Watchboy State of Health

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The document shows the detector rates given the various applied cuts. The total livetime of the data is shown in Figure 1.

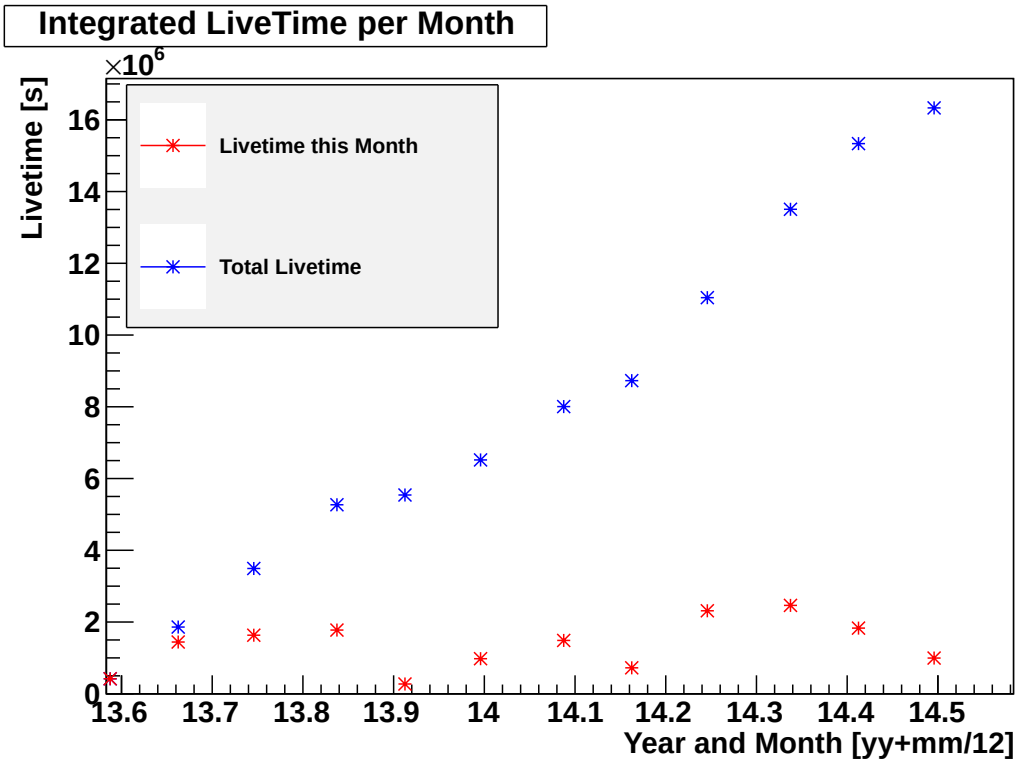

Figure 1: Individual and Integrated Livetimes as a function of month

1 Method

Rates are determined based on a charge balance cut as defined by Nathaniel in the analysis template. This version is somewhat simplified, in that I not specifically calculating the charge balance for a specific events but am simply counting the number of contributing channels.

The data are grouped into time periods of a single month, and at the start of each month the code reads in the charge to single photoelectron conversion factors. Additionally, at the start of each month, pedestals in each channel are checked for an appropriate fit. If the fit is off, then those specific channels are removed from the analysis.

The code then loops over every event in a run to count 7 quantities: 1) the total number of event 2) the total number of target events where 2 or more channels contribute (>1PMT target) 3) the total number of target events where 3 or more channels contribute (>2 PMT target) 4) the total number of veto events where 1 or more channels contribute (>1PMT veto) 5) the total number of veto events where 2 or more channels contribute (>2PMT target) 6) the total number of events where EITHER 2 or more target channels contribute OR 2 or more veto channels contribute (>1 PMT Either) 7)the total number of events where BOTH 2 or more target channels contribute AND 2 or more veto channels contribute (>1 PMT Both) . Rates are then calculated by dividing the total number of event given a specific cut by the total run time.

Additionally quantities tracking individual channels over time are calculated and used to check runs with anomalous rates.

2 The Plots

Below are the plots of event rates as a function of time, with one plot for each calendar month of data.

