
Run II Upgrades Status April 2005 Report

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Outline

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- Status Report for April '05
 - Milestones
 - % Complete
 - M&S Costs
 - Effort Report
- Contingency Analysis

Technical Highlights

Tevatron BPM Project

- Installation and Commissioning ~100% complete!
- New system is being used for operations; old system being decommissioned.
- Tasks remaining:
 - Implementation of pbar measurements
 - refined calibration and diagnostic procedures
 - Documentation of the new system and procedures
- Project to complete by end of June.
- Great example of inter-divisional collaboration

e-cool Commissioning

- Good progress with commissioning
 - U-bend commissioned April 14
 - Full beamline commissioned May 4
 - 0.5 A dc beam sustained in the U-bend for ~ 1 hr without full discharges
 - ~200 mA beam has been in the full beamline
 - Collector PS being replaced now
 - Commissioning operations to be interrupted June 20-24
 - upgrades to the electron gun to address the Pelletron HV discharge problem.
 - Additional shielding of the beamline in the tunnel from the MI bus field
- See Sasha's report today
- Interim Technical Progress review
 - ~ Mid-late June, '05 ?

Other

- AP2 BPM electronics upgrade complete (34 BPMs)
 - Application software available
- D→A BPMs to be upgraded next
- MI BPM project organization in progress
 - 2/3rd the Tev BPM project in scale
 - Design in progress
- 2.5 MHz pbar acceleration ready to integrate into operations

Status Report

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

WBS	Name	MS Class	Finish	Base Fin	2005							
					Nov	Dec	Jan	Feb	Mar	Apr	May	
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	5/17/05	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	5/20/05	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 In	C	5/13/05	2/10/05			■					◆
1.4.5.4.4.2.2	TEV BPM Frontend Integration Test Complete	C	7/5/05	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 commissioning complete	C	5/16/05	2/17/05			■					◆
1.2.2.7.4	Decision to proceed with development of chromatic compensator	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	4/27/05	3/31/05					■	■		
1.1.1.2.3	MLRF RF Upgrades & Improvements Complete	C	4/27/05	3/31/05					■	■		
1.4.5.4.6.8	Tev BPM Upgrade Operational	B	7/12/05	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					■	■		
1.3.5.6.3.1	Full Beamline Commissioned (Milestone)	C	5/4/05	5/1/05								◆

→ Notes:

- Tev BPM project installation, commissioning complete; Finish by end of June
- 2.5 MHz studies/commissioning ready for implementation into operation

Progress as of April 30, 2005

WBS	Name	Actual % Complete	Planned % Complete	A/P %
0	Run II	66%	70%	94%
1	Luminosity Upgrades	67%	73%	92%
1.1	Protons on Pbar Target	62%	63%	98%
1.2	Pbar Acceptance	53%	60%	87%
1.3	Pbar Stacking & Cooling	72%	81%	89%
1.4	Tevatron High Luminosity	70%	74%	94%
1.5	Shutdowns	50%	50%	100%
1.6	Project Management	65%	65%	100%
2	Maintenance & Reliability	59%	55%	106%

