

23 March 2005

To: Paul Philp
DOE Project Manager, Run IIb CDF Detector Project

From: Pat Lukens
Project Manager for the Run IIb CDF Detector Project

Subject: Run IIb CDF Detector Project February 2005 Report

Attached is the monthly report summarizing the February 2005 activities and progress for the Fermilab RunIIb CDF Detector Project. This report is available electronically at:

<http://www-cdf.fnal.gov/run2b.html>

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RunIIb CDF Detector Project
Progress Report No. 27
1 - 28 February 2005

I. PROJECT DESCRIPTION

The primary goal of the CDF Run IIb Detector Project is to enable the detector to exploit the physics opportunities available during Tevatron operation through 2008. The data from Run II will represent a set of detailed measurements that can be compared with the predictions of the Standard Model at the highest available collision energy. The increased size of the data sample will allow us to study the top quark by measuring the details of its production and decay mechanism. In addition, we plan precision electroweak and QCD measurements, continued searches for a variety of phenomena that are predicted to exist beyond the Standard Model framework, and to explore CP violation in the b quark sector. The detailed physics goals of the upgrade are described in the Technical Design Report (TDR).

The major tasks of this upgrade are:

- Upgrade the calorimeter by replacing the Central Preradiator Chamber with a device with shorter response time to allow operation in a high-luminosity environment, and adding timing information to the electromagnetic calorimeters.
- Upgrade the data acquisition and trigger systems to increase throughput needed for higher luminosity operation and efficiently trigger on the higher multiplicity events of Run IIb.

II. OVERVIEW OF PROJECT STATUS – P. Lukens

The project made steady progress during February, 2005. All cost codes for the Silicon Detector Upgrade have now been closed, and the unspent budget has been returned to contingency. The final SOW to close out the Calorimeter subproject was approved, and the associated requisition has been submitted. The remaining subprojects made steady progress. February saw the first installation of modified TDCs into the experiment, and the final tests before the operation of the upgraded Level 2 trigger system were performed. Technical problems with the Track Trigger Finder board were resolved.

Our current projection is that portions of the Project that require a shutdown of the experiment and access to the collision hall will be complete by 3 August 2005. Our current estimate is that no more than five weeks of shutdown are required for installation of the Run IIb upgrades.

III. PROJECT MILESTONE SUMMARY (as of 28 February 2005)

CDF Data Acquisition & Trigger (L1 and L2) Milestones Sorted by Baseline Completion Date