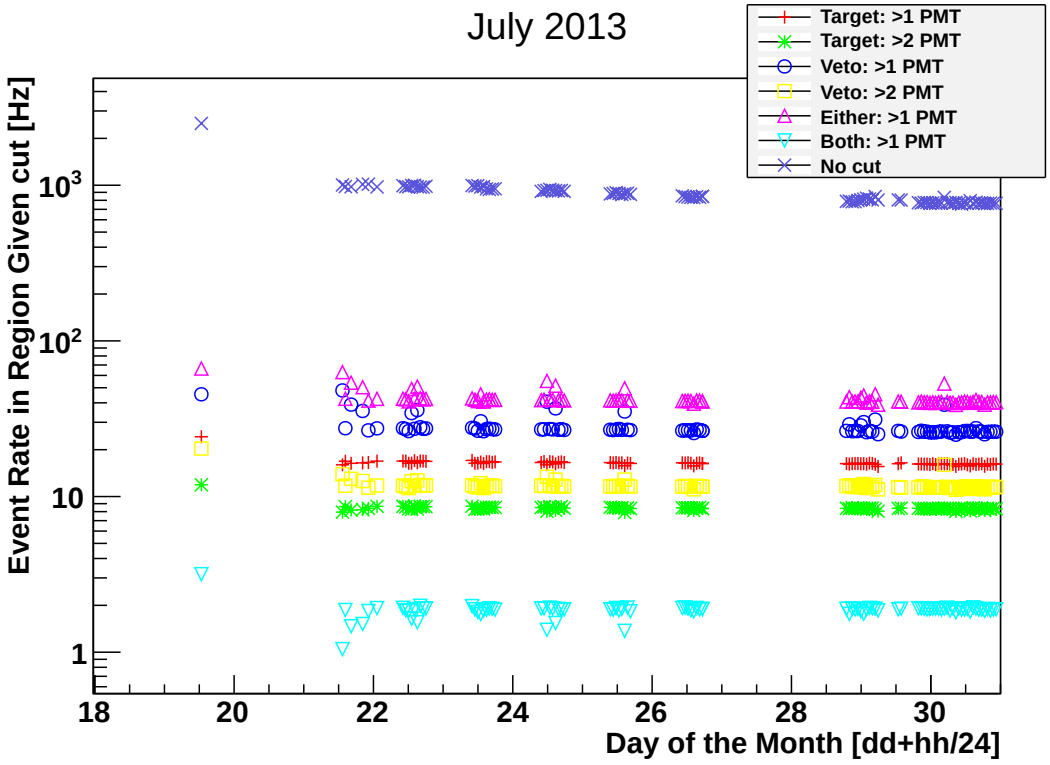

Figure 2: Events Rates in July

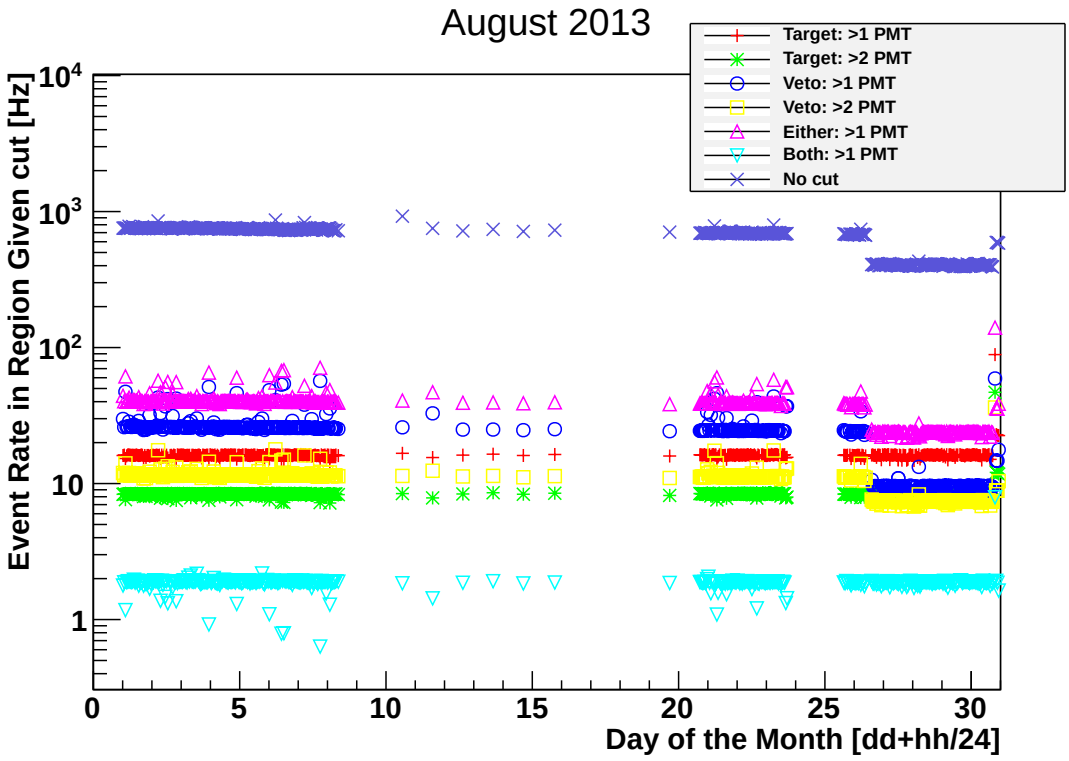

Figure 3: Events Rates in August

