All Experimenter's Meeting

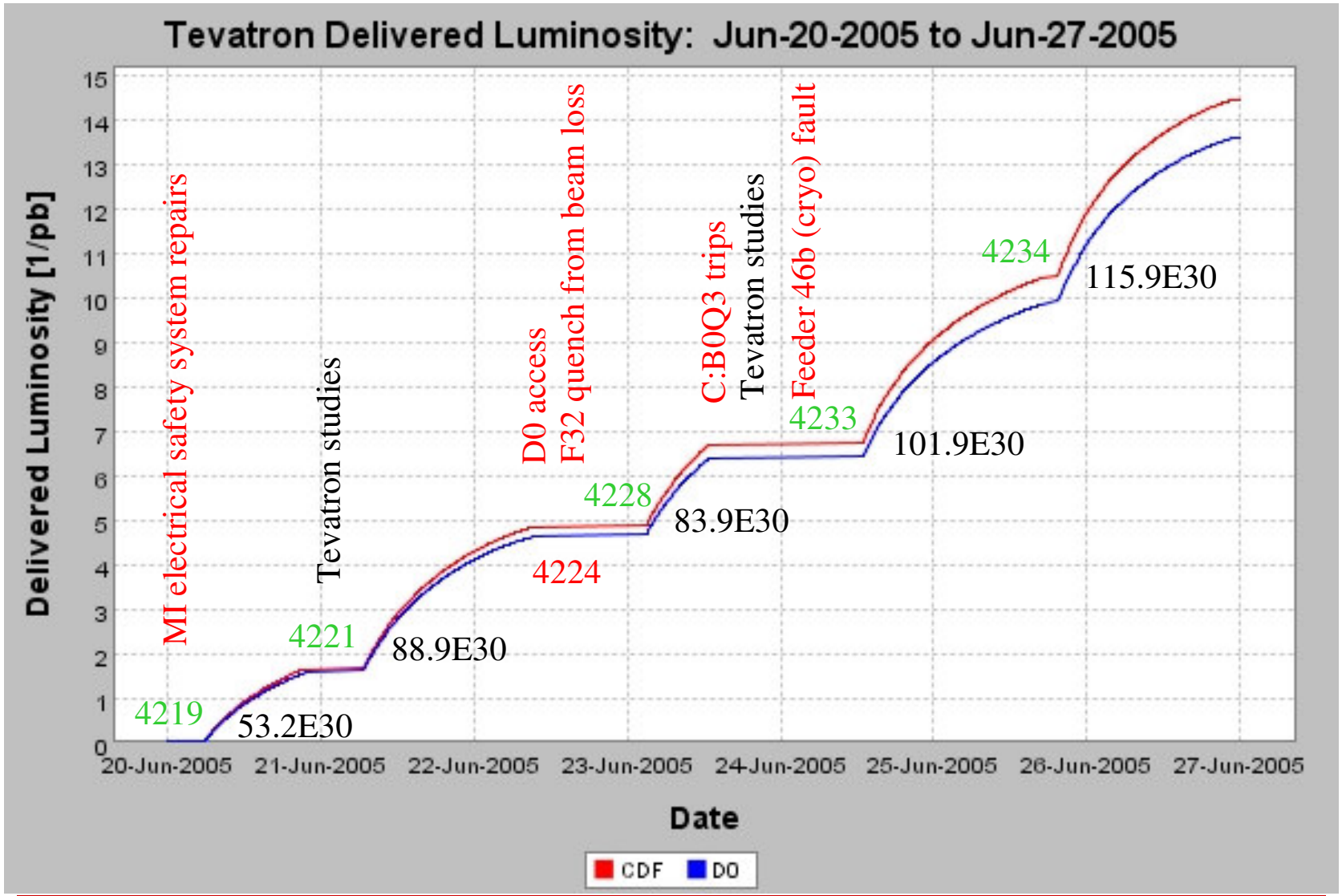
Jim Morgan

June 27, 2005

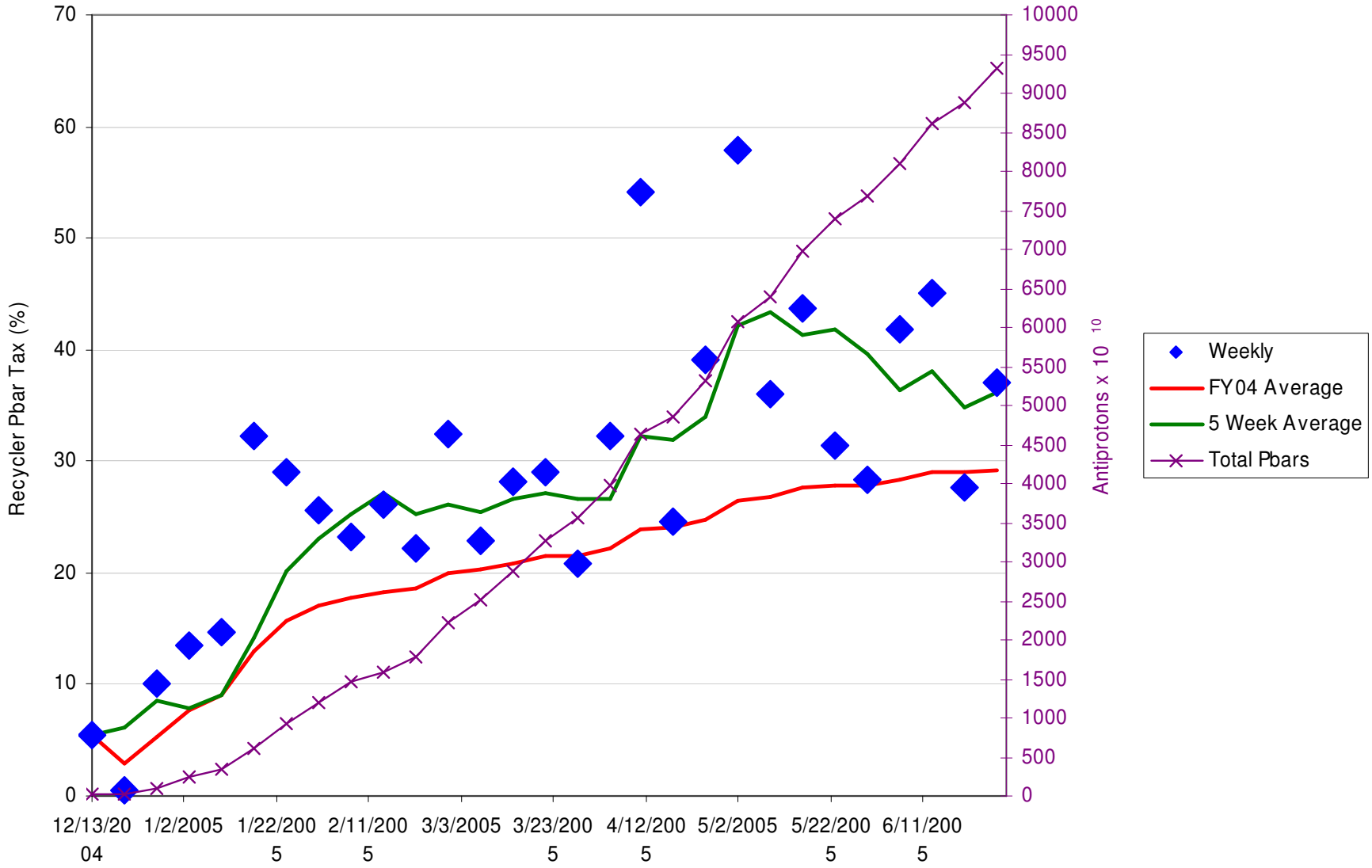
Stores Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
4219	53.2	1,619	Planned	15.3	101.1	
4221	88.9	3,205	Planned	27.0	152.3	Combination shot (121.7/30.6E10)
4224	0	0	Loss of store	0	259.4	Combination shot (168.5/90.9E10), F3 quench from beam loss on ramp
4228	83.9	1,856	Loss of store	9.8	139.4	Combination shot (107.5/31.9E10), C:B0Q3 tripped off
4233	101.9	3,755	Planned	28.3	180.6	Combination shot (118.2/62.4E10)
4234	115.9	4,028	Planned	27.7	257.4	Combination shot (160.4/97.0E10)
4235	99.0	2,100+	Pending	9+	216.2	Combination shot (110.6/105.6E10)

