

WBS	Name	Cost	M&S Cont.	Labor Cont.																					
1.3	Run 2b DAQ and Trigger Project	\$4,400,199.00	0	0																					
1.3.1	Run 2b TDC Project	\$1,463,134.00	0	0																					
1.3.1.1	Start Run 2b TDC Project	\$0.00	0	0																					
1.3.1.2	Specification & Development	\$172,208.00	0	0																					
1.3.1.2.1	Formal Specification	\$884.00	0	0																					
1.3.1.2.1.1	Block Diagram	\$884.00	0	1																					
<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>11</td> <td>ElecEngChi</td> <td>100%</td> <td>16 hrs</td> <td>0 days</td> <td>Thu 6/20/02</td> <td>Fri 6/21/02</td> </tr> </tbody> </table>					ID	Resource Name	Units	Work	Delay	Start	Finish	11	ElecEngChi	100%	16 hrs	0 days	Thu 6/20/02	Fri 6/21/02							
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11	ElecEngChi	100%	16 hrs	0 days	Thu 6/20/02	Fri 6/21/02																			
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11	ElecEngChi	100%	\$884.00	\$0.00	\$0.00	\$884.00																			
1.3.1.2.1.2	Physics Justification	\$0.00	0	1																					
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5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
1.3.1.2.2	Interface Specification	\$26,348.00	0	0																					
1.3.1.2.2.1	Trigger	\$2,038.00	0	1																					
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ID	Resource Name	Units	Work	Delay	Start	Finish																			
4	PhysicistF	100%	40 hrs	0 days	Tue 9/3/02	Mon 9/9/02																			
6	ElecEngF	100%	40 hrs	0 days	Tue 9/3/02	Mon 9/9/02																			
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ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
6	ElecEngF	100%	\$2,038.00	\$0.00	\$0.00	\$2,038.00																			
1.3.1.2.2.2	ASDQ	\$0.00	0	1																					
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ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
1.3.1.2.2.3	Crate - Hardware	\$0.00	0	1																					
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4	PhysicistF	100%	120 hrs	0 days	Tue 9/17/02	Mon 10/7/02																			

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.1.2.4.1	Simulation	\$15,470.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	280 hrs	0 days	Tue 8/6/02	Tue 9/24/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$15,470.00	\$0.00	\$0.00	\$15,470.00
1.3.1.2.4.2	Trial Implementation	\$0.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	50%	80 hrs	0 days	Wed 9/25/02	Tue 10/22/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
4	PhysicistF	50%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.1.2.5	Buffer Management	\$27,625.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	280 hrs	0 days	Tue 8/6/02	Tue 9/24/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$15,470.00	\$0.00	\$0.00	\$15,470.00
1.3.1.2.5.1	Simulation	\$8,840.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	160 hrs	0 days	Tue 8/6/02	Tue 9/3/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$8,840.00	\$0.00	\$0.00	\$8,840.00
1.3.1.2.5.2	Trial Implementation	\$3,315.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
5	PostDocF	50%	60 hrs	0 days	Wed 9/4/02	Tue 9/24/02
11	ElecEngChi	50%	60 hrs	0 days	Wed 9/4/02	Tue 9/24/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	50%	\$3,315.00	\$0.00	\$0.00	\$3,315.00
1.3.1.2.6	VME Interface	\$23,205.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	240 hrs	0 days	Wed 9/4/02	Tue 10/15/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$13,260.00	\$0.00	\$0.00	\$13,260.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"VME Interface" continued						
1.3.1.2.6.1	Simulation	\$6,630.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	120 hrs	0 days	Wed 9/4/02	Tue 9/24/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$6,630.00	\$0.00	\$0.00	\$6,630.00
1.3.1.2.6.2	Trial Implementation	\$3,315.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
5	PostDocF	50%	60 hrs	0 days	Wed 9/25/02	Tue 10/15/02
11	ElecEngChi	50%	60 hrs	0 days	Wed 9/25/02	Tue 10/15/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	50%	\$3,315.00	\$0.00	\$0.00	\$3,315.00
1.3.1.2.7	Design Review	\$1,326.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	24 hrs	0 days	Thu 11/28/02	Mon 12/2/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$1,326.00	\$0.00	\$0.00	\$1,326.00
1.3.1.3	Detailed Design	\$146,744.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	1,248 hrs	0 days	Tue 12/3/02	Thu 7/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$68,952.00	\$0.00	\$0.00	\$68,952.00
1.3.1.3.1	Front End	\$8,840.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	160 hrs	0 days	Tue 12/3/02	Fri 1/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$8,840.00	\$0.00	\$0.00	\$8,840.00
1.3.1.3.2	Trigger Interface	\$8,840.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	160 hrs	0 days	Mon 1/6/03	Mon 2/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$8,840.00	\$0.00	\$0.00	\$8,840.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"Trigger Interface" continued						
1.3.1.3.3	Compression	\$6,630.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	120 hrs	0 days	Tue 2/4/03	Mon 2/24/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$6,630.00	\$0.00	\$0.00	\$6,630.00
1.3.1.3.4	Buffers	\$6,630.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	120 hrs	0 days	Tue 2/25/03	Mon 3/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$6,630.00	\$0.00	\$0.00	\$6,630.00
1.3.1.3.5	VME	\$4,420.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	80 hrs	0 days	Tue 3/18/03	Mon 3/31/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$4,420.00	\$0.00	\$0.00	\$4,420.00
1.3.1.3.6	Test Paths	\$4,420.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	80 hrs	0 days	Tue 4/1/03	Mon 4/14/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$4,420.00	\$0.00	\$0.00	\$4,420.00
1.3.1.3.7	Board Layout	\$13,260.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	240 hrs	0 days	Tue 4/15/03	Tue 5/27/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$13,260.00	\$0.00	\$0.00	\$13,260.00
1.3.1.3.8	Board Simulation	\$13,260.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	240 hrs	0 days	Wed 5/28/03	Wed 7/9/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$13,260.00	\$0.00	\$0.00	\$13,260.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"Board Simulation" continued						
1.3.1.3.9	Documentation	\$11,050.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	200 hrs	0 days	Wed 6/11/03	Wed 7/16/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$11,050.00	\$0.00	\$0.00	\$11,050.00
1.3.1.3.10	Design Review	\$442.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	8 hrs	0 days	Thu 7/17/03	Thu 7/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$442.00	\$0.00	\$0.00	\$442.00
1.3.1.4	Prototype - V1.0	\$167,204.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	768 hrs	0 days	Fri 7/18/03	Wed 12/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$42,432.00	\$0.00	\$0.00	\$42,432.00
1.3.1.4.1	ASDQ teststand	\$35,000.00	0.5	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
2	FNALR&D	0%	0 hrs	0 days	Thu 7/17/03	Thu 7/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
2	FNALR&D	0%	\$35,000.00	\$0.00	\$0.00	\$35,000.00
<i>Notes</i>						
Purchase scope , dvm's etc ~ \$20K						
VME crate - \$15K						
1.3.1.4.2	Develop Test Protocols	\$26,520.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	50%	240 hrs	0 days	Fri 7/18/03	Fri 10/10/03
11	ElecEngChi	100%	480 hrs	0 days	Fri 7/18/03	Fri 10/10/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
4	PhysicistF	50%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	100%	\$26,520.00	\$0.00	\$0.00	\$26,520.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
1.3.1.4.3	Board Fabrication	\$5,055.00	0	1

