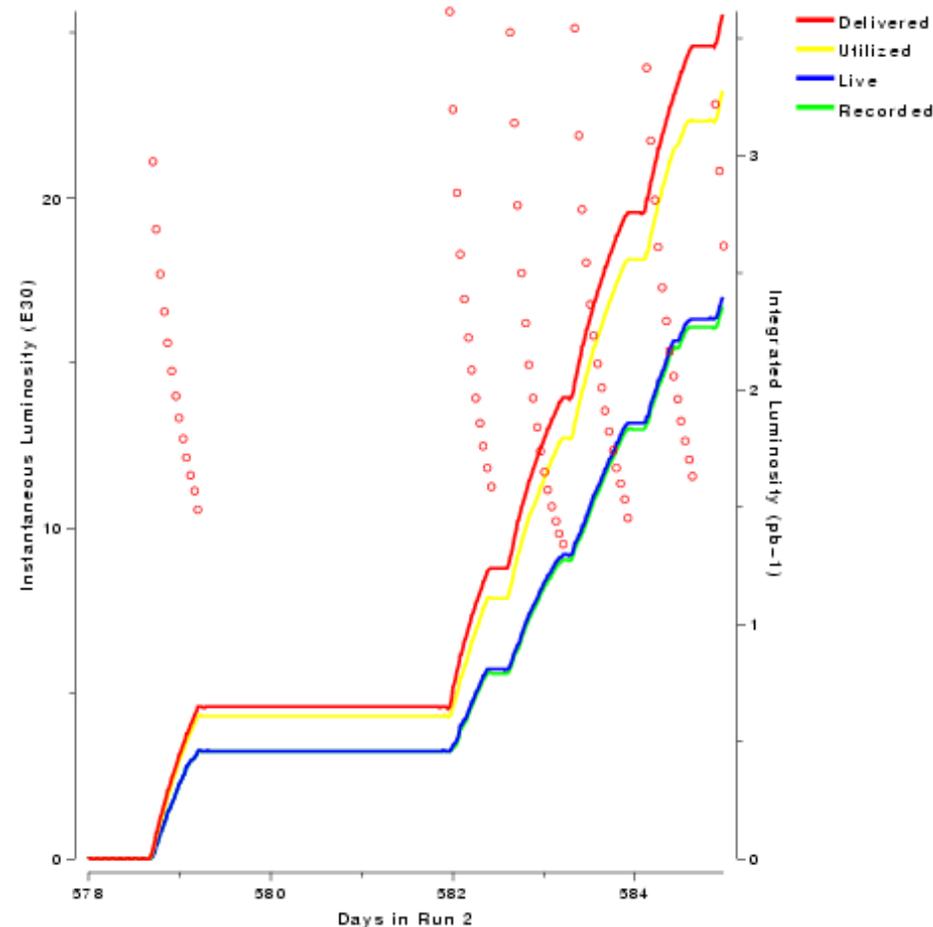




DO Summary - Week of 2002 September 30 - October 6

- **Luminosity & operating efficiency**
 - Delivered: 3.6 pb^{-1}
 - Recorded: 2.4 pb^{-1} (~66%)
 - 5.9 million physics events to tape
 - 4.7 hours of downtime
- **Issues caused >20 min downtime**
 - Muon PDT readout problems
 - Controlled Accesses: 15 m on Oct 4 & 20 m on Oct 6 to power cycle crate
 - Special Runs
 - Study muon detection efficiency
 - Study L2 CAL Jet Algorithm
 - Tevatron Scraping (Oct 4 owl shift)
- **Accelerator halo**
 - Ok at beginning of store, but Pbar rates steadily rise within ~30 min
 - Spikes in 1st hour of Stores
 - 1808 (Oct 2 beginning eve shift)
 - 1823 (Oct 4 beginning owl shift)
 - 1824 (Oct 4 end day shift)





