All Experimenter's Meeting

Dave McGinnis

May 23, 2005

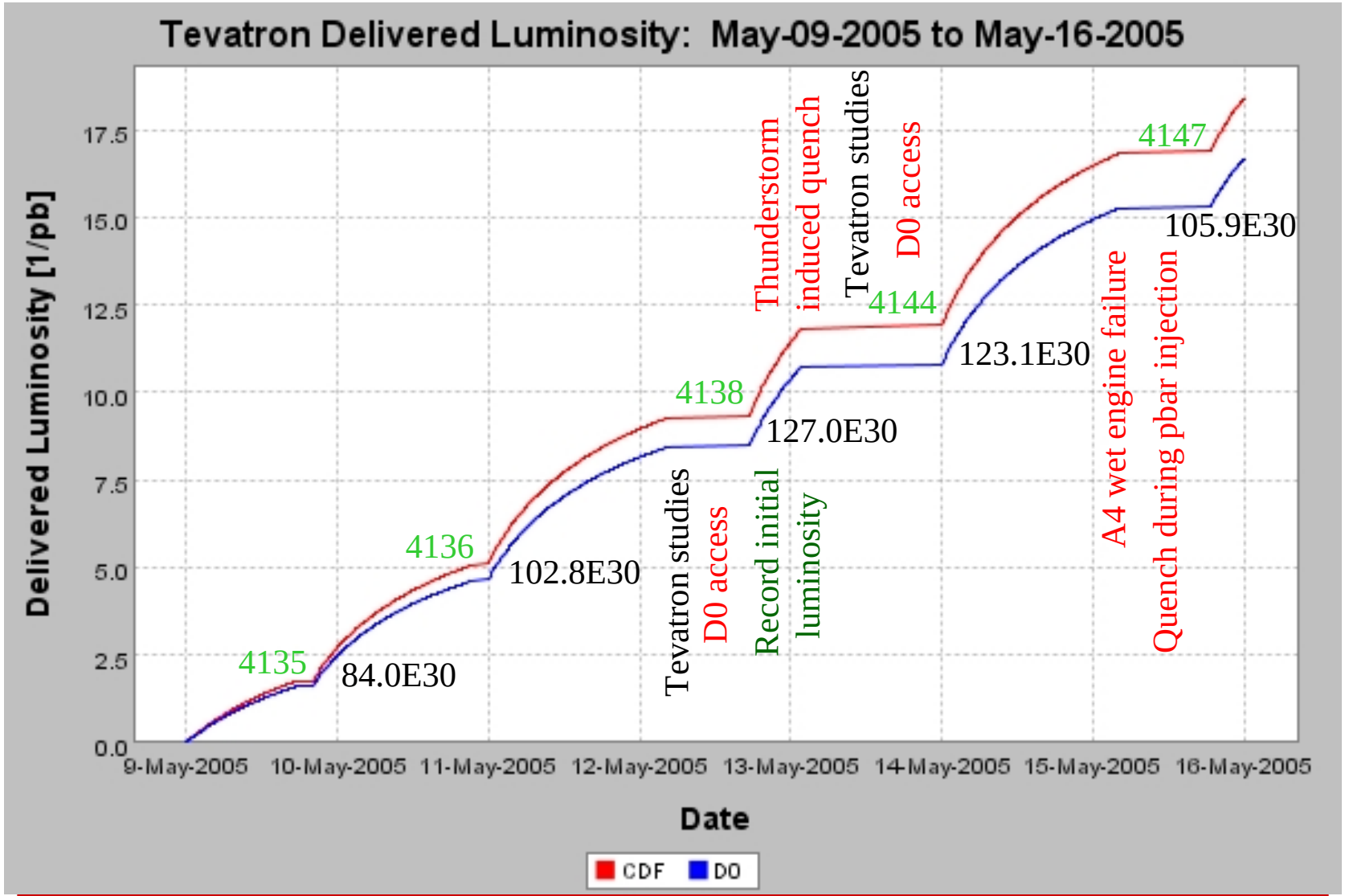
Stores Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4135	84.0	3,317	Planned	24.7	217.7	Combination shot (150.8/66.9E10), Large pbar losses in MI
4136	102.8	4,199	Planned	28.3	187.1	Combination shot (136.0/51.1E10)
4138	127.0	2,623	Loss of store	8.6	293.7	Combination shot (159.7/134.0E10), Record initial luminosity, lightning induced quench
4144	123.1	5,020	Planned	28.7	256.8	Combination shot (161.8/95.0E10)
4147	105.9	4,157	Planned	26.4	232.7	Combination shot (161.3/71.4E10)

