MTA line status

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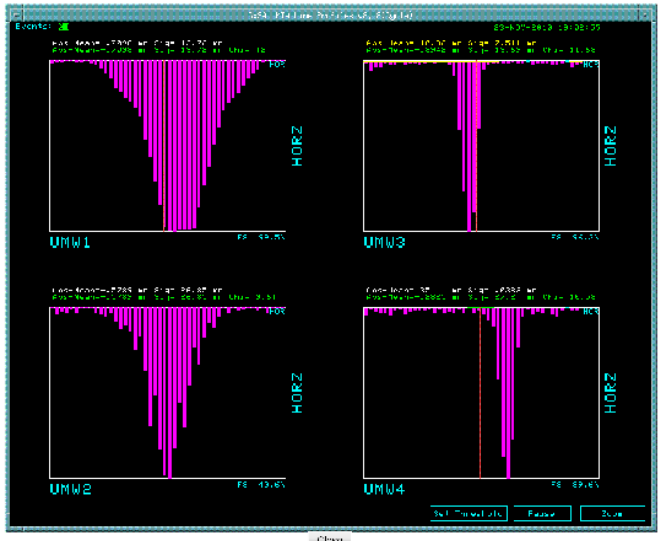
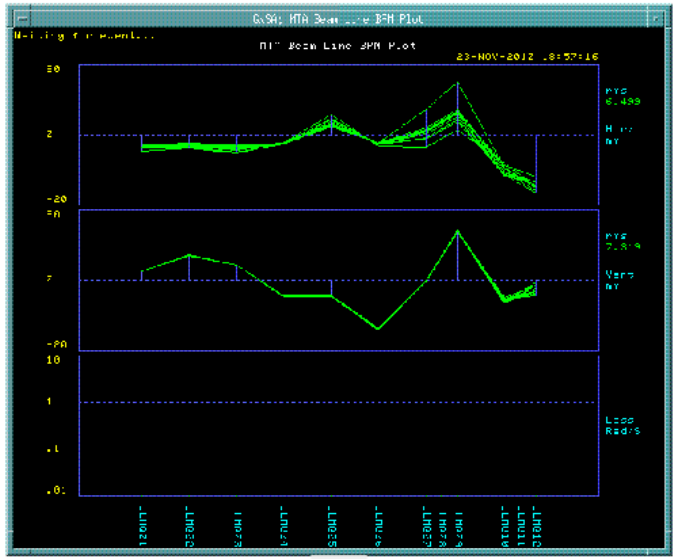
MTA work and beam tests

- Nov 2010
  - Beam to first absorber.
  - Acceptable losses.
  - Instrumentation (SWICs, BPMs, toroid) functional.
- Dec 2010
  - Verified quadrupoles supply output is correct.
  - Investigated trips of trim magnets.
  - Begin shielding installation.





Activities Leading to First Beam

- Shielding assessment submitted to 7th floor.
  - ✓Signed off week of 12/13.
- Safety assessment must be approved by SAD review committee, then directorate. Afterwards, Accelerator Safety Envelope goes to DOE for approval.
  - ○AD/Safety will comment on current submittal and return to project for review this week.
- Remaining shielding to be installed.
  - ○Begin 12/17, estimate two days.
- Polarity check magnets in MTA hall.
- Modify second absorber.
  - ○Core complete 12/27.
- Install multiwire six.
  - ○Ready to install.

Commissioning the MTA Beamline

Philisophy:

- Diagnostics, MWs and BPMs will have as founds, but will not be set per beam sheet. The center of the quadrupoles in the line will provide the calibration for the reference trajectory.