Integrated Luminosity for the week



Recycler Pbar "Tax"



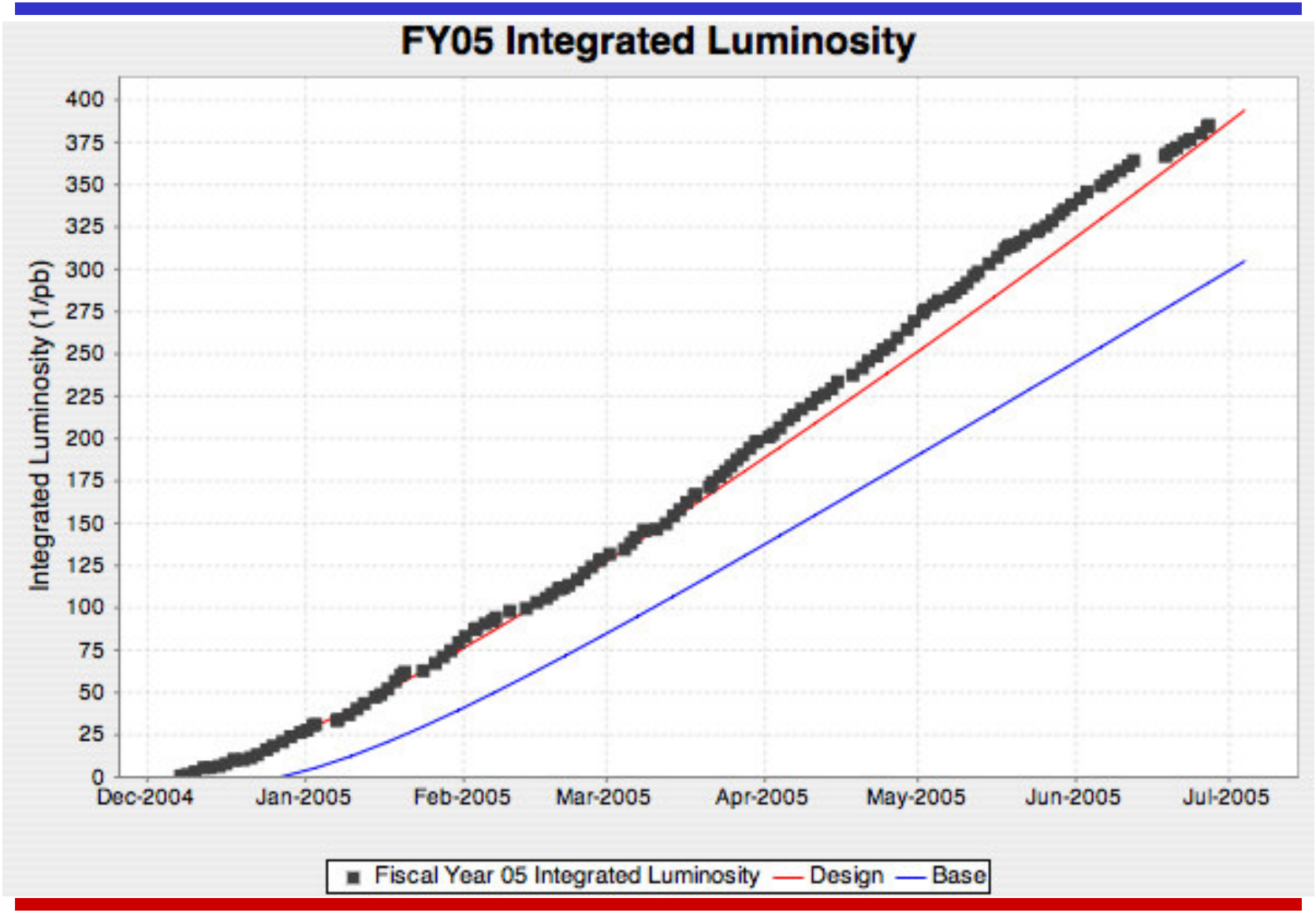
Pbar and Tevatron Studies

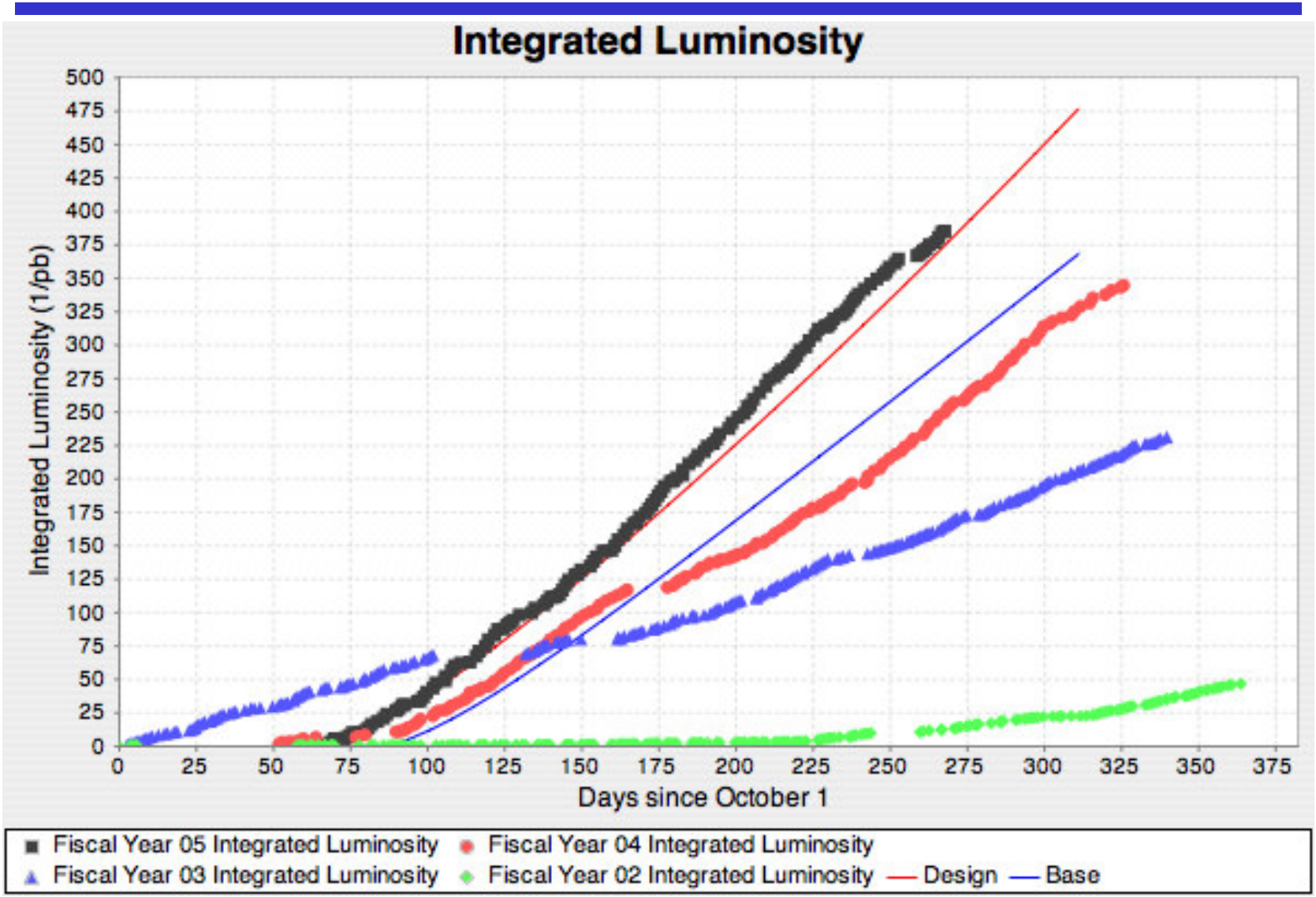
Pbar Studies