WBS	Title	Baseline Comp. Date	Forecast/Actual Completion Date	Complete
1.3.2.6.3	Begin production of Level 2 Pulsar system	12 Nov 03	12 Nov 03	Yes
1.3.1.6.6	First Prototype TDC available for testing	19-Nov-03	16-Feb-04	Yes
1.3.4.4.1.4	Prototype Event Builder hardware arrives	3-Jun-04	31 Mar 04	Yes
1.3.2.10	Pulsar Hardware Ready for Installation	31-Aug-04	20-Aug-04	Yes
1.3.6.1.1.7	Begin AMS Design Work	1-Sept-04	2-Aug-04	Yes
1.3.6.1.3.7	Begin Track Fitter Design	1-Sept-04	2-Aug-04	Yes
1.3.4.5.3	Production Readiness Review - Event Builder	4-Oct-04	2-Jun-04	Yes
1.3.4.5.4.4	Arrival of the Event Builder hardware	15-Oct-04	15-Oct-04	Yes
1.3.11.8.5.5	Begin Purchase of Pulsar Board components	20-Oct-04	4-Nov-04	Yes
1.3.11.5.3.8	Begin Production TDC Mezzanine Card	28-Oct-04	3-Nov-04	Yes
1.3.6.2.6.4	Begin Ampchip Production	10-Jan-05	22-Nov-04	Yes
1.3.6.2.1.1.5	Begin AMS Mezzanine Card Production	14-Jan-05	11-Nov-04	Yes
1.3.1.17.4	TDC Readout System Complete	21-Jan-05	10-Dec-04	Yes
1.3.11.6.3.6	Receipt of TDC to Finder cables complete	18-Mar-05	3-May-05	
1.3.5.3.7	Arrival of 15 PCs from the vendor	23-Mar-05	18-Mar-05	
1.3.2.9	Pulsar Level 2 subproject ready for installation	1-Apr-05	11-Mar-05	
1.3.11.8.8	Begin Joint Testing with Finder Board	4-Apr-05	2-May-05	
1.3.11.7.5.8	Begin Production of SLAM Boards	18-Apr-05	3-May-05	
1.3.11.4.4.8	Begin Production TDC Fiber Transition Boards	21-Apr-05	18-Apr-05	
1.3.11.5.3.9	Checkout of TDC Mezzanine Cards Complete	6-Jun-05	15-Jun-05	
1.3.11.2.5.1	Begin Production XFT Finder Boards	8-Jun-05	16-May-05	
1.3.6.1.2.5	Hit Buffer Firmware Complete for Board Test	23-Jun-05	14-Jun-05	
1.3.6.1.3.5	Track Fitter Firmware Complete for Board Test	28-Jun-05	31-Mar-05	
1.3.1.12.6	Installation of Modified TDC's Complete	27-July-05	15-Aug-05	
1.3.4.8	Finish Event-Builder Upgrade	28-July-05	29-Jun-05	
1.3.10.2	Ready for Accelerator Shutdown 2005	8-Aug-05	15-Aug-05	
1.3.1.12.8	TDC Modification Complete	10-Aug-05	29-Aug-05	
1.3.5.5.5	Arrival of 70 Level3 and 15 DAQ PCs	15-Aug-05	15-Aug-05	
1.3.5.6.5	Arrival of 140/20 PCs from the vendor	15-Aug-05	15-Aug-05	
1.3.6.1.1.5	AMS Firmware Complete for Board Test	19-Aug-05	14-Apr-05	
1.3.6.3	SVT ready for installation	25-Aug-05	9-Aug-05	
1.3.5.8	Finish Purchase of Computers for L3 DAQ system	6-Sept-05	6-Sept-05	
1.3.11.4.4.9	Checkout of TDC Transition Boards Complete	16-Sept-05	3-Aug-05	
1.3.11.7.5.9	Checkout of SLAM Boards Complete	28-Sept-05	1-Sept-05	
1.3.11.2.5.10	Finder Board Checkout Complete	29-Sept-05	27-Oct-05	
1.3.11.10	XFT Ready for Installation at CDF	29-Sep-05	27-Oct-05	
1.3.8	Finish Run 2b Trigger DAQ project	30-Sep-05	27-Oct-05	
1.3.9	DAQ and Trigger Upgrades Ready for Installation	17-Jan-06	27-Oct-05	

Run IIb Data Acquisition & Trigger Milestones (Level 1 and 2)