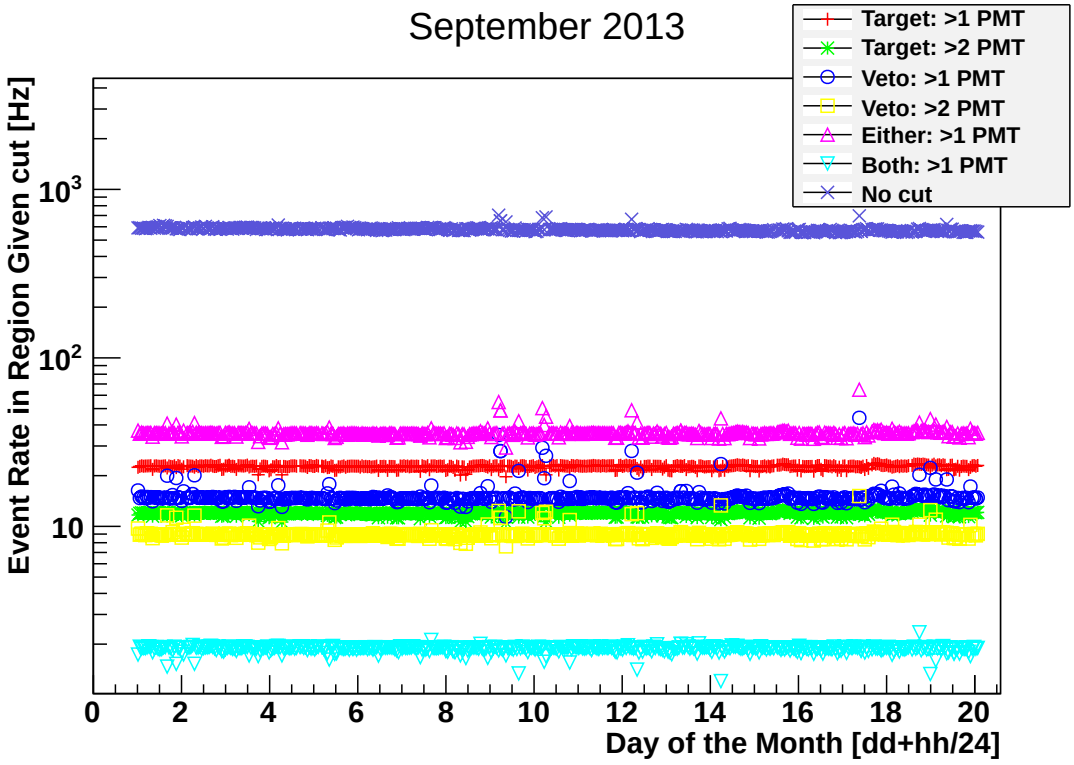

Figure 4: Events Rates in September

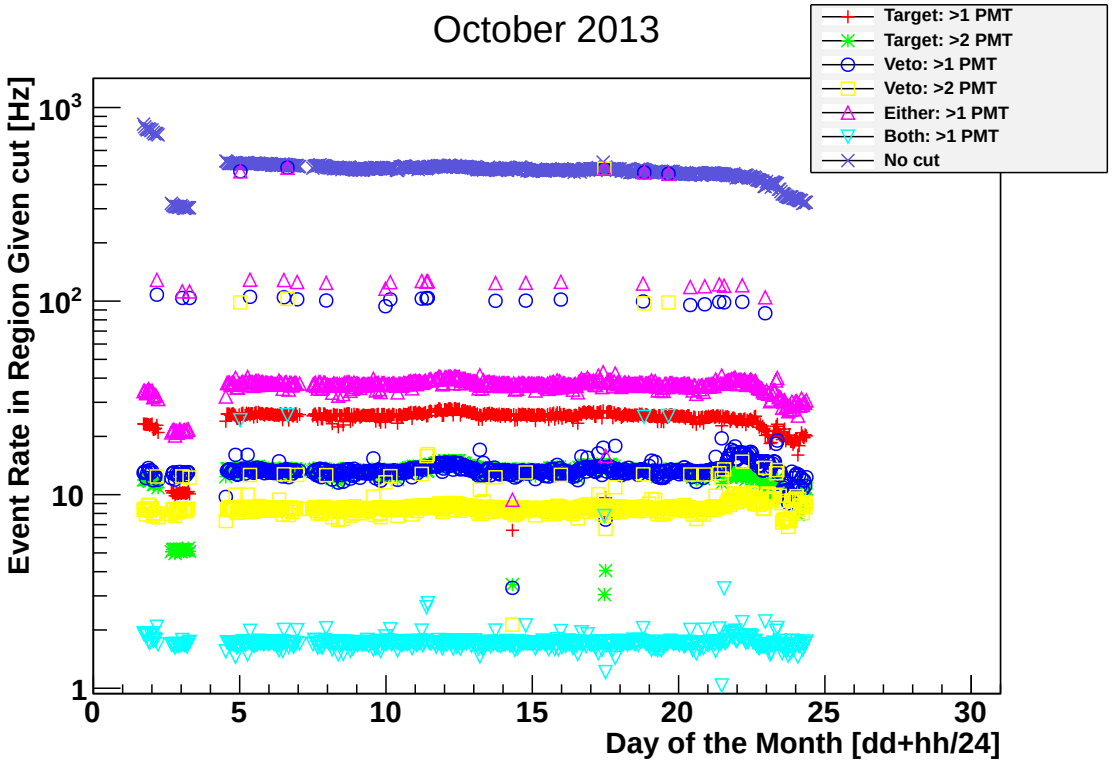

