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Week in Review: 07/21/03 –07/28/03

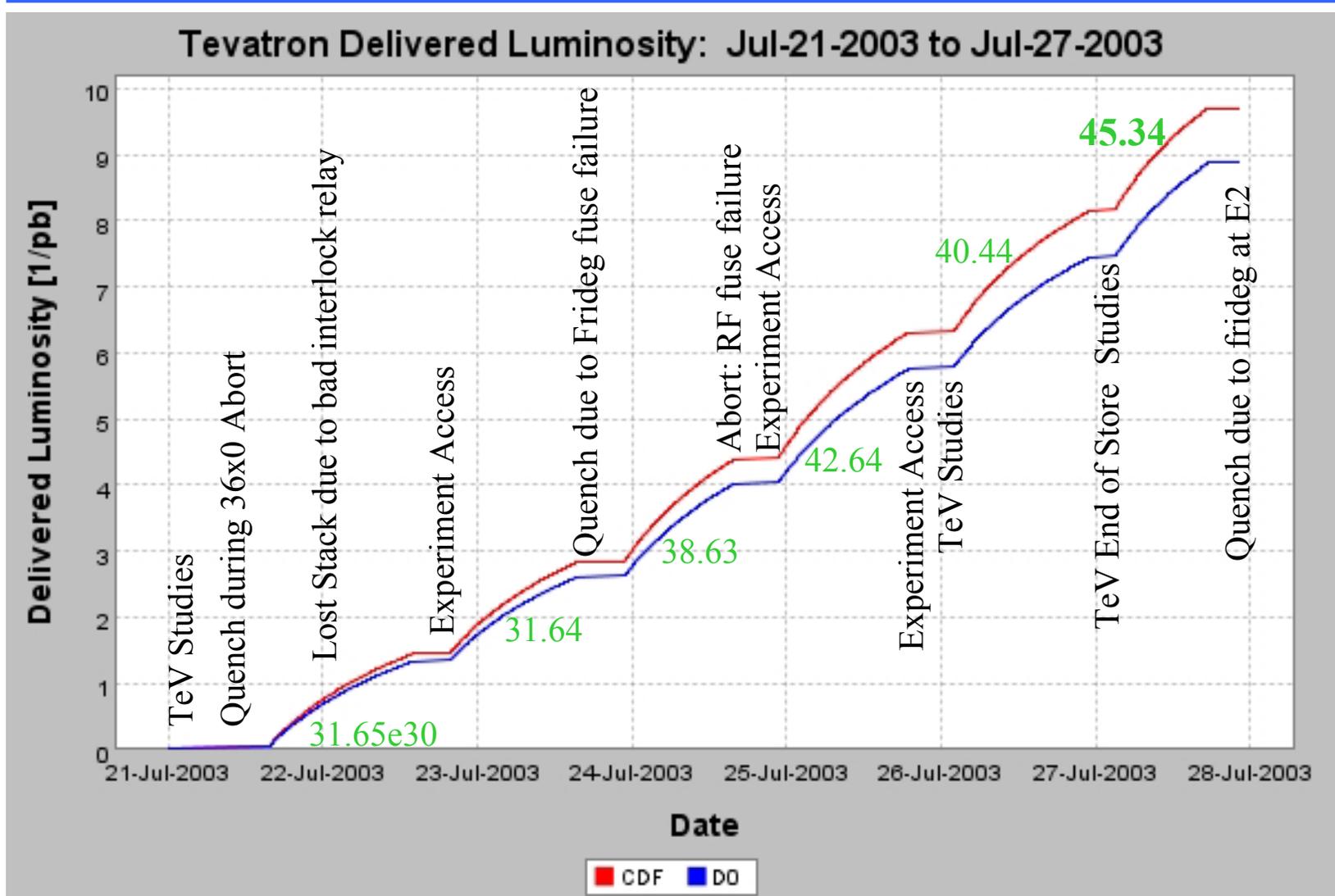
Keith Gollwitzer – FNAL

- Stores and Operations Summary
- Standard Plots

Stores Summary

Store	Initial Lum. (E30)	Deliv'd Lum. (nb ⁻¹)	Termination	Time (hr)	Stack Size (mA)	Comments
2810	31.65	1362	Intentional	22.7	129	Ran long due to lost stack
2813	31.64	1320	Abort	19.7	136	Fridge I/O power supply fuse failure led to quench
2815	38.63	1499	Abort	17.3	169	TRF8 water heater fuse failure led to vacuum problems- trip RF stations
2817	42.64	1824	Intentional	20.6	160	<i>Most integrated luminosity for a store</i>
2821	40.44	1702	Intentional	20.2	162	High losses at beginning of store TeV End of Store studies
2824	45.34	1465	Abort	14.5	172	<i>Highest TeV initial luminosity</i> E2 fridge problem led to quench
2826	37.11	-	On-Going	-	164	Fewer protons out of source Counts as next week

