All Experimenter's Meeting

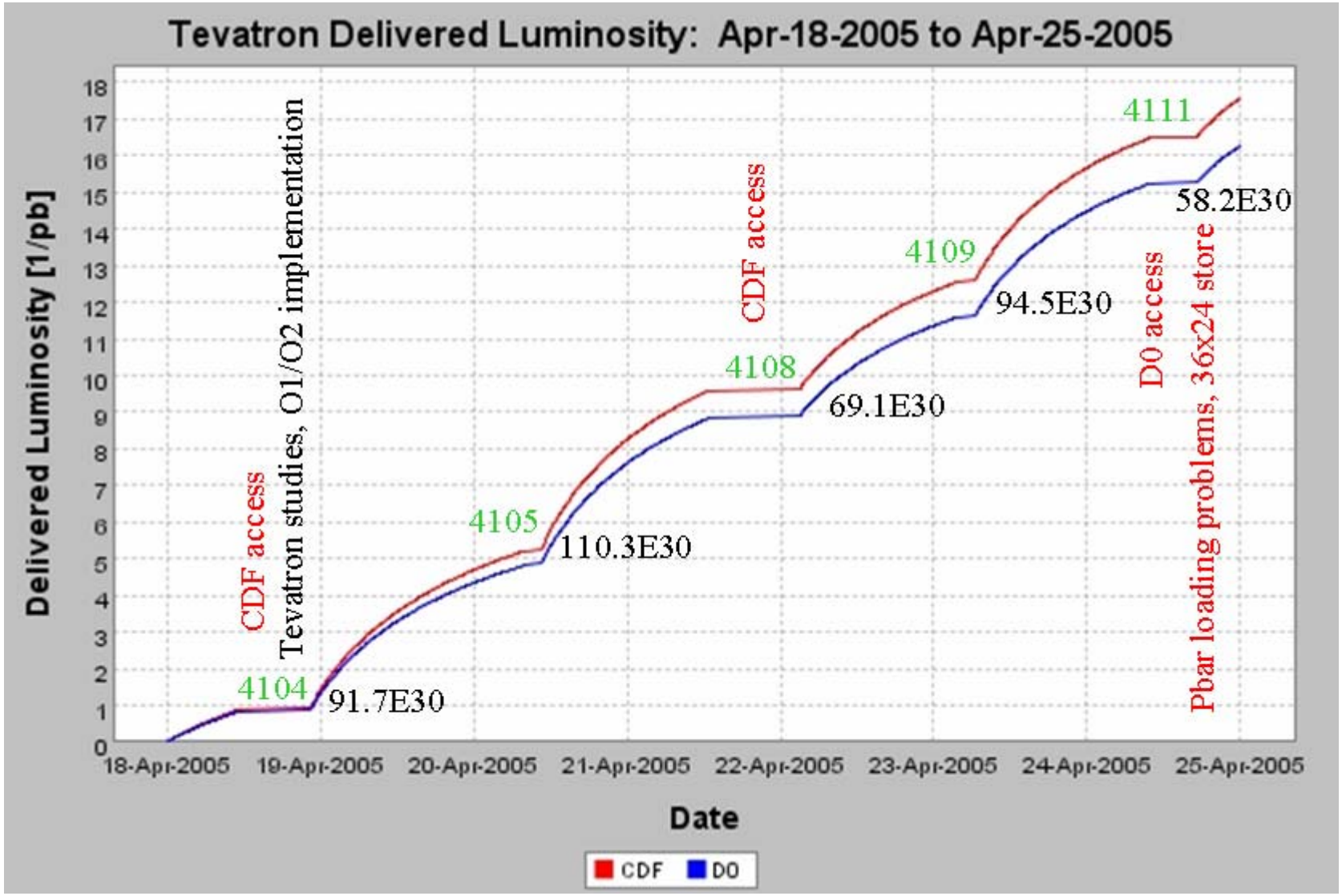
Dave McGinnis

April 25, 2005

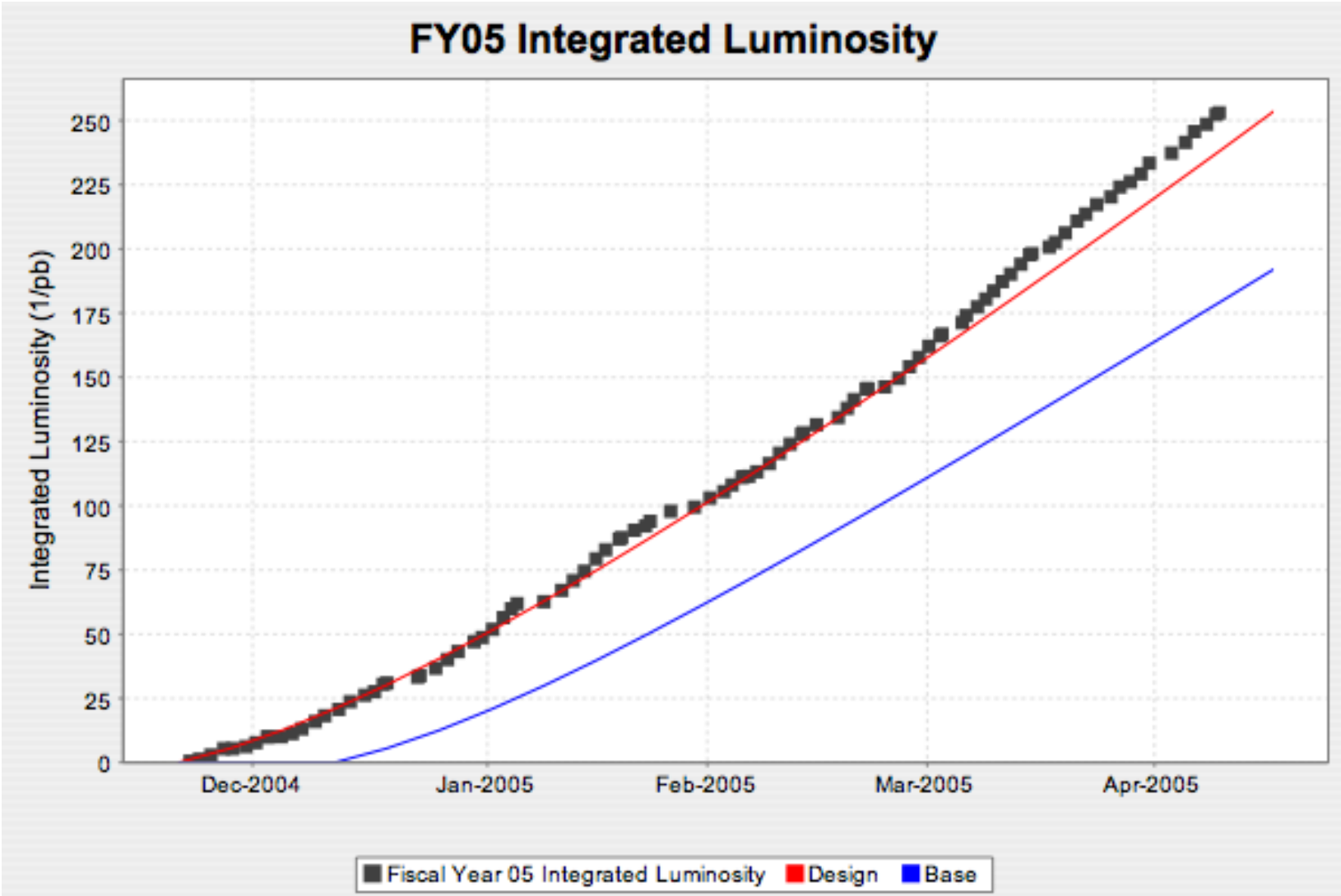
Store Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4104	91.7	4,331	Planned	33.7	199.2	Combination shot (160.1/39.1E10)
4105	110.3	4,364	Planned	26.5	208.2	Combination shot (100.2/108.0E10)
4108	69.1	2,999	Planned	25.2	158.7	
4109	94.5	3,927	Planned	27.6	202.8	Combination shot (143.9/58.9E10)
4111	58.2	2,200+	Pending	20+	265.0	Combination shot (149.5/115.5E10), Problems with pbar transfers from Accumulator, 36x24 store

