

# *Beams Week in Review*



- Collider Operation
- Accelerator Studies
- MiniBoone Start up
  - Beam on target
- Good Stores / Bad Stores

# Beams Week in Review



## Store Summary

<u>Store #</u>	<u>Initial Luminosity</u>	<u>Duration</u>	<u>Termination</u>	<u>comments</u>
1672	1.66 E31	12.3 hours	intentional	E48Kick failure, 36X32 store
1679	1.99 E31	4.75 hours	TECAR	Tev RF glitch, orbit smooth on ramp
1680	1.55 E31	2.1 Hours	Tev RF	
1686	1.28 E31	12.5 hours	Quench A4 (wet engine)	

# Beams Week in Review



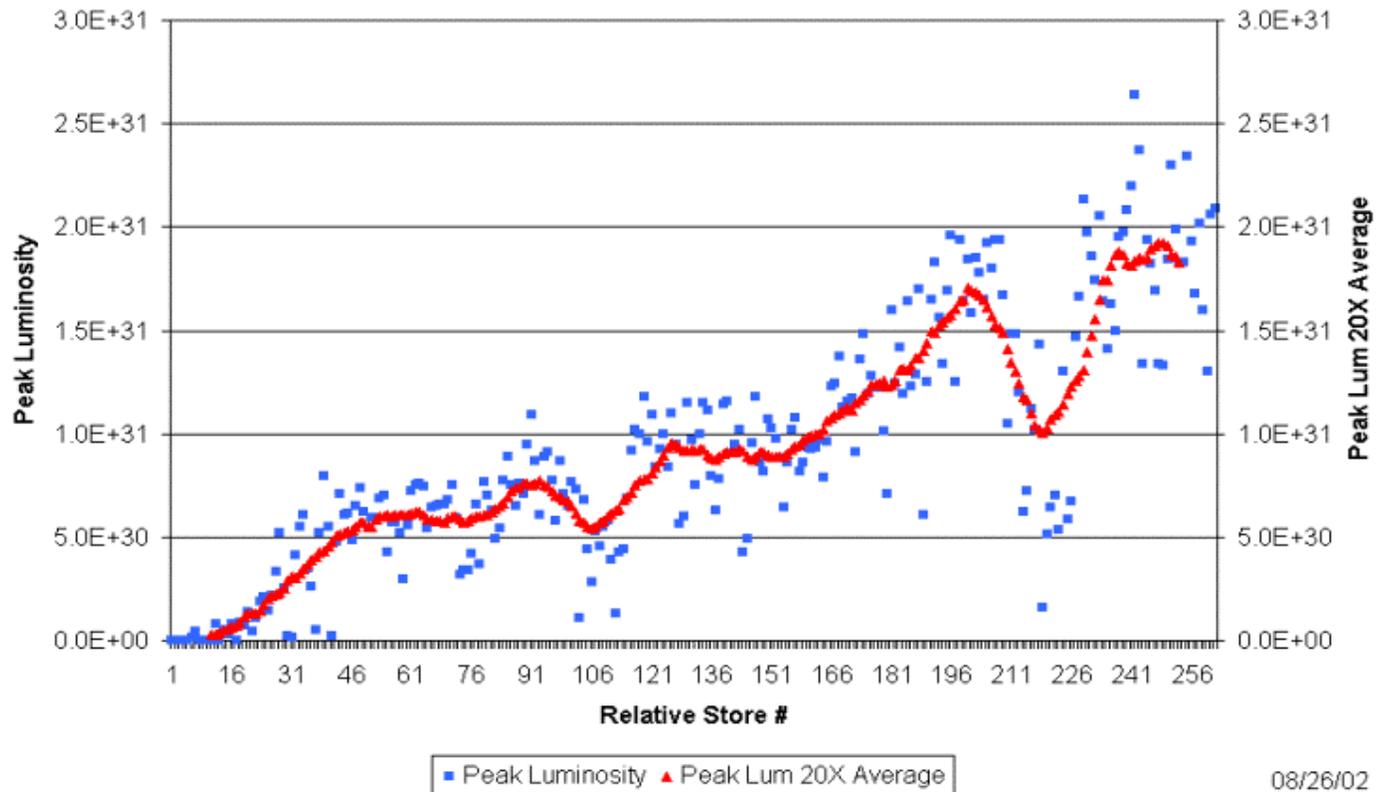
## Store Summary

<u>Store #</u>	<u>Initial Luminosity</u>	<u>Duration</u>	<u>Termination</u>	<u>comments</u>
1687	2.06 E31	19.3 hours	intentional	Chromaticity adj on inj pbars, tune adj at HEP
1689	2.08 E31	18 hours	intentional	no known changes