M&S Spending through April '05

M&S Spending through April 2005		Planned Estimate		FY05	FY05	Inception (FY04) To date (ITD)			% Fy05 Budget Use	
		FY05	Total	Allocation	Obl+RIP	Actual	Obligations	Obl+RIP	ITD Obl+RIP /Total Est	YTD Obl+RIP /FY05 Allocation
Run II Upgrades		5,090	18,104	6,536	2,609	12,661	12,731	12,772	71%	40%
1	Luminosity Upgrades	3,713	13,584	4,412	1,771	10,599	10,050	10,087	74%	40%
1.1	Protons on Target	537	1,607	629	131	1,701	1,161	1,161	72%	21%
1.1.1	Slip Stacking	10	417	10	18	923	392	392	94%	175%
1.1.2	Pbar Target and Sweeping	11	54	0	-3	24	12	12	22%	
1.1.3	MI Upgrades	447	963	550	0	504	504	504	52%	0%
1.1.4	Booster-MI Cogging	0	0	0	0	0	0	0		
1.1.5	OTR	69	174	69	116	251	253	253	146%	168%
1.2	pbar Acceptance	486	1,472	342	286	701	731	731	50%	84%
1.2.1	LiLens	99	517	102	126	262	248	248	48%	123%
1.2.2	AP2 and DB Acceptance	387	955	240	160	438	483	483	51%	67%
1.3	pbar Stacking and Cooling	1,413	5,125	1,173	737	3,938	3,817	3,829	75%	63%
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	102	1,507	105	101	800	781	793	53%	96%
1.3.4	Recycler Commissioning	227	469	228	74	250	280	281	60%	33%
1.3.5	Electron Cooling	776	2,589	522	478	2,504	2,360	2,360	91%	92%
	AIP	384	1,777	126	300	1,865	1,837	1,865	105%	
	Non AIP	392	812	396	178	639	523	495	61%	
1.3.6	Rapid Transfers	307	560	318	83	385	396	396	71%	26%
1.4	Tevatron High Luminosity	1,277	5,288	1,205	566	4,157	4,186	4,212	80%	47%
1.4.1	Beam Studies and Simulation	0	38	0	0	42	41	41	106%	
1.4.2	Active BBC	360	1,414	360	177	606	655	655	46%	49%
1.4.3	Increased Helix Separation	393	1,039	221	94	874	896	899	87%	42%
1.4.4	Luminosity Leveling	0	0	0	0	0	0	0		
1.4.5	Improved Controls and Diagnostics	278	2,255	358	240	2,166	2,150	2,158	96%	67%
1.4.6	Tevatron Vacuum Improvements	55	235	80	4	197	197	197	84%	5%
1.4.7	Tevatron Alignment	191	307	186	51	273	247	263	85%	27%
1.6	Management	0	92	1,063	52	102	154	154	168%	5%
2	Reliability Upgrades	1,377	4,520	2,124	837	2,061	2,681	2,684	59%	39%
2.1	Vulnerability White Paper	702	2,749	1,306	683	935	1,506	1,509	55%	52%
2.2	Reliability Upgrades	675	1,771	818	155	1,127	1,176	1,176	66%	19%

Effort for April 2005

Adjusted FTE April 2005			Plan
		Totals	3 Mo rolling ave.
Run II Upgrades		101.5	93.1
1	Luminosity Upgrades	89.5	76.8
1.1	Protons on Target	4.8	3.3
1.2	pbar Acceptance	8.0	11.3
1.3	pbar Stacking and Cooling	31.6	22.6
1.4	Tevatron High Luminosity	42.0	35.1
1.6	Management	3.1	4.5
2	Reliability Upgrades	12.0	16.3

Contingency Analysis

- Estimate to complete: $\$18,104 - \$12,772\text{K} = \$5332\text{K}$
- Contingency remaining: $\$20,946\text{K} - \$18,104\text{K} = \$2,842\text{K}$
- ~200K in new CRs coming up
 - New Est. to complete ~ \$5.5M
 - Cont. remaining ~ ~2.6 M → 47% on Est. to complete
- Contingency Need

		Obl. To complete
• MI BPM	\$200K	\$460K
• Rapid Transfers	\$100K	\$160K
• Recycler	\$200K	\$200K
• E-cool	\$200K	\$300K
• Stacktail	\$300K	\$700K
• Other	\$200K	\$1.7 M (Lum upg only)
Major Concerns/New scope?		
• Pbar Stack rate related	\$300K	
• Booster HLRF (SS + NUMI)	\$300K	→ \$1.8 M

 - Serious Vulnerability → Linac 7835 tubes
 - Linac Task Force recommendation → explore Thales tubes
 - Collaborate with Los Alamos; Test station ~ \$2 M

Upgrades Shutdown Activities

- 4 weeks of pbar studies first 4 weeks of Tev Shutdown
 - stacktail upgrade related studies
 - aperture studies
- Pbar installations
 - Band-4 cooling tanks
 - DB Extraction kicker magnet
- Tevatron Alignment
- Tevatron Installations
 - IPM
 - OTR
 - TEL-2
 - Separators → 2 new; 3 swap?
- Main Injector
 - BPM cables ?