

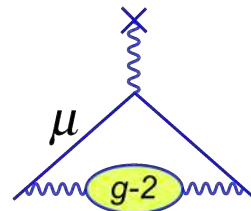


Muon g-2 Update

Alex Keshavarzi, Shutdown Coordinator

Proton PMG Meeting

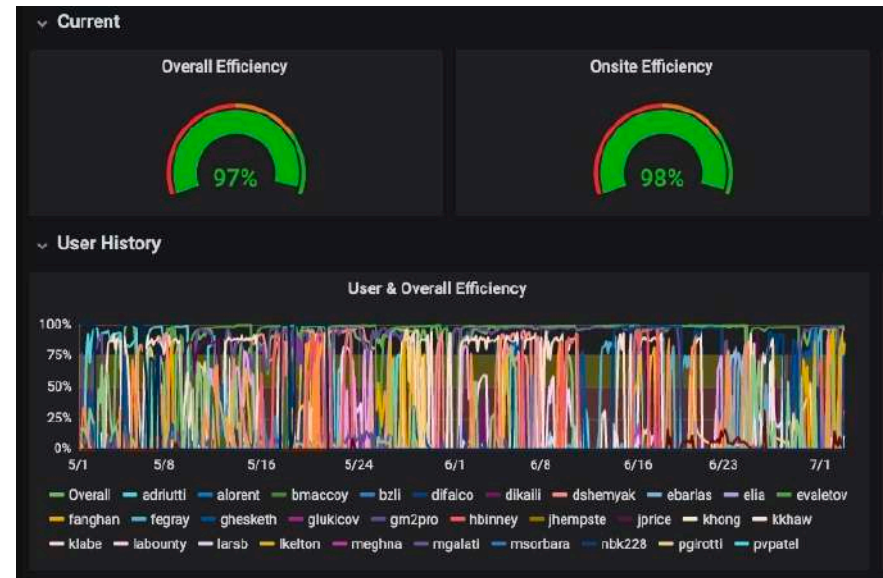
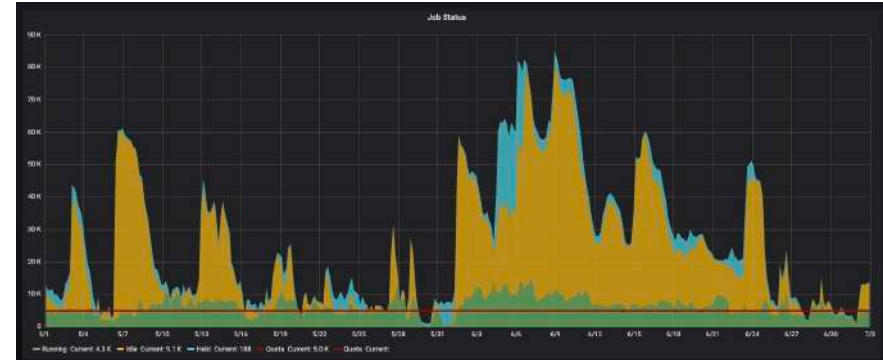
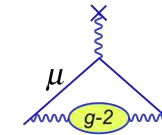
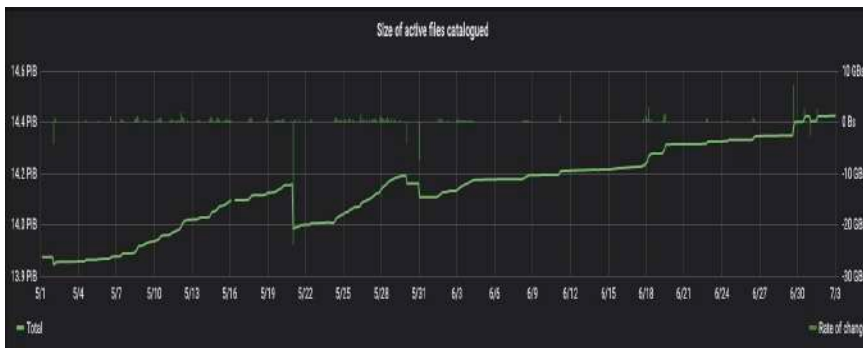
9th July 2020



