
Run II PMG
Operations Report
& Technical Progress

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Startup Period May-July 2006

- Nice Summary of shutdown work
 - www-bd.fnal.gov/cgi-mach/machlog.pl?nb=runco&action=view&page=621&load=
- Week of May 22
 - Main Injector Startup Began
 - Tevatron Cold
 - **B11 Separator vacuum leak at feed through**
 - Linux migration of some major programs
- Week of May 29
 - Tevatron circulates beam (in 2 shifts)
 - New BPMs at MI40
 - 120 Gev beam to pbar target
- Week of June 6
 - Commissioned new 150 Gev helix
 - 12x12 store
 - First store
 - Store 4759 First 36x36 store
 - **Debuncher cooling tank developed vacuum leak**
- Week of June 13
 - MI30 BPMs installed
 - Best stacking 13 mA/hr
- Week of June 20
 - BLMs installed in MI
 - See pbar orbits in MI from new BPMs
 - **Transverse emittance growth in Recycler during mining.**

Repaired

June 1st – first Tev beam
June 12th – first store

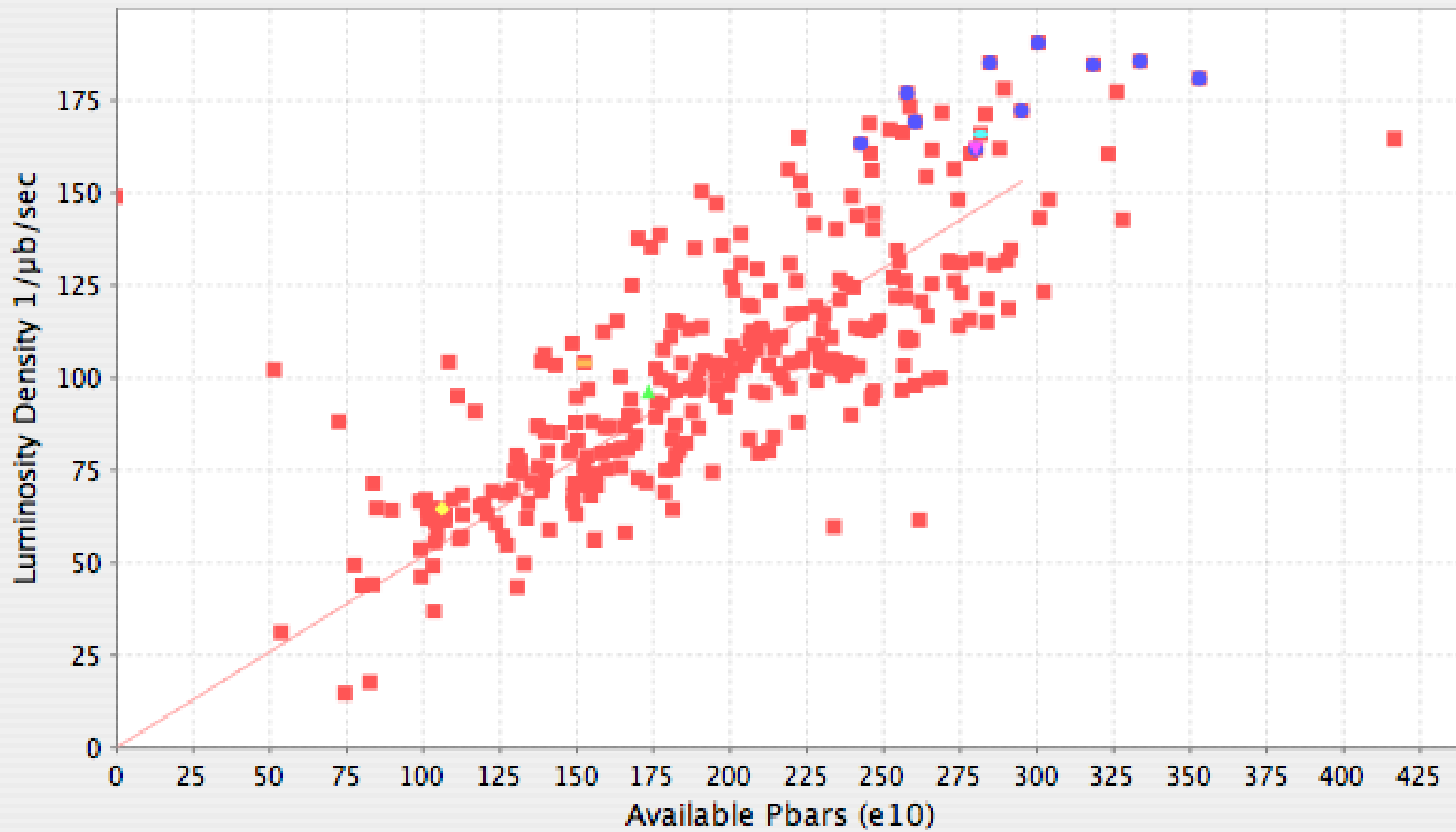
Need ~2 shift for repair

Broad band damper
commissioned

Operational Summary

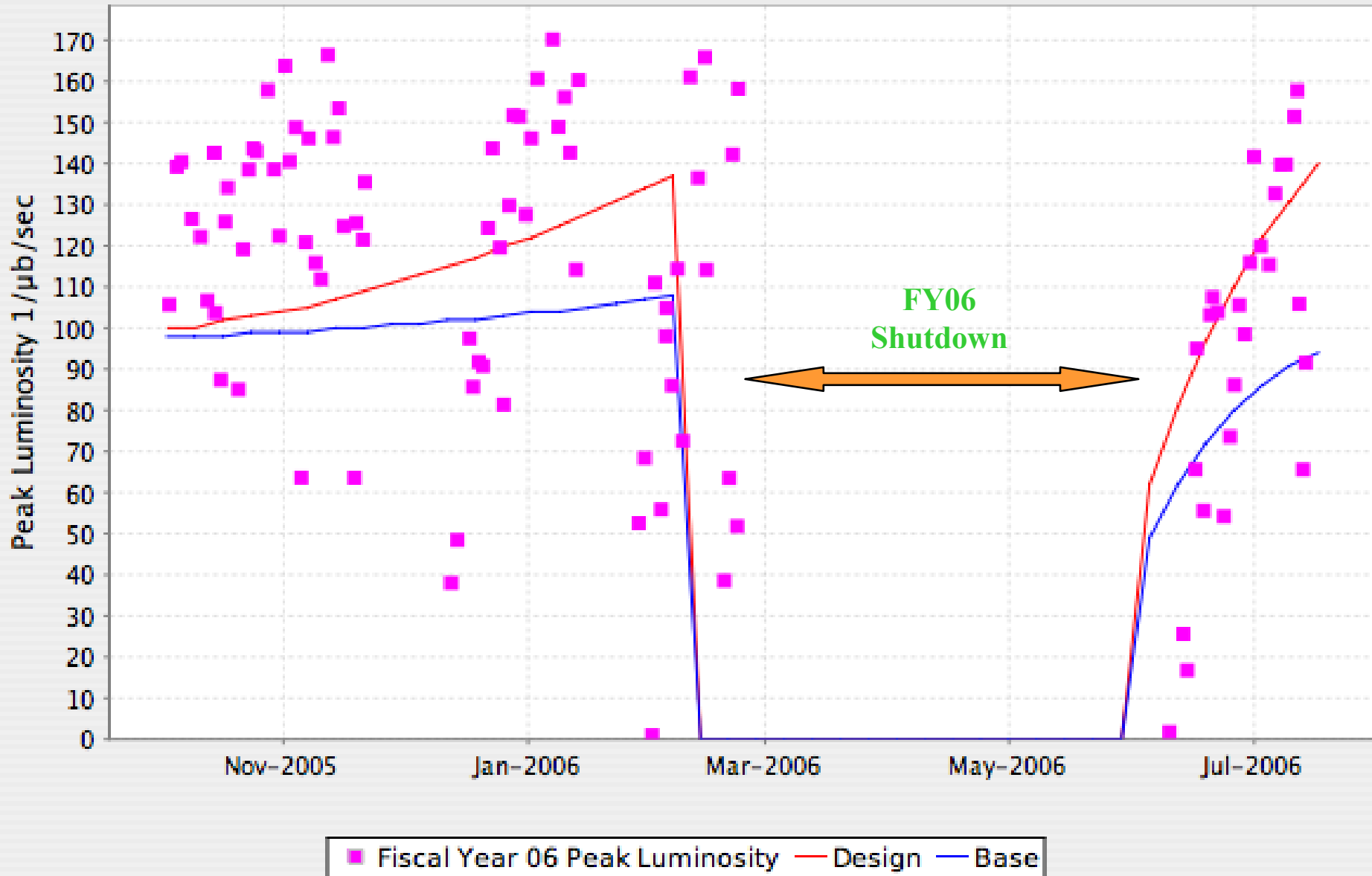
- 1st order of business - get back to pre-shutdown levels
- Booster
 - Progress has been steady
 - Getting $7E12$ /ppp on target (was $8E12$ before shutdown)
- Main Injector
 - Doing Well
- Pbar Source
 - Averaging 14 mA/hr (was 18 mA/hr before shutdown)
 - Vacuum Leak in cooling tank (-10% effect)
 - Protons on target (-12% effect)
 - Auto beamline orbit correction is off (due to flaky BPMs)
 - Running 2.4 s rep-rate (was 2.2 s pre-shutdown) (-10% effect)
- Tevatron
 - Running well
- Recycler
 - AA to RR transfer efficiency is $\sim 85\%$ ($\sim 90\%$ pre-shutdown)
 - Transfer time reduced from 45 minutes to 25 minutes
- Luminosity
 - Accumulating at expected rate for "base" scenario

