

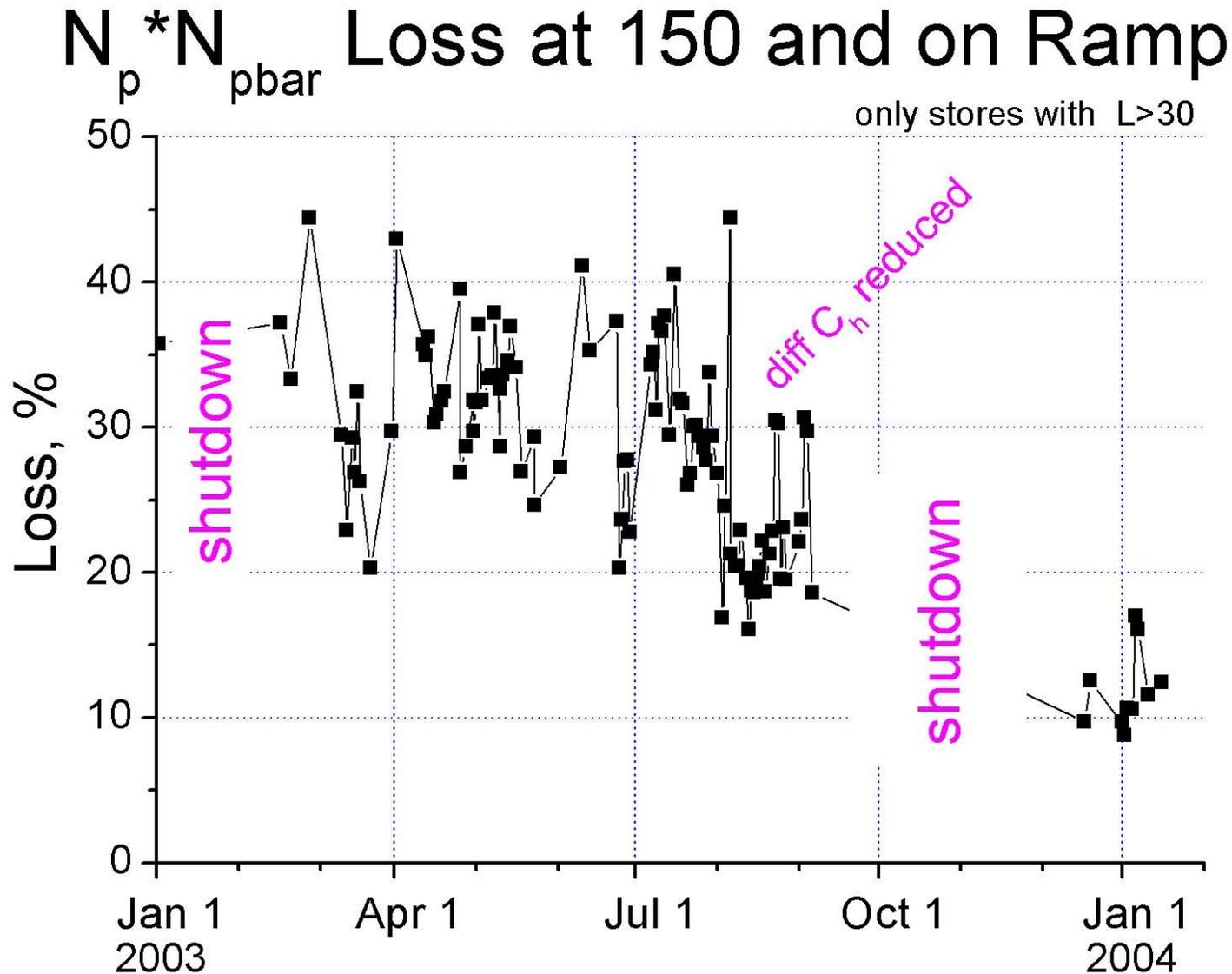
Tevatron progress: November'03 To January'04

- Luminosity: (average initial peak L)
 - End of Aug (7 stores #2934-2956) $L=39.9$
 - Mid-January (7 stores #3175-3185) $L=44.3$
 - -15% N_p , +15% N_{pbar} , eff emm -13%
 - record L as of Nov.8 $48.9e30$ store #2887
record L as of Jan.23 $51.8e30$ store #3108
 - lifetimes of N_p up from 32 to 100 hrs , eff emittance down 22 \rightarrow 16 hrs; L & N_{pbar} \sim same (\sim 9hrs, \sim 30hrs)
- FY'04 goal integral 300 pb-1 (now 35 pb-1)

