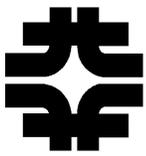


Week in Review: 07/28/03 –08/03/03

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## **Doug Moehs – FNAL**

- Stores and Operations Summary
- Standard Plots

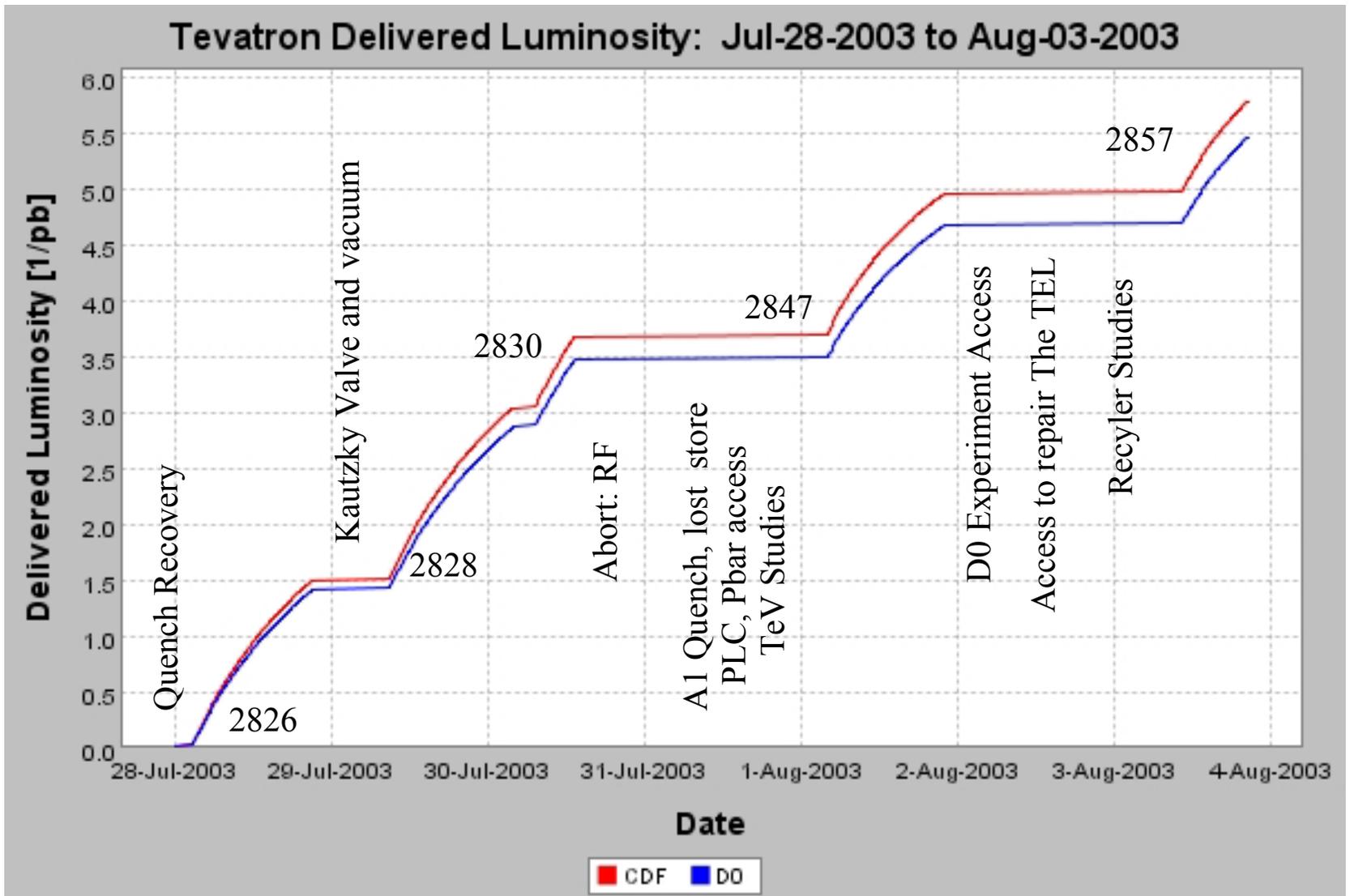


# Stores Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb <sup>-1</sup> )	Termination	Time (hr)	Stack Size (mA)	Comments
2826	37.20	1443	Intentional	21	164	Fewer protons out of source
2828	37.24	1514	Intentional	21.5	194	Some Pbars lost up the ramp emittances somewhat larger
2830	35.14	616	Abort	9.1	166	RF Abort
2839	-	-	Quench	-	144	Lost shot at the beginning of the ramp, 465 card replaced
2847	34.83	1277	Intentional	20.0	143	
2852	-	-	Quench	-	217/ 155	60 Hz ripple on TEV RF anode supply's 3 phase current monitor
2857	32.04	844	Intentional	18	119	High Proton Losses



# Integrated Luminosity for the Week





# Troubles

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- Access into the:
  - Tevetron
    - Kautzky valve replacement and vacuum work
    - Electron Lens tube replacement
  - Pbar
    - Lost Remnant stack, 20 mA, following shot to TeV.
    - Programmable Logic Controller repairs
- Heat load on E2 fridge
  - Leaky Kautsky valve
  - Bad cryo vacuum
- QB15 ramped improperly due to a bad 465 card
  - The card had to be replace twice
  - Caused quench at A1
- Flying wire intercepting beam in Linac 400 MeV line
  - Beam falling out of booster, causing MiniBooNE trips.



## TeV Studies and Changes

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- Continuation of orbit smoothing between stores.
- Orbit and Tune measurements up the ramp, uncoalesced beam on the central orbit
- Chromaticity and Tune measurements at 980 GeV, through the squeeze
- Preparation of a new helix using more separators up the ramp.
  - Increase lifetime, reduce beam-beam effects
  - The helix is ready for a 36x4 commissioning store
- Lattice measurements at 150 GeV (next study)

