
Run II Upgrades Status October Report

Pushpa Bhat
Jeff Spalding

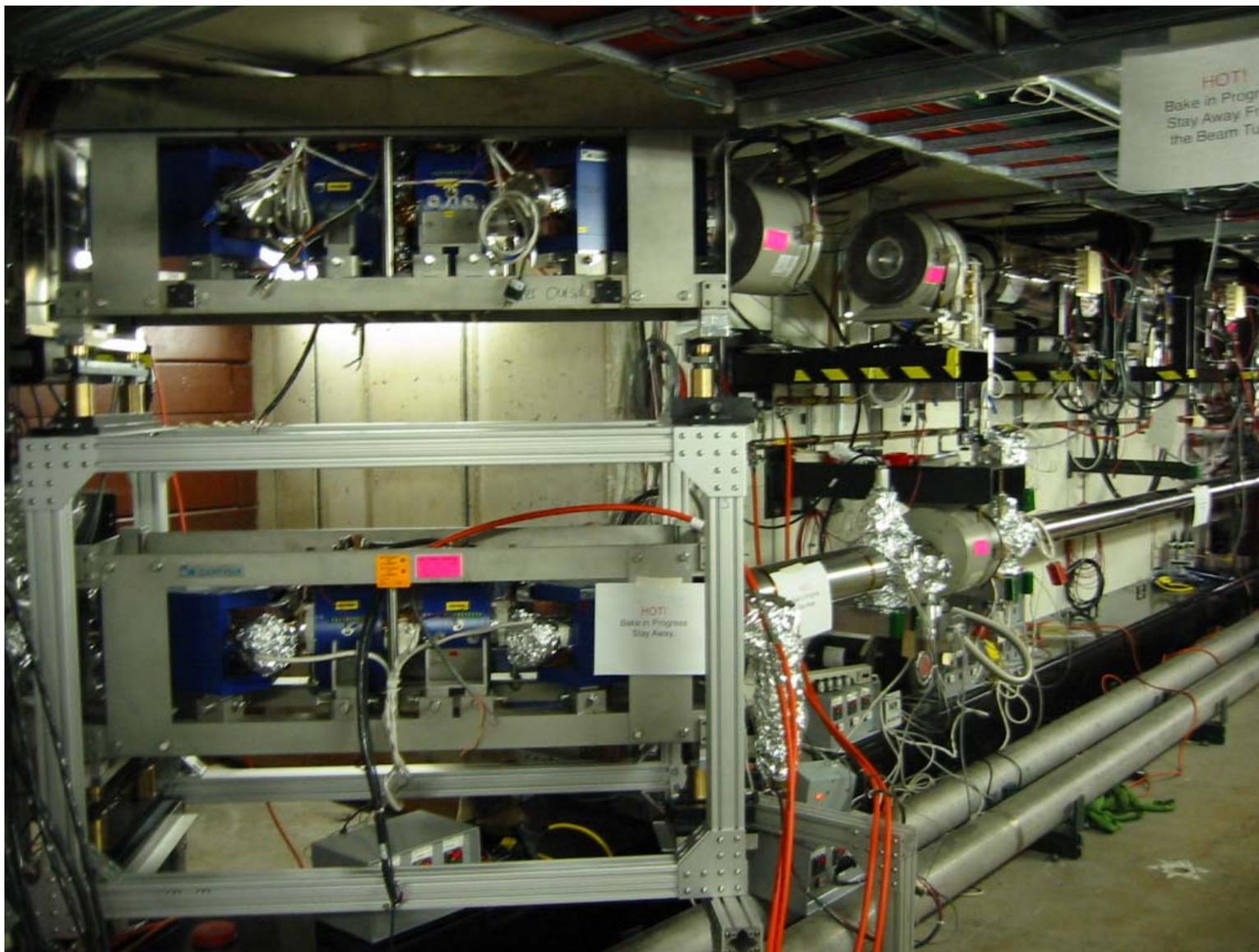
Outline

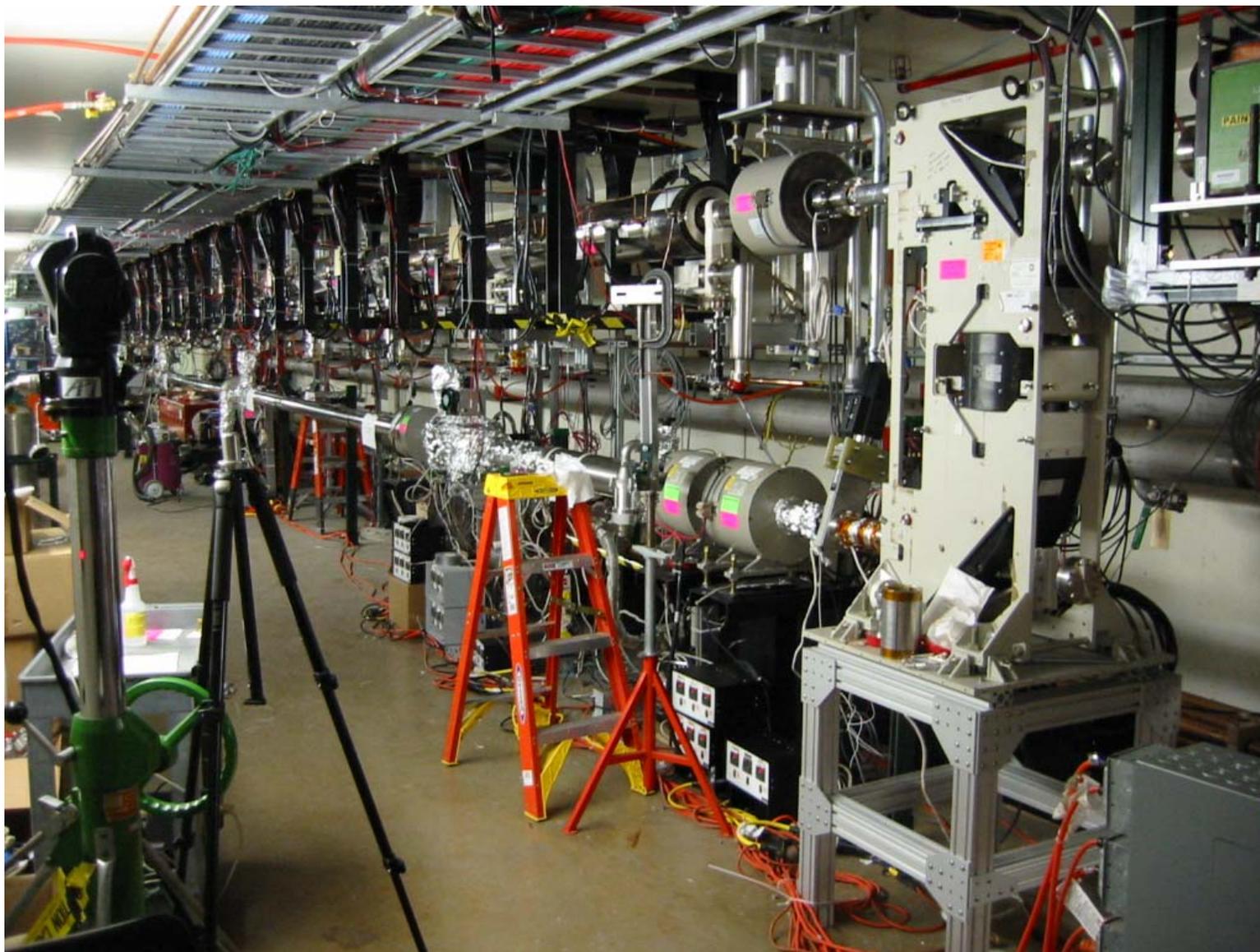
- Technical Highlights/ Shutdown Progress
- Status Report for October
 - Milestones
 - % Complete
 - Effort Report
 - M&S Costs (FY05+ITD)
- Other
 - TEL Review
 - Separators Project
 - Change Requests

Technical Highlights / Shutdown Progress

- Main Injector
 - Slip-stacking/ Beam-loading Compensation
 - On track for start of Phase-2 on December 23rd.
 - All 18 MI RF stations have been upgraded. Now tuning and working on series modulators.
- Recycler/e-cool
 - e-cool installation in the RR will be complete by mid- next week
 - All components installed and aligned
 - All 4 sectors under vacuum, in various stages of bake
 - 3 to be done today, cooling section to start today
 - Recycler work in the area complete
 - MI re-installation in the area half-way
 - Remaining items (not in the original plan) needing short access at a later date
 - Lead shielding for OTR cameras in the tunnel
 - Magnetic shielding around transferline beamtubes in MI-31

E-cool Installation in the Recycler





Technical Highlights / Shutdown Progress (contd.)

- AP2/DB Acceptance
 - AP1/AP2 survey ✓
 - AP2 BPM upgrade
 - Prototype assembled, being tested
 - Wide aperture toroid in AP2 in progress
 - 20 motorized quad stands installed in the Debuncher
 - DB Injection region
 - New septum and stand installed
 - Motorized Debuncher injection kicker stand in place
 - Beam tube to be installed this week
 - LQBs are installed and aligned.
 - DRF2 cavity moved to low dispersion region
 - DEX bump to be installed this week
- Rapid Transfers
 - All 465 ramping cards & power supplies installed
 - New ramping PS D:H926 in APO
 - Transferline BPM upgrade
 - Most hardware ordered
 - Specs documented & reviewed; test stand, prep for installation

Technical Highlights / Shutdown Progress (contd.)