Major Fall'03 Shutdown Projects

- F0 Lambertson liner P.Ivanov, A.Chen
- Reshim 106 dipoles D.Harding, M.Syphers
- A48 Collimator R.Moore
- New octupole circuits P.Ivanov, J.Annala
- A0 sextupole D.Still, Y. Alexahin
- Fix cold leaks A4,E2, F1 D.Augustine
- Fix aperture restrictions (A0, D0..) C.Moore, B.Hanna
- Vacuum improvements (A1/P1,F0) B.Hanna
- Replace rusty stands (~ 60 dipoles) M.McGee, J.Volk
- Survey and alignment (unrolls, ...) R.Stefanski, C.Moore
- BPM wiring F.DeJongh
- TevNet (survey network) AMG
- B-sector HLS system A.Chupira, J.Volk
- CDF IP move M.Syphers, V.Lebedev

Improved Tevatron Efficiency



Highlights on Operations/Reliability:

- 3 fast startups after shutdowns (Jerry+Coord's)
- Superb week in Jan'04 (11.4 pb-1, stores >1day)
- 16 house- and 6 house quenches (Roman pots+kicker room AC → 8+9 days)
- Stores lost due to : instability at 152GeV (2 + few days of investigations), loss at 960GeV, big collimator move
- Separator spark on ramp, sigma_s blowup - fixed
- High abort gap losses early in stores

Tevatron Beam Physics Progress:

- CDF IP move (M.Syphers, Norm, Valery, Jim Volk)
- Coupling at IP (Vaia, Valery)
- Support alignment, operations(BPM) (Norm, MikeM)
- b2 snapback recommendations (Pierre Bauer & Co)
- Roman pots quench investigation (Dean, Nikolai, Sasha)
- Parallel beam-beam code (Shatilov, Valery)
- Stability limits with liner (Peter)
- Attempt to corrected lattice at injection (Valery)
- Results on lattice on helix (Vladimir, Phil Yoon)

Tevatron Diagnostics:

- 1.7GHz Schottky fitter progress (Paul Lebrun)
- BPM prototype progress, tests (JS, BW, SW, et al)
- $C_{v,h}$ from head-tail steady progress (Vahid)
- QXR remeasured (Andreas, Jim Volk)
- Horiz BLT fixed (Vic Scarpine)
- RF Phase noise detector T:PGPN (John Reid)
- Lost E11H FW (S.Pordes)
- SBD kurtosis not helpful (Vladimir, Bob Flora)
- SL questions unanswered (Harry+SP)
- Abort gap monitor improved, new study results (H.Cheung, S.P)

Misc.:

- Reorganization in BD, BD→AD, 6 people joined Tev Department :T.Sen, N.Gelfand, Yu.Alexahin, B.Erdelyi, V.Boocha(GS) and A.Valishev (GS)
- BPM review, B-field review, Temple review
- Letters of Recognition from AD Head to Jim Volk, Mike Syphers, Valery Lebedev, Norm Gelfand, VS
- Task force on new abort policy/new system (Czarapata, Pordes, Tev people)
- Critical situation with beam studies

Next Two Months – Beam Physics/Studies

- use octupoles, $C_{vh}=0$ with large N_p (Petr, Jerry)
- lattice msmnts+correction (Valery, Mike S, Phil)
- commission inj-dampers (JimS, Tan)
- P1/A1 rolls to match Tev (access – Dave J, Valery)
- 300W kicker to clean DC beam (CYTan, J.S.)
- Implement fixed backporch time (Mike M, et al)
- Losses vs helix (T.Sen, XLZhang, VS)
- Shave protons in MI, loss at HEP (C.Bhat, TeV)
- Consider passive shielding A0, F17 (Dean, Nikolai, et.al)
- Task force on lower β^* (Mike M, Val, et al)
- Beam-beam phenomenology (Sasha Valishev)
- Understand orbit drifts (Norm, Todd, VS)
- Understand nonlinearities (Yuri, Norm, at al)
- Wire BBC analysis (T.Sen, Bela, F.Zimmermann)

Next Two Months – Diagnostics

- Commission SL abort gap monitor (Harry, Stephen, Eugene Lorman)
- Commission tunetracker (CYTan)
- Commission head-tail monitor (Vahid Ranjbar)
- Deliver dEmittance application (Aimin Xiao)
- Develop Beam Motion @ Abort system (Vic+)
- CDF beta^{*} analysis on-line (N.Lockyer, Vaia)
- Complete prototype BPM tests, proceed with Ekotech cards purchase and the system development (J.Steimel, B.Webber, S.Wolbers)
- DCCT upgrade (T.Meyer, S.Pordes)

Next Two Months: Expectations

- Last time it was “... *we are around 45-55 by Jan 8*”
- we are at $51.5e30$
- Over the next 2 months, I expect:
 - stable operation at high 40's low 50's ($e30$)
 - possible improvements
 - 10-20% more p due to better understanding of instability, use of octupoles
 - 10-20% more pbars due to longer stores → larger stacks (not every store)
- As the result, I expect peak luminosity be around $56-64e30$ by Mar.14, 2004