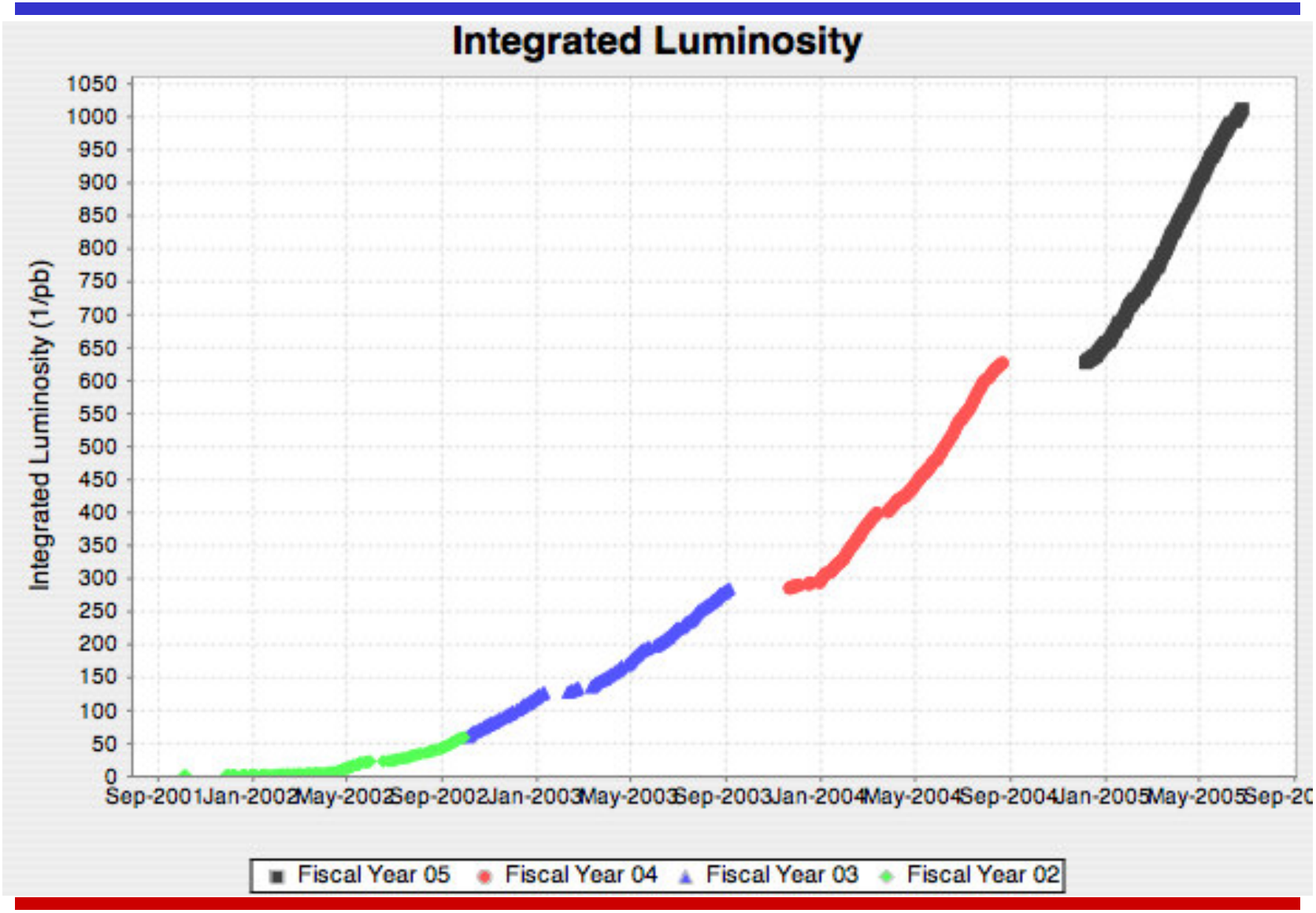
6/20	0.2	Stacktail tank centering
6/21	3.1	Debuncher cooling adjustments
6/23	3.5	Access to install 2-4 GHz hybrids
6/24	1.0	Stacktail fan-in/fan-out phasing