Figure 5: Events Rates in October

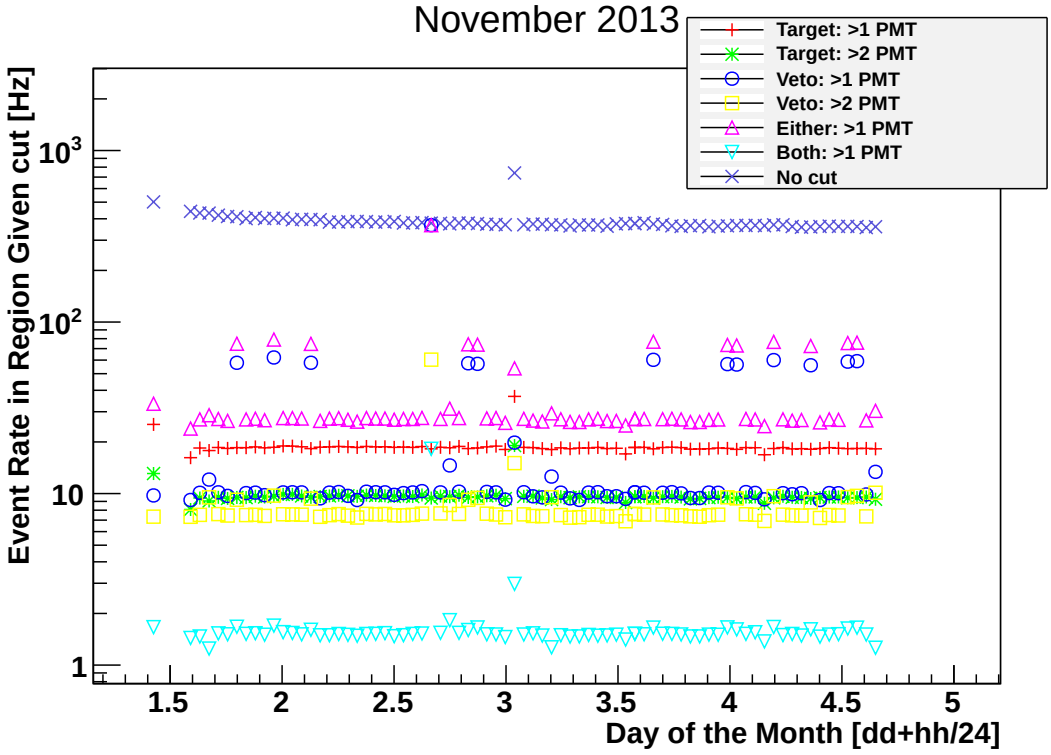

Figure 6: Events Rates in November

