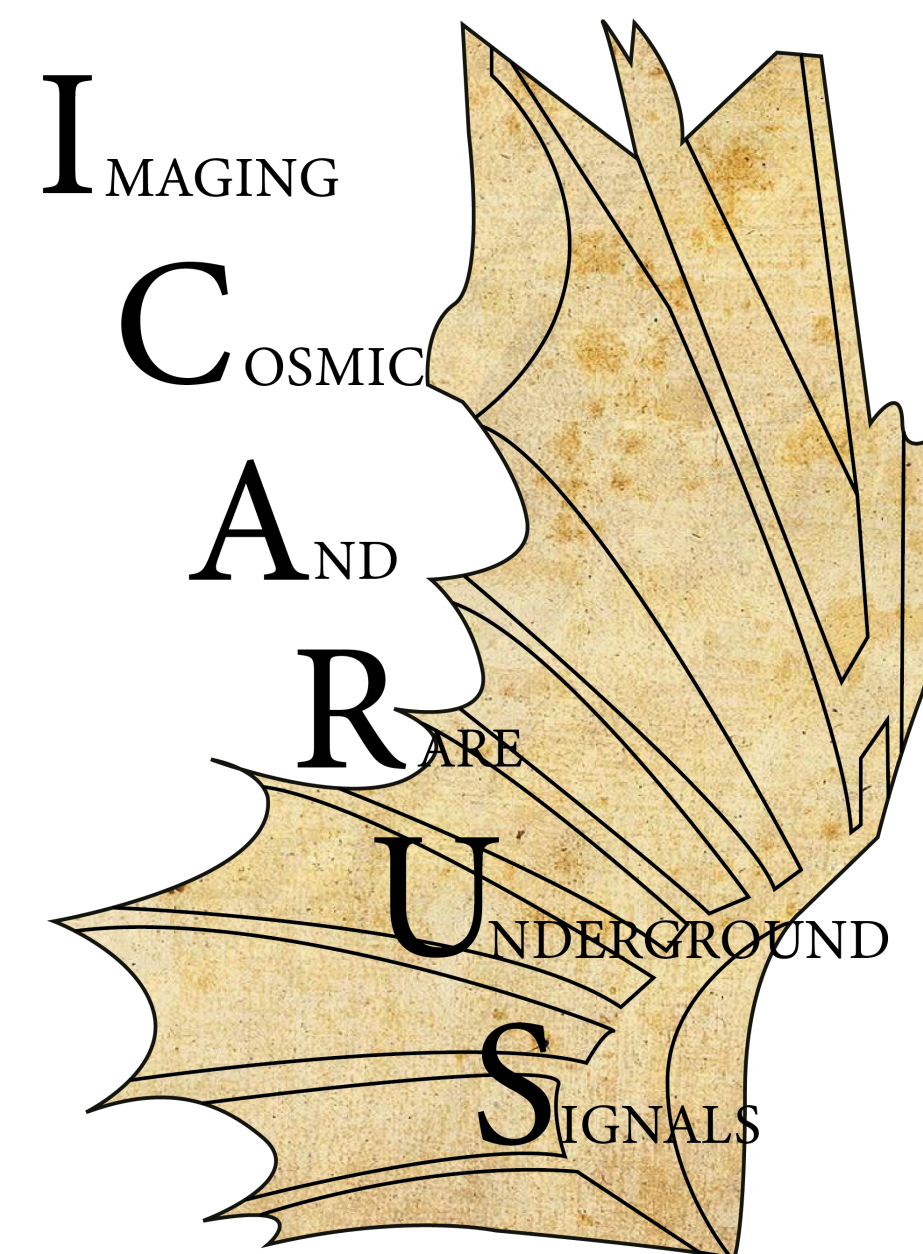




ICARUS Run Operations Status

Matteo Vicenzi, Filippo Varanini

