

# NOvA Experiment Status

## All Experimenter's Meeting

Jaroslav Zalesak, FNAL/Institute of Physics, Prague

Jul 11, 2016

# Operations – Summary



## □ BEAM:

- Since Jun 29 we are delivered with the antineutrino beam.

## □ NearDet:

- The noise was reduced after the detector set to HV off.
- Since this point 100% efficiency of taking antineutrino beam.

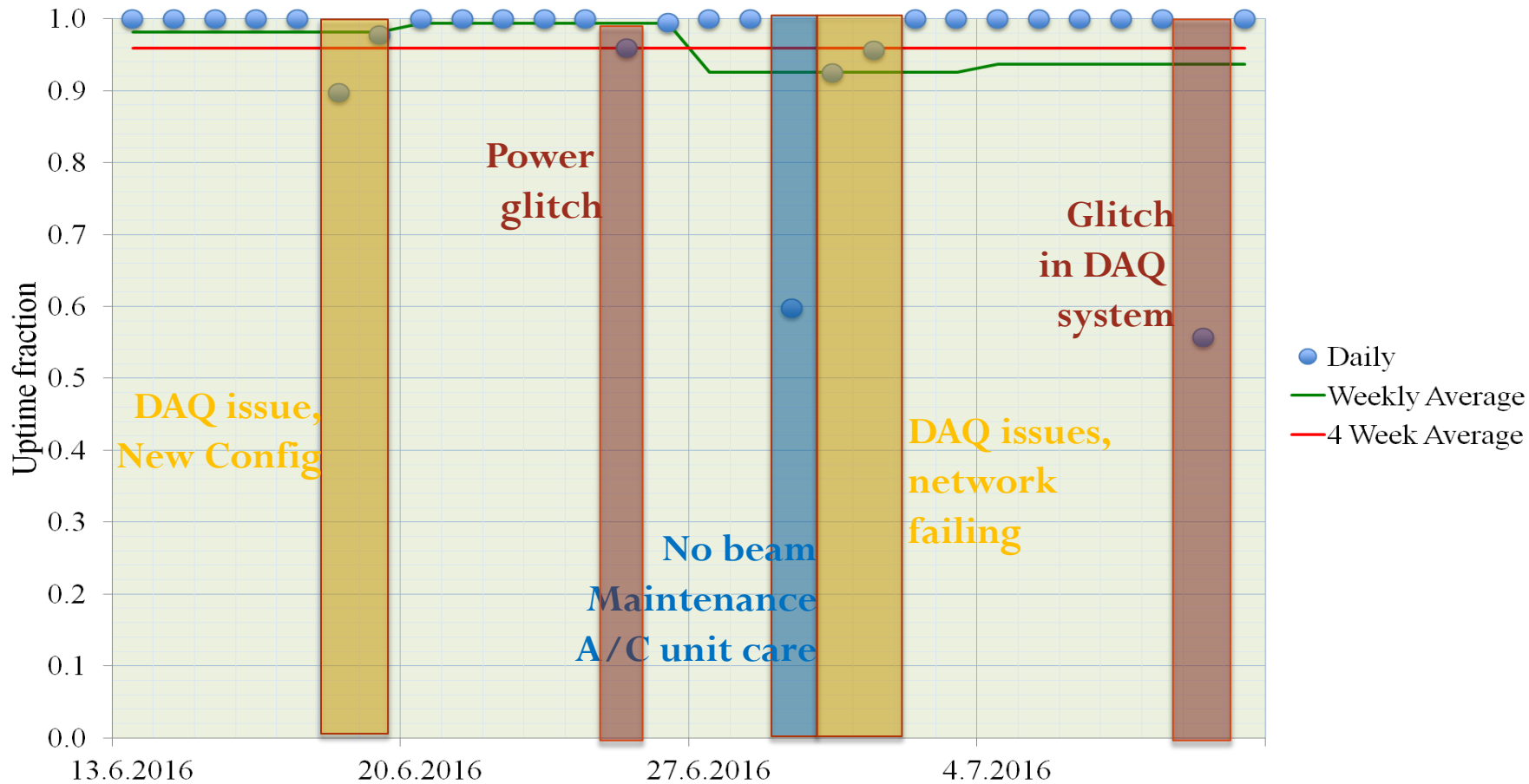
## □ FarDet:

- **A glitch-like issue in the DAQ system on Sat.**
- Maintenance (incl. A/C) performed during beam downtime.
- More than 1 week some kind of a network failure mode is present, however not preventing us to take good data.