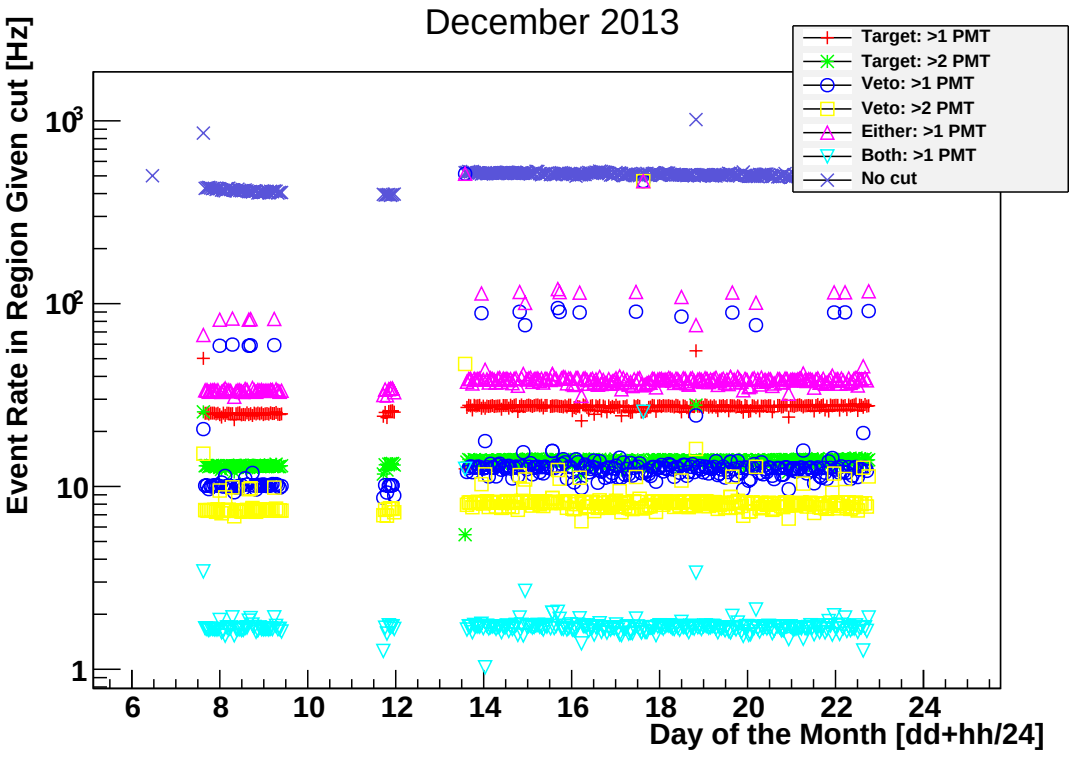

Figure 7: Events Rates in December

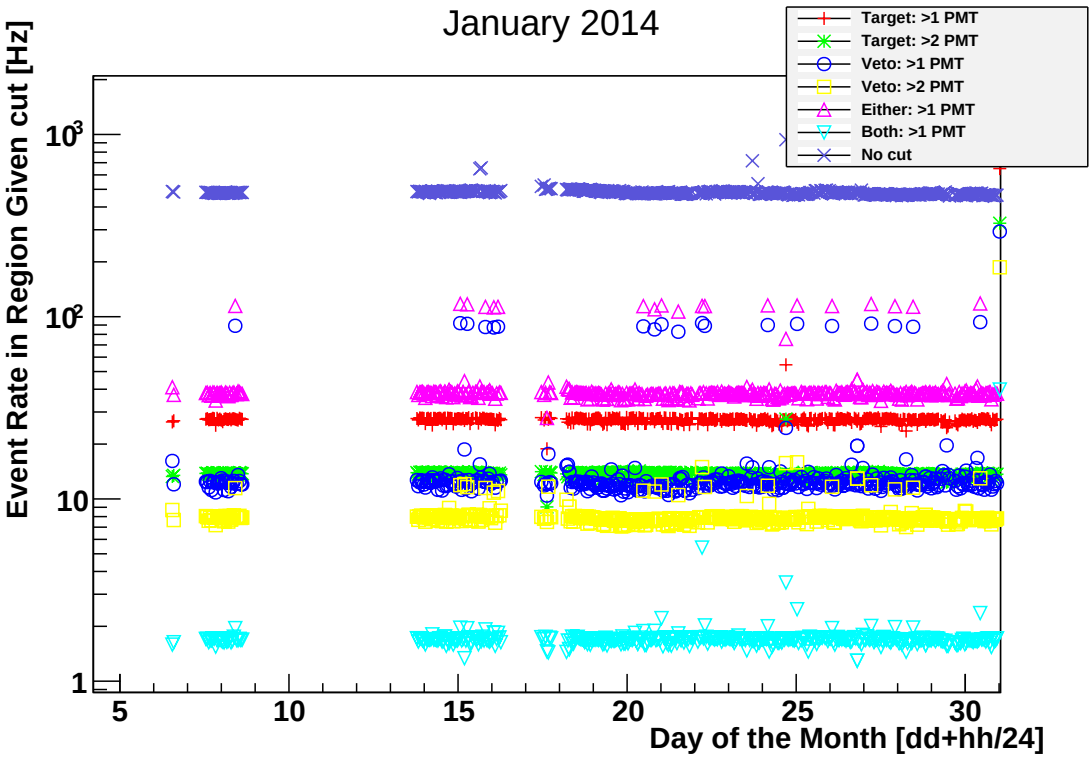

Figure 8: Events Rates in January 14