Proton PMG/AEM
June 6th, 2024

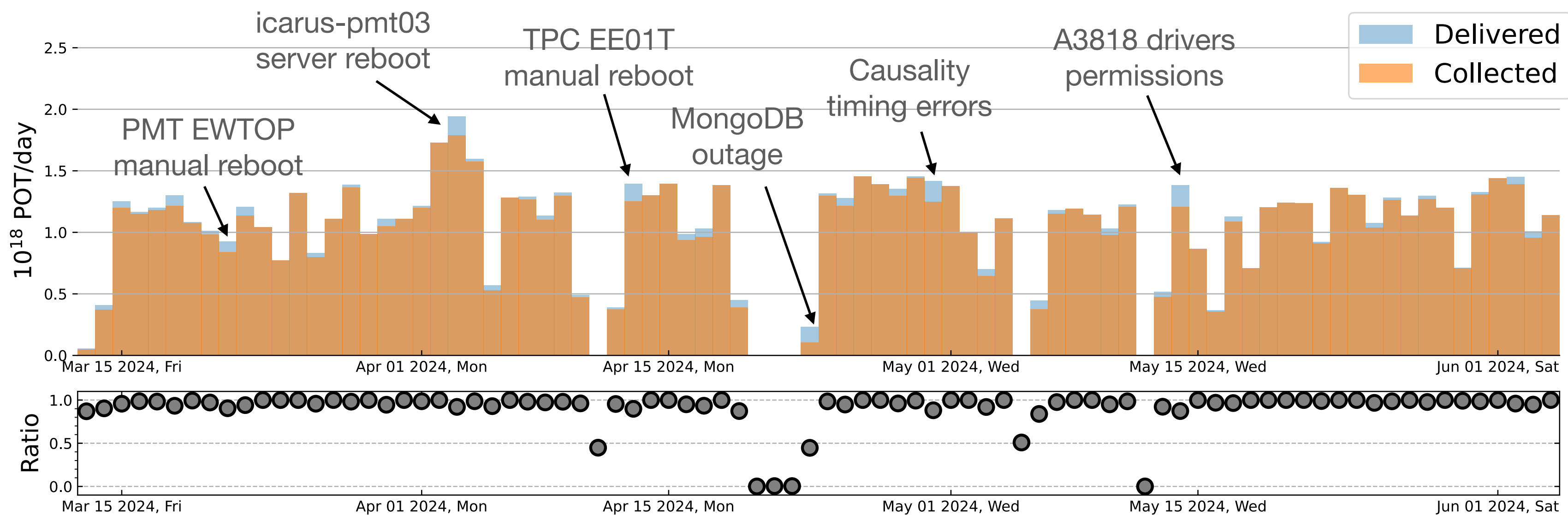
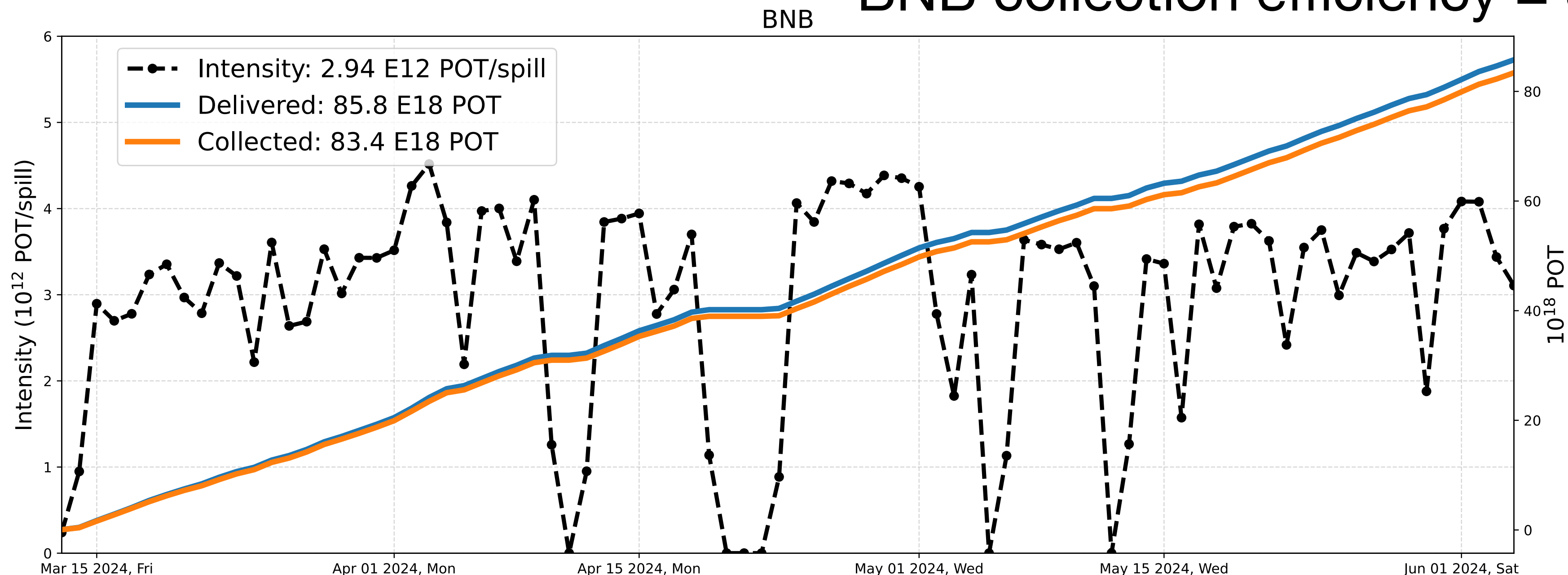


