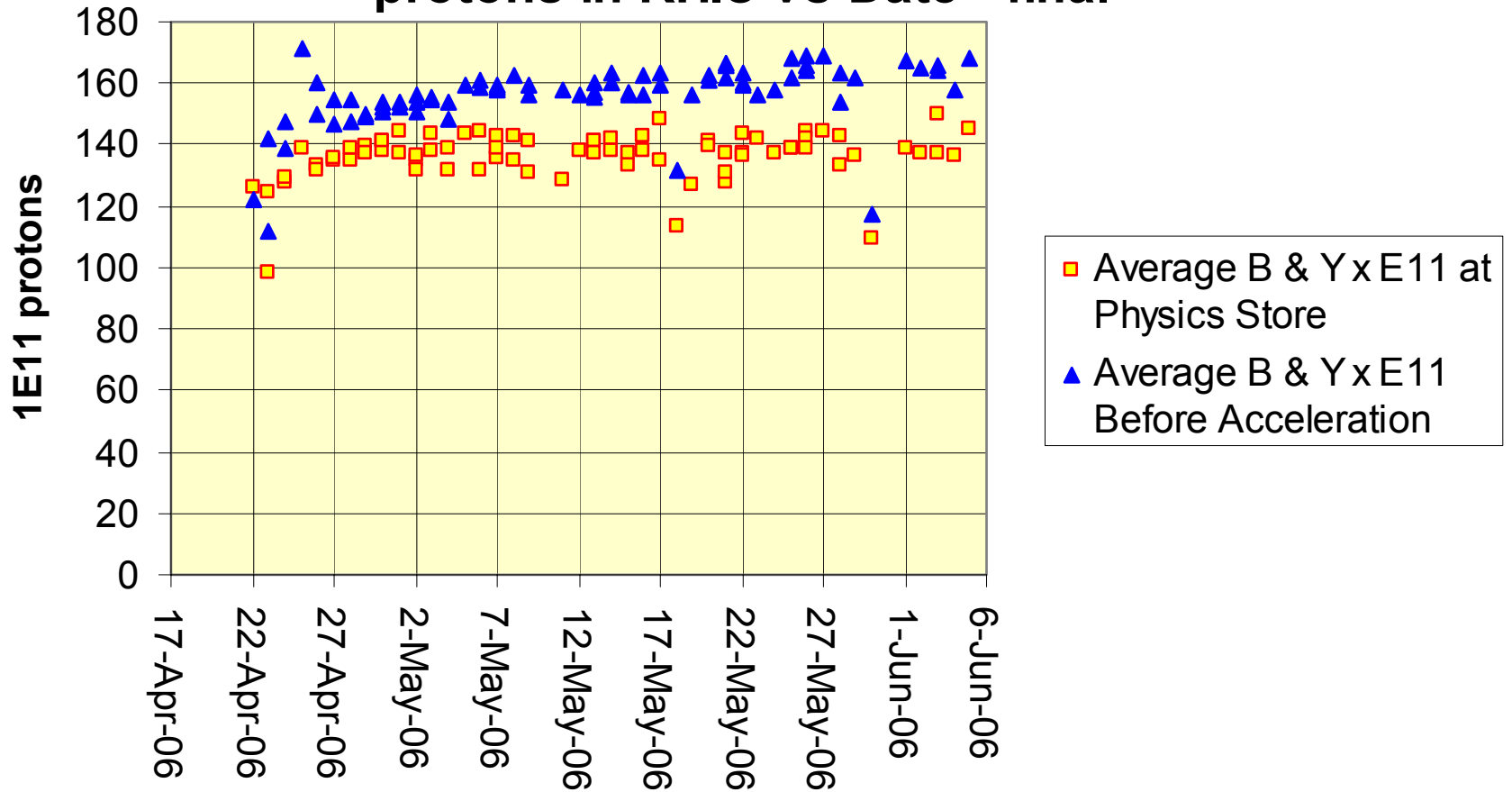
**Phenix Initial ZDC Rate (for physics) vs Protons in RHIC
(after 7 April) - final**



