

Tevatron BPM Upgrade

Stephen Wolbers

CD Accelerator Coordination
Meeting

August 3, 2004

Outline of this talk

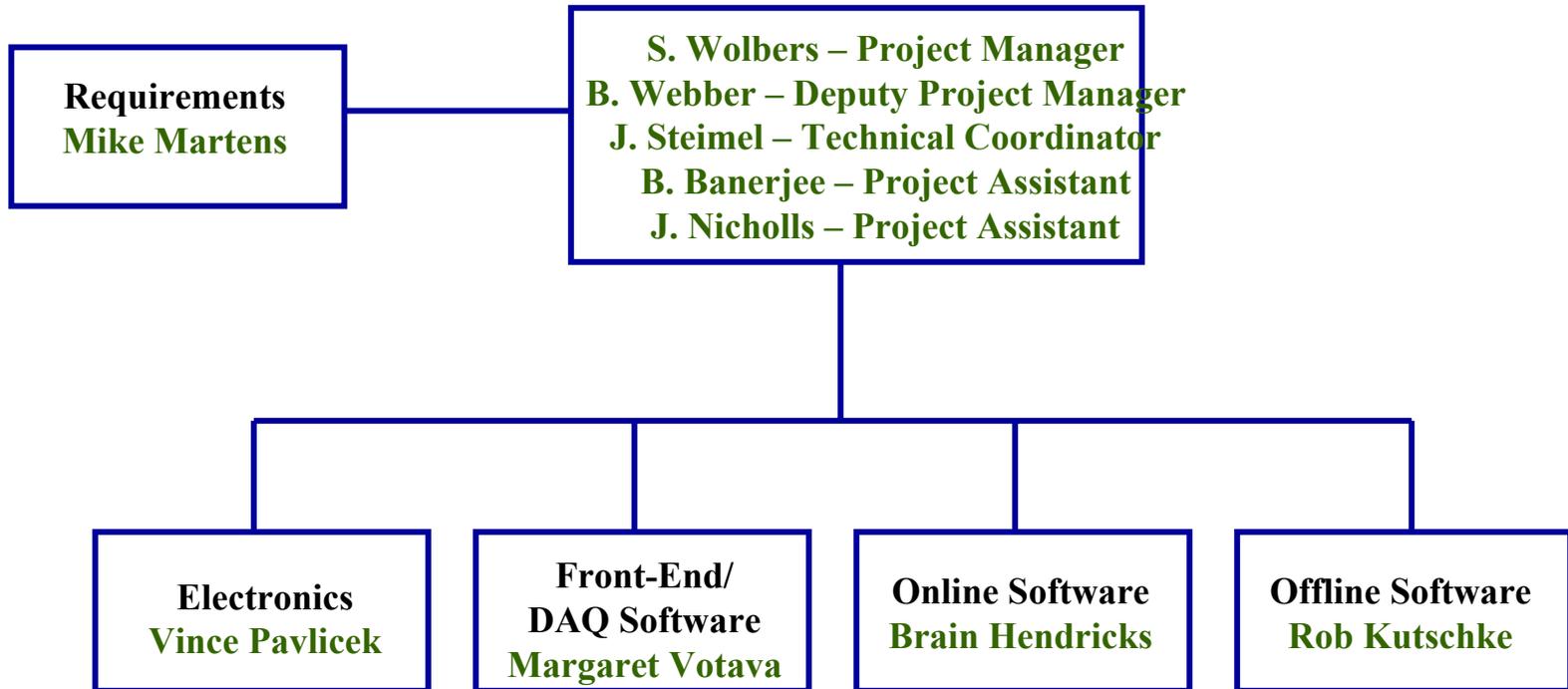
- Introduction
- Current milestones/changes in schedule
- Accomplishments and Status
- Prospects and Plans
 - Shutdown work
 - Commissioning
 - End of Project/MOU's
- Issues and concerns
- Summary

Intro: What is to be delivered by the TeV BPM Upgrade project?

- All new electronics.
- Front-end software.
- Data to the online/controls system.
- Applications to use the new data.
- The pickups in the accelerator will not be modified!



