Muon g-2 update and plans for startup with limited on-site personnel

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Proton PMG Meeting

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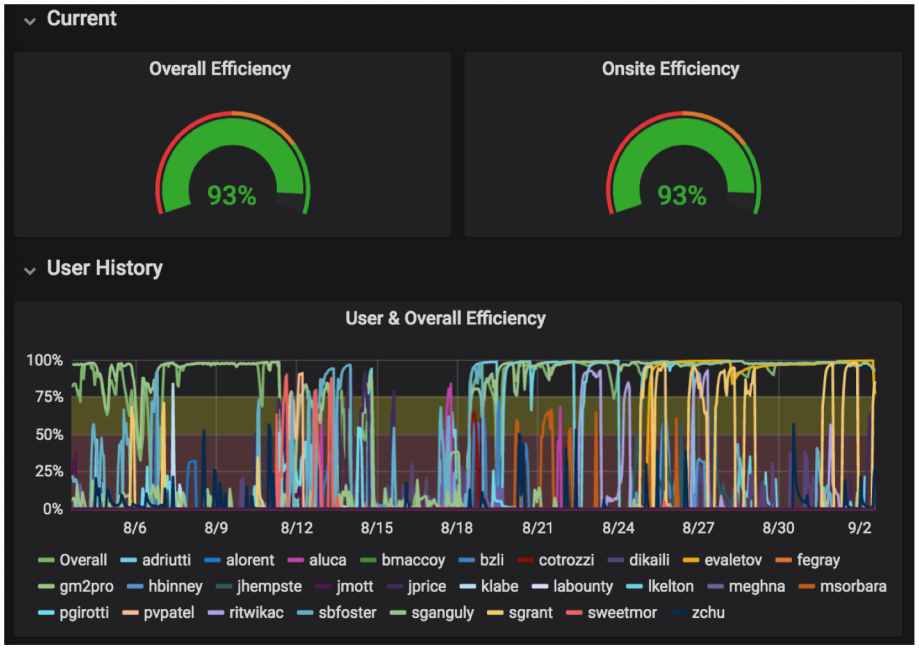
https://indico.fnal.gov/event/45272/

Status of the Offline Production



- Production has restarted
- Using the requested 5k Fermi grid slots
- Resolved the issues with the constants database
  - Overloading the system with connection requests
- Run 2
  - 90% is completed
  - Project full completion in 2 weeks
- Run 3 ”main” production has started
- Preparing production for Run 4

Status of summer shutdown work

- 03 – 31 Aug: cryo system at 80K (magnet off)
  - Completed planned program of process systems work at 80K
  - Powered up main magnet on 31 Aug as planned