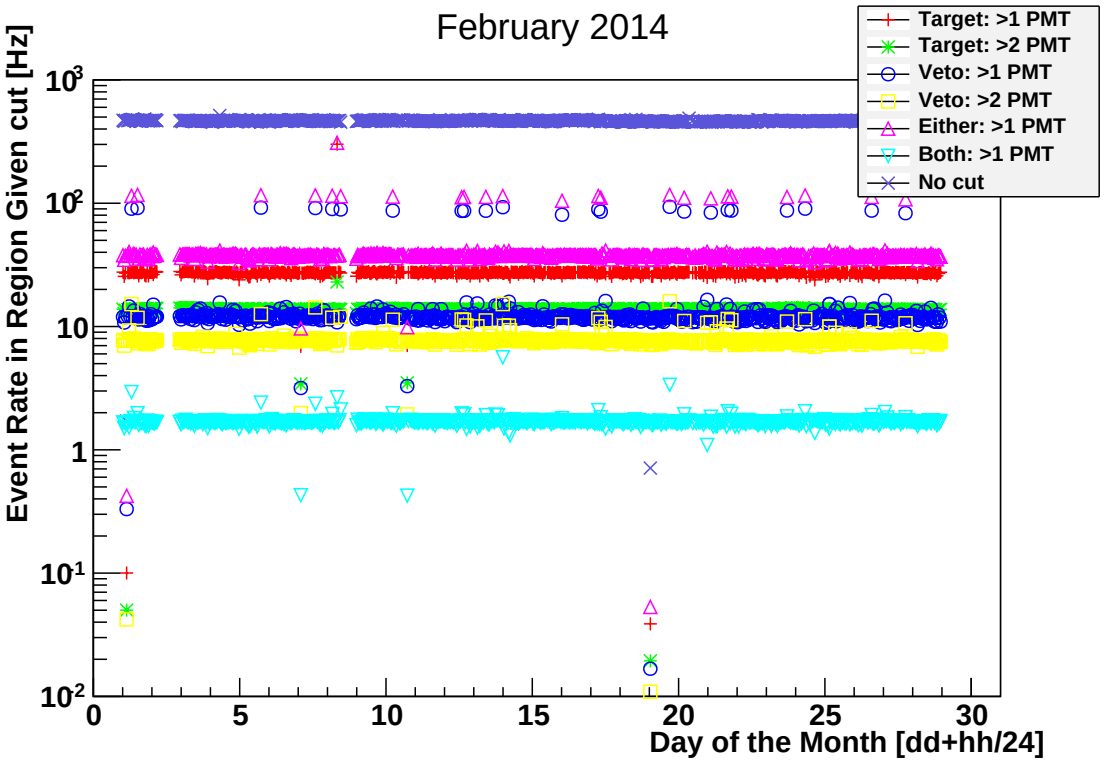

Figure 9: Events Rates in February 14

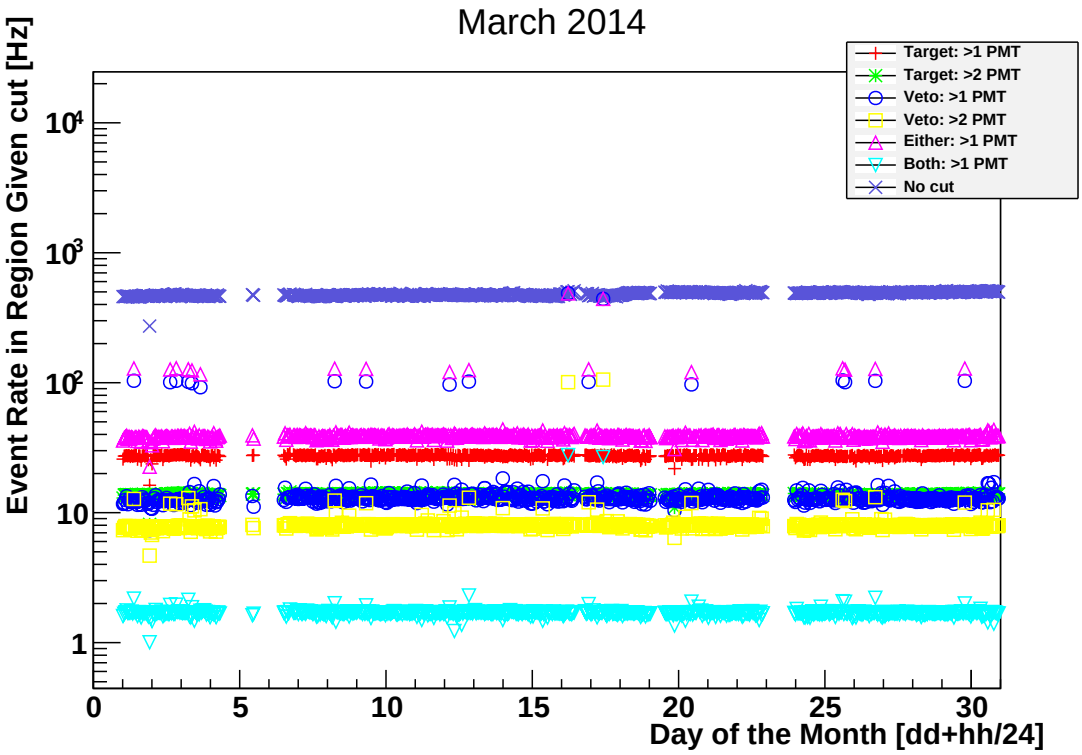