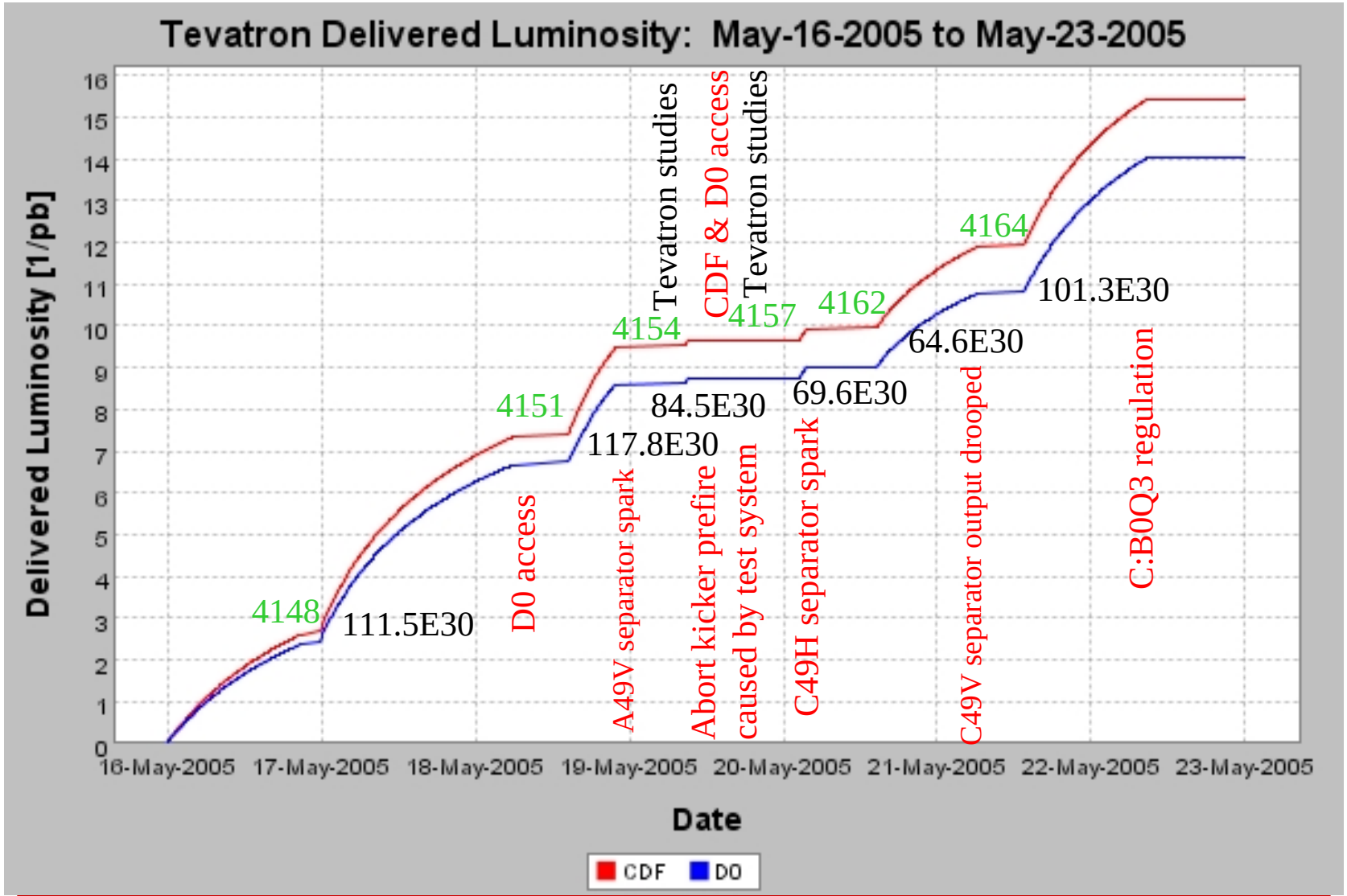
Stores Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4148	111.5	4,157	Planned	30.4	213.3	Combination shot (157.3/56.0E10)
4151	117.8	2,138	Loss of store	7.3	226.9	Combination shot (157.9/69.0E10), Quench, A49V separator spark
4154	84.5	193	Loss of store	0.6	160.8	Combination shot (86.4/74.4E10), Abort kickers glitched
4157	69.6	279	Loss of store	1.2	137.8	Combination shot (123.4/14.4E10), C49V spark during scraping, C49H spark killed store
4162	64.6	1,978	Loss of store	16.0	115.2	C49V separator high voltage power supply problem
4164	101.3	3,560	Loss of store	19.9	195.3	Combination shot (164.4/30.9E10), C:B0Q3 power supply regulation

