All Experimenter's Meeting

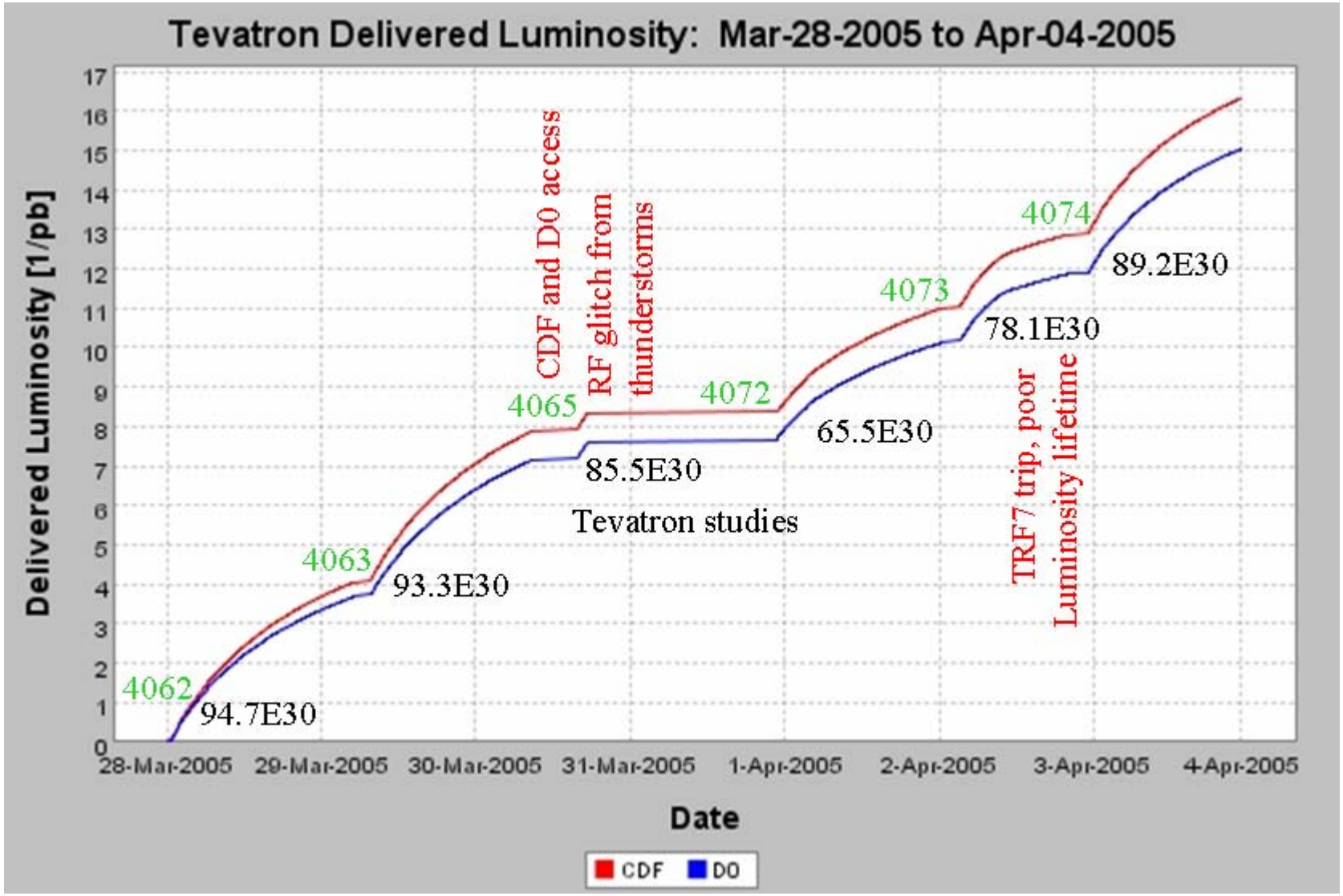
Dave McGinnis

April 4, 2005

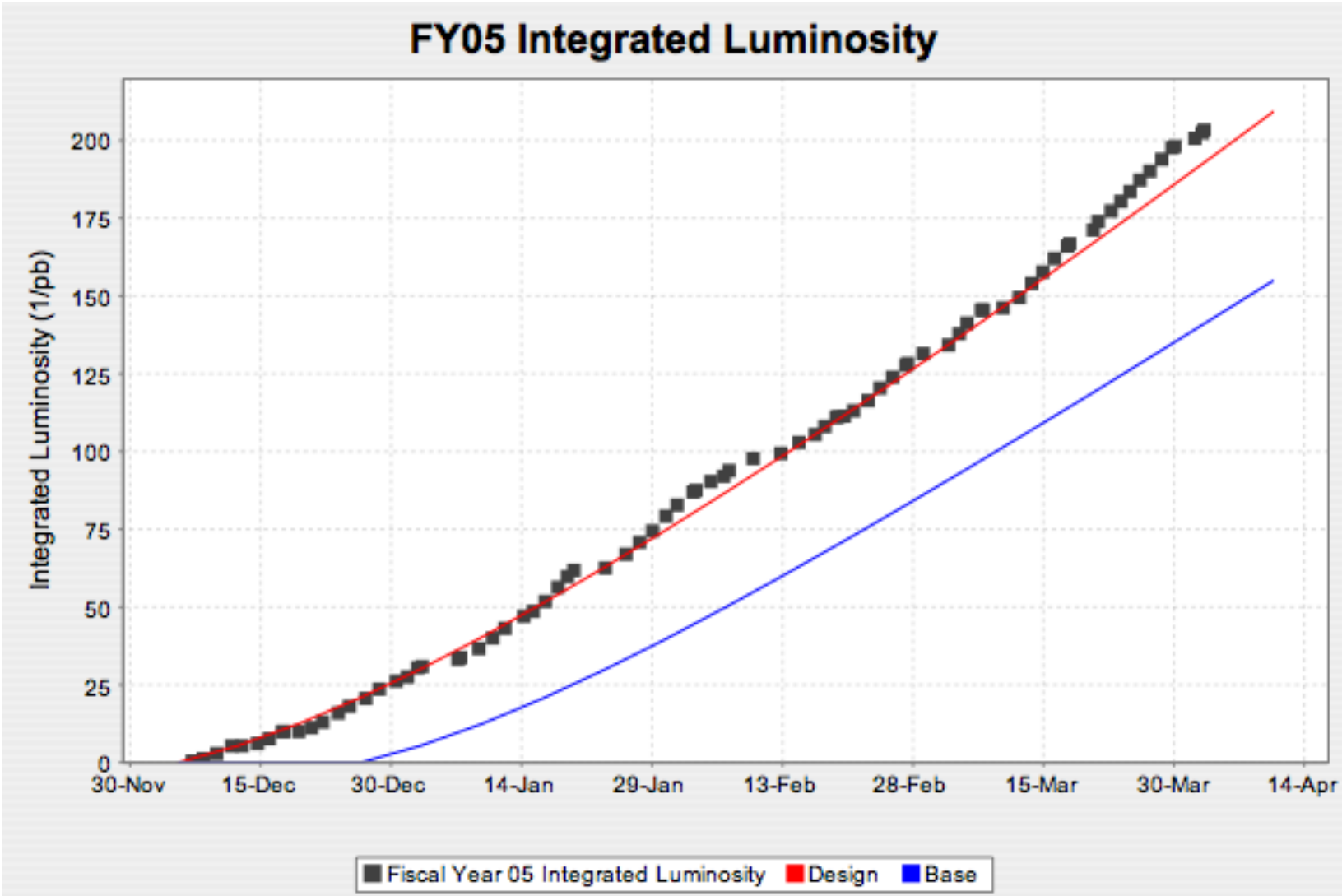
Store Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4062	94.7	4,041	Planned	28.6	213.7	Combination shot (148.8/64.9E10),
4063	93.3	3,841	Planned	25.6	240.9	Combination shot (171.9/69.0E10)
4065	85.5	473	Loss of store	1.7	250.5	Combination shot (187.4/63.1E10), Large pbar loss in MI on transfers A1, A2, A5 & A7, Thunderstorm glitched RF causing abort
4072	65.5	2,758	Planned	26.2	173.6	Large pbar loss in MI on A1, poor proton quality longitudinal emittance blow-up
4073	78.1	1,883	Planned	17.1	151.5	Very poor luminosity lifetime after TRF7 trips off
4074	89.2	3,823	Planned	29.0	170.2	Combination shot (114.0/56.2E10)