Tev BPM Upgrade Project Organization



Changes to Project since the last briefing

- BLM portion was removed.
 - The BLM will build their own interface to the controls system.
 - We can remove most of the old BPM system but must leave the BLM portion functional.
- No AIP was required to fund the project.
- Deliveries are later than scheduled.
- New effort brought in for service building work (Tim Kasza's people) and for EchoTek understanding (Eric James, Gustavo Cancelo)

Project Planning - Schedule DOE Milestones (1)

- 9/22/03 ★ Tev BPM Requirements Review
- 12/19/03 ★ Tev BPM Technology Review
- 2/13/04 Core Electronics PO placed
 - 3/11/04 ★ EckoTek order placed
- 4/1/04 First modified board delivered
 - 6/15/04 Updated First modified board
 - 8/9/04 Current date of 1st Mod. Board
- 4/28/04 Electronics system design review
 - 5/14/04 Design Review
 - 7/19/04 ★ Final design complete

Project Planning - Schedule

DOE Milestones (2)

- 6/1/04 First Production Board delivered
- - 10/7/04 First Production Board delivered
- 6/15/04 First crate in Tevatron
- - 8/23/04 Begin installation in service bldg
- 9/10/04 All Echotek boards delivered
- 9/29/04 System complete and cabled
- - 12/6/04 Begin commissioning (not a DOE milestone)
- 12/21/04 Commissioning complete
- - 1/12/05 Commissioning complete
- 3/31/05 Project Complete

