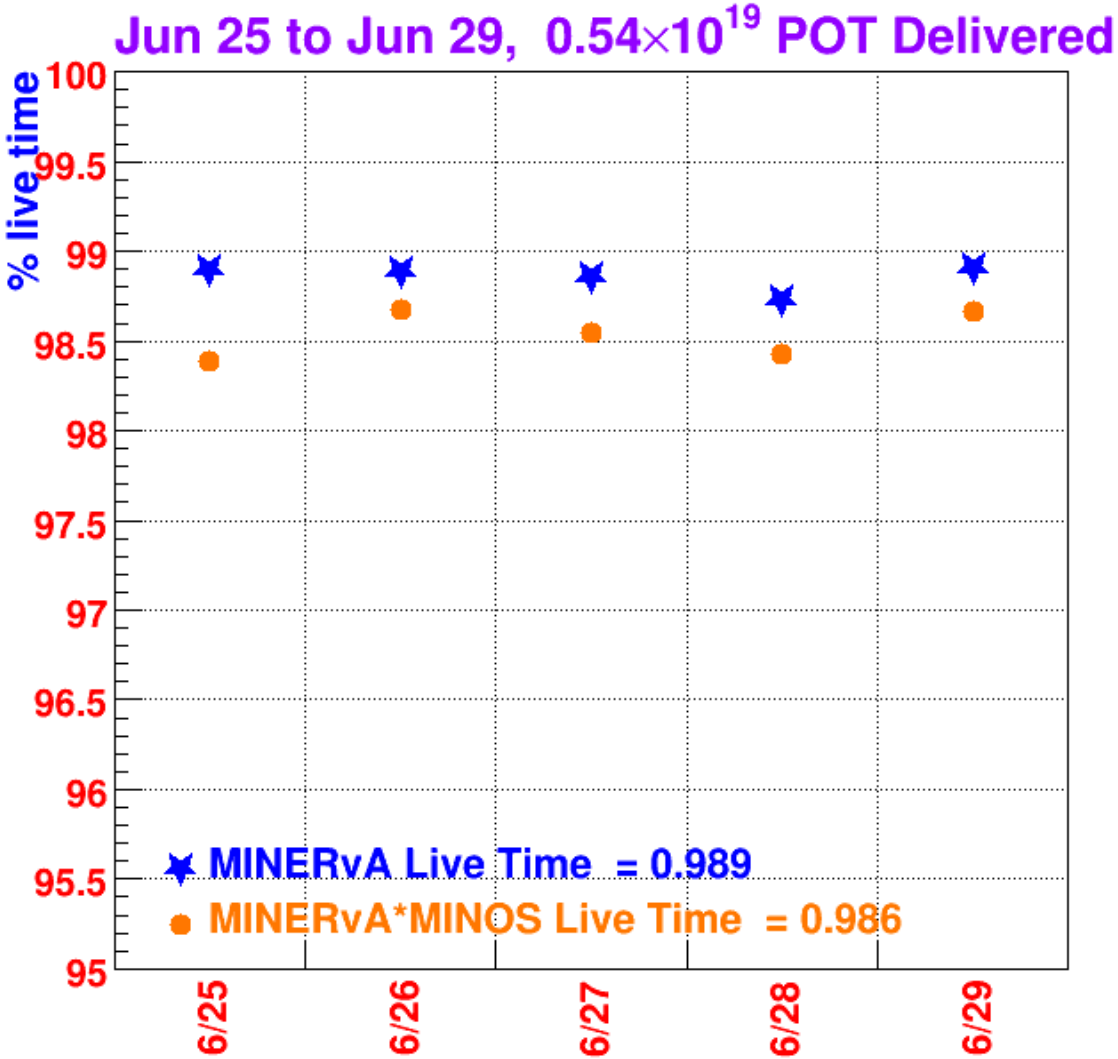
The MINERνA Operations Report
All Experimenters Meeting

Howard Budd, University of Rochester

Jul 6, 2015

ν Data

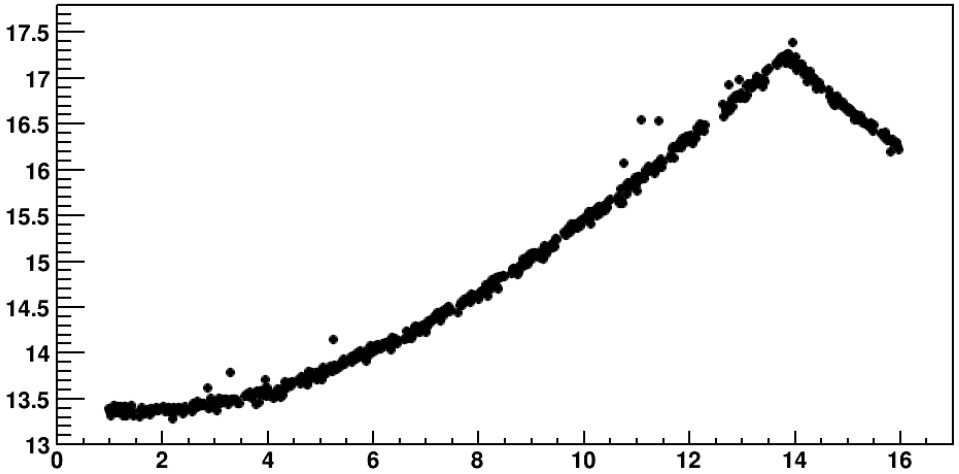


- Live time, Jun 25 - 29, 2015
- 0.54×10^{19} POT
- MINERvA 98.9%
- MINERvA*MINOS 98.6%
- Jun 30 – Jul 1
  - We had problems running keepup so those 2 days are not reported. We will discuss the DAQ deadtime for Jun 30

