

WBS Dictionary as of 7/7/04  
CDF RunIIb Calorimeter Schedule

WBS	Name	Cost	M&S	Labor	M&S Cont.	Labor Cont	Level
1.2	<b>Calorimeter Upgrades</b>	\$995,155	\$852,728	\$114,660	0	0	0
	<u>Notes</u> WBS Definition- Summary task for the entire calorimeter project.						
1.2.1	<b>Central Preshower and Crack Detectors</b>	\$793,082	\$676,201	\$88,452	0	0	0
	<u>Notes</u> WBS Definition- Summary task for the central preshower/crack detector subproject.						
1.2.1.1	Start of Preshower/Crack Subproject	\$0	\$0	\$0	0	0	4
	<u>Notes</u> WBS Definition: Start of central preshower/crack detector subproject. (Milestone)						
1.2.1.2	<b>Research and Development(US)</b>	\$55,672	\$55,672	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for the U.S. R+D for the preshower/crack subproject.						
1.2.1.3	<b>Research and Development(Japan)</b>	\$28,940	\$28,940	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for the R+D in Japan for the preshower/crack subproject.						
1.2.1.4	<b>Research and Development (Italy)</b>	\$18,000	\$18,000	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for the R+D in Italy for the preshower/crack subproject.						
1.2.1.5	<b>Procure parts</b>	\$507,275	\$498,993	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for parts procurement common to both preshower and crack detectors.						

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1.2.1.6	<b>Preshower Detector Assembly</b>	\$131,324	\$36,108	\$79,758	0	0	0
	<u>Notes</u> WBS Definition- Summary task for preshower detector assembly.						
1.2.1.7	<b>Crack Detector Assembly</b>	\$23,971	\$9,388	\$8,694	0	0	0
	<u>Notes</u> WBS Definition- Summary task describing the assemble of the CDF Crack Detector.						
1.2.1.8	<b>Fiber Bundle Assembly</b>	\$27,900	\$29,100	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for fiber bundle assembly.						
1.2.1.9	<b>Physicist or Student Labor</b>	\$0	\$0	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for physicist and student labor testing detectors.						
1.2.1.10	<b>Level 2 Milestones</b>	\$0	\$0	\$0	0	0	0
	<u>Notes</u> WBS Definition- Summary task for Preshower/Crack Level 3 milestones.						
1.2.1.10.1	1st Calorimeter phototube order placed	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. First phototube order placed.						
1.2.1.10.2	1st Calorimeter WLS fiber holder finished	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. first wavelength shifting fiber holder completed						

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1.2.1.10.3	1st set of Calorimeter phototubes tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. First set of production phototubes tested.						
1.2.1.10.4	1st Calorimeter CPR module finished and tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. first CPR module completed and fully tested						
1.2.1.10.5	2nd set of Calorimeter phototubes tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. Second set (of three) production phototubes tested in Japan.						
1.2.1.10.6	1st Calorimeter CCR module finished and tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. first Central Crack detector module completed and fully tested.						
1.2.1.10.7	50% Calorimeter CPR Detectors Tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. First 1/2 of the production CPR detectors completed and tested.						
1.2.1.10.8	50% Calorimeter CCR Detectors Tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone. first 1/2 of production Central Crack detectors completed and fully tested.						
1.2.1.10.9	Final Calorimeter CPR Detector Tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower milestone marking the completion of assembly and testing of the CPR detector.						

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1.2.1.10.10	Final Calorimeter CCR Detector Tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Crack milestone marking the completion of assembly and testing of the CCR detector.						
1.2.1.10.11	Final set of Calorimeter phototubes tested	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone marking the completion of production phototube testing in Japan.						
1.2.1.10.12	End of Central Preshower Project	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- Preshower/Crack milestone marking the end of the Central Preshower project.						
<b>1.2.2</b>	<b>Electromagnetic timing</b>	<b>\$202,073</b>	<b>\$176,527</b>	<b>\$26,208</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<u>Notes</u> WBS Definition- Highest level summary for electromagnetic timing project						
<b>1.2.2.1</b>	<b>Research and Development</b>	<b>\$12,936</b>	<b>\$12,000</b>	<b>\$936</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<u>Notes</u> WBS Definition- Summary of research and development for electromagnetic timing project						
<b>1.2.2.2</b>	<b>Purchase parts for components and Produce</b>	<b>\$189,137</b>	<b>\$164,527</b>	<b>\$25,272</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<u>Notes</u> WBS Definition- This is high level summary for purchasing parts for the components and doing production. We note that the components for this project are:  CEM Splitter harnesses, PEM cable harnesses, TB, ASD's, ASD->TDC cables and TDC's. We itemize each part here.  Parts = 227,128 Labor = 15,552 Parts & Labor = 242,680 Recycling = 83,840						

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1.2.3	<b>Calorimeter Milestones</b>	\$0	\$0	\$0	0	0	0
	<u>Notes</u> WBS Definition- These are the EMTiming management milestones						
1.2.3.1	PAC Review	\$0	\$0	\$0	0	0	4
	<u>Notes</u> WBS Definition- This is the preliminary review approval process before Stage 1 approval and before critical decision 1.						
1.2.3.2	Approval to spend Construction funds	\$0	\$0	\$0	0	0	3
	<u>Notes</u> WBS Definition- This is the DOE critical decision. It is used, among other things, to finalize the final Italian funding.						
1.2.3.3	Italian R&D Funding Approval	\$0	\$0	\$0	0	0	4
	<u>Notes</u> WBS Definition- This is the preliminary approval needed for funding of the ASD prototypes to be built by the INFN groups						
1.2.3.4	Full Italian Government Approval	\$0	\$0	\$0	0	0	3
	<u>Notes</u> WBS Definition- Project has to be approved by Italian Government due the Italian government funds used on the project.						
1.2.3.5	End of Calorimetry Project: Level 2	\$0	\$0	\$0	0	0	2
	<u>Notes</u> WBS Definition- This is the end of the calorimetry project and is the Level 2 milestone. This milestone is coupled to the corresponding level 3 milestone with added schedule contingency.						
1.2.3.6	End of Calorimetry Project: Level 1	\$0	\$0	\$0	0	0	1
	<u>Notes</u> WBS Definition- This is the end of the calorimetry project and is the Level 1 milestone. This milestone is coupled to the corresponding level 2 milestone with added schedule contingency.						