All Experimenter's Meeting

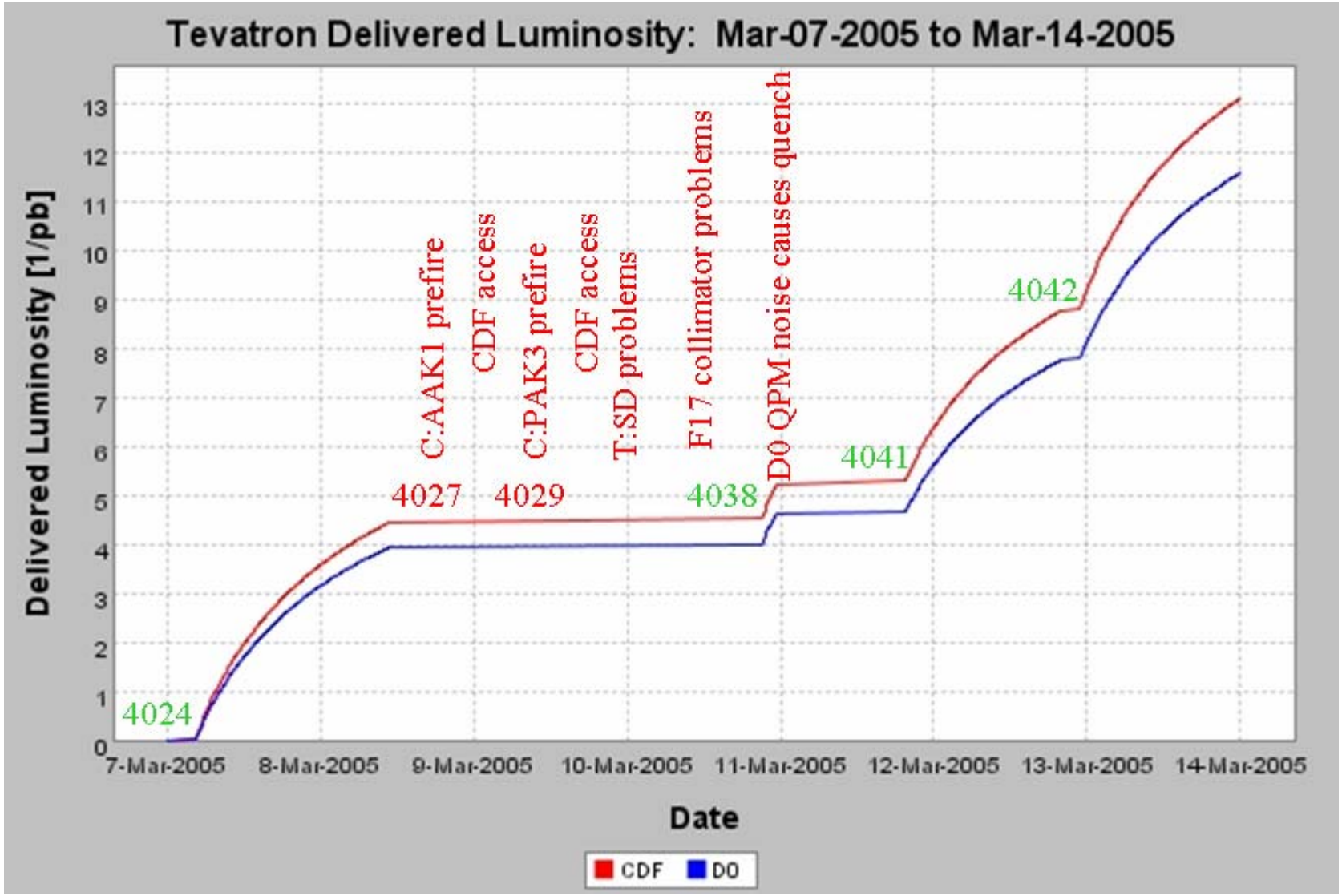
Dave McGinnis

March 14, 2005

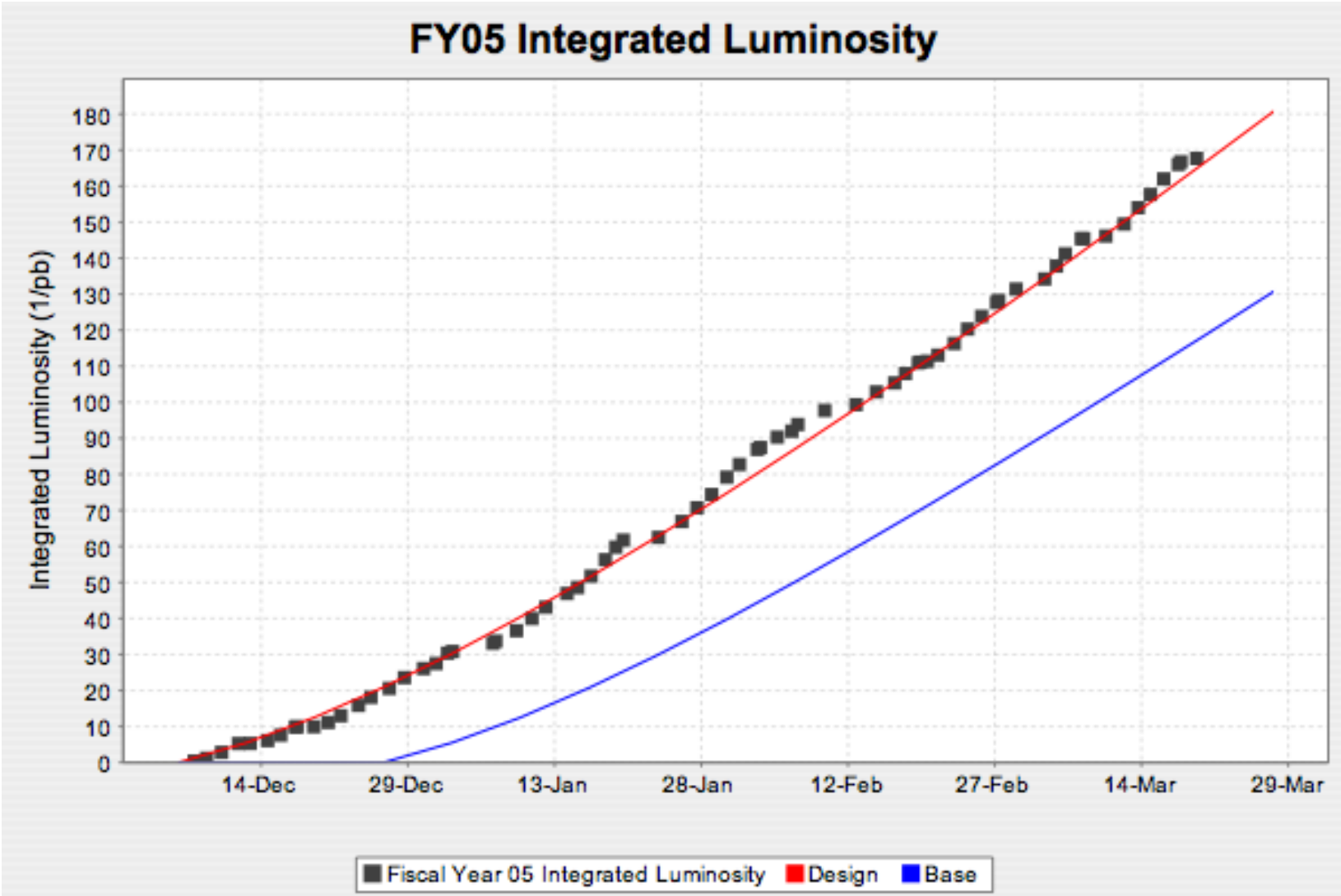
Store Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4024	98.1	4,468	Planned	30.8	261.6	Combination shot (180.1/81.5E10)
4027	93.4	25	Loss of store	0.1	241.3	Combination shot (172.8/68.5E10), Large MI loss on A5, C:AAK1 prefire
4029	0	0	Loss of store	0	141.1	Combination shot (125.0/16.1E10), C:PAK3 prefire
4038	95.9	825	Loss of store	2.6	227.3	Combination shot (170.1/57.2E10), D0 QPM noise causes quench
4041	84.9	3,515	Planned	24.5	169.5	
4042	102.3	4,790	Planned	31.6	234.6	Combination shot (185.7/48.9E10