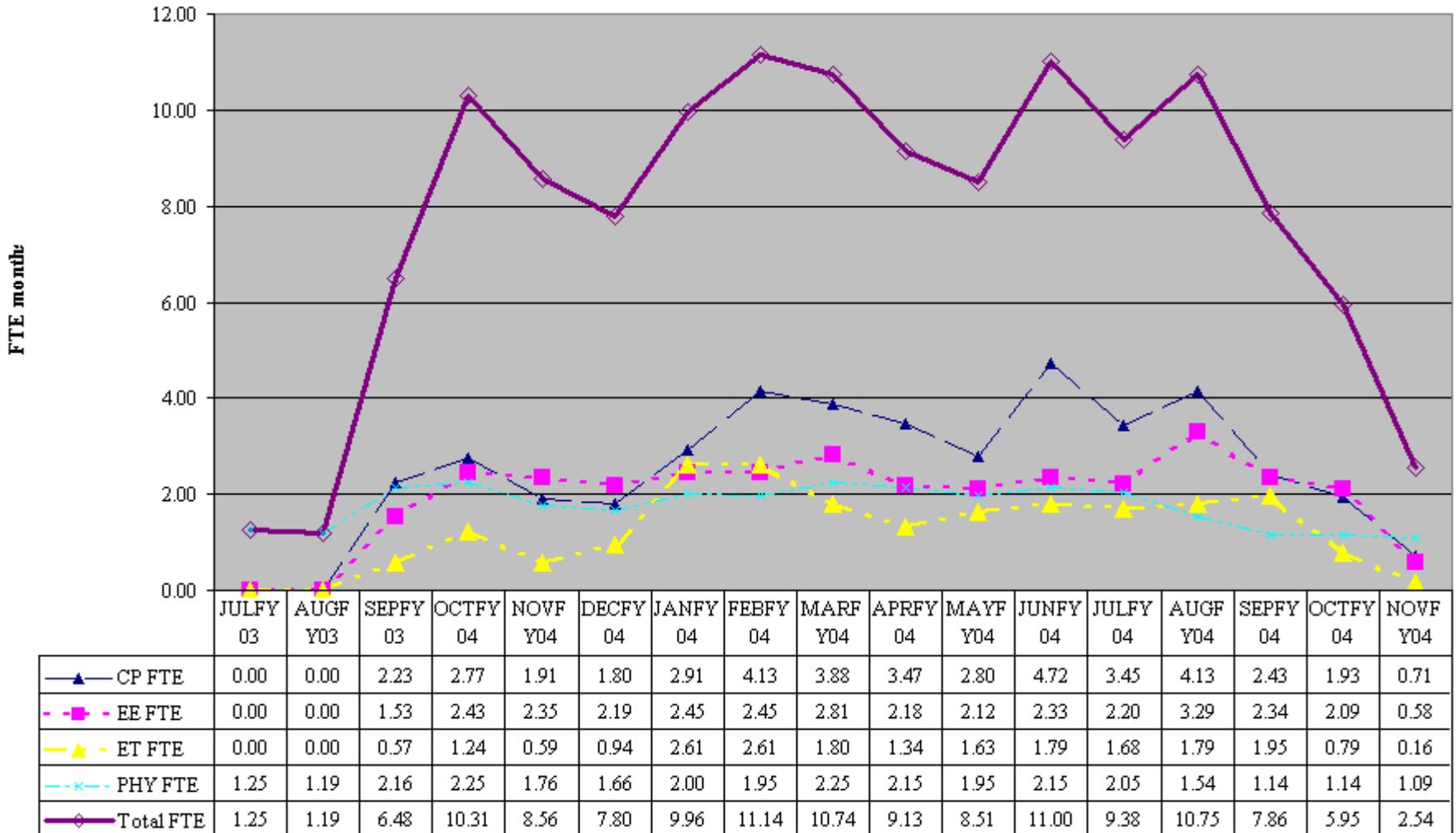
Project Planning - Cost

- The wbs is effort loaded and contains all M&S and SWF.
- Totals (not including overhead and contingency)
 - M&S: \$1.76 Million (Same as December 2003 estimate)
 - SWF: \$1.3 Million < - Rising as the project time stretches

First complete wbs effort estimate

TBPM Estimated FTE by Group

Not synchronized with The commissioning plan



Effort Report:
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3.5 5.5 11.4 6.6 5.8 6.8 9.0 9.7 9.4 9.7 10.3

(Updated)

Key Accomplishments

- **Measurements/proof of concept**
 - Resolutions
 - Pbar
- **Designs and specifications**
 - Front-end, online, offline software
 - Analog front-end system
 - Timing System
 - Filters
 - Cables