Data Taking Statistics

****Preliminary****

Date	Del Lumi (nb ⁻¹)	Util Lumi (nb ⁻¹)	L2/L3 Lost (nb ⁻¹)	Rec Lumi (nb ⁻¹)	Store (hrs)	Downtime (hrs)	Events (k)
30-Sep-02	394.9	371	0.7	276.7	6.6	0.3	631
1-Oct-02	251.1	237.8	0.7	179.4	5.8	0.3	493
2-Oct-02	0	0	0	0	0	0	0
3-Oct-02	3.2	0	0	0	0	0	0
4-Oct-02	1106.1	976.2	17.9	671.4	18.9	2.1	1599
5-Oct-02	1000.5	972.2	5.4	705.6	19.8	0.5	1983
6-Oct-02	862.4	735.2	14.2	536.7	14.3	1.4	1170
	3618.2	3292.4	38.9	2369.8	65.4	4.6	5876

- **Total Data Taking Efficiency → 65.5%**

- 325.7 nb⁻¹ or 9.0% Lost due to Downtime
- 1209.5 nb⁻¹ or 33.4% Lost due to Deadtime
 - Decorrelated (L2/L3/COOR Disables)
 - Correlated (FEB, SkipNextN)
- 38.9 nb⁻¹ or 1.1% Lost at L2/L3

Still developing tools to understand all the sources of deadtime.

- **5876 k Events from Physics Runs recorded to tape**

- global_CMT-8.30: 1924 events through Store 1823
- global_CMT-8.40: 3952 events from late day shift Oct 4



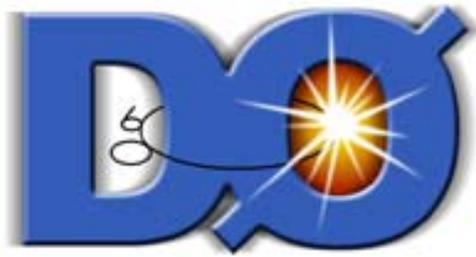
Best Days by Recorded Luminosity

Best Day

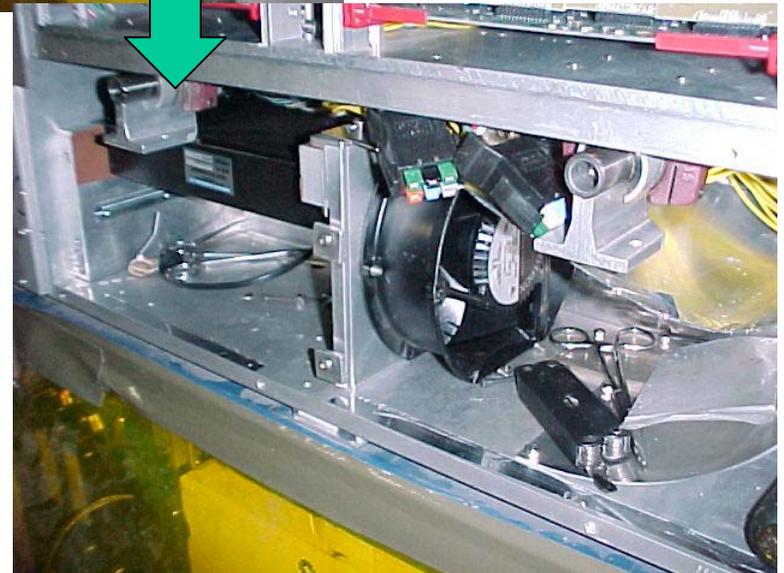
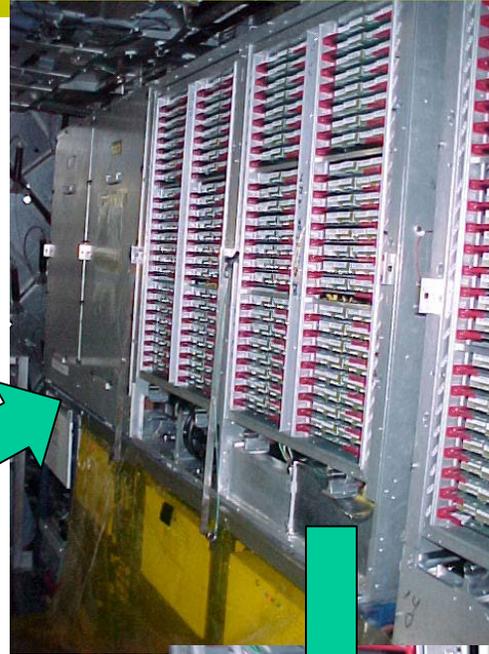
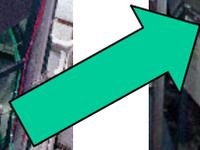
Sorted by Recorded Luminosity.