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Fri 7/18/03	Fri 7/18/03
11	ElecEngChi	0%	0 hrs	0 days	Fri 7/18/03	Fri 7/18/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$5,055.00	\$0.00	\$0.00	\$5,055.00
11	ElecEngChi	0%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

Item	Quan	Cost	Line Total
Spreadsheet of prototype assembly			
Prototype Run I (5 copies)			\$ 26,345
Board Fabrication			\$ 5,055
Tooling	1	575	575
Testing	1	850	850
Boards	6	605	3630
Parts			\$ 19,540
FPGAs	15	1200	18000
Connectors	50	8	400
Panels	6	40	240
Misc.	6	150	900
Assembly Svcs.			\$ 1,750
	5	350	1750

WBS	Name	Cost	M&S Cont.	Labor Cont.
1.3.1.4.4	Parts Procurement	\$19,540.00	0	1

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Fri 7/18/03	Fri 7/18/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$19,540.00	\$0.00	\$0.00	\$19,540.00

Notes

Item	Quan	Cost	Line Total
Prototype Run I (5 copies)			\$ 26,345
Board Fabrication			\$ 5,055
Tooling	1	575	575
Testing	1	850	850
Boards	6	605	3630
Parts			\$ 19,540
FPGAs	15	1200	18000
Connectors	50	8	400
Panels	6	40	240

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Parts Procurement" continued

Notes

Misc.	6	150	900	
Assembly Svcs.				\$ 1,750
	5	350	1750	

1.3.1.4.5 First Board Assembly \$350.00 0 1

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Thu 8/7/03	Thu 8/7/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$350.00	\$0.00	\$0.00	\$350.00

Notes

Assemble 1 of 5 copies			
Item	Quan	Cost	Line Total
Prototype Run I (5 copies)			\$ 26,345
Board Fabrication			\$ 5,055
Tooling	1	575	575
Testing	1	850	850
Boards	6	605	3630
Parts			\$ 19,540
FPGAs	15	1200	18000
Connectors	50	8	400
Panels	6	40	240
Misc.	6	150	900
Assembly Svcs.			\$ 1,750
	5	350	1750

1.3.1.4.6 Bench Tests \$17,680.00 0 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	100%	320 hrs	0 days	Fri 8/22/03	Fri 10/17/03
11	ElecEngChi	100%	320 hrs	0 days	Fri 8/22/03	Fri 10/17/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	100%	\$17,680.00	\$0.00	\$0.00	\$17,680.00

1.3.1.4.7 Multiple Board Assy \$1,400.00 0 1

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Fri 9/12/03	Fri 9/12/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Multiple Board Assy" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$1,400.00	\$0.00	\$0.00	\$1,400.00

Notes

Item	Quan	Cost	Line Total	
Assemble 4 of 5 copies				
Prototype Run I (5 copies)				\$ 26,345
Board Fabrication				\$ 5,055
Tooling	1	575	575	
Testing	1	850	850	
Boards	6	605	3630	
Parts				\$ 19,540
FPGAs	15	1200	18000	
Connectors	50	8	400	
Panels	6	40	240	
Misc.	6	150	900	
Assembly Svcs.				\$ 1,750
	5	350	1750	

1.3.1.4.8 Bench Tests \$4,420.00 0 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	100%	80 hrs	0 days	Mon 9/29/03	Fri 10/10/03
5	PostDocF	100%	80 hrs	0 days	Mon 9/29/03	Fri 10/10/03
11	ElecEngChi	100%	80 hrs	0 days	Mon 9/29/03	Fri 10/10/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	100%	\$4,420.00	\$0.00	\$0.00	\$4,420.00

1.3.1.4.9 B0 Tests \$6,630.00 0 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	200%	480 hrs	0 days	Mon 10/13/03	Fri 11/21/03
5	PostDocF	100%	240 hrs	0 days	Mon 10/13/03	Fri 11/21/03
11	ElecEngChi	50%	120 hrs	0 days	Mon 10/13/03	Fri 11/21/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	200%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	50%	\$6,630.00	\$0.00	\$0.00	\$6,630.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.1.4.10	Documentation	\$7,735.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	50%	140 hrs	0 days	Mon 10/13/03	Tue 12/2/03
11	ElecEngChi	50%	140 hrs	0 days	Mon 10/13/03	Tue 12/2/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
4	PhysicistF	50%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	50%	\$7,735.00	\$0.00	\$0.00	\$7,735.00
1.3.1.4.11	Design Review	\$442.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	8 hrs	0 days	Wed 12/3/03	Wed 12/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$442.00	\$0.00	\$0.00	\$442.00
1.3.1.5	Preproduction	\$153,871.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	968 hrs	0 days	Thu 12/4/03	Thu 5/27/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$53,482.00	\$0.00	\$0.00	\$53,482.00
1.3.1.5.1	TDC crate power supplies	\$2,000.00	0.5	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Wed 12/3/03	Wed 12/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$2,000.00	\$0.00	\$0.00	\$2,000.00

Notes

two new TDC power supplies

Subject:

TDC Power Supply for 2B

From:

Peter Wilson <pjw@fnal.gov>

Date:

Thu, 08 Aug 2002 14:06:58 -0500

To:

Kevin Pitts <kpitts@fnal.gov>

CC:

Robert Roser <roser@fnal.gov>

Hi Kevin,

I am assuming that the 1.8V requirements for the new TDC would be <5A/card

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"TDC crate power supplies" continued

Notes

or 100A/crate. In that case we would replace the 5V 150A modue with a 2V 150A module which would be adjusted down to 1.8V. A rough estimate is as follows:

Materials per supply: \$900 for module + \$100 for misc materials for internal and external cable harness

Labor: 3 man-days/supply to remove, modify, re-install and modify PS->Crate power harness. (Tech Time)
Probably need ~2 man day total of engineer time to go over plans

Assume: 30 total supplies (20 + spares)

Total cost = \$30K
Total manpower = 30 man-days (tech) modify and install
2 man days engineering

Peter

1.3.1.5.2 Production test equipment \$2,000.00 0.5 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 12/3/03	Wed 12/3/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$2,000.00	\$0.00	\$0.00	\$2,000.00

Notes

test equipment for testing/debugging the new board
logic analyzer and various other apperatus - \$40K

1.3.1.5.3 Layout Modification \$6,630.00 0 1

ID	Resource Name	Units	Work	Delay	Start	Finish
11	ElecEngChi	100%	120 hrs	0 days	Thu 12/4/03	Fri 12/26/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
11	ElecEngChi	100%	\$6,630.00	\$0.00	\$0.00	\$6,630.00

1.3.1.5.4 Board Fabrication \$5,297.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Thu 12/4/03	Thu 12/4/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Board Fabrication" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$5,297.00	\$0.00	\$0.00	\$5,297.00

Notes

Item	Quan	Cost	Line Total	
PreProduction Run (20 copies)				
Board Fabrication				\$ 5,297
Tooling	1	575	575	
Testing	1	850	850	
Boards	22	176	3872	
Parts				\$ 50,080
FPGAs	45	1000	45000	
Connectors	160	8	1280	
Panels	20	40	800	
Misc.	20	150	3000	
Assembly Svcs.				\$ 3,000
	20	150	3000	

1.3.1.5.5 Parts Procurement \$50,080.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Thu 12/4/03	Thu 12/4/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$50,080.00	\$0.00	\$0.00	\$50,080.00

Notes

Item	Quan	Cost	Line Total	
PreProduction Run (20 copies)				
Board Fabrication				\$ 5,297
Tooling	1	575	575	
Testing	1	850	850	
Boards	22	176	3872	
Parts				\$ 50,080
FPGAs	45	1000	45000	
Connectors	160	8	1280	
Panels	20	40	800	
Misc.	20	150	3000	
Assembly Svcs.				\$ 3,000
	20	150	3000	

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.1.5.6 First Board Assembly \$150.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Fri 12/26/03	Fri 12/26/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$150.00	\$0.00	\$0.00	\$150.00

Notes

Item	Quan	Cost	Line Total
PreProduction Run (20 copies)			
Board Fabrication			\$ 5,297
Tooling	1	575	575
Testing	1	850	850
Boards	22	176	3872
Parts			\$ 50,080
FPGAs	45	1000	45000
Connectors	160	8	1280
Panels	20	40	800
Misc.	20	150	3000
Assembly Svcs.			\$ 3,000
	20	150	3000

1.3.1.5.7 Bench Tests \$17,680.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	100%	320 hrs	0 days	Wed 1/14/04	Wed 3/10/04
5	PostDocF	100%	320 hrs	0 days	Wed 1/14/04	Wed 3/10/04
11	ElecEngChi	100%	320 hrs	0 days	Wed 1/14/04	Wed 3/10/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	100%	\$17,680.00	\$0.00	\$0.00	\$17,680.00

1.3.1.5.8 Multiple Board Assy \$2,850.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 3/10/04	Wed 3/10/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$2,850.00	\$0.00	\$0.00	\$2,850.00

Notes

Item	Quan	Cost	Line Total
PreProduction Run (20 copies)			

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Multiple Board Assy" continued

Notes

Board Fabrication				\$ 5,297
Tooling	1	575	575	
Testing	1	850	850	
Boards	22	176	3872	
Parts				\$ 50,080
FPGAs	45	1000	45000	
Connectors	160	8	1280	
Panels	20	40	800	
Misc.	20	150	3000	
Assembly Svcs.				\$ 3,000
	20	150	3000	

1.3.1.5.9 Bench Tests \$2,210.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	200%	160 hrs	0 days	Thu 3/25/04	Wed 4/7/04
11	ElecEngChi	50%	40 hrs	0 days	Thu 3/25/04	Wed 4/7/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	200%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	50%	\$2,210.00	\$0.00	\$0.00	\$2,210.00

1.3.1.5.10 B0 Tests \$3,315.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	200%	480 hrs	0 days	Thu 4/8/04	Wed 5/19/04
5	PostDocF	100%	240 hrs	0 days	Thu 4/8/04	Wed 5/19/04
11	ElecEngChi	25%	60 hrs	0 days	Thu 4/8/04	Wed 5/19/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	200%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	25%	\$3,315.00	\$0.00	\$0.00	\$3,315.00

1.3.1.5.11 Documentation \$7,735.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	50%	140 hrs	0 days	Thu 4/8/04	Wed 5/26/04
11	ElecEngChi	50%	140 hrs	0 days	Thu 4/8/04	Wed 5/26/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	50%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	50%	\$7,735.00	\$0.00	\$0.00	\$7,735.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"Documentation" continued						
1.3.1.5.12	Design Review	\$442.00	0.5	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	8 hrs	0 days	Thu 5/27/04	Thu 5/27/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$442.00	\$0.00	\$0.00	\$442.00
1.3.1.6	Production	\$624,480.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	1,480 hrs	0 days	Fri 5/28/04	Thu 2/24/05
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$81,770.00	\$0.00	\$0.00	\$81,770.00
1.3.1.6.1	TDC crate power supplies	\$28,000.00	0.5	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Thu 5/27/04	Thu 5/27/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$28,000.00	\$0.00	\$0.00	\$28,000.00

Notes

28 new TDC power supplies

Subject:
TDC Power Supply for 2B
From:
Peter Wilson <pjw@fnal.gov>
Date:
Thu, 08 Aug 2002 14:06:58 -0500
To:
Kevin Pitts <kpitts@fnal.gov>
CC:
Robert Roser <roser@fnal.gov>

Hi Kevin,

I am assuming that the 1.8V requirements for the new TDC would be <5A/card or 100A/crate. In that case we would replace the 5V 150A modue with a 2V 150A module which would be adjusted down to 1.8V. A rough estimate is as follows:

Materials per supply: \$900 for module + \$100 for misc materials for internal and external cable harness

Labor: 3 man-days/supply to remove, modify, re-install and modify

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"TDC crate power supplies" continued

Notes

PS->Crate power harness. (Tech Time)
Probably need ~2 man day total of engineer time to go over plans

