NOvA Operations Report

December 2020

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Proton PMG Meeting

January 7, 2021

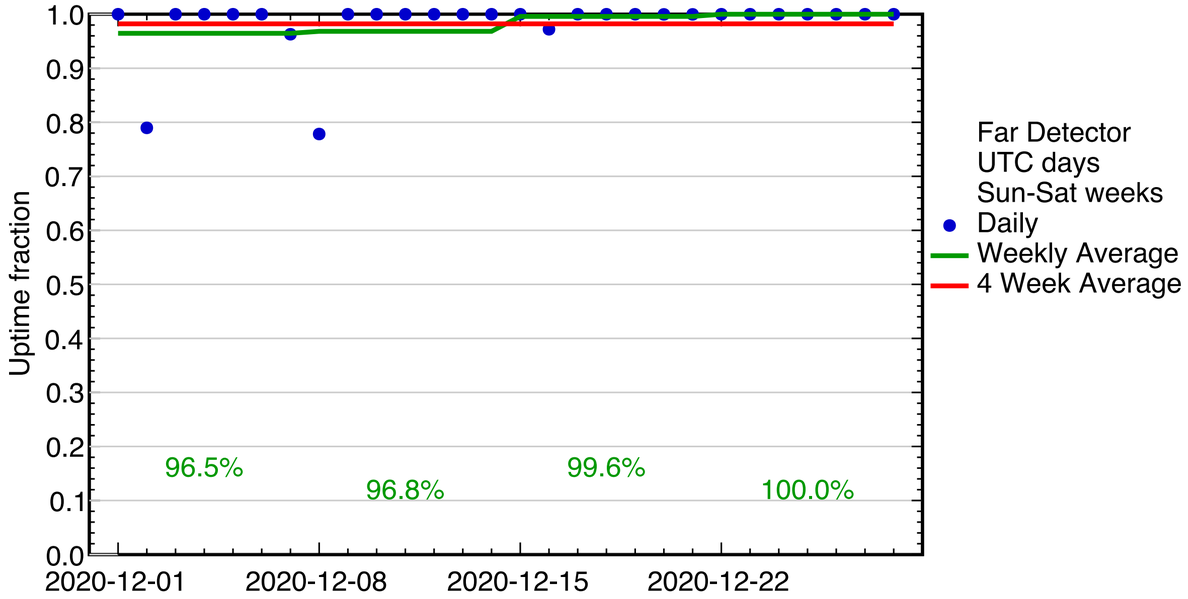
NOvA Status and Plans

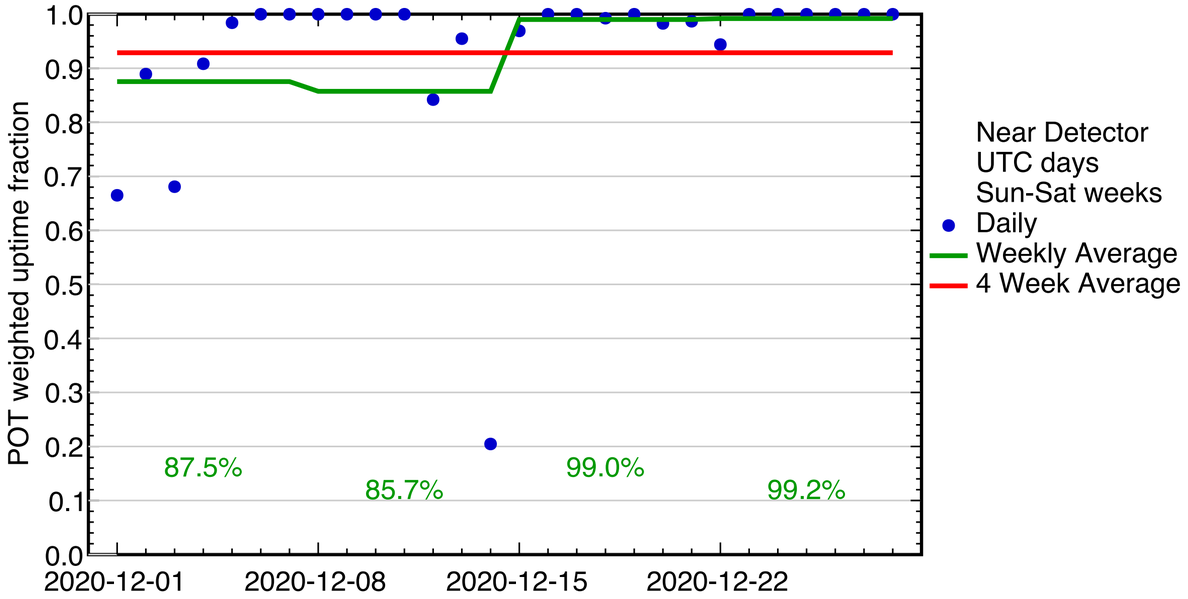
- We have been doing web-based checklist shifts with shifters monitoring the detectors through screenshots of the DAQ VNC sessions from their laptops or home computers.
  - Rely on 24/7 on-call expert support and automated alerts.
  - Less than 5% impact on detector uptime and less than 1% impact on data quality.
- Beam is back on December 12, we continue web-based checklist shifts since then.
  - We've been using a call forwarding service provided by Google since November 13, in order to let shifters without access to a ROC be able to contact and be contacted by the MCR after beam returns.
  - It works well most of the time. However, we have had at least one incident where the MCR could not reach our shifter. We are investigating.

NOvA Testbeam Status and Plan

- Expecting beam to return to MCenter this week.
  - Switchyard beam is back, we are awaiting final approval before receiving it again.
  - Sign-offs proceeding in the S&S, Interlock and Rad Safety groups.
- Recommenced our operations in the middle of December, collecting cosmics with the NOvA detector.
  - New ‘merged’ shifting model involving the combining of Test Beam monitoring with regular NOvA operations has been extremely smooth over the first few weeks and has been fully stress-tested and ready for beam.
  - Experienced experts with site access on-call 24/7 to access experiment if required.
- Currently coordinating final work in MC7 before collecting further beam data:
  - New shielding in the secondary beam completed the week of Christmas;
  - Tilting detector to correct the slope of the horizontal cells (this week/next week);
  - Wire chambers in beamline are all operational and ready for beam following a long campaign to improve their stability and grounding;
  - Time-of-Flight detectors are being aligned following a re-arrangement to improve particle acceptance and re-commissioned this week.

