

---

# SUMMARY OF WORK DONE IN MESON LABS (SY120 & HPTF) DURING JUNE 05 SHUTDOWN



*Brajesh Choudhary, SY120 COORDINATOR*

FOR THE EXTERNAL BEAMLINES DEPARTMENT

ALL EXPERIMENTERS MEETING, JUNE 20, 2005

# WHERE IS SWITCHYARD 120 ?



---

# THANKS

IN ALPHABETICAL ORDER OF LAST NAME

Christine Ader

David B. Augustine

Leon Bartelson

Leon Beverly

Virgil Bocean\_

Bob Brooker

Chuck Brown

Richard Coleman

Garry Coppola

Brian Falconer

Glenn Federwitz

Rick Ford

Michael Gerardi

Arkadiy Klebaner

Tom Kobilarcik

Gordon Koizumi\_

John Kyle

Al Legan

Raymond Lewis

Michael Mascione

Holger Meyer

Craig Moore

Todd Nebel

Mike Petkus

Rajendran Raja

Erik Ramberg

Jim Ranson

Daniel Schoo

Gianni Tassotto\_

Bill Wickenberg

Roger Zimmermann

+

Many people who helped from

3. Survey

4. Mechanical

5. Electrical

6. Cryogenics

7. Interlock &

8. Rigging, section of the lab.

# INSTALLATION OF THE PINHOLE COLLIMATOR IN M02

---

1. A collimator is generally a block of steel or iron with a fixed size aperture. Some of the collimators have adjustable apertures. It is used to control the beam intensity and also to absorb the beam halo.
2. A pinhole collimator with a 1mm X 1mm hole has been installed in the M02 enclosure at Z=190 ft in the MC line for 120 GeV particle transmission. It attenuates the beam by a factor of  $\sim 10^3$  to  $10^4$ .
3. The MC interlocks have been augmented to include a new 120 GeV proton mode which requires this pinhole collimator be in the beam.
4. The in-position of the collimator is (approximately):
  - MC2PUH = 532 mils, MC2PDH = 503 mils
  - MC2PUV = 2005 mils, MC2PDV = 2006 mils
5. These positions trip independent position sensors that are part of the proton mode interlock requirements.
6. Proper shielding has been installed.

**Thanks to Chuck Brown for information**

# PICTURE OF PINHOLE COLLIMATOR



**PIN HOLE COLLIMATOR**

**About 5' in length with a 1mm X 1mm Hole**

**BCC + Gordon Koizumi Tour**

# MORE FROM MIPP/E907

---

1. NuMI target installed with new trigger counters and surveyed.
2. Two new SWIC's installed with precise alignment. They are:
  - F : MC7WC1
  - F : MC7WC2
  - Will be needed for beam tuning from MCR.
3. Target wheel taken out.
4. Beam veto counter taken out.
5. Interaction scintillator taken out.
6. Trigger electronics modified/expanded.

**Thanks to Holger Meyer for information**

# INSTALLATION OF SHIELDING IN M03, M04, & M05 FOR HPTF

---

Shielding walls have been erected in the “Pion Target Hall”, at the 1000ft cross over, the 1100ft passageway between MP and ME, and the 1250ft crossover. Chuck Brown inspected the walls after they were completed on 11<sup>th</sup> June and found them to be in substantial compliance with the sketch approved by the safety section. There is one change from the sketch - the wall at the 1250ft crossover consists of two walls, a 9ft wall between the MC and MP lines, and a 15ft wall between the MP and the ME line which adds up to the 21ft originally requested. Since the two walls now include a neutron trap in between, this is most likely an improvement beyond the original design.

**Thanks to Chuck Brown for information**

# LOWERING OF SIX (6) SEPTA IN THE F1 ENCLOSURE

---

1. This particular set of septa splits the proton beam into two beams, one for MCenter and other for Mtest. A septa is a chamber bisected by a row of fine wires. On one or both sides of the wires there exists an electrostatic field that serves to separate the two beams.
2. Out of EIGHT (8) septa in the F1 enclosure, SIX (6) were lowered and are no more in the beam line.
3. The lowered septa's are FSEP1 through FSEP6.
4. Only FSEP7 and FSEP8 will be used for splitting beam between MC and MT. Hopefully this will make it easier to split the beam between MC and MT.
5. LSM are only on the downstream end of the FSEP7 and FSEP8.
6. Request have been made to the instrumentation for putting LSM's on the upstream end of FSEP7 and FSEP8.