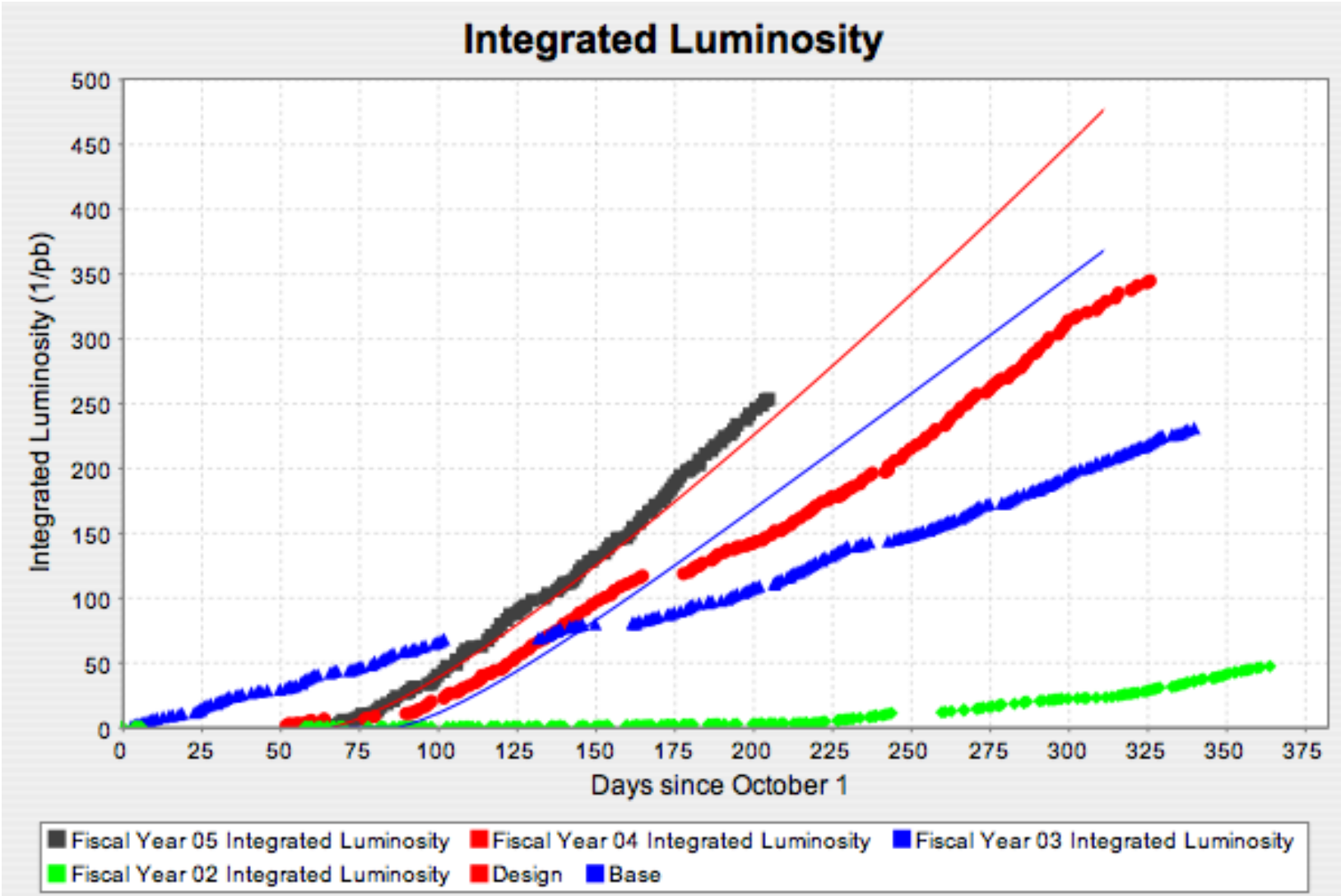
Store Summary



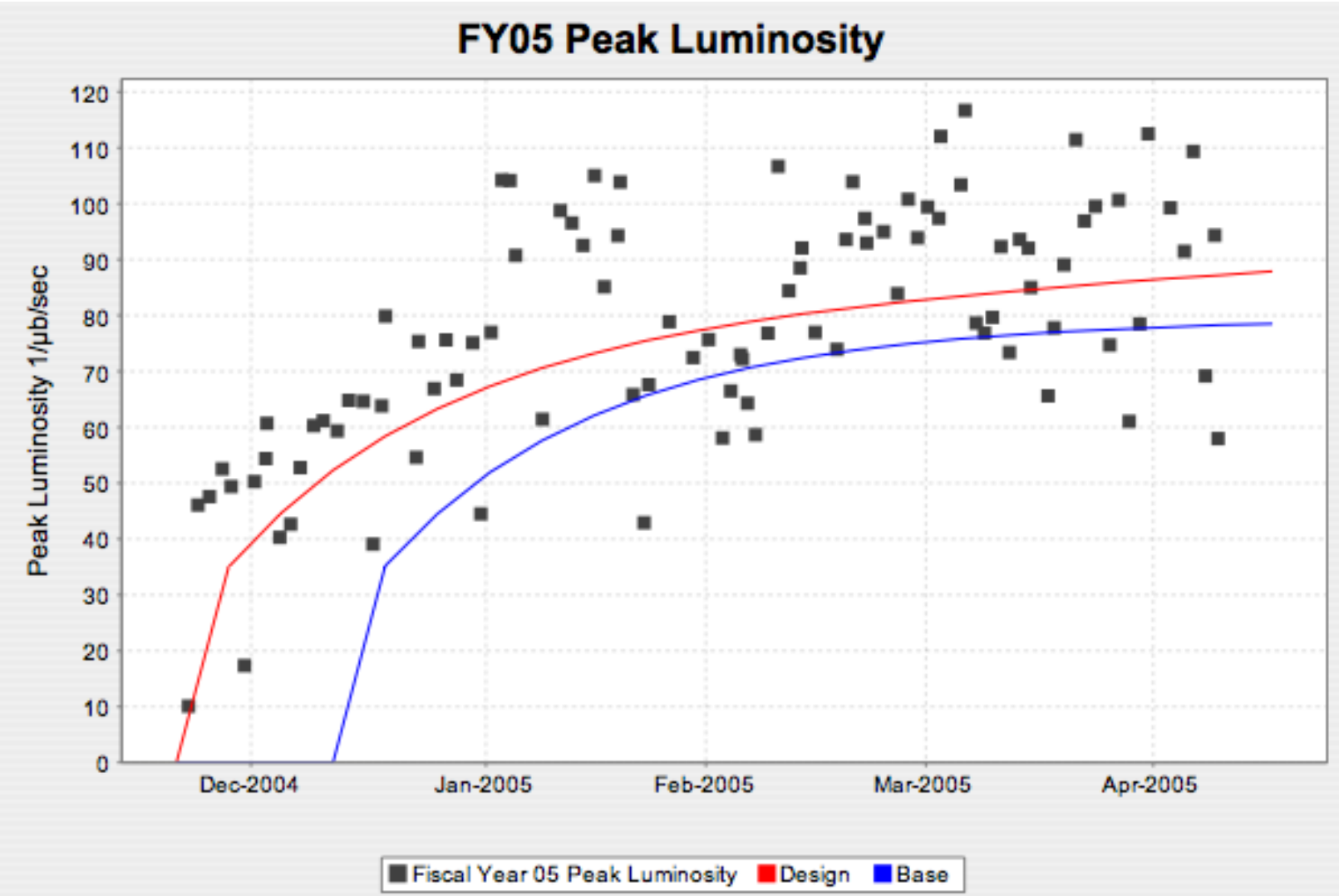
FY05 Integrated Luminosity



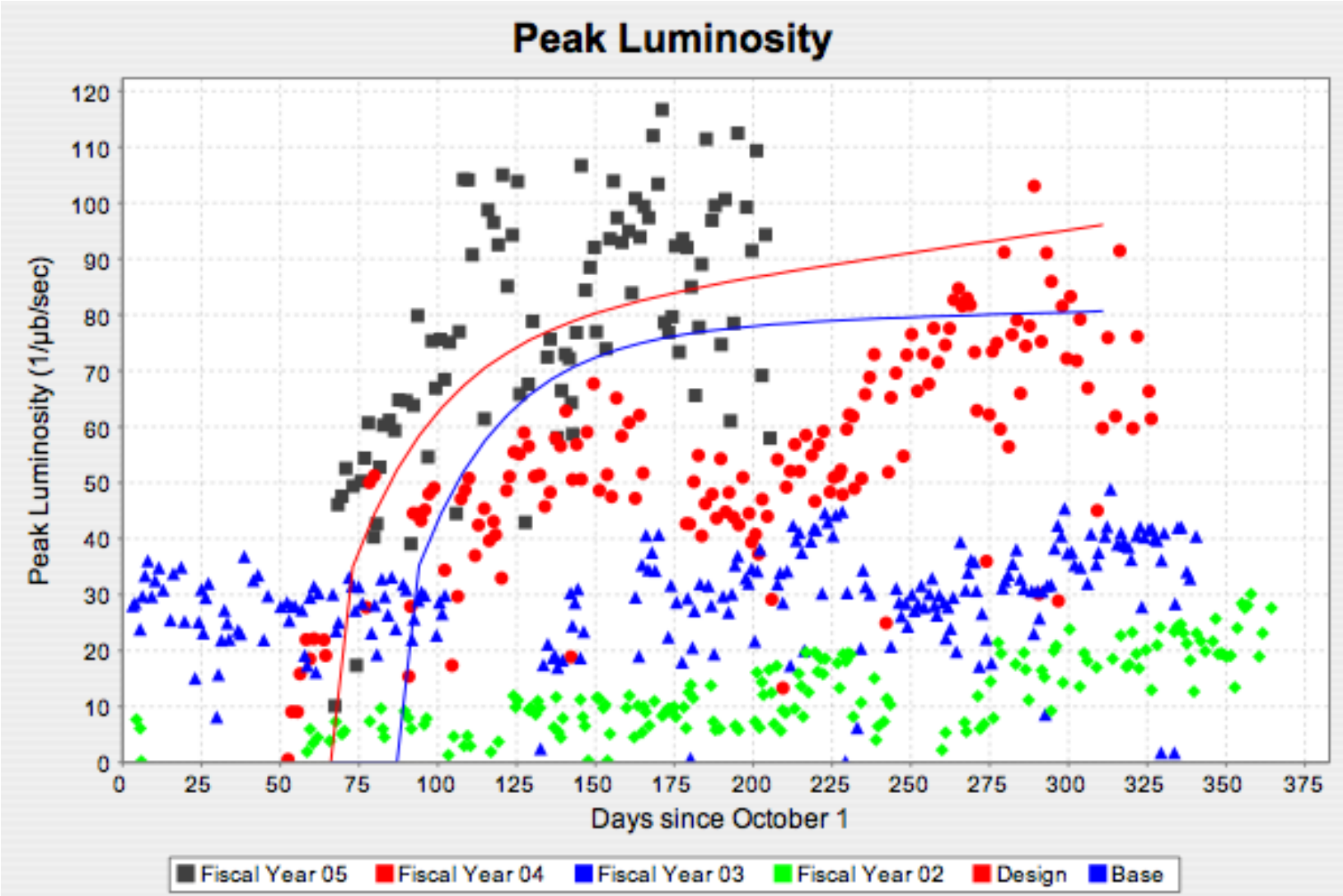
Integrated Luminosity



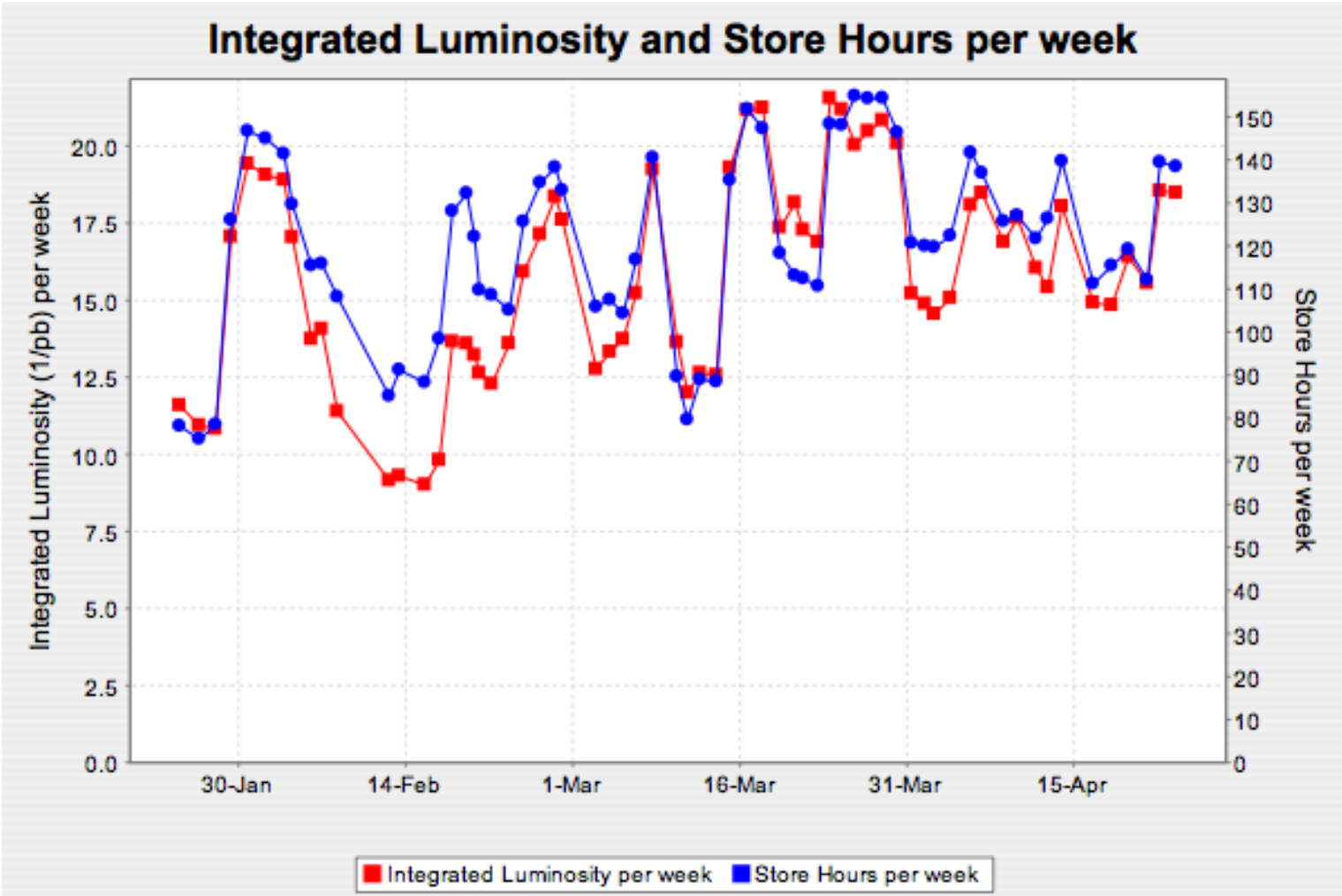
FY05 Peak Luminosity



FY05 Goals Peak Luminosity

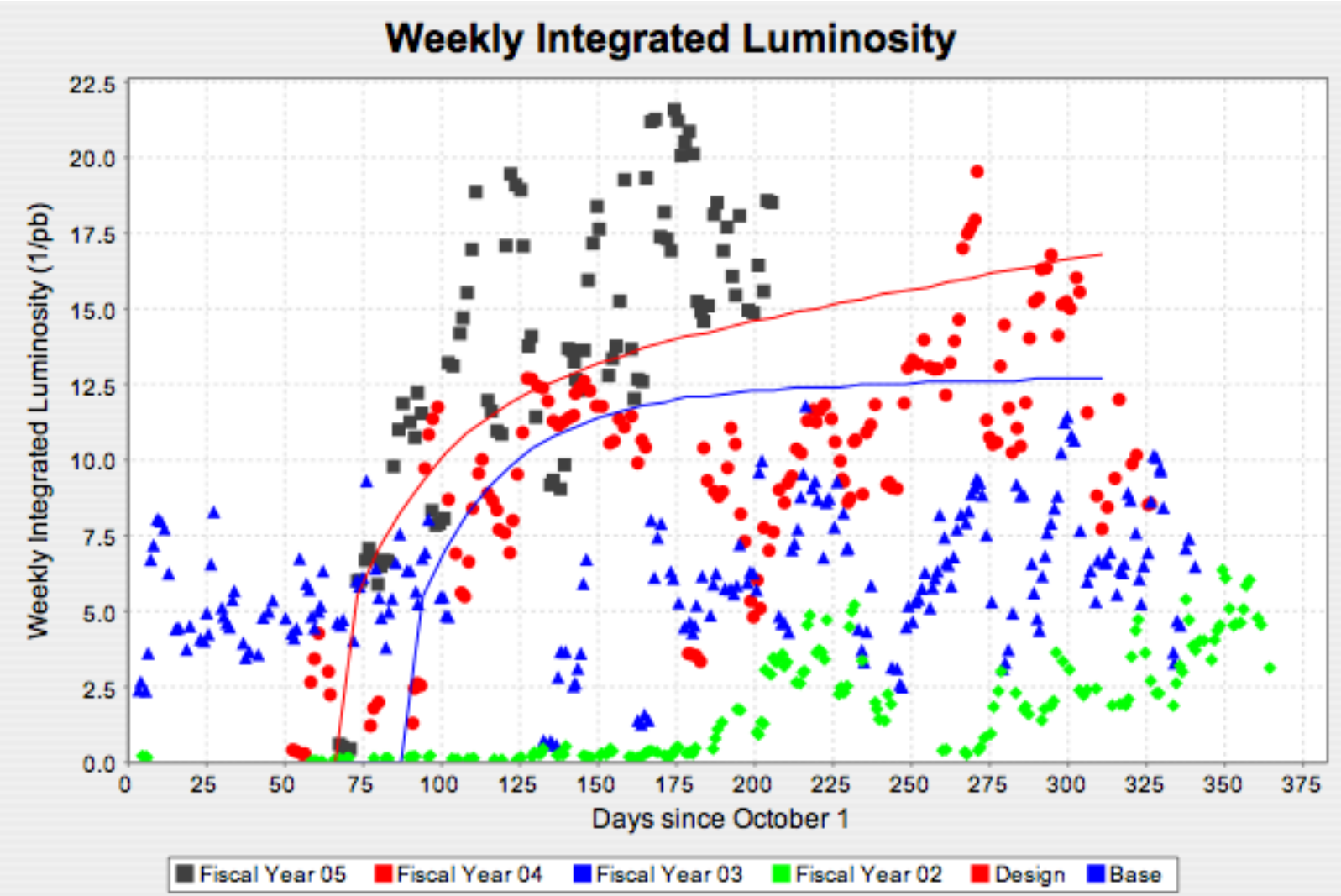


Integrated Luminosity and Store Hours per Week



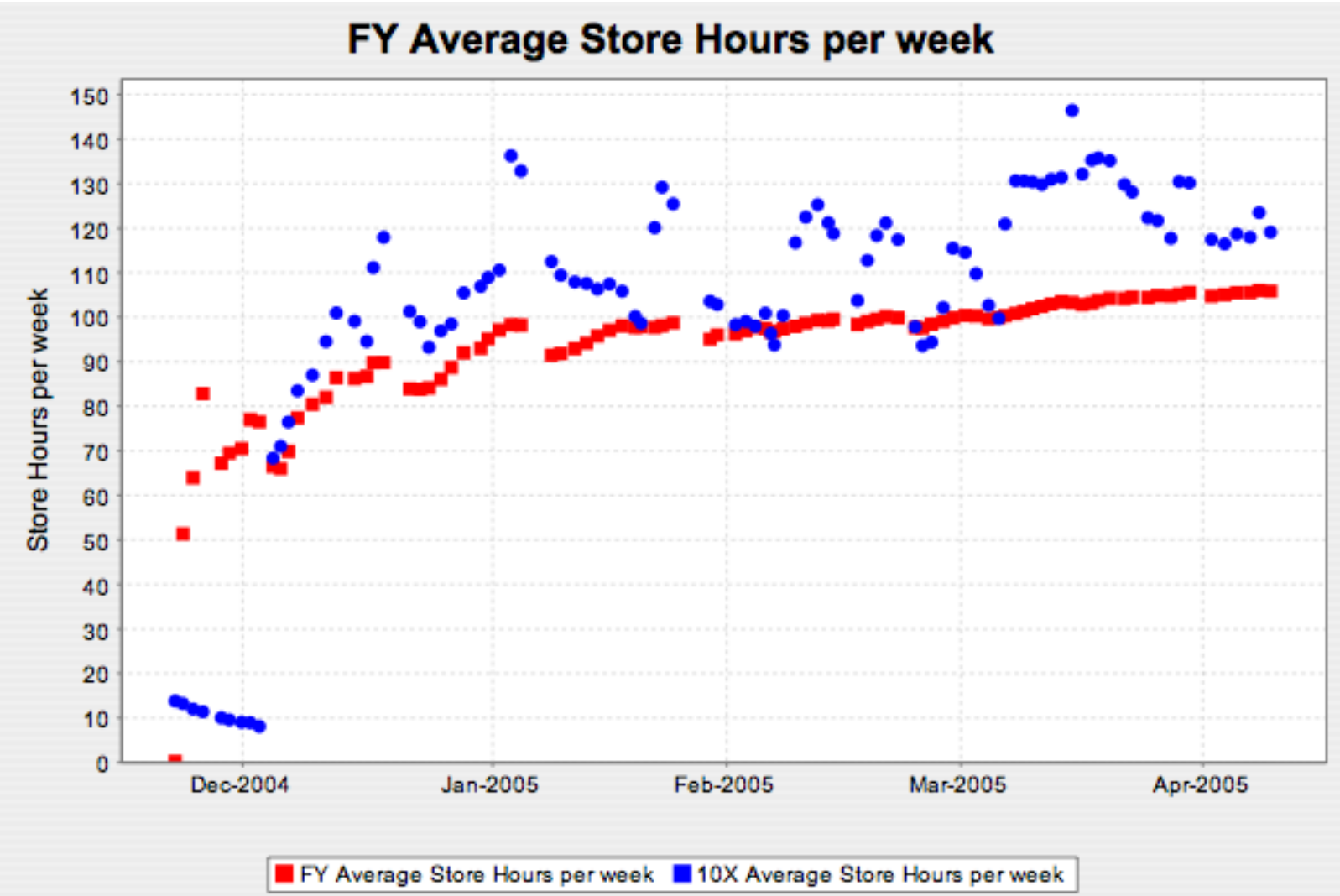
5 Store Running Average

FY05 Goals Weekly Integrated Luminosity

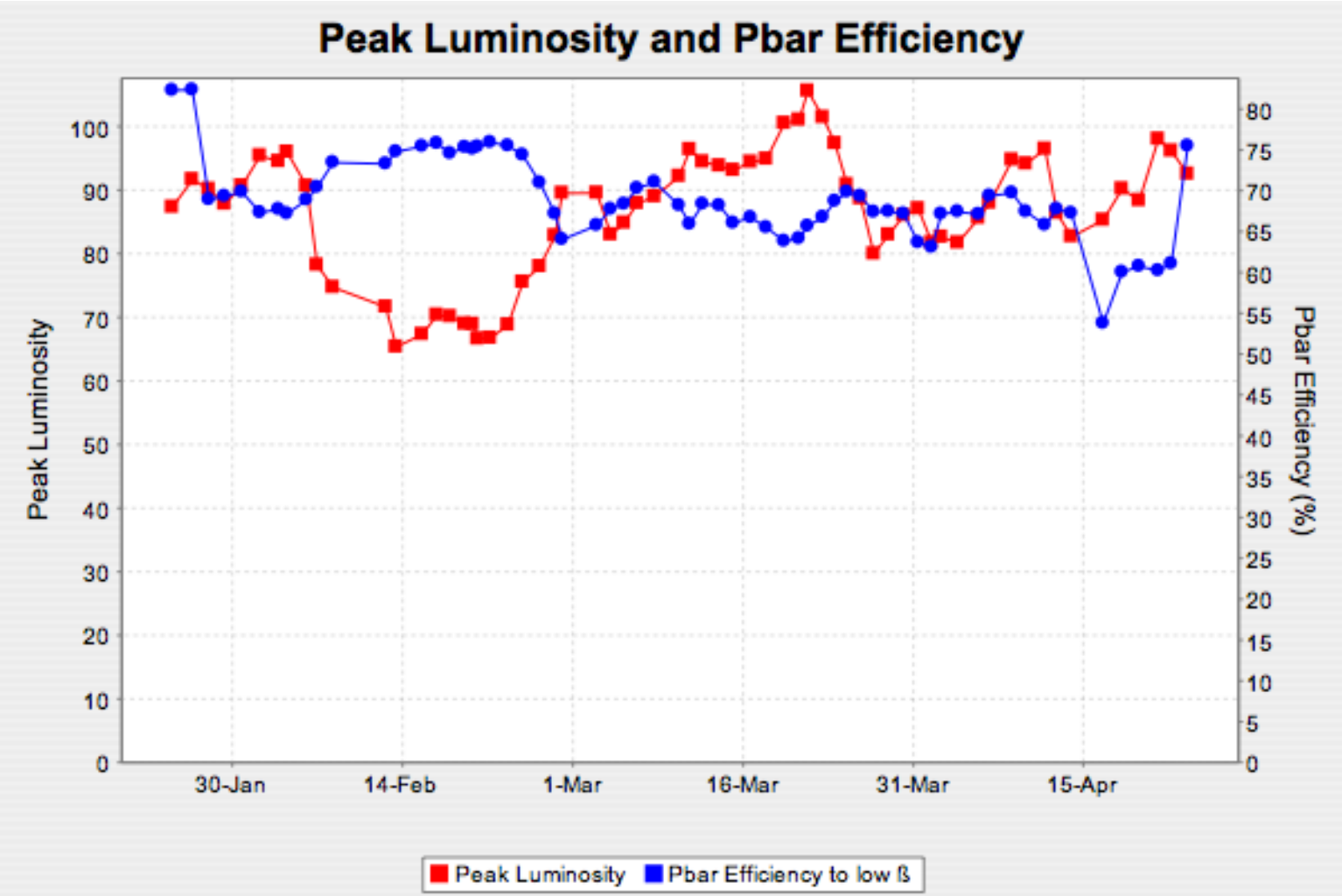


5 Store Running Average

FY05 Average Store Hours per Week



Peak Luminosity and Pbar Efficiency