Figure 10: Events Rates in March 14

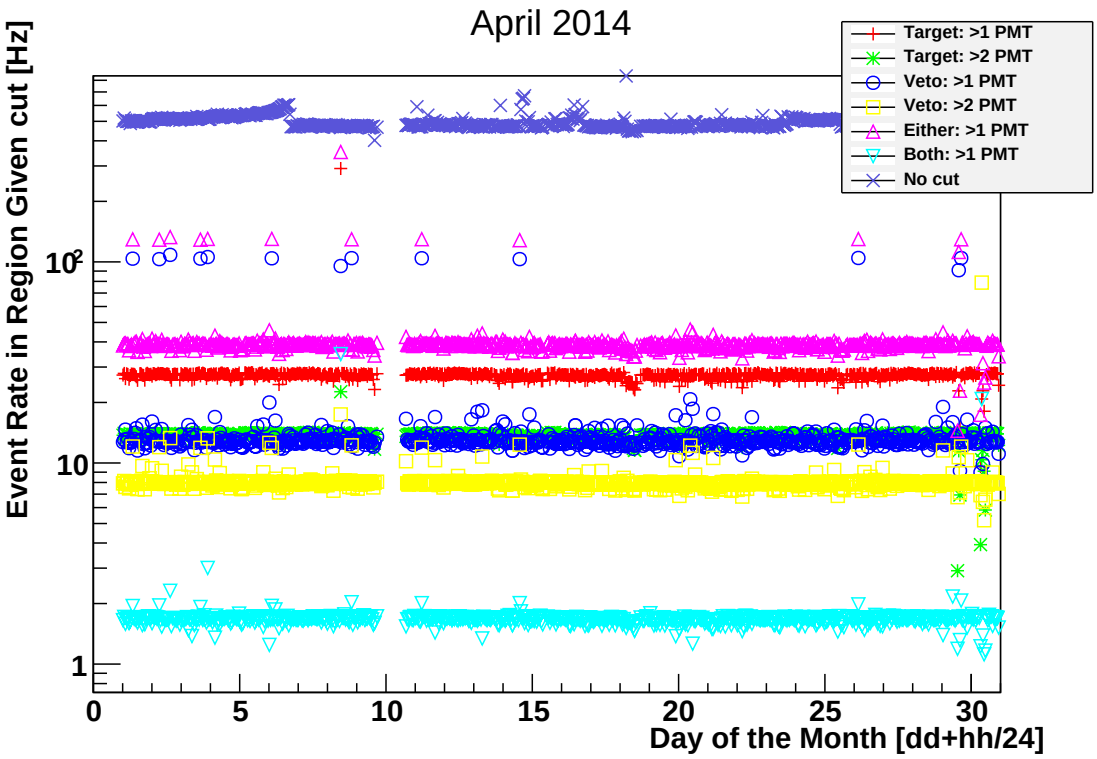

Figure 11: Events Rates in April 14