**BCC + Richard Coleman Tour**

# SURVEYING AND IMPROVING THE BEAM CONDITIONS IN MTEST

## MECHANICAL :

2. New 6" beam pipe ~22'6" in M04 up to MT4CC1.
3. Fixed vacuum from M06 to M04, more than 100ft. Should help at low momentum.
4. Fixed vacuum in beam pipe inside MT2BD.

Information from BCC tour, John Kyle and Erik Ramberg (ER).

## DETECTORS:

2. Removed - MT3FCH scintillator
3. Installed a SWDC in M04. **Aligned.**
4. Installed a SWDC in M05. **Confusion regarding component location. Not aligned due to time constraint.**
5. Replaced MT3SC, MT4SC1, MT4SC2, & MT5SC with thinner scintillator. **No need to align them (ER).**

## ALIGNMENT:

2. Aligned 6" beam pipe between MT4Q to MT3U (~100').
3. Aligned 6" beam pipe between MT3W to MT3SW
4. Aligned 6" beam pipe from M05 (MT5Q1) to M04 (MT4Q) (~40').
5. Aligned 4" beam pipe between MT2WD2 to MT2WU-1 (~58').
6. **Beam pipe between MT2V & MT2WU-1 was computed incorrectly for station 23.5'. It is 0.1" out of tolerance. Tolerance is 0.4" for a 4" diameter pipe. It is 0.5" low from ideal. Should be fixed during next access.**
7. **MTest drastically needs a vertical elevation run. John Kyle.**

## MAGNET:

Aligned/unrolled MT5Q2 quad. It was found rolled by ~0.060" over the width of the quad.