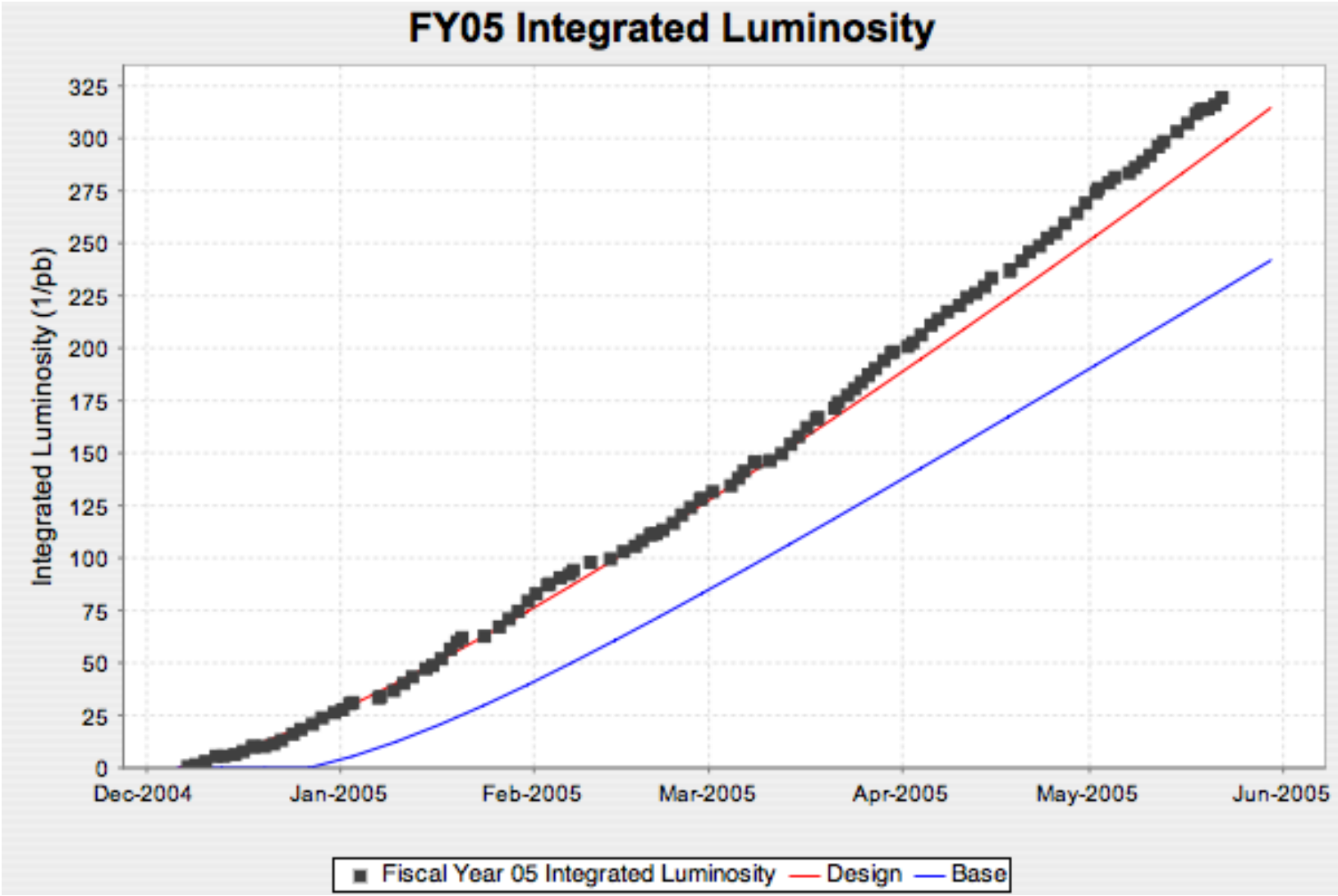
Integrated Luminosity for the week



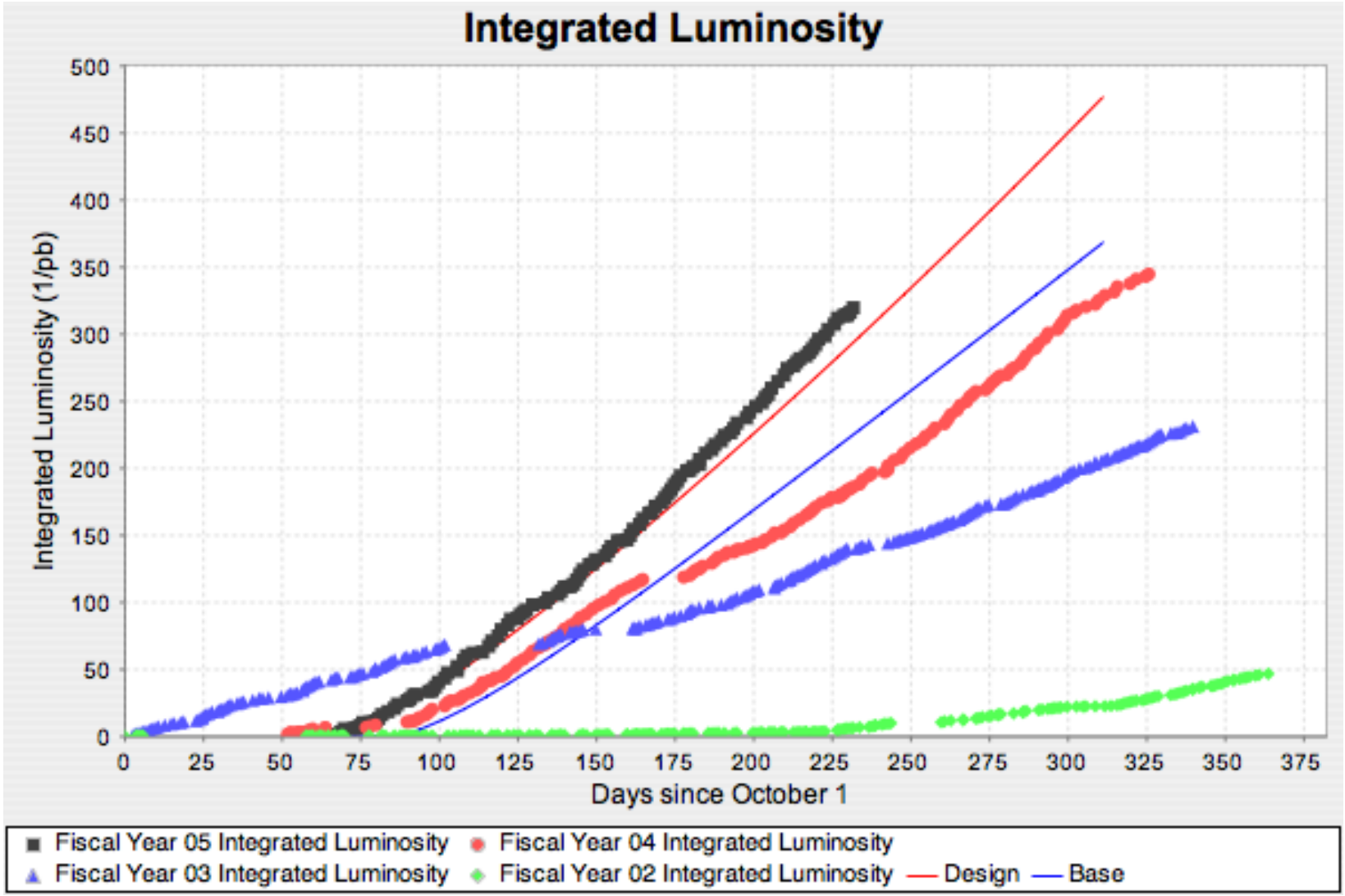
Integrated Luminosity for the week



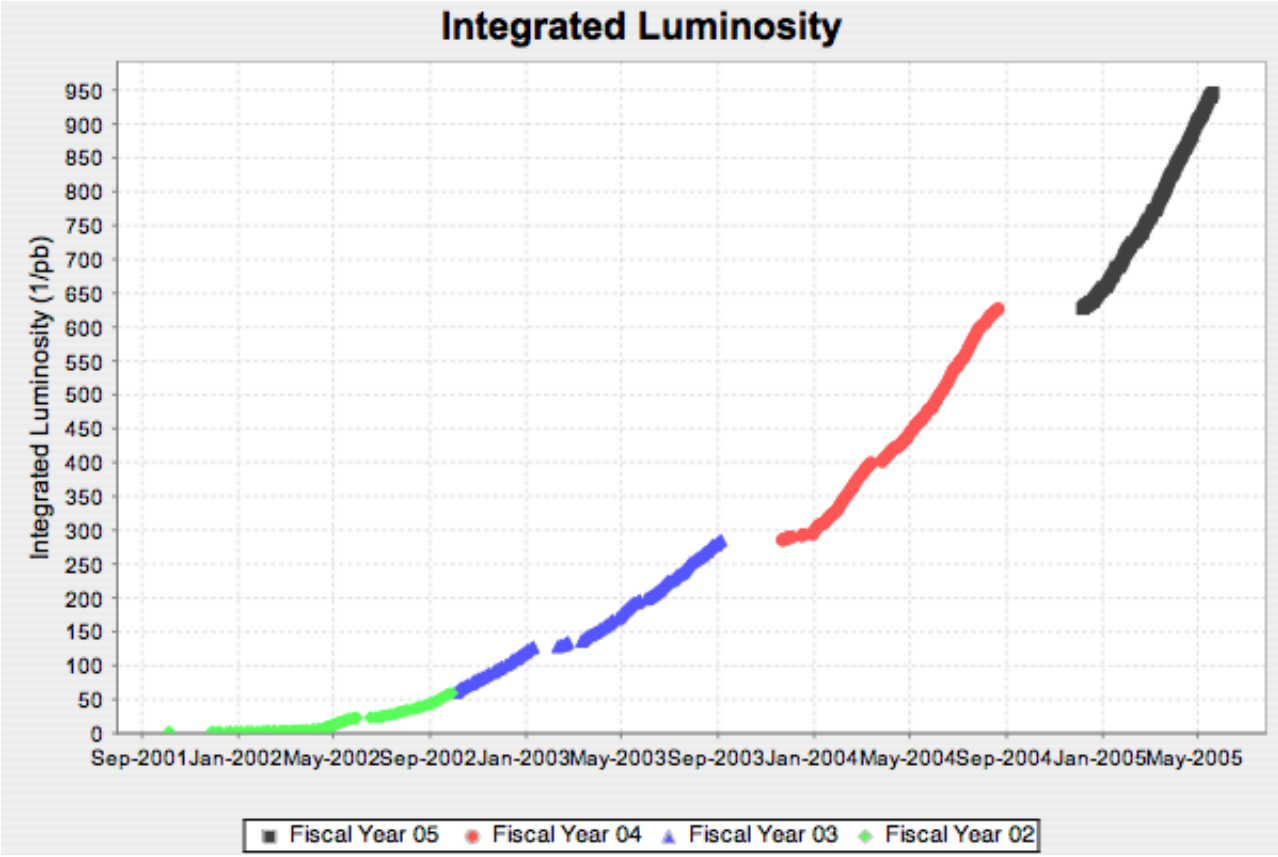
FY05 Integrated Luminosity



Integrated Luminosity



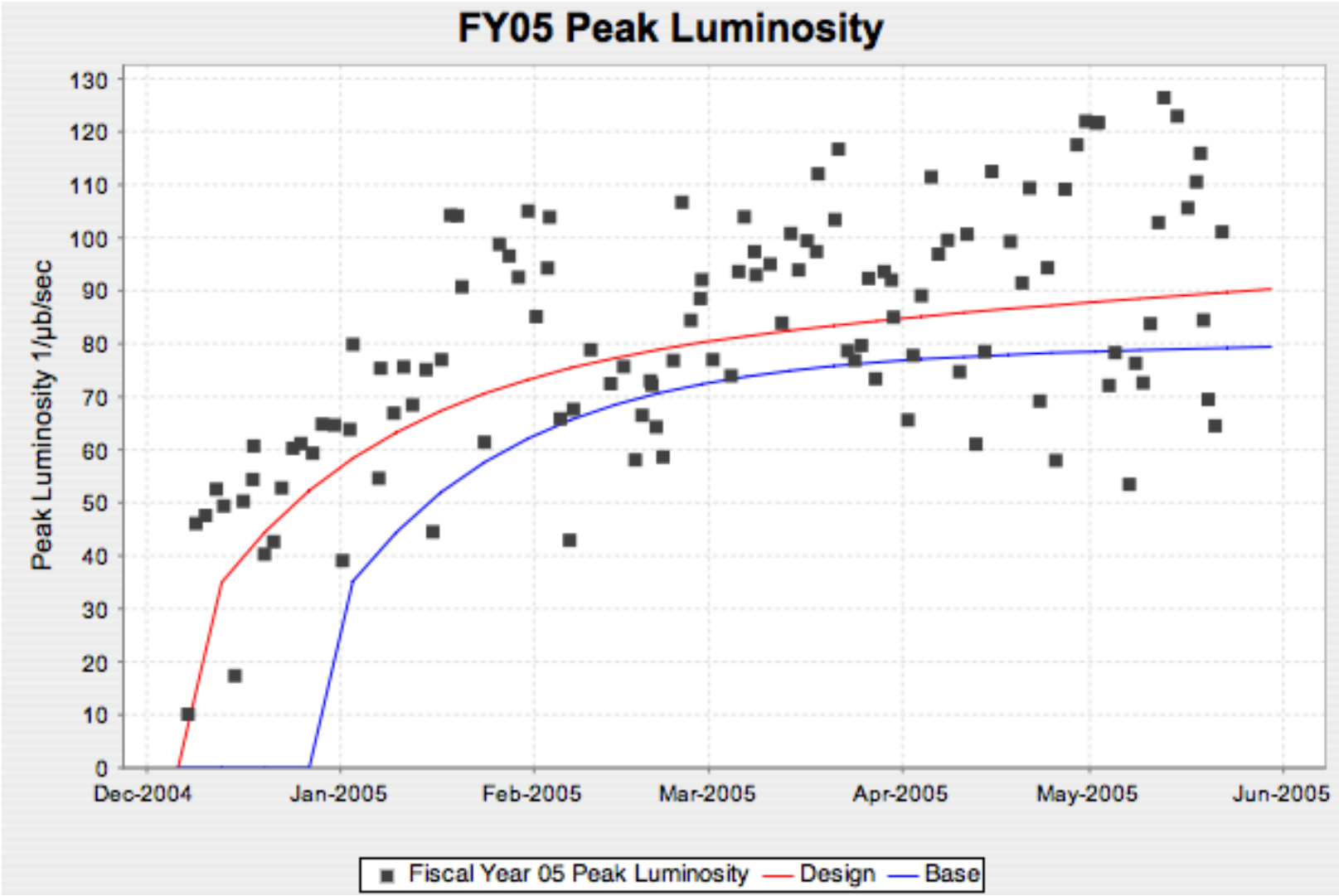
1 fb^{-1} Watch



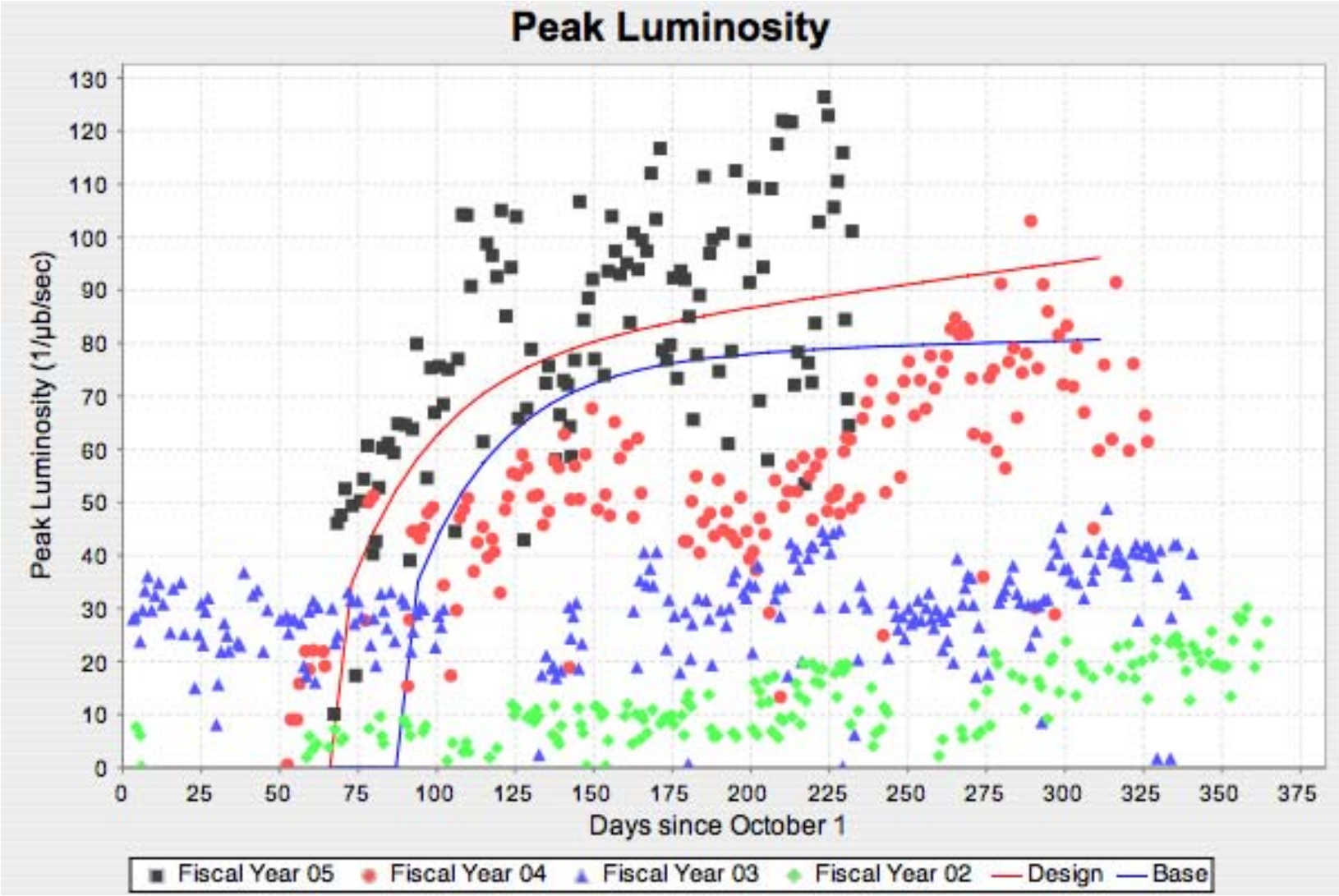
Projection: June 24, 2005 02:46:37.12

Pot: $46.92

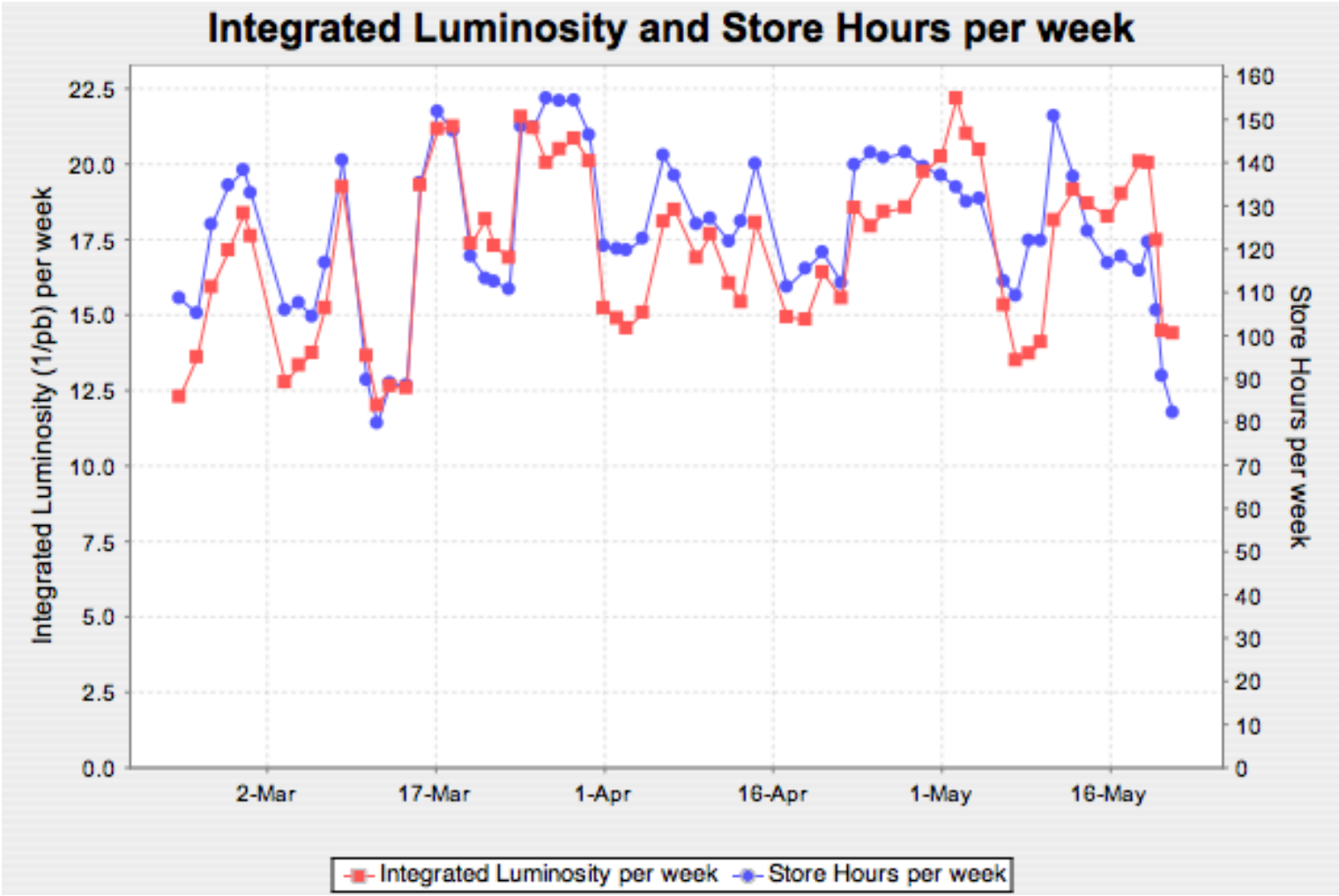
FY05 Peak Luminosity



FY05 Goals Peak Luminosity

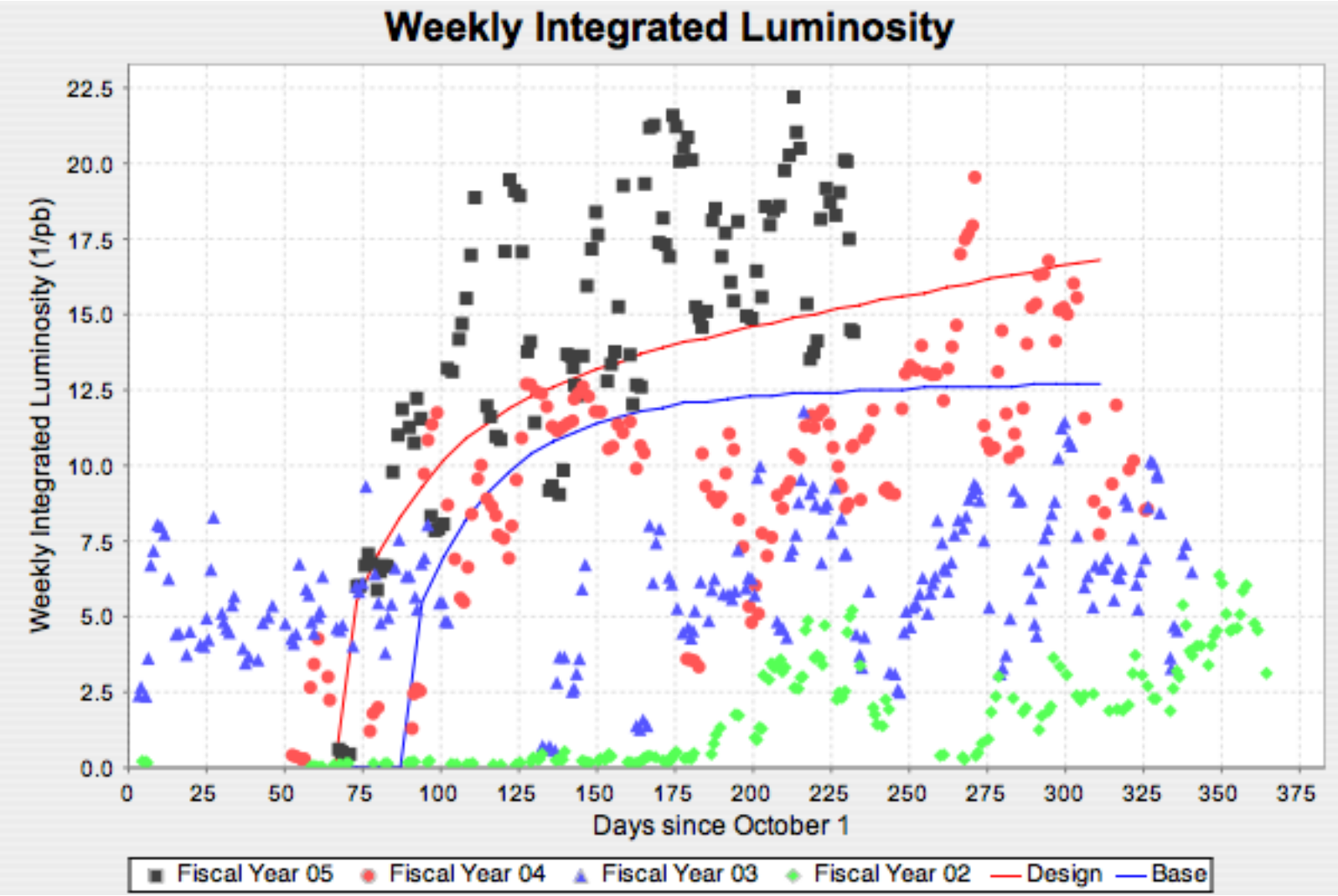


Integrated Luminosity and Store Hours per Week



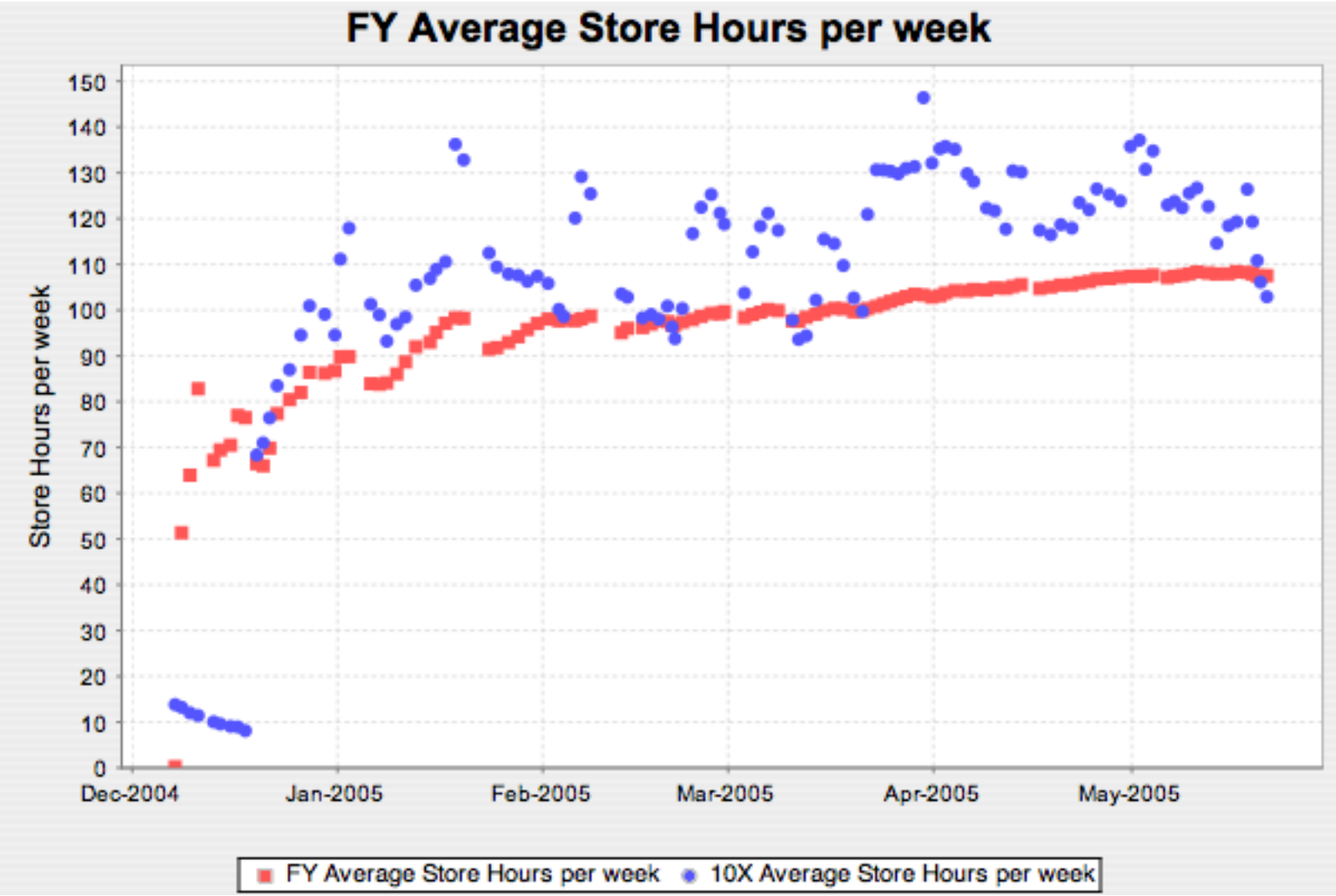
5 Store Running Average

FY05 Goals Weekly Integrated Luminosity

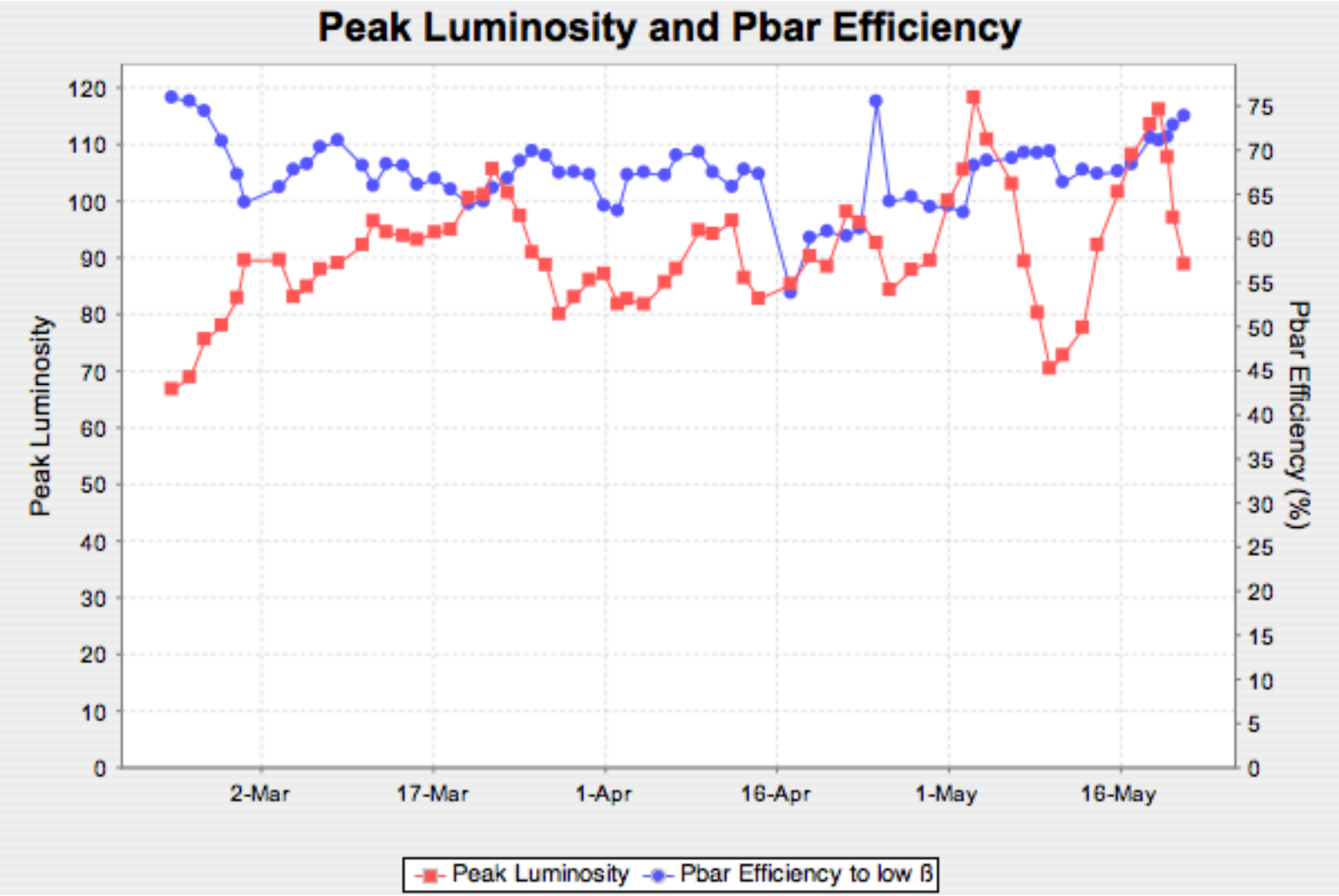


5 Store Running Average

FY05 Average Store Hours per Week



Peak Luminosity and Pbar Efficiency

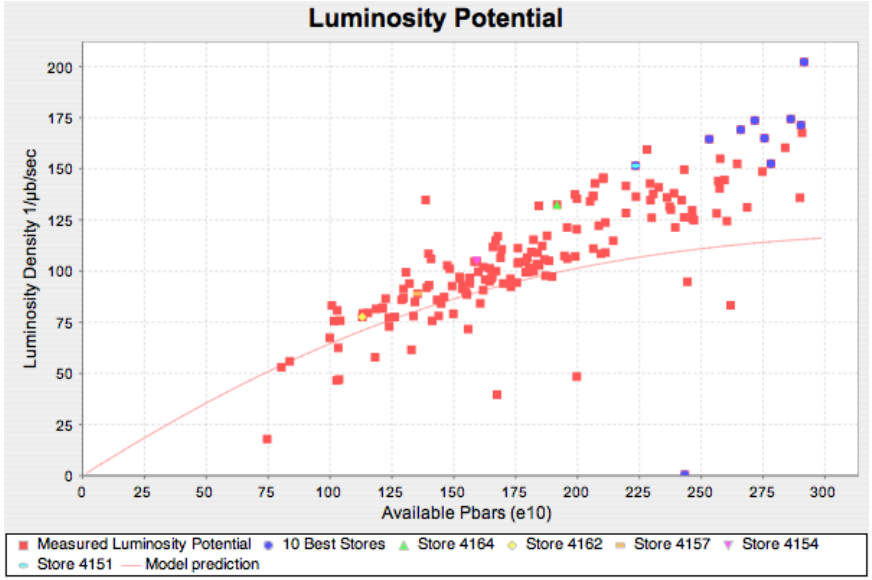