Initial Beam Request: $5E^{12}$/pulse, 600 pulses/hour

Mode: Linac Study Pulse, Beam Switch controlled

Establishing the Reference Trajectory

1. Setting the pulsed C magnet currents ✓

- Set current in pulsed C magnets to establish a centered profile on UMW01. Record BPM-1 positions

2. Center Beam on UQ02 ✓

- No space was available for horizontal trim; (possibility of implementing a shunt on UHB03A). Record horizontal movement of beam on BPM3 and profiles on UMW02
- Adjust UVB01 to center on UQ02 vertically by measuring beam movement on BPM-3 as a function of current in UQ02. Record vertical profiles on UMW02.

3. Center Beam on UQ03 ✓

- Use UHT03 and BPM-4 to center beam horizontally on UQ03. Next quad will likely require finer adjustment of UHT03.
- Use UVB01 to center vertically and BPM-4. This will be the initial setting of UVB01. The next quadrupole will likely "fine" tune this corrector setting.

4. Center Beam on UQ04 ✓

- Use finer setting on UHT03 to center horizontally on UQ04 using BPM-5. The expectation is that this will not affect the center significantly on UHQ03.
- Use UVT03 to center vertically on UQ04 using BPm-5.

Commissioning the MTA Beamline (2)

5. *Center Beam on UQ05* ✓

- Use UHT04 to center on UQ05 observing BPM-6.
- Use UVT04 to center on UQ05 using BPM-5.

6. *Center beam on UQ06* ✓

- Use, "fine" tune UHT04 to center beam on UQ06 using BPM-7. Should be able to record UM03 profiles at this point.
- Use UVB03 to center vertically on UQ06 observing BPM-7. UMW03 profiles.

7. *Center beam on UQ07* ✓

- Use UHT06 to center beam horizontally on UQ07 using BPM-8. Record UMW04 profiles.
- "Fine" tune UVB03 to center on UQ07 vertically observing BPM-8.

8. *Center Beam on UQ08* ✓

- Use UHB07 to center on UQ08 horizontally using BPM-8. Essentially we are looking for the optimal UHT06/UHB07 to center on all three quads in the triplet. Record UMW04 profiles.
- If beam is significantly off vertically only UVB03 is available.