Integrated Luminosity for the BEST Week



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Troubles

- **Booster RF vacuum trips**
 - **Interlock relay failure in pbar system dropped stack**
 - pbar tunes after accessing need adjusting
 - **HT848 PS in 8GeV beam line**
 - Caused trips especially on MiniBooNE losses
 - **Booster VBC PS water hoses cleared**
 - Murky water caused over heating of PS
 - **Fuse failures**
 - Fridge I/O crate and
 - TeV RF water heater system...led to beam pipe vacuum
 - **Heat load on E2 fridge**
 - Leaky Kautsky valve and/or
 - Bad cryo vacuum
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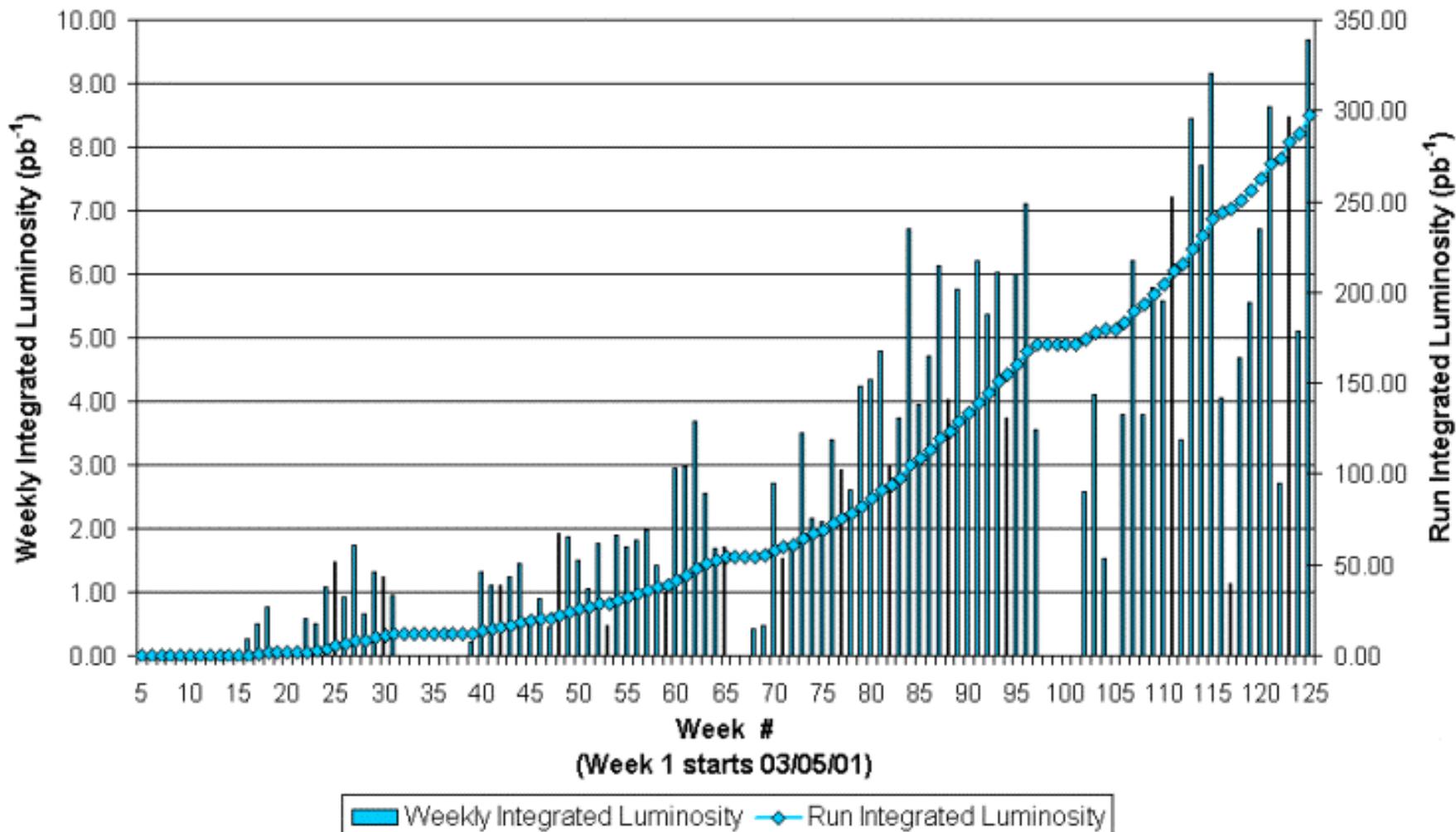
TeV Studies and Changes

- Reduction current in S6 feed down circuit
 - Increase pbar lifetime at 150GeV
- Decrease of differential chromaticities
 - Increase pbar and proton lifetimes at 150GeV
- Continuation of orbit smoothing between stores
- Slight increase of separator strength
- Separator scan of interaction regions
 - Small changes in Dzero
- Small tunes changes near top of ramp and store
 - Decrease losses
- Change of TeV injection energy
 - Increase pbar injection efficiency
- Commission/debug
 - proton BLT
 - Chromaticity measurement method
 - Trim quads for making beta function measurements