ID	Name	Forecast	Baseline	Variance	2004				2005				20		
					Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4			
174	Begin production of Level2 Pulsar system	11/12/03	11/12/03	0 wks	◆										
67	First Prototype TDC available for testing	2/16/04	11/19/03	11.35 wks	◆	★									
344	Arrival of the prototype Event Builder hardware	3/31/04	6/3/04	-9 wks		★	◆								
184	Pulsar Hardware Ready for Installation	8/20/04	8/31/04	-1.4 wks				◆							
411	Begin AMS Design Work	8/2/04	9/1/04	-4.4 wks				★	◆						
425	Begin Track Fitter Design	8/2/04	9/1/04	-4.4 wks				★	◆						
353	Event Builder Production Readiness Review	6/2/04	10/4/04	-17 wks		★			◆						
358	Arrival of the Event Builder hardware	10/15/04	10/15/04	0 wks					◆						
321	Begin Purchase of Pulsar Board components	11/4/04	10/20/04	2 wks					◆						
269	Begin Production TDC Mezzanine Card	11/3/04	10/28/04	0.8 wks					◆						
471	Begin Ampchip Production	11/22/04	1/10/05	-5.8 wks					★	◆					
436	Begin AMS Mezzanine Card Production	11/11/04	1/14/05	-8.2 wks					★	◆					
280	Receipt of TDC to Finder cables Complete	5/3/05	3/18/05	6.4 wks						◆					
376	Arrival of 15 PCs from the vendor	3/18/05	3/23/05	-0.6 wks						◆					
188	Pulsar Level 2 subproject ready for installation	3/11/05	4/1/05	-3 wks						◆					
324	Begin Joint Testing with Finder Board	5/2/05	4/4/05	3.8 wks						◆					
307	Begin Production of SLAM Boards	5/3/05	4/18/05	2.2 wks						◆					
252	Begin Production TDC Fiber Transition Boards	4/18/05	4/21/05	-0.6 wks						◆					
108	TDC Readout System Complete	12/10/04	6/6/05	-23.8 wks					★						
270	Checkout of TDC Mezzanine Cards Complete	6/15/05	6/6/05	1.4 wks						◆					
212	Begin Production XFT Finder Boards	5/16/05	6/8/05	-3.2 wks						◆					
417	Hit Buffer Firmware Complete for Board Test	6/14/05	6/23/05	-1.6 wks						◆					
423	Track Fitter Firmware Complete for Board Test	3/31/05	6/28/05	-12.6 wks						◆					
146	Installation of Modified TDC's Complete	8/15/05	7/27/05	2.6 wks						◆					
367	Finish Event-Builder Upgrade	6/29/05	7/28/05	-4 wks						◆					
152	TDC Modification Complete	8/29/05	8/10/05	2.6 wks						◆					
391	Arrival of 70 Level3 and 15 DAQ PCs from the vendor	8/15/05	8/15/05	0 wks						◆					
398	Arrival of 140/20 PCs from the vendor	8/15/05	8/15/05	0 wks						◆					
409	AMS Firmware Complete for Board Test	4/14/05	8/19/05	-18 wks						◆					
473	SVT ready for installation	8/9/05	8/25/05	-2.4 wks						◆					
401	Finish Purchase of Computers for Level3/DAQ system	9/6/05	9/6/05	0 wks						◆					
253	Checkout of TDC Transition Boards Complete	8/3/05	9/16/05	-6.2 wks						◆					
308	Checkout of SLAM Boards Complete	9/1/05	9/28/05	-3.6 wks						◆					
224	Finder Board Checkout Complete	10/27/05	9/29/05	4 wks						◆					
326	XFT Ready for Installation at CDF	10/27/05	9/29/05	4 wks						◆					
475	Finish Run 2b Trigger DAQ project	10/27/05	9/30/05	4 wks						◆					
480	Ready for Accelerator Shutdown 2005	8/15/05	8/8/05	1.2 wks						◆					
476	Data Acquisition and Trigger Upgrades Ready for Installation	10/27/05	1/17/06	-10 wks						◆					

Project: CDF RunIIb DAQ
 Status Date: 2/28/05
 Print Date: 3/17/05

Completed Milestone ★
 Current Forecast ◇

Baseline Milestone ◆

IV. PROCUREMENT – P. Lukens

Erratum for January, 2005: The procurement for Pulsar boards and Silicon Vertex Trigger mezzanine cards was placed with the University of Chicago in January.

V. PROJECT HIGHLIGHTS

1.3 – Data Acquisition and Trigger

1.3.1 TDC (Time to Digital Converter) – Eric James

TDC modification continues at a rate of about 10 boards per week when boards are available. A total of 61 boards out of 300 to be modified were completed by the end of the month. The success rate for the modifications remains high. Over 90% of modified boards pass testing on the first attempt. We installed the first set of modified boards on the detector in late February. A total of 21 boards on the detector have been replaced and have been in use for several weeks without any operational problems.