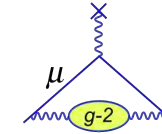
The University of Manchester

Computing status

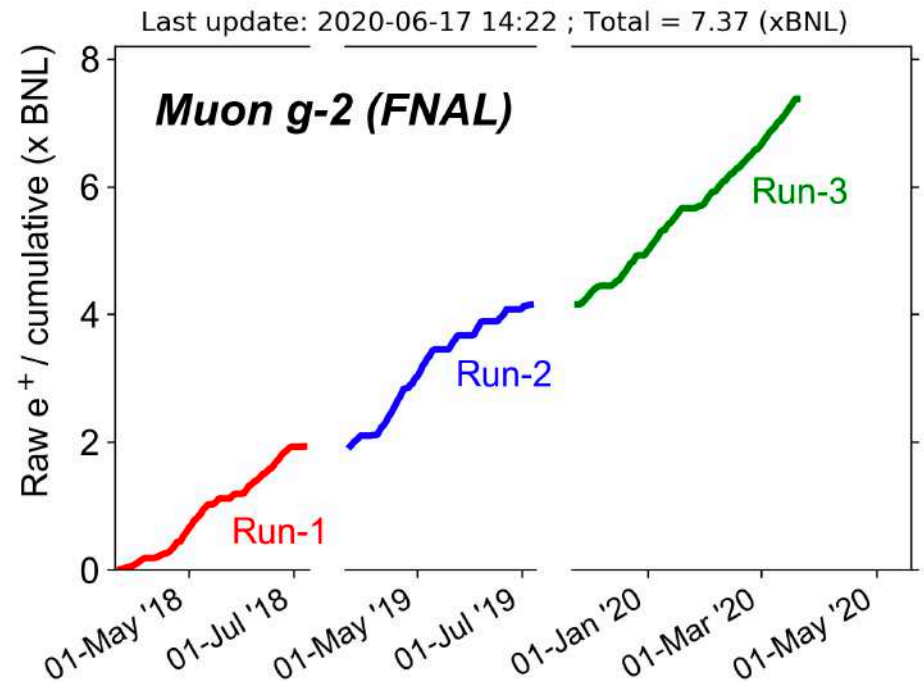
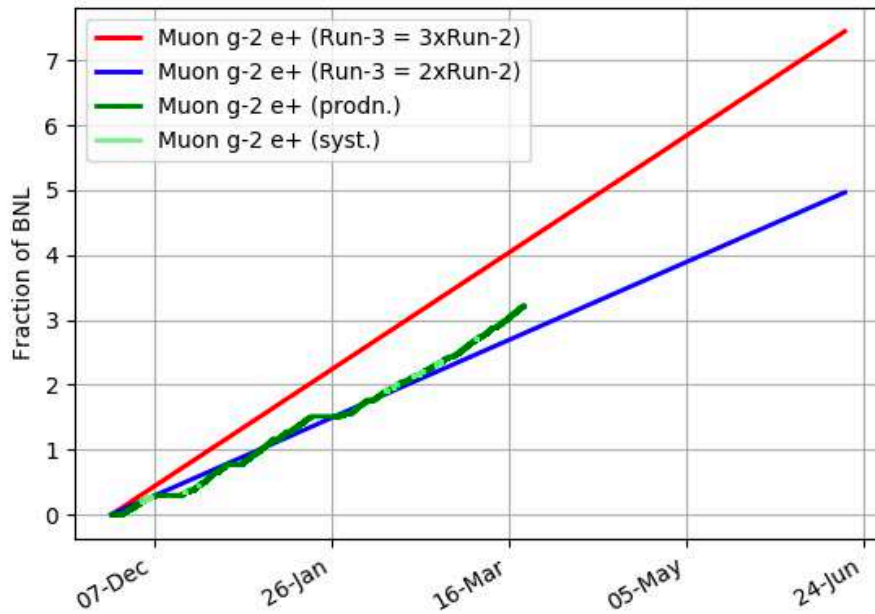
- Muon g-2 has 5,000 Fermi Grid slots.
- Using above this capacity.
- Running at high efficiency.
- Now also using external nodes (UK, Italy).
- Users make up 2/3 of CPU usage running analysis jobs.
- Remaining 1/3 is g-2 data production.
- Run-2 production is 90% complete - pending final DQC.
- Run-3 production is beginning.