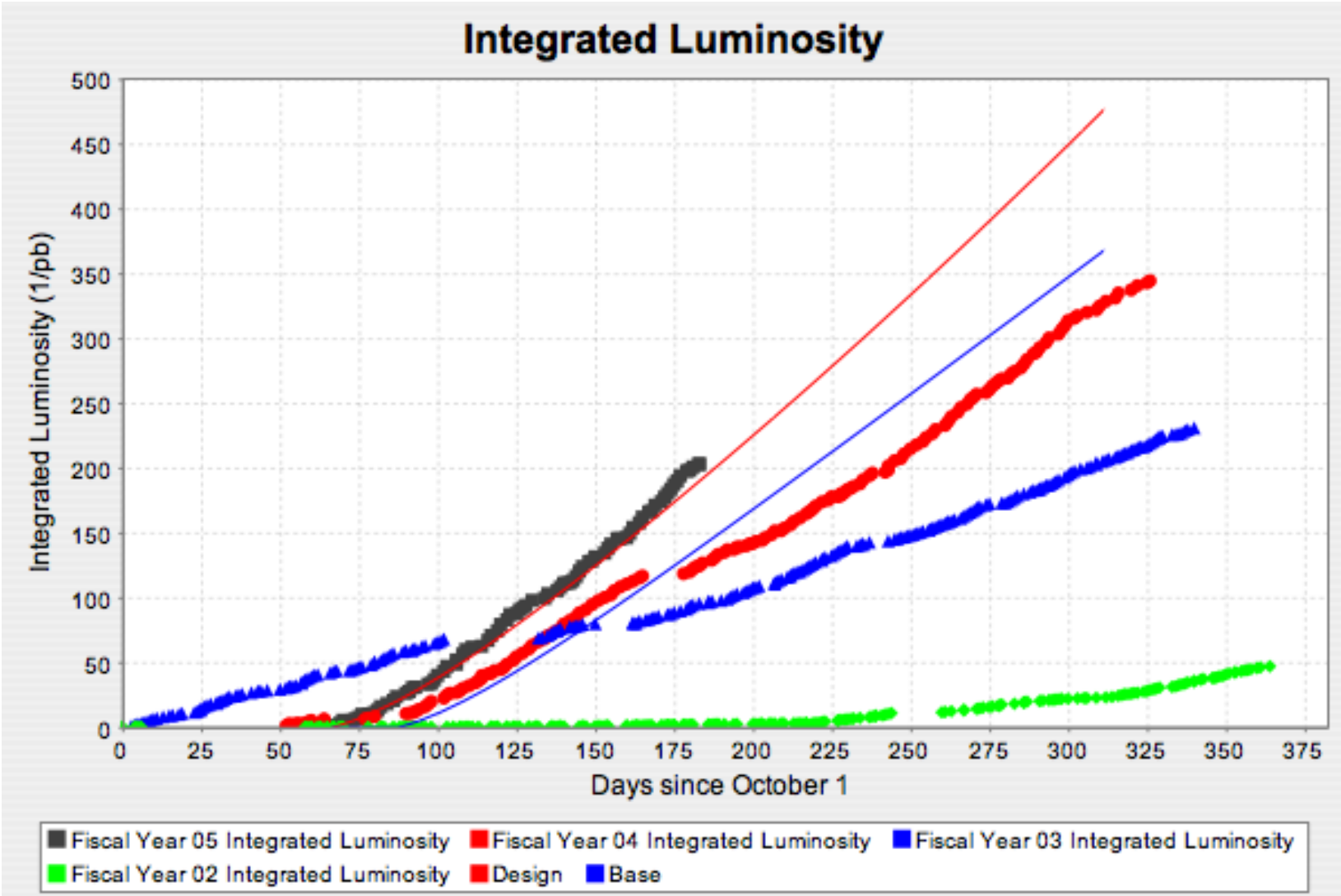
Store Summary



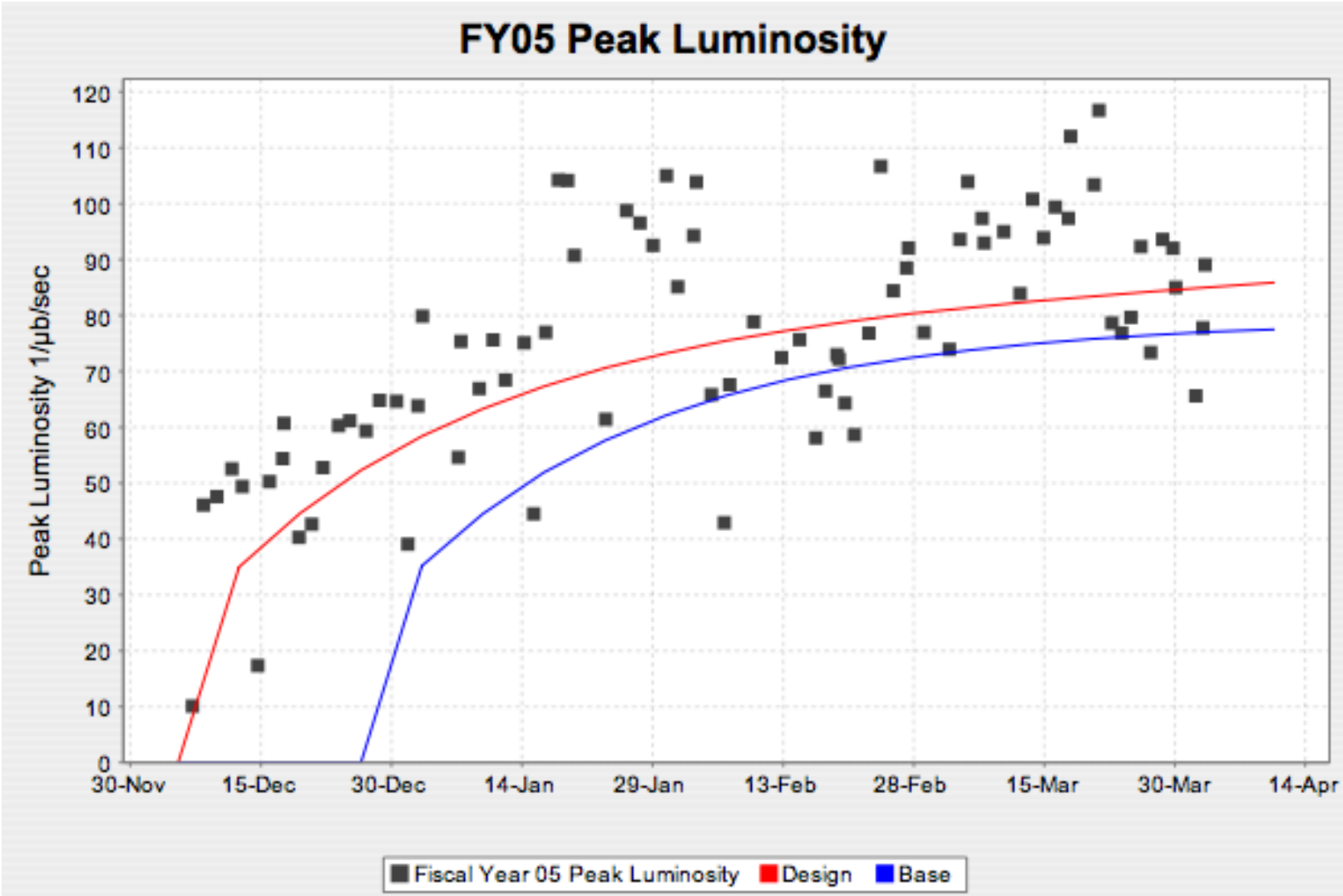
FY05 Integrated Luminosity



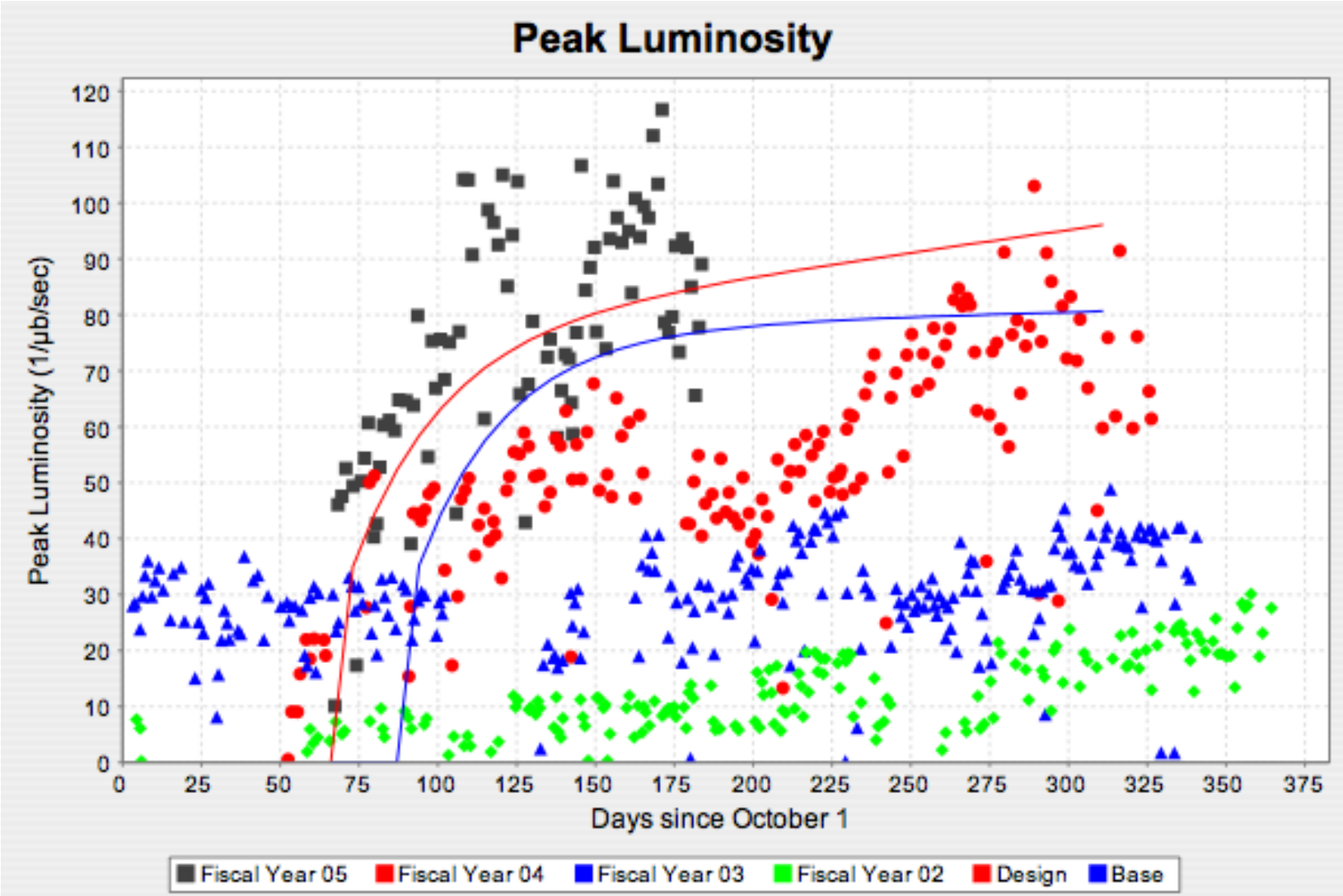
Integrated Luminosity



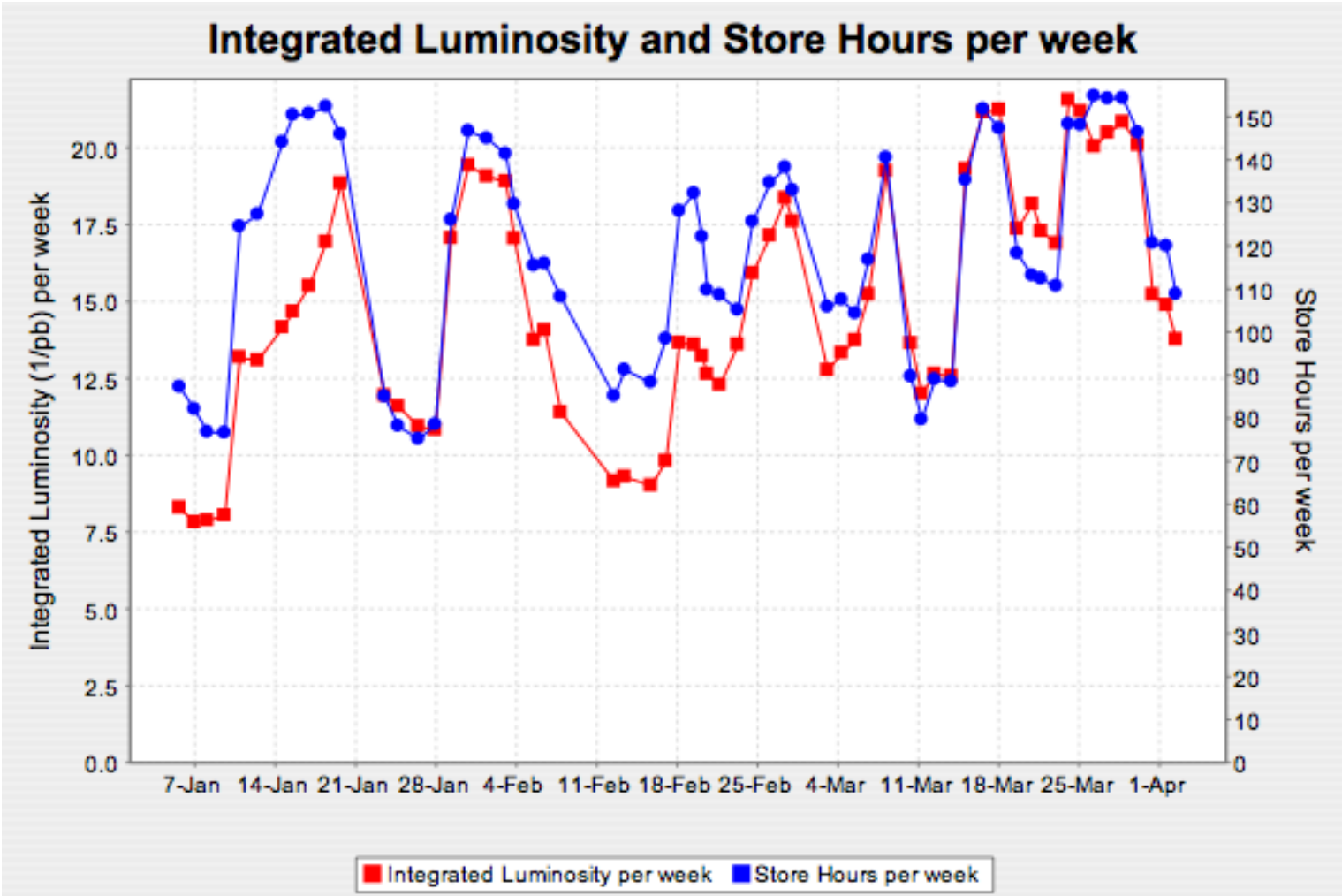
FY05 Peak Luminosity



FY05 Goals Peak Luminosity

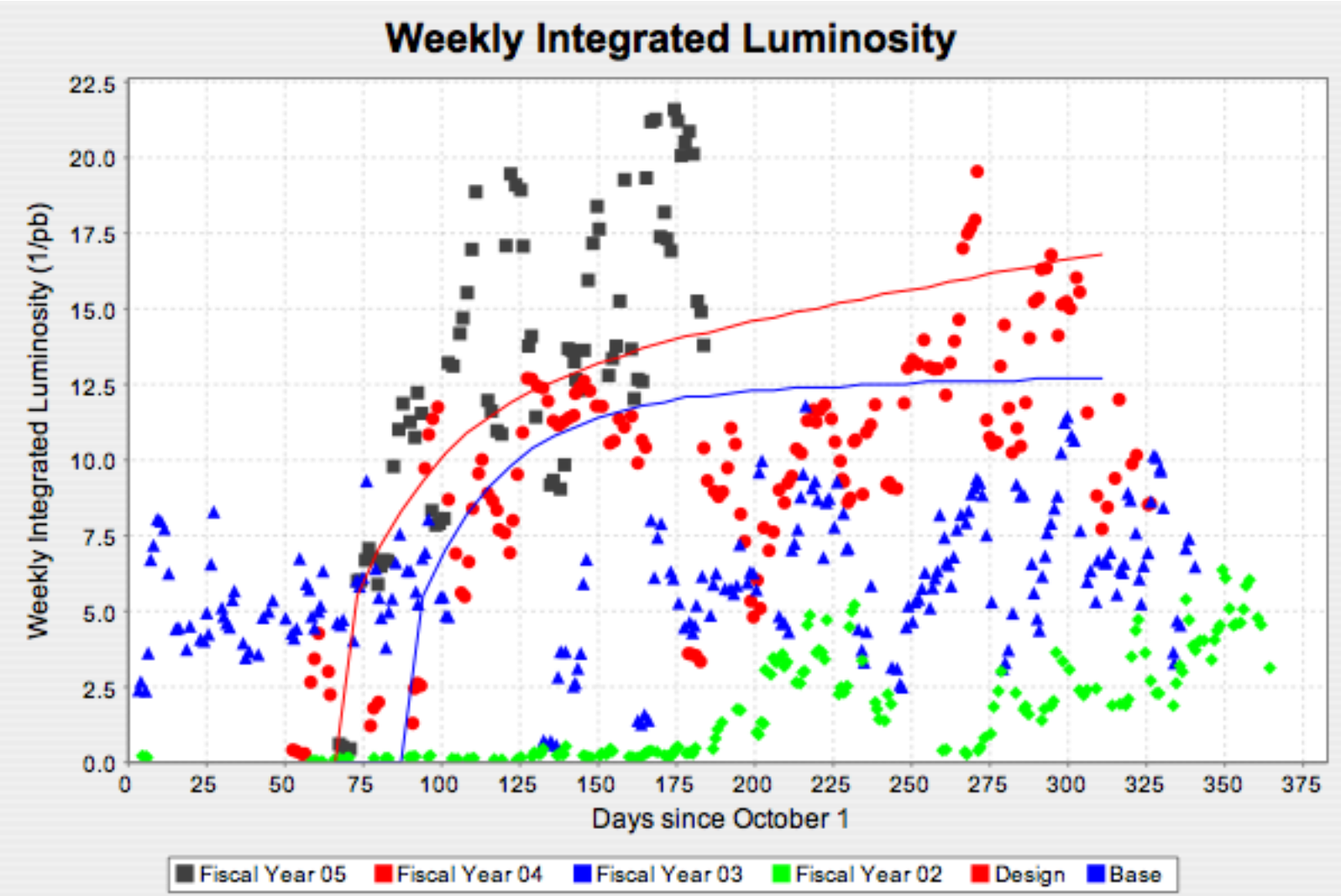


Integrated Luminosity and Store Hours per Week



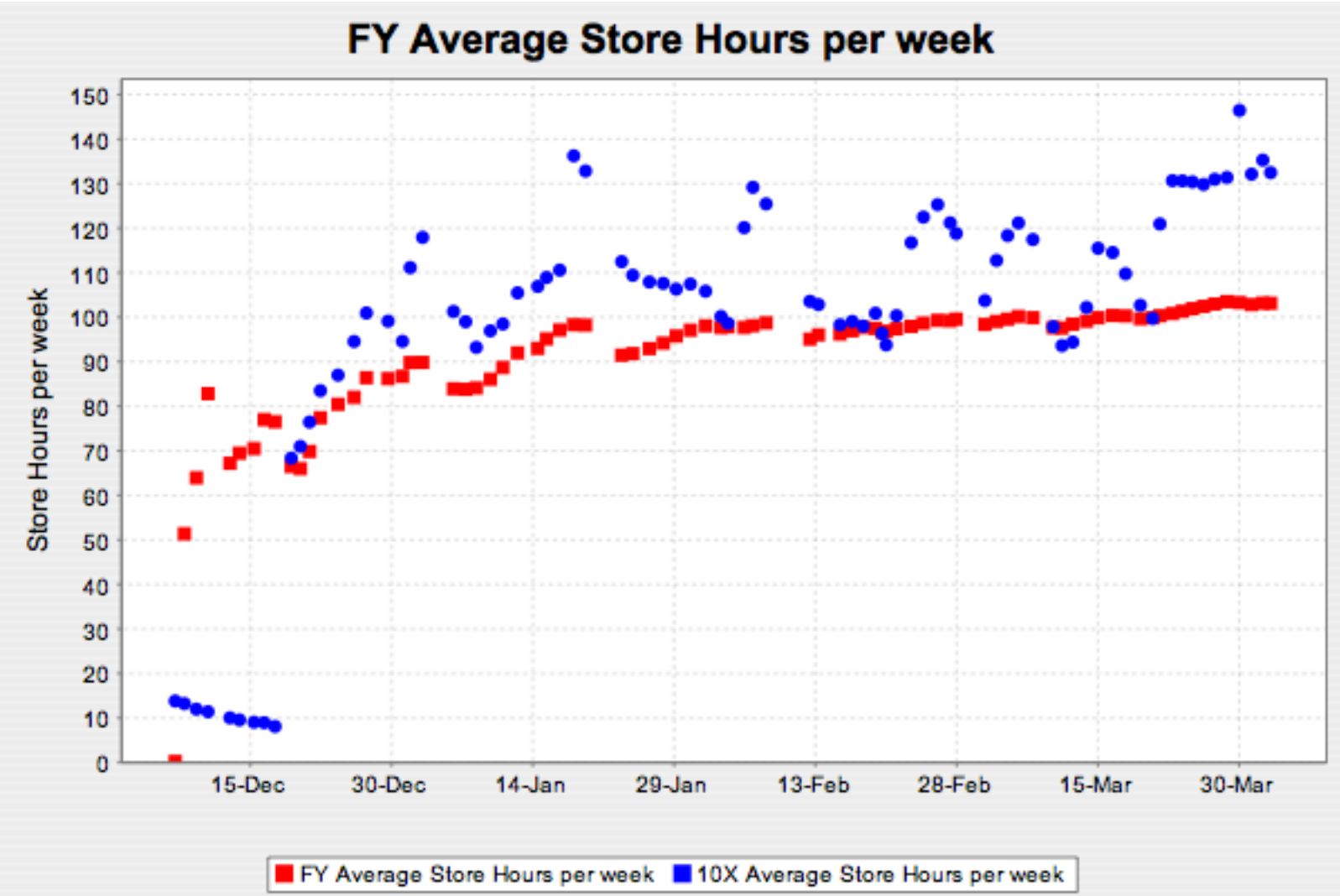
5 Store Running Average

FY05 Goals Weekly Integrated Luminosity

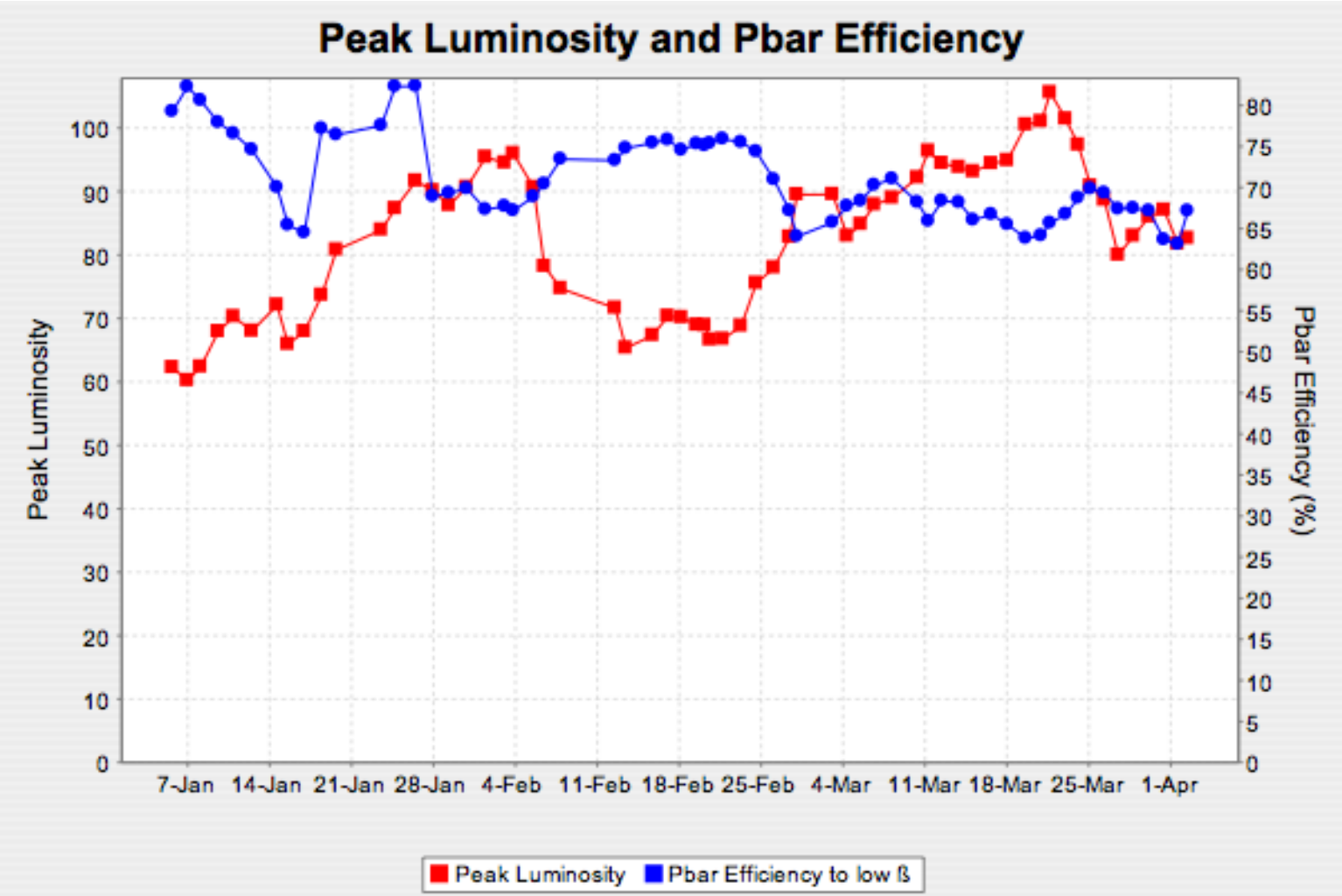


5 Store Running Average

FY05 Average Store Hours per Week



Peak Luminosity and Pbar Efficiency