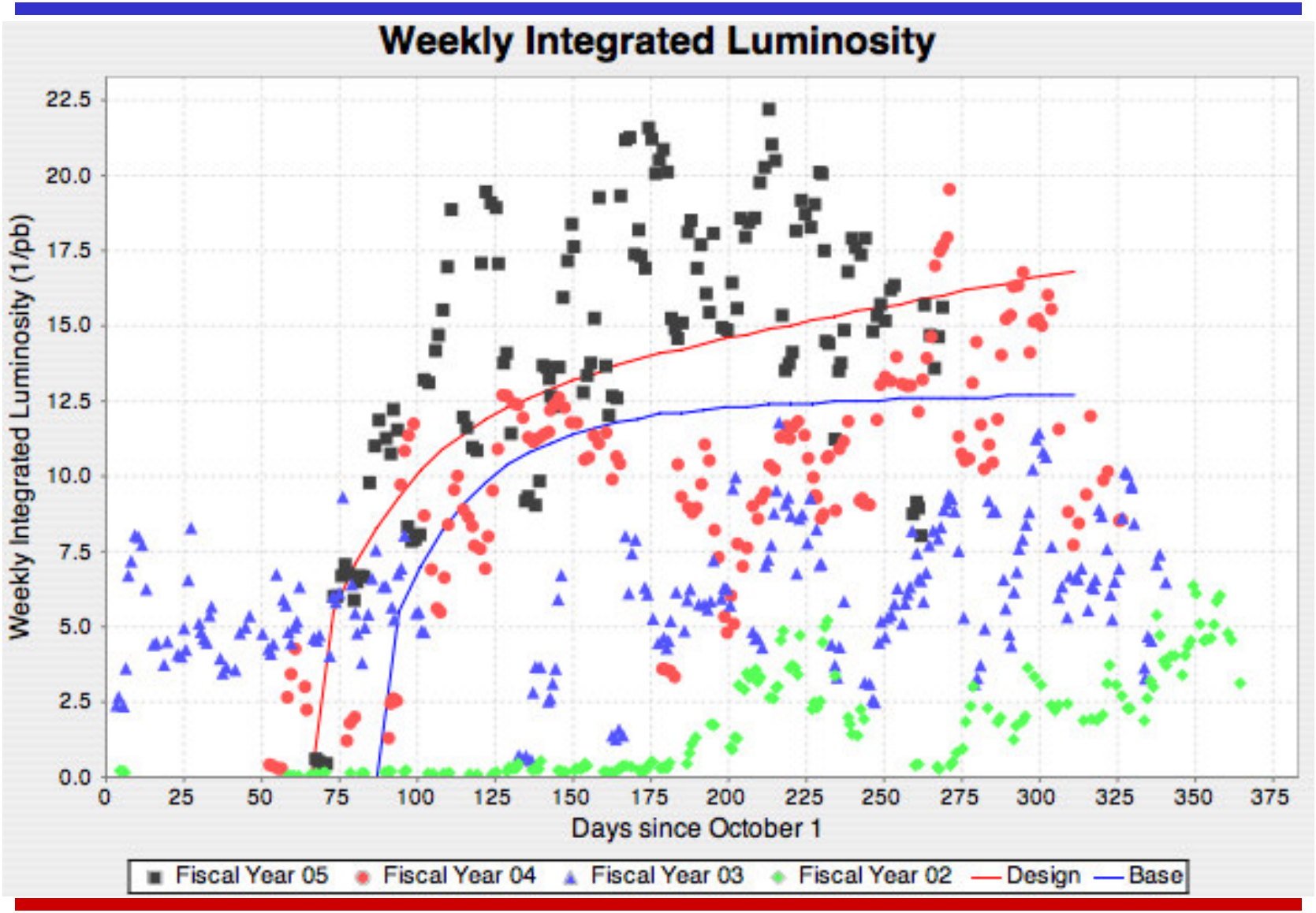
Tevatron Studies

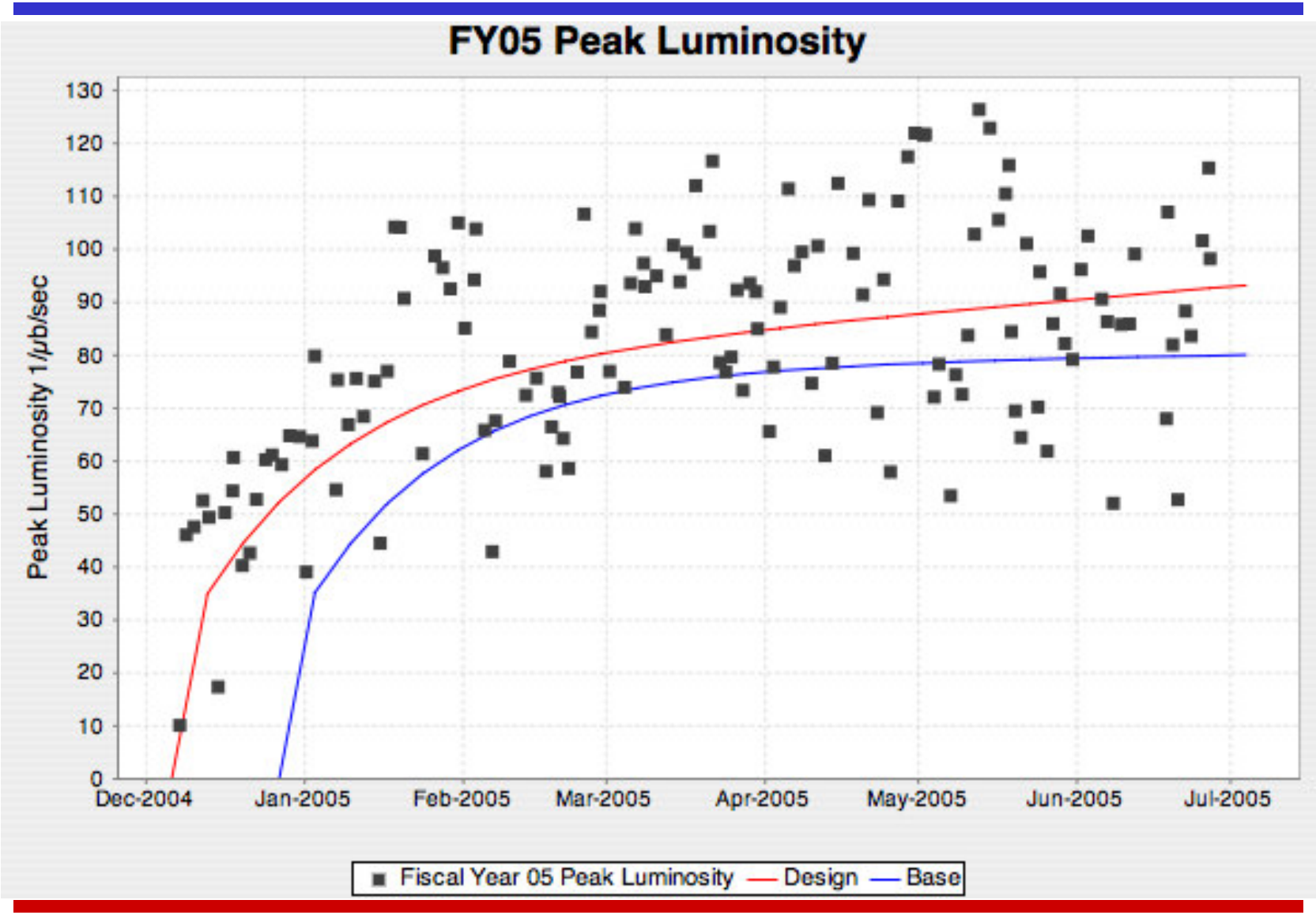
6/20	0.9	EOS, tune measurement with tickler
6/20	4.0	Coupled bunch/octupole
6/22	0.4	EOS, tune measurement
6/22	5.8	Pinger timing, optics +quench recovery
6/23	5.0	Optics studies