- Recorded luminosity greater than 500 nb-1
- Recorded events greater than 1000k

Stores	Date	Delivered Lumi (nb-1)	Recorded Lumi (nb-1)	In Store (hrs)	Events (in k)	Rate to Tape (Hz)
1754, 1756	2002 Sep 15	823.9	717.3	21.2	2076	27.8
1826, 1828	2002 Oct 05	1000.5	705.6	19.8	1983	28.3
1824, 1826	2002 Oct 04	1106.6	671.4	18.9	1599	26.6
1787	2002 Sep 24	1036.9	581.0	17.8	1251	22.3
1770	2002 Sep 20	856.0	575.5	21.8	1800	23.7
1750, 1752	2002 Sep 13	1068.2	560.8	19.8	1443	23.8
1687,1689	2002 Aug 25	884.4	539.6	21.1	1848	26.3
1828,1830	2002 Oct 06	862.4	536.7	14.3	1170	27.4
1752, 1754	2002 Sep 14	786.4	508.3	18.4	1480	23.1
1711,1713	2002 Aug 31	943.9	505.6	20.4	1774	27.2
1507	2002 Jul 8	674.9	505.1	19.9	1947	27.6
1737	2002 Sep 8	694.4	504.4	15.5	1410	26.0
1748	2002 Sep 12	727.4	500.2	15.7	1377	26.3



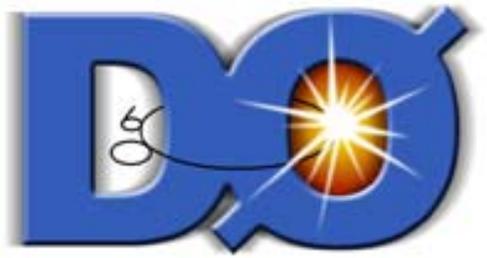
Calorimeter Preamp Cooling





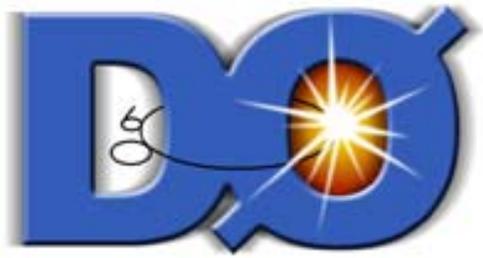
Replacement of Cooling Fans

- **Reminder: Week of Sep 23rd D0 lost cooling in one of the Calorimeter preamp boxes**
 - Temperature of the cooling air increased from 40°C to 69°C
 - Affected ~4% of calorimeter channels → 12% of central calorimeter channels
- **We requested Supervised Access for Wed Oct 2 of 12-16 hours**
 - 4 hours each to open and close 1,000 tons muon magnets
 - 4-8 hours to disassemble box and replace failed fan(s)
- **Began SA at 04:30; South & East EF Open at 06:30**
- **Closed detector from 14:30-16:30**
- **Search & Secured by 19:00**
- **Each Fanout Box has one large fan & two smaller fans near the heat exchanger**
- **Large fan was dead**
 - black dust in surrounding area
 - Probably the source of mysterious VESDA alarm in the recent past
- **Smaller fan mounted on the heat exchanger also dead**
 - We think it failed after the larger fan
 - Overworked due to large fan failure
- **Replaced other small fan as a precaution**
- **Exchangers & fans built as one "unit"**
 - Small fans were tricky & we were missing a special screw & nut
 - Work delayed by 1.5 hours by special trip into Chicago



