Run II Upgrades Status
March 2005 Report

Pushpa Bhat

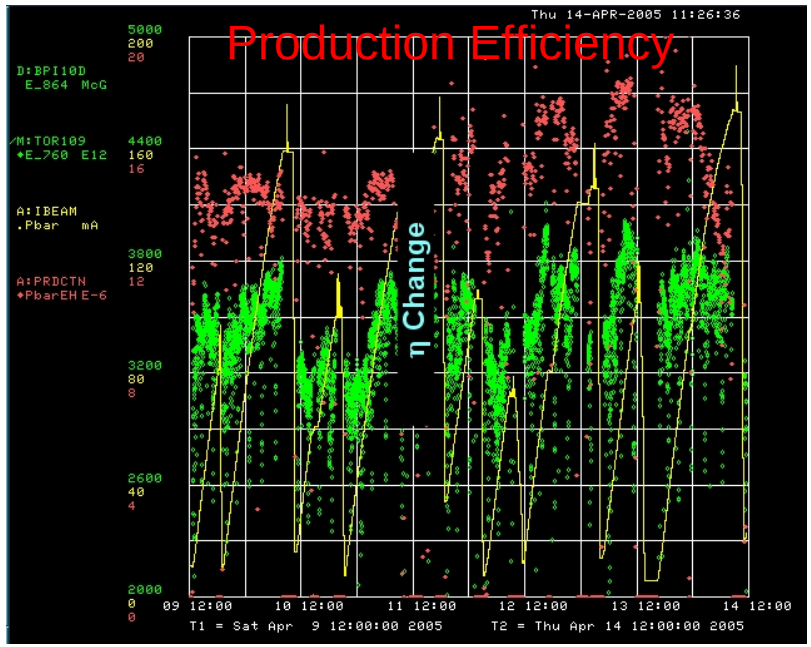
Outline

- Technical Highlights/ Progress
- Status Report for March '05
  - Milestones
  - % Complete
  - M&S Costs
  - Effort Report

Technical Highlights

Pbar Source

- AP2/DB Acceptance
  - Changed the DB η from 0.007 to 0.006
    - Production efficiency above 18×10^{-6} per proton
    - Need orbit tuning in DB and D→A
  - DEX bump commissioned
  - Work on DB extraction kicker magnet with TD continues



- Rapid transfers project
  - **Dave's goal: 15 mins. by June 1; working group meetings started**
  - **BPM test in F23 in progress; BPMs still on track to complete end of summer**
  - **Work on transverse injection dampers in MI in progress**

Tevatron

- Tevatron
  - BPMs
    - 14 houses connected/commissioned
    - 9 houses installed; 4 houses remaining
      - Working on some new problems that have surfaced
  - Helix/Separators
    - Luminosity lifetime vs. Helix size studies over many stores continue → parasitic
    - R&D
      - Separator with Eletropolished SS electrodes had a vacuum leak. That is fixed and is being conditioned
      - One more separator that needs reassembly
      - Problems with Ti electrodes
      - HV conditioning being tested; Problems with HV connectors for ~ 180 kV testing
  - Plenty of Tevatron studies getting done
    - Octupoles, tune tracker, helix
  - TEL R&D making progress

e-cool Commissioning

- Commissioning going well
  - Pulsed beam circulated in the cooling section
  - U-bend commissioned with DC beam (350 mA)
  - Still not stable and high beam-induced outgassing in the collector
- Expect low current DC beam through the entire beamline by the end of April
- Still one month behind Schedule

