All Experimenter's Meeting

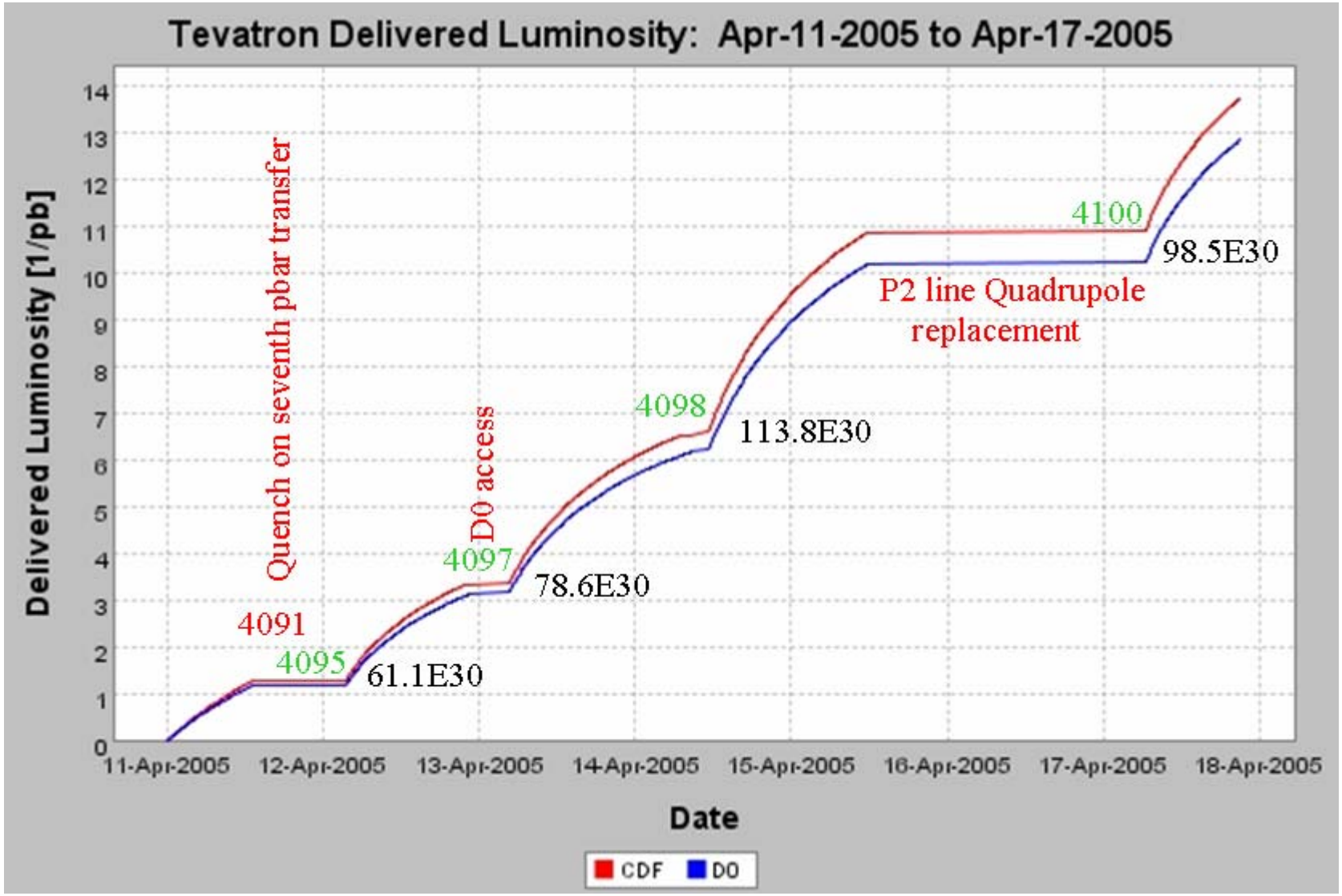
Dave McGinnis

April 18, 2005

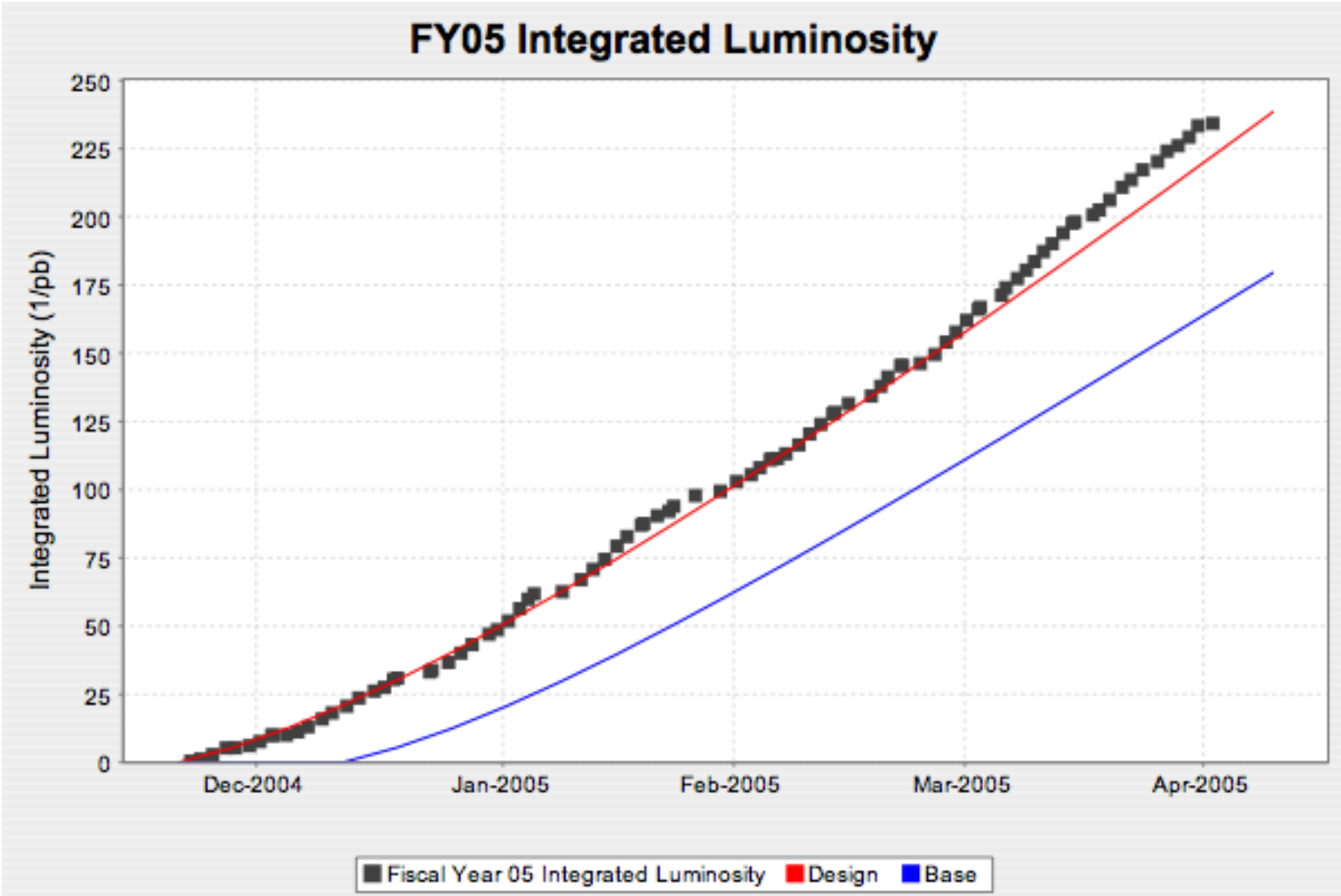
Store Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4091	0	0	Loss of store	0	163.1	Quench during pbar load due to controls problem
4095	61.1	2,059	Planned	19.3	106.3	
4097	78.6	3,193	Planned	28.0	171.5	Combination shot (145.4/26.1E10)
4098	113.8	4,038	Planned	24.4	247.0	Combination shot (173.1/73.9E10)
4100	98.5	3,000+	Pending	16+	199.9	Combination shot (141.6/58.3E10)

