

The MINERvA Operations Report

All Experimenters Meeting

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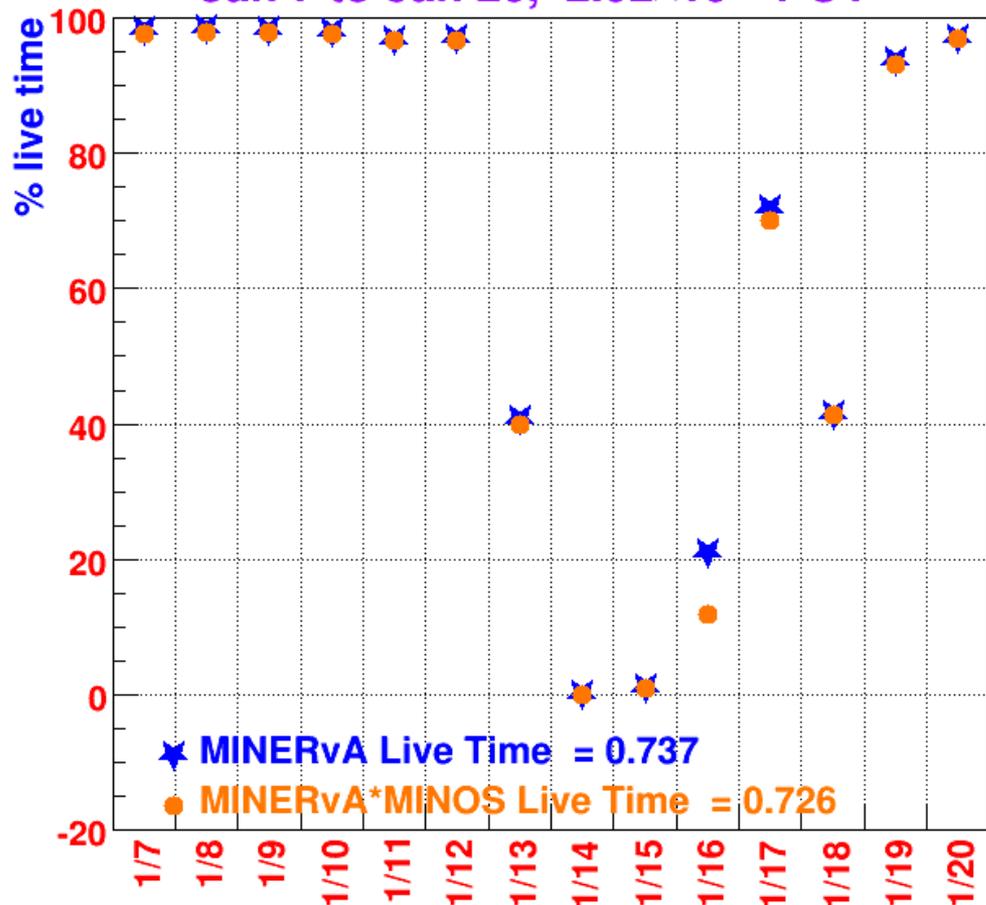
Jan 25, 2016



v Data



Jan 7 to Jan 20, 2.02×10^{19} POT



- Live Time – Jan 7, 2016 to Jan 20, 2016.
- 2.02×10^{19} POT
- MINERvA 73.7%
- MINERvA*MINOS 72.6%
- As will be described later some, ~7%, of the data for Jan 16-18 is bad although it is included in this plot. It is flagged as “dummy bit error” for later removal from the unpacking.



Jan 13-14 Power Outage



- The power panel which supplies power to MINERvA and the electronics for MINOS tripped ~ 8 AM on Jan 13.
 - The breaker was reset
- The power tripped again at 5 PM on Jan 14.
 - 2 cables (2 phases) had connections to ground, probably to the conduit that runs from the MINOS Surface Building to MINOS Hall.
- Through quick work from the Lab, power was restored to the power panel by using 4 of the 8 cables in the power panel at 4:30 PM on Jan 15.
 - The trip of the panel was reduced from 600 amps to ~ 350 amps. The panel is drawing roughly 70 amps on each of the 3 phases at 480 V so the power levels are now fine.