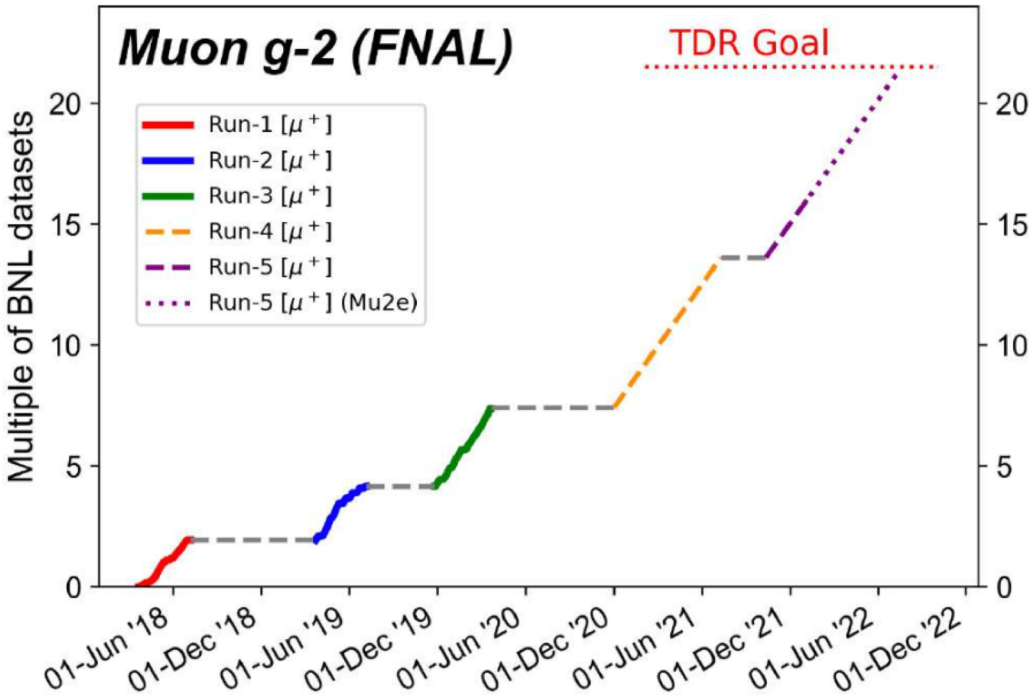
- Status of shutdown work
  - Main magnet: completed absolute calibration
  - Magnetometers
    - Installed new laser to study magnetometer measurements of residual eddy currents induced by kicker field to confirm correction for Run-1 result
    - Installed and performed initial tests of fiber magnetometer (Run-4)
  - Transient fields in quads (seen with fixed probes)
    - Established correlation of transient fields with vibrations of quadrupole plates
    - Tested “slow-ramp technique” to mitigate, presently investigating issues with implementation
  - Process systems: proceeding well on summer shutdown maintenance of magnet/cryo systems
  - DAQ: almost finished all major upgrades from SLF6 to SLF7
  - Inflector: ongoing preparations to install additional probes

Primary remaining summer shutdown work

- Process systems: continue summer shutdown maintenance
- Field: study hall temperature effects on field instabilities
- DAQ: complete computing upgrades
- Quad/fixed-probes: implement and test slow ramp technique
  - "Option A" has been confirmed to mitigate effect with no sparking, other options being investigated to possibly improve further
- Inflector: install more fixed probes in inflector region
- Perform remaining preparations for Run-4 production running
  - Next page…

Stats recap and projection

- Recall: through Run-3, accumulated total 7.37x BNL



- Expect to reach total ~14x BNL by the end of Run-4
  - Assumes **01-Nov-2020** start date for beam to g-2
  - Assumes **05-July-2020** end of run (31 weeks)

Approach taken regarding remote shifts for Run-4

- Recall: end of g-2 Run-3 had 1x local shifter + 1x remote shifter
  - The Operations shifter will always remain local at MC-1

- Evaluated technical feasibility of operation by full-remote shift crew
  - Result: many subsystems presently require action by local shifter
  - Work would be needed to make operation (monitor and control) possible by fully remote shifters
  - Some general concerns expressed regarding completely removing the Experiment (local) shifter…
    - E.g. Experiment shift load must not fall to the Operations shifter

- Polled collaboration for willingness/ability to be at FNAL to do shifts
  - Result: with those willing and able, we could have a local shifter for ~4 months before the local people have filled their shift quota
  - Some general concerns expressed regarding overloading local people with shifts and hands-on work

Muon g-2 shift plan

- Open up Run-4 shifts to **begin mid-Oct**, assuming 1x remote + 1x local
  - Preferentially ask collaboration to fill the first 3 months
  - Specifically ask local shifts to be filled by willing and able local people

- For shifts, need to…
  - Implement COVID controls for ops shifter + local shifter both in MC-1
  - Revamp training for remote shifter
  - Update documentation for 1x remote + 1x local

- In parallel, subsystems start addressing technical issues to go fully remote
  - Identify possible local hands from available and willing local people
  - Subsystems estimate work to go fully remote
  - If possible, subsystem do work to go fully remote
  - Define program of tests to do with remote shifters before beam comes

- After Run-4 starts and g-2 achieves production running, options include
  - If technical issues can be addressed and we can ensure that we are not adding tasks to the operations shifters, we could think about trying to switch to 2x remote shifters
  - Ask local people/institutes if they are willing to go over their shift quota (e.g., if technical issues cannot be addressed)

Other preparations for beam

- Beginning to make lists of…
  - Items to do prior to beam
  - Commissioning / tune-up items with beam
  - Systematic studies / special runs with beam