## □ Collaboration:

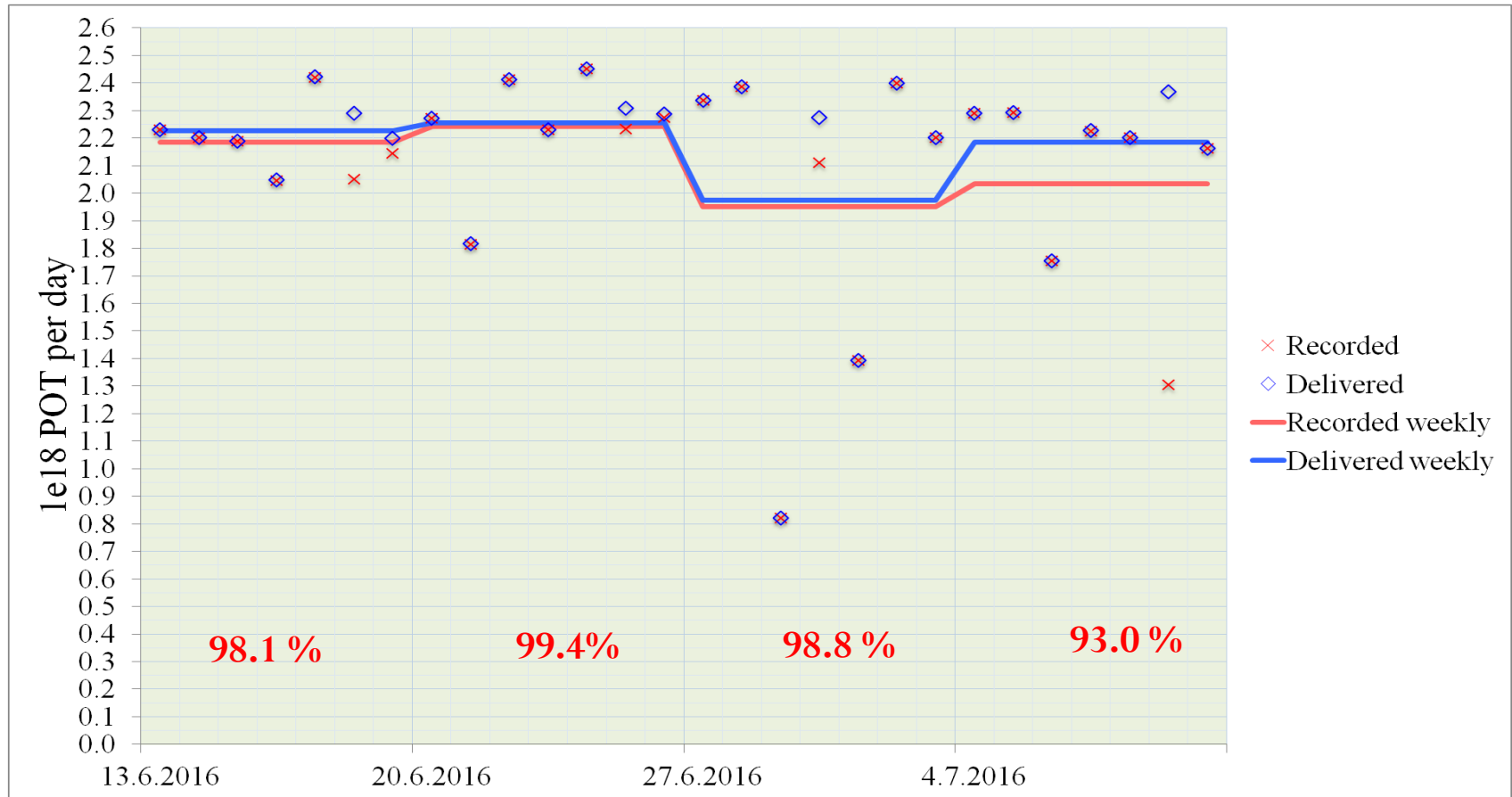
- Collaboration presented their newest results on Neutrino'2016.
- Discussion on beam summer shutdown tasks.