Month	Board Modification		Testing at Michigan		Detector Installation	
	Complete	Remaining	Complete	Remaining	Complete	Remaining
January	39	261	9	291	0	233
February	61	239	43	257	21	212

1.3.2 Level 2 – Ted Liu

We held the Level 2 Pulsar Operational Readiness Review on Feb 9th. The committee commended the L2 Pulsar Group for their hard work and commitment in bringing the L2 Pulsar sub-project to the integration & commissioning phase. Most of the issues from the previous Review have been addressed by the Pulsar Group in a timely fashion. The ORR concluded that the Pulsar is on track with the timeline from the previous Review, there are no significant problems, and that operational integration in March 2005 is attainable.

1.3.11 XFT (eXtremely Fast Tracker) II – Richard Hughes, Brian Winer, Kevin Pitts

SLAM Boards: A second SLAM board has been loaded with parts. We now have two operating SLAM boards. We have developed a "pass-through" design that allows a SLAM to operate as a replacement for the existing Linker Output Module. This designed was checked at the teststand at OSU and operated with a Production Linker board. Teststand software for the operation of the SLAM board has continued to mature. We have tests which provide long term data integrity checks of the optical fiber input to the SLAM. We have begun to develop tests which drive signals from one SLAM board to another. These tests will be further developed in March.

XTC Cards: The first production XTC board was hand-assembled and successfully tested in February. Delivery of the first five machine assembled board from the vendor is expected in early March. Full production assembly will proceed shortly after receipt and checkout of the first five boards. In addition, data source firmware was developed and successfully tested. This firmware allows for the XTC to be used as a data source for fiber optic and integration testing. Software was developed to easily input source patterns. The production XTC checkout teststand and software is ready and awaiting the arrival of production boards.

Prototype XTC boards continue to be utilized at Fermilab to test modified TDC boards before they're installed onto the detector. With production boards available, they'll replace the prototype boards in this checkout, and XTC boards will be installed onto the detector.

Cabling: The specification for the TDC to Finder fiber optics was completed and the purchasing process was started. Bidding for the fiber fabrication and assembly was initiated with bids due in early March. Components for the patch panel at the Finder end were ordered and a preliminary layout of the patch panel was completed.

Stereo Finder: All 5 of the pre-production Stereo Finder modules have been received. Two boards have been found to have direct shorts between 3.3V and GND and were returned to the manufacturer for evaluation. We expect to hear the results of that diagnosis in March. The VME_Slave FPGA now downloads from PROM on power-up. VME operations are all functioning correctly. Problems have been found with the firmware downloading of the main Finder FPGAs. One problem is due to a previously undocumented feature of the configuration PROMs and the other is due a misunderstanding of how the PROMs function. A workaround has been found to download these chips and permit the board testing to continue unhindered.

Due to these problems with firmware downloading on the Finder board, a more significant design modification than planned will be required prior the start of Finder production. A rework of the schedule has been made including this redesign effort in parallel with the testing of the preproduction boards. It is expected that production of the redesigned board will not slip relative to the projection of January but an additional testing cycle will be required prior to the release of full board production. As a result, the forecast date for completion of the Finder Board Checkout and XFT Ready for Installation milestones is now October 27, 2005.

1.3.4 Event Builder – Bruce Knuteson

We ordered the Event Builder upgrade Proxy machines. They have arrived and have been configured. Updated performance numbers were obtained with improved code. The current rate at which events can be handled by the SCPU's is slightly greater than 1 kHz, marginally meeting our specifications. We expect to improve this over the coming weeks. Progress has been made on the L3 Builder (interface from the Event Builder to the L3 Farm). This should be completed by the mid-March. Once we complete this last piece of the system, the remaining task will be to commission our upgrade in the CDF online system with real beam data. An MIT graduate student (Khaldoun Makhoul) has joined the team at Fermilab and has produced an initial document describing the Event Builder upgrade to ACE's. He will continue learning the system in order to assist in installation and subsequent maintenance.

1.3.6 SVT (Silicon Vertex Tracker) – Alberto Annovi

Software: A detailed plan has been finalized, according to the recommendations of the review board. Each task has a coordinator and work has started already on most of the tasks. The first deadlines are at mid March which we're confident we'll be able to meet.

AM++: Designs of the third generation prototypes for AM++ and lamb boards have been completed and ordered. Second generation boards have been moved to Fermilab and tested in B0 (equivalent to tests performed in Pisa). Software is under development to allow tests with fake hits. Diagnostic software has been moved to Fermilab.