Calorimeter Preamp Fans

- Postmortem on large fan
 - Windings opened up - likely a manufacturer defect
- Both smaller fans were bushing fans
 - Fans were dry and could not turn!
 - We had ordered ball bearing fans
 - Manufacturer sent the wrong fans
 - They were labelled correctly, but the labels were not visible because of the casing
- All Calorimeter preamp cooling fans were procured & assembled using Columbia Univ. base grant money
- There are 72 total fans
 - 24 large & 48 small
 - L10 = 85k hours for small fans & 55k hours for large ones
- Fanout box put constraints on size and number of fans
 - Maximally push air through heat exchanger in rectangular volume
- We may simply need to replace ALL fans every year as a preventative measure
 - Assuming shutdown > 1 week
 - New fans have been ordered
- Still looking through the archiver
 - Looking at a step function in the temperature
 - Correlate to VESDA alarm(s)?



Other System Work

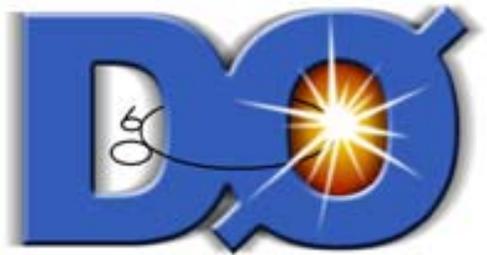
- 30 New L3 farm nodes installed on Sat Oct 5th
 - Double processing power!
 - This permits us to significantly raise our L2 output rate
 - Back pressure from farms would deny L3 accepts
 - Increase our L3 rejection on single muons
- New online Linux PCs & flat screen monitors to be installed
 - Substantial increase in CPU & Memory
 - Many old nodes are overloaded

- FPD Tunnel Access during Wed Shutdown

- Installed 6 new TLDS
- Previous TLD readings from 10 days in Aug (in REM)

	A1U	A2U	P1U	P2O
photons	91.5	120.1	33	549.6
Fneutrons	13.5	13.9	7.2	>25
total	105	134	40.2	***
10%loss.transm.		~20years		~5 years

- L0 (lime glass) tubes sensitive to levels $> 10^8$ REM
- MAPMTS (Borosilicate window) 10% loss in transmission at levels $> 10^5$ REM
- Helium levels are an issue (~1000 ppm). May need special tunnel access to install air hoses to blow fresh air.