The Leap Second

- Jun 30 we were down for about 1 hour due to the leap second
- We get our computer time from the MINOS DAQ.
  - Our MINERvA-MINOS track match is based on matching gate times.
- MINOS & MINERvA stopped data taking ~ 6:50 PM
- MINOS ran scripts to update the MINOS NTP server to the leap second.
- After MINOS NTP time and GPS time were synched, we waited ~15 minutes. Then we reset the DAQ processes and started the DAQ
- We processed a MINOS & MINERvA file to see if we were synched

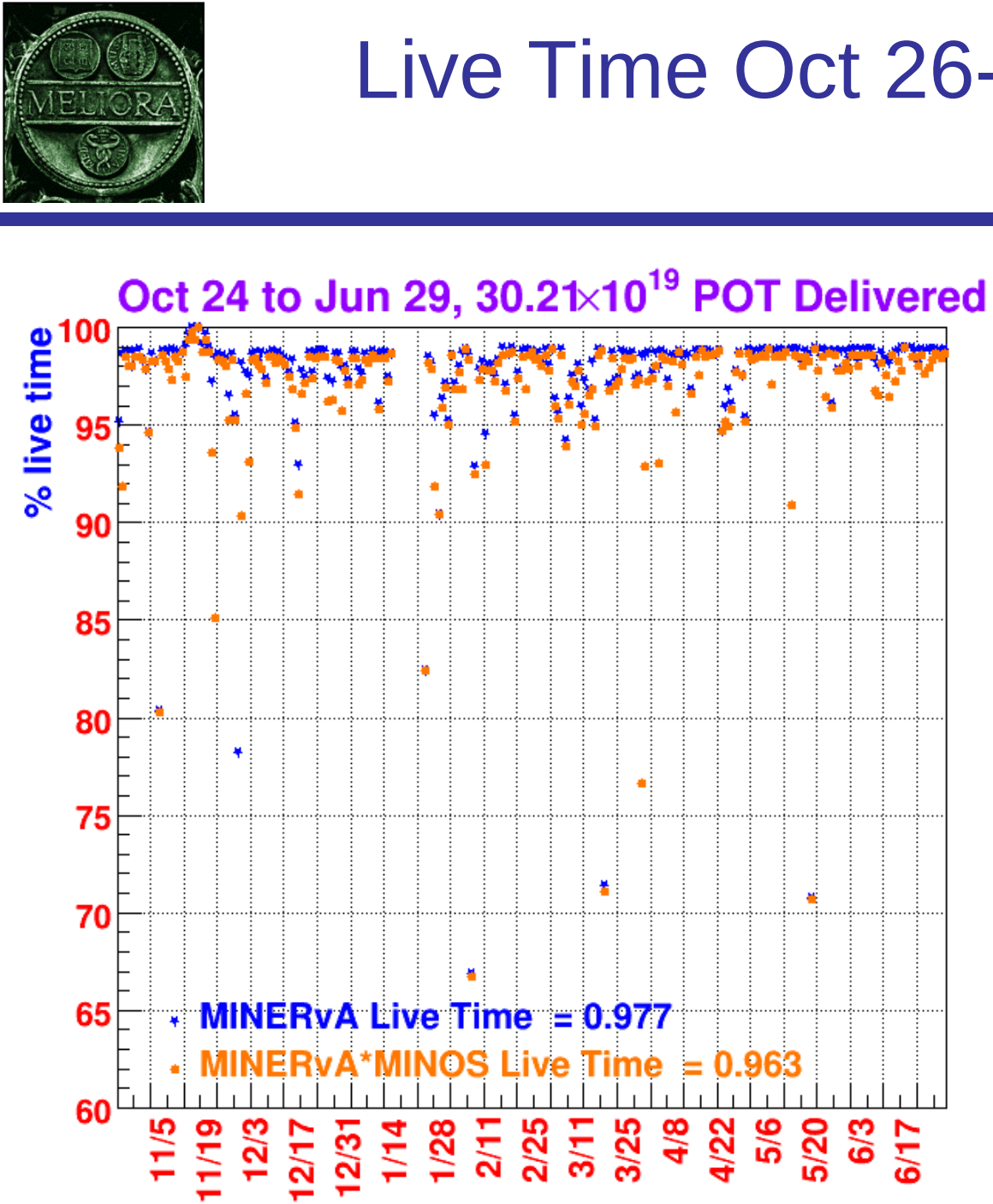
MINERvA – MINOS gate time (ms)