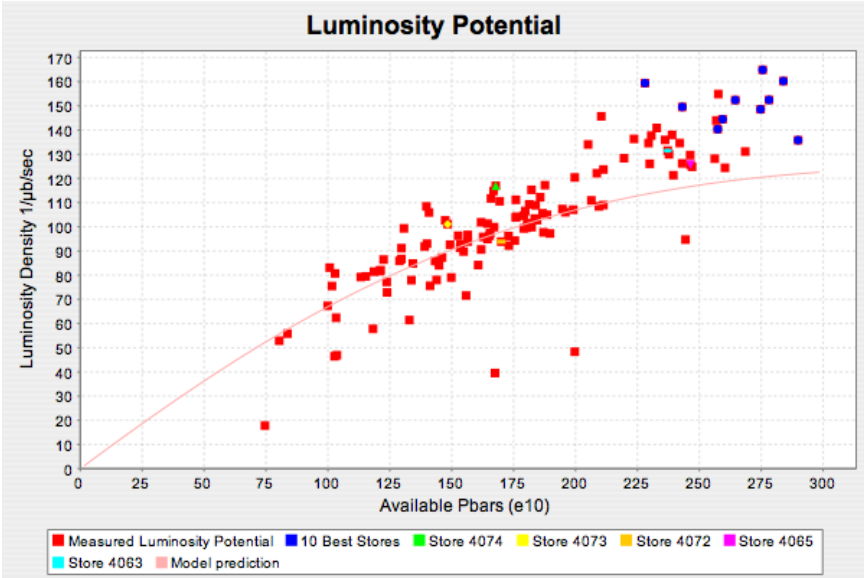


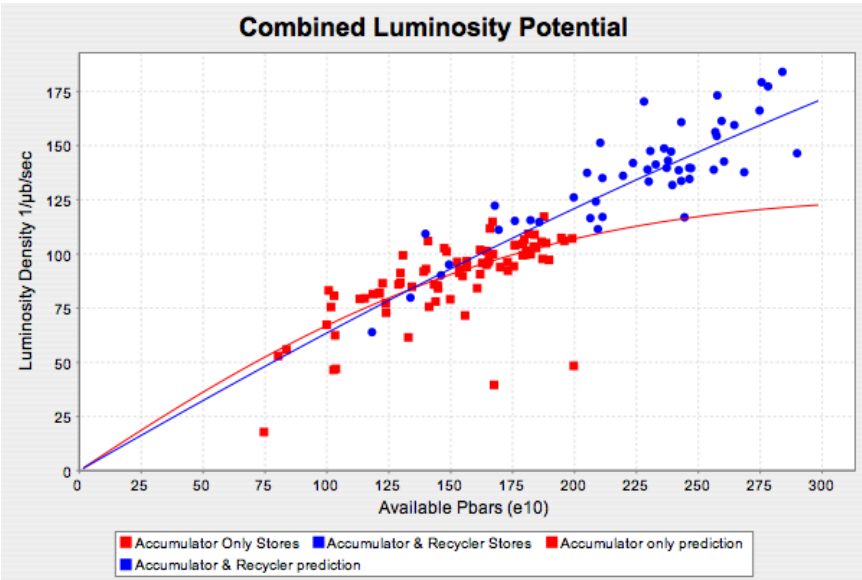
5 Store Running Average

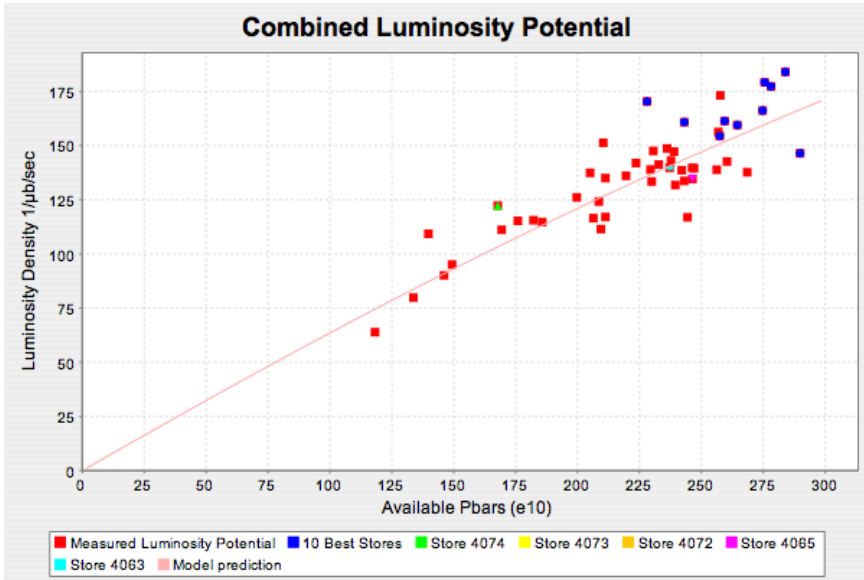
Data Summary Table

		Luminosity Parameters							
Parameter	Last Store	Best Store	Last 10 Stores (Ave)	Best 10 Stores (Ave)	FY Average	Previous FY	FY End Goal (Design)	FY End Goal (Base)	
Initial Luminosity (Average)	88.9	116.5	81.3	106.1	75	71.1	96.1	80.7	$x10^{30} cm^{-2} sec^{-1}$
Integrated Luminosity per Store (Avera	893.9	2746	2602.8	3288	2505	2660	3369	3190	nb^{-1}
Luminosity per week (Averaged)	-	-	17.2	-	12.3	11.8	16.8	12.7	pb^{-1}
Store Length	3.3	11.2	20	20.8	21.1	24.5	20	25	Hours