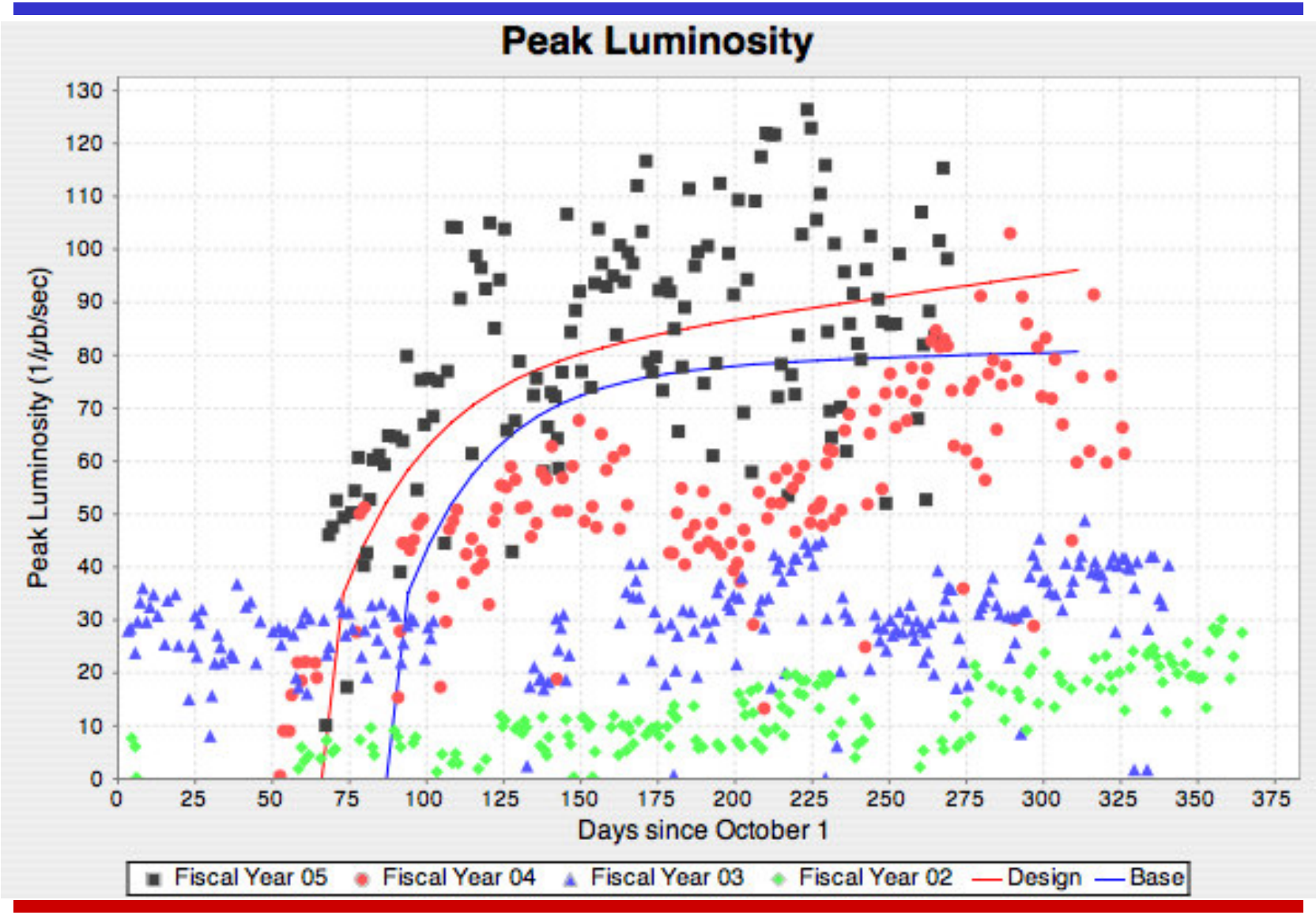

FY05 Integrated Luminosity
Integrated Luminosity (1/pb)
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
Dec-2004
Jan-2005
Feb-2005
Mar-2005
Apr-2005
May-2005
Jun-2005
Jul-2005
Fiscal Year 05 Integrated Luminosity
Design
Base

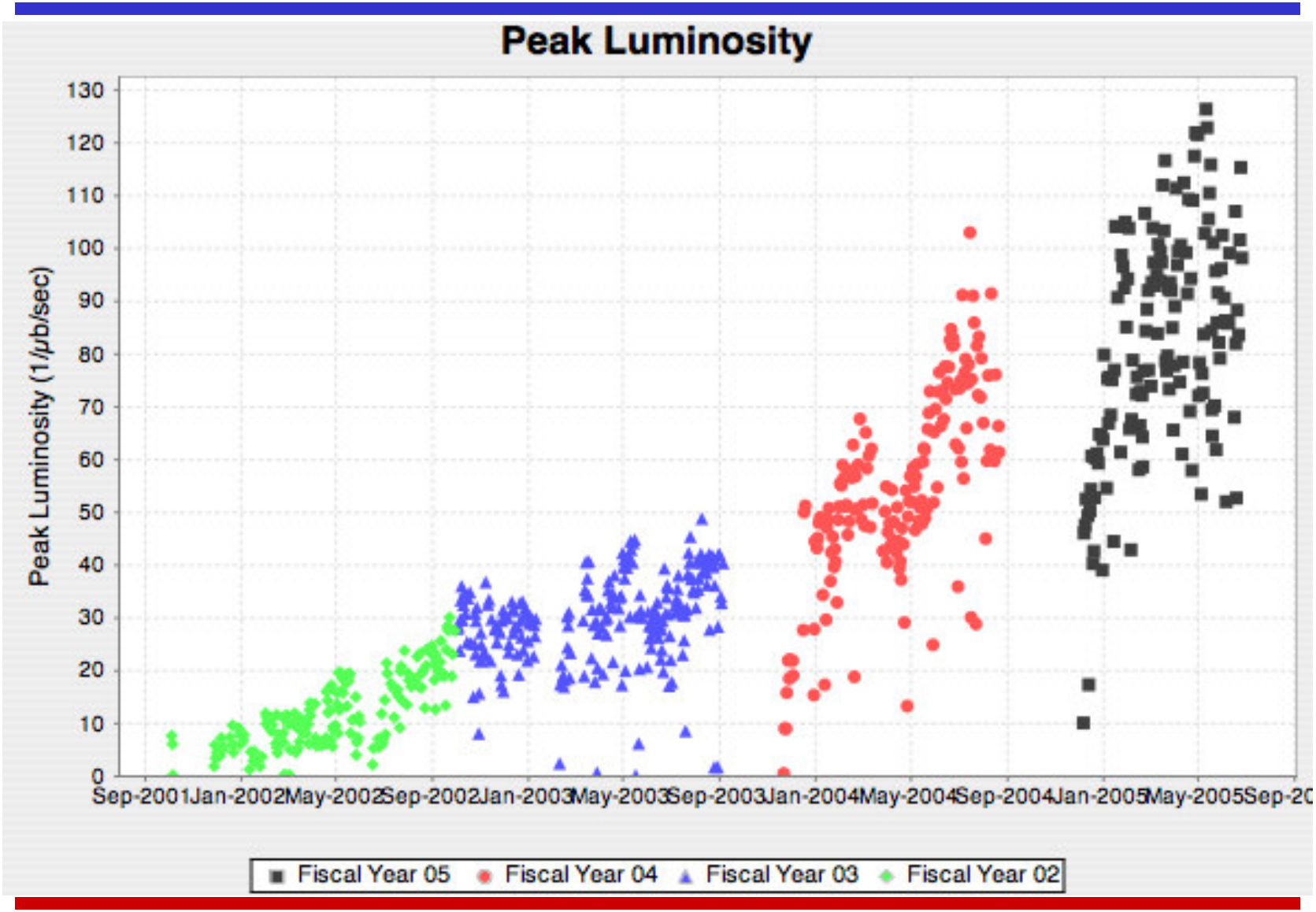

Integrated Luminosity
Integrated Luminosity (1/pb)
500
475
450
425
400
375
350
325
300
275
250
225
200
175
150
125
100
75
50
25
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
Days since October 1
Fiscal Year 05 Integrated Luminosity
Fiscal Year 04 Integrated Luminosity
Fiscal Year 03 Integrated Luminosity
Fiscal Year 02 Integrated Luminosity
Design
Base