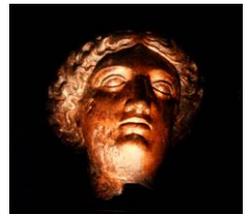
Recovering from the Outage



- The outage created 3 problems.
- During the summer we downloaded FEB firmware v95. We did not have a beam trigger, which gates the DAQ on the neutrino spill, during this time.
 - In general to get the DAQ working, we work on the detector so that our diagnostic program, slowcontrol, returns no errors.
 - The DAQ ran without any problem from the end of the shutdown to the power outage, hence we did not have to debug the DAQ until the power outage.
 - In trying to recover from the outage, Slowcontrol gave errors due to the beam triggers, although we did not know they were from beam triggers. These errors appeared over the entire detector. The beam triggers would disrupt communications in the chains.
 - We determined we could ignore the errors from the beam triggers. Also we had to modify the parameter file to account for this.
 - It took 2 days to figure this out.



Recovering from the Outage



- After the FEB firmware v95 upgrade, the DAQ has been difficult to recover from a power outage. Using Slowcontrol we would see errors on specific chains. We would try to clear these errors by either one or more chain resets and/or power cycles. Eventually the detector would settle down.
- Once the recovery was complete the errors did not appear.



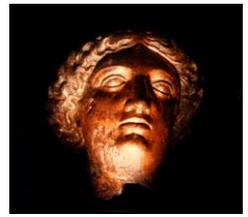
Recovering from the Outage



- After we could run the DAQ, we looked at the data
 - We got 2 kinds of data bank header errors.
 - 1st caused the unpacking to give up trying to unpack the rest of the data in the subrun after it appeared, called “RAM2” error (from the message in the nearline.).
 - 2nd caused the ADC data to be bad, called the “dummy bit” error.
 - Replacing 4 CROC-Es out the 15 CROC-Es caused these data bank errors to go away.
- The last CROC-E was replaced ~11 PM on Jan 18
- After that the data has been fine.
- About 93% the data from runs with “dummy bit” error can be recovered. We do not know how to recover from the RAM2 errors.
- We are still getting errors, 1-2 times a day, which sometimes stops the DAQ. It can be restarted fairly easily. The last CROC-E that we replaced has these errors. There are no data errors.