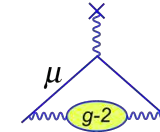
Accumulated stats recap



- Projected to reach 5-7 x BNL with Run-3.
- March 20: Crossed 3 x BNL in Run 3 before beam turn off.
- Accumulated 7.37 x BNL total from Run1-3.



COVID-19 at MC-1



- Continuation of work at MC-1 required implementing COVID-19 safety protocols at MC-1.
- ES&H-approved protocols were in place before majority of phased return to work.

G Minus 2 Experiment Document 22633-v2

JHA: Muon g-2 COVID-19 Protocols + MC-1 COVID-19 Signs.

Document #: GM2-doc-22633-v2
Document type: JHA
Submitted by: Alex Keshavarzi
Updated by: Alex Keshavarzi
Document Created: 01 May 2020, 14:52
Contents Revised: 22 Jun 2020, 09:05

Abstract:

JHA for performing work on behalf of Muon g-2 Experiment during the COVID-19 pandemic and any work performed at MC-1 during the period of the COVID-19 pandemic (this encompasses all persons interacting with or without other persons in all areas of MC-1).

MC-1 COVID-19 Signs for new protocols and new key issuance procedure.

Files in Document:

- [JHA_COVID-19_06-22-20.pdf](#) (216.8 kB)
- [MC1_COVID-19_KeyProcedure_05-04-20.pdf](#) (55.1 kB)
- [MC1sign_COVID-19_05-04-20.pdf](#) (135.4 kB)

- These protocols have been retained but merged with Fermilab COVID safety protocols to ensure safety of all involved with Muon g-2 .
- In general, protocols and procedures have been well received by all involved and have been a success thus far.

Hazard Analysis Form

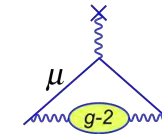
This form can be used by Fermilab Employees, Fermilab Supervisors, Fermilab Task Managers, Construction Coordinators, Service Coordinators, Work Planners and Fermilab Subcontractors. This is a dynamic document which may require modification as the project moves from start to finish and should be readily available at the site where the work is being performed.

Note: Not all sections of the first page are applicable to every job or task, complete what is necessary for your specific job or task.

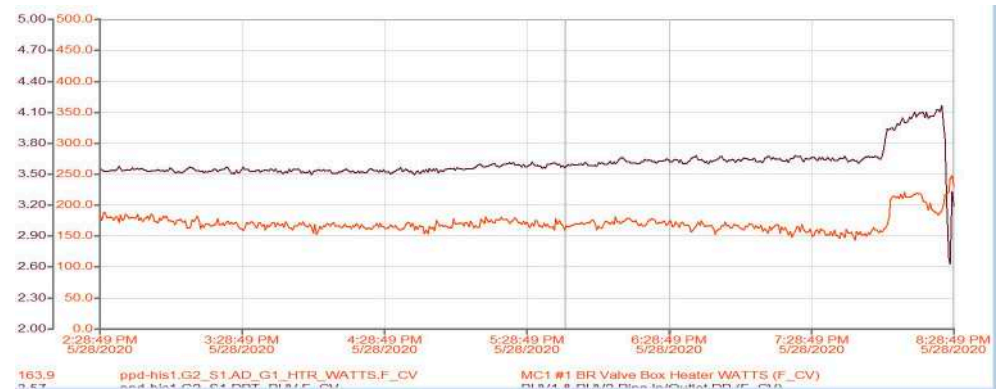
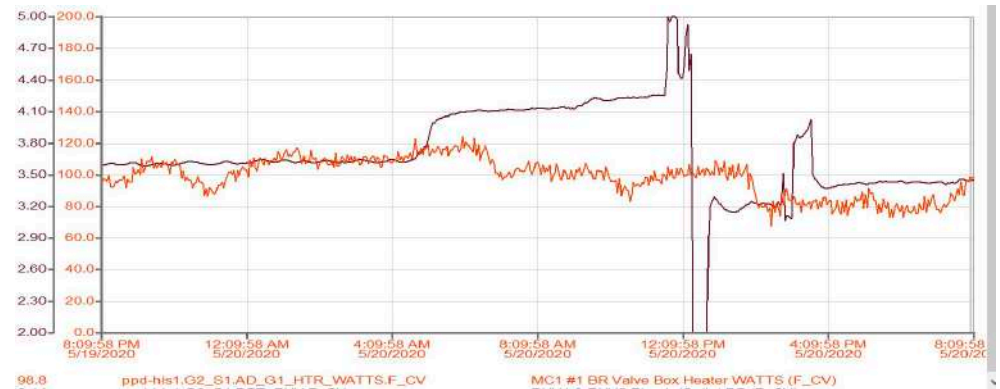
Job Title _____ Muon g-2 Health & Safety: COVID-19 Protocols _____