We require MINERvA MINOS gate to match ± 0.6 sec

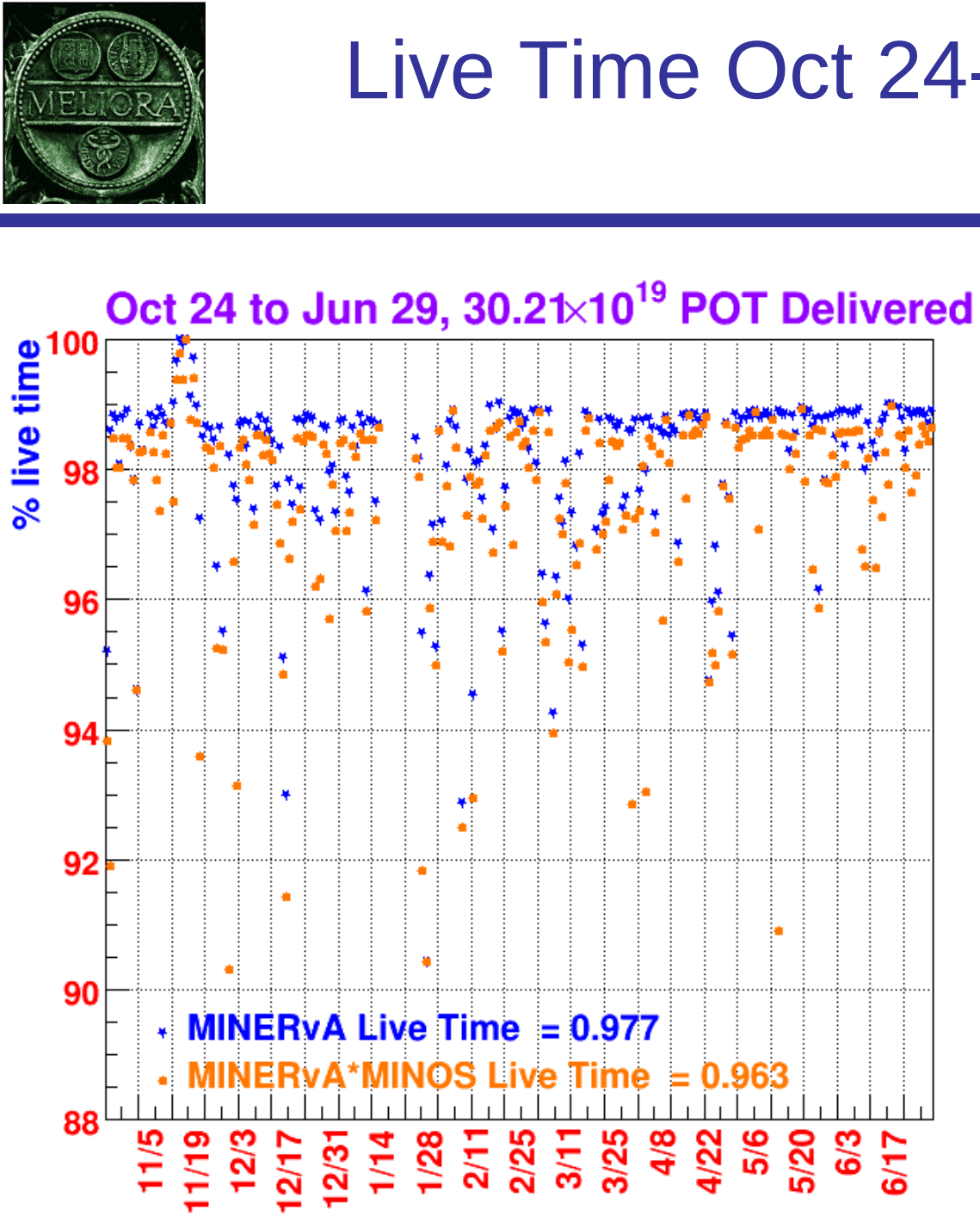
Time after start of subrun (minutes)

Live Time Oct 26-Jun 29



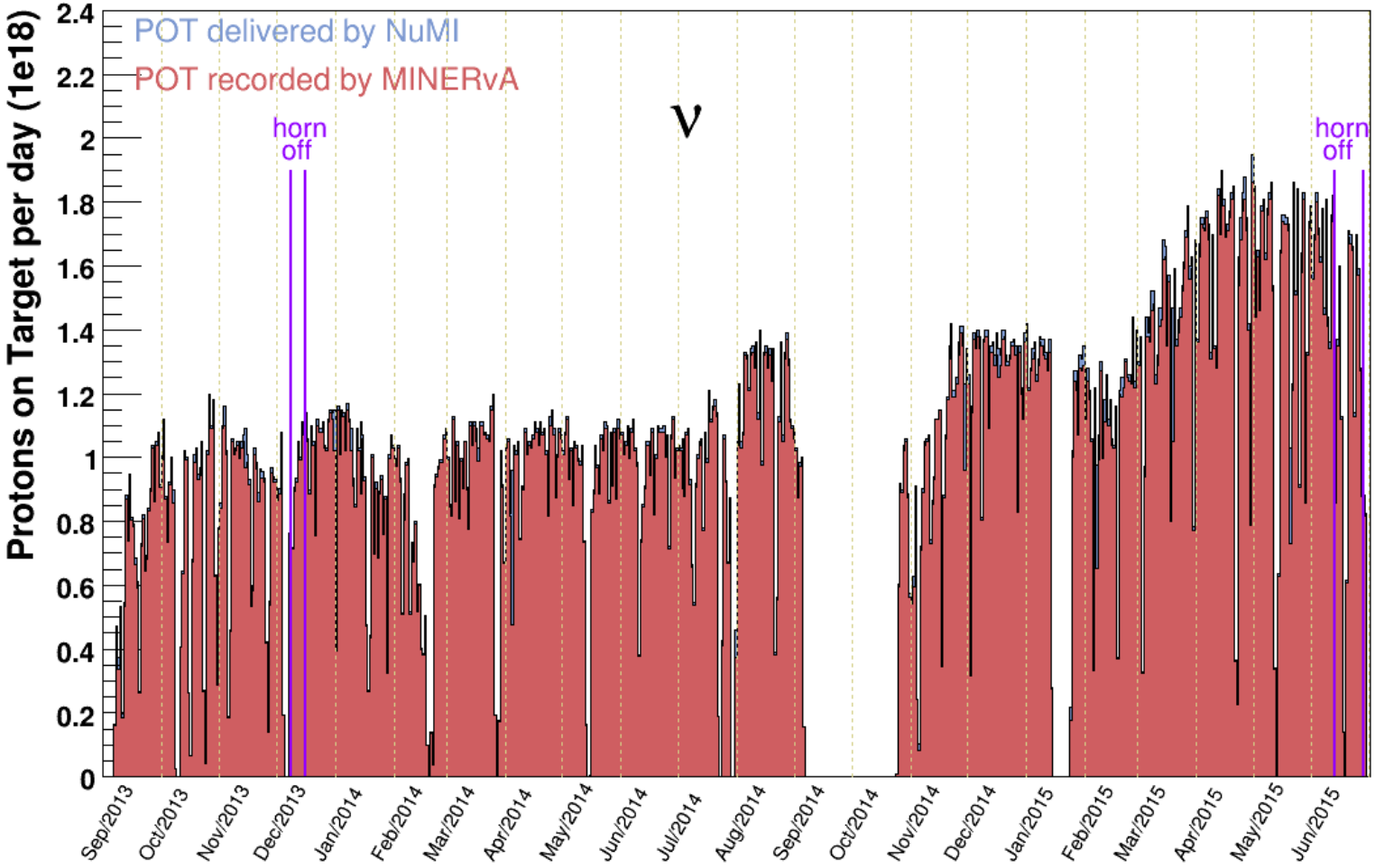
- From the start of the 2d ME Run

Live Time Oct 24- Jun 29



- Finer scale.
  - 6 days with live time < 88%
  - MINERvA 97.7%
  - MINERvA*MINOS 96.3%
- Not clear what is happening near Nov 22.
- When nothing goes wrong, the live time is ~98.7%. This is due to deadtime starting runs and subruns

