All Experimenter's Meeting

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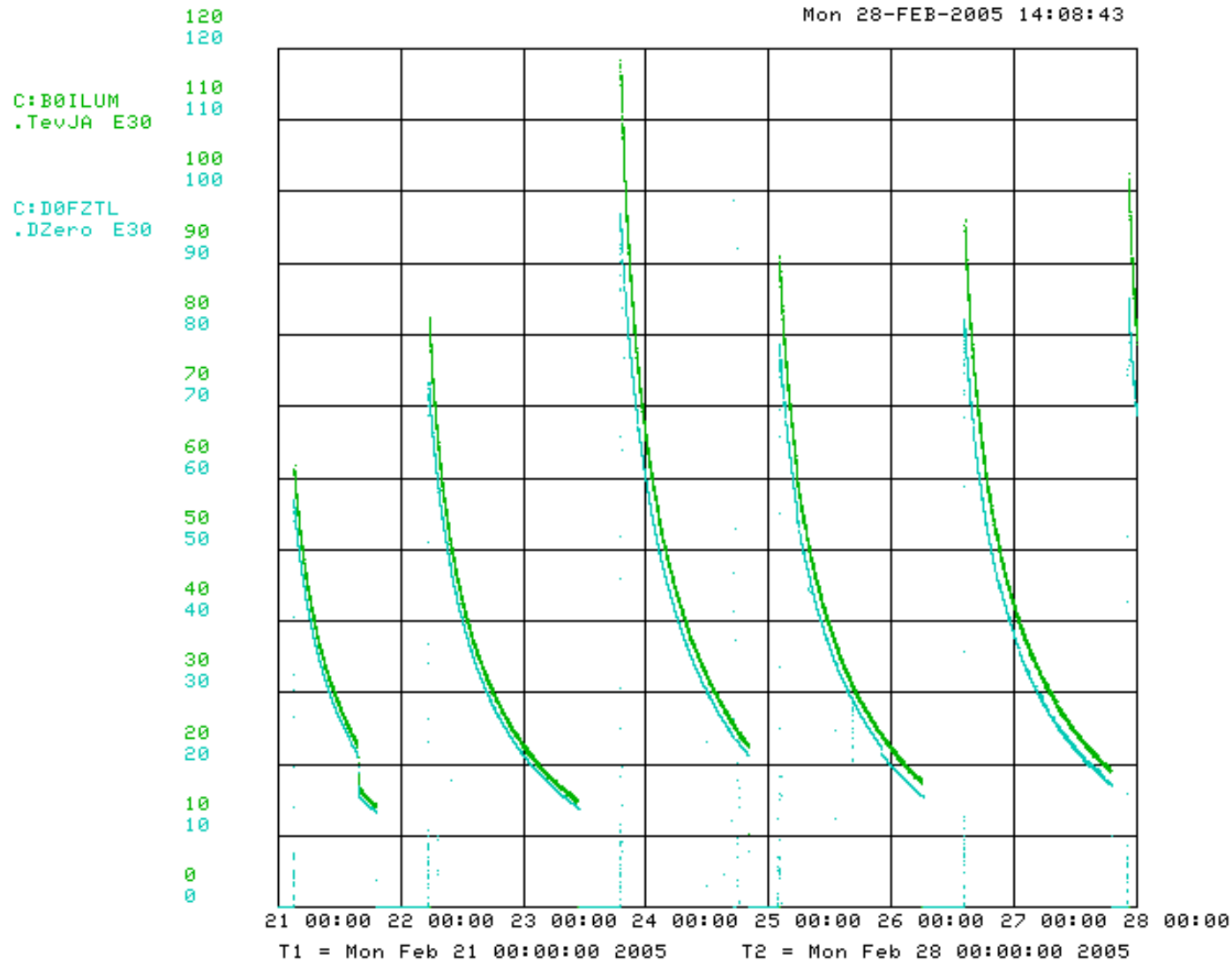
February 28, 2005