- Interim Technical Progress review
  - ~ May 31, '05

- http://www-ecool.fnal.gov/

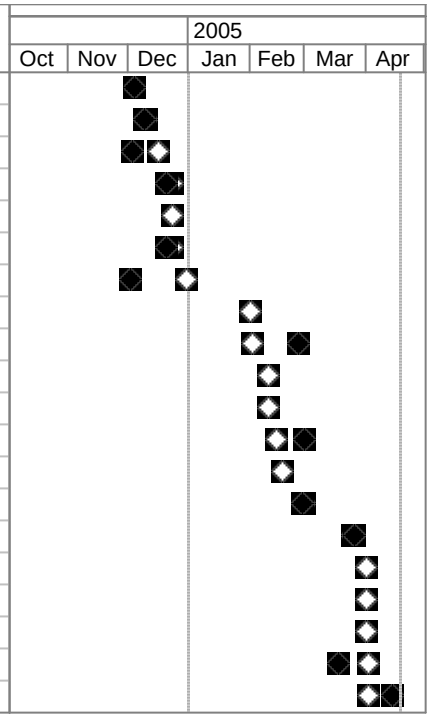
Other

- MI BPM project organization in progress
  - CD/AD
  - Piggybacks on the TeV BPM project
  - Same management team (Wolbers, Webber)
  - Need formal approval in CD
  - BPM Requirements being updated
  - EchoTek DDC boards already in hand and tested
  - Project to complete by end of summer 06

Status Report

Milestones Status (Dec. '04 – May '05)

WBS	Name	MS Class	Finish	Base Fin
1.3.3.1.3.1.2.3	Kicker tank design finalized	C	12/3/04	12/3/04
1.4.5.4.5.1.1	Begin TEV BPM system commissioning	C	12/8/04	12/9/04
1.4.3.4.3	New standard separators operational	A	12/2/04	12/16/04
1.1.1.4	Slip Stacking Operational	A	12/20/04	12/23/04
1.4.5.4.3.2.3.2	Offline SW code complete	C	4/5/05	12/23/04
1.6.5.4	Start Phase 2 (Milestone)	A	12/20/04	12/23/04
1.4.3.2.6	Polarity switches operational	C	12/1/04	12/30/04
1.1.3.3.5	MI 2.5 MHz Acceleration complete	B	5/17/05	1/31/05
1.3.5.5.22	Pelletron Installed at MI-31 (Milestone)	C	2/25/05	2/1/05
1.4.5.4.4.1.7	All Tev BPM crates functionally available (except for F bldg.) or Instal	C	5/13/05	2/10/05
1.4.5.4.4.2.2	TEV BPM Frontend Integration Test Complete	C	5/16/05	2/10/05
1.2.2.5.3.4.1.4	DB Extract Kicker Decision to Proceed w/Upgrade	C	2/28/05	2/14/05
1.4.5.4.5.1.4	Tev BPM Electronics comissioning complete	C	5/16/05	2/17/05
1.2.2.7.4	Decision to proceed with development of chromatic compensation	C	2/28/05	2/28/05
1.4.2.1.1.4	Decision on TEL-3	C	3/26/05	3/25/05
1.1.1.2.2.6	MLRF upgrade complete	C	5/3/05	3/31/05
1.1.1.2.3	MLRF RF Upgrades & Improvements Complete	C	5/3/05	3/31/05
1.4.5.4.6.8	Tev BPM Upgrade Operational	B	6/20/05	3/31/05
1.3.3.1.3.1.1.7	Pickup tank design finalized	C	3/17/05	4/1/05
1.3.5.6.1.1.5	Ubend Commissioned (Milestone)	C	4/14/05	4/1/05



Notes:

- Tev BPM project progressing well but delayed by 6-8 weeks
- 2.5 MHz studies/commissioning now in progress
- MLRF upgrade not needed for slip-stacking but an operational improvement

Progress as of March 31, 2005

WBS	Name	Actual % Complete (A)	Planned % Complete (P)	A/P %
0	**Run II**	**65%**	**69%**	**95%**
1	**Luminosity Upgrades**	**67%**	**72%**	**93%**
1.1	Protons on Pbar Target	74%	75%	98%
1.2	Pbar Acceptance	50%	58%	87%
1.3	Pbar Stacking & Cooling	71%	78%	91%
1.4	Tevatron High Luminosity	69%	73%	95%
1.5	Shutdowns	50%	50%	100%
1.6	Project Management	59%	63%	94%
2	**Maintenance & Reliability**	**54%**	**51%**	**104%**