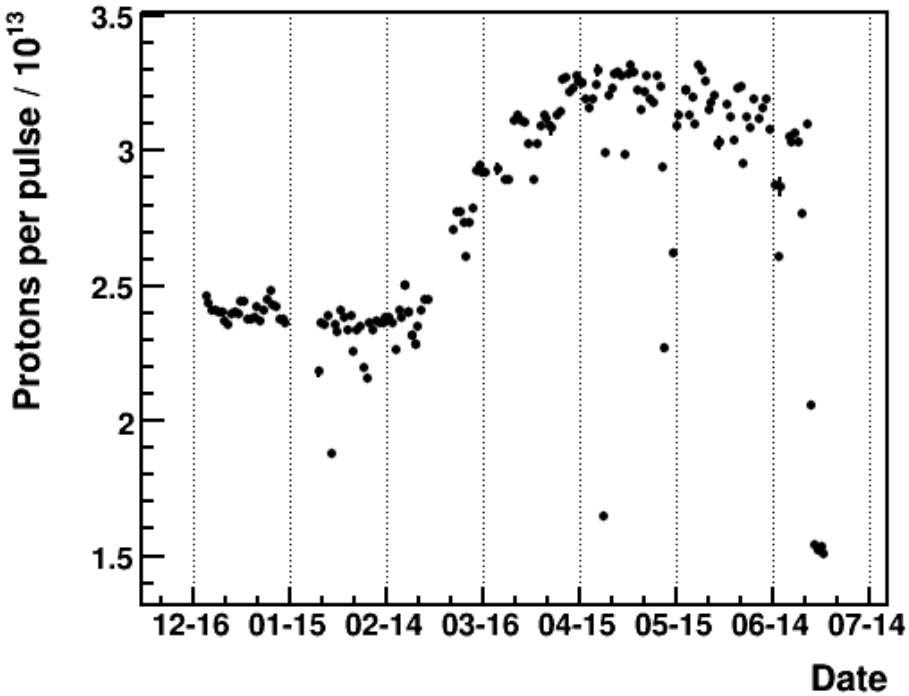
Data taking for ME Run

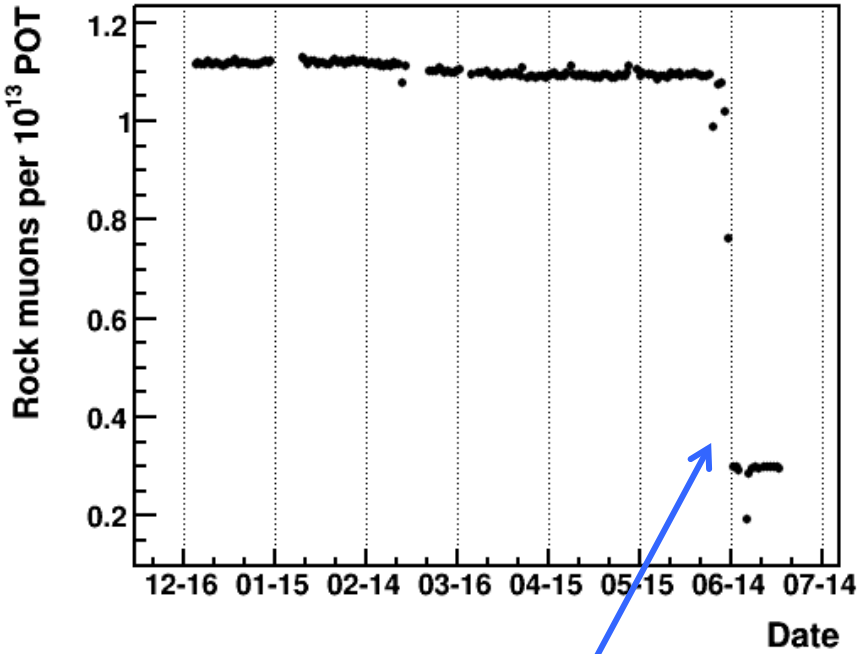


Preliminary live times over ME Run

MINERvA Live = 97.9% MINERvA*MINOS Live = 96.0%

Rock Muons/POT





POT/Pulse

Rock Muons/POT

- The recent Rock Muons/POT points are low because of the horn current scans and the horn off running

Test Beam

- We completed the test beam data taking that we wanted to take with the current TB detector configuration.
- We are doing data quality checks on the data to determine if we need to come back in the fall to collect more data.
- We thank the FTBF group and Accelerator Division for the support during the test beam run.