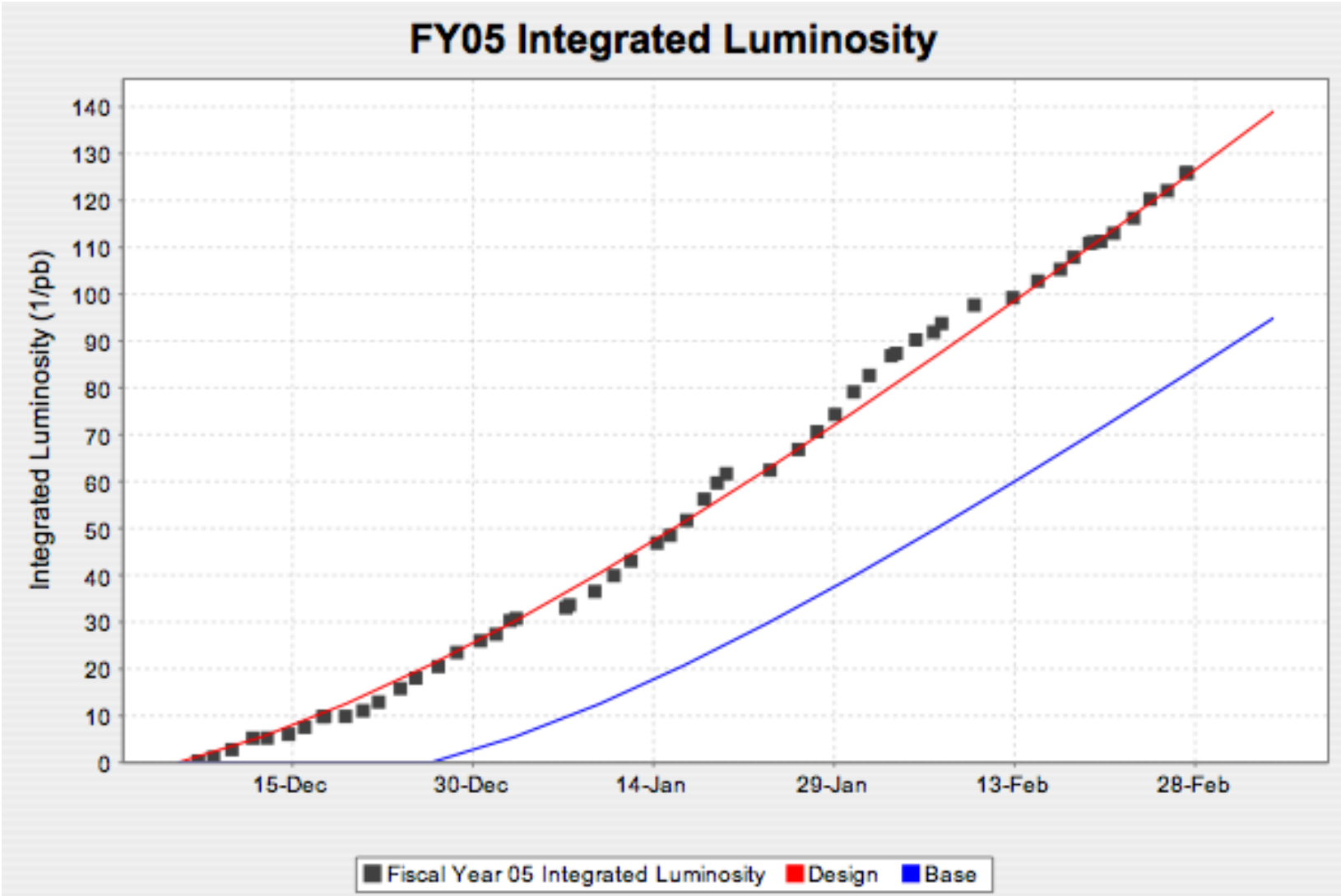
Store Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb^{-1})	Termination	Time (hr)	Total Pbars (E10)	Comments (Stack/Stash)
3997	58.8	1,796	Planned	16.0	102.7	Store ended early when longitudinal damper blew up beam
4000	77.3	3,348	Planned	29.4	171.9	Combination shot (122.1/49.8E10), Recycler pbar emittances large
4002	107.4	4,248	Planned	24.9	278.8	Combination shot (186.9/91.9E10), Record initial luminosity
4004	83.6	3,700	Planned	28.3	243.2	Combination shot (170.9/72.3E10), Large pbar loss in MI on A1,A8
4006	88.5	4,025	Planned	28.6	272.9	Combination shot (201.8/71.1E10), Large pbar loss in MI on A6
4007	93.5	655	Loss of store	2.1	236.3	Combination shot (166.5/69.8E10), E1 quench, link repeater caused A1 correction elements to change