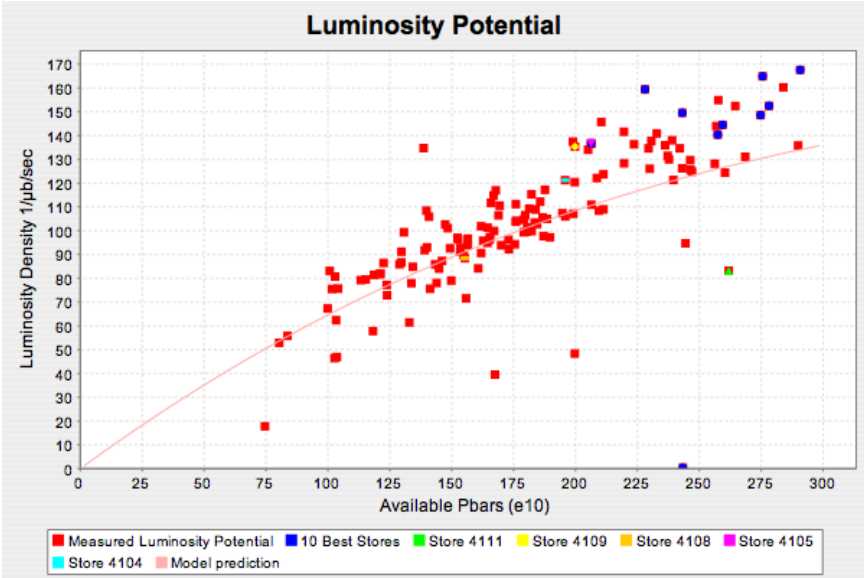


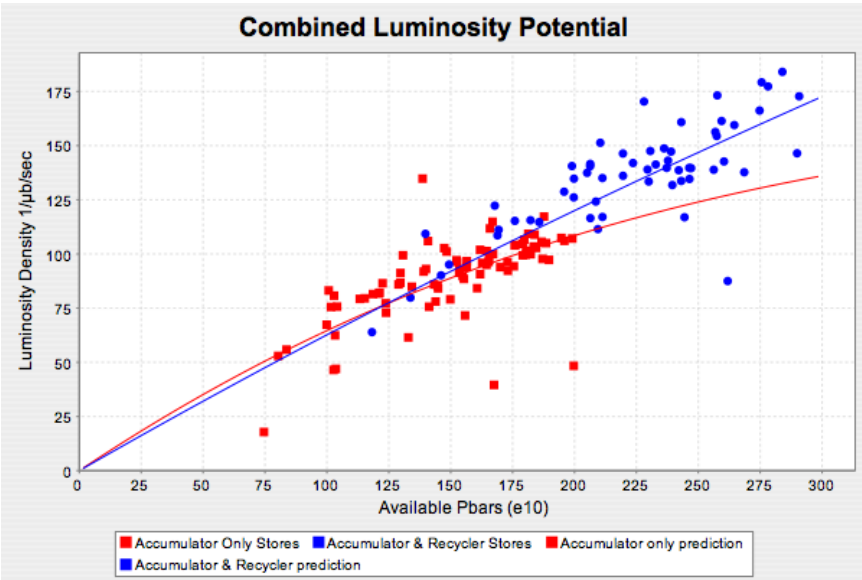
5 Store Running Average

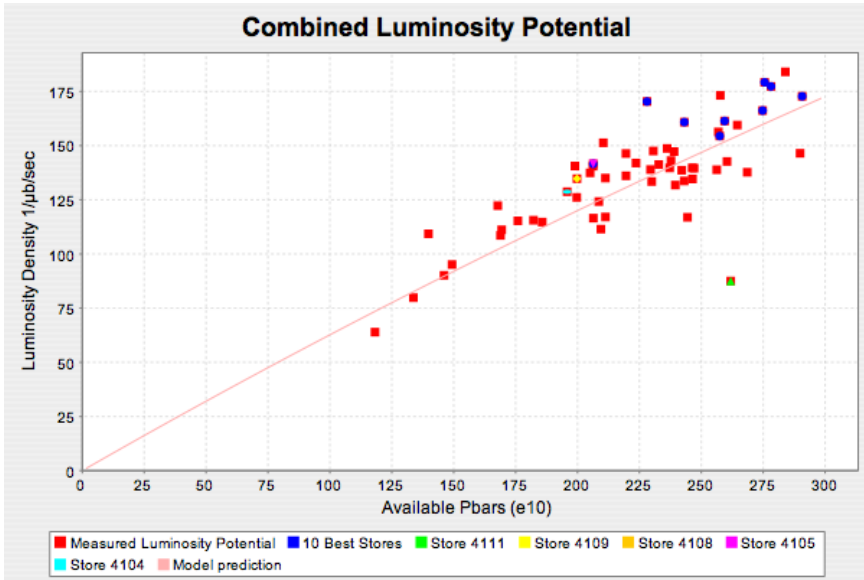
Data Summary Table

		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)	57.8	116.5	88.9	108.4	77.5	71.1	96.1	80.7	$x10^{30} cm^{-2} sec^{-1}$
Integrated Luminosity per Store (Avera	633.4	2746	3273.5	3669.7	2657.2	2660	3369	3190	nb^{-1}
Luminosity per week (Averaged)	-	-	15.9	-	12.9	11.8	16.8	12.7	pb^{-1}
Store Length	3.7	11.2	24.5	22.8	21.9	24.5	20	25	Hours
Store Hours per week	-	-	118.9	-	106.4	108.3	100	100	Hours