- Tevatron

- Separators

- Two spare separators installed at D17 ready for use. Will be commissioned after shutdown for immediate use during collisions.
- All 13 separator stations now have polarity switches. (Only 6 before shutdown.)
 - Two newly installed at D17 tested with power supplies

- BPMs

- All 150 boards delivered by EchoTek, testing in progress
 - 5 boards had to be returned due to hardware problems
 - Firmware problem being addressed
- Timing and filter boards bids in, still need to be ordered.
- Will install one crate in A3 → it will instrument 8 BPMs (32 channels). Plan to connect all 8 BPMs from this one service building.

- IPMs

- Magnets and Vacuum chambers, pumps, stands installed
- Detector delayed; will be ready by mid-January, may need ~5 days

- OTRs

- to be ready about the same time as IPM, 2 shifts/detector for installation, 1 in Tev and 3 in A150 beamline

Status Report

All Milestones (Sept. '04 - Jan. '05)

WBS	Name	MS Class	Finish	Base Fin	2005		
					Qtr 4	Qtr 1	Qtr 2
1.2.1.1.2.1	Decision on long lithium lens (Milestone)	C	9/15/04	9/15/04	■		
1.4.5.4.3.1.1.1.6	Core electronics 1st production board available	C	9/27/04	10/19/04	■		
1.1.2.2.4.2	Beam Sweeping Ready (redefined)	A	10/21/04	10/21/04		■	
1.4.2.1.1.3	Review TEL R&D	C	11/10/04	10/18/04		■	
1.2.2.10	Initial AP2&DB Improvements Complete (Milestone)	A	11/29/04	11/19/04		□	
1.5.4	Finish Summer 04 Shutdown	C	11/29/04	11/19/04		□	
1.1.1.2.1.24	HLRF Upgrade complete	C	11/30/04	11/1/04		□	
1.3.3.1.3.1.2.3	Kicker tank design finalized	C	12/3/04	12/3/04		□	
1.4.5.4.3.2.1.3	Frontend DAQ SW code complete	C	12/3/04	11/29/04		□	
1.4.5.4.3.2.2.2	Online SW code complete	C	12/6/04	10/21/04		□	
1.1.1.2.2.6	MLRF upgrade complete	C	12/7/04	10/22/04		□	
1.4.5.4.5.1.1	Begin system commissioning	C	12/8/04	12/9/04		□	
1.4.3.4.3	New standard separators operational	A	12/16/04	12/16/04		□	
1.1.4.4	Booster-MI Cogging Operational	C	12/20/04	8/20/04		□	
1.1.1.4	Slip Stacking Operational	A	12/21/04	12/23/04		□	
1.6.5.4	Start Phase 2 (Milestone)	A	12/21/04	12/23/04		□	
1.4.5.4.3.2.3.2	Offline SW code complete	C	12/22/04	12/23/04		□	
1.4.3.2.6	Polarity switches operational	C	12/30/04	12/30/04		□	
1.3.3.1.3.1.1.7	Pickup tank design finalized	C	1/21/05	1/21/05			□



Progress as of October 31, '04

WBS	Name	Planned %	Actual %	A/P %
0	Run II - Jeff Spalding	53%	50%	95%
1	Luminosity Upgrades	55%	52%	95%
1.1	Protons on Pbar Target	58%	55%	93%
1.2	Pbar Acceptance	45%	39%	87%
1.3	Pbar Stacking & Cooling	63%	61%	97%
1.4	Tevatron High Luminosity	52%	49%	94%
1.5	Shutdowns	32%	32%	100%
1.6	Project Management	52%	52%	100%
2	Maintenance & Reliability	40%	39%	99%
2.1	2003 White Paper/Vulnerability Report	33%	34%	103%
2.2	Maintenance Improvements	50%	47%	95%
2.3	Project Management Oversight	44%	44%	99%

Effort for October '04

WBS	WBS Name	Actual FTE	v3 Proj
	Total	158.3	146.5
1.1	Protons on Target	20.0	7
1.2	Pbar Acceptance	16.8	11.5
1.3	Pbar Stacking and Cooling	45.2	35.7
1.4	Tevatron High Luminosity	64.6	72.5
1.6	Mgmt	3.7	4.7
2	Reliability & Maint. Upgrades	8.2	15.1