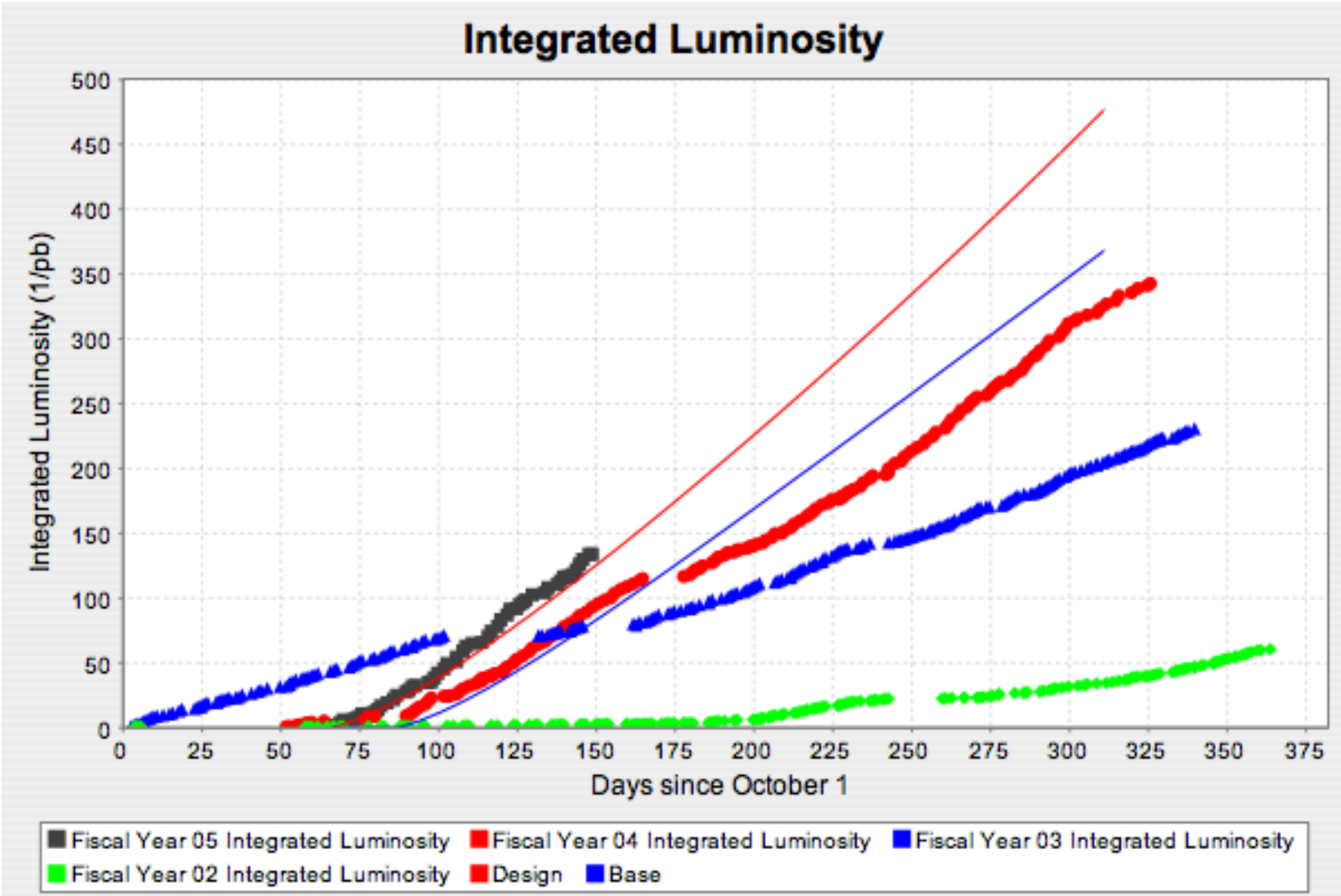
Store Summary



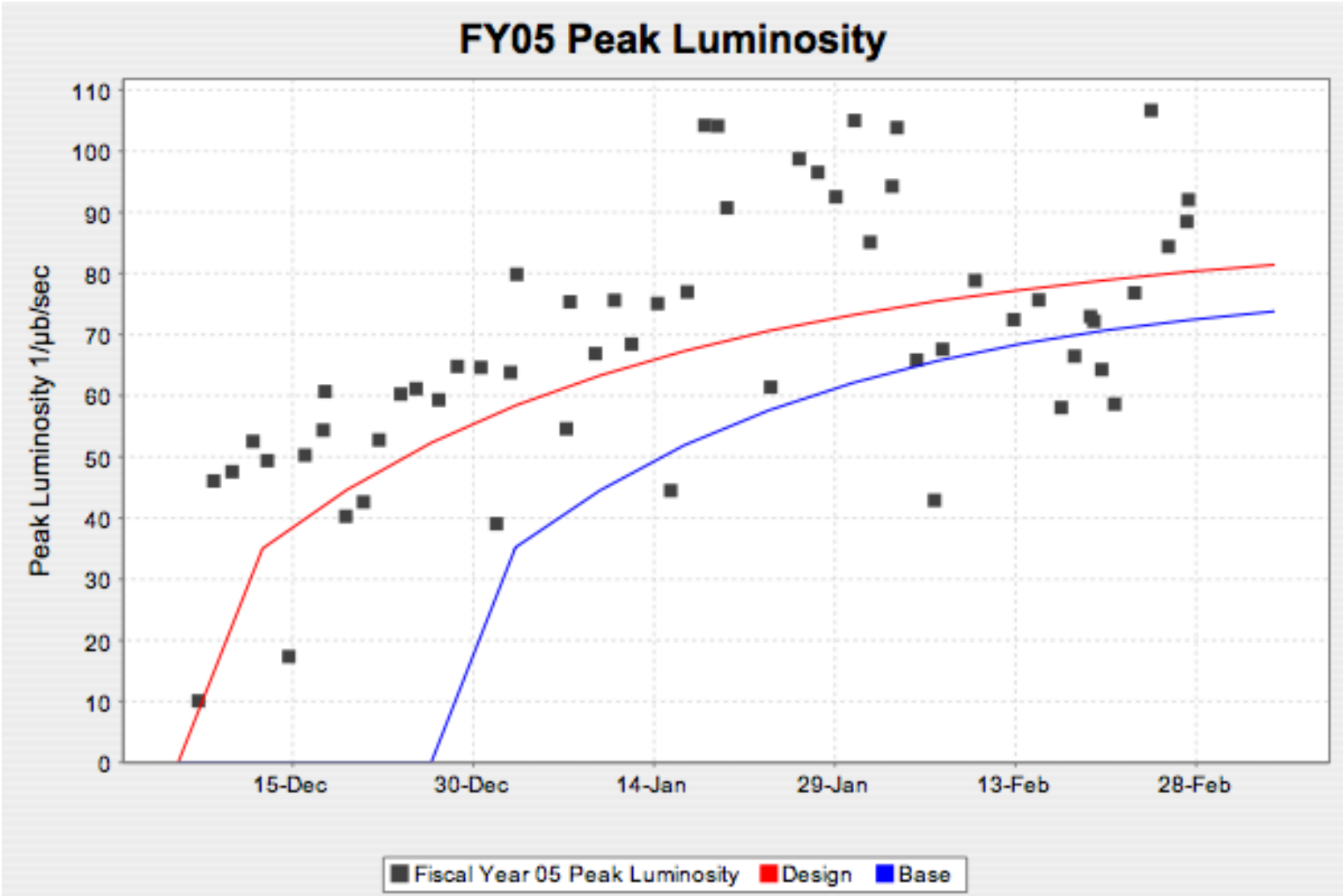
FY05 Integrated Luminosity



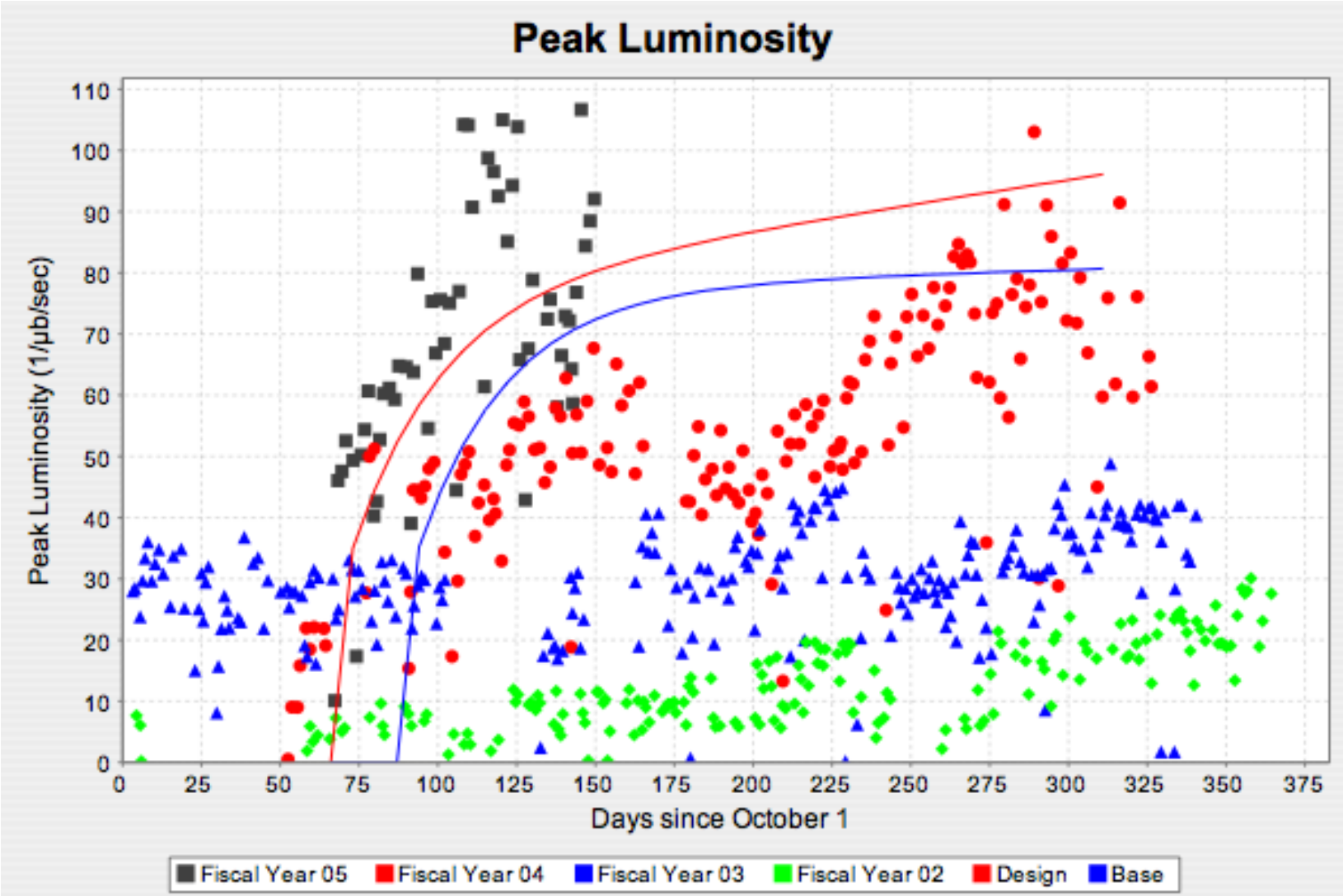
Integrated Luminosity



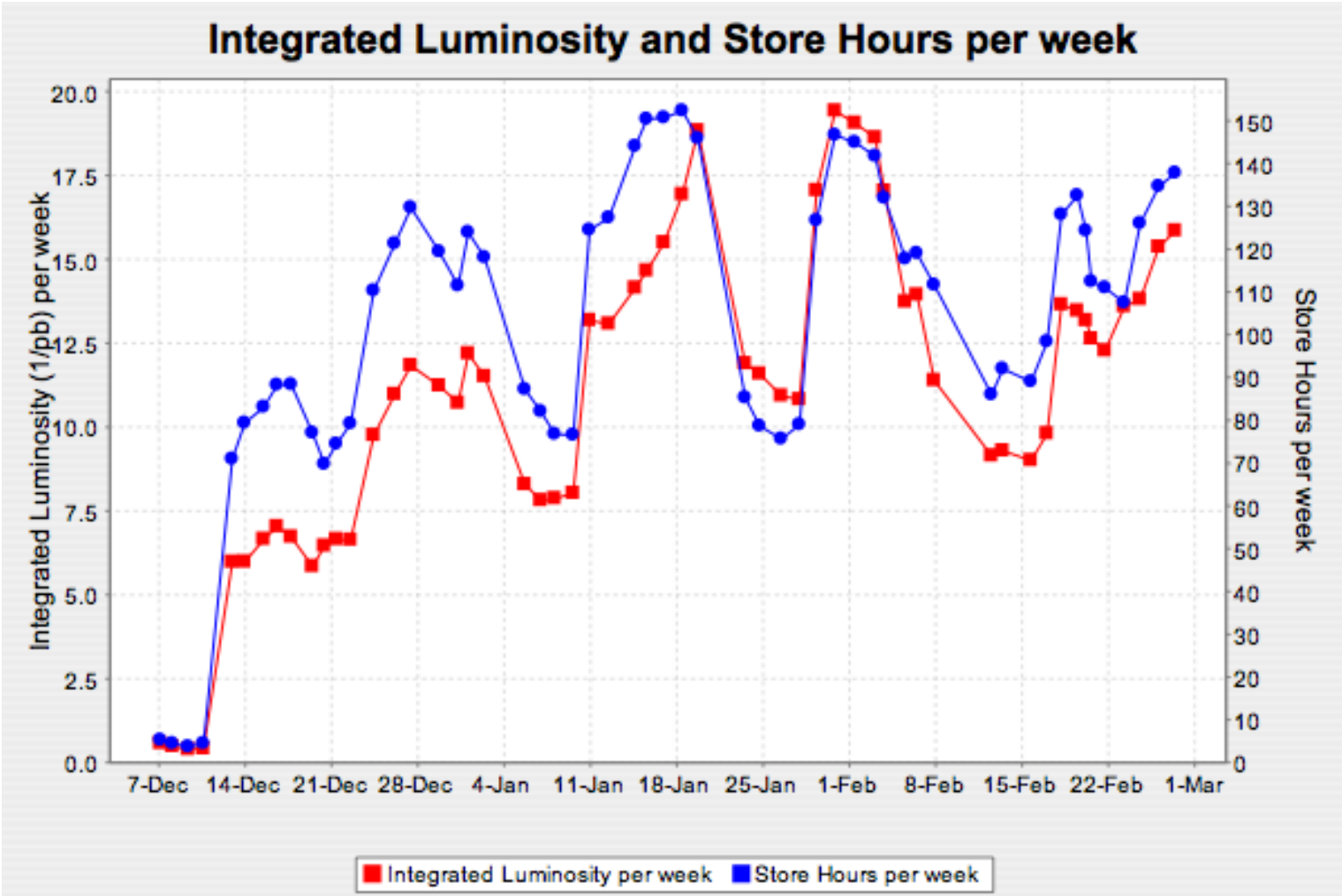
FY05 Peak Luminosity



FY05 Goals Peak Luminosity

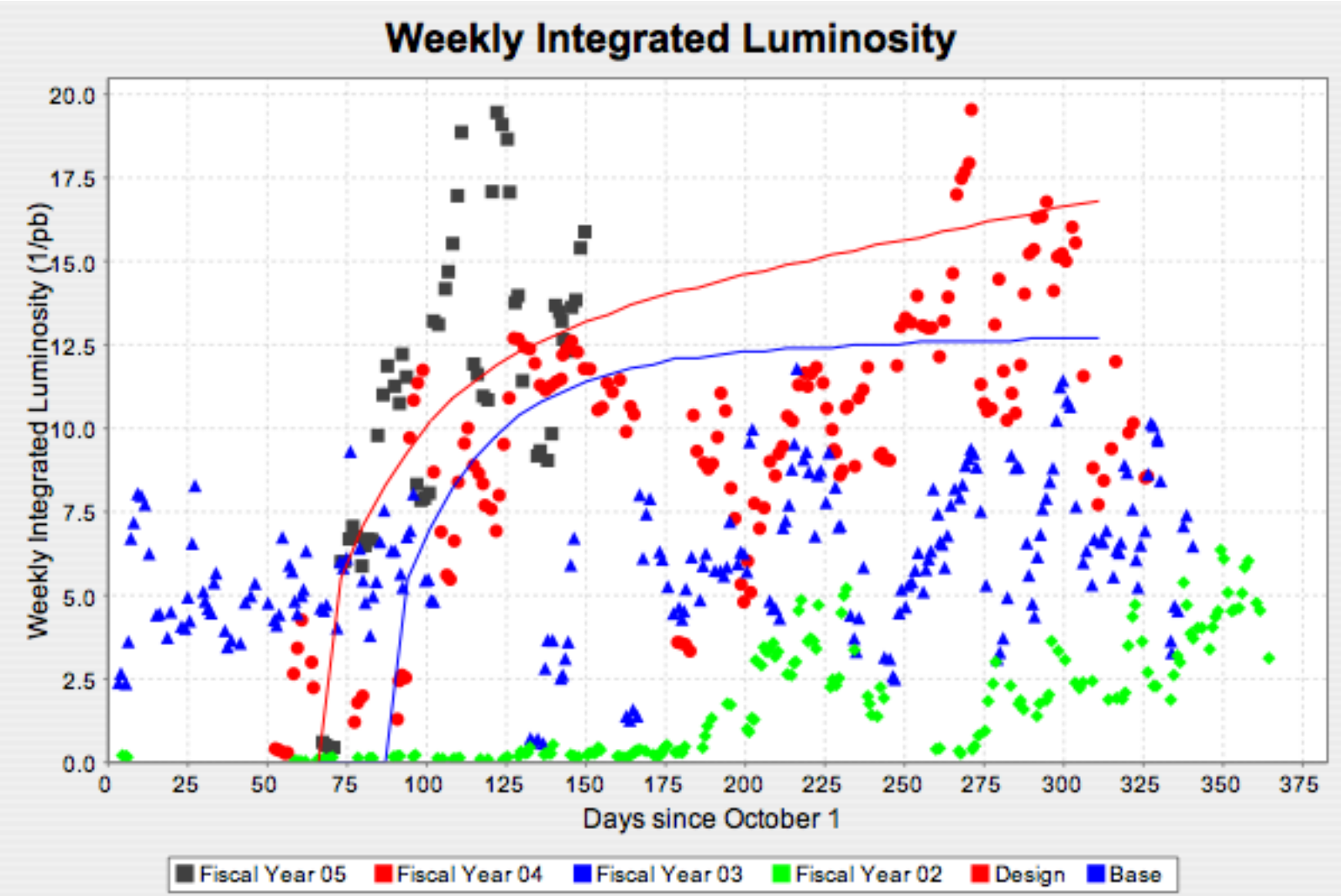


Integrated Luminosity and Store Hours per Week



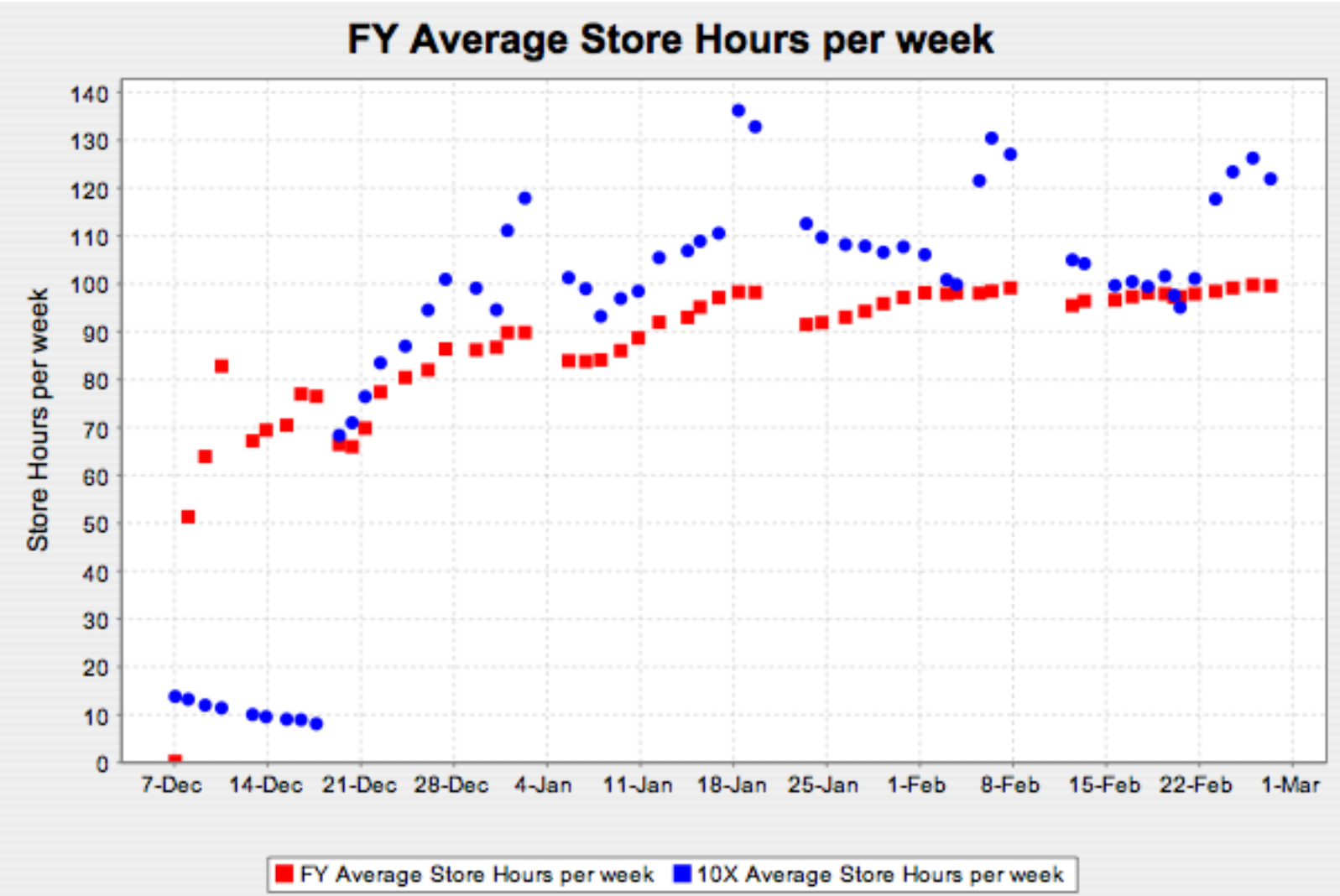
5 Store Running Average