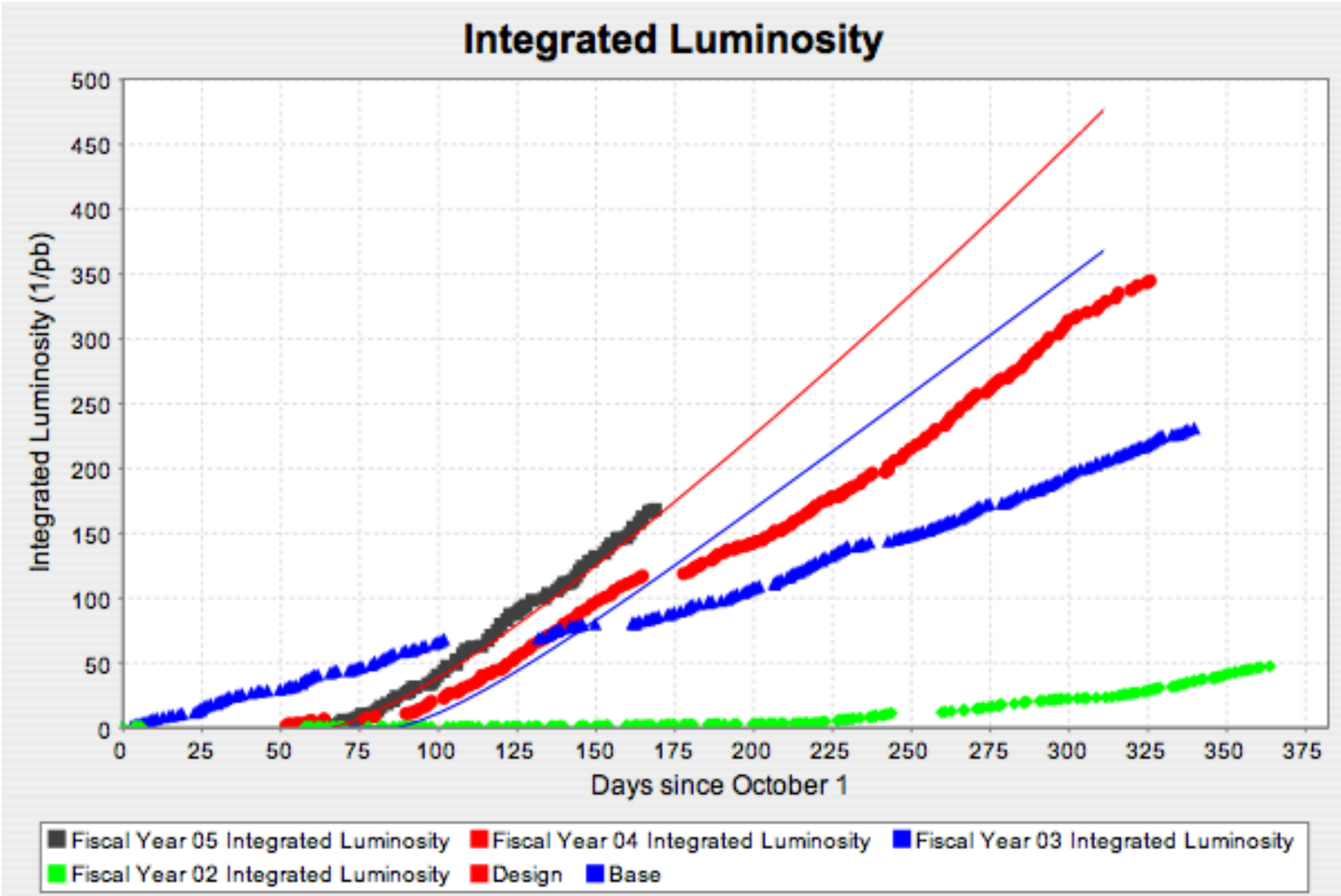
Store Summary



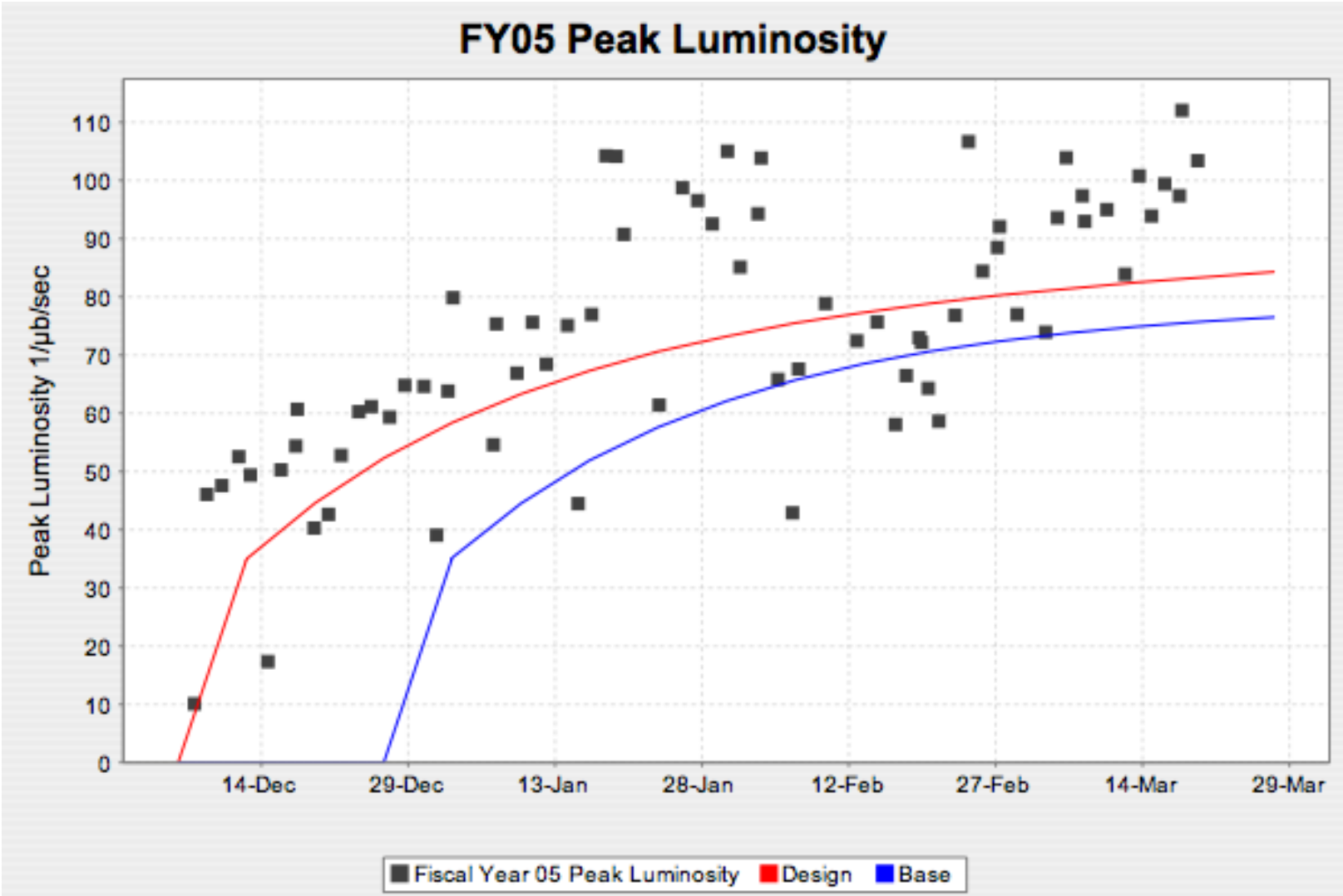
FY05 Integrated Luminosity



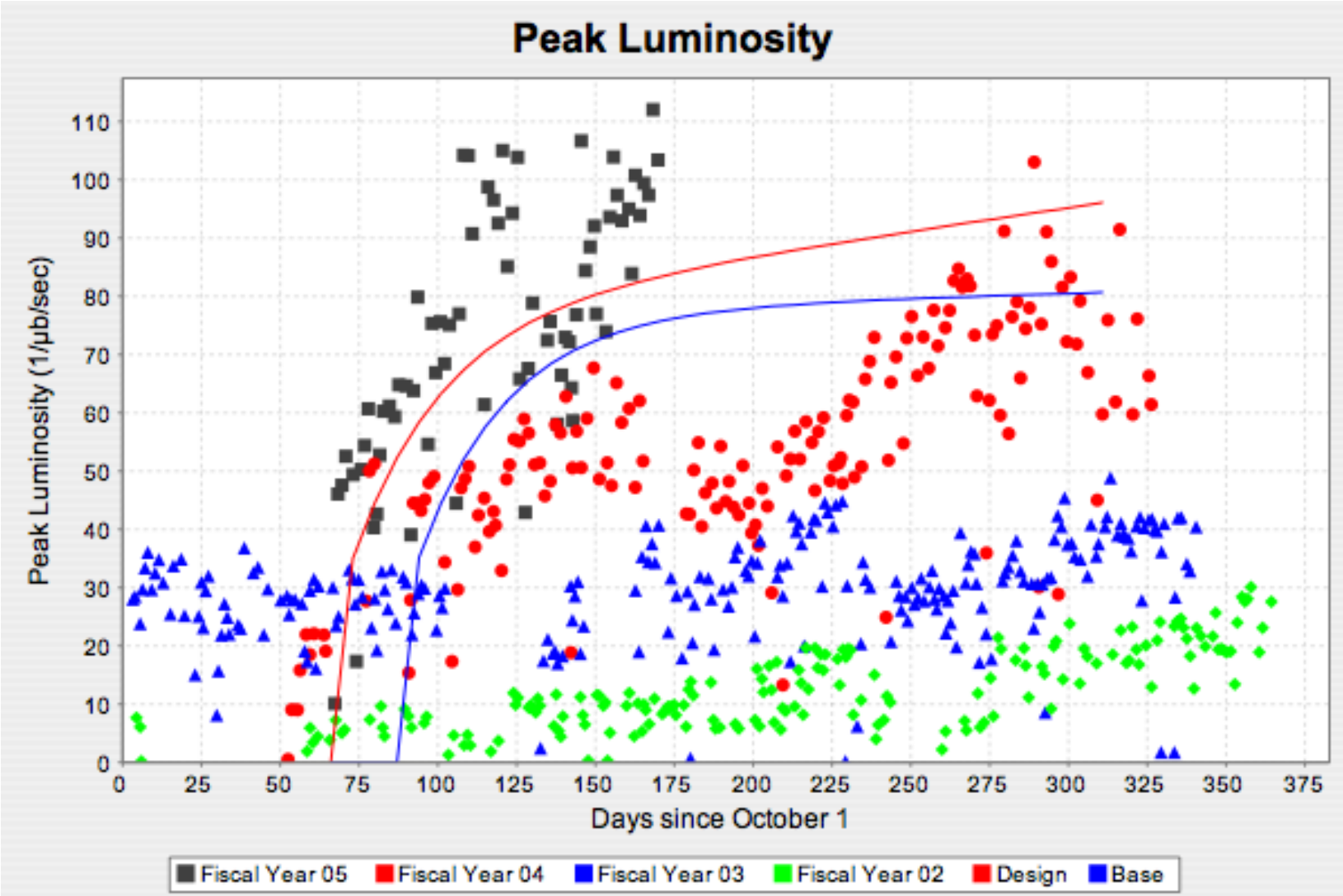
Integrated Luminosity



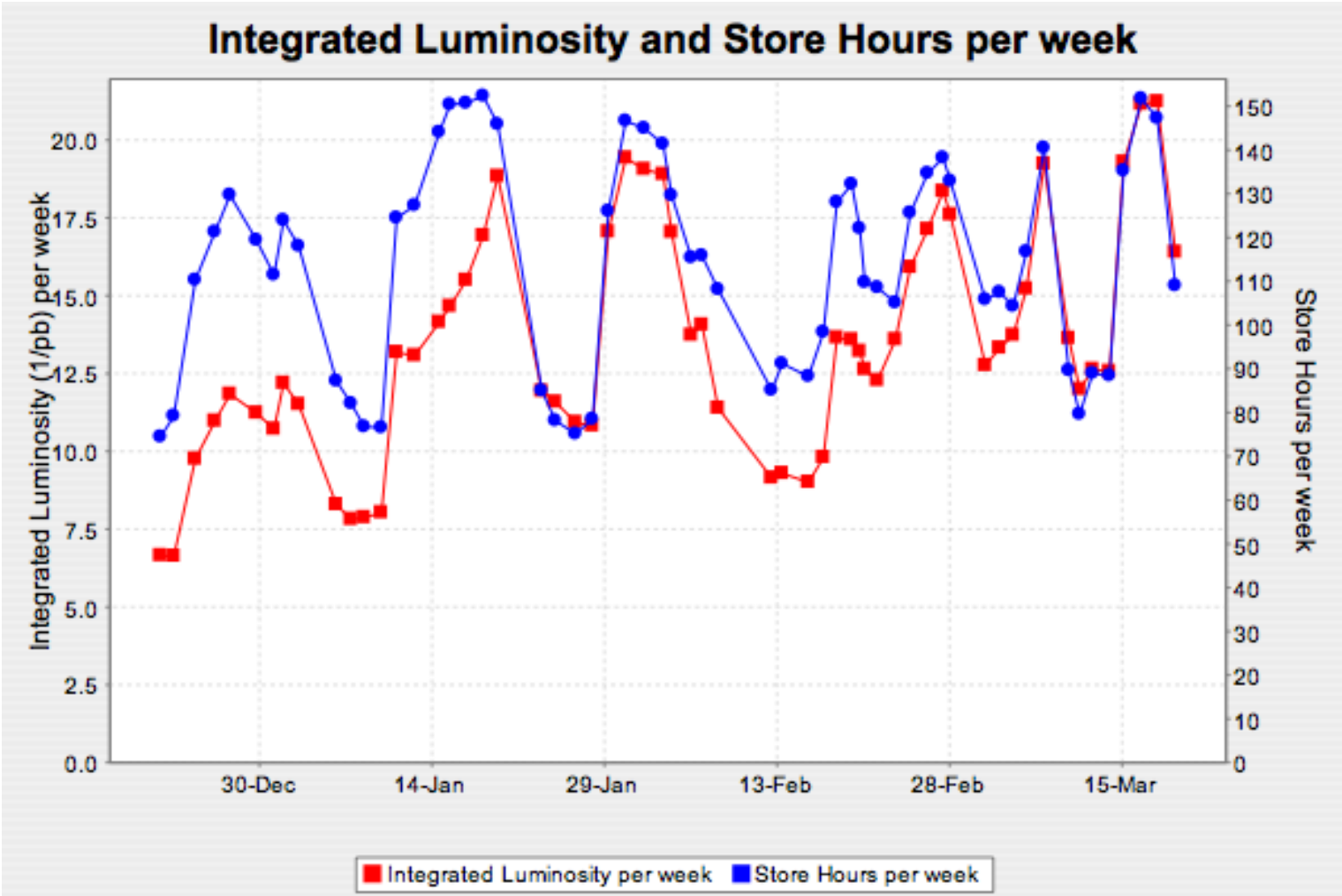
FY05 Peak Luminosity



FY05 Goals Peak Luminosity

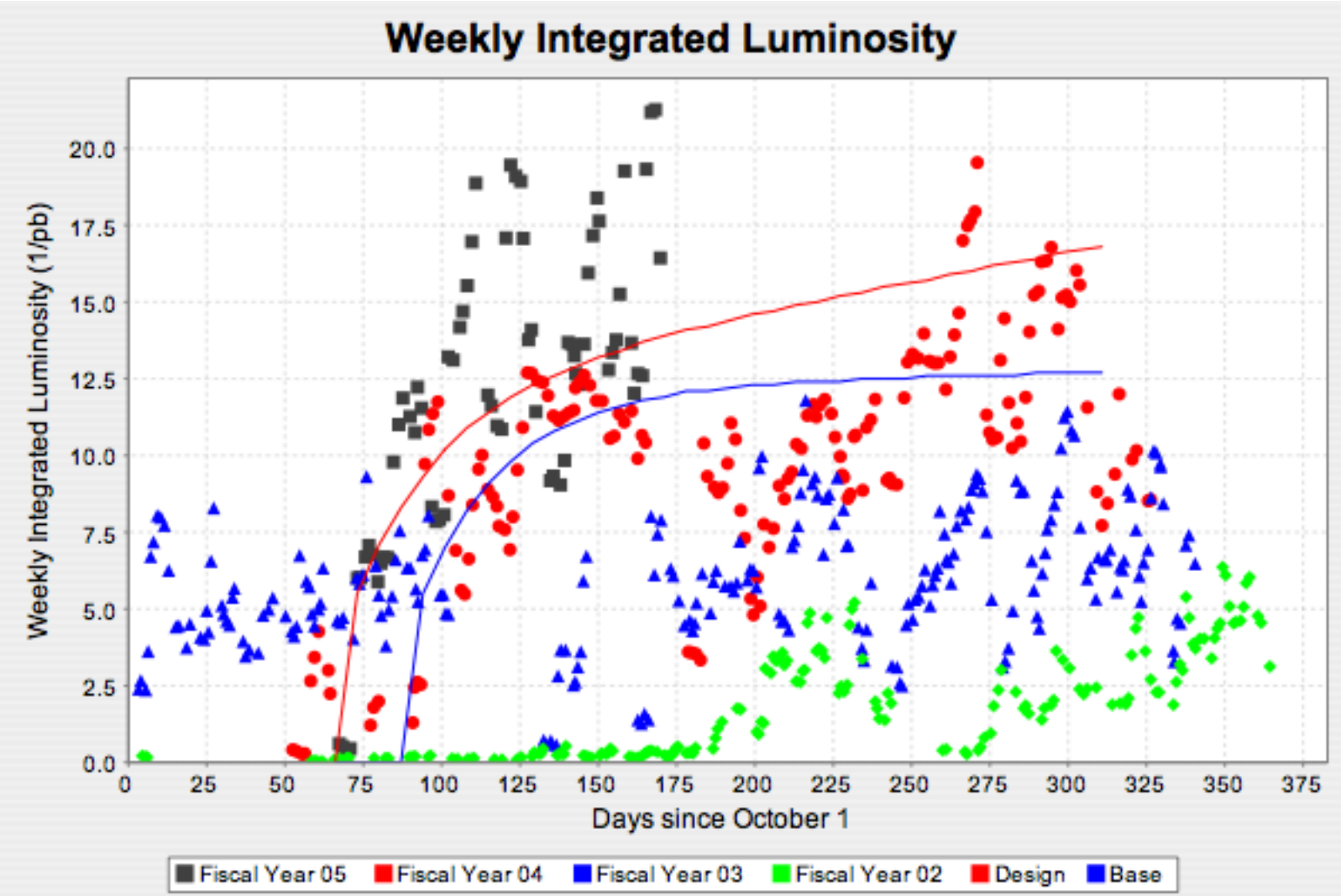


Integrated Luminosity and Store Hours per Week



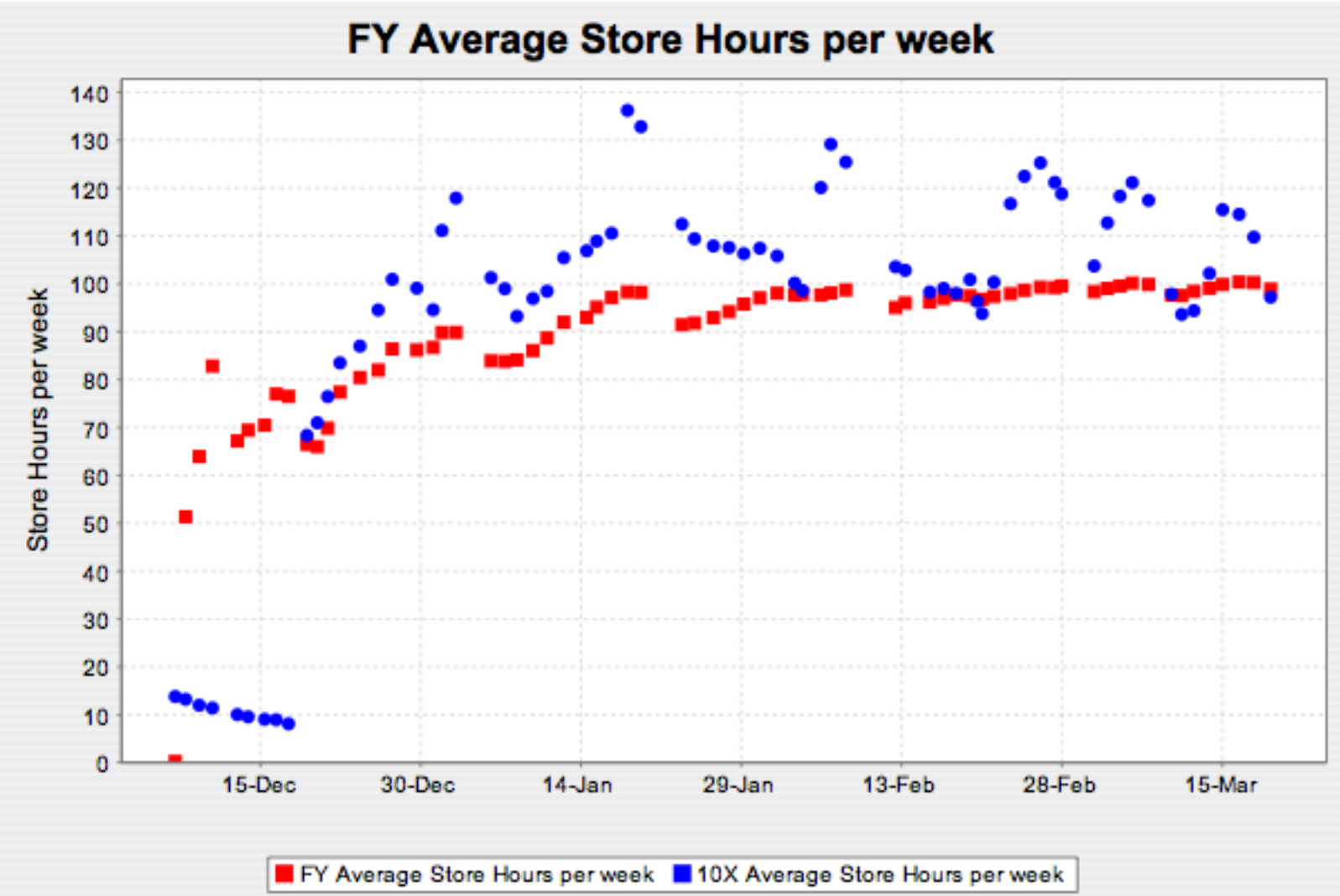
5 Store Running Average

FY05 Goals Weekly Integrated Luminosity

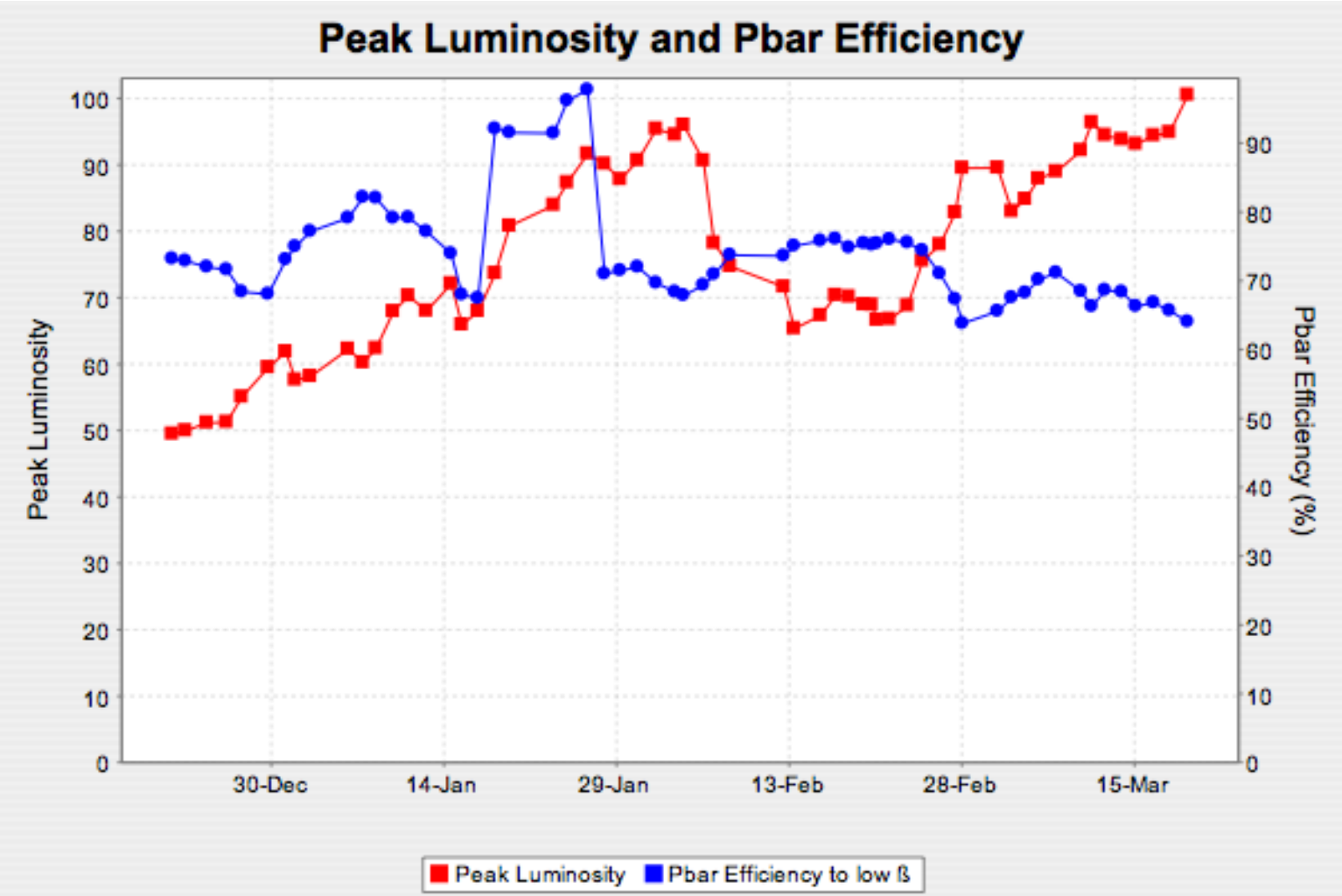


5 Store Running Average

FY05 Average Store Hours per Week



Peak Luminosity and Pbar Efficiency

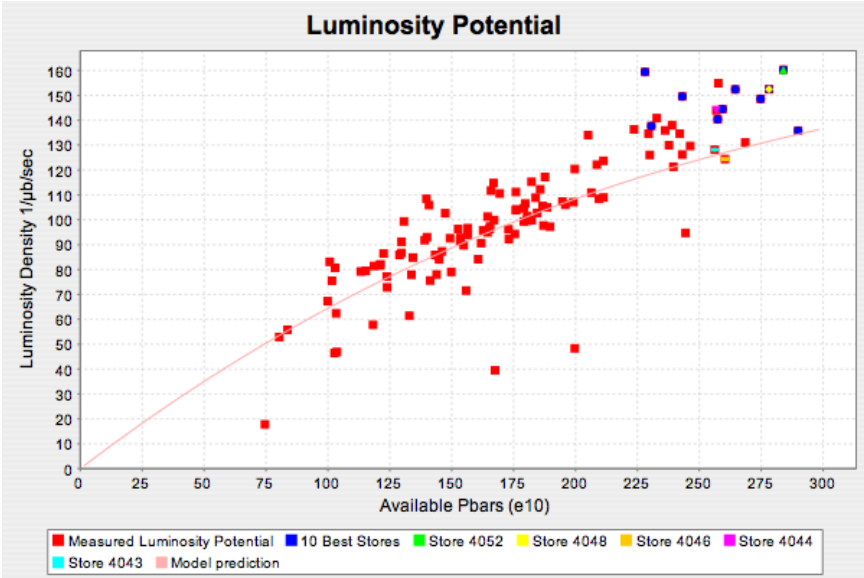


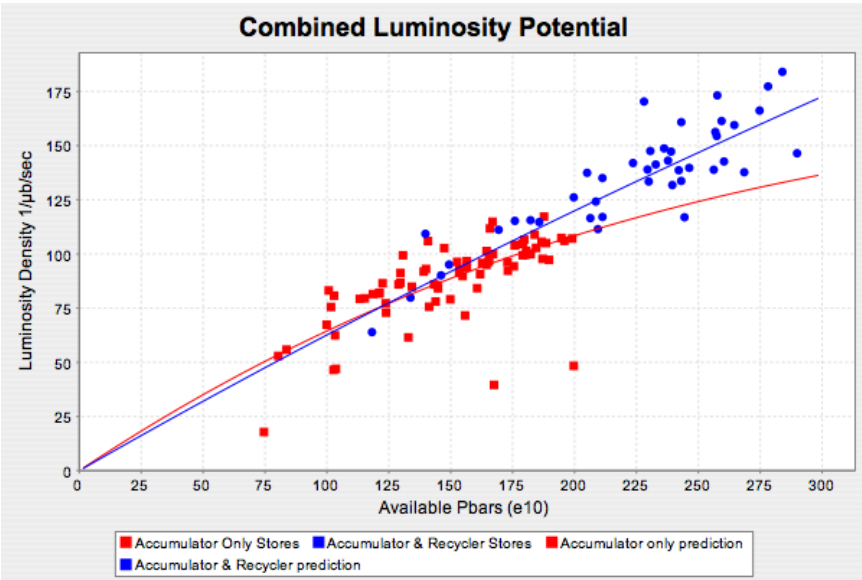
5 Store Running Average