Luminosity Density

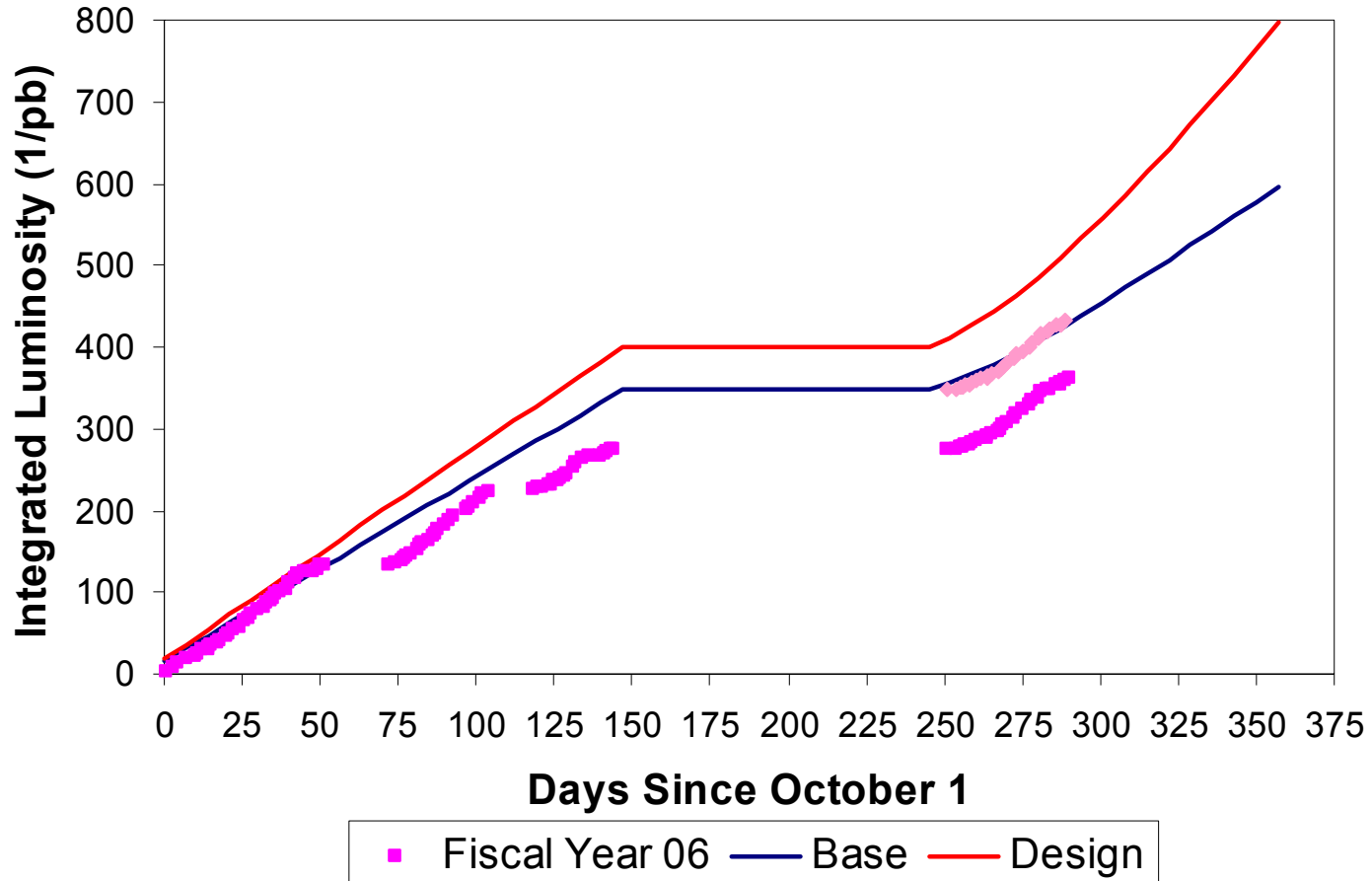


■ Measured Luminosity Density ● 10 Best Stores ▲ Store 4828 ◆ Store 4825 ■ Store 4822
▼ Store 4821 ● Store 4818 — Model prediction