9. *Center Beam on UQ09* ✓

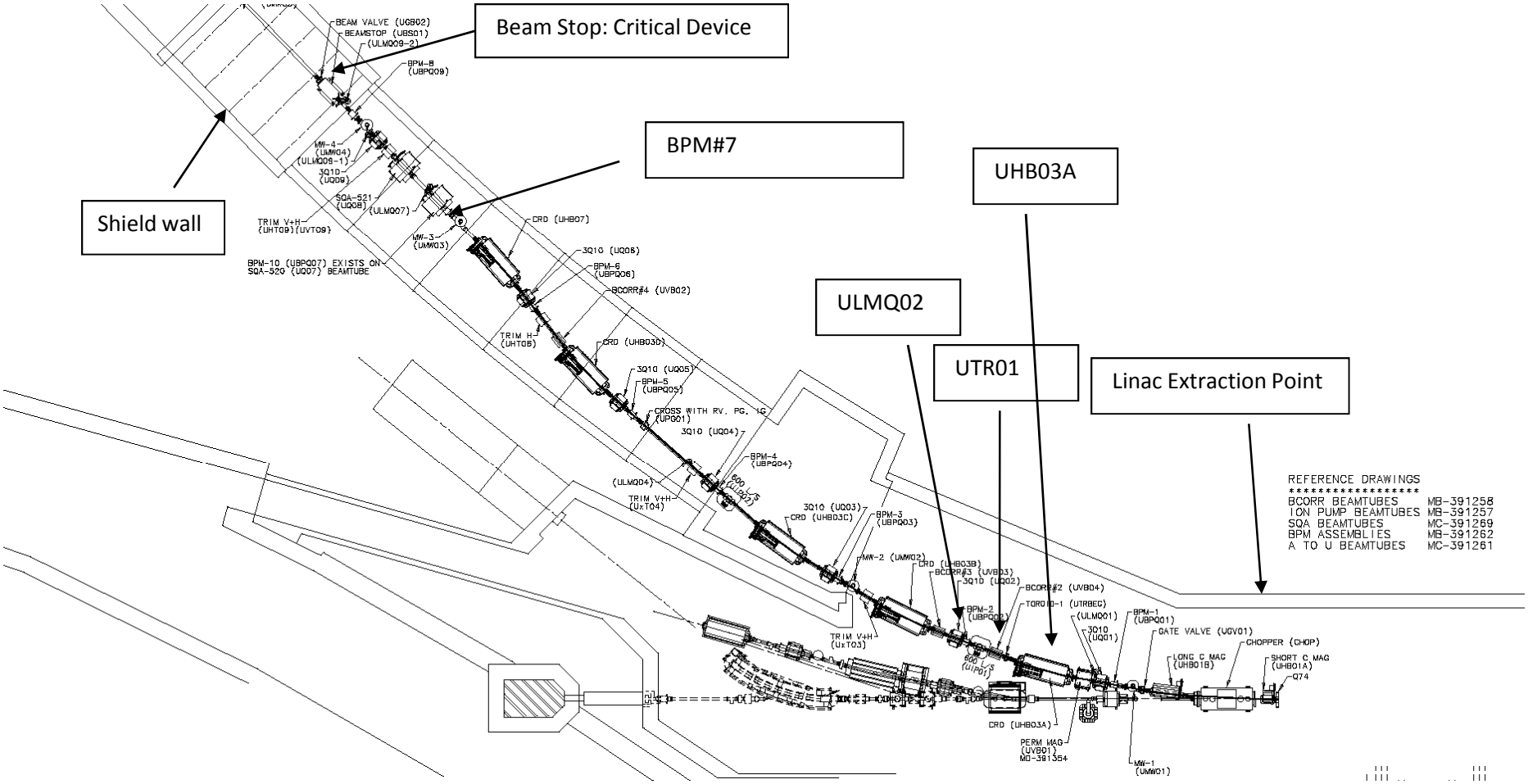
- The last trims in the line, UHT09 and UVT09 will not impact center beam on this quad to any extent. The hope is that the settings on UHT06/UHB07 and UVB03 will be successful in transiting the triplet close to all their centers.