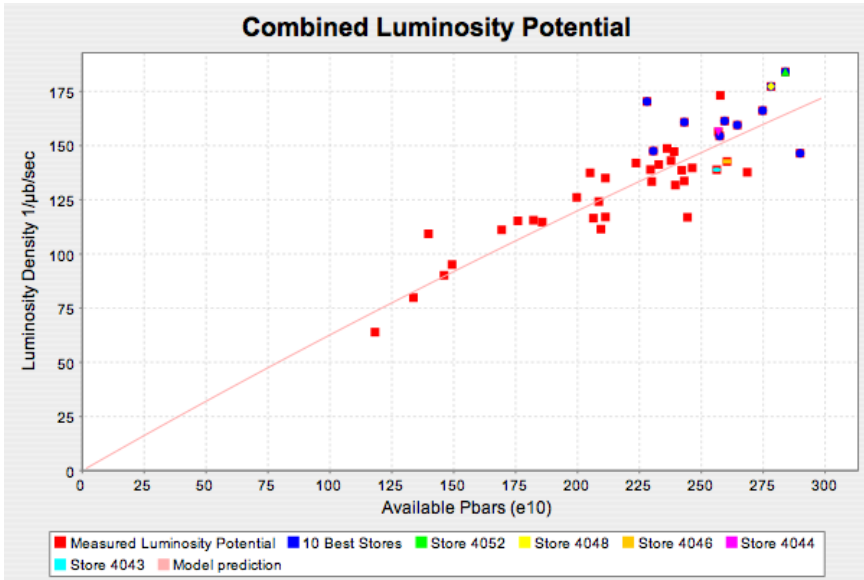
Data Summary Table

		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)	100.6	106.5	89.6	102.6	70.9	71.1	96.1	80.7	$x10^{30}cm^{-2}sec^{-1}$
Integrated Luminosity per Store (Avera	4524.7	4008.9	2632.4	3812.6	2399.6	2660	3369	3190	nb^{-1}
Luminosity per week (Averaged)	-	-	12.9	-	11.2	11.8	16.8	12.7	pb^{-1}
Store Length	31.8	25.1	19.3	26.2	21.2	24.5	20	25	Hours
Store Hours per week	-	-	94.2	-	99.2	108.3	100	100	Hours
Shot Setup Time	2.5	2	2.7	2.9	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	243.5	234.2	228.7	232.9	219.6	247.3	260	260	$x10^{9}$
Antiprotons per bunch	39.6	41.8	34.4	41.1	30	30.1	42	34	$x10^{9}$
Proton Efficiency to Low Beta	62.9	61.9	64.9	66.4	62.5	72.7	-	-	%