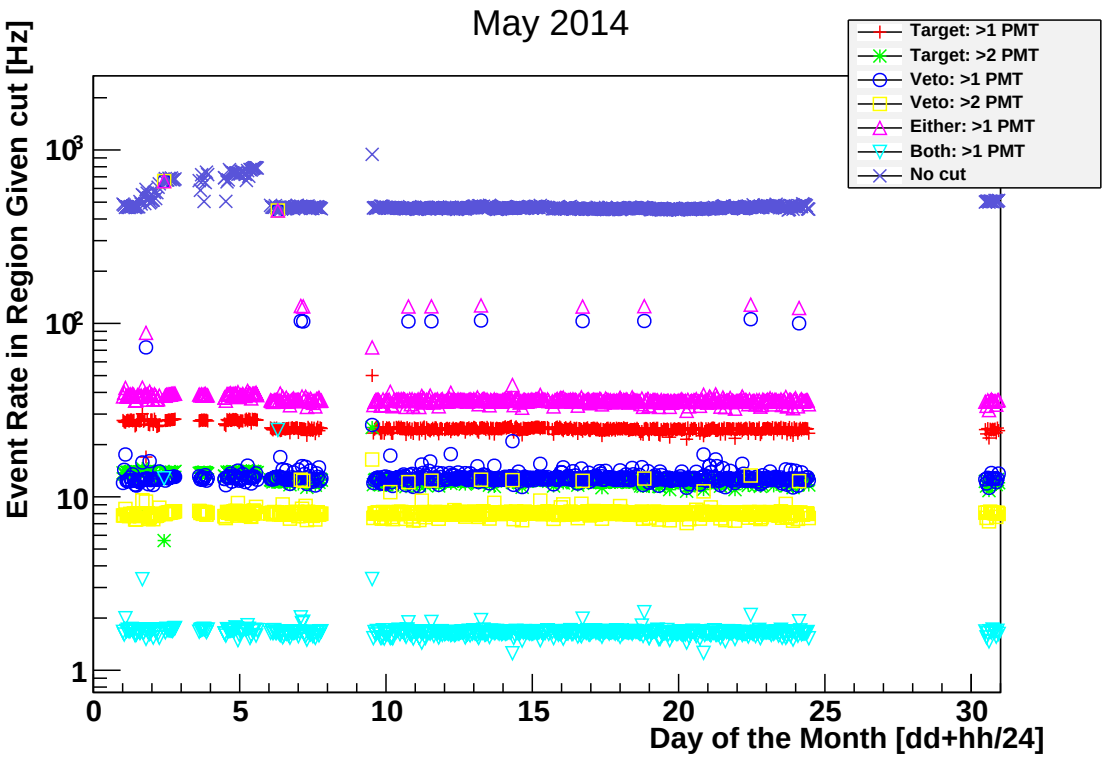

Figure 12: Events Rates in May 14

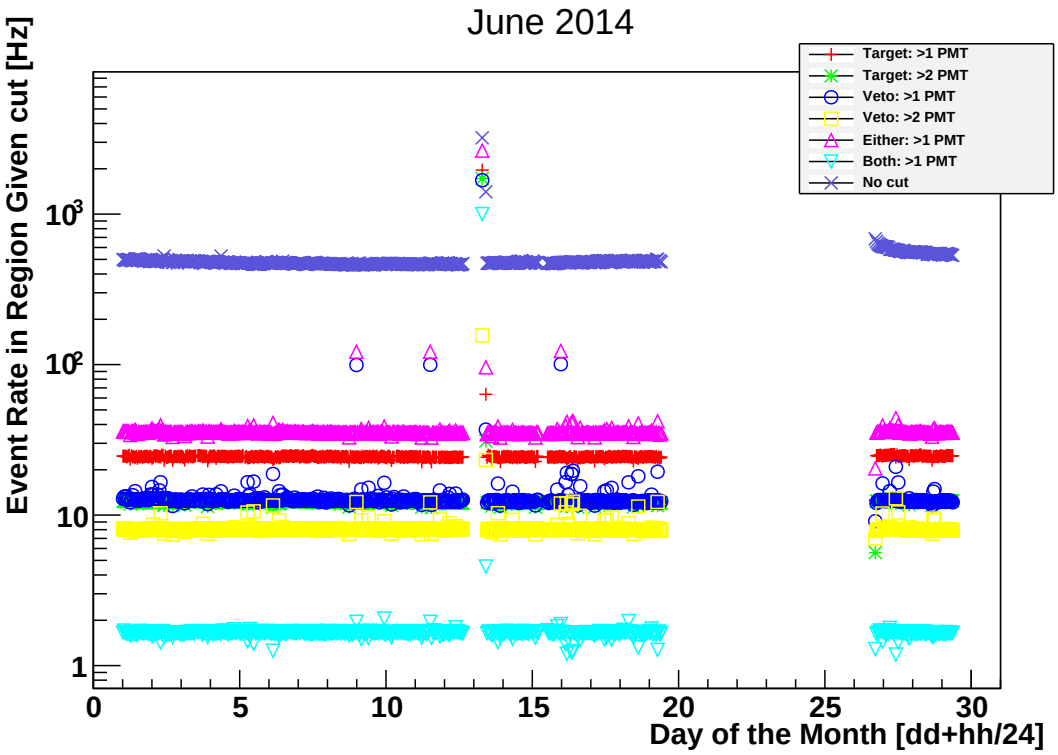

Figure 13: Events Rates in June14