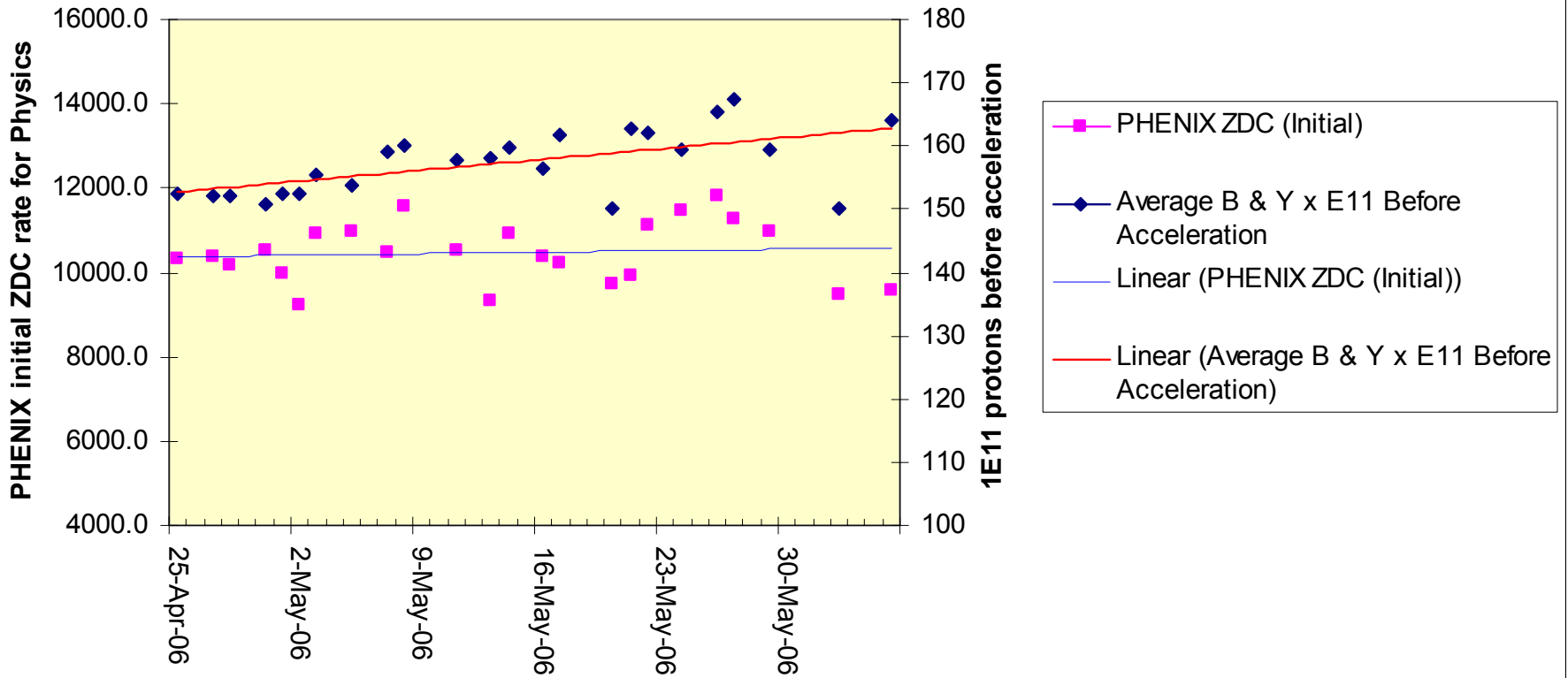
Initial protons in RHIC (before acceleration) vs Date - final



