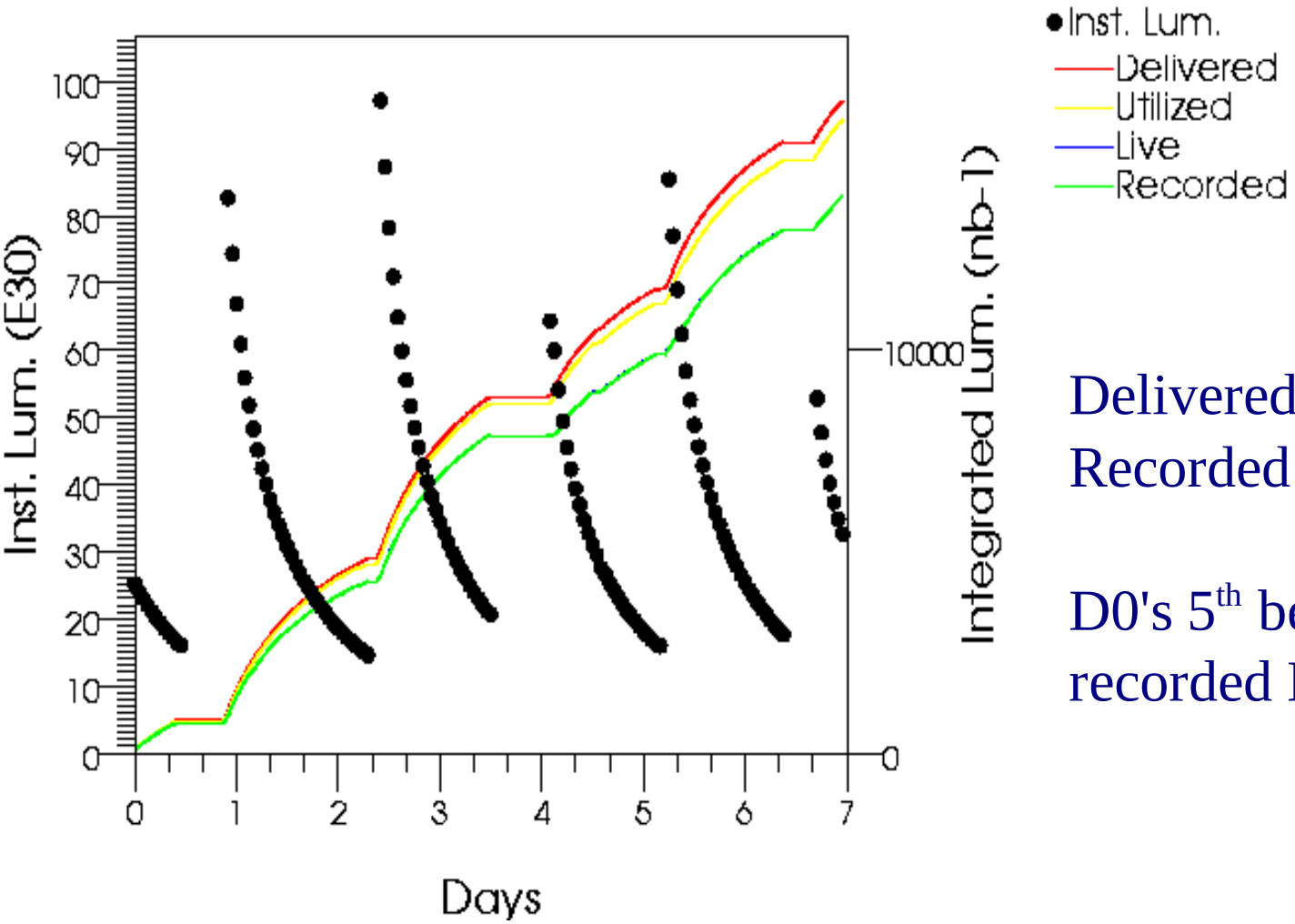
D0 Status Report

Bill Lee
FSU

All Experimenters' Meeting
25 April 2005

Data Taking 18-24 April



Delivered: 16.2 pb^{-1}
Recorded: 13.8 pb^{-1} (85%)

D0's 5th best week for recorded Luminosity

Daily Data Taking

Day	Recorded Lum (nb^{-1})	Efficiency	Comment
18 Apr	1154	88	
19 Apr	2688	89	
20 Apr	2906	89	7th best day recorded Luminosity
21 Apr	1122	93	
22 Apr	1767	72	"Problems in every detector"
23 Apr	2615	84	
24 Apr	1564	87	

Friday Problems

- Calorimeter
  - A hot tower at the start of the store eluded detection for 1.5 h.
  - A rack monitor died, providing many false alarms.*
  - BLS power supply died.
    - It took 20 minutes to find since the alarm was disabled due to bad Rack monitor.
- MUON – PDT failed, had to be removed from readout.*
- Silicon – HV pod tripped, difficult to reset.
- L2 – Entire rack tripped off, low air flow.
- Silicon Track trigger – crate error, required power cycle.

Store Summary

Store	Initial Lum (E30)	BLM (R/min)	Comment
4104	86.7	15	
4105	102.8	39	5th best initial Luminosity
4108	65.2	11	
4109	89.7	38	
4111	55.7	23	36 X 24 Store

There are two shifts of Tevatron studies planned to tune and reduce the losses at D0. Since we are losing electronics in coincidence with these losses we hope that the retune will be able to happen in the near future.

More on Data Taking

- The 36 X 24 store provided an interesting issue.
  - Since only two thirds of the crossings had antiprotons, the instantaneous luminosity in those crossings was higher than it should be for the given average luminosity. Since we choose our prescale based on the average luminosity, there were two consequences.
    - The trigger rates at D0 are non linear with luminosity. This led to higher trigger rates from the higher instantaneous crossings. These higher rates increase the deadtime in our system by about 1%.
    - The multiplicity for each event was higher as well. When this is combined with a higher than expected rate, the Level 3 farm became maxed out at the beginning of the run.
  - This was corrected by simply choosing a trigger prescale set for a higher luminosity.
- A uniform luminosity per crossing is preferred by D0.