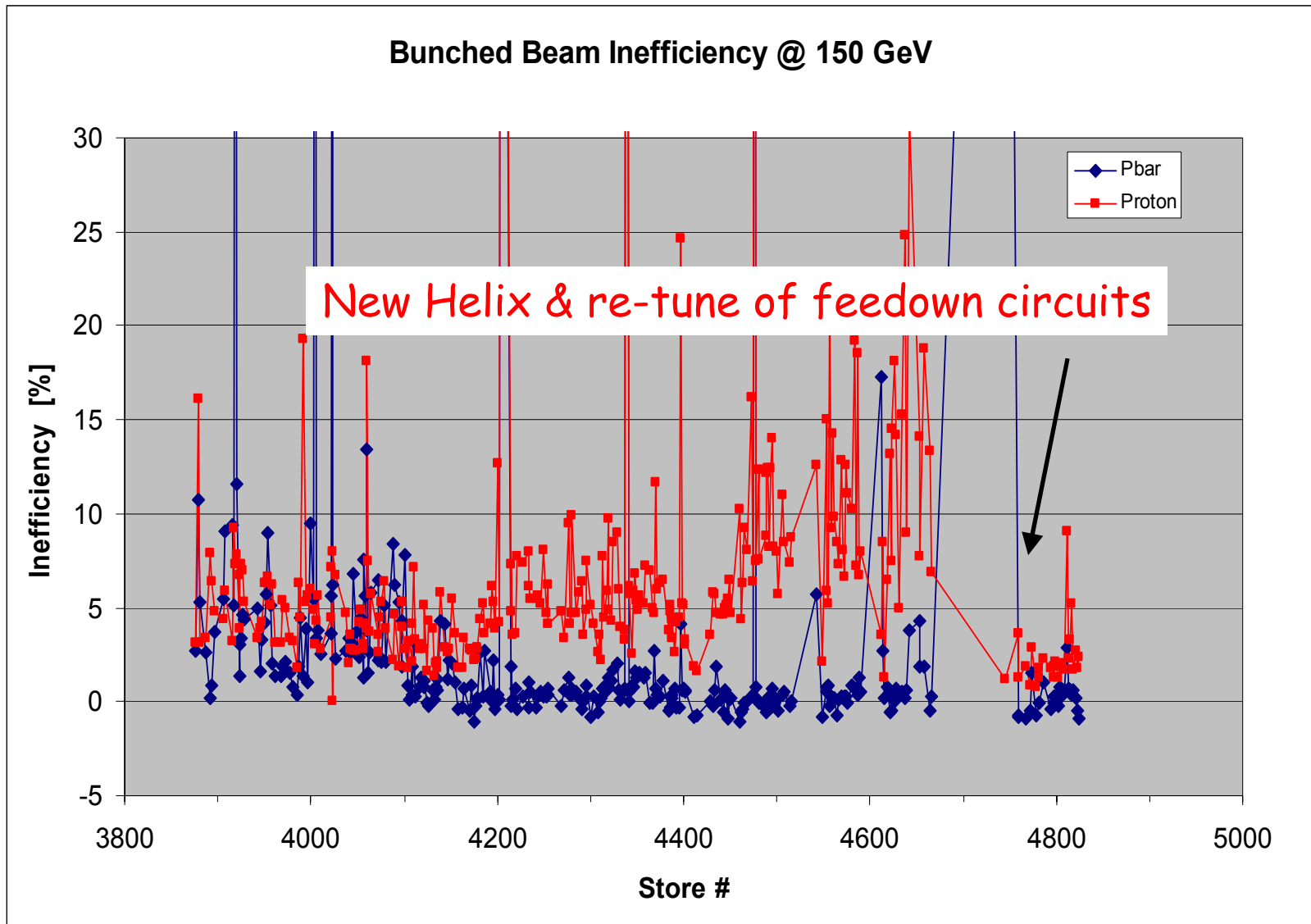
FY06 Peak Luminosity



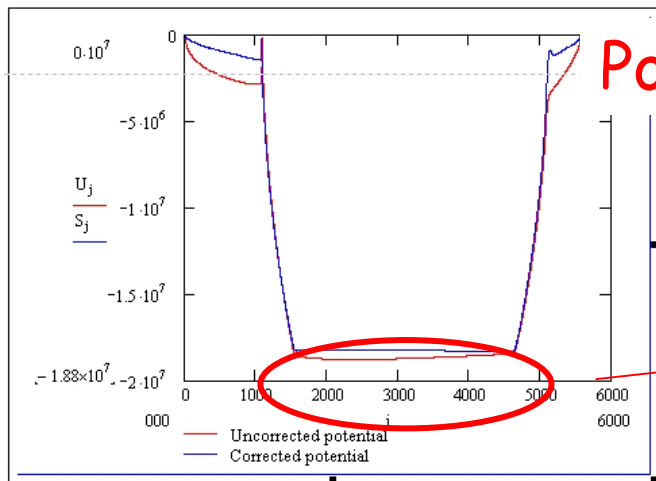
Integrated Luminosity



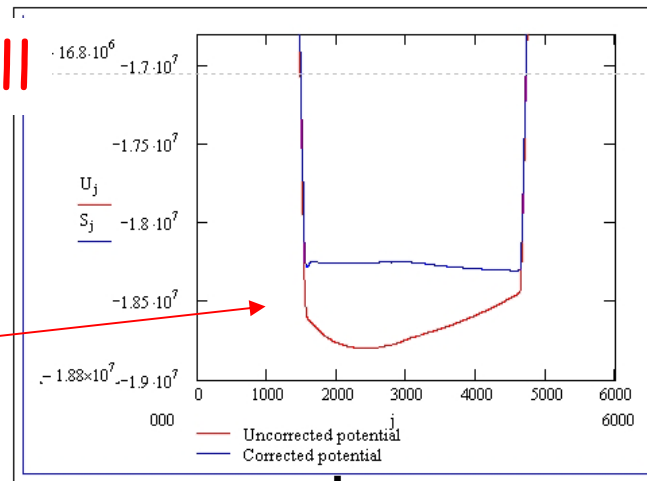
Beam Loss @ 150GeV



Recycler Barrier Bucket Potential Wells

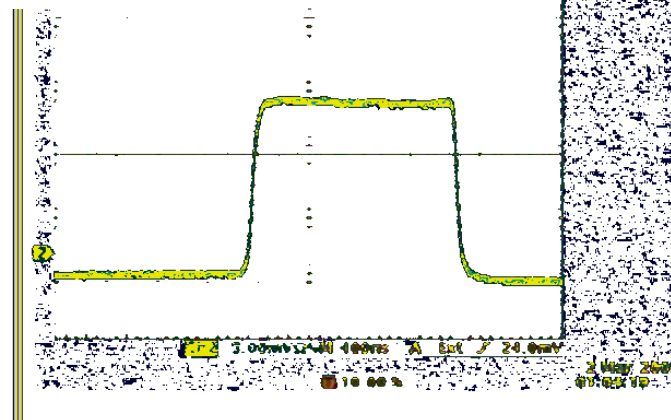
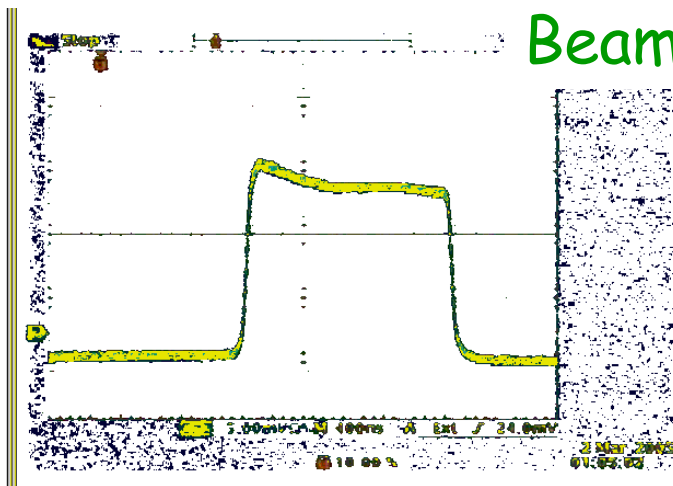


Potential Well



Zoom

Beam Distribution



Technical Progress

- MI BPMs
 - New system installed in 5/7 of ring.
 - See pbar orbits for first time.
- BLMs
 - Installed the first BLM crate in MI with hardware, firmware, and software.
 - All (or nearly so) of the production modules have been tested and are ready for action.
 - The signals are "noisy" - not yet understood.
 - Will have review of readiness before installing BLMs in the Tevatron
- Stacktail Cooling Upgrade
 - Prototype tank installed in debuncher for characterization
 - Tests were completed and results are being analyzed.
- Li Lens Upgrade
 - Two Prototype 1 lenses completed
 - One Prototype 2 lens completed and beginning bench testing
 - One Prototype 2 lens nearing completion

Summary

- Back to Normal Operations
- Need work to get Booster Intensity from $7E12$ back to $8E12$
- Main Injector is doing well
- Need work to get stacking rate back to pre-shutdown
 - Protons on target
 - Fix stochastic cooling tank
- Tevatron is running well
- Recycler OK