protons in RHIC vs Date - final

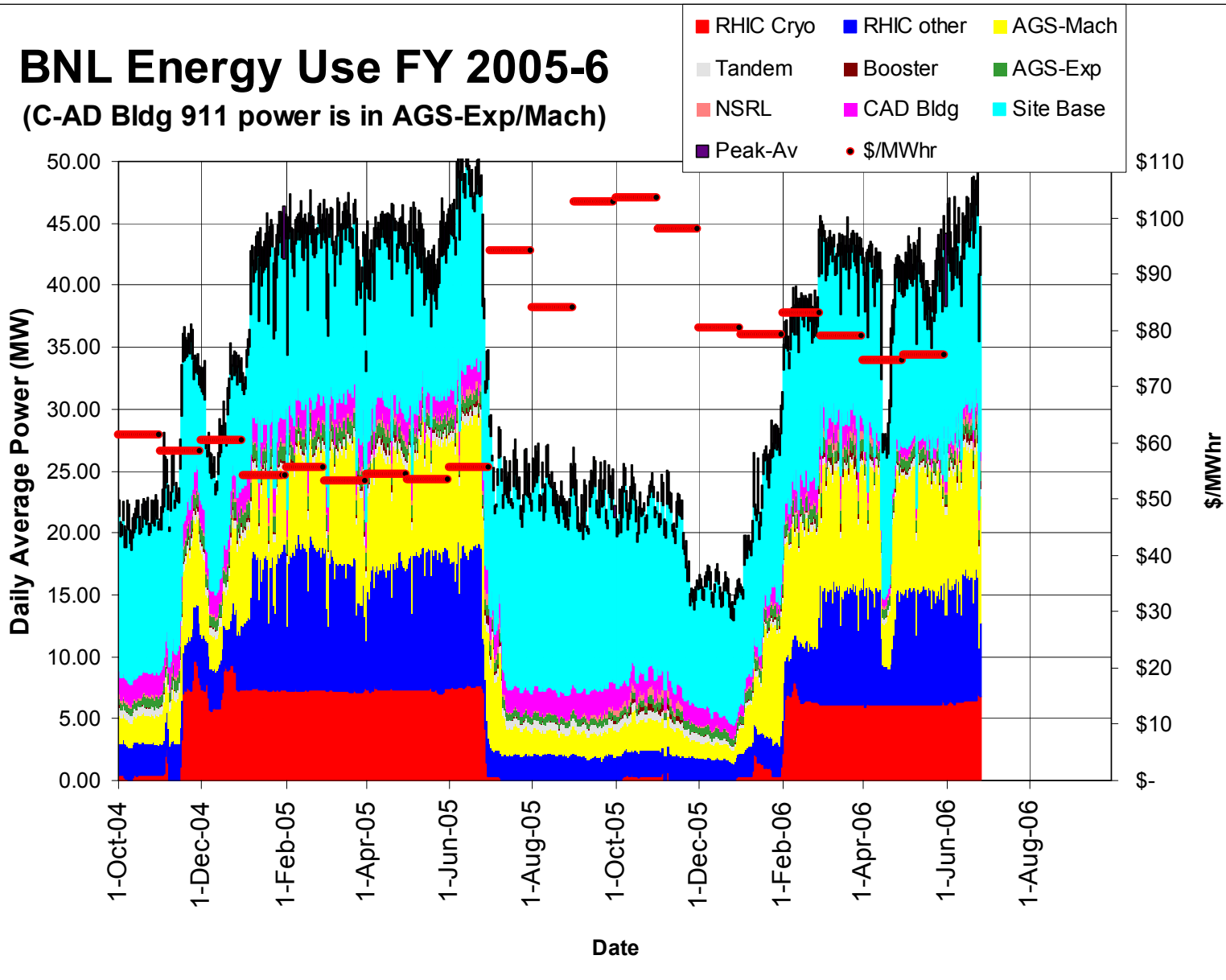


3 store av., RHIC protons before acceleration and initial luminosity vs date - final