Pbar Transfer efficiency to Low Beta	69.4	65.8	68.4	54.8	73.2	88.6	76	74	%
HourGlass Factor	0.67	0.64	0.71	0.68	0.68	0.68	0.65	0.65	
Initial Luminosity Lifetime	0	0	0	0	0	0	0	0	hours
Asymptotic Luminosity Lifetime	0	0	0	0	0	0	0	0	hours
Effective Emittance	15.9	14.5	15.3	15.7	15.8	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	15.2	14.4	14.6	14.3	12.4	12.2	24.5	14	$x10^{10}$/hour
Normalized Zero Stack Stack Rate	2.4	2.4	2.4	2.4	2.2	2.3	3.1	2.3	$x10^{-2}$/hour
Average Stacking Rate	10	6.4	7.9	7.7	7.1	6.2	10.1	6.6	$x10^{10}$/hour
Stacking Time Line Factor	96.9	65.7	74	77.9	76.6	76.6	75	75	%
Stack Size at Zero Stack Rate	336.5	339.7	390.5	351.2	391.4	332.6	300	300	$x10^{10}$
Protons on Target	6.4	6.1	6.2	5.9	5.6	5.2	8	6.2	$x10^{12}$
Start Stack	230.9	275	208.7	255.1	175.7	170.7	216	181	$x10^{10}$