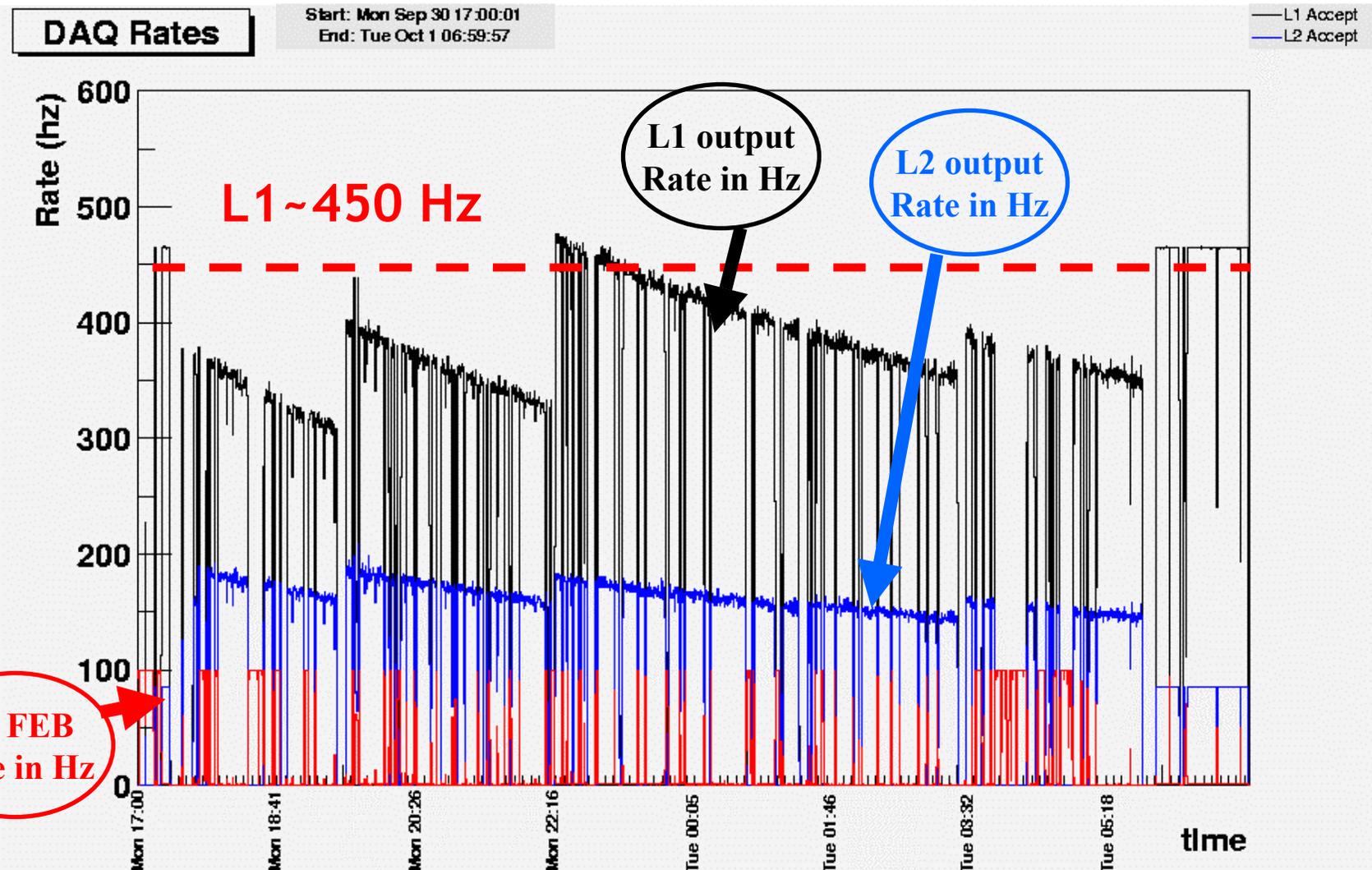


New Trigger List

- **global_CMT-8.40 - Store 1824 on Fri Oct 4th end of day shift**
 - L1: Calorimeter EM and JET tower triggers and MUON triggers based on central and forward muon scintillator detectors.
 - L2: EM, JET, MUON, and angular separation filters.
 - L3: Electron, Jet, Tau and Muon filters, some of which use the central tracking systems.
- **Changes from global_CMT-8.30:**
 - Muon events at L3 - Changed from mark & pass of 1 to pass all
 - Each time the script ran - whether event passed or failed filter - debug information was added, increasing event size
 - Expect to see a drop in event size of factor of 2 for these type of events
 - Added more L2 rejection to 2 tau & 1 top trigger
 - Removed obsolete jet triggers
 - Increase L1 output rate by 10%