Shot Setup Time	3.7	2.2	2.7	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	237.7	241.8	235.6	225.6	247.3	260	260	$x10^{9}$
Antiprotons per bunch	23.7	42.3	30	40.5	31.4	29.9	42	34	$x10^{9}$
Proton Efficiency to Low Beta	57.8	60.7	60.4	56.5	61.9	72.7	-	-	%
Pbar Transfer efficiency to Low Beta	40.1	66.4	64.6	67.9	70	74	76	74	%
HourGlass Factor	0.71	0.67	0.67	0.68	0.67	0.68	0.65	0.65	
Effective Emittance	17.1	14.2	14.4	14.9	15.5	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	13.8	13.4	14.9	14.3	13.2	12.2	24.5	14	$x10^{10}$/hour
Normalized Zero Stack Stack Rate	2.2	2.3	2.3	2.4	2.3	2.3	3.1	2.3	$x10^{-2}$/hour
Average Stacking Rate	11.7	7.8	7.6	7	7.4	6.2	10.1	6.6	$x10^{10}$/hour
Stacking Time Line Factor	102	79.3	68.1	67.1	75.4	76.6	75	75	%
Stack Size at Zero Stack Rate	482.5	412.9	365.8	359	382.8	332.6	300	300	$x10^{10}$
Protons on Target	6.2	5.9	6.3	6.1	5.8	5.2	8	6.2	$x10^{12}$
Start Stack	262.2	275.9	188.3	256	187.2	170.7	216	181	$x10^{10}$
End Stack	49.1	46.9	22.2	40.6	21.5	15.8	15	15	$x10^{10}$
Unstacked Pbars	213.1	229	166.1	215.4	165.7	154.9	201	166	$x10^{10}$

Stack Size Potential







TEV Studies

Date	Duration (Hr)	Description
4/18/2005	2.3	Proton-only for O1/O2 implementation
4/21/2005	0.5	End of store, Tevatron instability studies during store, quench