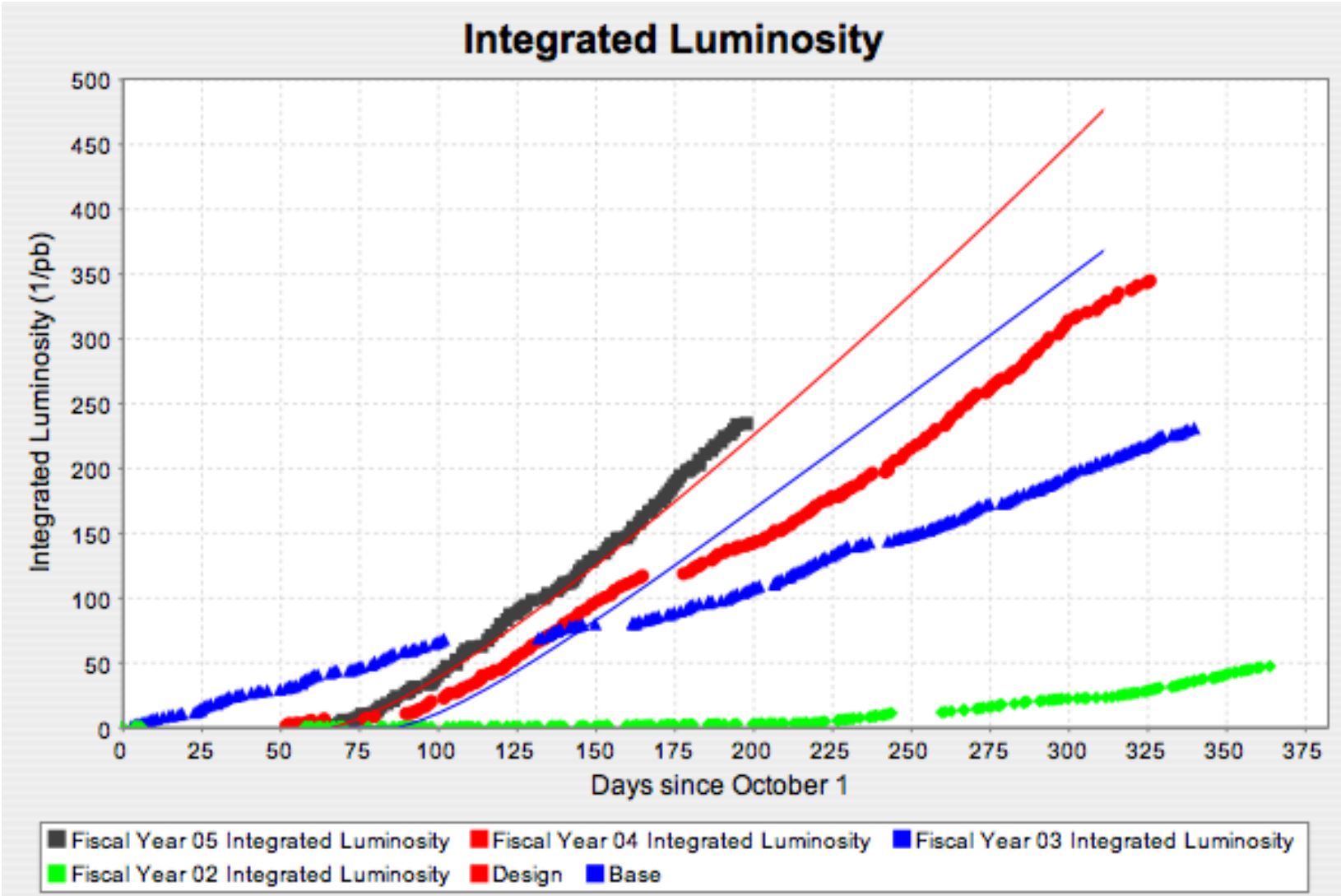
Store Summary



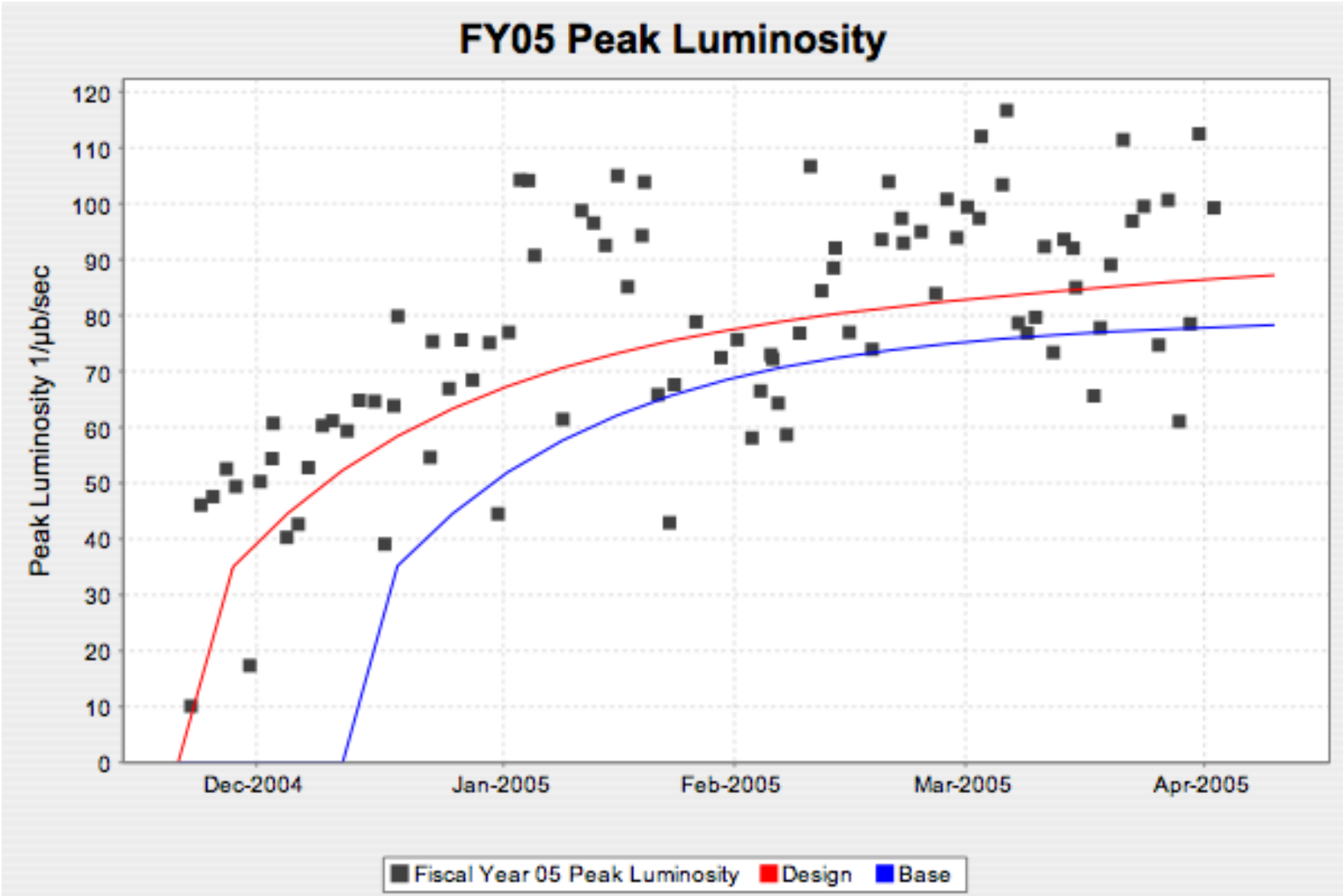
FY05 Integrated Luminosity



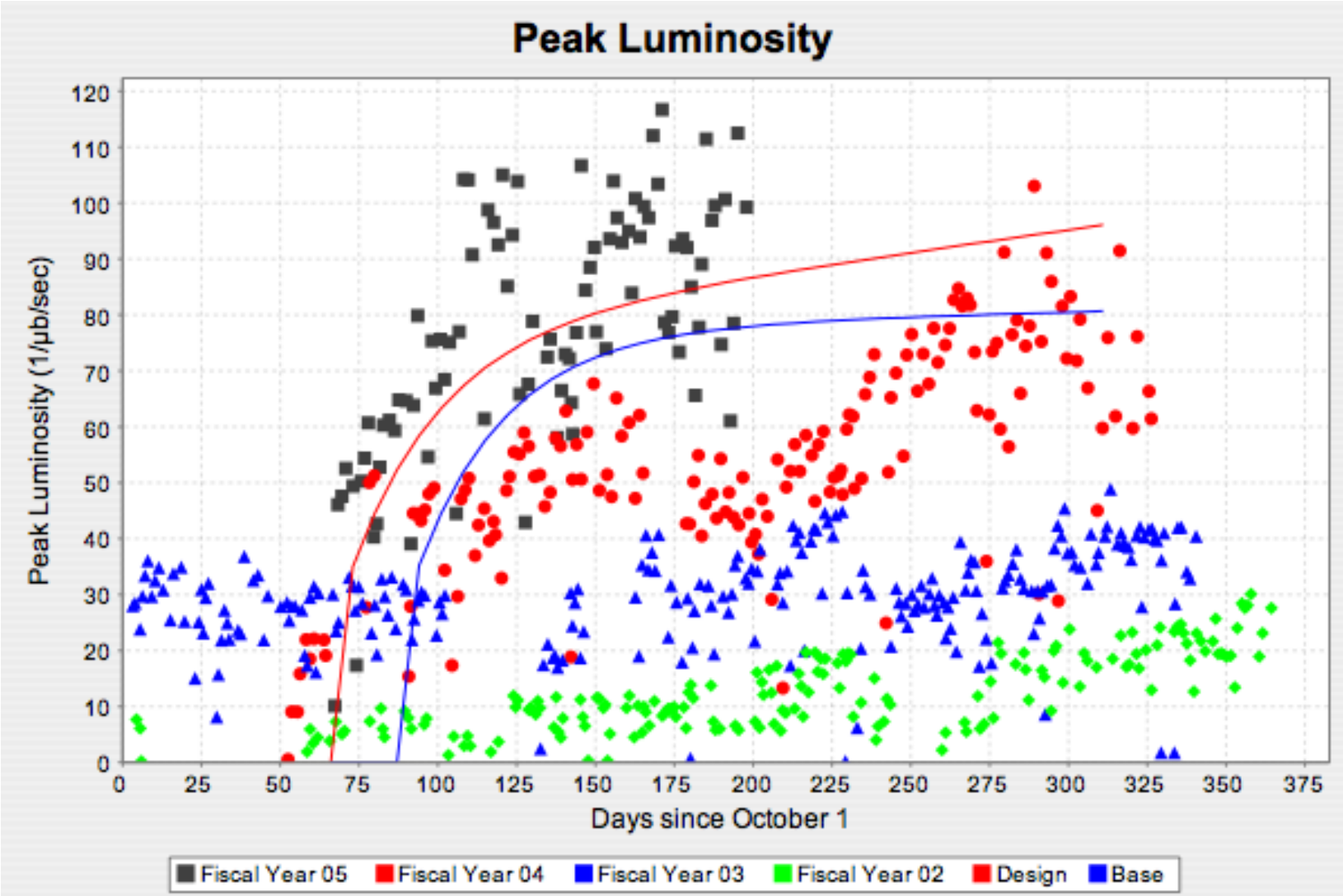
Integrated Luminosity



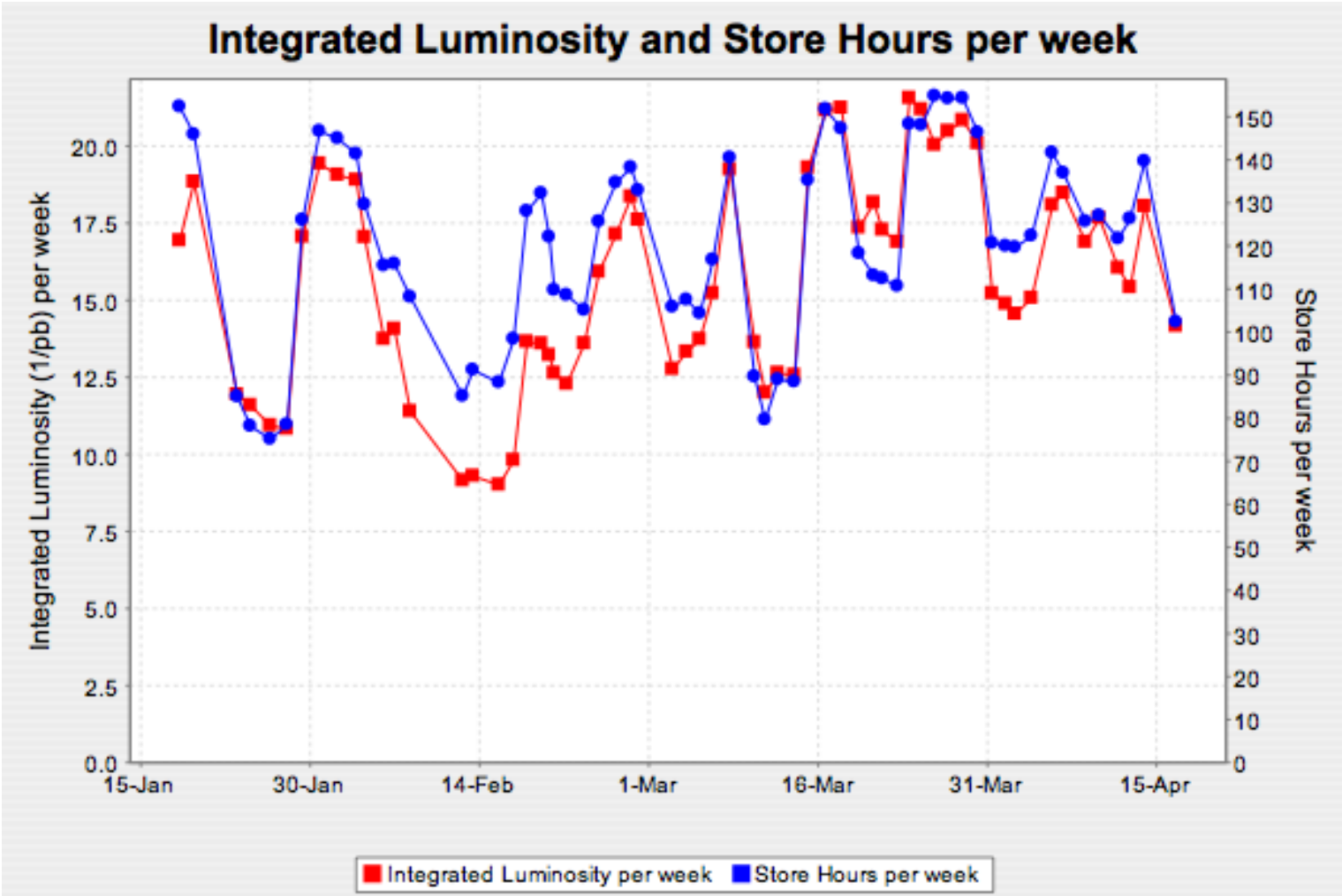
FY05 Peak Luminosity



FY05 Goals Peak Luminosity

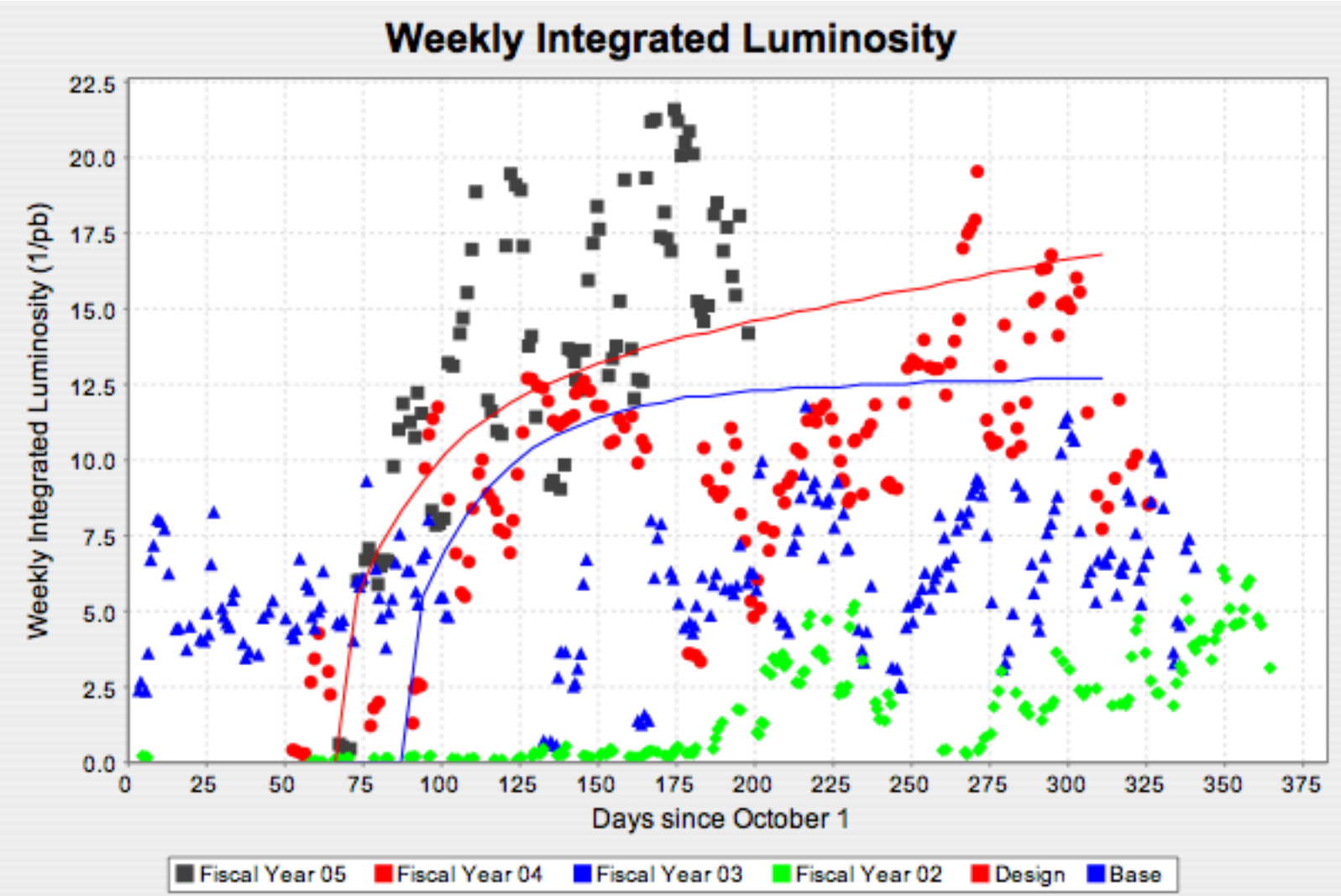


Integrated Luminosity and Store Hours per Week



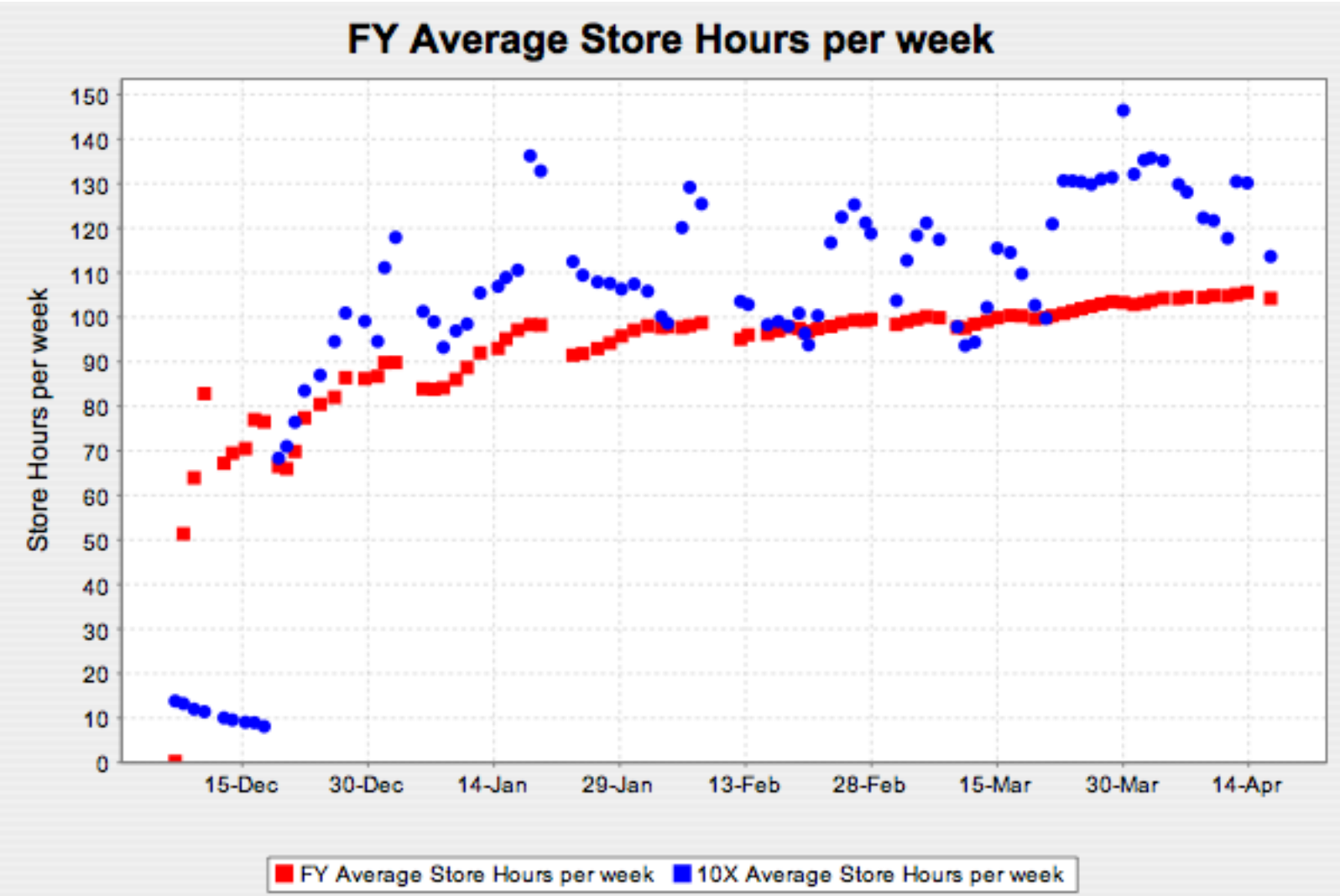
5 Store Running Average

FY05 Goals Weekly Integrated Luminosity

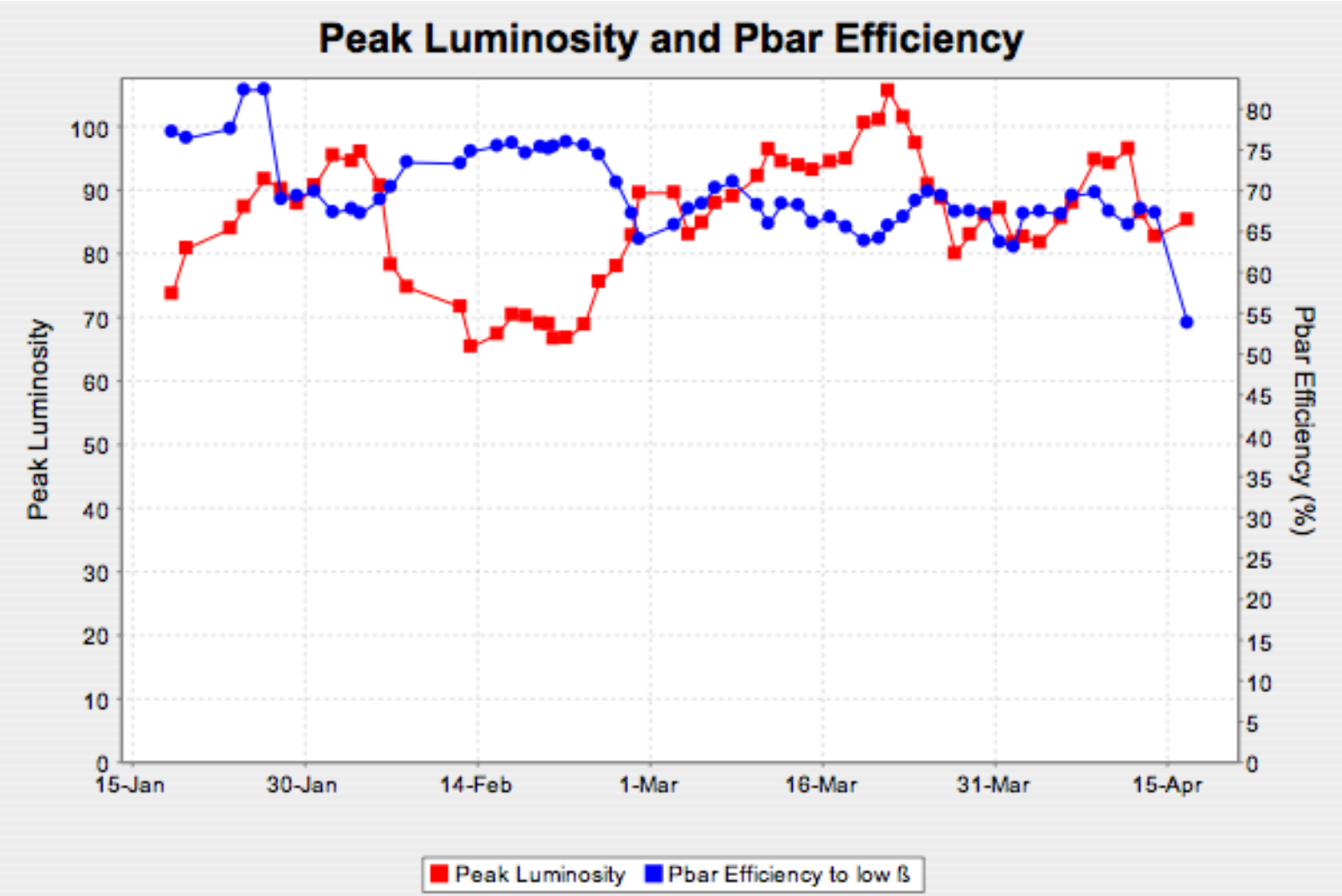


5 Store Running Average

FY05 Average Store Hours per Week