FY05 Goals Weekly Integrated Luminosity

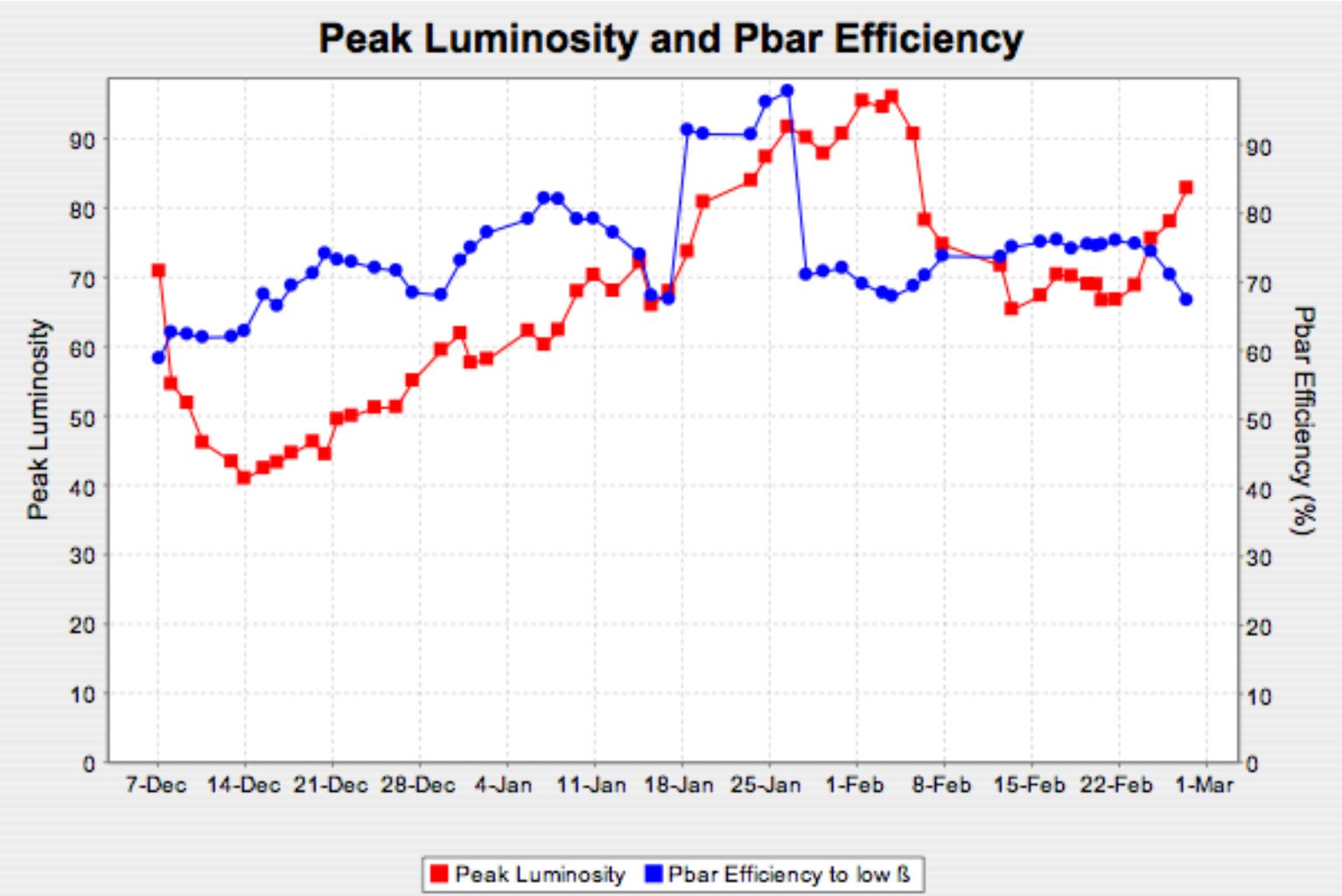


5 Store Running Average

FY05 Average Store Hours per Week



Peak Luminosity and Pbar Efficiency

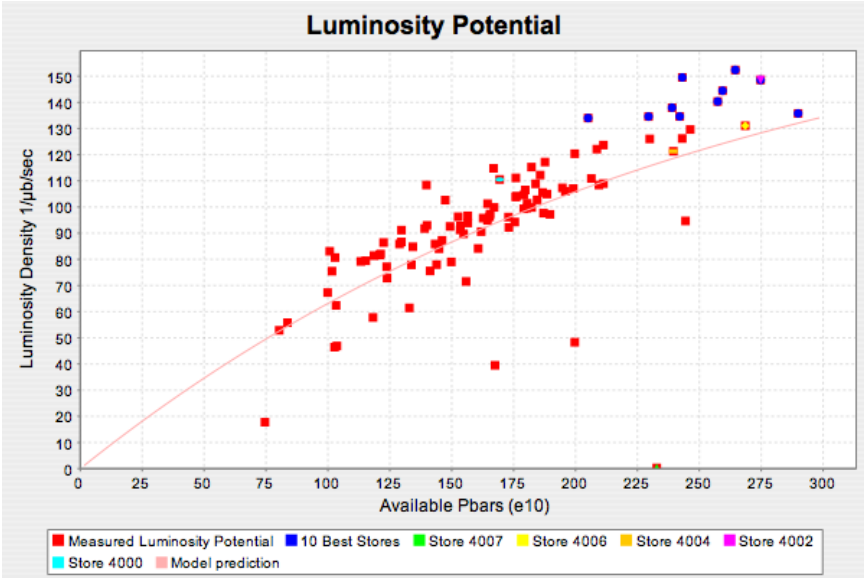


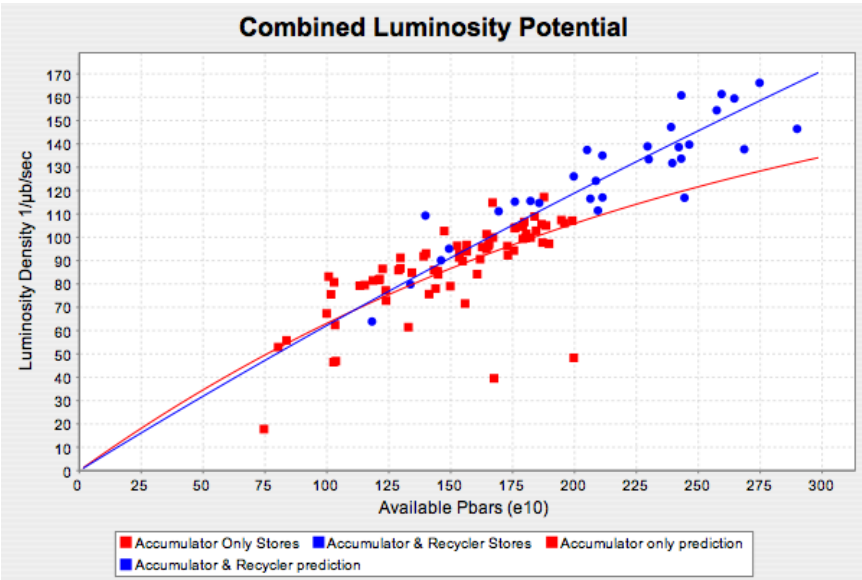
5 Store Running Average

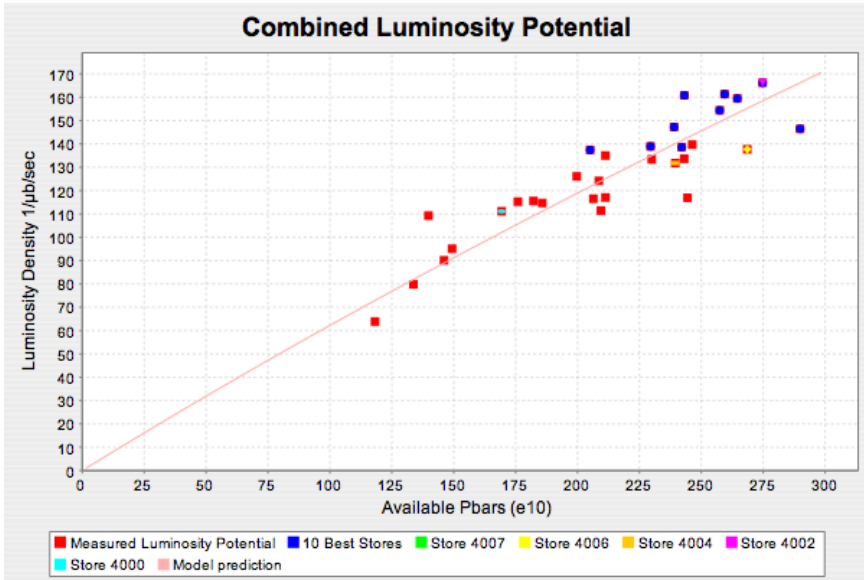
Data Summary Table

		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)	91.9	106.5	74.7	100.7	67.9	71.1	96.1	80.7	$x10^{30}cm^{-2}sec^{-1}$