4/21/2005	2.6	D0 losses at end of squeeze
	5.4	Sum for Week
	216.0	Sum for Year
	11.0	Average per week

Pbar Studies

MiniBoone

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Summary for Event 1D
From 11-APR-2005 00:00:00
  to 18-APR-2005 00:00:00

Percentage up time: 76.5
Total Events:     2327024
Total Protons:    8.29E+18
Average Events/second:        4.69
Average protons/Event:        3.82E+12
Average protons/hour:         6.45E+16
Maximum protons/hour:         7.81E+16   04/15/05
(protons out)/(protons in):   .835
(Joules lost)/(1e12 prot):    20.5
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Summary for Event 1D
From 18-APR-2005 00:00:00
  to 25-APR-2005 00:00:00

Percentage up time: 82.7
Total Events:     2445088
Total Protons:    8.96E+18
Average Events/second:        4.6
Average protons/Event:        3.90E+12
Average protons/hour:         6.45E+16
Maximum protons/hour:         7.89E+16   04/20/05
(protons out)/(protons in):   .832
(Joules lost)/(1e12 prot):    20.7
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Up 8% from last week

Plan for the Week

- Proton Source
  - Slip Stacking
    - Bunch Rotation at Extraction
- Main Injector
  - Slip Stacking Studies
    - Beam loss outside RF bucketes
  - 2.5 MHz Acceleration in concert with electron cooling commissioning
- Pbar
  - Slip Stacking Studies
    - Production vs Beam on Target
  - Accumulator to Recycler Transfers
  - Beam Based Alignment
  - Debuncher η change
    - Need to correct orbits in Debuncher
- Recycler
  - Accumulator to Recycler Transfers
  - Recycler Only Store
  - Electron Cooling commissioning
- Tevatron
  - Step 24-25 loss
    - 2 shift re-tune of LBSEQ 24
  - Vary helix size store-to-store
  - Longitudinal instability and RF cavity tuning
  - Store-Store orbit smoothing with the new Tev BPMs