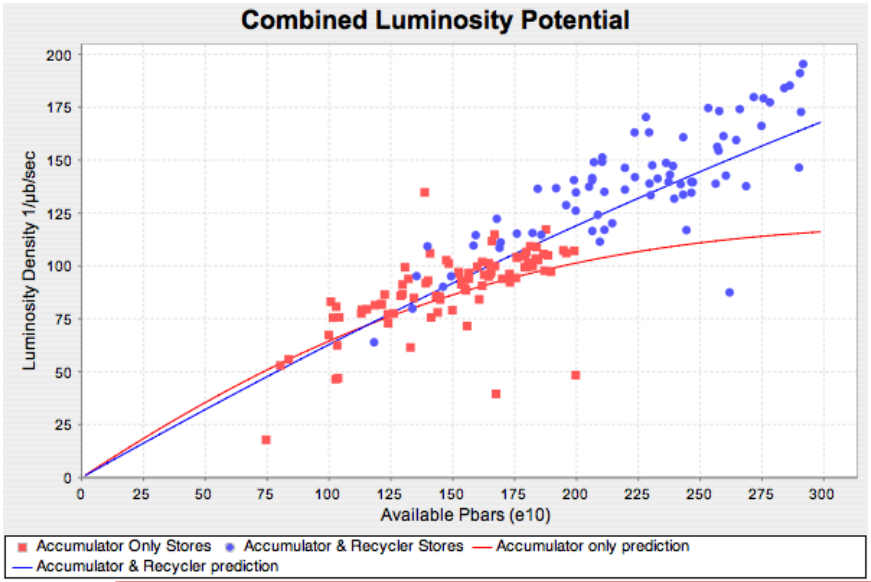
5 Store Running Average

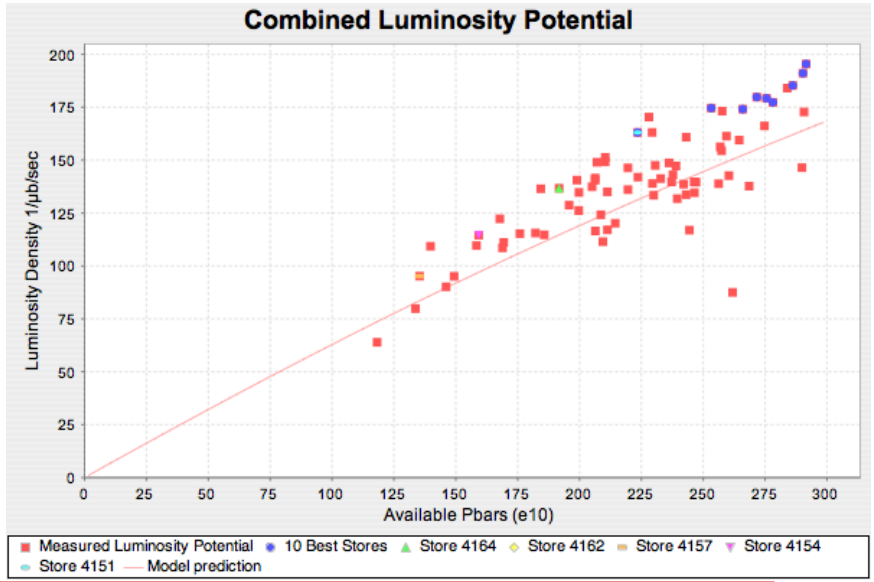
Data Summary Table

		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)	100.9	126.2	98.4	118.7	80.6	71.1	96.1	80.7	$x10^{30}cm^{-2}sec^{-1}$
Integrated Luminosity per Store (Avera	3413.7	2462.7	2745.4	3355	2748	2660	3369	3190	nb^{-1}
Luminosity per week (Averaged)	-	-	16.9	-	13.5	11.8	16.8	12.7	pb^{-1}
Store Length	19.3	8.5	16.7	17.9	21.9	24.5	20	25	Hours
Store Hours per week	-	-	102.7	-	107.9	108.3	100	100	Hours
Shot Setup Time	2.7	2.5	2.7	2.4	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	241.9	239.9	245.8	237.3	228.4	247.3	260	260	$x10^{9}$
Antiprotons per bunch	37.9	44.2	34.1	42.5	31.9	29.9	42	34	$x10^{9}$
Proton Efficiency to Low Beta	61.1	60.1	64.3	56.1	62.2	72.7	-	-	%
Pbar Transfer efficiency to Low Beta	76.6	69	71.1	61.4	69.8	74	76	74	%