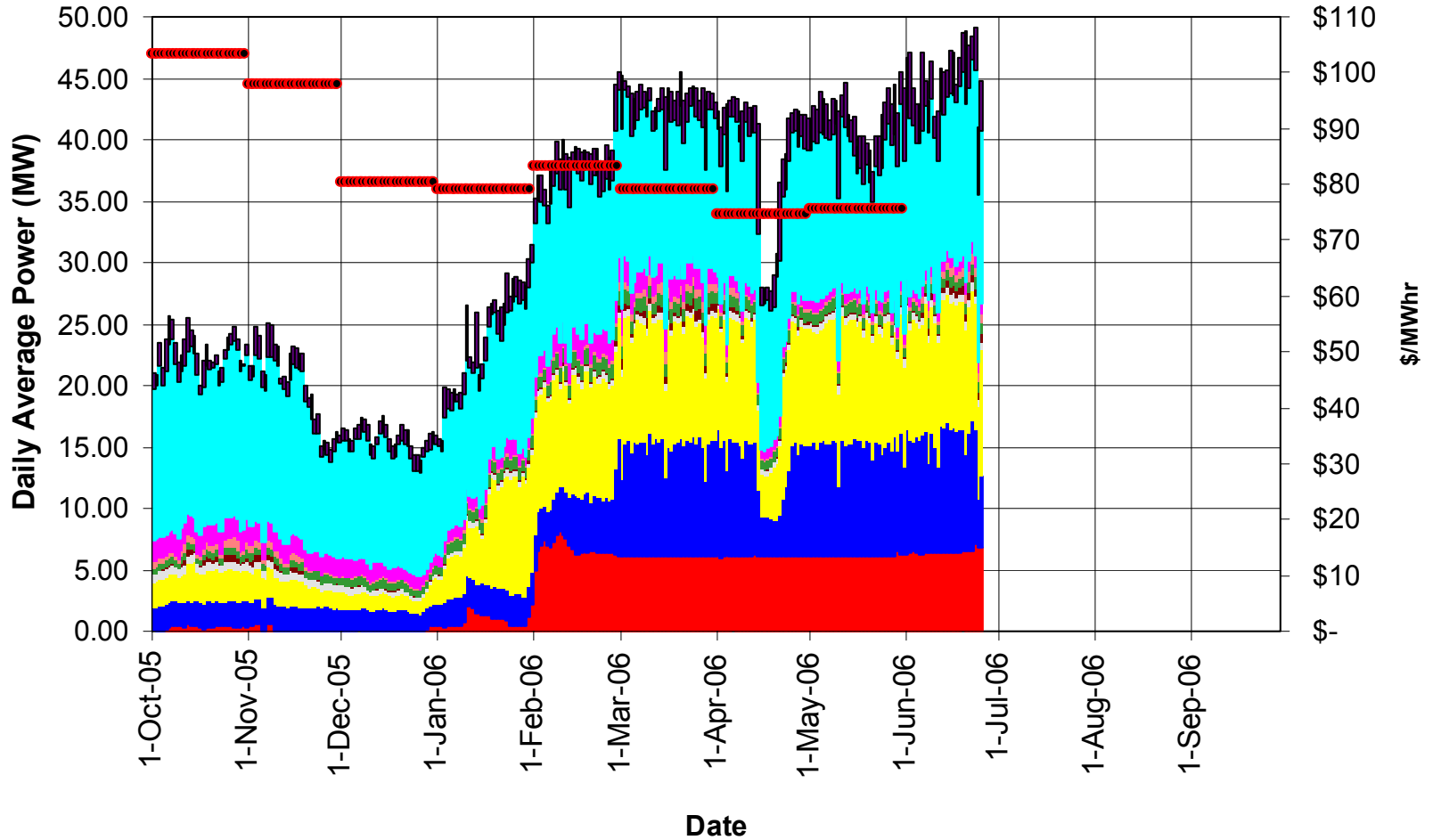
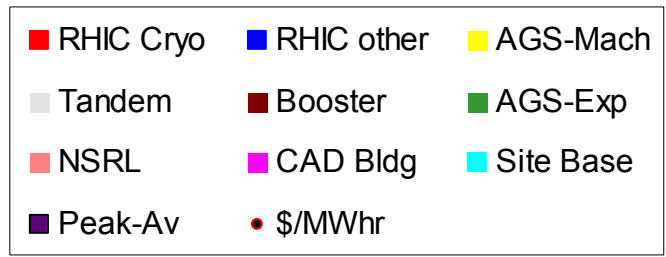
BNL Energy Use FY 2005-6