Assume: 30 total supplies (20 + spares)

Total cost = \$30K
Total manpower = 30 man-days (tech) modify and install
2 man days engineering

Peter

1.3.1.6.2 Bid Documentation \$6,630.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
11	ElecEngChi	100%	120 hrs	0 days	Fri 5/28/04	Fri 6/18/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
11	ElecEngChi	100%	\$6,630.00	\$0.00	\$0.00	\$6,630.00

1.3.1.6.3 Board Fabrication \$50,400.00 0.5 1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Fri 6/18/04	Fri 6/18/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$50,400.00	\$0.00	\$0.00	\$50,400.00

Notes

	item	cost	line Total	
Production Run (350 copies)				
Board Fabrication				\$ 50,400
Tooling	0	575	0	
Testing	0	850	0	
Boards	360	140	50400	
Parts				\$ 295,150
FPGAs	750	275	206250	
Connectors	2800	8	22400	
Panels	350	40	14000	
Misc.	350	150	52500	
Assembly Svcs.				\$ 45,500
	350	130	45500	

WBS	Name	Cost	M&S Cont.	Labor Cont.
1.3.1.6.4	Parts Procurement	\$295,150.00	0.5	1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Fri 6/18/04	Fri 6/18/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$295,150.00	\$0.00	\$0.00	\$295,150.00

Notes

	item	cost	line Total	
Production Run (350 copies)				
Board Fabrication				\$ 50,400
Tooling	0	575	0	
Testing	0	850	0	
Boards	360	140	50400	
Parts				\$ 295,150
FPGAs	750	275	206250	
Connectors	2800	8	22400	
Panels	350	40	14000	
Misc.	350	150	52500	
Assembly Svcs.				\$ 45,500
	350	130	45500	

WBS	Name	Cost	M&S Cont.	Labor Cont.
1.3.1.6.5	Board Assembly	\$45,500.00	0.5	1

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 9/14/04	Tue 9/14/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$45,500.00	\$0.00	\$0.00	\$45,500.00

Notes

	item	cost	line Total	
Production Run (350 copies)				
Board Fabrication				\$ 50,400
Tooling	0	575	0	
Testing	0	850	0	
Boards	360	140	50400	
Parts				\$ 295,150
FPGAs	750	275	206250	
Connectors	2800	8	22400	
Panels	350	40	14000	
Misc.	350	150	52500	
Assembly Svcs.				\$ 45,500
	350	130	45500	

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.1.6.6	Board Test	\$117,030.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
11	ElecEngChi	100%	1,480 hrs	0 days	Fri 5/28/04	Thu 2/24/05
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
11	ElecEngChi	100%	\$81,770.00	\$0.00	\$0.00	\$81,770.00
1.3.1.6.6.1	Production Test Stands	\$35,260.00	1	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALQ	0%	0 hrs	0 days	Thu 5/27/04	Thu 5/27/04
4	PhysicistF	100%	240 hrs	0 days	Fri 5/28/04	Mon 7/12/04
11	ElecEngChi	100%	240 hrs	0 days	Fri 5/28/04	Mon 7/12/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALQ	0%	\$22,000.00	\$0.00	\$0.00	\$22,000.00
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
11	ElecEngChi	100%	\$13,260.00	\$0.00	\$0.00	\$13,260.00
<i>Notes</i>						
Test Fixtures and Misc. - Est. \$ 22,000						
1.3.1.6.6.2	Test Software Revision	\$0.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	100%	440 hrs	0 days	Tue 7/13/04	Tue 9/28/04
5	PostDocF	100%	440 hrs	0 days	Tue 7/13/04	Tue 9/28/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.1.6.6.3	Test Data Base	\$0.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
5	PostDocF	100%	280 hrs	0 days	Tue 8/10/04	Tue 9/28/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.1.6.6.4	First Pass Tests	\$0.00	0	1		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
4	PhysicistF	100%	400 hrs	0 days	Wed 11/10/04	Thu 1/27/05
5	PostDocF	100%	400 hrs	0 days	Wed 11/10/04	Thu 1/27/05
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00

WBS	Name	Cost	M&S Cont.	Labor Cont.			
"First Pass Tests" continued							
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
	5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.1.6.6.5	Rework			\$0.00		0	1
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
	4	PhysicistF	100%	400 hrs	0 days	Wed 11/24/04	Thu 2/10/05
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
	4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.1.6.6.6	Second Pass			\$0.00		0	1
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
	4	PhysicistF	100%	360 hrs	0 days	Fri 12/17/04	Thu 2/24/05
	5	PostDocF	100%	360 hrs	0 days	Fri 12/17/04	Thu 2/24/05
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
	4	PhysicistF	100%	\$0.00	\$0.00	\$0.00	\$0.00
	5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.1.7	Data Concentrator			\$198,627.00		0	0
1.3.1.7.1	Design			\$16,304.00		0	1
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
	5	PostDocF	100%	320 hrs	0 days	Wed 5/7/03	Wed 7/2/03
	6	ElecEngF	100%	320 hrs	0 days	Wed 5/7/03	Wed 7/2/03
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
	5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
	6	ElecEngF	100%	\$16,304.00	\$0.00	\$0.00	\$16,304.00
1.3.1.7.2	Layout			\$8,152.00		0	1
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
	5	PostDocF	100%	160 hrs	0 days	Thu 7/3/03	Thu 7/31/03
	6	ElecEngF	100%	160 hrs	0 days	Thu 7/3/03	Thu 7/31/03
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
	5	PostDocF	100%	\$0.00	\$0.00	\$0.00	\$0.00
	6	ElecEngF	100%	\$8,152.00	\$0.00	\$0.00	\$8,152.00
1.3.1.7.3	Prototype fabrication			\$20,000.00		1	0
	<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
	2	FNALR&D	0%	0 hrs	0 days	Thu 7/31/03	Thu 7/31/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Production checkout" continued

1.3.2 Run 2b Level 2 Project \$233,099.00 0 1

1.3.2.1 Start of Run 2b Level 2 Project \$0.00 0 0

1.3.2.2 Testing and Software work existing L2 Puslar test stand \$0.00 0 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	150%	960 hrs	0 days	Tue 9/3/02	Mon 1/6/03
5	PostDocF	50%	320 hrs	0 days	Tue 9/3/02	Mon 1/6/03
9	PostDocU	200%	1,280 hrs	0 days	Tue 9/3/02	Mon 1/6/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

finish all mezz/Aux cards, Pulsar prototype testing, Rev B if needed
SLINK to PCI software work, teststand software,
additional firmware work for testing ALL basic functionalities of prototypes