AMS/RW: The AMS implemented in a Pulsar has been also tested in B0. For the AMS/RW VME tests started to read/write on the new mezzanine.

Hit Buffer: Firmware development is in progress.

Track Fitter: We began track fitter simulation, successfully set up input vectors, and ran fake events through the individual FPGAs at the functional level. We see the inputs being parsed correctly, the fitter making the correct parameter calculations, and the chi2 and output being sent off correctly. Next up is the board-level and timing simulation.

Mezzanines and Pulsars: Full speed testing of the large memory mezzanine card was completed and the order for the remaining boards was placed. The small memory mezzanine card design is done and a request for bids was sent out. The transition cards arrived from the PC vendor.

VI. FINANCIAL STATUS (as of 28 February 2005)

The baseline cost of the Project is \$10,375K, consisting of Run IIB Project costs (\$9,034K) plus the closeout costs of the silicon detector upgrade (\$1,341K), which will no longer be constructed.

Current Financial Tracking Report - The table below contains current values for selected financial tracking quantities that do not appear in the standard Obligations or Cost Performance Reports. For the Silicon Detector portion of the project, we assume a BAC of \$1673K and obtain the ACWP from the Obligations report. Remaining portions of the project have their costs listed in the Cost Performance Report.

	ACWP		BCWP		BAC		Cont.	EAC	ETC	Complete
	Silicon	Non-Sil	Silicon	Non-Sil	Silicon	Non-Sil				
2004										
October	1342	1957	1342	2125	1673	5254	3448	6759	6908	50%
November	1357	2081	1357	2366	1673	5254	3448	6642	6652	54%
December	1341	2199	1341	2673	1673	5254	3448	6453	6361	58%
2005										
January	1341	2277	1341	2909	1673	5254	3448	6295	6125	61%
February	1341	2396	1341	3095	1341	5531	3503	6173	5939	65%

CDF RunIIB Obligations Report - This report provides a Level 2 summary of outstanding Purchase Orders (PO) where money has been committed but for which the Project has not been invoiced. This does not include requisitions in the system where a Fermilab PO number has not yet been assigned. A brief description of the columns included in this report is given below:

- Current Month Total Cost – The cost charged to the project for the reporting month.
- Current Month Obligation – Obligations made against the project in the reporting month.
- Year to Date (YTD) Total Cost – The total cost charged to the project in this fiscal year.
- YTD Obligations w/Indirect – Total obligations against the project for this fiscal year.
- Current Purchase Orders Open Commitment – This is the total of the open commitments against the project. It includes open commitments from the current and all prior years.
- Prior Year Total Cost - This is the total cost charged to the project in all prior fiscal years.

The total project cost is simply the sum of the Year-to-Date costs and the Prior Year costs. The total committed and spent is the Total Project Cost plus the Open Commitment value.

**CDF Obligations Report
Through 28 February 2005**

CDF RIIb EQU - February FY05 IN \$K							
Schedule	Expenditure Category	Current Month Total Cost	Current Month Obligation	YTD Total Cost	YTD Obligations w/Indirect	Current PO Open Comm	Prior Yr Total Cost
Silicon	M&S	0.0	0.0	3.3	(100.2)	0.0	539.0
	SWF	0.0	0.0	(1.1)	(1.1)	0.0	571.1
	OH	0.0	0.0	(2.1)	(2.1)	0.0	230.9
	Total 1.1	0.1	0.0	0.1	(103.4)	0.0	1,341.0
Calorimeter	M&S	1.2	0.0	42.0	4.1	5.6	211.8
	SWF	0.0	0.0	0.0	0.0	0.0	139.1
	OH	0.0	0.0	0.7	0.7	0.0	51.5
	Total 1.2	1.2	0.0	42.7	4.9	5.6	402.3
Trigger/DAQ	M&S	36.6	16.1	207.4	863.3	713.4	708.2
	SWF	45.6	45.6	146.2	146.2	0.0	220.7
	OH	18.3	0.0	75.3	75.3	0.0	129.2
	Total 1.3	100.6	61.8	429.0	1,084.8	713.4	1,058.1
Administration	M&S	0.0	0.0	0.1	0.1	0.0	29.1
	SWF	13.0	13.0	63.0	63.0	0.0	268.2
	OH	3.9	0.0	19.1	19.1	0.0	84.4
	Total 1.4	16.9	13.0	82.2	82.2	0.0	381.7
Total Project	M&S	37.9	16.2	252.8	767.4	719.0	1,488.2
	SWF	58.6	58.6	208.1	208.1	0.0	1,199.0
	OH	22.3	0.0	93.0	93.0	0.0	495.9
Grand Total		118.8	74.8	554.0	1,068.5	719.0	3,183.1