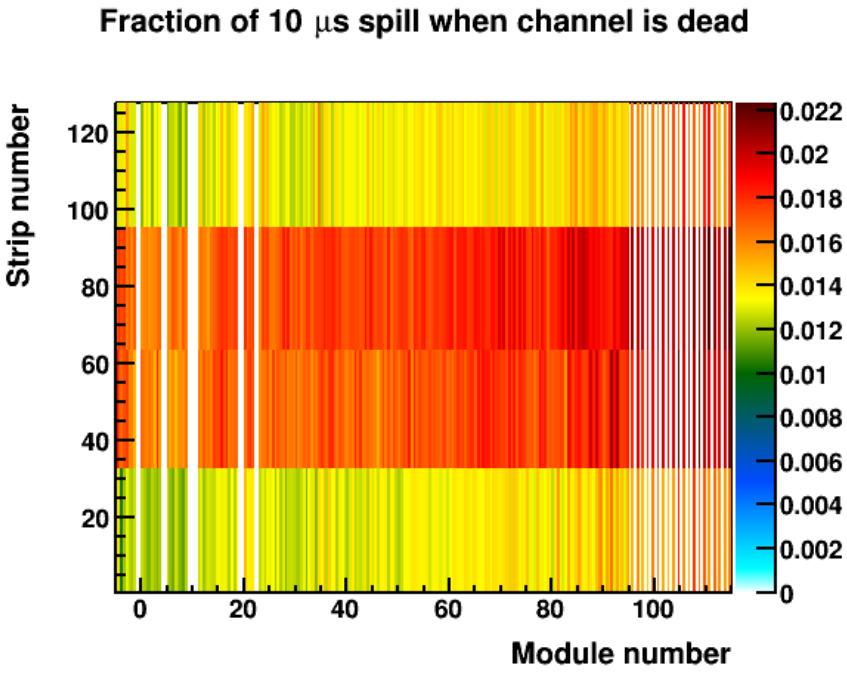
Tasks During Shutdown
New Computers

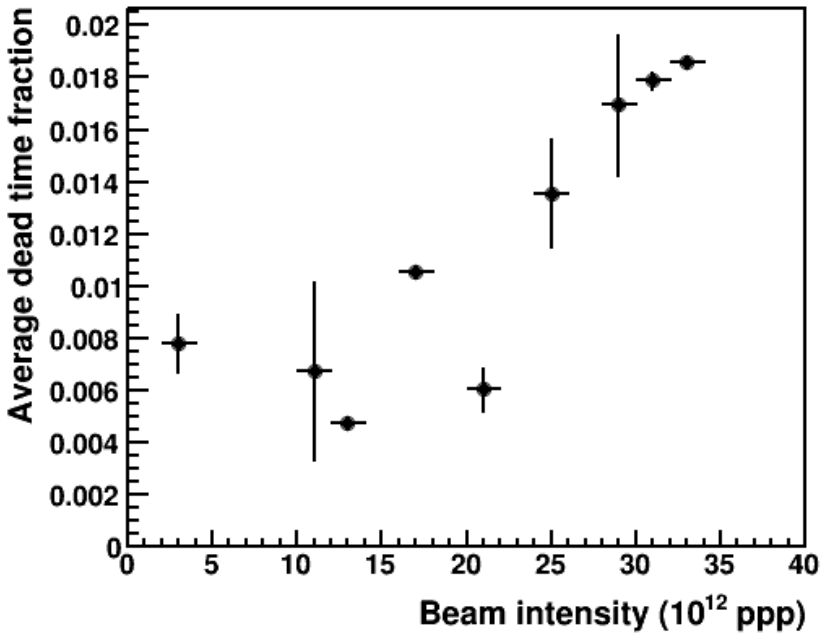
- New DAQ computers
  - Upgrade from a mirrored raid1 system to a reliable and robust raid6 system with a hot spare.
  - Increase disk space from 1 TB to 12 TB
  - Have 2 serial ports so 1 DAQ computer can control both LI boxes
    - Right now separate machines, mnvonline0 & 1, control the LI boxes.
  - One computer will be installed this week
  - These will replace the DAQ computers in the MINOS Hall
- Online monitoring machine – mnvonlinelogger (“logger”)
  - Replace logger with a new machine and add a spare.
    - Current logger is old and dusty.
    - Clone logger and test above ground

FEB Firmware V91→V95 → V96

- The main detector is running with V91.
- V95 increases the number of hits the TriP chips can store from 8 to 21.
  - This firmware has be tested well at the testbeam.
- Readout of TriP chips in V91,V95
  - On a FEB, a TriP chips 1 to 4 stores 16 channels (highs & mediums). While TriP chips 5, 6 each store 32 low channels.
  - Right now if the discriminator of 1 channel fires, we store the charge of 32 channels of highs, mediums, & lows.
    - This reads in all highs, medium & lows read together.
  - While storing the charge the TriP chip is dead for ~ 200 ns

Dead Time



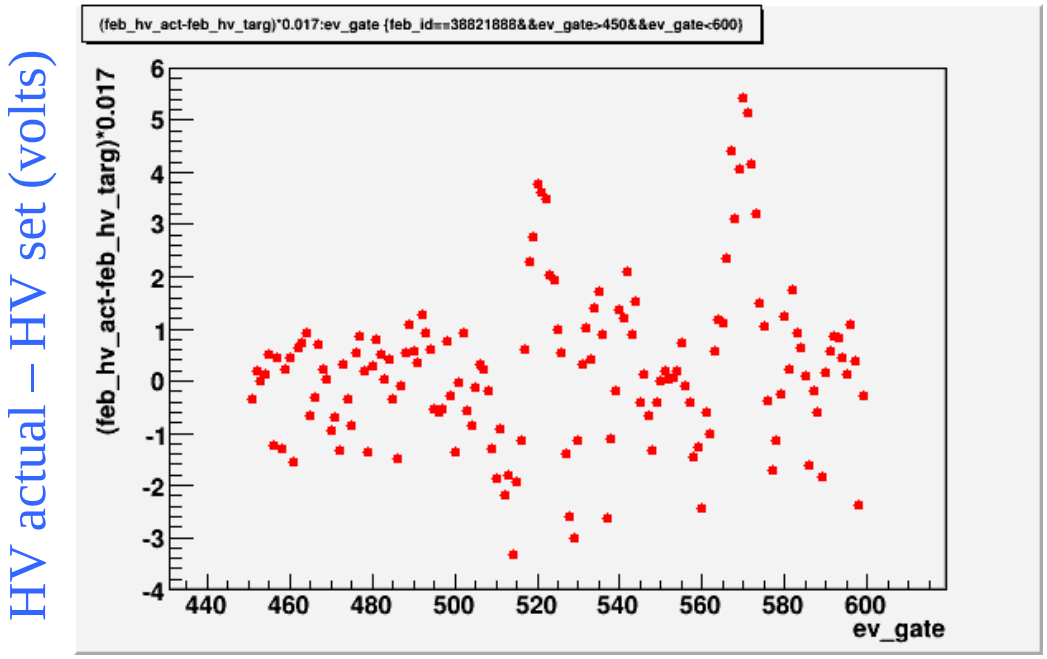


- Dead time while the TriP chip is storing the charge.
  - For Jun 12, the day before the horn strip line failed.
- We see 32 channels storing the charge together