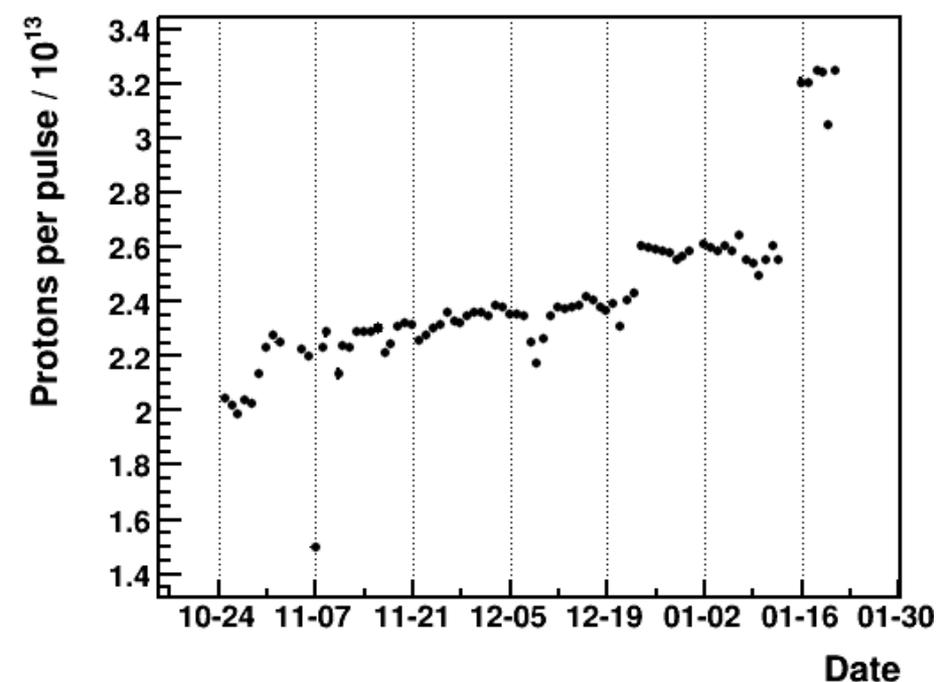
Recovering from the Outage



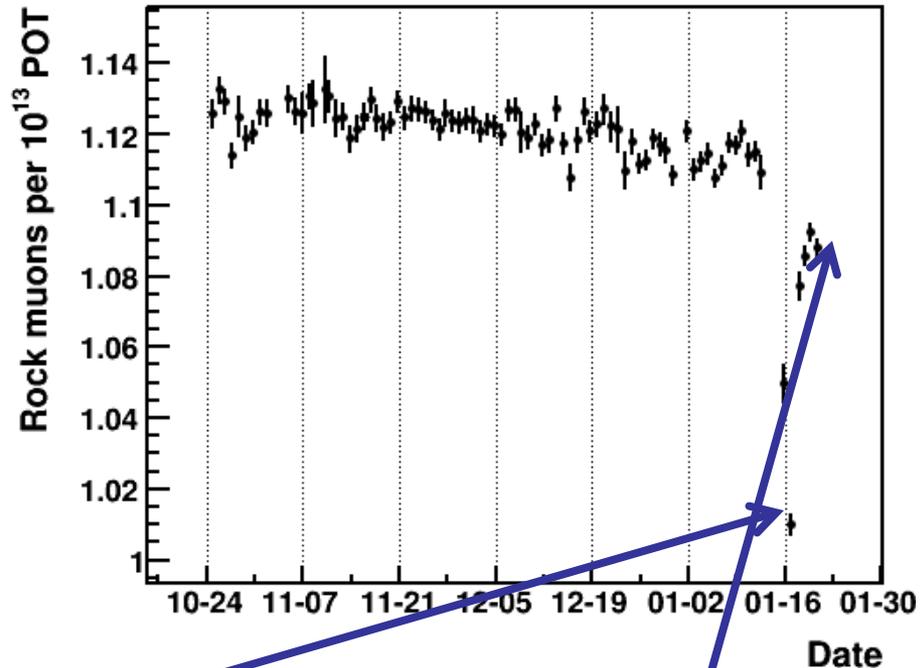
- On Jan 19 the lower live time , 93.7%, was caused by this problem.
- We would like to thank Cristian Gingu, Paul Rubinov, & Boris Baldin of EED and Donatella Torretta & Geoff Savage of the Neutrino Division.