# Peak Luminosity



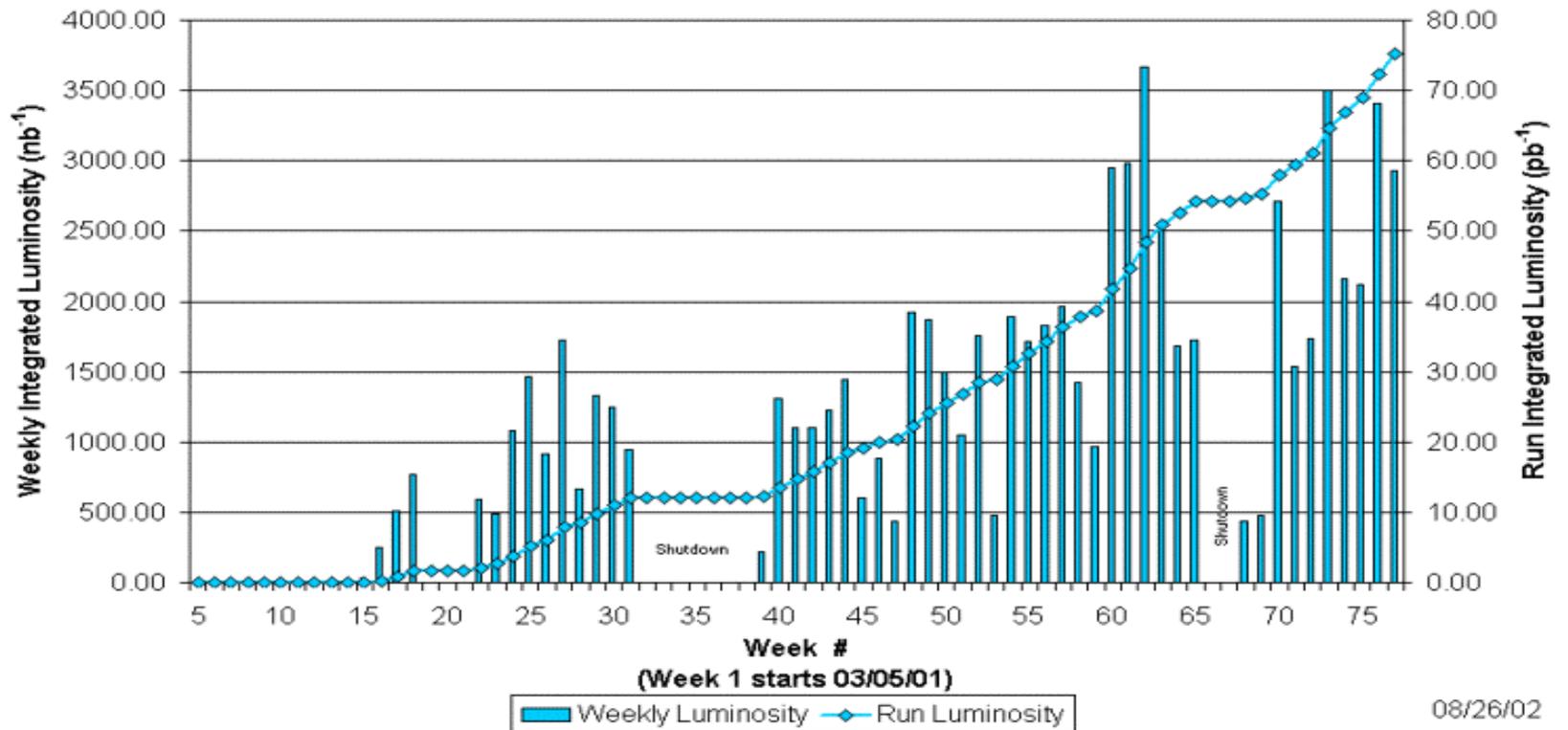
Collider Run IIA Peak Luminosity



08/26/02

# Integrated Luminosity

Collider Run IIA Integrated Luminosity



# *Tevatron Summary*



- Studies included
  - Tevatron Horizontal bunch by bunch
  - TEL
  - Turn by turn hardware characterization (BLT)
  - Instabilities at 150 and 980 due to chromaticity