# INSTALLATION OF THE ANACONDA TRANSFER LINE IN M04

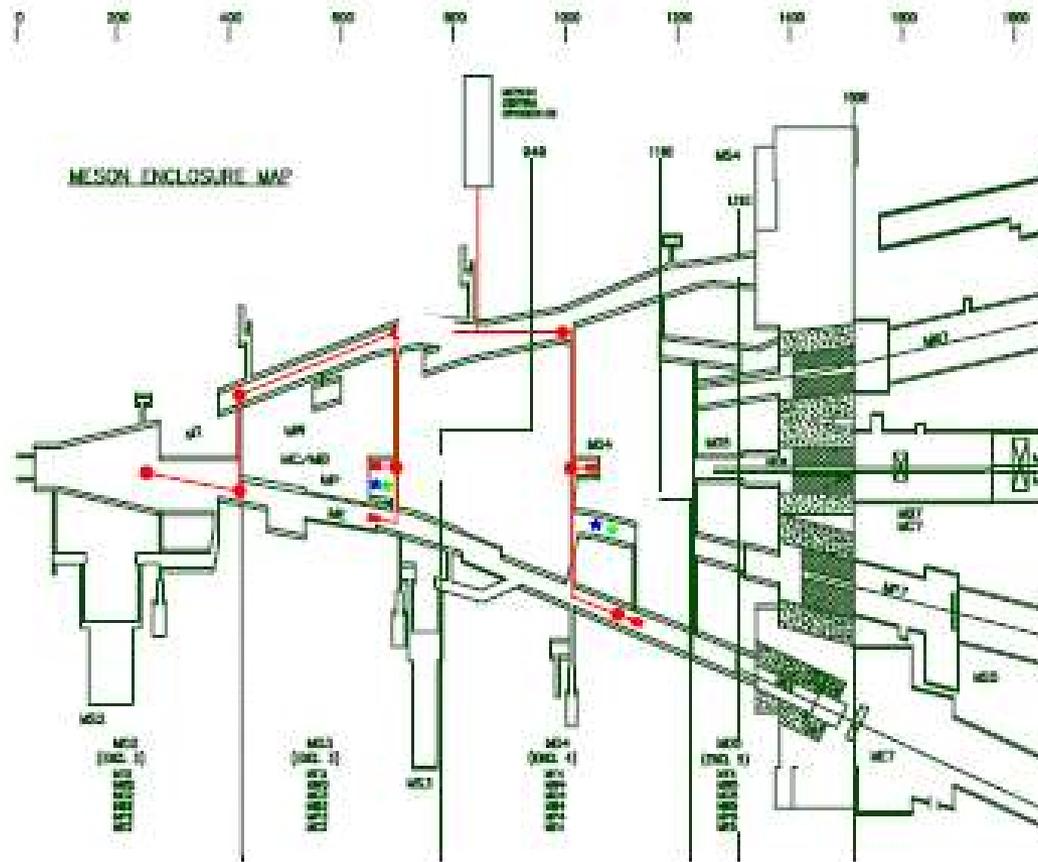


Figure 1 Meson Enclosure Map and Cryogenic Transfer Line Location

**In ME cryogenic lines were installed for the HPTF facility.**

**Figure - Courtesy - Arkadiy Klebaner**

# INSTALLATION OF THE ANACONDA TRANSFER LINE IN M04

---

1. Cryogenic test Facility (CTF), formerly the Meson Central Cryogenics (MCC), is located on the west side of the Meson beam line, as shown in figure on the last page. CTF will provide cryogenics for a cryomodule tests area of the High Power Test facility (HPTF) in the Meson Detector Building.
2. CTF houses three (3) Tevatron satellite refrigerators capable of producing a total of 1,500W at 4.5°K. Cryogenic transfer line from CTF, red line on the picture on last page, is available in M03 and M04 enclosures, formerly servicing superconducting bending magnets in various portions of the East, Center, and the West beam lines. Note, that M02 section of the Meson cryogenic transfer line was isolated from CTF during previous shutdown.
3. **During the June 6<sup>th</sup>, 2005 shutdown in the meson area, Arkadiy Klebaner's group has installed a 91ft cryogenic transfer line and associated gas piping extension in the M04 tunnel. Currently, the cryogenic transfer line extends ~120 ft north from the 1100ft crossover.**

**Details - Courtesy - Arkadiy Klebaner**

# UPDATE ON INTERLOCK GATES & RADIATION DETECTORS

---

1. A new interlock gate was installed at 1135' location in M04.
2. A new interlocked detector (chipmunk) was installed at the 1000 ft x-over, in M04.
3. The interlocked detector (chipmunk) previously installed at the gate between M05 and ME6 was moved upstream to the new gate position at 1135'.
4. A new interlocked detector (chipmunk) was installed along side the calorimeter in MC7.
5. Other interlock gates in enclosures M02 through M05 were re-cored to a shutdown core series on 06/06 and brought to normal interlock series cores on 06/12-13.
6. New Meson primary search and secure maps has been generated.
7. New running condition for MC has been generated.

**Details - Courtesy – Roger Zimmermann**

# RADIATION DETECTORS (CHIPMUNKS) AT VARIOUS LOCATIONS



**CHIPMUNK AT 1000' X-OVER**

*Photographs - Courtesy  
Roger Zimmermann*

**CHIPMUNK  
AT NEW  
BOUNDARY  
AT 1135'**



**CHIPMUNK  
IN MC7**

# WHAT ELSE HAPPENED & WHAT GOT LEFT?

---

1. Better lighting in Meson. Non-working tube lights changed - Bill Wickenberg (BW).
2. Instrumentation group checked all three target wheels, tightened the belts and operated them both locally and remotely – Daniel Schoo.
3. M02 HV2 unit was scrapped. It was planned - BW.
4. Failed dehumidifiers replaced in SY F2 and F3 manholes – BW.
5. Four power supplies were changed for the F1 manhole over to the new modern trim supplies - Leon Bartelson.
6. A signal cable was pulled from the enclosure E/J gate back to switchyard service building. This cable will be connected to the FIRUS system to monitor the status of the ODH system fan which prevents gas migration into enclosure J from upstream areas of switchyard - Raymond Lewis.
7. A survey was done on the location of the flanges in enclosure F1 – Tom Kobilarcik.
8. Cables were run by electricians supervised by Jim Ranson.
9. ODH fan in the stairwell by the reflecting pond in SY enclosure C was shut off and lock was installed. Will require eight (8) hour access to fix. More assessment is needed. Contact is BW.
10. Many lights repaired in SY enclosure C. Couple of fixtures left to be repaired. Will need four (4) hour access. Contact is BW.
11. Lighting ballasts in SY F2 and F3 manholes need to be replaced. Four (4) hour access required. Contact is BW.

# WHAT MORE?

---

1. Brajesh Choudhary and Gordon Koizumi did a detailed element listing from M01 to MT6, and MC2 to MC6.
2. Brajesh Choudhary and Richard Coleman did a detailed element listing of F1 manhole.
3. The SY120 beam line drawing will be updated very soon with the latest information and sent to all the relevant people.

***That's ALL***