Rock Muons/POT



POT/Pulse

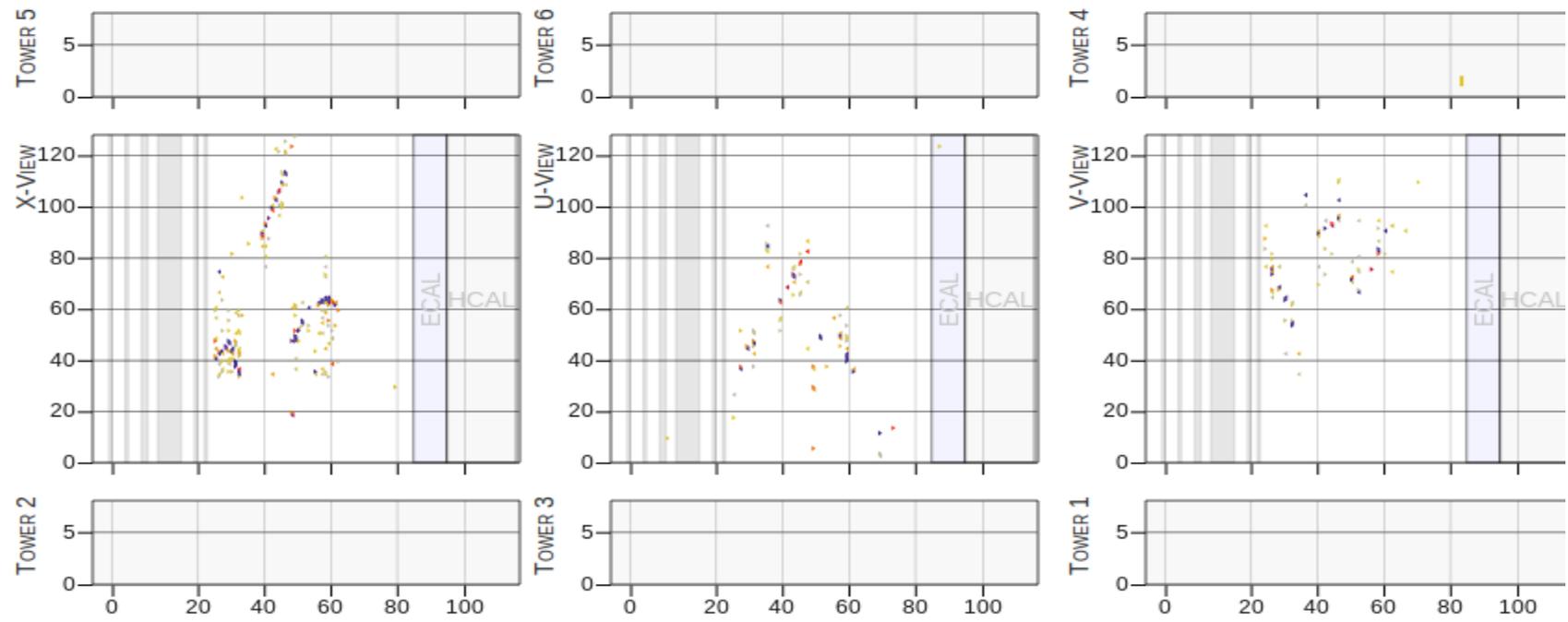
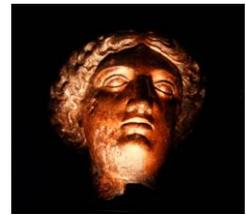


Rock Muons/POT

- The ~10% loss is caused by the bad ADC data caused by the “dummy bit” error. As CROC-Es got replaced the error rate went down.
- The higher proton power from 4+6 slipstacking beam causes ~ 2% decrease in rock muon tracking efficiency