End Stack	26	46.7	28.2	35.6	18.1	15.8	15	15	$x10^{10}$
Unstacked Pbars	204.9	228.3	180.5	219.5	157.6	154.9	201	166	$x10^{10}$

Stack Size Potential







Studies

TEV Studies

Date	Duration (Hr)	Description
3/8/2005	1.3	Wet squeeze for helix vs. tunes and check losses in steps 24/25
3/9/2005	0.7	Orbit adjustments to compensate for T:HA48 correction element
3/9/2005	3.7	O1/O2 octupole studies
3/9/2005	1.4	36x0 to check losses in abort kicker room
3/10/2005	2.0	12x0 stores to check collimator operation
	9.1	Sum for Week
	179.3	Sum for Year
	13.2	Average per week

Pbar Studies

Date	Duration (Hr)	Description
3/7/2005	6.5	Reverse protons, verify Debuncher bumps
3/8/2005	0.4	Commission A:H104 bump
3/10/2005	0.3	Debuncher bumping while stacking
3/13/2005	1.5	Debuncher bumping while stacking
	8.7	Sum for week
	43.4	Sum for year
	3.2	Average per week

MiniBoone

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Summary for Event 1D
From 28-FEB-2005 00:00:00
  to 07-MAR-2005 00:00:00

Percentage up time: 85.8
Total Events:     2680000
Total Protons:    8.15E+18
Average Events/second:        4.64
Average protons/Event:        3.38E+12
Average protons/hour:         5.65E+16
Maximum protons/hour:         7.10E+16   02/28/05
(protons out)/(protons in):   .818
(Joules lost)/(1e12 prot):    23.5
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Summary for Event 1D
From 07-MAR-2005 00:00:00
  to 14-MAR-2005 00:00:00

Percentage up time: 82.2
Total Events:     2665328