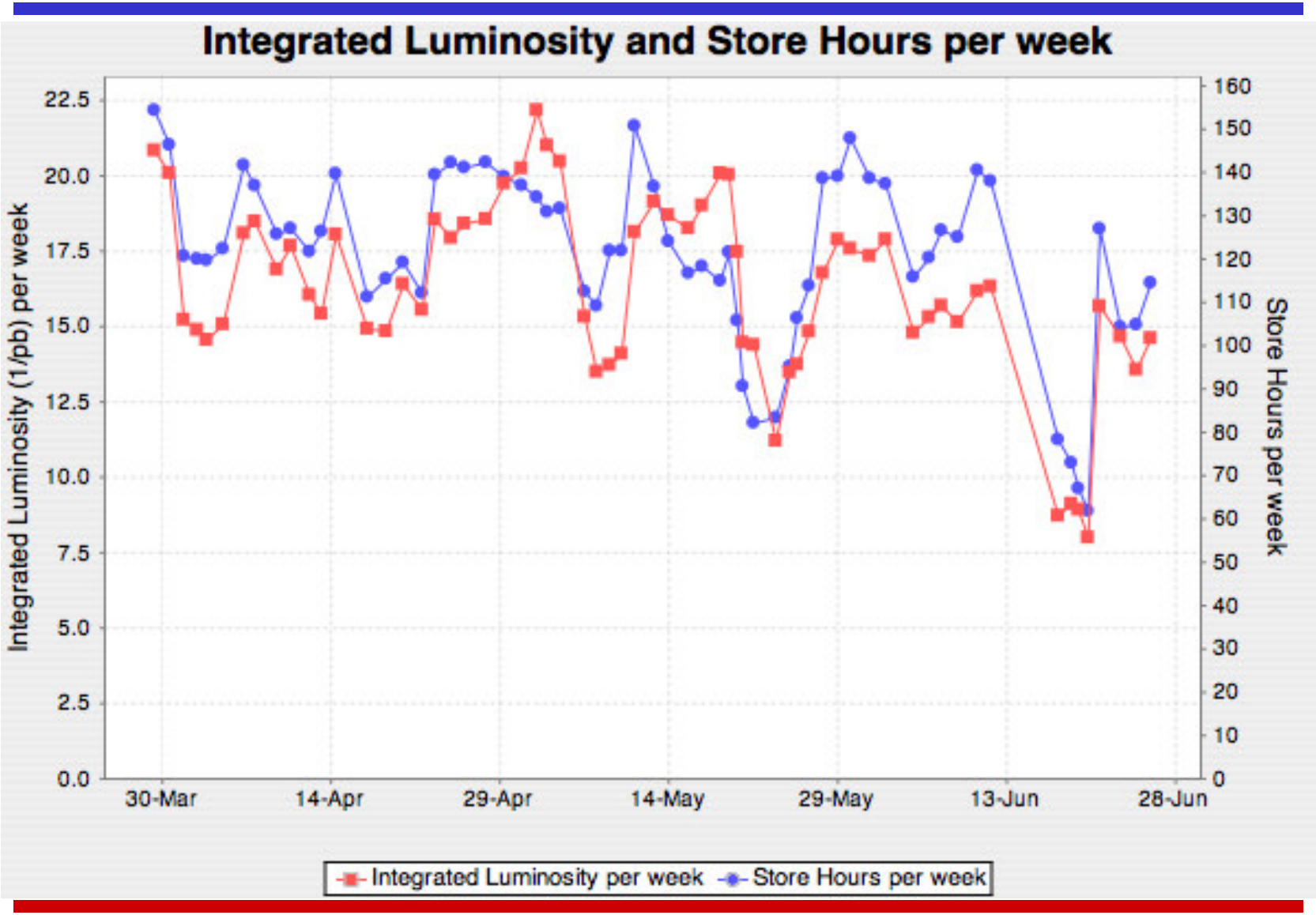

Integrated Luminosity
Integrated Luminosity (1/pb)
1050
1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
Sep-2001
Jan-2002
May-2002
Sep-2002
Jan-2003
May-2003
Sep-2003
Jan-2004
May-2004
Sep-2004
Jan-2005
May-2005
Fiscal Year 05
Fiscal Year 04
Fiscal Year 03
Fiscal Year 02

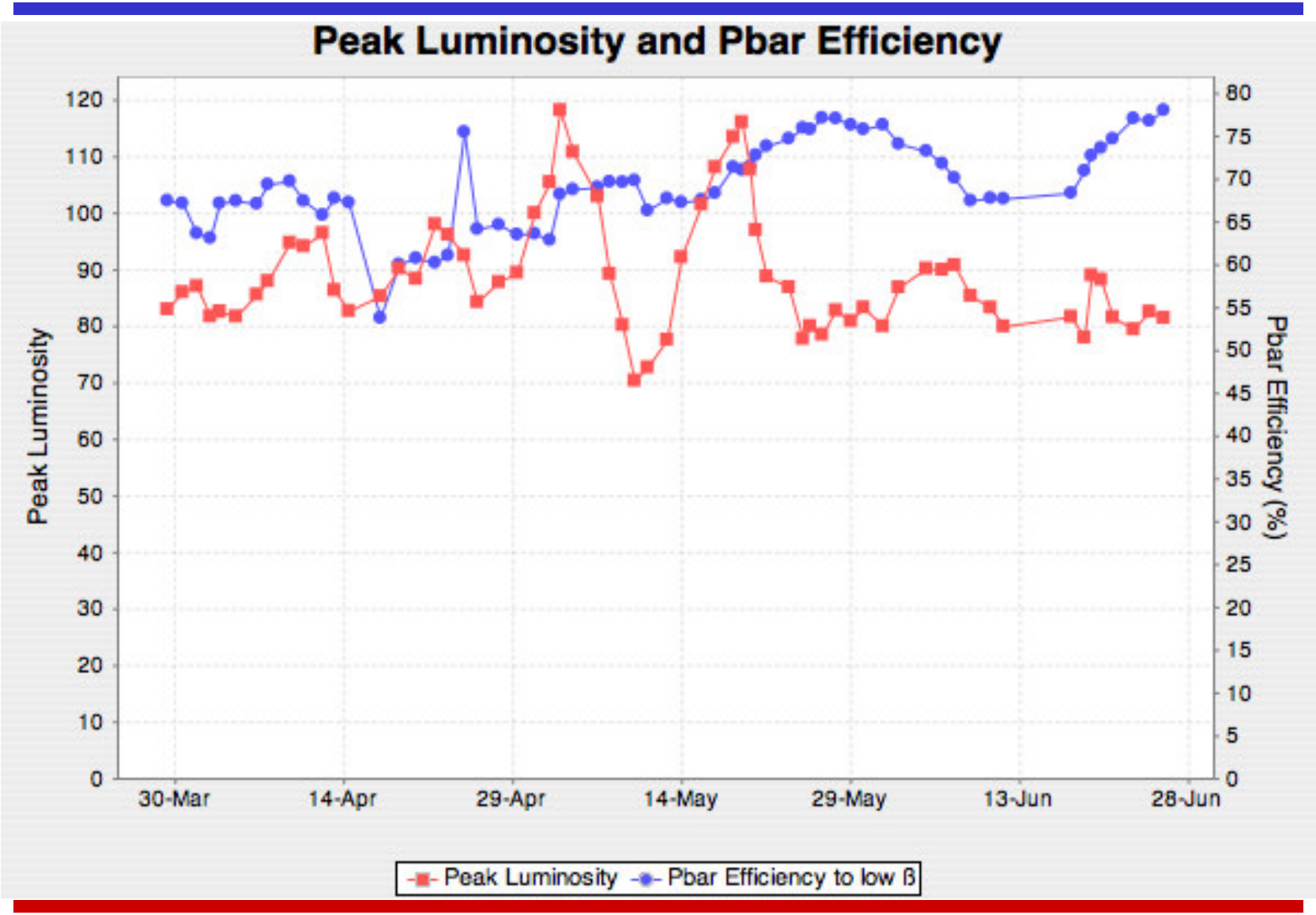

Weekly Integrated Luminosity
Weekly Integrated Luminosity (1/pb)
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
Days since October 1
Fiscal Year 05
Fiscal Year 04
Fiscal Year 03
Fiscal Year 02
Design
Base