# FD: Data taking Uptime



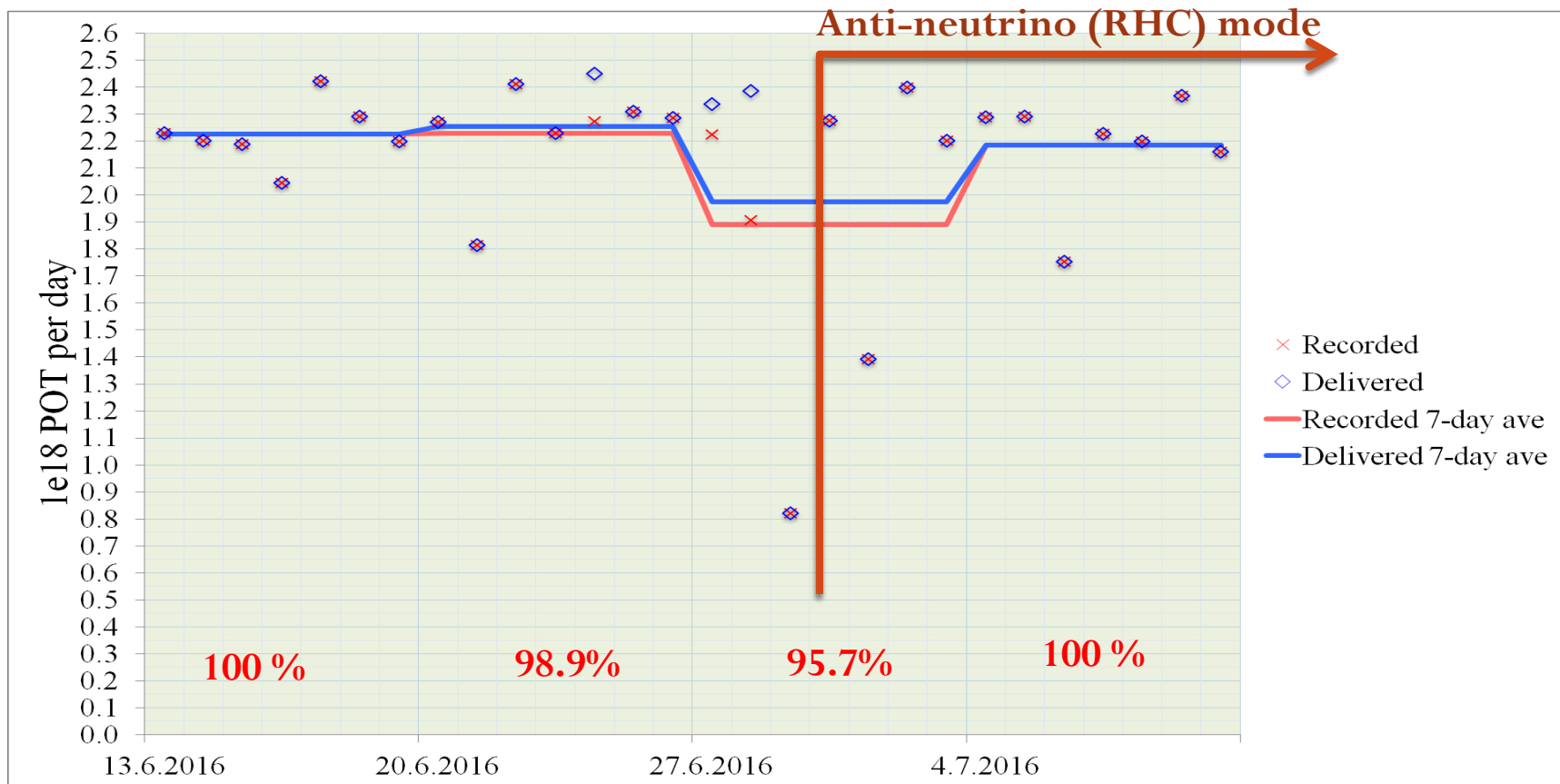
- 93.6% (92.5%) efficiency last (one before) week.
- A weird glitch within computing infrastructure took down detector for 11 hours over weekend, even if the worst scenario did not happen, the DAQ/DCS recovery requested a big effort of couple of experts being on-site during the cold start of the system performed.
- We are trying to solve some unexpected latency in the network responses.

# FD: POTs delivered/recorded



- Last week we took **14.23 of 15.30** e18 POTs with eff **93%**, a week before **98.8%**.
- All beam lost is related to the 11 hours recovery of the detector over weekend.