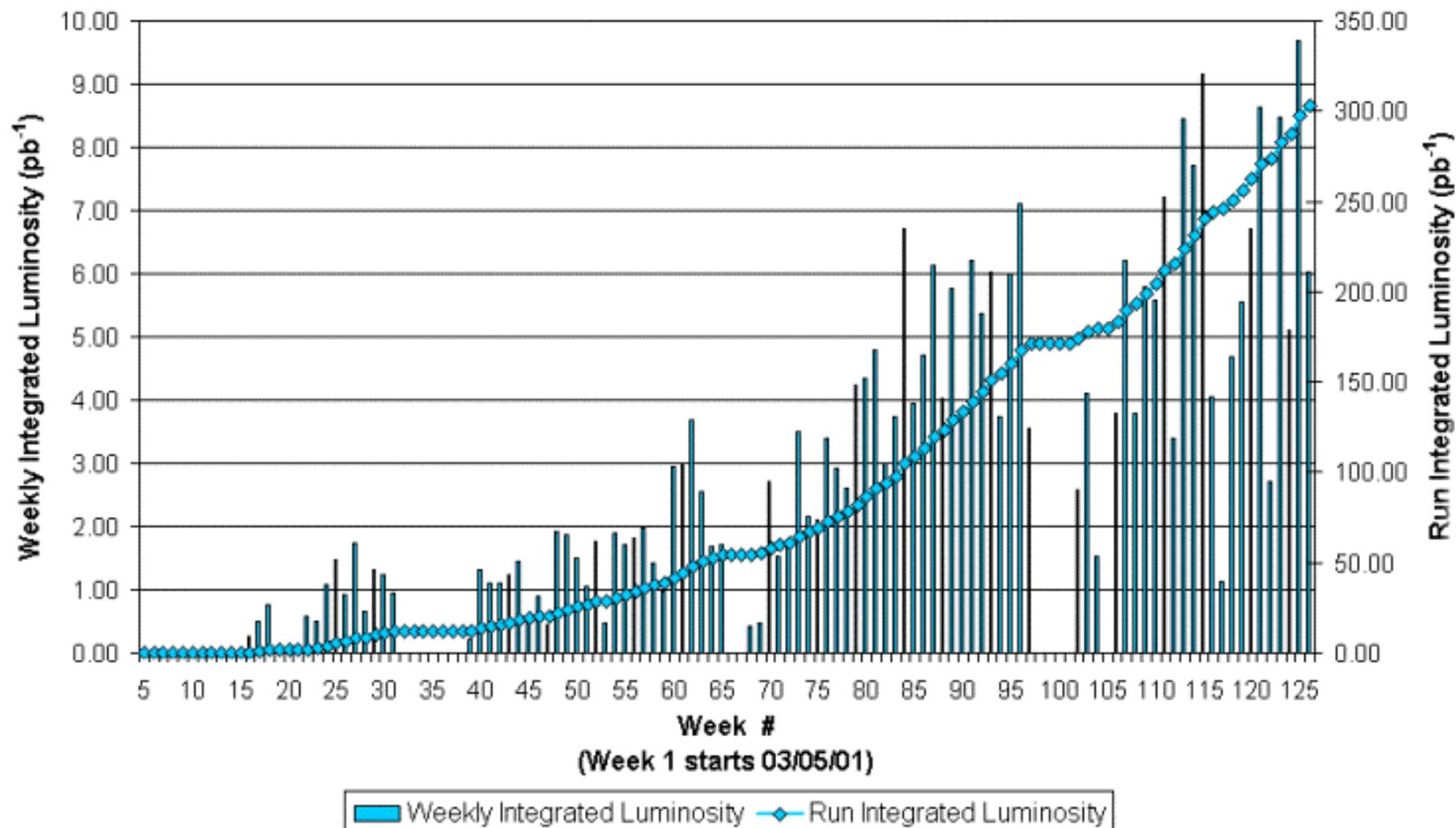


# Other Studies

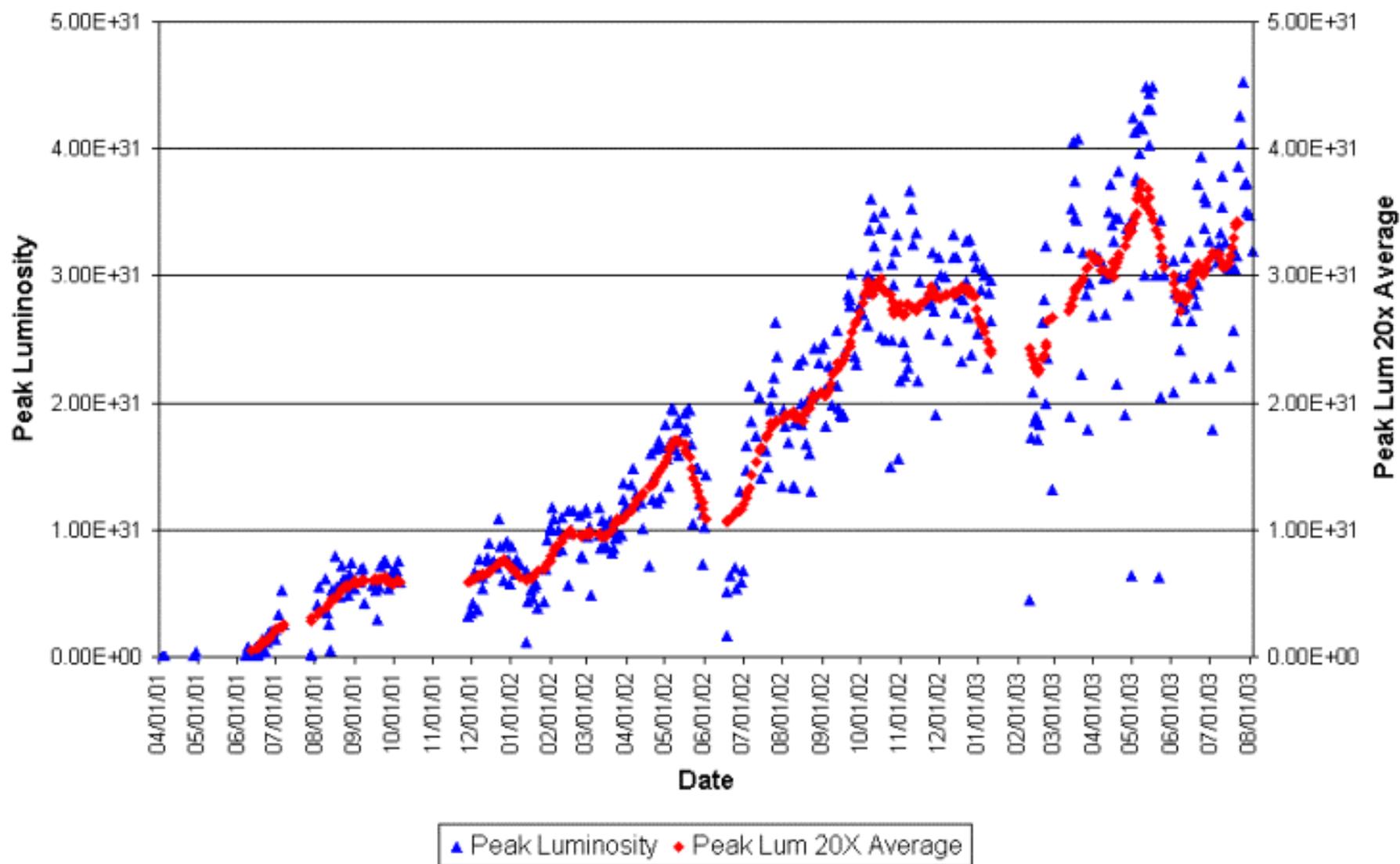
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- Recycler
  - longitudinal and transverse emittance studies
  - Average beam energy measurements.
  - Admittance measurements
    - These studies were made while there were no MI ramps
- Slip stacking
  - Capture efficiency
  - Accelerating beam
- NUMI multibatch
- 2.5MHz acceleration
- SY120 commissioning
  - Beam to MT6
    - 38 GeV pions and 120 GeV protons
- 8GeV reverse proton lattice measurements
  - Corrections implemented
- MI8 beam line lattice measurements

## Collider Run IIA Integrated Luminosity



# Collider Run IIA Peak Luminosity





# Luminosity Strategy

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- Keep the large number of particles to low beta
  - Most of the time proton source is running well including high coalescing efficiencies
    - Objective 240 protons per bunch to low beta
  - Larger stacks associated with longer stores
    - Objective shoot from 170 mA stacks

Now trying to decrease the effective emittance of the beam

- TeV injection matching (between store studies will be needed)
  - Refining Accumulator to MI pbar transfers
- 
- Goal is still  $225\text{pb}^{-1}$  ASAP
    - TeV study philosophy is to concentrate on a few studies in order to maximize the available study time
    - Once this goal is achieved will incorporate some dedicated beam studies, approximately



# Brief Summary

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- The week
  - All average initial luminosities  $> 32 \times 10^{30} \text{cm}^{-2} \text{s}^{-1}$
  - 76 store hours
- FY03 total is  $208.8 \text{ pb}^{-1}$ ; 3 weeks to Aug 25
  - Need  $5.4 \text{ pb}^{-1}/\text{week}$ , down from  $5.6 \text{ pb}^{-1}$  last week
- Goal for this week
  - Stack and Store
  - Commission new helix