10. *Center Beam through shield wall*

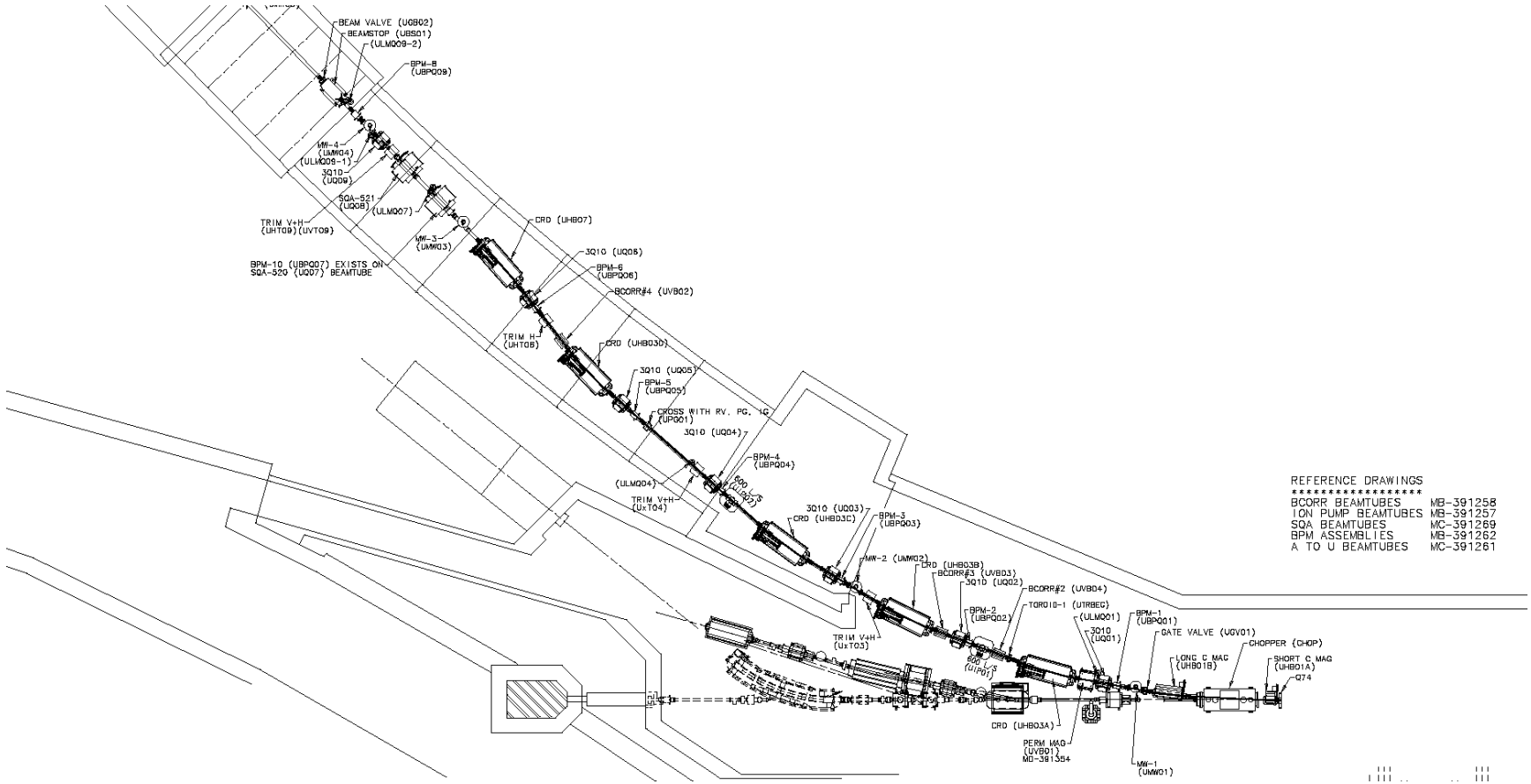
- The last trims in the line, UHT09 and UVT09 will be used to steer beam through the shield wall. If the alignment of UQ09 is correct relative to the upstream side of the beampipe in the shield wall then centering beam on UQ09 also centers it at the beginning of the beampipe. The UT09 trim is then only necessary to center beam at the exit of the shield wall.

11. *Center Beam @experiment*

- The last trim in the line is UTH11 and UTV11 and will be used to steer onto the experiment. A stronger vertical bend, UVB05 is available for additional correction.



The layout of the MTA beamline upstream of shield wall.