M&S Spending through March '05

M&S Spending through March 2005		Planned from MSP file January RLS Estimate (then yr$)		FY05	FY05	Inception (FY04) To date Costs			ITD Obl+RIP	% Fy05 Budget Used YTD Obl+RIP
		FY05	Total	Allocation	Obl+RIP	Actual	Obligations	Obl+RIP	/Total Est	/FY05 Allocation
Run II Upgrades		**5,787**	**17,588**	**5,677**	**2,417**	**12,371**	**12,477**	**12,580**	**72%**	**43%**
1	**Luminosity Upgrades**	**4,124**	**13,343**	**4,232**	**1,599**	**10,407**	**9,818**	**9,915**	**74%**	**38%**
1.1	**Protons on Target**	**401**	**1,625**	**399**	**125**	**1,684**	**1,155**	**1,155**	**71%**	**31%**
1.1.1	Slip Stacking	10	417	10	13	919	388	388	93%	135%
1.1.2	Pbar Target and Sweeping	11	54	0	-3	12	12	12	22%	
1.1.3	MI Upgrades	311	980	320	0	504	504	504	51%	0%
1.1.4	Booster-MI Cogging	0	0	0	0	0	0	0		
1.1.5	OTR	69	174	69	114	249	252	252	145%	166%
1.2	**pbar Acceptance**	**485**	**1,333**	**336**	**265**	**643**	**665**	**710**	**53%**	**79%**
1.2.1	LiLens	99	406	102	113	231	235	235	58%	111%
1.2.2	AP2 and DB Acceptance	386	927	234	152	412	430	475	51%	65%
1.3	**pbar Stacking and Cooling**	**1,971**	**5,133**	**1,721**	**688**	**3,860**	**3,746**	**3,780**	**74%**	**40%**
1.3.1	S&C Task Force	0	0	0	0	0	0	0		
1.3.2	Debuncher Cooling	0	0	0	0	0	0	0		
1.3.3	Stacktail Upgrade	642	1,491	655	91	749	783	783	53%	14%
1.3.4	Recycler Commissioning	227	469	227	38	245	245	245	52%	17%
1.3.5	Electron Cooling	795	2,613	521	484	2,484	2,331	2,365	91%	93%
	AIP	384	1,777	126	306	1,860	1,837	1,871	105%	
	Non AIP	411	836	395	178	624	494	494	59%	
1.3.6	Rapid Transfers	307	560	318	74	381	386	386	69%	23%
1.4	**Tevatron High Luminosity**	**1,267**	**5,161**	**1,322**	**521**	**4,119**	**4,150**	**4,167**	**81%**	**39%**
1.4.1	Beam Studies and Simulation	0	38	0	0	41	41	41	106%	
1.4.2	Active BBC	361	1,395	360	172	603	633	651	47%	48%
1.4.3	Increased Helix Separation	381	1,038	406	80	846	885	885	85%	20%
1.4.4	Luminosity Leveling	0	0	0	0	0	0	0		
1.4.5	Improved Controls and Diagnostics	254	2,147	281	228	2,160	2,145	2,145	100%	81%
1.4.6	Tevatron Vacuum Improvements	80	234	80	4	197	197	197	84%	5%
1.4.7	Tevatron Alignment	191	308	195	37	273	248	248	81%	19%
1.6	**Management**	**0**	**92**	**454**	**0**	**102**	**102**	**102**	**111%**	**0%**
2	**Reliability Upgrades**	**1,663**	**4,245**	**1,445**	**818**	**1,964**	**2,659**	**2,665**	**63%**	**57%**
2.1	Vulnerability White Paper	783	2,667	697	679	883	1,499	1,505	56%	97%
2.2	Reliability Upgrades	880	1,578	748	138	1,081	1,160	1,160	74%	19%

Effort for March 2005

Adjusted FTE March 2005		Actual	Plan
		Totals	3 Mo. rolling ave.
Run II Upgrades		**100.9**	**103.5**
1	**Luminosity Upgrades**	**91.6**	**87.6**
1.1	**Protons on Target**	**6.6**	2.3
1.2	**pbar Acceptance**	**6.9**	11.5
1.3	**pbar Stacking and Cooling**	**32.3**	29.7
1.4	**Tevatron High Luminosity**	**42.7**	39.6
1.6	**Management**	**3.1**	4.5
2	**Reliability Upgrades**	**9.3**	**15.9**