V91→V95 → V96

- To increase the live time, V96 will have TriP chips 1-4 store only their charge when there is a hit. A hit in TriP chip 1 will not cause TriP chip 2 to store their charge. We will store the charge of the lows at the end of the gate.
  - We hardly use the lows.
  - Note that the switching may cause some noise in the lows, so we will have to look at this.
- V96 firmware written, and slowcontrol for v96 is finished.
- V96 needs to be testing it on the 14th floor. The DAQ code and the unpacking will need changes.

HV Varying Problem

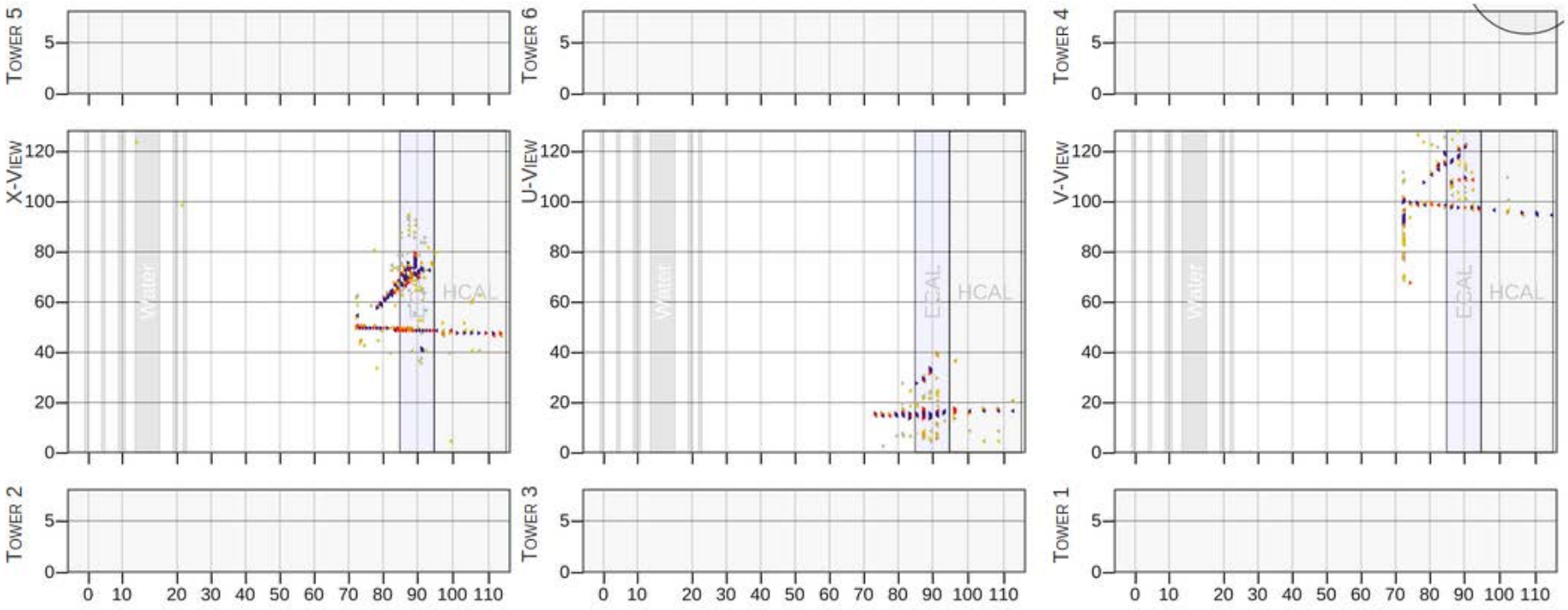


HV actual – HV set (volts)

Gate number

- We have a couple of tubes with the HV varying. One of them will certainly be replaced. The other we will probably replace it.
  - This will require removing the roof