# *Pbar Summary*



- Improvements in Stacking
  - Up to 12 mA/hr with small stacks
  - Production up to  $20 \times 10^{-6}$  pbars/proton
- Studies Last Week (Accelerator Measurements)
  - Debuncher momentum aperture
  - Debuncher admittance  $26.8 \times 20.4$  p-mm-mr (H & V)
  - Debuncher central orbit (compared to Aphil 02)
  - Accumulator admittance  $8.4 \times 7.6$  p-mm-mr (H&V)
  - Accumulator tunes
  - Centered stack tail kickers ( reduced transverse heating of stack)
  - Many Changes (no one big bullet)

# *Pbar Summary*



# *MI Summary*



- Continued work on Beam loading compensation for pbars
- Coalescing efficiency
  - 76% for stacks  $> 120$  mA
  - 82% for stacks  $< 120$  mA

# *Recycler Summary - Beam Lifetime*



- Design Lifetime:  $\sim 100$  Hours
- Measured Lifetimes:
  - Small Emittance Proton Beams: 80-100 Hours
  - Uncooled Protons:
    - $(3 \pi / \text{hour emittance growth}) \rightarrow 10\text{-}20$  hour lifetimes
  - Cooled Pbars (small intensity & emittances)
    - 100-150 hr lifetimes with  $\sim 10\text{E}10$
  - Cooled Pbars (realistic intensities 50~100E10)
    - *to be tested starting this week*

# *Recycler Summary - Circulating Aperture*



- Design Aperture: (H & V)  $40 \pi$
- Measured Aperture for Circulating beam:
  - $50 \pi$  Horizontal
  - $40 \pi$  Vertical
- Improvements due to
  - Corrector Power supplies installed ~June
  - Machine Survey and Alignment
  - Aperture Scan Work by RR Commissioning Crew

# *Recycler Summary - Beam Transfers*



- Recycler Injection Efficiency (Protons)
  - Protons scraped to  $<10 \pi$  emittance:  $\sim 100\%$
  - Protons from Booster ( $15 \pi$  +tails):  $\sim 90-95\%$
- “Round Trip” Efficiency MI-RR-MI  $\sim 85\%$
- Multiwire installation in Transfer Lines to further optimize injection matching

# *Schedule for this Week*



f

- Monday: Collider Operation ( and pbar studies)
- Tuesday (0000): 3 ½ shift studies
- Wednesday (0730): 3 shift M&D
- Thursday (0730): Accelerator startup  
Resume Collider Operation
- Friday: Continue Collider Operation  
and pbar's to the Recycler

# *Studies this week*



- Tevatron
  - Investigate proton losses seen at CDF
  - Orbit Coupling at interaction regions
  - Tevatron closure (BLT)
  - Tevatron longitudinal damper (close the loop)
  - Non-linear tune & chromaticity vs orbit through interaction regions

# Schedule for this Week

f

Update 8/26/02 11:37 AM	MONDAY 8/25/02	TUESDAY 8/26/02	WEDNESDAY 8/27/02	THURSDAY 8/28/02	FRIDAY 8/29/02	SATURDAY 8/30/02	SUNDAY 8/25/02
<b>Owls 0000 to 0800</b>		<b>Pbar</b> -stack  <b>Tev</b> -000-0100 EOS -IR coupling	<b>Pbar</b> -Stack  <b>Tev</b> -finish non linear measurement studies 0500 rack out 0600 rad survey, Mi, Mini Boone, 0730 Mi access	M&D  S&S CDF/Mi/DO	Stack and store	→	
<b>DAYS 0800 to 1600</b>	<b>Pbar</b> -Stack tail Characterization  <b>Tev</b> -mind store	<b>NTF - PT</b> <b>Pbar</b> -0600-1100 Pbar access -phase debuncher cooling <b>Tev</b> -BLT studies@ 150 gev.4-6 hrs. -Tev damper close loop	<b>NTF - PT</b> <b>M&amp;D</b>	Start up 36 XO store shot set up beam to collider	<b>NTF - PT</b> <b>Shots to tev</b>  <b>Shots to Recycler</b> <b>Stack and store</b>	→	
<b>EVES 1600 to 2400</b>	<b>Pbar</b> stack  <b>Tev</b> Store	<b>Pbar</b> -stack  <b>Tev</b> -finish tev damper studies -Non liner measurements around low beta.	M&D -Linac Booster start up  -Booster Rpos studies	Stack and Store	Stack and store	→	

Schedule can be found at <http://www-bd.fnal.gov/operations/schedules.html>