HourGlass Factor	0.66	0.67	0.67	0.67	0.67	0.68	0.65	0.65	
Effective Emittance	14.8	13.9	14.1	13.9	15.2	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	13.9	13.7	14.2	14.5	13.4	12.2	24.5	14	$x10^{10}$/hour
Normalized Zero Stack Stack Rate	2.3	2.4	2.3	2.4	2.3	2.3	3.1	2.3	$x10^{-2}$/hour
Average Stacking Rate	7.8	5.3	8.1	7.2	7.4	6.2	10.1	6.6	$x10^{10}$/hour
Stacking Time Line Factor	80.3	51.9	74.7	66.7	74.7	76.6	75	75	%
Stack Size at Zero Stack Rate	315	361.5	403.2	371.2	397.4	332.6	300	300	$x10^{10}$
Protons on Target	6.2	6.1	6.2	6.2	5.9	5.2	8	6.2	$x10^{12}$
Start Stack	192.1	290.6	199.3	268.2	190	170.7	216	181	$x10^{10}$
End Stack	12.4	20.6	13.9	23.6	15.2	13.8	15	15	$x10^{10}$
Unstacked Pbars	179.7	270	185.4	244.6	174.8	156.9	201	166	$x10^{10}$

Stack Size Potential







Studies

TEV Studies

Date	Duration (Hr)	Description
5/9/2005	0.3	End of store, pbar tune measurement