1.3.2.3 Commision L2 Puslar for each data path - proof of principle tests \$0.00 0 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	150%	1,668 hrs	0 days	Tue 1/7/03	Wed 7/23/03
5	PostDocF	50%	556 hrs	0 days	Tue 1/7/03	Wed 7/23/03
9	PostDocU	200%	2,224 hrs	0 days	Tue 1/7/03	Wed 7/23/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

commission L2 teststand for each data path and for existing system,
able to both source and sink (to a PC) for each data path,
advanced teststand software/firmware, high speed SLINK to PCI software,
define CDF L2 SLINK format for all data pathes;prove of principle tests

1.3.2.4 Preproduction run of Pulsar L2 system \$70,795.00 0 0

1.3.2.4.1 Engineering on preproduction L2 system \$17,680.00 0 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
11	ElecEngChi	100%	320 hrs	0 days	Tue 4/1/03	Tue 5/27/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Engineering on preproduction L2 system" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
11	ElecEngChi	100%	\$17,680.00	\$0.00	\$0.00	\$17,680.00

Notes

Based on information from Run 2a - Pulsar teststand quotes			
Engineering	Quan	Cost	Total
2 months	2	\$10,000.00	\$20,000.00

U of C rate (as of Summer '02) \$55.25/hr

1.3.2.4.2 Motherboards Fabrication \$18,600.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$18,600.00	\$0.00	\$0.00	\$18,600.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
Motherboard Fabrication	Quan	Cost	Total
Boards	3	\$6,200.00	\$18,600.00

1.3.2.4.3 Mezzanine boards Fabrication \$13,000.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$13,000.00	\$0.00	\$0.00	\$13,000.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
Mezzanine board fabrication	Quan	Cost	Total
Boards	20	\$650.00	\$13,000.00

1.3.2.4.4 S-link Auxiliary boards \$900.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$900.00	\$0.00	\$0.00	\$900.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
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WBS	Name	Cost	M&S Cont.	Labor Cont.
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"S-link Auxiliary boards" continued

Notes

S-link Auxiliary board	Quan	Cost	Total
Boards	3	\$300.00	\$900.00

1.3.2.4.5 LSC/LDL + fiber boards \$6,828.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$6,828.00	\$0.00	\$0.00	\$6,828.00

Notes

from Run 2a quotes- Pulsar teststand quotes	Quan	Cost	Total
LSC/LDL + fiber	3	\$2,276.00	\$6,828.00
Boards			

1.3.2.4.6 PCI-> S-link boards \$2,574.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$2,574.00	\$0.00	\$0.00	\$2,574.00

Notes

from Run 2a quotes- Pulsar teststand quotes	Quan	Cost	Total
PCI->S-link	3	\$858.00	\$2,574.00
Boards			

1.3.2.4.7 S-link -> PCI boards \$3,213.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$3,213.00	\$0.00	\$0.00	\$3,213.00

Notes

from Run 2a quotes- Pulsar teststand quotes	Quan	Cost	Total
S-link -> PCI	3	\$1,071.00	\$3,213.00
Boards			

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.2.4.8 L2 decision processor \$8,000.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Tue 5/27/03	Tue 5/27/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$8,000.00	\$0.00	\$0.00	\$8,000.00

Notes

from Run 2a quotes- Pulsar teststand quotes						
L2 decision processor				Quan	Cost	Total
PC				2	\$4,000.00	\$8,000.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.2.5 Verticle Slice Test \$0.00 0 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	150%	1,188 hrs	0 days	Thu 7/24/03	Fri 12/12/03
5	PostDocF	50%	396 hrs	0 days	Thu 7/24/03	Fri 12/12/03
9	PostDocU	200%	1,584 hrs	0 days	Thu 7/24/03	Fri 12/12/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

use teststand to fine tune receiver firmware for each data path; system integration at crate level with test stand; L2 code testing for new system.

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.2.6 Production run of Pulsar L2 system \$162,304.00 0 0

1.3.2.6.1 Motherboards Fabrication \$80,600.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$80,600.00	\$0.00	\$0.00	\$80,600.00

Notes

from Run 2a quotes- Pulsar teststand quotes						
Motherboard Fabrication				Quan	Cost	Total
Boards				13	\$6,200.00	\$80,600.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.2.6.2 Mezzanine boards Fabrication \$32,500.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$32,500.00	\$0.00	\$0.00	\$32,500.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
Mezzanine board fabrication	Quan	Cost	Total
Boards	50	\$650.00	\$32,500.00

1.3.2.6.3 S-link Auxiliary boards \$3,900.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$3,900.00	\$0.00	\$0.00	\$3,900.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
S-link Auxiliary board	Quan	Cost	Total
Boards	13	\$300.00	\$3,900.00

1.3.2.6.4 LSC/LDL + fiber boards \$29,588.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$29,588.00	\$0.00	\$0.00	\$29,588.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
LSC/LDL + fiber	Quan	Cost	Total
Boards	13	\$2,276.00	\$29,588.00

1.3.2.6.5 PCI-> S-link boards \$3,432.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$3,432.00	\$0.00	\$0.00	\$3,432.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"PCI-> S-link boards" continued

Notes

from Run 2a quotes- Pulsar teststand quotes			
PCI->S-link	Quan	Cost	Total
Boards	4	\$858.00	\$3,432.00

1.3.2.6.6 S-link -> PCI boards \$4,284.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$4,284.00	\$0.00	\$0.00	\$4,284.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
S-link -> PCI	Quan	Cost	Total
Boards	4	\$1,071.00	\$4,284.00

1.3.2.6.7 L2 decision processor \$8,000.00 0.3 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Mon 12/15/03	Mon 12/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$8,000.00	\$0.00	\$0.00	\$8,000.00

Notes

from Run 2a quotes- Pulsar teststand quotes			
L2 decision processor	Quan	Cost	Total
PC	2	\$4,000.00	\$8,000.00

