D0 Status Report

Bill Lee
FSU

All Experimenters' Meeting
10 October 2005

Data Taking

Day	Delivered Lum (pb^{-1})	Recorded Lum (pb^{-1})	Efficiency (%)	Comment
3 Oct	3.00	2.79	93	30 min RunIIb L1CAL special run
4 Oct	3.47	3.01	87	Record initial luminosity 133E30. First 30 minutes down due to L2 crate.
5 Oct	1.76	1.57	89	New L2 code allows a smooth start.
6 Oct	3.81	> 2.51	> 66	Online cluster problems. 2 hour downtime due to L1CAL leak. Access for Calorimeter.
7 Oct	0.00	0.00	-	Automatic luminosity HV ramping begins. Access.
8 Oct	3.52	3.14	89	1 hour downtime due to L1CAL leak.
9 Oct	0.85	0.73	86	40 min downtime due to L1CAL leak.

3-9 Oct	16.4	13.7	84	
3-5,7-9 Oct	12.6	11.2	89	

Accesses

- 6 October
  - Replace Calorimeter BLS card and daughter cards.
- 7 October
  - Update firmware to for timing of FPD spectrometer.
  - Measure cables for RunIIb upgrade.
  - Replace air filters.
  - Investigate muon pixel power supplies.

L2 crate

- At the beginning of store 4431, D0 had a record luminosity of 133E30.
  - However, we could not consistently take data for the first 30 minutes because a L2 crate would go into an error state with a buffer overflow.
    - The problem was discovered to be a problem with the data flow timing and a new L2 executable was made to fix it.
- Store 4433 came in with a luminosity of 132E30.
  - There was no evidence of the buffer flow error.
  - There was a slightly high busy rate which is being investigated.

Online Cluster

- At approximately 5AM on 6 October, the online cluster began a normal update of its software.
  - However, in this case, the cluster managing software was updated and then restarted.
    - This caused the cluster to lose all of its disk mounts.
  - While we continued to take data for three hours, some luminosity and other information was not recorded.
- The cluster management software has been excluded from the automatically updated software.

L1CAL Leak

- We now have our third L1CAL water leak this year.
  - The first was in January, the second in July, the third last Thursday.
    - This radiator has managed to trip off the system three times in the last week.
    - We are investigating our options for stopping this leak.
  - This is a 20 year old system, scheduled to be replaced during the shutdown.

Luminosity Changes I

- Since the increase in Tevatron luminosity has lead to a corresponding increase in the backgrounds during shot setup,
  - we have decided to reduce the luminosity PMTs to a standby voltage during this time.
    - This means that during shot setup the D0 luminosity will be low.
  - These voltages will be ramped to their full values at the start of a store.

Luminosity Changes II

- During the next store we need to perform a calibration of the luminosity system. Then we will be prepared to make additional adjustments to the luminosity system.
  - We currently report our luminosity via a NIM system.
    - We will switch to a custom VME system.
      - allows for discrimination of all 48 Luminosity counters.
      - allows us to adjust the high voltages to the optimum values
  - The constant associated with the VME system will be set so the the difference between the two systems is minimized over the luminosity range of 10 to 120E30.
    - Studies indicate a systematic variation of ± 1% over that range of luminosity.