(C-AD Bldg 911 power is in AGS-Exp/Mach)







BNL Energy Use FY 2006

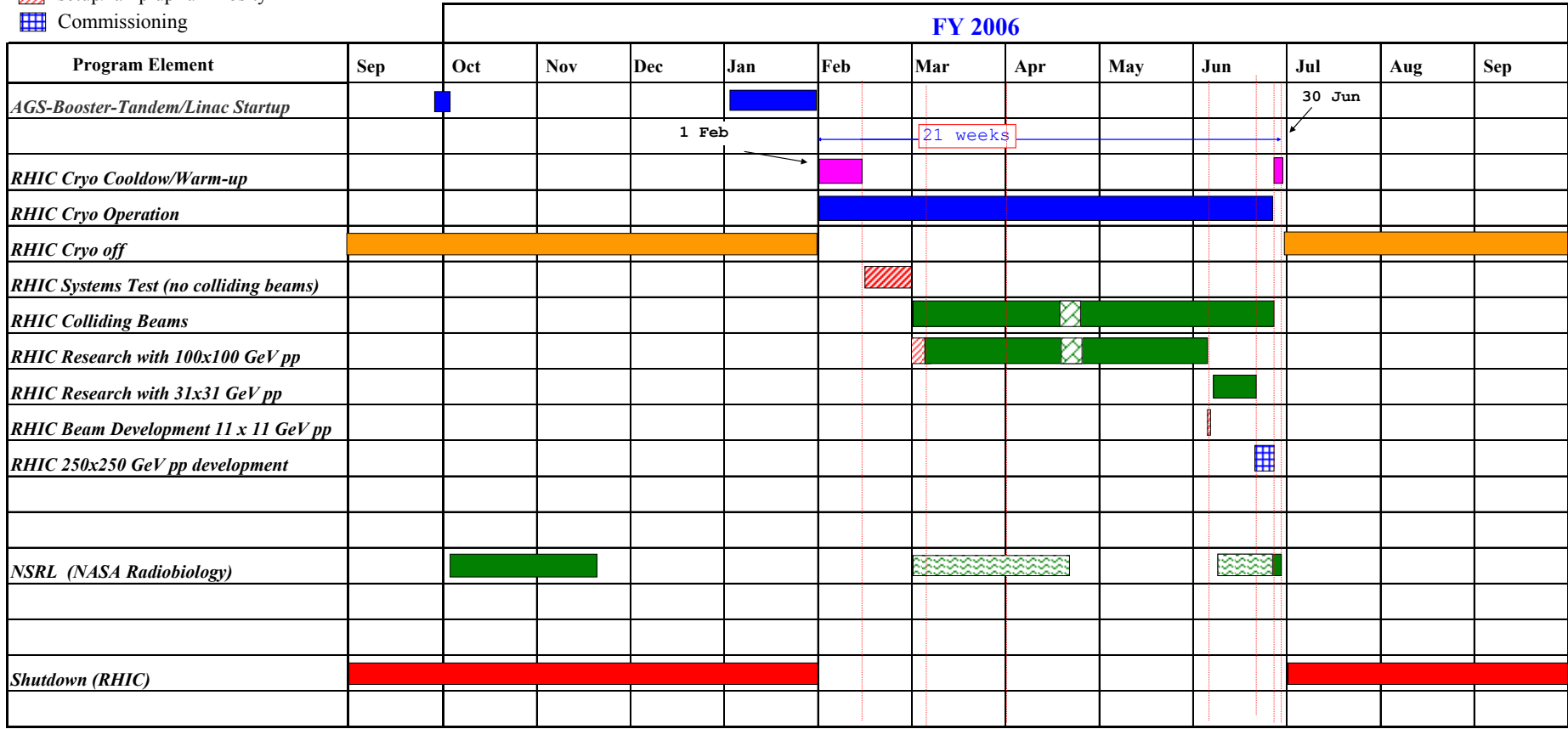
(C-AD Bldg 911 power is in AGS-Exp/Mach)