Event Display



X View

V View

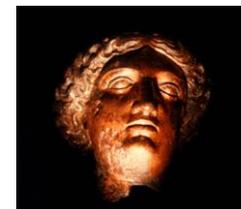
U View

Tracker neutral current



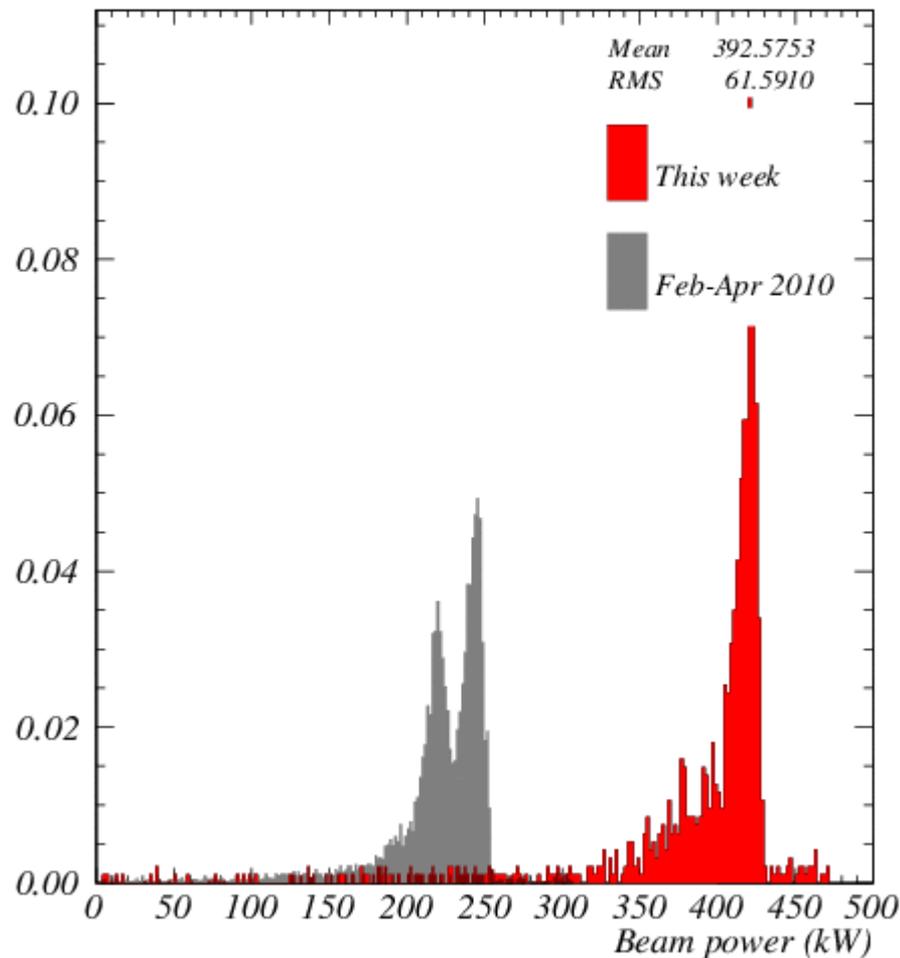
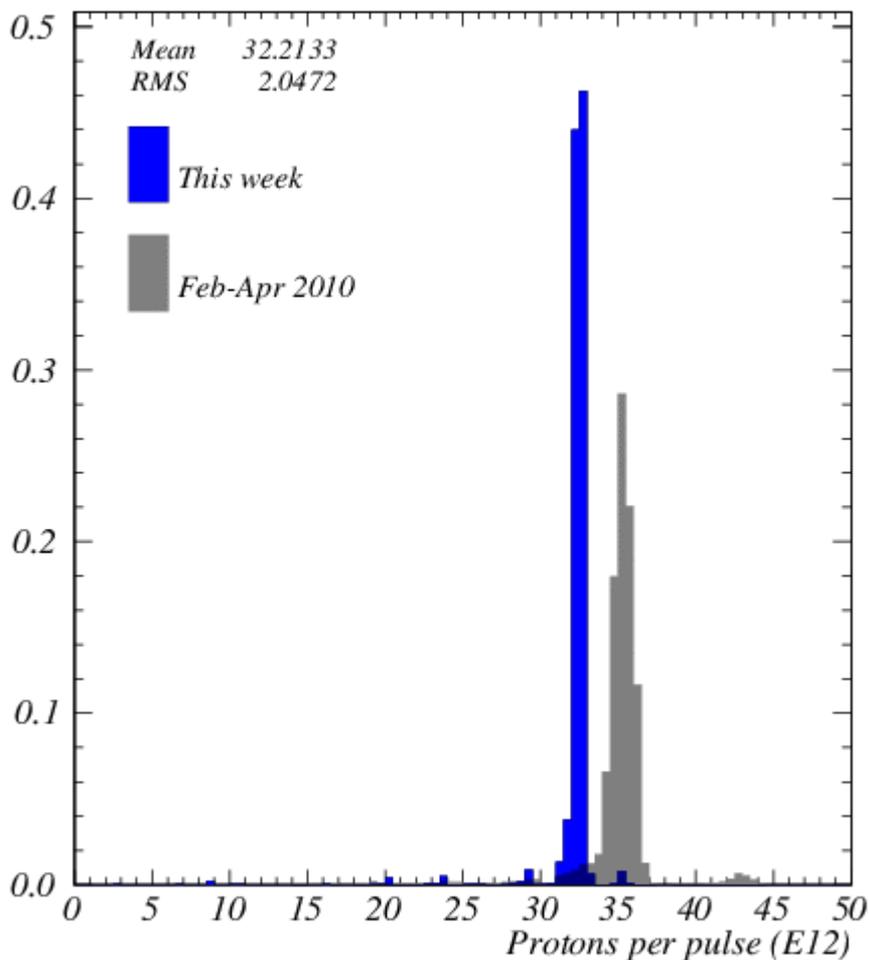
NuMI Beam Plots