# ND: POTs delivered/recorded



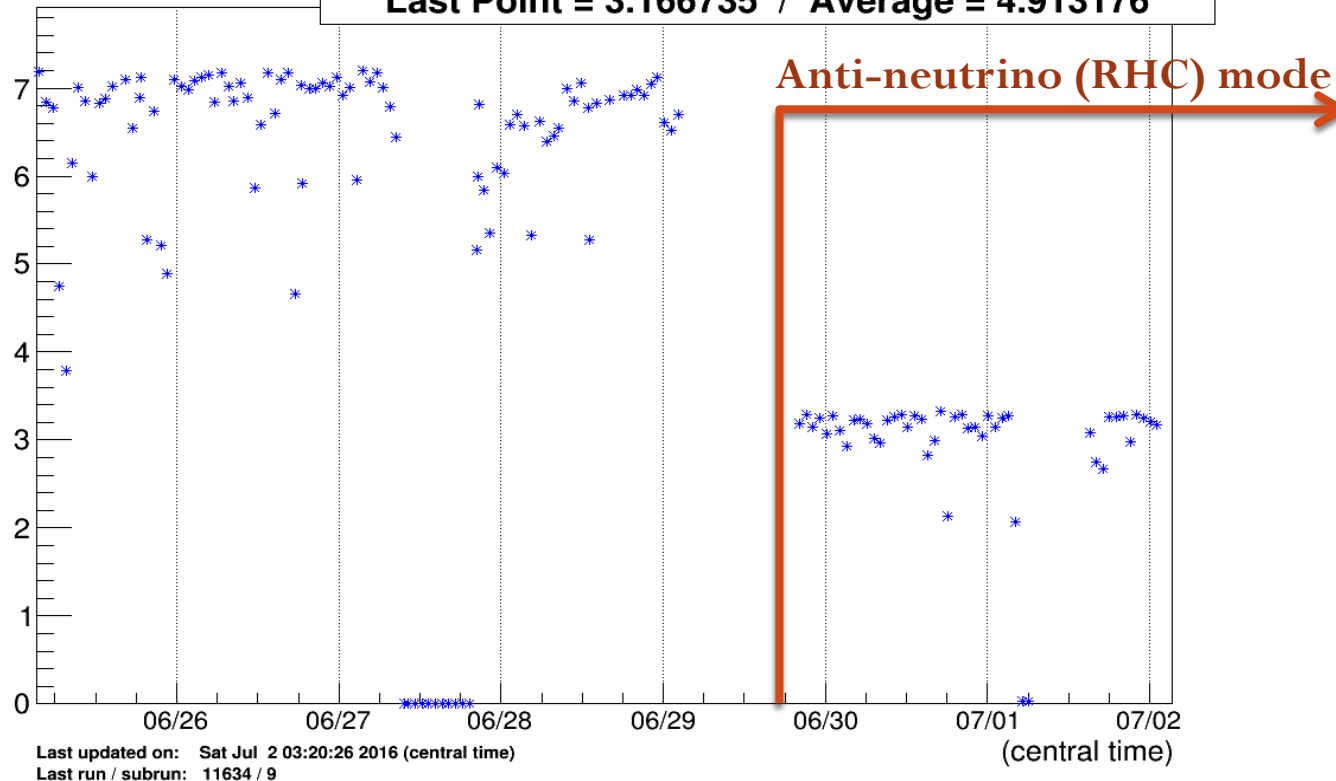
- Last weeks we took 15.30 of 15.30 e18 POTs.
- Since the RHC mode beam started we took 23.6 of 23.6 e18 POTs