Peak Luminosity and Pbar Efficiency

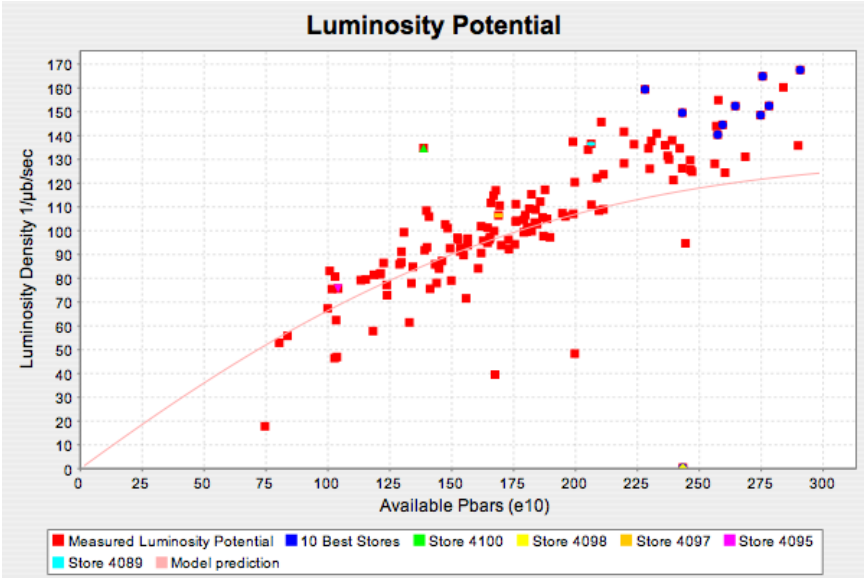


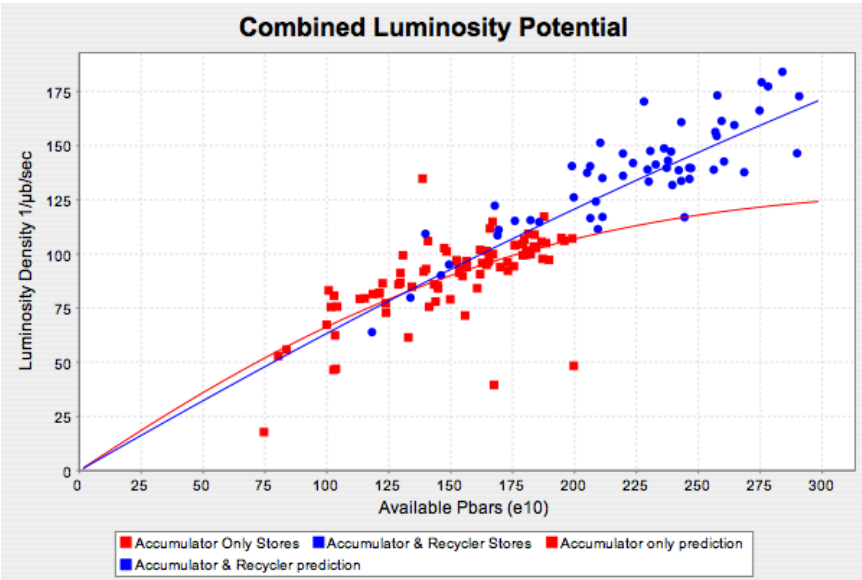
5 Store Running Average

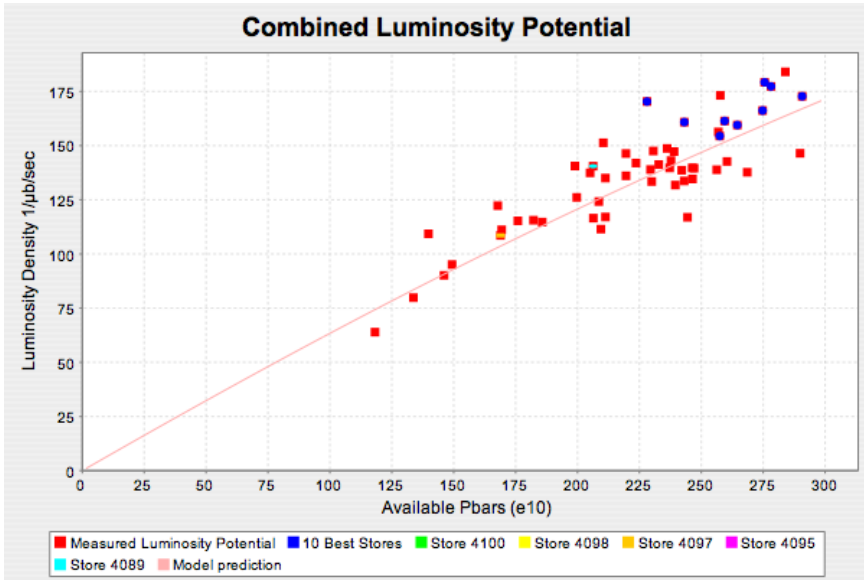
Data Summary Table

		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)	99.1	116.5	90	107.9	76.6	71.1	96.1	80.7	$x10^{30} cm^{-2} sec^{-1}$
Integrated Luminosity per Store (Avera	876.3	2746	3170.5	3300.6	2596.8	2660	3369	3190	nb^{-1}
Luminosity per week (Averaged)	-	-	15.4	-	12.6	11.8	16.8	12.7	pb^{-1}
Store Length	3	11.2	23.3	20.3	21.6	24.5	20	25	Hours
Store Hours per week	-	-	113.4	-	104.7	108.3	100	100	Hours