1.3.2.7 System Integration standalone w/ teststand \$0.00 0 0

ID	Resource Name	Units	Work	Delay	Start	Finish
4	PhysicistF	150%	1,680 hrs	0 days	Tue 2/24/04	Thu 9/9/04
5	PostDocF	50%	560 hrs	0 days	Tue 2/24/04	Thu 9/9/04
9	PostDocU	200%	2,240 hrs	0 days	Tue 2/24/04	Thu 9/9/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
4	PhysicistF	150%	\$0.00	\$0.00	\$0.00	\$0.00
5	PostDocF	50%	\$0.00	\$0.00	\$0.00	\$0.00
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

use teststand to drive the new system in standalone mode, study/optimize the

WBS	Name	Cost	M&S Cont.	Labor Cont.																					
"System Integration standalone w/ teststand" continued																									
<u>Notes</u>																									
performance, request test runs with actual beam...																									
1.3.3	Run 2b XFTII Project	\$1,605,966.00	0	0																					
1.3.3.1	Start of XFTII Project	\$0.00	0	0																					
1.3.3.2	Finder Boards	\$630,928.00	0	0																					
1.3.3.2.1	Prototype Finder boards	\$133,732.00	0	0																					
1.3.3.2.1.1	Study existing boards	\$0.00	0.5	0.5																					
<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>PhysicistU</td> <td>30%</td> <td>96 hrs</td> <td>0 days</td> <td>Wed 7/24/02</td> <td>Wed 9/18/02</td> </tr> </tbody> </table>					ID	Resource Name	Units	Work	Delay	Start	Finish	8	PhysicistU	30%	96 hrs	0 days	Wed 7/24/02	Wed 9/18/02							
ID	Resource Name	Units	Work	Delay	Start	Finish																			
8	PhysicistU	30%	96 hrs	0 days	Wed 7/24/02	Wed 9/18/02																			
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ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
8	PhysicistU	30%	\$0.00	\$0.00	\$0.00	\$0.00																			
<u>Notes</u>																									
Data Readout with existing finder boards for testing purposes																									
1.3.3.2.1.2	Prototype Finder 1/3 Board Schematic Design	\$16,320.00	0.5	0.5																					
<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>PhysicistU</td> <td>100%</td> <td>240 hrs</td> <td>0 days</td> <td>Thu 9/19/02</td> <td>Wed 10/30/02</td> </tr> <tr> <td>13</td> <td>ElecEngOSU</td> <td>100%</td> <td>240 hrs</td> <td>0 days</td> <td>Thu 9/19/02</td> <td>Wed 10/30/02</td> </tr> </tbody> </table>					ID	Resource Name	Units	Work	Delay	Start	Finish	8	PhysicistU	100%	240 hrs	0 days	Thu 9/19/02	Wed 10/30/02	13	ElecEngOSU	100%	240 hrs	0 days	Thu 9/19/02	Wed 10/30/02
ID	Resource Name	Units	Work	Delay	Start	Finish																			
8	PhysicistU	100%	240 hrs	0 days	Thu 9/19/02	Wed 10/30/02																			
13	ElecEngOSU	100%	240 hrs	0 days	Thu 9/19/02	Wed 10/30/02																			
<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Cost</th> <th>Baseline Cost</th> <th>Act. Cost</th> <th>Rem. Cost</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>PhysicistU</td> <td>100%</td> <td>\$0.00</td> <td>\$0.00</td> <td>\$0.00</td> <td>\$0.00</td> </tr> <tr> <td>13</td> <td>ElecEngOSU</td> <td>100%</td> <td>\$16,320.00</td> <td>\$0.00</td> <td>\$0.00</td> <td>\$16,320.00</td> </tr> </tbody> </table>					ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost	8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00	13	ElecEngOSU	100%	\$16,320.00	\$0.00	\$0.00	\$16,320.00
ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
13	ElecEngOSU	100%	\$16,320.00	\$0.00	\$0.00	\$16,320.00																			
1.3.3.2.1.3	Prototype Finder 2/4 Board Schematic Design	\$16,320.00	0.5	0.5																					
<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>PhysicistU</td> <td>100%</td> <td>240 hrs</td> <td>0 days</td> <td>Thu 10/31/02</td> <td>Fri 12/13/02</td> </tr> <tr> <td>13</td> <td>ElecEngOSU</td> <td>100%</td> <td>240 hrs</td> <td>0 days</td> <td>Thu 10/31/02</td> <td>Fri 12/13/02</td> </tr> </tbody> </table>					ID	Resource Name	Units	Work	Delay	Start	Finish	8	PhysicistU	100%	240 hrs	0 days	Thu 10/31/02	Fri 12/13/02	13	ElecEngOSU	100%	240 hrs	0 days	Thu 10/31/02	Fri 12/13/02
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ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
13	ElecEngOSU	100%	\$16,320.00	\$0.00	\$0.00	\$16,320.00																			
1.3.3.2.1.4	Prototype Finder SL7 Board Schematic Design	\$16,320.00	0.5	0.5																					
<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>8</td> <td>PhysicistU</td> <td>100%</td> <td>240 hrs</td> <td>0 days</td> <td>Mon 12/16/02</td> <td>Fri 1/31/03</td> </tr> <tr> <td>13</td> <td>ElecEngOSU</td> <td>100%</td> <td>240 hrs</td> <td>0 days</td> <td>Mon 12/16/02</td> <td>Fri 1/31/03</td> </tr> </tbody> </table>					ID	Resource Name	Units	Work	Delay	Start	Finish	8	PhysicistU	100%	240 hrs	0 days	Mon 12/16/02	Fri 1/31/03	13	ElecEngOSU	100%	240 hrs	0 days	Mon 12/16/02	Fri 1/31/03
ID	Resource Name	Units	Work	Delay	Start	Finish																			
8	PhysicistU	100%	240 hrs	0 days	Mon 12/16/02	Fri 1/31/03																			
13	ElecEngOSU	100%	240 hrs	0 days	Mon 12/16/02	Fri 1/31/03																			

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Prototype Finder SL7 Board Schematic Design" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00
13	ElecEngOSU	100%	\$16,320.00	\$0.00	\$0.00	\$16,320.00

1.3.3.2.1.5 Prototype Finder 1/3 board layout \$7,424.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
15	ElecTechOSU	100%	232 hrs	0 days	Thu 10/31/02	Thu 12/12/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
15	ElecTechOSU	100%	\$7,424.00	\$0.00	\$0.00	\$7,424.00

1.3.3.2.1.6 Prototype Finder 2/4 board layout \$7,424.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
15	ElecTechOSU	100%	232 hrs	0 days	Mon 12/16/02	Thu 1/30/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
15	ElecTechOSU	100%	\$7,424.00	\$0.00	\$0.00	\$7,424.00

1.3.3.2.1.7 Prototype Finder SL7 board layout \$7,424.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
15	ElecTechOSU	100%	232 hrs	0 days	Thu 2/6/03	Tue 3/18/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
15	ElecTechOSU	100%	\$7,424.00	\$0.00	\$0.00	\$7,424.00