Jan 4-10, 2016



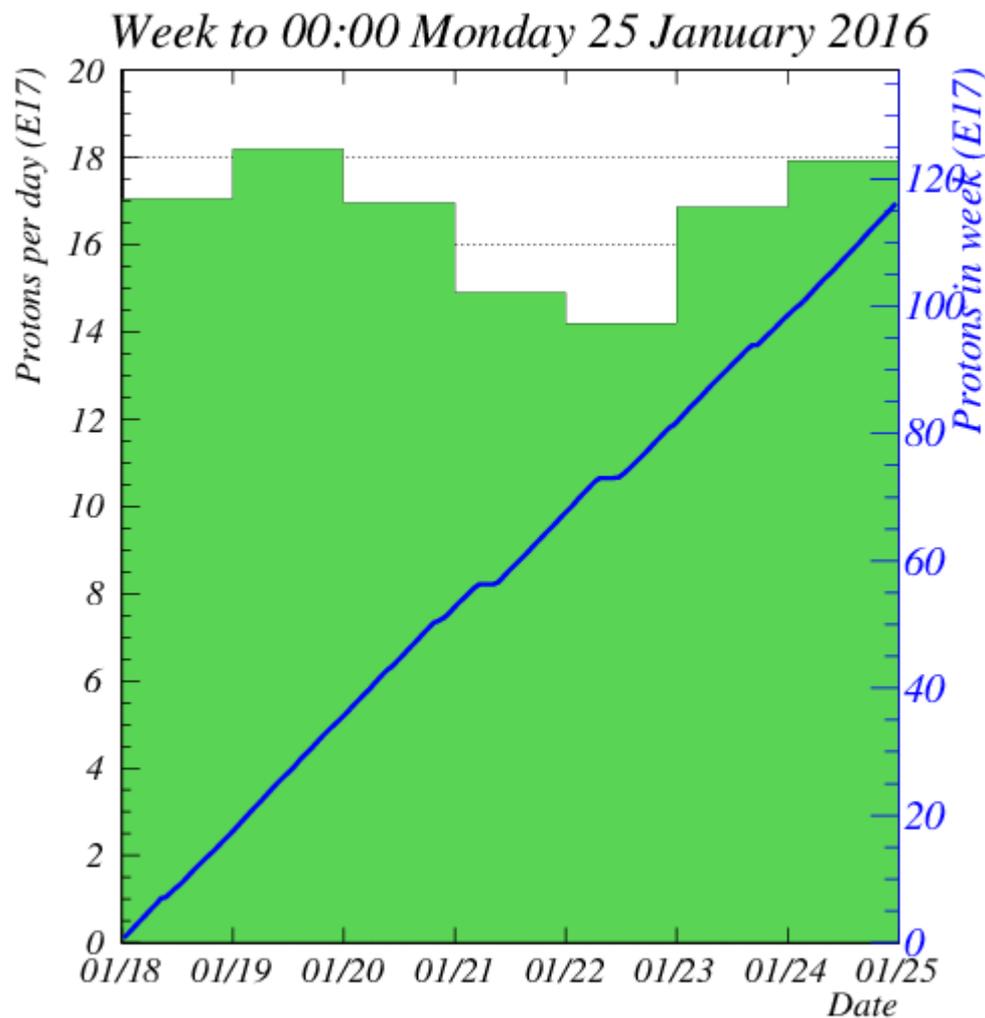
Week ending 00:00 Monday 25 January 2016

