

Tenth Monthly Report of the MI BPM Upgrade
April, 2006
wbs item 1.1.3.2 of the Run 2 Luminosity Upgrade Project
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Project Definition:

The MI BPM Upgrade 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:

During April the project focused on finishing the design and fabrication of the hardware required for the installation and commissioning of the system. Analysis continued on the measurements taken that characterize the cables that connect the combiner boxes to the service buildings. Preparations of three posters and papers presented at the Beams Instrumentation Workshop occupied many people. The topics covered were the front-end software, the front-end analog electronics and the overall system design and performance.

The first two transition modules were tested in April. A few process problems and mistakes were found during testing. The vendor was informed, agreement was reached on the nature and probable causes of the problems and the full order of 70 additional boards were released for production. In addition, the first 2 production boards were repaired. This provides the project with 72 production boards plus the three pre-production boards for a total of 75.

During May the project will test and prepare all of the hardware required for the installation and commissioning of the 7 systems. Missing functionality will be added and debugging will occur as full systems are fabricated and tested.

Resources Used in April 2006:

The total time worked on the project in April 2006 from the Computing Division was 4.2 FTE-months with 16 people contributing. The time worked from the Accelerator Division was 2.1 FTE-months with 11 people contributing. The total time worked from both Divisions was 6.3 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
August, 2005	1.4	2.7	4.1
September, 2005	2.8	3.7	6.5
October, 2005	3.5	4.7	8.2
November, 2005	2.1	5.1	7.2
December, 2005	1.4	5.7	7.1
January, 2006	3.1	4.1	7.2
February, 2006	4.2	5.7	9.9
March, 2006	3.0	4.2	7.2
April, 2006	2.1	4.2	6.3
SUM (through Apr, 2006)	25.7	42.5	68.2

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

Purchase requisitions/procard obligations through April, 2006:

Small purchases were made in April, primarily for the transition control module. The final accounting of purchases for the project will be collected and reported in a future 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 April on the following dates:

Project Meetings: April 4, 11, 18, 25: Minutes are available in beams-doc-1526.

Documents:

The following documents were written and added to the Accelerator Division Document Database during April, 2006.

[1526-v5 MI BPM Meeting Notes and Minutes Steve Wolbers](#) 27 Apr 2006

[2234-v1 Analysis of Bench Test Data for the MI BPM Pickups Robert K Kutschke](#) 25 Apr 2006

[2243-v1 MI BPM Upgrade Topics Steve Wolbers](#) 18 Apr 2006

[1949-v9 Main Injector Beam Position Monitor Upgrade Software Specifications for Data Acquisition Steve Foulkes et. al.](#) 07 Apr 2006

[2217-v3 Main Injector Beam Position Monitor Upgrade: Status and Plans Robert K Kutschke](#) 03 Apr 2006

Subproject Leaders Reports:

Rob Kutschke: Validation

I continued to work on the analysis of the Bench Test data. This analysis will give the function that will be used to compute the beam position from the measured A and B voltages. The analysis will also give the error on the beam position that arises from neglecting the orthogonal transverse beam position.

I also helped to prepare the paper and poster for the Beam Instrumentation Workshop.