# ND: Tracks in neutrino and anti-neutrino mode



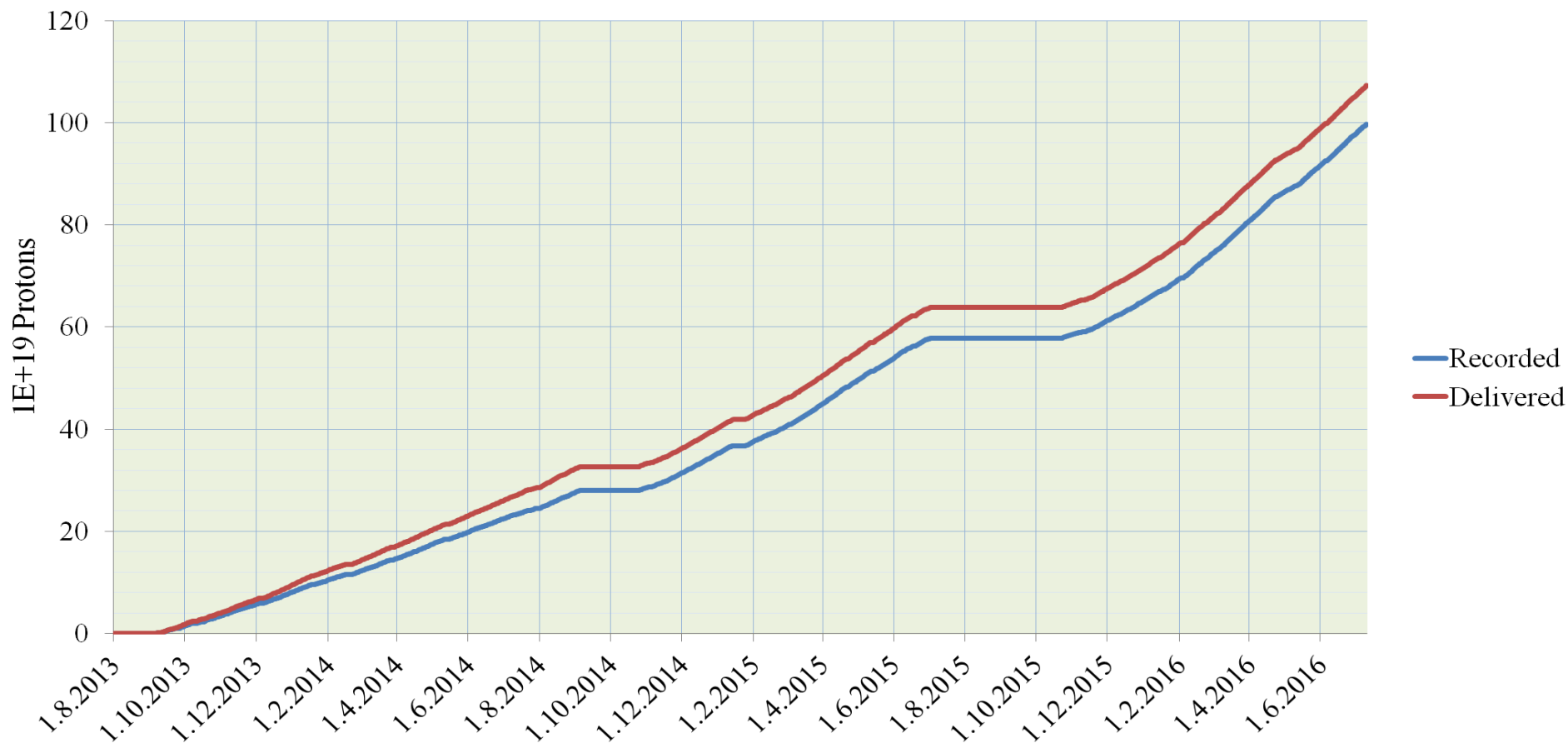
NuMI # Tracks by Subrun - partition 1

Last Point = 3.166735 / Average = 4.913176



➤ We could see in average (1-hour binning) 3 antineutrino comparing to 7 neutrino tracks in the Near detector.

# FD: Accumulated POTs – all years



- FY2014: 280/326 e18 POTs (86%) + FY2015: 298.5/312.5\* e18 POTs (95.5%) [253days]
- FY2016: 418.1/433.5 e18 POTs (96.4%) [280 days]  
including Anti-Neutrino beam 22.3/23.6 e18 POTs (94.8%) [11 days]

\*) Including 20.8e18 POTs horn-off data and 2.6e18 non-nominal horn current data.

- Total neutrino beam for the FD reached 0.982 / 1.057 e21 POTs (not weighted)
- Total anti-neutrino beam for the FD reached 0.022 / 0.024 e21 POTs (not weighted)



- Computing usage were dominated by user jobs on-site (7/4-7/11)
- Jobs achieved high CPU efficiency (94.7%)
- and high success rate (>98%).