Store Hours per week	-	-	132.2	-	103.7	108.3	100	100	Hours
Shot Setup Time	2.8	2.2	2.6	2.6	2.9	2.6	2.6	2.6	Hours
		TEVATRON Parameters							
Parameter	Last Store	Best Store	Last 10 Stores (Ave)	Best 10 Stores (Ave)	FY Average	Previous FY	FY End Goal (Design)	FY End Goal (Base)	
Protons per bunch	236.6	237.7	227.9	232.9	222.4	247.3	260	260	$x10^{9}$
Antiprotons per bunch	31.3	42.3	33.2	41.7	31.2	30.1	42	34	$x10^{9}$
Proton Efficiency to Low Beta	57.8	60.7	59.2	65.4	62.2	72.7	-	-	%
Pbar Transfer efficiency to Low Beta	73.7	66.4	67.3	77	70.8	74	76	74	%
HourGlass Factor	0.67	0.67	0.67	0.68	0.68	0.68	0.65	0.65	
Effective Emittance	13.7	14.2	15.3	15.4	15.7	18.1	18.5	17	π-mm-mrad
		Antiproton Parameters							
Parameter	Last Store	Best Store	Last 10 Stores (Ave)	Best 10 Stores (Ave)	FY Average	Previous FY	FY End Goal (Design)	FY End Goal (Base)	
Zero Stack Stack Rate	16	13.4	15.3	13.8	12.9	12.2	24.5	14	$x10^{10}$/hour
Normalized Zero Stack Stack Rate	2.5	2.3	2.4	2.4	2.2	2.3	3.1	2.3	$x10^{-2}$/hour
Average Stacking Rate	6	7.8	8	7	7.3	6.2	10.1	6.6	$x10^{10}$/hour
Stacking Time Line Factor	48.2	79.3	78.1	72.8	77	76.6	75	75	%
Stack Size at Zero Stack Rate	296.2	412.9	310.3	363.8	380.6	332.6	300	300	$x10^{10}$
Protons on Target	6.7	5.9	6.5	5.9	5.7	5.2	8	6.2	$x10^{12}$