Total Project Cost (Inception To Date) = 3,737.1

CDF Project Cost Performance Report (CPR) – This report is generated from COBRA and provides a summary of the WBS 1.2-1.4 costs of the Project down to Level 3 of the Work Breakdown Structure. Silicon detector subproject closeout costs are not tracked here. Input data originates with the status (% Complete) of the Project schedules as reported by the Level 2 managers and actual costs extracted from the Fermilab accounting system. Where possible, costs are accrued for items that have been delivered, but not yet invoiced. This is only possible for a small fraction of our cost. Financial summaries are shown for this reporting period (columns 2-6) as well as the project to date (columns 7-11). Column 12 contains our baseline BAC, and will only be changed after the formal implementation of the Change Control process. Column 13 is the projected BAC, based on the current month's schedule. A number of specialized financial terms and abbreviations used in the CPR are defined here for convenience:

ACWP – Actual Cost of Work Performed. The actual cost of completed tasks.

BAC – Budget at Completion. Estimated total project cost when completed. Equivalent to the BCWS at completion. BCWS baseline value is found in column 12 of the CPR.

BCWP – Budgeted Cost of Work Performed. The scheduled cost profile of completed tasks.

BCWS – Budgeted Cost of Work Scheduled. This is the sum of the budgets for all planned work to be accomplished within a given time period.

CV – Cost Variance. $CV = BCWP - ACWP$

EAC – Estimate At Completion. This is the ACWP to date, plus the BCWS (current scheduled estimate) of remaining tasks. $EAC = (BAC (current) - BCWP) + ACWP$

