


MTA 400 MeV Beamline Commissioning Plan

The following Pre-Checkout, Initial Setup, and Commissioning steps have been agreed upon by the heads of the Accelerator Division Operations and External Beams Department.

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9/1/20

Operations Department Head

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1 Pre-checkout

1.1 Power Supplies

- Power supplies have been load verified.
- Power supplies have been given permission to power by EE support.
- Power supplies have gone through EE support powered checkout list.
- Power supplies have been given permission to operate by EE support.

1.2 LCW Cooling

- Components that use cooling water have been verified to have valves open and cooling water flowing in the device.

1.3 Vacuum

- Vacuum system installation is complete.
- Vacuum system controls have been verified to operate.
- Beamline is under vacuum.

1.4 Instrumentation

- BLM system signals have been tested from the tunnel detector to the readings on the application page.
- Multiwire systems have been tested for operation.
- Toroid signals have been tested from the tunnel to the readings on the application page.

1.5 Controls

- Confirm that desired ACNET devices are input in the datalogger.
- Confirm that devices are in the alarm scan or list on D59.
 - Verify alarms are operational and will alarm for out of tolerance devices.
 - Verify that devices are mapped to the alarm screen.
 - Verify BBM is set up properly to monitor MTA beam; names and calibrations are up-to-date.
- Confirm that timeline module plays out as expected.

The following commissioning plan (steps 2 and 3) is normative, not prescriptive. The beamline physicist, in conjunction with the MCR Crew Chief, may modify these steps as needed

2 Initial Setup

1. Inhibit possible beam transport using beam switch.
2. Establish a low duty cycle of 1 pulse every 60 seconds, with an intensity of approximately $5E11$ protons per pulse.
3. Turn on all magnet power supplies and set to nominal values.
4. Verify that magnets are operational.
5. Verify that beam valves are open.
6. Insert multiwires into beamline.

3 Commissioning 400 MeV Beam

3.1 H^{-} mode

1. Verify that "Initial Setup" is complete.
2. Start MW plots.
3. Start BPM/BLM plots.
4. Verify that stripping foil is "out".
5. Verify that final bend polarity is correct.
6. Ask Crew Chief to enable MTA beam switch.
7. Establish beam through the MTA beamline.
8. Make a D1 save file once beam is established to the final multiwire.
9. Once beam has been established with reasonable efficiency to the final multiwire, a series of beam studies can be conducted to confirm and adjust the MTA beamline.

3.2 Proton Mode

1. Verify that "Initial Setup" is complete.
2. Start MW plots.
3. Start BPM/BLM plots.
4. Verify that stripping foil is "in".
5. Verify that final bend polarity is correct.
6. Ask Crew Chief to enable MTA beam switch.
7. Establish beam through the MTA beamline.
8. Make a D1 save file once beam is established to the final multiwire.
9. Once beam has been established with reasonable efficiency to the final multiwire, a series of beam studies can be conducted to confirm and adjust the MTA beamline.