Store 1808



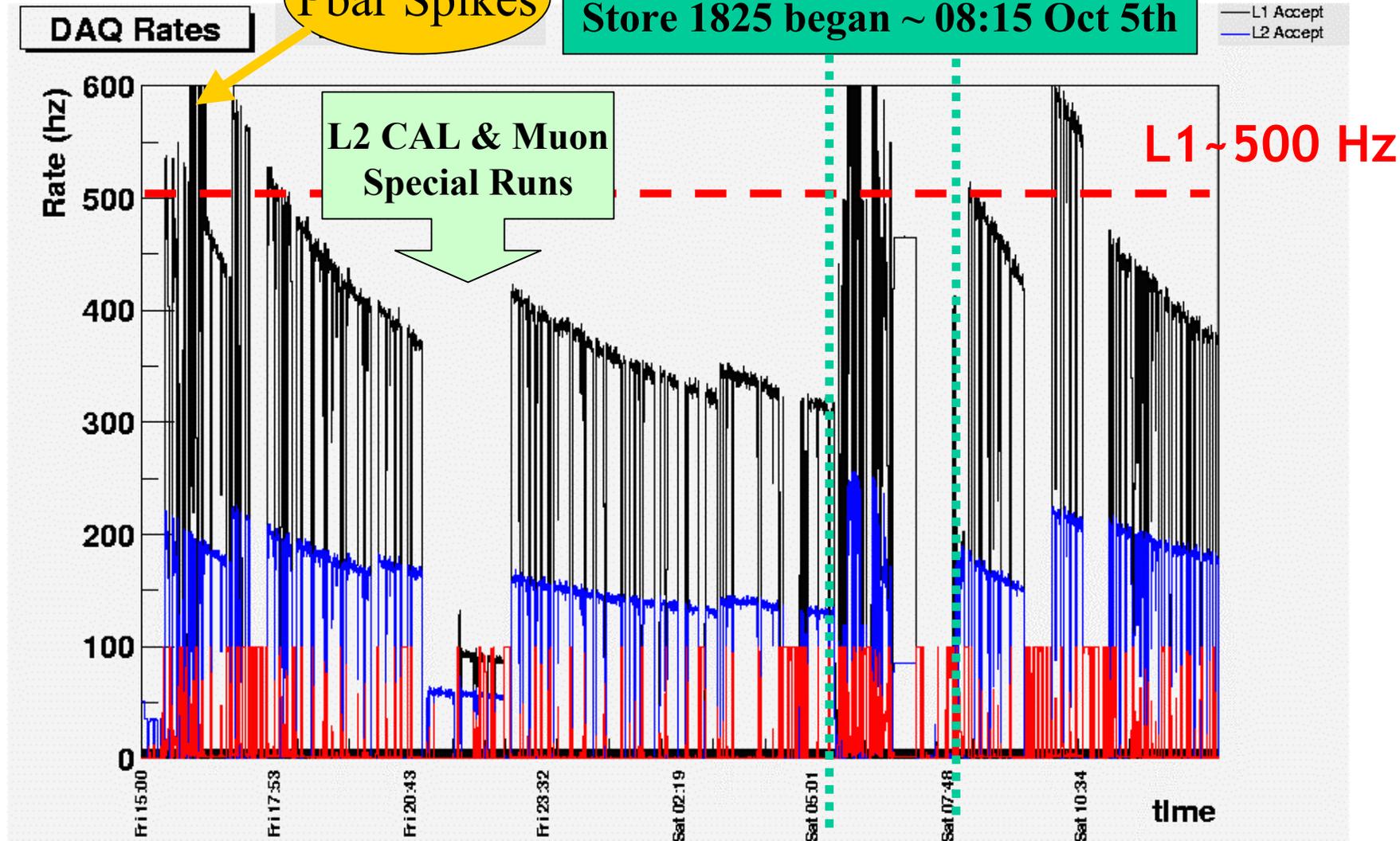


Store 1824

Pbar Spikes

Store 1824 ended ~05:30 Oct 5th
Store 1825 began ~ 08:15 Oct 5th

— L1 Accept
— L2 Accept





Plans for Upcoming Week

- Continue with trigger list `global_CMT-8.40`
 - We are conservatively increasing our L1/L2/L3 output rates without sacrificing stability
 - Baseline before this past weekend at the beginning of physics run: L1~400-450, L2~150-200, L3~40-45 Hz
 - Stores 1824-1830
 - L1/L2/L3 ~ 500-550/200-220/50-55 Hz
 - > 75-80% efficiency of Recorded/Delivered Lumi
- No urgent jobs requiring Controlled Access
- Looking forward to a full week of steady physics data taking!