

First Monthly Report of the MI BPM Upgrade
July, 2005
wbs item 1.1.3.2 of the Run 2 Luminosity Upgrade Project
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Project Definition:

The MI BPM Upgrade Project will replace the current BPM electronics and the data acquisition system used to transfer information between the BPMs and the Accelerator Controls Systems. As part of the project, the software used to read out, transfer, store, and analyze the BPM data will be upgraded. The goal of the project is to provide a BPM system based on modern hardware and software that gives the higher resolution and expanded functionality necessary to efficiently understand and operate the Main Injector now and for the foreseeable future including the needs for Run 2 and NUMI. Deliverables of the project include all relevant documentation, manuals, user's guides and any other written records necessary for maintaining the system.

Project Manager's Summary:

The MI BPM upgrade project continues to ramp up effort and activities aimed at installing and commissioning the upgrade as expeditiously as possible. People have been freed up from other projects (TeV BPM upgrade, transfer line BPM, other) and are starting to work on many aspects of the upgrade. Progress has been made on the upgrade requirements, the overall design, the combiner board, the transition board, and other components necessary for the upgrade to be successful.

A requirements and general readiness review was held on July 25, 2005. The presentation to the review committee can be found in the Beams docDB #1904-1910. The review report is not yet available. The verbal closeout emphasized completion of the requirements so that detailed design and planning can proceed.

The design and prototyping of the combiner boards is essentially complete. All parts are on order and the boards should be assembled before the scheduled shutdown. The plan is to install all 200+ boards in the MI tunnel during the fall 2005 shutdown. These boards replace existing boards in the MI tunnel. The existing boards are being replaced to remove the 53 MHz band-pass filter (the new system requires measurement of both 2.5 MHz and 53 MHz) and to remove relays that allow each BPM to be switched from horizontal to vertical (or back). The capability to switch between vertical and horizontal measurement mode is not required for the upgraded system and in fact has been a source of some trouble for the current system.

A test setup has been established in MI30 to investigate the signal amplitudes and signal to noise, to validate the measurement approach with prototype hardware and software, and to further develop the system. Measurements have been made and documented and will continue during the coming months.

The first transition board prototype, consisting of two channels and no remote control, will be ready in the latter part of August or early September. A full prototype with 8 channels will follow.

Resources Used in July 2005:

The total time worked on the project in calendar July 2005 from the Computing Division was 2.35 FTE-months with 9 people contributing. The time worked from the Accelerator Division was 2.13 FTE-months with 9 people contributing. The total time worked from both Divisions was 4.48 FTE-months. The following table gives the estimated or reported effort for both divisions (in FTE-months) since July, 2005.

| <u>Month</u> | <u>AD Effort</u> | <u>CD Effort</u> | <u>Total Effort</u> |
|--------------------------|------------------|------------------|---------------------|
| July, 2005 | 2.1 | 2.4 | 4.5 |
| SUM (through July, 2005) | 2.1 | 2.4 | 4.5 |

The effort listed here is time worked and does not include vacation, sick leave, holidays, etc.

Purchase requisitions/procard obligations through July, 2005:

Will be updated with all purchases to date for MI BPM in the August report.

Milestones:

| | | |
|-----------------|------------------------------|------------|
| 1.1.3.2.1.2 | MI BPM: Review (Milestone) | 7/25/2005 |
| 1.1.3.2.4.2 | All Combiner boxes available | 10/25/2005 |
| 1.1.3.2.3.1.3.5 | Transition module PO issued | 1/10/2006 |
| 1.1.3.2.6 | MI BPM system complete | 8/15/2006 |

Meetings held, Reports Given:

Meetings were held in July on the following dates:

Project Meetings: July 12, 19, 26

Documents:

The following documents were written and added to the Accelerator Division Document Database since January, 2005.

[1910-v1 Main Injector Operations in the Future Ioanis Kourbanis](#) 29 Jul 2005

[1909-v6 MI BPM Review: BPM HARDWARE OVERVIEW Manfred Wendt](#) 25 Jul 2005

[1908-v3 MI BPM Upgrade Review -- Overview Talk Bob Webber](#) 25 Jul 2005

[1905-v5 MI BPM Upgrade - Cost and Schedule Steve Wolbers](#) 25 Jul 2005

[1907-v2 Main Injector BPM Console Application Software Brian S. Hendricks](#) 25 Jul 2005

[1906-v3 MI BPM Online Software Overview Luciano Piccoli](#) 25 Jul 2005

[1904-v5 MI BPM requirements talk David P Capista](#) 24 Jul 2005

[1786-v4 Requirements for the Main Injector BPM upgrade Alberto Marchionni *et. al.*](#) 20 Jul 2005

[1526-v1 MI BPM Meeting Notes and Minutes Steve Wolbers](#) 17 Jul 2005

[1834-v9 BPM Buffers David P Capista *et. al.*](#) 30 Jun 2005

[1874-v1 MI States and BPMs Brian E. Chase](#) 17 Jun 2005

[1865-v1 Combiner Board Slides from MI BPM 6/7/05 Meeting Bob Webber *et. al.*](#) 09 Jun 2005

[1849-v1 BPM Filter Module for Transfer Lines Nathan Eddy](#) 31 May 2005

[1845-v1 Beam Sync Clocks Gregory L. Vogel](#) 25 May 2005

[1810-v1 TeV BPM Timing Generator Fanout \(TGF\) Features Bill Haynes](#) 13 May 2005

[1824-v1 MI Electrostatic BPM's with Extra Wide Aperture: Analysis of Position Characteristic and Linearity Manfred Wendt](#) 12 May 2005

[1822-v1 MI Service Building Survey \(BPM electronics space\) Marv Olson](#) 12 May 2005

[1807-v1 MI Abort line bpm's Dallas Heikkinen *et. al.*](#) 04 May 2005

[1806-v1 MI States and Clock Events](#) [David P Capista](#) 03 May 2005

[1803-v1 MI Stripline BPM: Analysis of Position Characteristic and Output Signals](#)
[Manfred Wendt](#) 02 May 2005

[1780-v1 Proton and PBar Beam Measurements in the Main Injector](#) [Peter Prieto](#) *et. al.* 13
Apr 2005

[1550-v1 MI BPM Upgrade \(Talk given at CD Accelerator Activities Coord. Mtg 1/25/05\)](#)
[Steve Wolbers](#) 28 Jan 2005

[1542-v1 Summary of Tevatron BPMs for Main Injector](#) [Jim Steimel](#) *et. al.* 25 Jan 2005

[1533-v1 Recycler BPM's - My impression](#) [David E. Johnson](#) 21 Jan 2005

[1523-v1 Towards a final MI BPM requirements document-MI BPM meeting 1-11-05](#)
[Alberto Marchionni](#) 11 Jan 2005

[1524-v1 MI BPM Upgrade](#) [Steve Wolbers](#) 11 Jan 2005

Subproject Leader Reports:

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No detailed subproject leader reports this month.