Integrated Luminosity per Store (Avera	0	4008.9	2060.9	3766.9	2283.1	2660	3369	3190	nb^{-1}
Luminosity per week (Averaged)	-	-	13.9	-	10.8	11.8	16.8	12.7	pb^{-1}
Store Length	0	25.1	18.1	27.3	21.2	24.5	20	25	Hours
Store Hours per week	-	-	121.7	-	100.6	108.3	100	100	Hours
Shot Setup Time	3.1	2	2.7	2.7	3	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	224.1	234.2	226.4	232.9	218	247.3	260	260	$x10^{9}$
Antiprotons per bunch	36.3	41.8	31.1	40.9	29.4	30.1	42	34	$x10^{9}$
Proton Efficiency to Low Beta	61.2	61.9	62.7	66.3	62	72.7	-	-	%
Pbar Transfer efficiency to Low Beta	64.1	65.8	71.4	54.8	73.8	88.6	76	74	%
HourGlass Factor	0.68	0.64	0.67	0.66	0.67	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	14.8	14.5	15.6	15.5	15.9	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	15.1	14.4	13.3	13.5	12.1	25.5	24.5	14	$x10^{10}$/hour
Normalized Zero Stack Stack Rate	2.4	2.4	2.3	2.4	2.2	2.3	3.1	2.3	$x10^{-2}$/hour
Average Stacking Rate	8.7	6.4	8.8	6.7	7	6.2	10.1	6.6	$x10^{10}$/hour
Stacking Time Line Factor	92.3	65.7	87.3	73.7	77.4	76.6	75	75	%
Stack Size at Zero Stack Rate	279.2	339.7	443.1	336.8	389.4	332.6	300	300	$x10^{10}$
Protons on Target	6	6.1	5.8	5.6	5.5	5.2	8	6.2	$x10^{12}$
Start Stack	233.1	275	191.9	250.8	170.8	170.7	216	181	$x10^{10}$
End Stack	34.4	46.7	21.9	32	16.5	15.8	15	15	$x10^{10}$
Unstacked Pbars	198.7	228.3	170	218.8	154.3	154.9	201	166	$x10^{10}$