M&S Costs

M&S Spending through October 2004		Planned		FY05	Inception To date Costs			% budget used	
		Estimate			Obl+RIP	Actual	Obligations	Obl+RIP	ITD Obl+RIP
		FY05	Total	/FY04+FY05					/Total Est
Run II Upgrades		6,253	17,448	516	9,119	10,511	10,911	70%	63%
1	Luminosity Upgrades	4,689	13,138	451	7,696	8,613	8,995	72%	68%
1.1	Protons on Target	961	1,619	29	1,072	1,059	1,059	65%	65%
1.1.1	Slip Stacking	0	416	5	895	380	380	91%	91%
1.1.2	Pbar Target and Sweeping	11	54	0	24	15	15	28%	27%
1.1.3	MI Upgrades	950	976	0	0	504	504	52%	52%
1.1.4	Booster-MI Cogging	0	0	0	0	0	0		
1.1.5	OTR	0	172	23	153	161	161	94%	94%
1.2	pbar Acceptance	441	1,378	34	473	464	479	51%	35%
1.2.1	LiLens	179	421	13	136	126	135	43%	32%
1.2.2	AP2 and DB Acceptance	262	957	21	338	338	344	54%	36%
1.3	pbar Stacking and Cooling	821	3,848	197	2,667	3,277	3,330	87%	87%
1.3.1	S&C Task Force	0	0	0	0	0	0		
1.3.2	Debuncher Cooling	0	0	0	0	0	0		
1.3.3	Stacktail Upgrade	503	1,436	0	513	692	692	48%	48%
1.3.4	Recycler Commissioning	0	257	0	206	206	206	80%	80%
1.3.5	Electron Cooling	86	1,597	165	1,869	2,042	2,067	129%	129%
	AIP	0	1,622	149	1,431	0	1,714	106%	106%
	Non AIP	86	260	16	439	0	353	136%	136%
1.3.6	Rapid Transfers	233	558	31	78	336	365	65%	65%
1.4	Tevatron High Luminosity	2,463	6,201	192	3,381	3,712	4,025	67%	65%
1.4.1	Beam Studies and Simulation	0	38	0	42	41	41	108%	108%
1.4.2	Active BBC	800	1,288	18	400	492	496	43%	39%
1.4.3	Increased Helix Separation	1,485	2,301	7	656	812	885	40%	38%
1.4.4	Luminosity Leveling	0	0	0	0	0	0		
1.4.5	Improved Controls and Diagnostics	29	2,142	150	1,845	1,946	2,182	102%	102%
1.4.6	Tevatron Vacuum Improvements	0	154	3	195	196	196	127%	127%
1.4.7	Tevatron Alignment	148	278	13	243	225	225	86%	81%
1.6	Management	0	93	0	102	102	102	110%	110%
2	Reliability Upgrades	1,564	4,310	65	1,424	1,898	1,916	60%	44%
2.1	Vulnerability White Paper	813	2,736	9	670	835	839	52%	31%
2.2	Reliability Upgrades	751	1,574	56	754	1,063	1,077	68%	68%

TEL Review

- Held November 10th
- Committee:
 - A. Hahn (Chair), M. Syphers, M. Martens, S. Nagaitsev, D. Wildman
- Charge:
 - Review tests with TEL1, technical specs for TEL1&2, R&D program for the next 1-2 years
- Recommendations:
 - The combination of TEL2 + TEL1 upgrades is a promising R&D program, may or may not help Run 2, but useful R&D + for BTeV
 - Support installation of new SEFT gun in TEL1 and studies
 - Two-prong development for 14 KV modulator
 - voltage, rep. rate in parallel
 - Demonstrate simultaneous abort-gap cleaning, BBC capability or find an alternate mechanism for abort gap cleaning.
 - Devote more manpower

Helix/Separators Project

- Met on Nov. 5th to evaluate scope of the project
 - Helen Edwards (Chair for the review last August)
 - Peter Limon (TD leader on the project)
 - Jeff, Pushpa, Ron Moore, Vladimir Shiltsev
- Decided to not build any new separators
 - Operating existing separators at 15-20% higher voltages has been very successful; no obvious increase in spark rates
- Set the scope for future work and R&D
 - Currently 2 spares available
 - Prepare 2 for installation in SD05
 - Use 2 for R&D on electrodes
 - Electropolishing
 - Titanium
 - Feed-through re-design?
 - HV conditioning
 - Retro-fit spares with new electrodes (electropolished probably) for swapping a few operational ones

Change Requests (M&S)

- TD cost re-estimates for FY05 Run II work \$66K
- IPM over-run \$60K
- Recycler transverse damper \$201K
- E-cool AIP \$126K
- Wideband R&D overrun \$189K
 - \$516K excluding AIP CR
- To come:
 - Separators re-scope
 - \$1470K
 - -300K mistake
 - -500K R&D → \$670K back to contingency
- → \$154K to contingency overall