ETC – Estimate to Completion. $ETC = EAC - ACWP + Contingency$

Percent Complete - %Com = $\frac{BCWP}{BAC}$

SV – Schedule Variance. $SV = BCWP - BCWS$

**CDF Project
Cost Performance Report
Through 28 February 2005**

Cost Performance Report - Work Breakdown Structure													
Contractor: Location:						Contract Type/No:			Project Name/No: CDF RIIB Mstr Equ		Report Period: 1/31/2005 2/28/2005		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %	Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	8,701,999		0		0	0.00	8,701,999	0	0	0	0		
Funding Type-CA WBS[2] WBS[3]	Current Period					Cumulative to Date					At Completion		
Item	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance		Baseline BAC	Latest Revised BAC	BAC Delta
	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost			
EQU Equipment													
1.2 Calorimeter Upgrades													
1.2.1 Central Preshower and Crack Detectors	0	0	1,227	0	-1,227	377,440	377,440	421,315	0	-43,875	377,440	377,440	0
1.2.2 Electromagnetic timing	0	0	0	0	0	35,630	35,630	23,403	0	12,227	35,630	35,630	0
WBS[2]Totals:	0	0	1,227	0	-1,227	413,070	413,070	444,718	0	-31,648	413,070	413,070	0
1.3 Run 2b DAQ and Trigger Project													
1.3.1 Run 2b TDC Project	38,762	70,148	69,222	31,386	927	494,783	475,407	495,962	-19,376	-20,556	741,434	741,434	0
1.3.2 Run 2b Level 2 Project	15,119	23,035	25,466	7,915	-2,431	376,433	379,448	361,202	3,014	18,245	437,236	438,964	1,729
1.3.4 Event-Builder Upgrade	11,075	178,365	16,463	167,290	161,902	416,951	406,404	130,237	-10,547	276,168	518,180	559,395	41,215
1.3.5 Computer for Level3 PC Farm / DAQ	12,533	34,780	10,473	22,247	24,308	144,134	166,381	220,806	22,247	-54,425	479,403	479,403	0
1.3.6 SVT upgrade	48,985	145,149	16,946	96,164	128,203	166,620	184,816	16,946	18,196	167,870	362,407	362,407	0
1.3.11 Revised XFTII Project	111,603	199,666	161,983	88,062	37,683	547,037	450,721	262,302	-96,316	188,419	1,620,128	1,635,257	15,129
WBS[2]Totals:	238,079	651,142	300,552	413,064	350,591	2,145,958	2,063,176	1,487,455	-82,782	575,722	4,158,787	4,216,860	58,073
1.4 Administration													
1.4.3 Construction Phase	22,616	24,753	16,928	2,138	7,825	619,562	619,222	463,936	-341	155,286	958,867	958,859	-8
WBS[2]Totals:	22,616	24,753	16,928	2,138	7,825	619,562	619,222	463,936	-341	155,286	958,867	958,859	-8
Funding Type-CATotals:	260,694	675,896	318,707	415,201	357,189	3,178,591	3,095,469	2,396,109	-83,122	699,360	5,530,724	5,588,789	58,065
Sub Total	260,694	675,896	318,707	415,201	357,189	3,178,591	3,095,469	2,396,109	-83,122	699,360	5,530,724	5,588,789	58,065
Management Resrv.											3,171,276	3,113,211	-58,065
Total	260,694	675,896	318,707	415,201	357,189	3,178,591	3,095,469	2,396,109	-83,122	699,360	8,701,999	8,701,999	0

VII. VARIANCE ANALYSIS – P. Lukens

Subproject	Schedule Variance	Cost Variance
Run 2b TDC	Not significant. Limited by operations, and the availability of the detector.	None.
Run 2b Level 2	Ahead of schedule	Not Significant
Run 2b XFTII	Finder submission is behind by a month, then there were vendor problems (since resolved).	Actual costs have lagged the progress. Costs will be accrued next month.
Event Builder	An element of this related to TDC readout is behind schedule.	Costs are low. Some engineering has been done with physicist (no cost) labor. These will be revaluated soon.
Computers for Level 3 and DAQ	Ahead of schedule	The price of Level 3 computers purchased in September, 2004 was higher than budgeted.
SVT Upgrade	None	Actual costs have lagged the progress. Costs will be accrued next month.
Administration	None	Costs for support and travel have been below estimates.

VIII. BASELINE CHANGES

Two Change Control Requests were submitted and approved during February 2005. The first, Change Request #17 readjusted the Silicon Detector Upgrade costs from \$1673K to \$1341K. Change Request #18 increased the scope of the baseline by adding the tasks needed to modify the TDCs at an additional cost of \$195K. This Change Request completes the scope adjustments recommended by our review committee, and was needed after the cancellation of the production of the new TDC (reflected in Change Request #16). Taken together, Change Request #16 and #18 result in a net decrease in the project cost of \$341K. Also, some costs were adjusted up by \$81K for the Silicon Vertex Trigger. The Cost Performance Report for this month reflects these changes.

IX. FUNDING PROFILES

The funding profile for the RunIIb CDF Detector Project is shown below:

	Funding Plan in Current Year \$K				
	FY02	FY03	FY04	FY05	Total
DOE MIE	\$ 3,460	\$ 3,509	\$ 1,673	\$ 1,732	\$ 10,375
DOE R&D	\$ 1,670	\$ 480	\$ -	\$ -	\$ 2,150
Foreign Contributions	\$ 39	\$ 342	\$ 252	\$ 10	\$ 643
U.S. Universities	\$ 24	\$ 225	\$ 103	\$ 26	\$ 378
Total	\$ 5,193	\$ 4,556	\$ 2,028	\$ 1,768	\$ 13,545