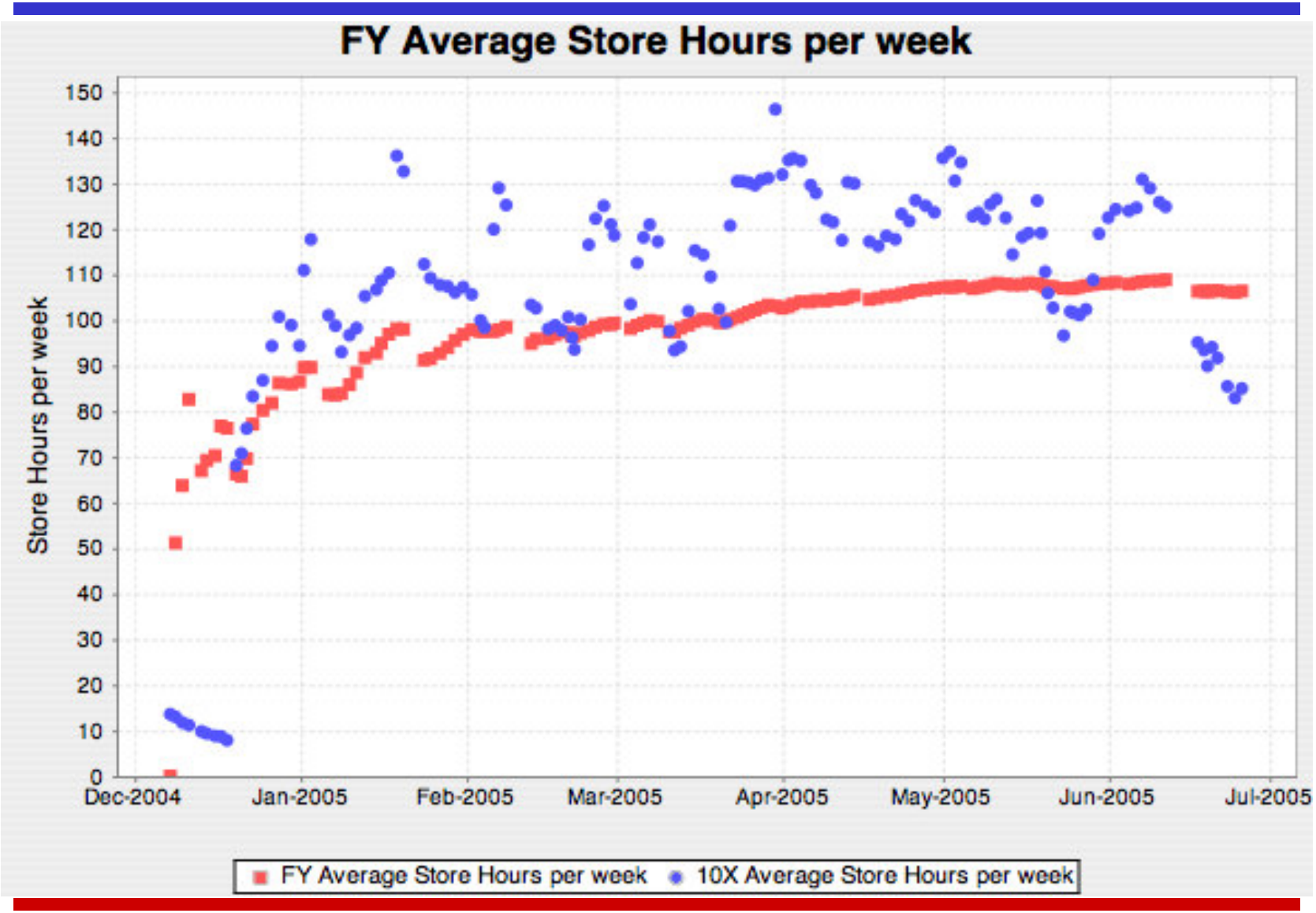

FY05 Peak Luminosity
Peak Luminosity 1/μb/sec
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Dec-2004
Jan-2005
Feb-2005
Mar-2005
Apr-2005
May-2005
Jun-2005
Jul-2005
Fiscal Year 05 Peak Luminosity
Design
Base

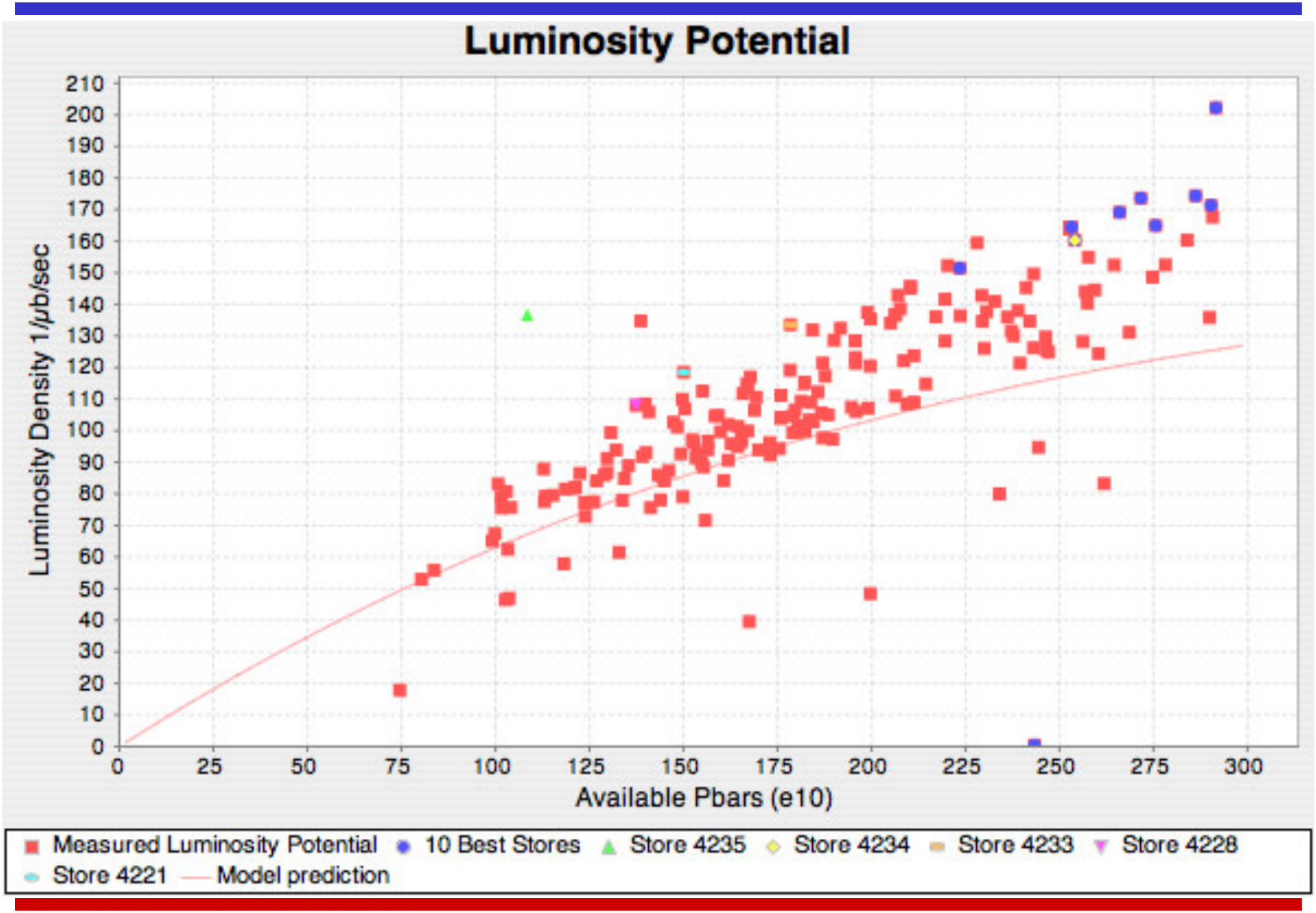

Peak Luminosity
Peak Luminosity (1/μb/sec)
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
25
50
75
100
125
150
175
200
225
250
275
300
325
350
375
Days since October 1
Fiscal Year 05
Fiscal Year 04
Fiscal Year 03
Fiscal Year 02
Design
Base