ICARUS Running Status

- ICARUS has been running in **stable conditions** taking data from both BNB and NuMI neutrino beams since March (RUN-3).
 - RUN-3 collected (as of June 4th): 8.34×10^{19} POT for BNB, 1.76×10^{20} POT for NuMI.
- Scheduled or unscheduled **beam downtimes** are either used for **test runs**, performing **hardware activities**, or taking **cosmic triggered data** (overlays).
- Occasional **DAQ crashes are easily resolved** by just restarting the run or remotely power-cycling the hardware. Instabilities recently mitigated by lowering crate temperatures.
 - Total uptime: 77.8/83 days (**93.7%**).
 - Average running time ~22hrs, maximum ~4 days long.
- ICARUS has presented an **OS variance request** to delay the transition of the DAQ cluster to AL9 by 1 year (2025 shutdown).

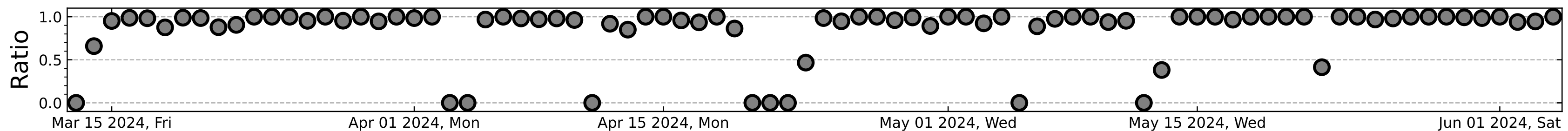
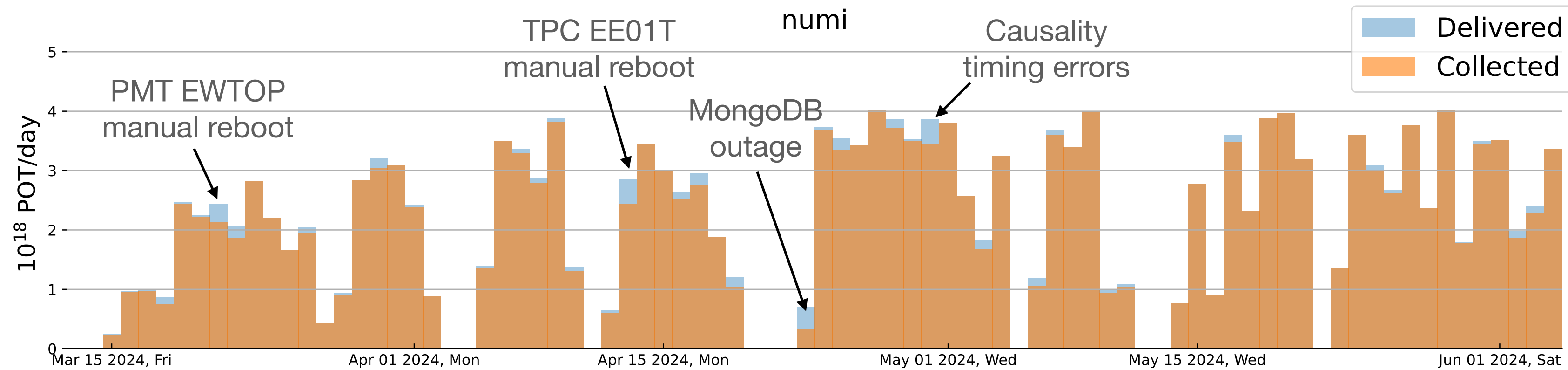
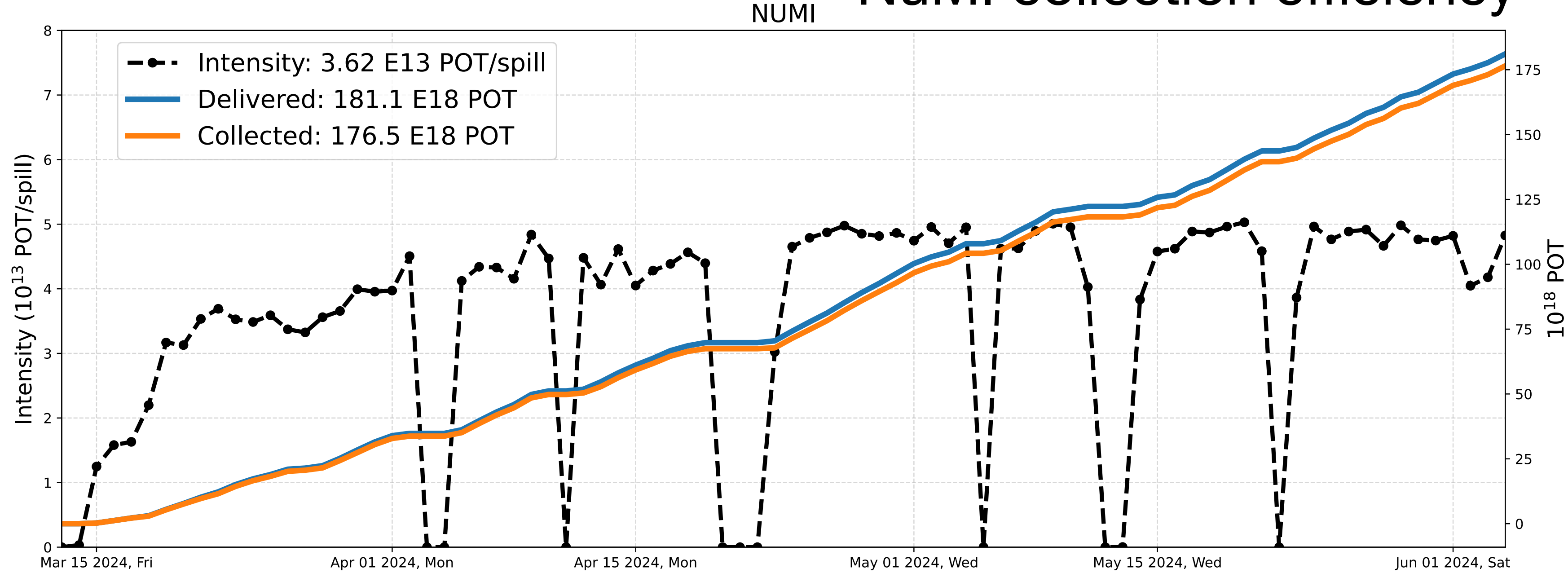
ICARUS - BNB POT