1.3.3.2.1.8 Fabricate Prototype Finder 1/3 board \$12,500.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Wed 3/19/03	Wed 3/19/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$12,500.00	\$0.00	\$0.00	\$12,500.00

Notes

Fabricate 2 PC boards, purchase parts and stuff them - private company \$6250/board

for production quantities -

Finder System:

1/3 Boards:

Major Components:

Altera Stratix: \$1650

Altera Flex 10K: \$174

Xilinx FPGAs: \$1455

Secondary Components: \$951

PCB Fabrication: \$600

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Fabricate Prototype Finder 1/3 board" continued

Notes

PCB Assembly: \$370

Total Cost/Board \$5200

1.3.3.2.1.9 Frabricate Prototype Finder 2/4 board \$12,500.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Wed 3/19/03	Wed 3/19/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$12,500.00	\$0.00	\$0.00	\$12,500.00

Notes

Fabricate 2 PC boards, purchase parts and stuff them - private company \$6250/board

For production quantities

2/4 Boards:

Major Components:

Altera Stratix: \$2200
Altera Flex 10K: \$232
Xilinx FPGAs: \$1435
Secondary Components: \$971
PCB Fabrication: \$600
PCB Assembly: \$370

Total Cost/Board \$5808
Total Cost for
24+6 spares Boards: \$174,240

1.3.3.2.1.10 Frabricate Prototype Finder SL7 board \$12,500.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Wed 3/19/03	Wed 3/19/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$12,500.00	\$0.00	\$0.00	\$12,500.00

Notes

Fabricate 2 PC boards, purchase parts and stuff them - private company \$6250/board

for production quantities -

Finder System:

1/3 Boards:

Major Components:

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Fabricate Prototype Finder SL7 board" continued

Notes

Altera Stratix:	\$1650
Altera Flex 10K:	\$174
Xilinx FPGAs:	\$1455
Secondary Components:	\$951
PCB Fabrication:	\$600
PCB Assembly:	\$370

Total Cost/Board	\$5200

1.3.3.2.1.11 Finder 1/3 board Prototype Testing \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	200%	640 hrs	0 days	Tue 9/9/03	Mon 11/3/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	200%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.1.12 Finder 2/4 board Prototype Testing \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	200%	640 hrs	0 days	Tue 9/9/03	Mon 11/3/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	200%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.1.13 Finder SL 7 board Prototype Testing \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	200%	640 hrs	0 days	Tue 9/9/03	Mon 11/3/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	200%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.1.14 Test Stand Setup \$25,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Fri 7/11/03	Fri 7/11/03
8	PhysicistU	100%	320 hrs	0 days	Mon 7/14/03	Mon 9/8/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$25,000.00	\$0.00	\$0.00	\$25,000.00
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00

Notes

Test Stand Setup and Software Development
test equipment

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.3.2.2	Preproduction Finder Boards	\$48,636.00	0	0		
1.3.3.2.2.1	Modification of Finder 1/3 board Schematic and Layout	\$3,712.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
15	ElecTechOSU	50%	116 hrs	0 days	Tue 11/4/03	Tue 12/16/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
15	ElecTechOSU	50%	\$3,712.00	\$0.00	\$0.00	\$3,712.00
<u>Notes</u>						
Modification of PC board schematic and layout based on results found in testing						
1.3.3.2.2.2	Modification of Finder 2/4 Board Schematic and Layout	\$3,712.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
15	ElecTechOSU	50%	116 hrs	0 days	Tue 11/4/03	Tue 12/16/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
15	ElecTechOSU	50%	\$3,712.00	\$0.00	\$0.00	\$3,712.00
<u>Notes</u>						
Modification of PC board schematic and layout based on results found in testing						
1.3.3.2.2.3	Modification of Finder SL board Schematic and Layout	\$3,712.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
15	ElecTechOSU	50%	116 hrs	0 days	Thu 12/18/03	Tue 2/3/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
15	ElecTechOSU	50%	\$3,712.00	\$0.00	\$0.00	\$3,712.00
<u>Notes</u>						
Modification of PC board schematic and layout based on results found in testing						
1.3.3.2.2.4	Preproduction Finder1/3 board Fabrication	\$12,500.00	0.3	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Wed 2/11/04	Wed 2/11/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$12,500.00	\$0.00	\$0.00	\$12,500.00
<u>Notes</u>						
Produce 2 preproduction boards including fabrication and stuffing-						
Finder System: - production quantities						
1/3 Boards:						
Major Components:						
Altera Stratix: \$1650						
Altera Flex 10K: \$174						
Xilinx FPGAs: \$1455						

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Preproduction Finder1/3 board Fabrication" continued

Notes

Secondary Components: \$951
 PCB Fabrication: \$600
 PCB Assembly: \$370

 Total Cost/Board \$5200

Since this is two board run - use prototype cost. \$6250/board

1.3.3.2.2.5 Preproduction Finder 2/4 board Fabrication \$12,500.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 2/11/04	Wed 2/11/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$12,500.00	\$0.00	\$0.00	\$12,500.00

Notes

Produce 2 preproduction boards including fabrication and stuffing-

Finder System: - production quantities

2/4 Boards:

Major Components:
 Altera Stratix: \$2200
 Altera Flex 10K: \$232
 Xilinx FPGAs: \$1435
 Secondary Components: \$971
 PCB Fabrication: \$600
 PCB Assembly: \$370

 Total Cost/Board \$5808
 Total Cost for
 24+6 spares Boards: \$174,240

Since this is two board run - use prototype cost. \$6250/board

1.3.3.2.2.6 Preproduction Finder SL board Fabrication \$12,500.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 2/11/04	Wed 2/11/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$12,500.00	\$0.00	\$0.00	\$12,500.00

Notes

Produce 2 preproduction boards including fabrication and stuffing-

Get updated price list

Finder System: - production quantities

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Preproduction Finder SL board Fabrication" continued

Notes

SL Boards:
 Major Components:
 Altera Stratix: \$1650
 Altera Flex 10K: \$174
 Xilinx FPGAs: \$1455
 Secondary Components: \$951
 PCB Fabrication: \$600
 PCB Assembly: \$370

 Total Cost/Board \$5200

Since this is two board run - use prototype cost. \$6250/board

1.3.3.2.2.7 Testing Finder 1/3 preproduction boards \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	150%	240 hrs	0 days	Thu 4/8/04	Wed 5/5/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	150%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.2.8 Testing Finder 2/4 preproduction boards \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	150%	240 hrs	0 days	Thu 4/8/04	Wed 5/5/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	150%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.2.9 Testing Finder SL preproduction boards \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	150%	240 hrs	0 days	Thu 4/8/04	Wed 5/5/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	150%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.3 Production Finder boards \$439,440.00 0 0