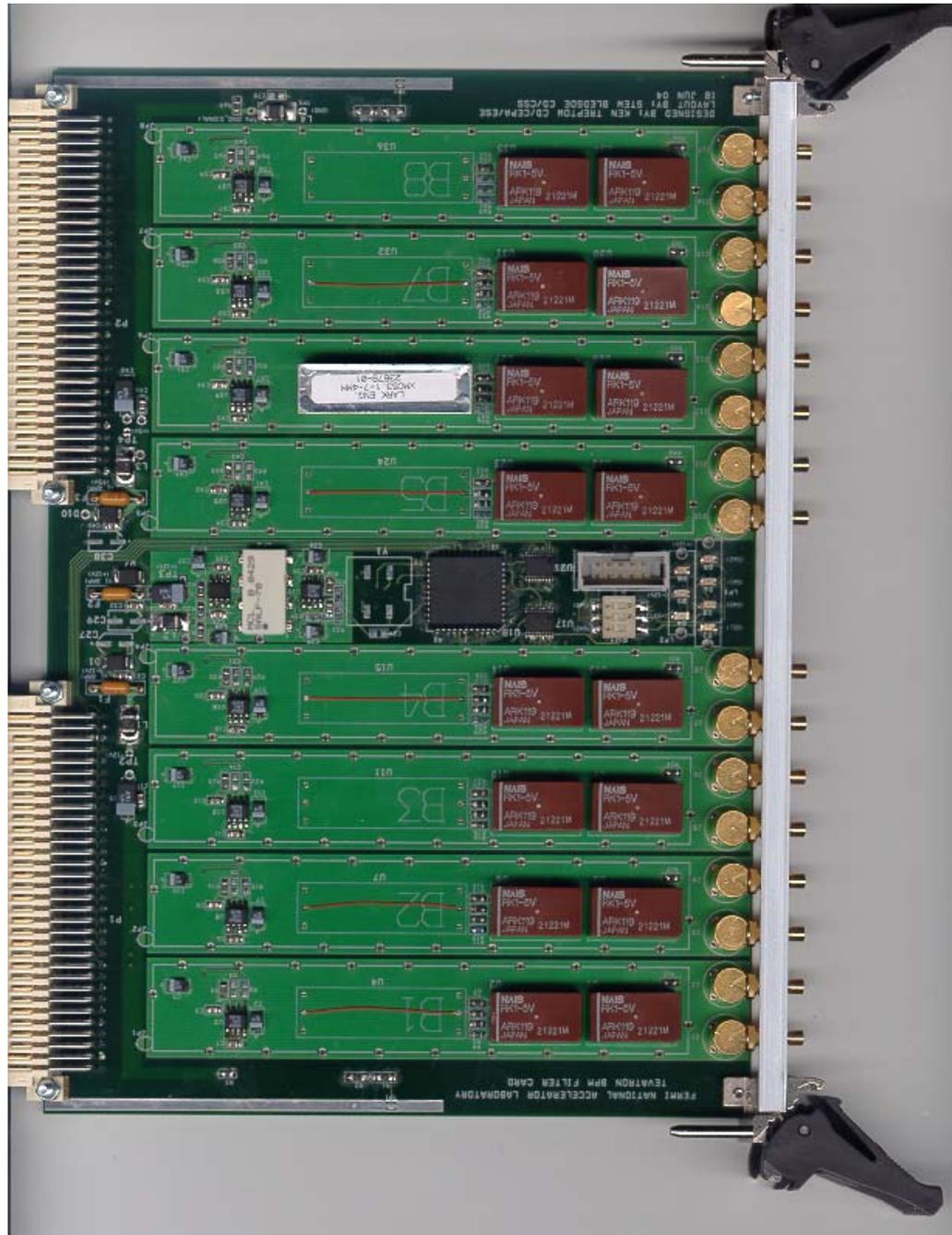
Key Accomplishments

- Prototypes/test stands
- Service Building survey and preparation
- Purchases
 - Crates, MVME Processors, analog filters, cables, timing and filter boards, etc.