Shot Setup Time	4.5	2.2	2.8	2.7	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	238	237.7	239.8	232.6	224.7	247.3	260	260	$x10^{9}$
Antiprotons per bunch	32.9	42.3	30.8	41.4	31.4	29.9	42	34	$x10^{9}$
Proton Efficiency to Low Beta	69.2	60.7	56.9	56.6	61.6	72.7	-	-	%
Pbar Transfer efficiency to Low Beta	96.8	66.4	61.7	67.7	69.7	74	76	74	%
HourGlass Factor	0.67	0.67	0.67	0.68	0.67	0.68	0.65	0.65	
Effective Emittance	13	14.2	13.5	15.2	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	14.7	13.4	14.9	14.1	13.1	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	2.3	7.8	7.4	7.3	7.3	6.2	10.1	6.6	$x10^{10}$/hour
Stacking Time Line Factor	20.2	79.3	64	71.5	75.8	76.6	75	75	%
Stack Size at Zero Stack Rate	387.6	412.9	411.5	370.6	385.2	332.6	300	300	$x10^{10}$
Protons on Target	6.6	5.9	6.5	6	5.8	5.2	8	6.2	$x10^{12}$
Start Stack	138.9	275.9	189.4	261.8	186.3	170.7	216	181	$x10^{10}$
End Stack	16.8	46.9	24.9	41.5	21.3	15.8	15	15	$x10^{10}$
Unstacked Pbars	122.1	229	164.5	220.3	165	154.9	201	166	$x10^{10}$

Stack Size Potential







Studies

TEV Studies

Date	Duration (Hr)	Description
4/11/2005	1.6	CDF vertical IP adjustment
4/11/2005	1.5	E44 aperture scans