C-A Operations-FY06





AS Run/Planned

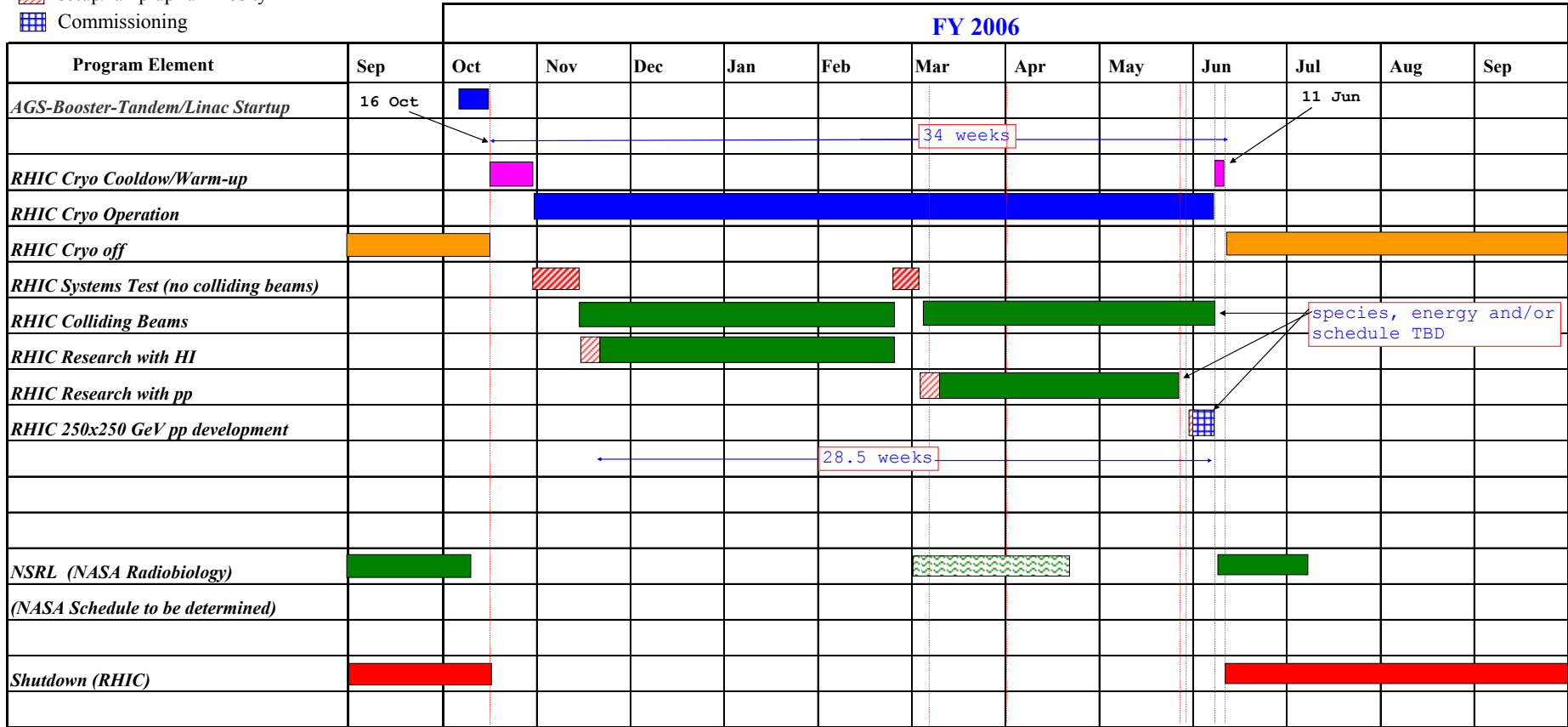
-  Unscheduled Shutdown
-  schedule to be determined
-  setup/ramp up luminosity
-  Commissioning