Average Jobs Running Concurrently

1484

Total Jobs Run

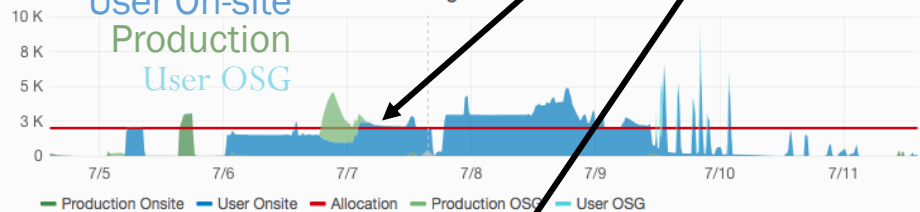
246863

Average Time Spent Waiting in Queue (Production)

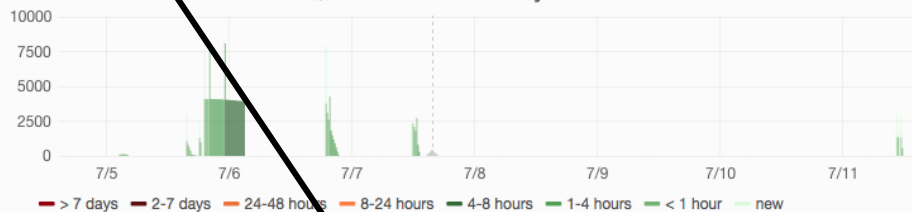
5.43 hour

User On-site  
Production  
User OSG

Running Batch Jobs



Queued Production Jobs by Wait Time



Total Jobs Failed (nonzero exit code)

3449

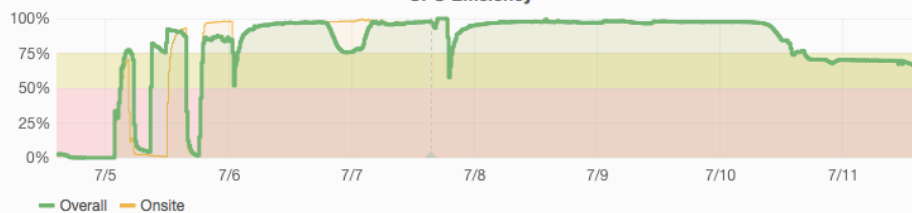
Average CPU Efficiency

94.7%

Job Success Rate



CPU Efficiency



New Data Cataloged

1.7 TB

Total Data Cataloged

7.1 PB



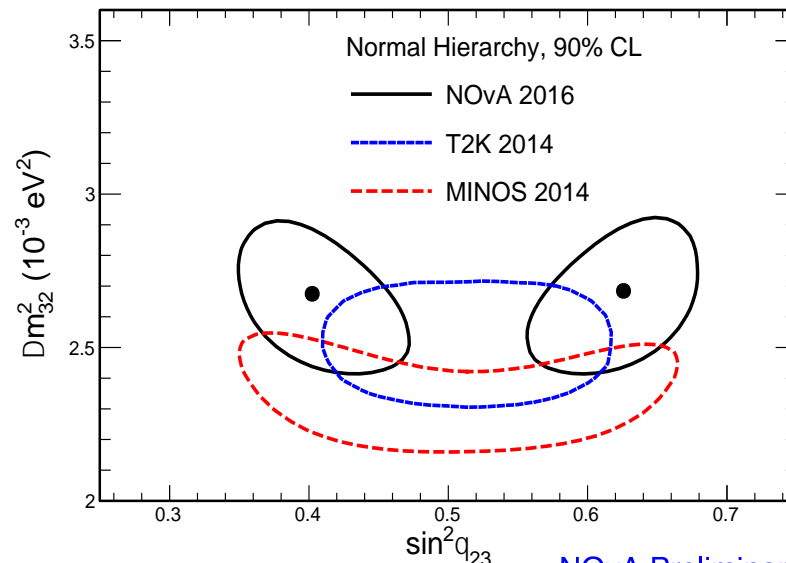
# NEUTRINO 2016 Summary



With  $6.05 \times 10^{20}$  POT, NOvA finds:

- **Muon neutrinos disappear**
  - Best fit is non-maximal
  - Maximal mixing excluded at  $2.5\sigma$
- **Neutral current event rate shows no evidence of steriles**
- **Electron neutrinos appear**
  - Data prefers NH at low significance
  - Region in IH, lower octant around  $\delta_{CP} = \pi/2$  is excluded
- **Looking forward to more neutrinos and antineutrino running planned, Spring 2017**

NOvA Preliminary



NOvA Preliminary