BNB BNB collection efficiency = **97.2%**

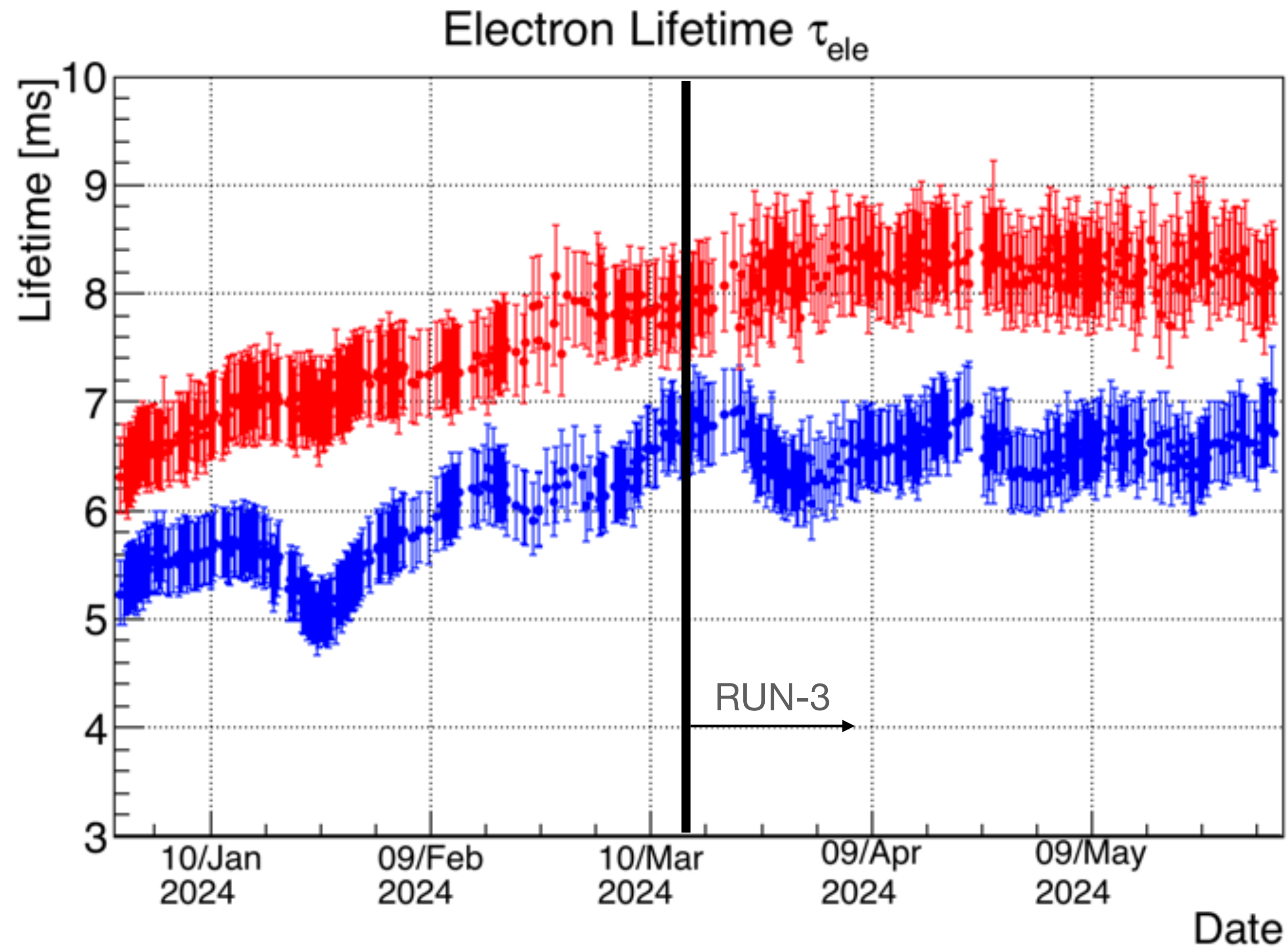


ICARUS - NuMI POT

NuMI collection efficiency = **97.5%**



Detector Stability

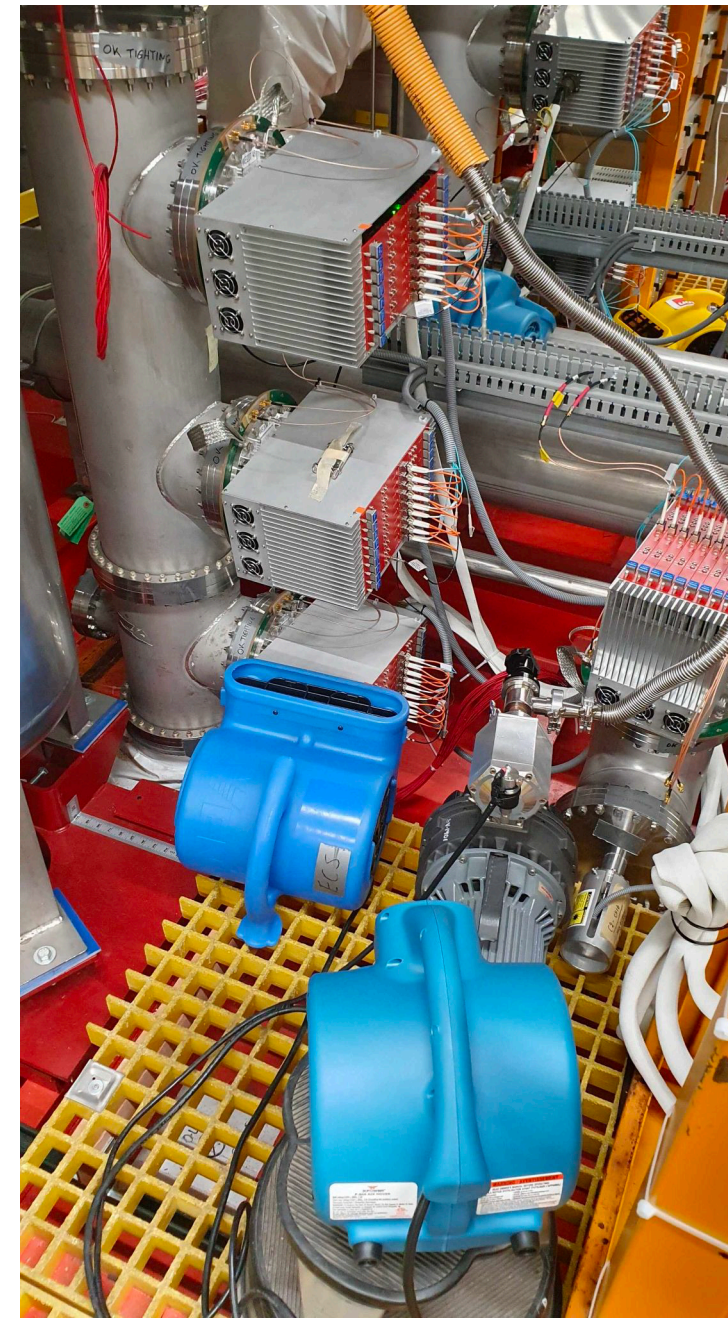


- ICARUS continues to operate with **good stability and performance** of all sub-systems.
- The liquid Argon purity, measured using the the electron lifetime, has been stable throughout RUN-3.
- HV system is stable, except an isolated current spike on May 21th (under investigation).
 - Procurement is in progress for a new Wire Bias power supply.

Temperature issues

- Several attempts to mitigate crate temperature issues (TPC/PMT electronics).
- Additional fan-trays for PMT crates.
- New blower fans in front of TPC mini crates, increased air recirculation with ODH fans.
- As of this week, adjustment of HVAC dampers to 75% close on the ground floor, redirecting flow downstairs.