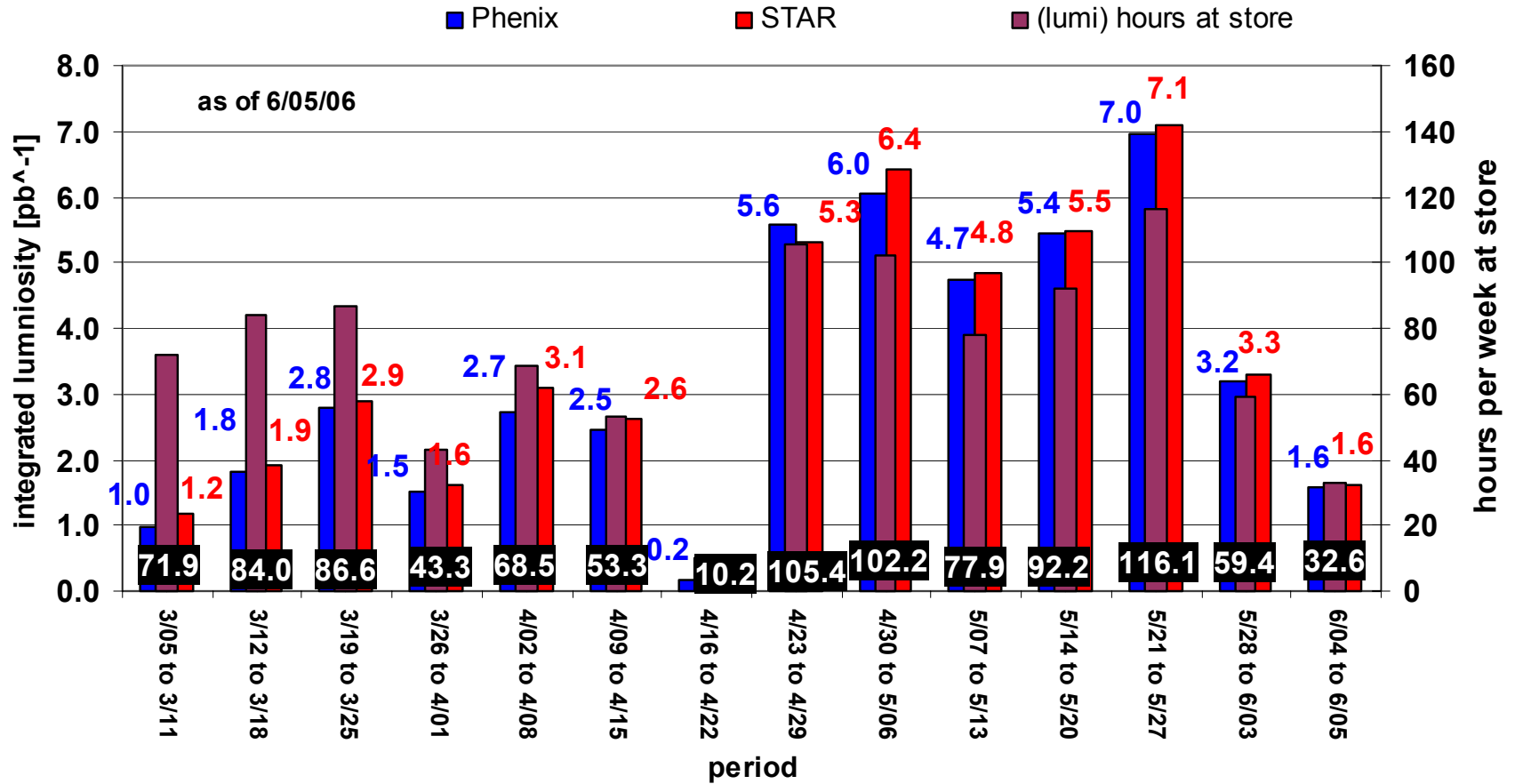
C-A Operations-FY07

34 week Draft Plan

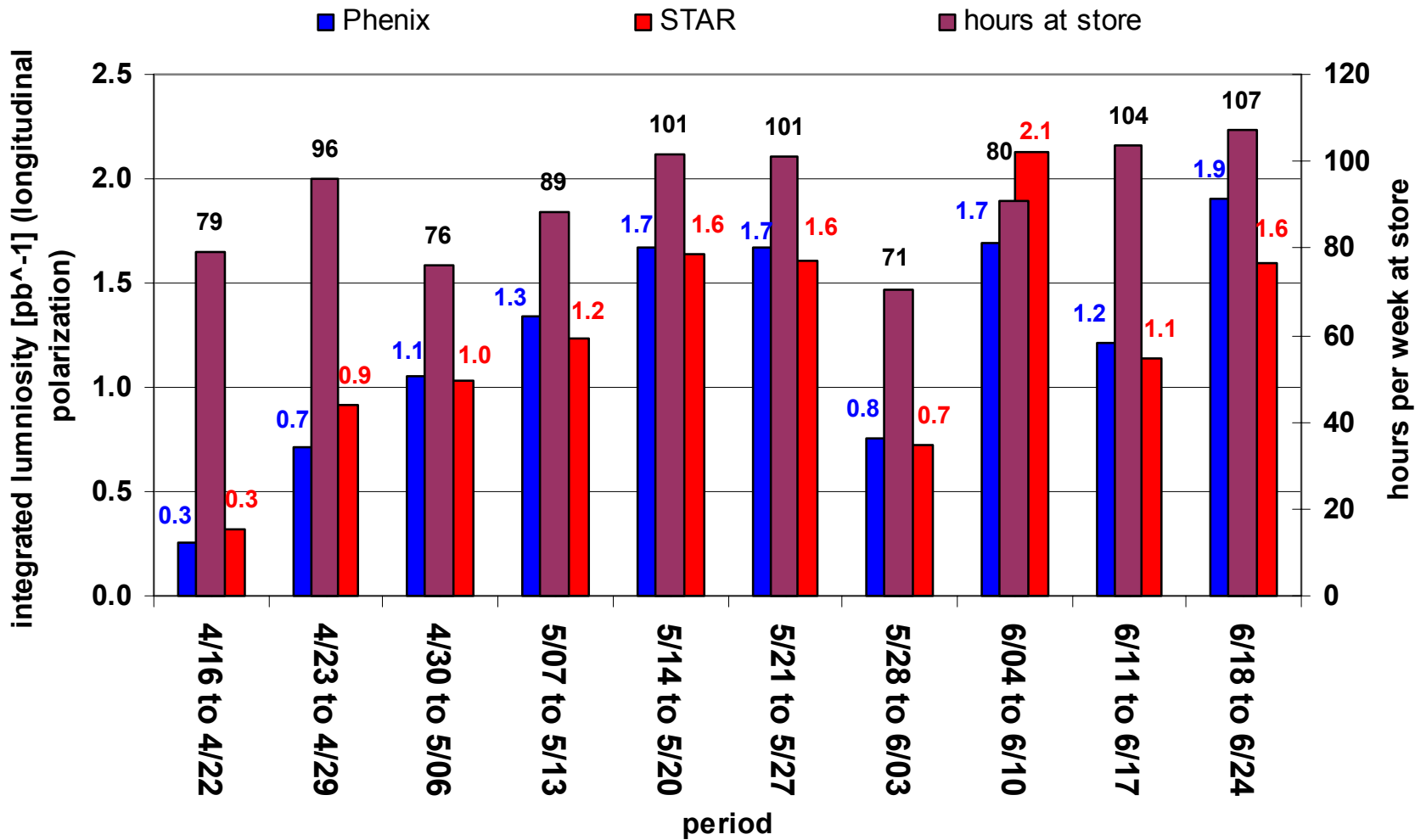
-  Contingency
-  concurrent with RHIC
-  setup/ramp up luminosity
-  Commissioning



Run 6 (p^p) -- Integrated Luminosity by week



Run 5 (p^p^)- Integrated Luminosity by week



RHIC Run6 (p^p^ 62 GeV COM) Integrated Luminosity by Day

