

MINERνA Operations Report

Fermilab AEM

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MINERvA Out of Shutdown

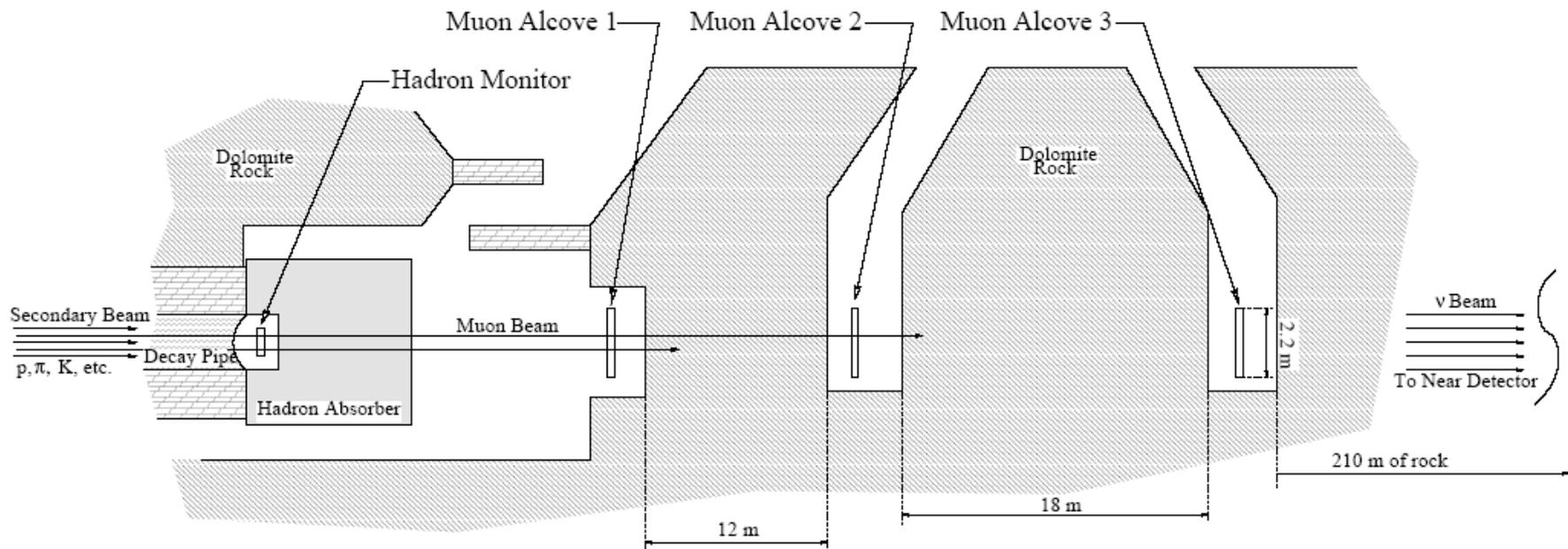
- MINERvA started seeing beam coming out of the shutdown on Sunday afternoon, August 22.
- NuMI beam power has now reached ~ 300 kW
- MINERvA detector has been recording data with good efficiency during the first week (no exact numbers today)
- HVs were tuned for the full detector (509 PMTs) based on data taken using an in situ light injection system after final hardware replacements were completed and just before the shutdown ended

NuMI Special Running

- MINERvA has requested [a period of special running](#) coming out of the shutdown to collect data useful for [validating NuMI beam flux predictions](#)
- The program involves collecting data in [different energy tunes of the beam line](#) (i.e. target positions) [and different horn current settings](#) (both magnitude and sign)
- There are a couple of reasons for doing this now :
 1. Target was replaced during the shutdown. It is good to do these studies before the target has aged at all in the beam.
 2. Past experience shows that the mechanisms which move the target along the beam direction operate best very early in a run and can lock up after extended running.

NuMI Special Running

- The data we are after comes in two forms:
 - CC neutrino events in MINER ν A detector (particularly as a function of beam energy settings)
 - muon flux detectors located in the alcoves of the NuMI facility (particularly as a function of horn current settings)
- Provide handles on constraining underlying pion kinematics in the beam line



NuMI Special Running

- Because of our interest in CC neutrino interactions from these data, the challenges in bringing the MINOS near detector to full operation after the shutdown did have an effect on the run plan.
- We are *extremely grateful* to the various MINOS collaborators – run-coordinators, electronics experts, DAQ experts, and spokespeople – for recognizing the importance for MINERvA and for all of their extremely hard work in solving these issues quickly.
- It was agreed that as of Thursday morning, August 26, at 11:49 AM, the MINOS near detector was fully operational and the POT accounting for the special running was started.
- Since then, 3.62e18 POT delivered as of midnight last night in first special running configuration

NuMI Special Running

- The NuMI beam line began after the shutdown in a “Medium Energy” configuration (target position -100) and Forward Horn Current (neutrino mode)
- The plan is to change to Reverse Horn Current (antineutrino mode) as soon as we accumulate $8e18$ POT in the current configuration.
- So far, $3.62e18$ in 3.5 days (Thursday to Sunday) implies about $1.0e18$ per day currently, implying we reach $8e18$ POT at noon on Friday.
- It would be ideal to change the horn current polarity (I understand this is about one 8 hour shift of work) on Friday before the holiday weekend. We will keep very careful track of the POT each day through this week.
- The next step is to perform the first target move sometime next week. Several beam line experts are currently at NBI (Neutrino Beams and Instrumentation Workshop) in Japan, but are back next week.