Start Stack	168.1	275.9	201.5	265.8	185.6	170.7	216	181	$x10^{10}$
End Stack	15.2	46.9	21.5	42.6	20.8	15.8	15	15	$x10^{10}$
Unstacked Pbars	152.9	229	180	223.2	164.8	154.9	201	166	$x10^{10}$

Stack Size Potential







TEV Studies

Date	Duration (Hr)	Description
3/30/2005	6.9	Longitudinal instability
3/31/2005	7.0	O1/O2 octupole studies, plus recovery
	13.9	Sum for Week
	204.4	Sum for Year
	12.3	Average per week

Pbar Studies

MiniBoone

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Summary for Event 1D
From 21-MAR-2005 00:00:00
  to 28-MAR-2005 00:00:00

Percentage up time: 90.5
Total Events:     2595664
Total Protons:    9.30E+18
Average Events/second:        4.57
Average protons/Event:        3.72E+12
Average protons/hour:         6.11E+16
Maximum protons/hour:         7.68E+16   03/25/05
(protons out)/(protons in):   .843
(Joules lost)/(1e12 prot):    20.9
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Summary for Event 1D
From 28-MAR-2005 00:00:00
  to 04-APR-2005 00:00:00

Percentage up time: 79.7
Total Events:     2123808
Total Protons:    7.86E+18
Average Events/second:        4.23
Average protons/Event:        3.85E+12
Average protons/hour:         5.87E+16
Maximum protons/hour:         7.21E+16   03/28/05
(protons out)/(protons in):   .82
(Joules lost)/(1e12 prot):    23.4
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Down 15% from last week

Plan for the Week

- Proton Source
  - Slip Stacking Studies
- Main Injector
  - Continue SY120 Mixed Mode operations until NUMI target is fixed
  - Slip Stacking Studies
  - Verify 4.5 sec Pbar loss is fixed
- Pbar
  - Beam Based Alignment
  - Low intensity Stacking studies
    - Production vs intensity on target
  - Back out of η change
- Recycler
  - Operational Studies
- Tevatron
  - Vary helix size store-to-store
  - Fix operational concerns of octupoles
  - Longitudinal instability and RF cavity tuning