4/14/2005	1.6	End of store, tune measurement using longitudinal damper pickups
	4.7	Sum for Week
	210.6	Sum for Year
	11.3	Average per week

Pbar Studies

Date	Duration (Hr)	Description
4/11/2005	1.3	Debuncher eta change to .006
4/12/2005	0.3	Debuncher orbits, reverse protons
4/13/2005	0.3	Debuncher orbit correction with reverse protons
4/14/2005	1.0	D/A steering while stacking
	2.9	Sum for week
	60.3	Sum for year
	3.2	Average per week

MiniBoone

```
Summary for Event 1D
From 04-APR-2005 00:00:00
  to 11-APR-2005 00:00:00

Percentage up time: 89
Total Events:     2615584
Total Protons:    9.01E+18
Average Events/second:        4.54
Average protons/Event:        3.69E+12
Average protons/hour:         6.03E+16
Maximum protons/hour:         7.13E+16   04/07/05
(protons out)/(protons in):   .83
(Joules lost)/(1e12 prot):    21.3
```

```
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
```

Down 8% from last week

Plan for the Week

- Proton Source
  - Slip Stacking Studies
- Main Injector
  - Slip Stacking Studies
  - 2.5 MHz Acceleration in concert with electron cooling commissioning
- Pbar
  - Slip Stacking Studies
  - Accumulator to Recycler Transfers
    - GOAL: 90% efficient, 15 minute turn around by June 1
  - Beam Based Alignment
  - Back out of η change in Debuncher
    - Need to correct orbits in Debuncher
- Recycler
  - Accumulator to Recycler Transfers
    - GOAL: 90% efficient, 15 minute turn around by June 1
  - Recycler Only Store
  - Electron Cooling commissioning
- Tevatron
  - Step 24-25 loss
    - Incremental chromaticity changes each store
  - IP move at CDF
    - Incremental store to store changes
    - Finished
  - Fix operational concerns of octupoles
  - Vary helix size store-to-store
  - Longitudinal instability and RF cavity tuning