REFERENCE DRAWINGS
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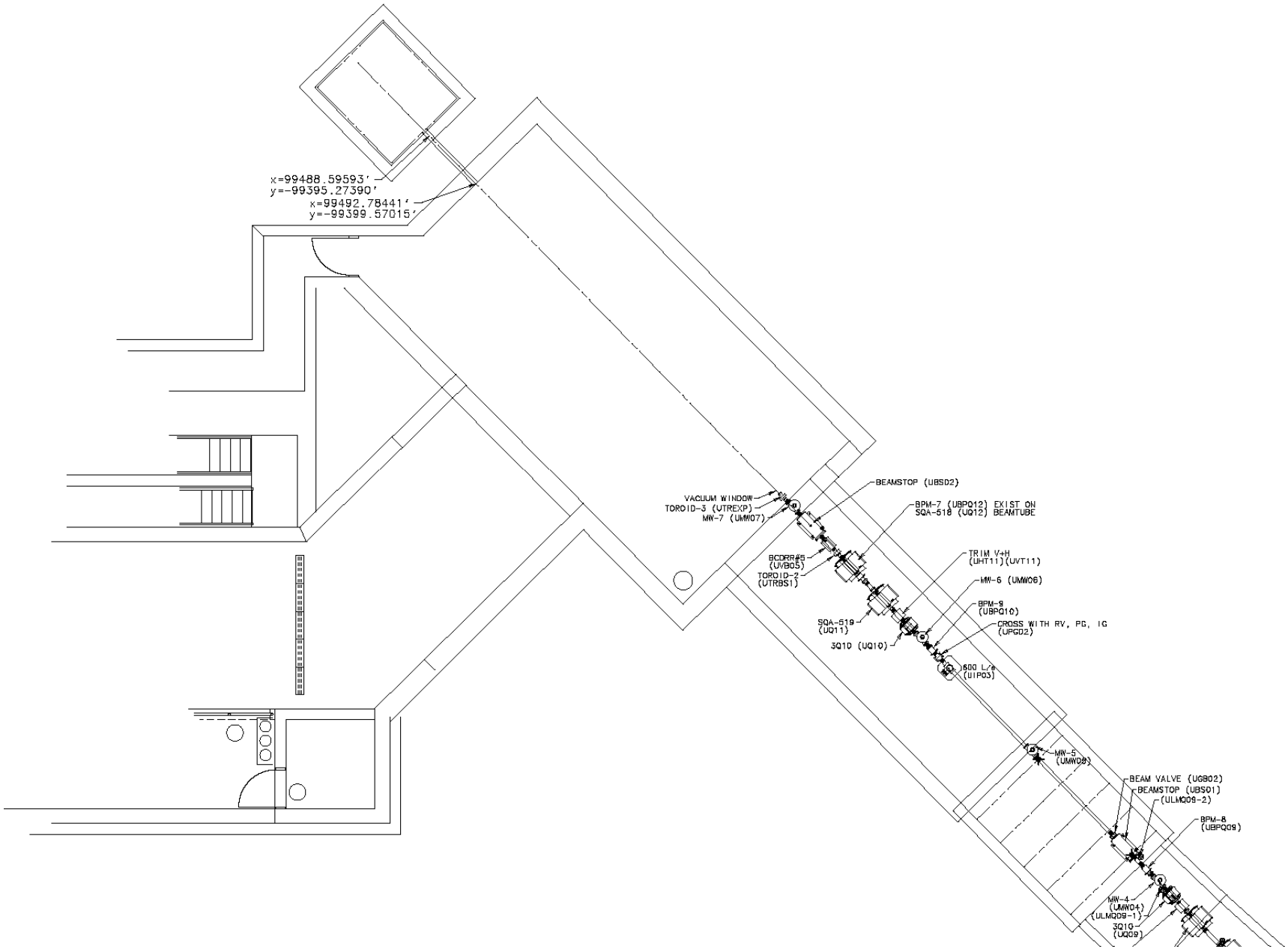
BCORR BEAMTUBES	MB-391258
ION PUMP BEAMTUBES	MB-391257
SQA BEAMTUBES	MC-391269
BPM ASSEMBLIES	MB-391262
A TO U BEAMTUBES	MC-391261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VACUUM WINDOW
TOROID-3 (UTREXP)
MW-7 (UMW07)
BEAMSTOP (UBSD2)
BPM-7 (UBPQ12) EXIST ON
SQA-518 (UQ12) BEAMTUBE
BCDRR#5
(UVB05)
TOROID-2
(UTRBS1)
TRIM V+H
(UHT11)(UVT11)
MW-6 (UMW06)
BPM-9
(UBPQ10)
SQA-519
(UQ11)
CROSS WITH RV, PG, IG
(UPGD2)
3Q1D (UQ10)
600 L/s
(UIPD3)
MW-5
(UMW08)
BEAM VALVE (UGB02)
BEAMSTOP (UBS01)
(ULMQ09-2)
BPM-8
(UBPQ09)
MW-4
(UMW04)
(ULMQ09-1)
3Q1D
(UQ09)