Stack Size Potential







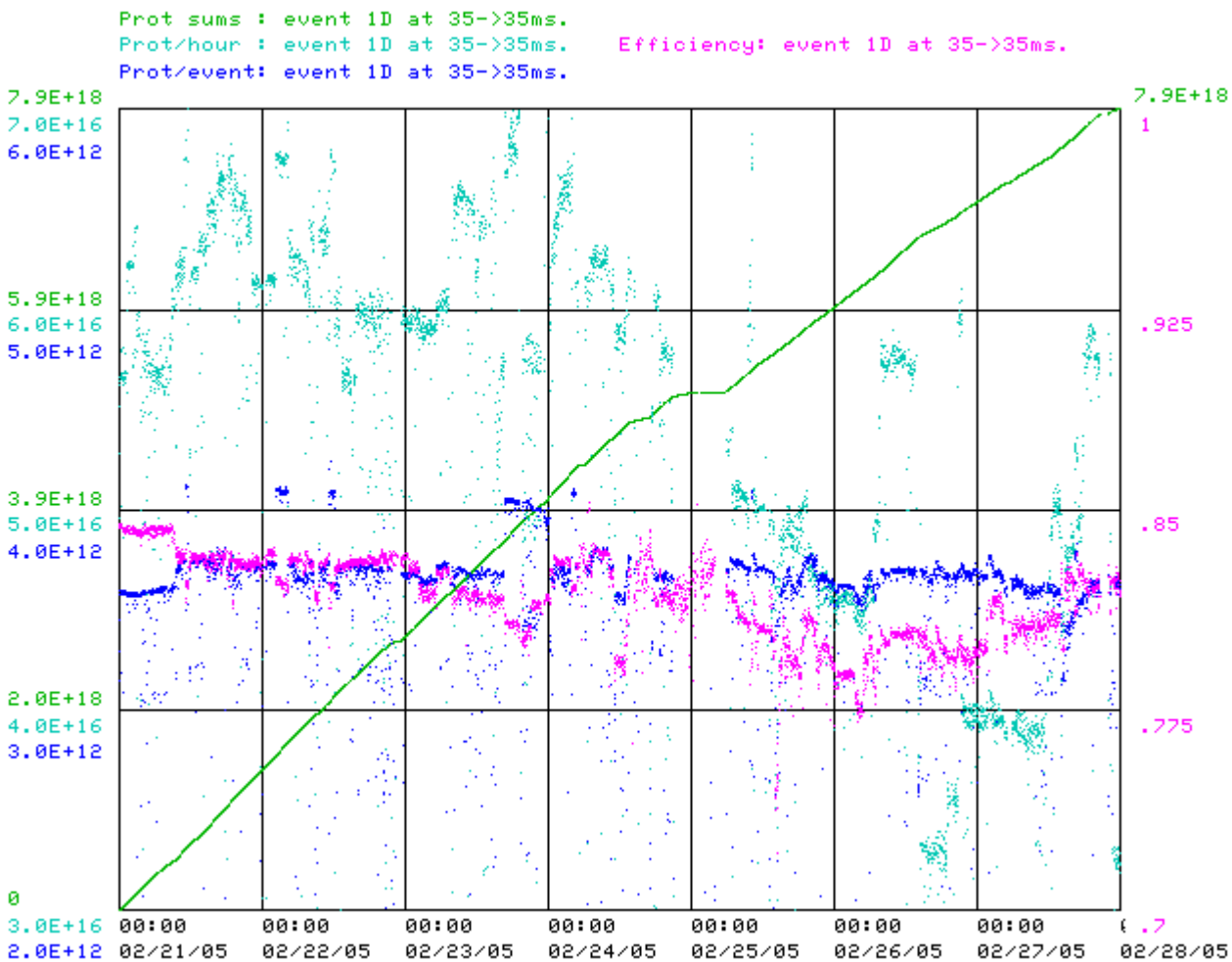
TEV Studies

Date	Duration (Hr)	Description
2/19/2005	2.5	Longitudinal damper check-out
2/20/2005	6.0	Longitudinal damper check-out
2/21/2005	3.0	Longitudinal damper check-out
2/23/2005	0.5	End of store, pbar synch light mirror
2/23/2005	0.6	Longitudinal damper beam transfer function measurement
	4.1	Sum for Week
	154.9	Sum for Year
	13.4	Average per week

Pbar Studies

Date	Duration (Hr)	Description
2/21/2005	0.4	Reverse protons during shot setup to measure Debuncher orbits
2/22/2005	1.0	D/A steering
2/23/2005	0.2	D/A measurements
	1.6	Sum for week
	32.4	Sum for year
	2.8	Average per week

MiniBoone



Down 6% from last week

Plan for the Week

- Proton Source
  - Work on slip-stacking beam loss
    - Cogging
    - Bunch rotation at extraction
  - Be reading for NUMI operations by March 7, 2005
    - Cogging
- Main Injector
  - Be reading for NUMI operations by March 7, 2005
    - Slip Stacking and NUMI on the same cycle
      - High intensity slip stacking
      - Low intensity NUMI
    - Follow the natural cycle time of stacking
  - Work on slip-stacking beam loss
- 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
  - Understand Longitudinal Mode 0 blowups
  - 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