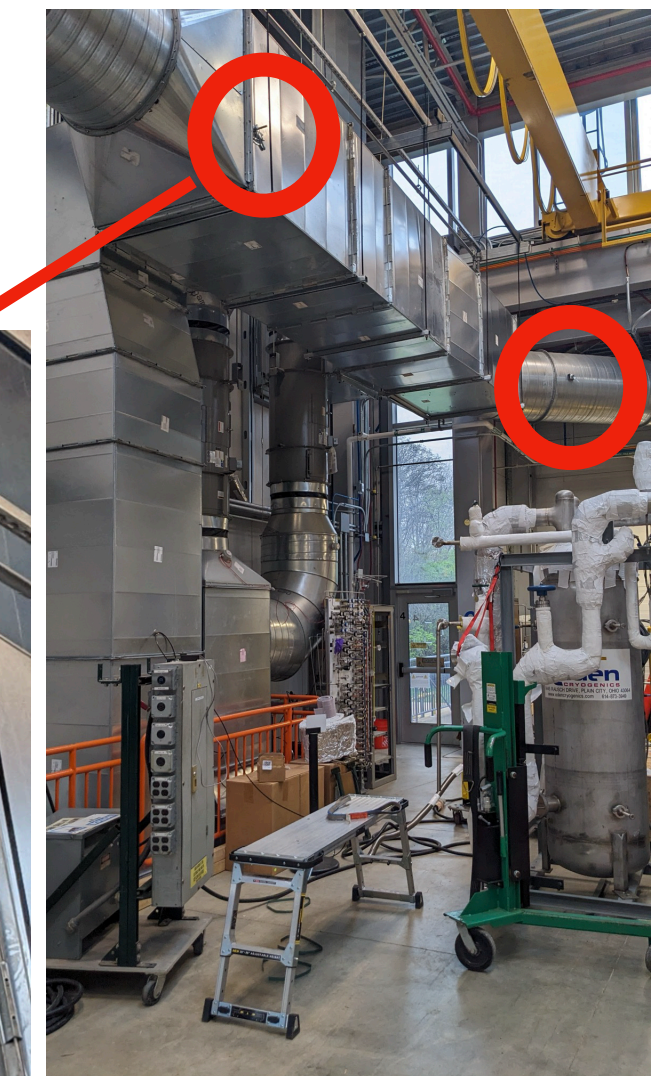
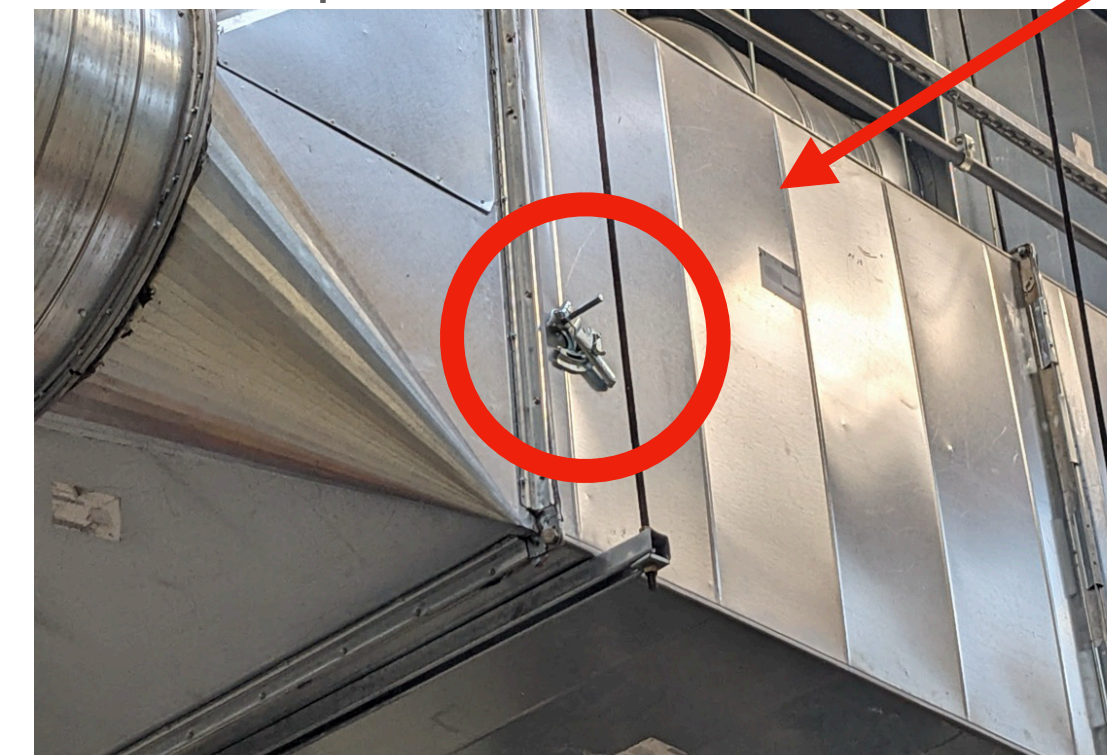
New blowers for TPC crates



Fan-trays for PMT crates



Adjustment of HVAC dampers to redirect air flow



Summary

- ICARUS has been running stably for the past month!
- Detector subsystems and liquid argon purity have been behaving well throughout RUN-3 for physics-quality data.
- Occasional DAQ issues are quickly resolved, while we continue to work on more general problems (e.g: building temperatures). Beam downtimes are also used in an opportunistic way for other test/calibration activities.
- As of June 4th, ICARUS collected a total of 8.34×10^{19} POT for BNB and 1.76×10^{20} POT for NuMI in RUN-3.
- No changes in detector operations are expected for the remainder of beam operations.

Thank you!