Total Protons:    8.38E+18
Average Events/second:        5.22
Average protons/Event:        3.23E+12
Average protons/hour:         6.07E+16
Maximum protons/hour:         6.72E+16   03/10/05
(protons out)/(protons in):   .815
(Joules lost)/(1e12 prot):    23.7
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Up 2.8% from last week

Plan for the Week

- Proton Source
  - Began around the clock NUMI operations by March 14, 2005
  - Need a re-tune of Booster to increase efficiency fo MiniBoone
- Main Injector
  - Began around the clock NUMI operations by March 14, 2005
    - Need to fix Time-line zoo!
    - Get NUMI and Pbar production on same cycle for every cycle
    - Slip-Stacking beam loss in NUMI kickers
  - Begin work on long slow-spill cycle for SY120
  - Cure Pbar loss at 4.5 sec
- Pbar
  - Implement new pbar extraction curves without high level phase feedback
  - Beam Based Alignment
    - Forward Pbar AP2
    - Forward Pbar D/A line
  - Optimize Accumulator/Recycler pbar transfers
    - Clean-up or minimize reverse proton tune-up
- Recycler
  - Optimize Accumulator/Recycler pbar transfers
    - Transfer merging
  - Investigate stochastic cooling limitations
- Tevatron
  - Continue to minimize pbar losses on Slot 24-25 (Dzero)
  - Finish operational implementation of octupoles
    - 150 GeV
      - Evaluation of lifetime improvement at 150 GeV
      - Implemetation of additional circuits
      - Measurement of chromaticity at 150 GeV
    - 980 GeV
  - Store-to-store orbit corrections