Job Location _____ Fermilab Site, Entire MC-1 Building, Control Room, Mezzanine, High Bay, MR-Region _____

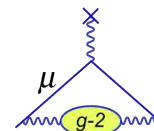
Magnet/cryo status and issues



- Since losing beam, the g-2 magnet has experienced a few magnet/cryo issues.
- 05/28: Poor refrigeration capacity and spikes in magnet differential pressure forced.
- 06/02: Early 80K magnet warm-up.
- 06/02 – 06/09: All problems were traced and fixed during 80K warm-up period.
- 07/02: Failure of dry engine caused system failure and loss of liquid.
- 07/02-07/06: Magnet powered down and repairs performed.
- 07/08: magnet currently powered and systems performing well.



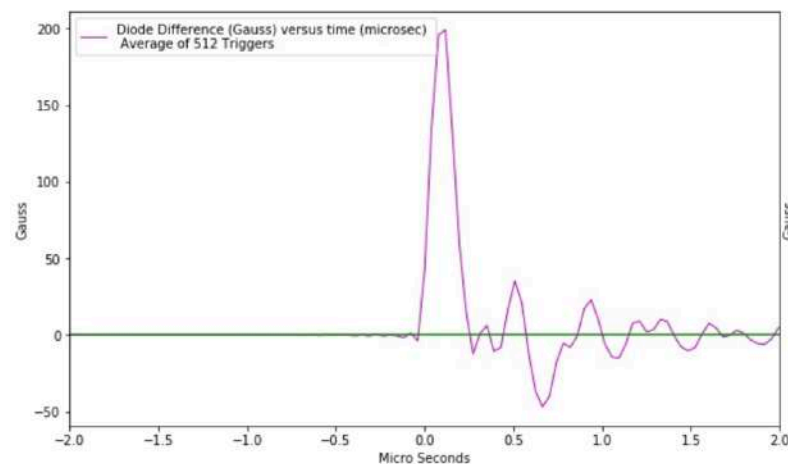
Status update of shutdown work



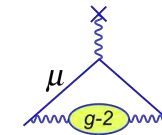
- Process systems + summer shutdown maintenance of magnet/cryo systems is proceeding well.
- Absolute calibration of main magnet completed. Majority of work was performed remotely.
- All computing systems are mid-way through major upgrades from SLF6 to SLF7.
- Magnetometer measurements of residual eddy currents induced by kicker field are essentially complete. Final systematic measurement for Run-1 publication.
- Measurements of transient fields induced in magnet fixed probes by vibrations of quadrupole plates have begun.
- Preparation for mitigation of transient field effect are underway.

Remaining shutdown plans

- Continued process systems + summer shutdown maintenance of magnet/cryo systems.
- Completed of computing upgrades.
- Implications of quad/fixed probe mitigation + testing.
- Remaining preparation for Run-4 production running.



Stats projection: Run-4 and onwards



- Expect to reach ≥ 13 x BNL during Run-4 (assuming Dec 1st start date for g-2 production running).