Detector Operations

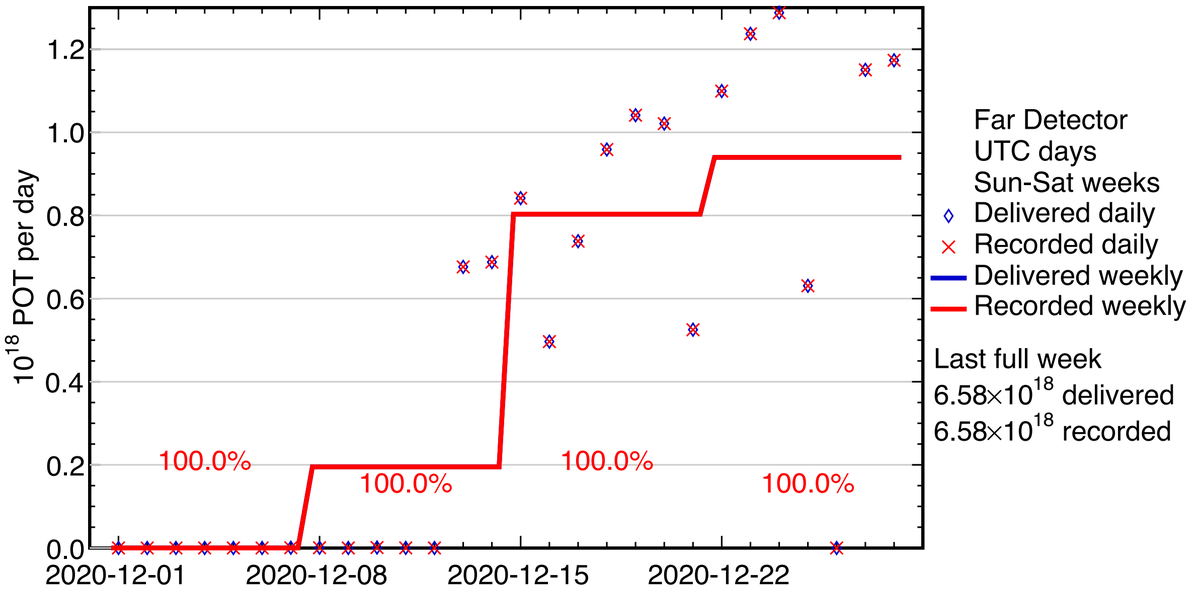


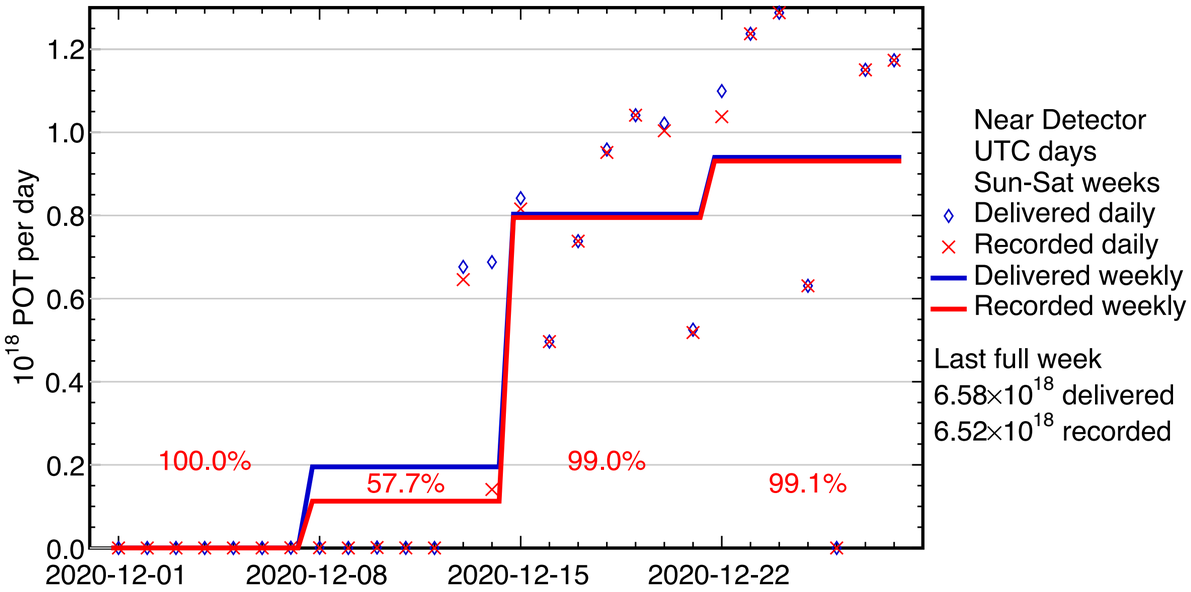


- Planned Downtimes: ~ 6 hours
  - Hardware maintenance in Ash River: 12/8
  - DAQ expert activity: 12/16
- Unplanned Downtimes: ~ 6 hours
  - Power supply issue in Ash River: 12/2
  - DAQ crash: 12/7

- Planned Downtimes: ~ 20 hours
  - Hardware maintenance: 12/1, 12/2, 12/3, 12/4
  - DAQ expert activity: 12/15
- Many small crashes are related to one FEB board. Unplanned Downtimes: ~ 27 hours
  - DAQ crash: 12/1, 12/5, 12/12, 12/13, 12/18, 12/20, 12/21, 12/22
  - Network issue: 12/14