Week ending 00:00 Monday 25 January 2016





Protons for the Week



1.16×10^{19} POT
Jan 18-24, 2016

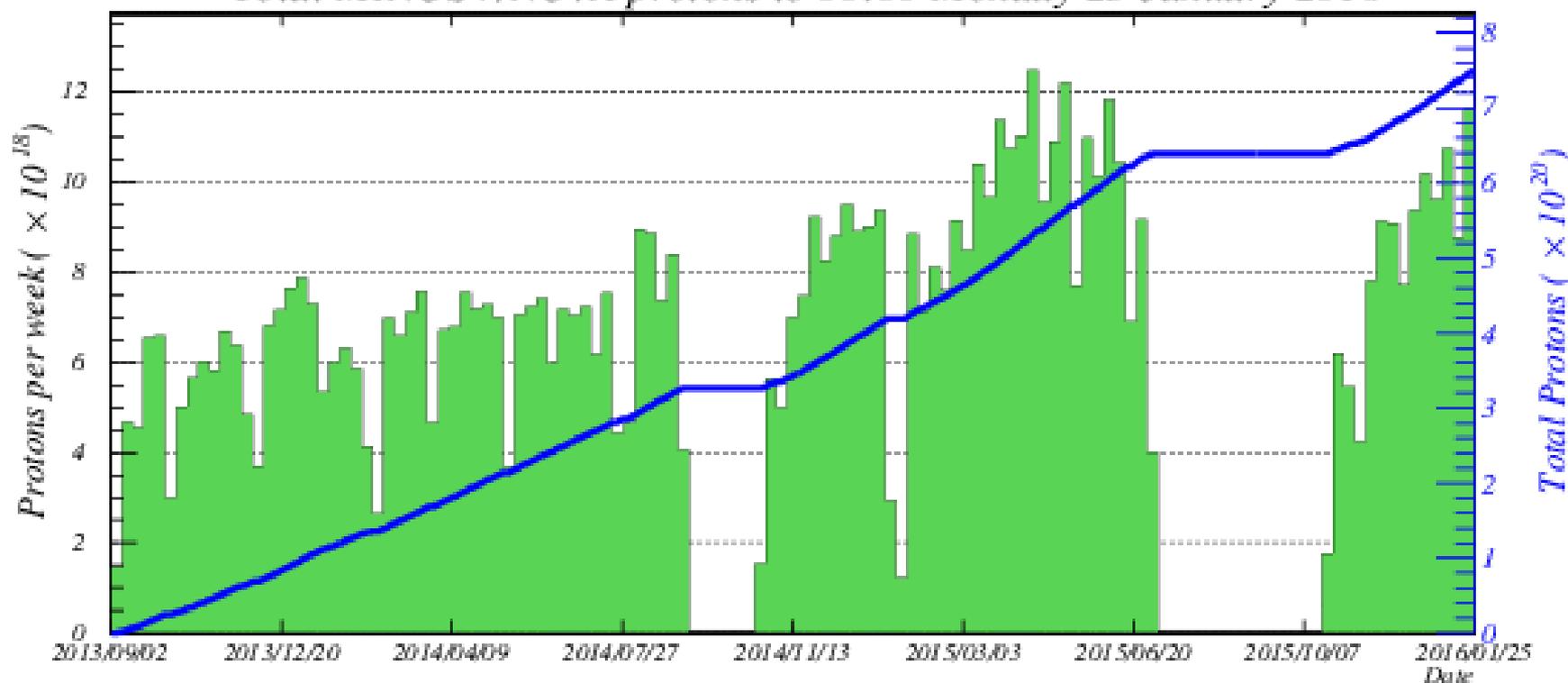
0.88×10^{19} POT
Jan 11-17, 2016



Protons for ME Run



Total MINOS+/NOvA protons to 00:00 Monday 25 January 2016



75.02×10^{19} POT - Sep 6, 2013 – Jan 24, 2016