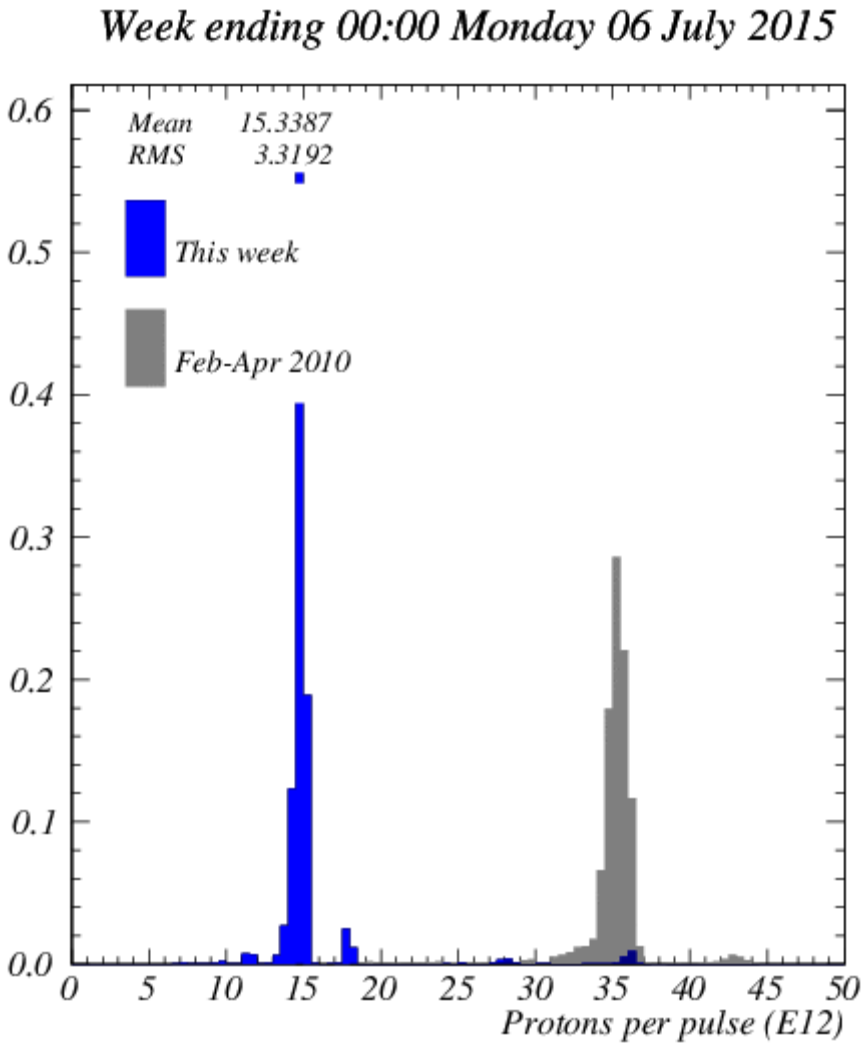
Event Display

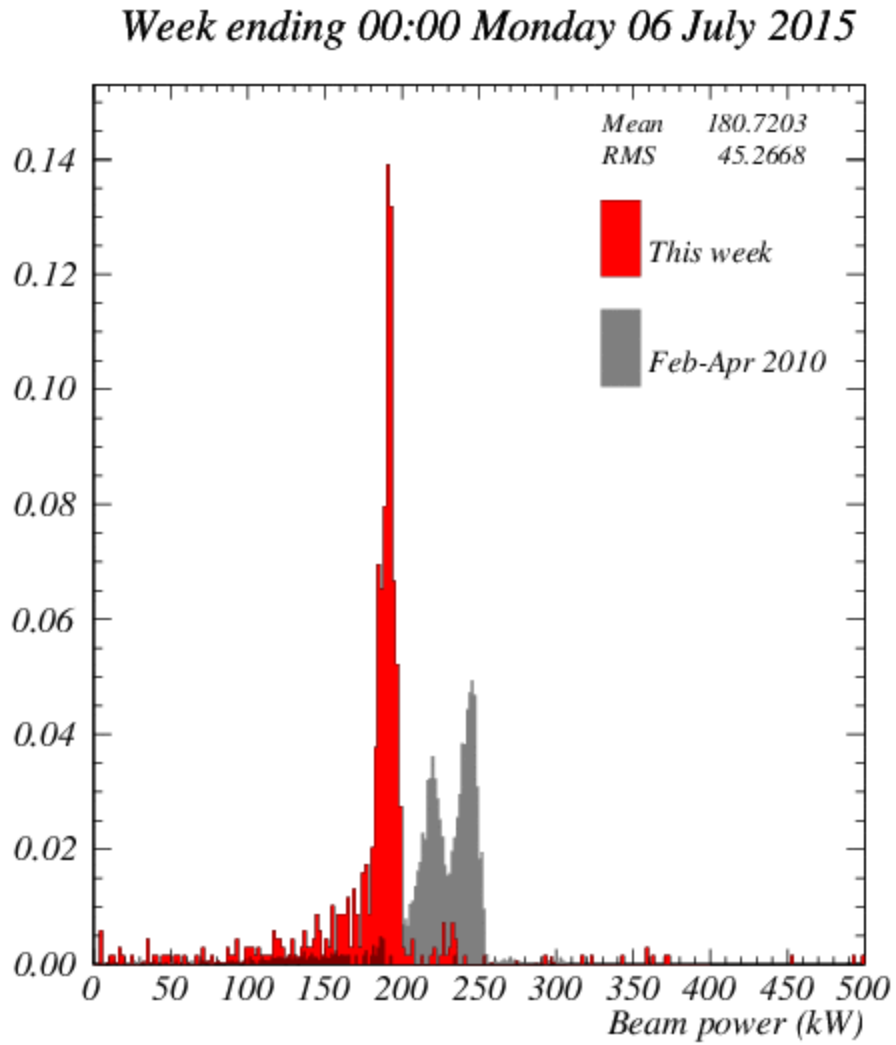


X View V View U View

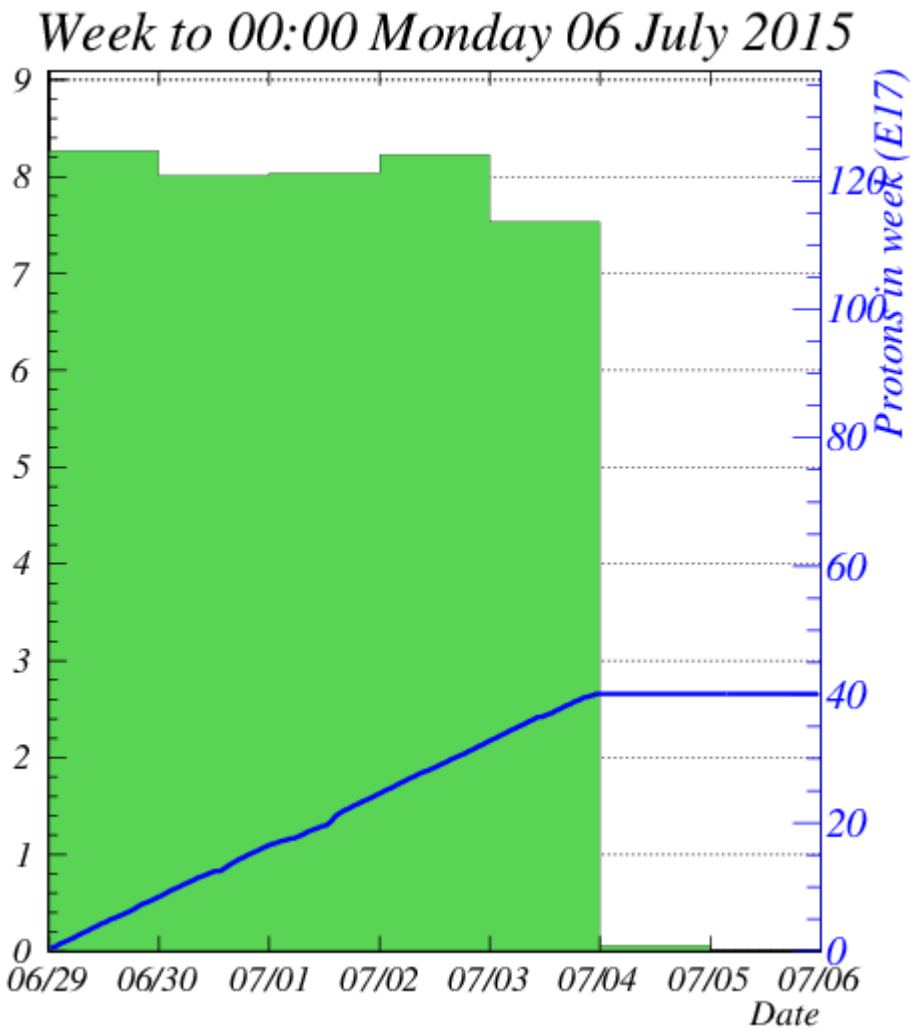
CC π^0 Tracker Event

NuMI Beam Plots
Jun 29 – Jul 3, 2015





Protons for the Week

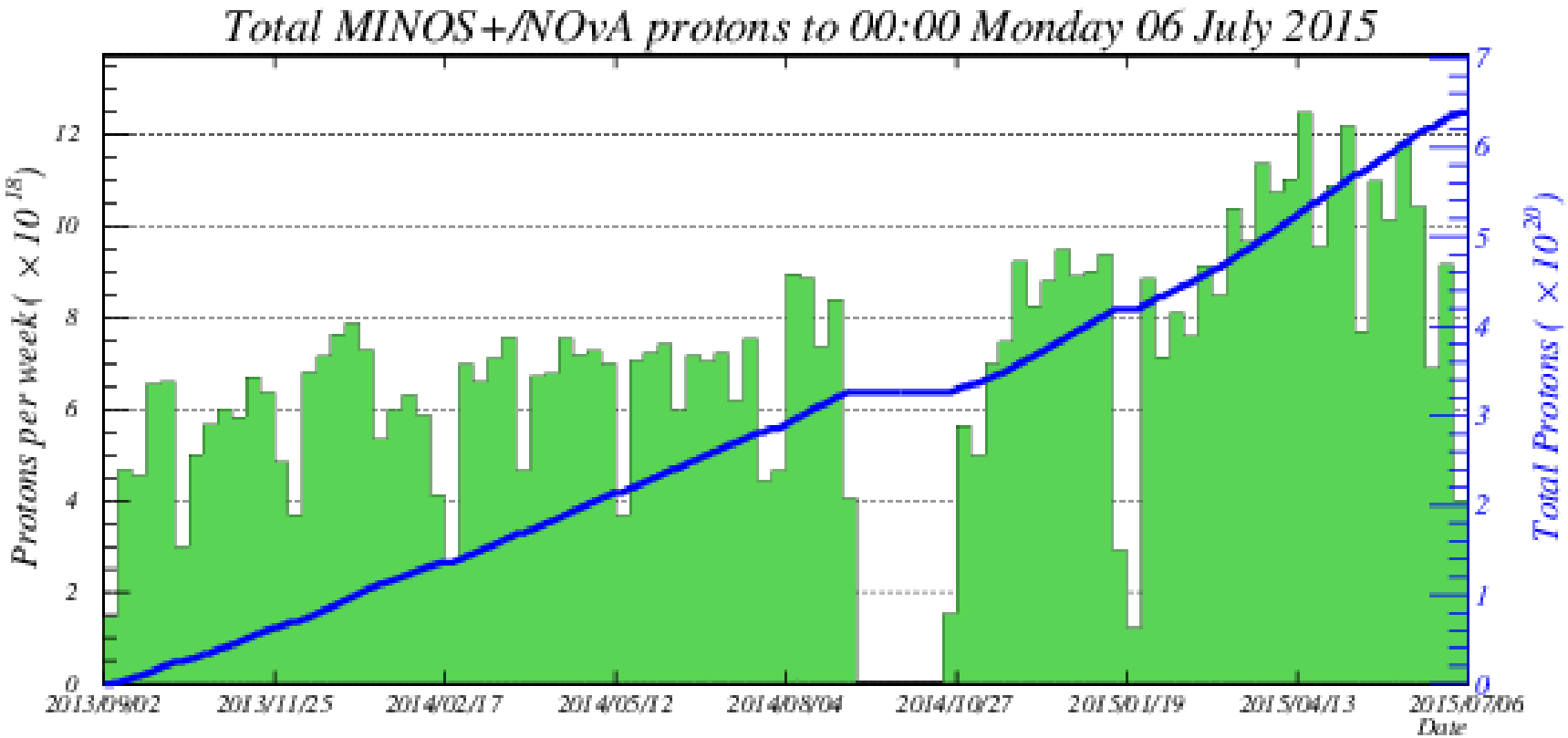


Horn off data
0.40×10^{19} POT
Jun 29 – Jul 4, 2015

Horn off data
2.16×10^{19} POT
Jun 13(~22:00)-Jul 4

Total horn off data
2.86×10^{19} POT

Protons for ME Run



63.85×10^{19} POT - Sep 6, 2013 at 15:00 – Jul 4, 2015

We thank the Accelerator Division for the successful run