Key Accomplishments

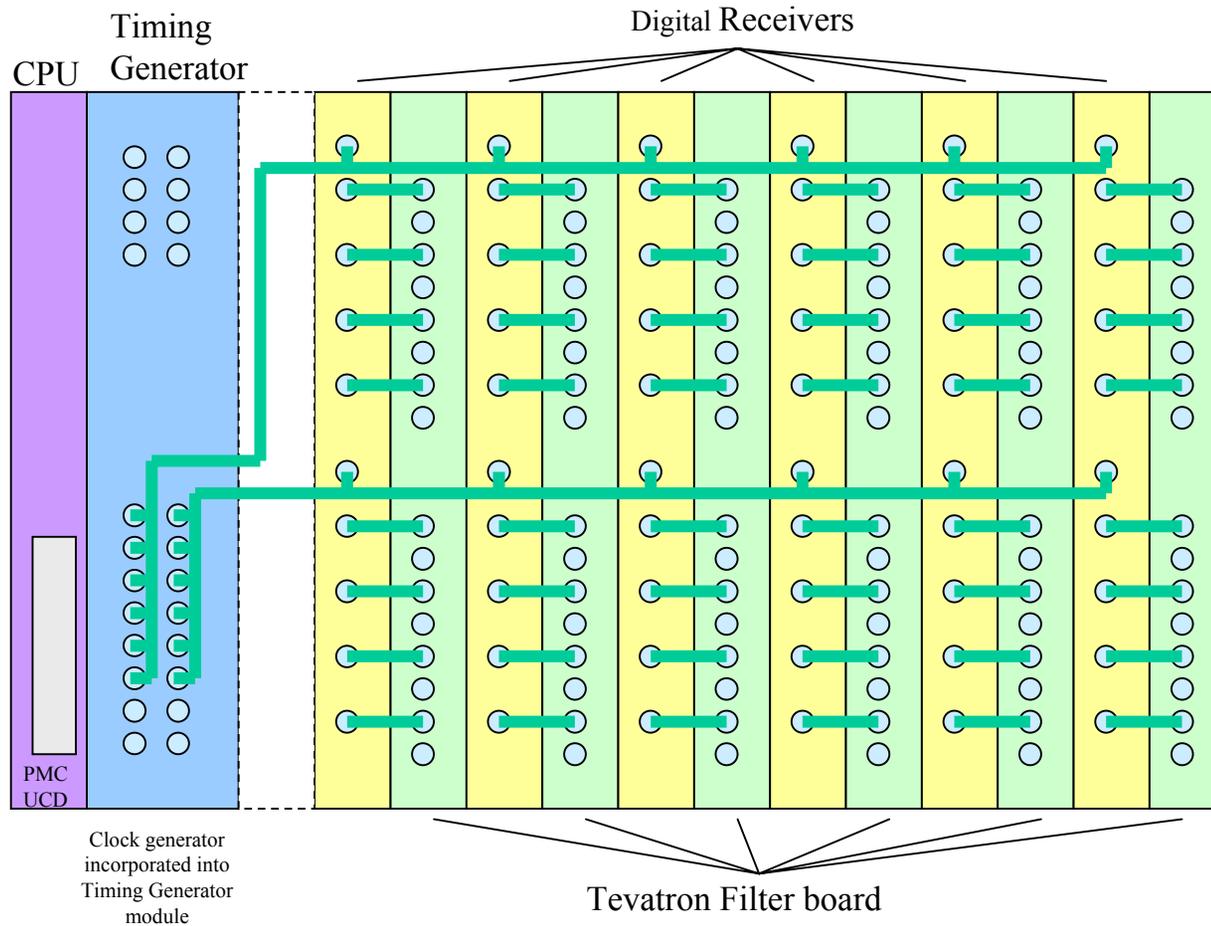
- Documents
 - Minutes of all meetings
 - Written documents in the AD Doc DB
 - 122 documents uploaded as of 7/28/04
 - A document is a container and often has many documents, so 122 is a low number.
 - Specifications, designs, schematics, implementation plans.
 - MOU's
 - Hardware (In AD and CD for review)
 - Software (Still inside TeV BPM Project)
- Web pages

Filter Board



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Final Crate Configuration - Front Panel



Old Test Stand (From February)



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Test Stand in July, 2004 - FCC3



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Dawn VME Crate



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Status

- Integrating H/W and S/W on the FCC3 teststand.
- Installing second teststand in the accelerator (A3) this week.
- Will make measurements (closed orbit first) with the beam.
- Test of end-to-end system (pickups - filter - EchoTek - FE - online - controls)
- Major Accomplishment!

Prospects and Plans

- **Shutdown**

- Plan to install most of the 27 crates during the shutdown.
- There is space in the racks.
- We will have the VME crates and MVME processors.
- Some concern about the remaining items.

Prospects and Plans

- **Commissioning**

- The system will be commissioned house by house after the beam returns in December, 2004.
- Can't commission during the shutdown- the accelerator needs the old BPM system to bring up the beam.
- Can do some installation in parallel with the commissioning.

Prospects and Plans

- **End of Project:**
 - Need to commission the whole system
 - Diagnostics and calibrations need to be developed and documented.
 - The system needs to be documented and handed over to operations.
 - **MOU's**
 - Hardware
 - Software

Issues

- Most Issues and concerns mentioned in February have been dealt with or have gone away by magic.
- Some expertise to build still, but we are making progress.
- Much work to do! Integration and commissioning will bring many surprises.

Issues

- **MI BPM**

- MI BPM is another large BPM system.
- Discussions of CD contributions have occurred off and on during the past 6-12 months.
- No commitments at this time that I know of.
- I am sure we will all hear more in the near future.

Summary

- The Tevatron BPM Upgrade is moving forward thanks to the hard and dedicated work of many people in CD and AD.
- We are reaching an exciting part of the project where we integrate and commission the system.
- The plan is to finish in early 2005.