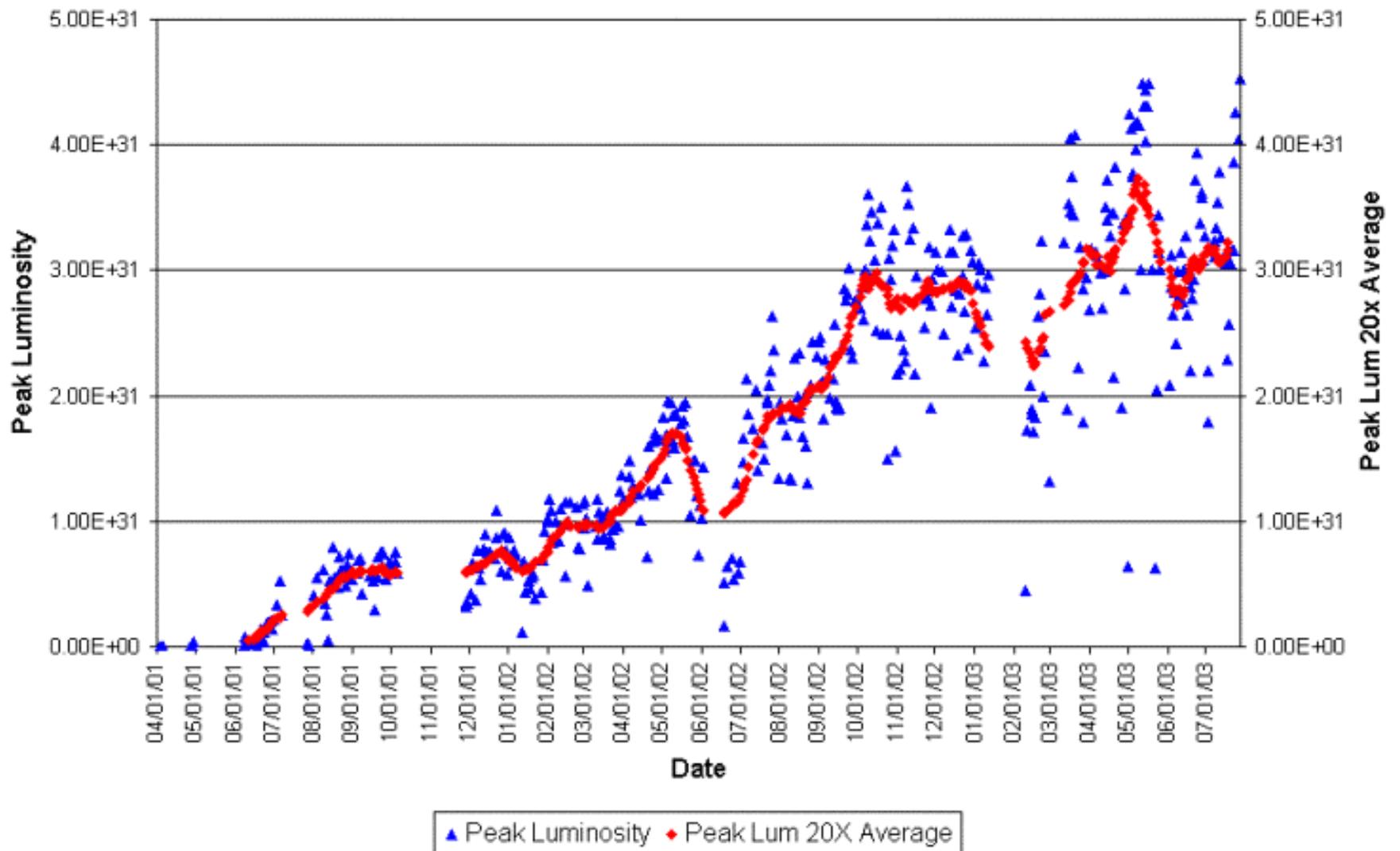
These have led to more particles to low beta

- Slip stacking
 - Capture efficiency
 - Accelerating beam
- NUMI multibatch
- 2.5MHz acceleration
- SY120
 - Beam to Meson Target Train
 - Work to deliver beam to MTest
- Pbar Debuncher momentum cooling
- 8GeV reverse proton lattice measurements
- MI8 beam line lattice measurements

Collider Run IIA Integrated Luminosity



Collider Run IIA Peak Luminosity



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Luminosity Strategy

- Keep the large number of particles to low beta
 - Most of the time proton source is running well
 - Larger stacks due to longer stores
 - Mother Nature & Lady Luck have been our side this last week
 - Still trying to increase pbar cycle rate
 - Production is running high ($>18e-6$ pbar/proton on target)
- 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 225pb^{-1} ASAP
 - Once goal is achieved will incorporate some dedicated beam studies into the weekly planning

- The week
 - Best week for integrated luminosity
 - Largest integrated luminosity for single store
 - Highest initial luminosity to date $45.34e30\text{cm}^{-2}\text{s}^{-1}$
 - All initial luminosities $> 31e30\text{cm}^{-2}\text{s}^{-1}$
 - 115hrs of stores
- FY03 total is 202.7pb^{-1} ; 4 weeks to Aug 25
 - Need $5.6\text{pb}^{-1}/\text{week}$
- Goal for this week
 - Stack and Store