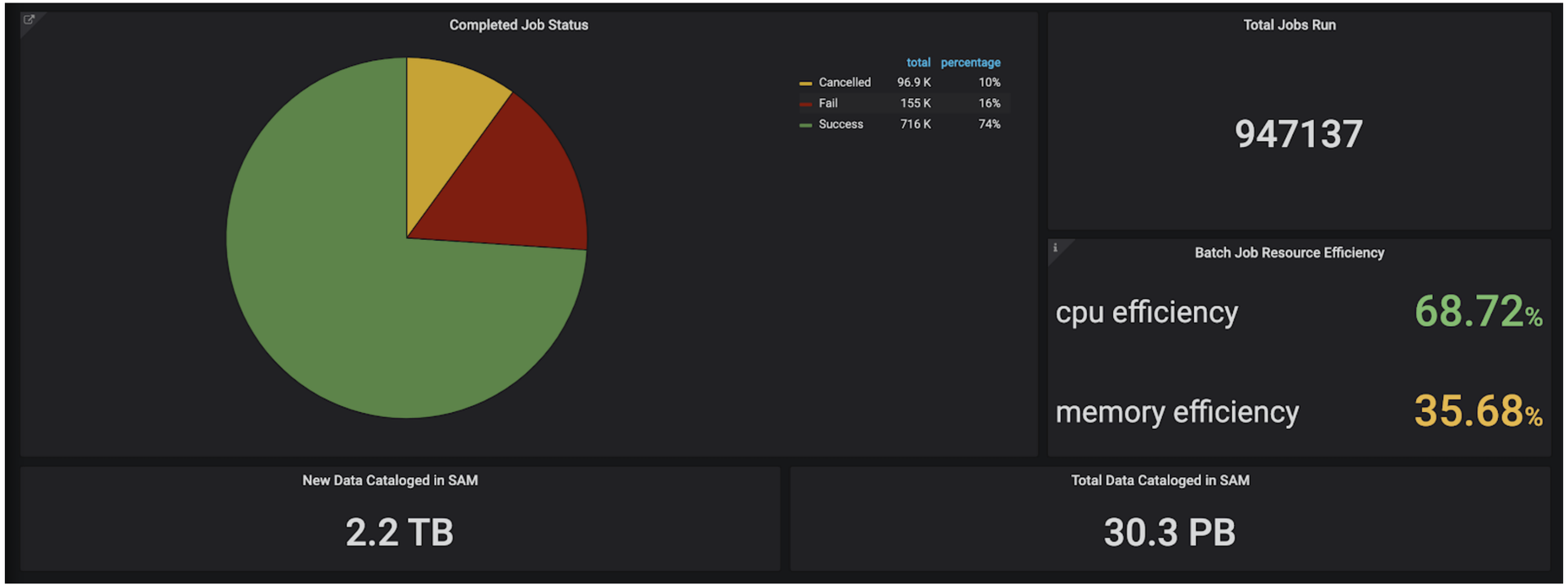
Detector Operations





- Total RHC POT recorded: 12.69E20
- Total FHC POT recorded: 16.50E20 (13.86E20 14kT-equivalent)
- FY20 POT: 2.60E20 delivered, 2.57E20 recorded
- FY21 POT: 0.25E20 delivered, 0.22E20 recorded

Computing Summary



- Between Dec 2, 2020 and Jan 5, 2021, NOvA ran a total of ~950k jobs.
- Activities were slow over the holiday break but we continued the production of Prod5.1 files.
- We've completed ~20% of Production 5.1 files in both FHC and RHC mode.
- We'll continue the Prod5.1 campaign over the next few months.

Physics Analysis

- Paper accepted by PRD “Search for slow magnetic monopoles with the NOvA detector on the surface” (arxiv:2009.04867).