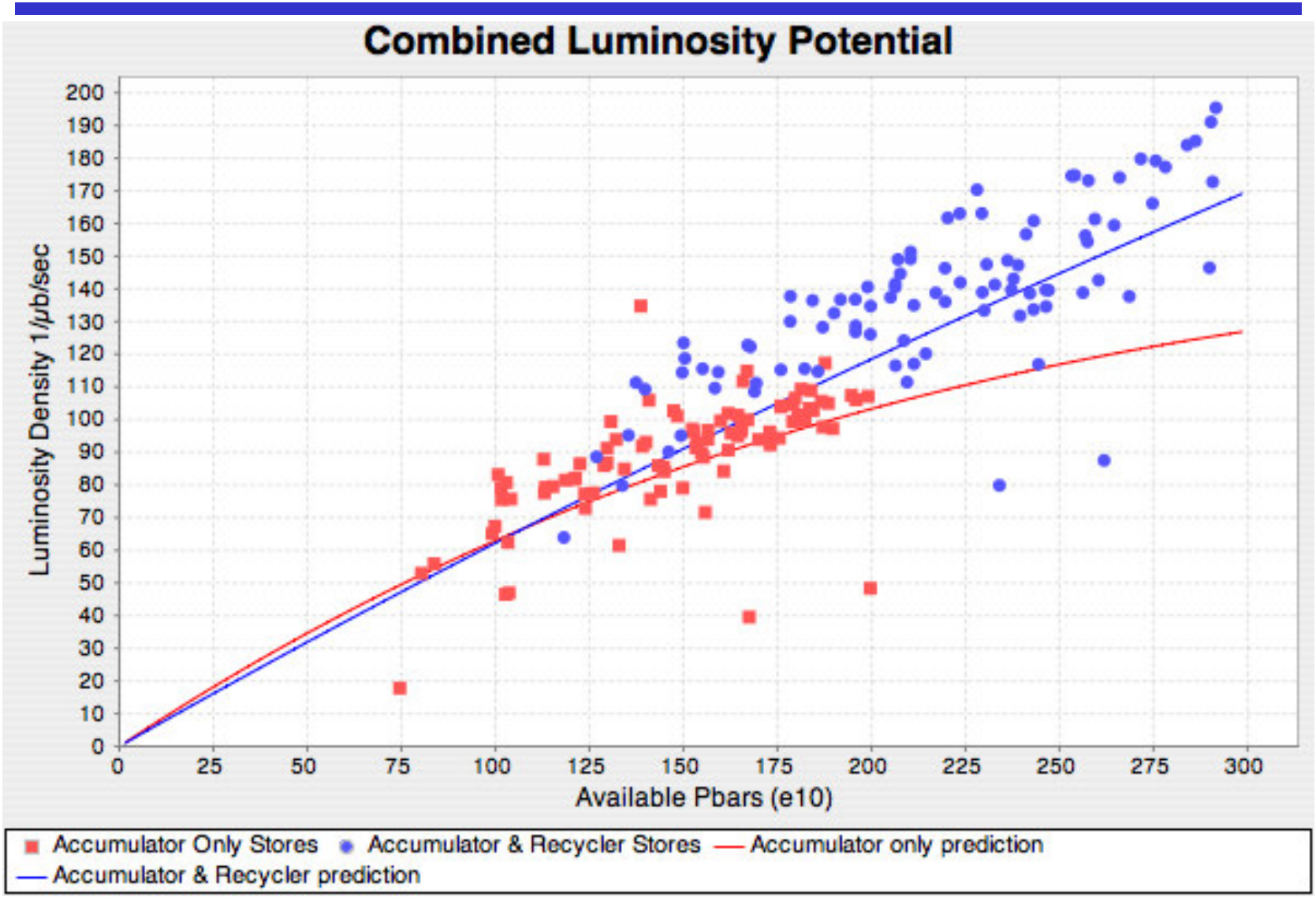

Peak Luminosity
Peak Luminosity (1/μb/sec)
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Sep-2001
Jan-2002
May-2002
Sep-2002
Jan-2003
May-2003
Sep-2003
Jan-2004
May-2004
Sep-2004
Jan-2005
May-2005
Sep-20
Fiscal Year 05
Fiscal Year 04
Fiscal Year 03
Fiscal Year 02


Integrated Luminosity and Store Hours per week
Integrated Luminosity (1/pb) per week
Store Hours per week
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
30-Mar
14-Apr
29-Apr
14-May
29-May
13-Jun
28-Jun
Integrated Luminosity per week
Store Hours per week


Peak Luminosity and Pbar Efficiency
Peak Luminosity
Pbar Efficiency (%)
120
110
100
90
80
70
60
50
40
30
20
10
0
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
30-Mar
14-Apr
29-Apr
14-May
29-May
13-Jun
28-Jun
Peak Luminosity
Pbar Efficiency to low ß


FY Average Store Hours per week
Store Hours per week
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Dec-2004
Jan-2005
Feb-2005
Mar-2005
Apr-2005
May-2005
Jun-2005
Jul-2005
FY Average Store Hours per week
10X Average Store Hours per week


Luminosity Potential
Luminosity Density 1/μb/sec
Available Pbars (e10)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
0
25
50
75
100
125
150
175
200
225
250
275
300
Measured Luminosity Potential
10 Best Stores
Store 4235
Store 4234
Store 4233
Store 4228
Store 4221
Model prediction


Combined Luminosity Potential
Luminosity Density 1/μb/sec
Available Pbars (e10)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
0
25
50
75
100
125
150
175
200
225
250
275
300
Accumulator Only Stores
Accumulator & Recycler Stores
Accumulator only prediction
Accumulator & Recycler prediction

Plan for the week

- Proton Source
  - Support slip-stacking and work on cogging
- Main Injector
  - Slip-stacking studies
    - Reduce bunch length and losses
  - NuMI
    - Reduce losses on mixed-mode cycles
  - MI-8 optics match
  - 120 GeV energy on different cycles
  - 2.5MHz slow acceleration
- NuMI
  - Increase number of cycles during shot setup
  - Reduce number of spurious permit trips
- Pbar
  - Stacktail heating
    - Center kicker tanks
  - Debuncher Cooling
  - D/A efficiency
  - 120 GeV optics
  - Debuncher orbits/aperture
- Recycler
  - Commission ECOOL
- Tevatron
  - D0 losses during squeeze
  - Orbit motion from CDF low beta quadrupoles
  - Low beta optics
  - Tune tracker
  - High intensity protons