5/11/2005	4.2	Chromaticity measurements/tune tracker
5/13/2005	5.0	Tune tracker, IPM, QXR
5/13/2005	2.0	Tune mesurements with stripline
5/13/2005	4.7	Low beta optics measurements
5/19/2005	3.3	Electron cloud
5/19/2005	2.2	Orbit verification near abort
5/19/2005	2.2	BLT studies
5/19/2005	0.8	4x0 to check orbits
5/20/2005	2.3	4x0 to check orbits after separator change
	10.8	Sum for Week
	256.5	Sum for Year
	10.9	Average per week

Pbar Studies

Date	Duration (Hr)	Description
5/11/2005	1.6	Stacktail fan-out measurement
5/11/2005	1.3	Beamline optics measurement
5/12/2005	0.2	Debuncher bumps while stacking
5/12/2005	0.2	Debuncher bumps while stacking
5/18/2005	0.2	Debuncher bumps while stacking
5/19/2005	0.6	D/A line adjustments
	0.8	Sum for week
	77.8	Sum for year
	3.3	Average per week

MiniBoone

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Summary for Event 1D
From 02-MAY-2005 00:00:00
  to 09-MAY-2005 00:00:00

Percentage up time: 55.4
Total Events:     1249152
Total Protons:    4.71E+18
Average Events/second:        3.58
Average protons/Event:        3.92E+12
Average protons/hour:         5.06E+16
Maximum protons/hour:         7.76E+16   05/07/05
(protons out)/(protons in):   .82
(Joules lost)/(1e12 prot):    21.9
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Summary for Event 1D
From 09-MAY-2005 00:00:00
  to 23-MAY-2005 00:00:00

Percentage up time: 83.6
Total Events:     3151968
Total Protons:    1.18E+19
Average Events/second:        2.98
Average protons/Event:        3.90E+12
Average protons/hour:         4.18E+16
Maximum protons/hour:         7.64E+16   05/13/05
(protons out)/(protons in):   .829
(Joules lost)/(1e12 prot):    21.3
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Plan for the Week

- Proton Source
  - Slip Stacking
  - Cogging
- Main Injector
  - Slip Stacking Studies
    - Bunch length on target
    - losses
  - NUMI
    - Increase intensity
    - Reduce losses on mixed mode cycles
  - Improve spill quality for SY120
  - Pbar Transverse Injection Dampers
  - 2.5 MHz Acceleration in concert with electron cooling commissioning
- Recycler
  - Accumulator to Recycler Transfers
  - Electron Cooling commissioning
- Pbar
  - Beam Based Alignment
    - D-A line
    - Debuncher
  - Slip Stacking Studies
    - Production vs Beam on Target
  - Accumulator to Recycler Transfers
  - New tune operating point
    - Stacking lattice
    - Shot lattice
- Tevatron
  - Step 24-25 loss
    - Store to Store Chromaticity Adjustments
  - Tune Tracker Studies
  - CDF-DO Low Beta lattice measurements
    - Measurements have been made with new BPM system!
    - Plan in progress for reducing beta*