1.3.3.2.3.1 Production of Finder 1/3 boards \$156,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 5/5/04	Wed 5/5/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$156,000.00	\$0.00	\$0.00	\$156,000.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Production of Finder 1/3 boards" continued

Notes

Need 24 + (6 spare) Finder 1/3
Total boards - Finder 1/3 - SL7 boards - \$5200/board = \$156,000

1/3 Boards:

Major Components:
 Altera Stratix: \$1650
 Altera Flex 10K: \$174
 Xilinx FPGAs: \$1455
 Secondary Components: \$951
 PCB Fabrication: \$600
 PCB Assembly: \$370

 Total Cost/Board \$5200

1.3.3.2.3.2 Production of Finder 2/4 boards \$174,240.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 5/5/04	Wed 5/5/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$174,240.00	\$0.00	\$0.00	\$174,240.00

Notes

Need 24 + (6 spare) Finder 2/4 boards for SL 4 and SL 8
Total boards - 30 Finder 2/4 boards - \$5808/board = \$174,240.00

2/4 Boards:

Major Components:
 Altera Stratix: \$2200
 Altera Flex 10K: \$232
 Xilinx FPGAs: \$1435
 Secondary Components: \$971
 PCB Fabrication: \$600
 PCB Assembly: \$370

 Total Cost/Board \$5808

1.3.3.2.3.3 Production of Finder SL boards \$109,200.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 5/5/04	Wed 5/5/04

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Production of Finder SL boards" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$109,200.00	\$0.00	\$0.00	\$109,200.00

Notes

Need updated costs

Need 18 + (3 spare) Finder SL 7 boards
Total boards - SL7 boards - \$5200/board = \$109,200

SL Boards:

Major Components:

Altera Stratix:	\$1650
Altera Flex 10K:	\$174
Xilinx FPGAs:	\$1455
Secondary Components:	\$951
PCB Fabrication:	\$600
PCB Assembly:	\$370

Total Cost/Board	\$5200

1.3.3.2.3.4 Test Production Finder 1/3 boards \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	150%	720 hrs	0 days	Mon 8/2/04	Mon 10/25/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	150%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.3.5 Test Production Finder 2/4 boards \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	150%	708 hrs	0 days	Tue 9/14/04	Tue 12/7/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	150%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.3.6 Test Production Finder SL boards \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	150%	708 hrs	0 days	Tue 10/26/04	Tue 1/25/05

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	150%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.2.4 Finder3D backplane \$9,120.00 0 0

Notes

need 2 backplanes

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.3.2.4.1	Finder3d backplane Layout	\$5,120.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
15	ElecTechOSU	100%	160 hrs	0 days	Thu 5/15/03	Thu 6/12/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
15	ElecTechOSU	100%	\$5,120.00	\$0.00	\$0.00	\$5,120.00
1.3.3.2.4.2	Finder3d backplane Fabrication and Stuffing	\$4,000.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Thu 6/12/03	Thu 6/12/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$4,000.00	\$0.00	\$0.00	\$4,000.00
<u>Notes</u>						
\$4,000 + contingency for two finder3d backplanes						
1.3.3.3	Test equipment	\$25,000.00	0.5	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Thu 7/1/04	Thu 7/1/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$25,000.00	\$0.00	\$0.00	\$25,000.00
<u>Notes</u>						
purchase test equipment for production testing of boards						
1.3.3.4	Linker Modules	\$327,576.00	0	0		
<u>Notes</u>						
need 12 boards + 4 spares						
1.3.3.4.1	Prototype Linker Modules	\$100,533.00	0	0		
1.3.3.4.1.1	Prototype Linker Module Schematic Design	\$32,640.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
13	ElecEngOSU	100%	480 hrs	0 days	Thu 3/20/03	Thu 6/12/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
13	ElecEngOSU	100%	\$32,640.00	\$0.00	\$0.00	\$32,640.00
1.3.3.4.1.2	Prototype Linker Module pc board layout	\$21,216.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	100%	312 hrs	0 days	Fri 6/13/03	Thu 8/7/03
13	ElecEngOSU	100%	312 hrs	0 days	Fri 6/13/03	Thu 8/7/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Prototype Linker Module pc board layout" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
13	ElecEngOSU	100%	\$21,216.00	\$0.00	\$0.00	\$21,216.00

1.3.3.4.1.3 Prototype Linker Module pc board fabrication \$14,037.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Fri 8/8/03	Fri 8/8/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$14,037.00	\$0.00	\$0.00	\$14,037.00

Notes

Prototype Linker board cost - 2 boards - \$14,037

Production board costs

Linker System:

Major Components:

Altera Stratix: \$3300

Altera Flex 10K: \$1035

Secondary Components: \$ 384

PCB Fabrication: \$ 600

PCB Assembly: \$ 370

Total Cost/Board \$5689

1.3.3.4.1.4 Prototype Linker Module testing \$32,640.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	200%	960 hrs	0 days	Tue 10/7/03	Tue 1/6/04
13	ElecEngOSU	100%	480 hrs	0 days	Tue 10/7/03	Tue 1/6/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
13	ElecEngOSU	100%	\$32,640.00	\$0.00	\$0.00	\$32,640.00

1.3.3.4.2 Preproduction Linker Modules \$24,373.00 0 0

1.3.3.4.2.1 Modification of Schematic Design and Layout \$10,336.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
13	ElecEngOSU	100%	152 hrs	0 days	Thu 1/15/04	Wed 2/11/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
13	ElecEngOSU	100%	\$10,336.00	\$0.00	\$0.00	\$10,336.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Modification of Schematic Design and Layout" continued

1.3.3.4.2.2 Preproduction Linker Module pc board fabrication \$14,037.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 2/11/04	Wed 2/11/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$14,037.00	\$0.00	\$0.00	\$14,037.00

Notes

2 Preproduction Linker Modules -
cost - \$14037 (same cost as prototypes)

Production quantity linker board cost

Linker System:

Major Components:
 Altera Stratix: \$3300
 Altera Flex 10K: \$1035
 Secondary Components: \$ 384
 PCB Fabrication: \$ 600
 PCB Assembly: \$ 370

 Total Cost/Board \$5689

1.3.3.4.2.3 Preproduction Linker Module pc board testing \$0.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	100%	112 hrs	0 days	Thu 3/25/04	Tue 4/13/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.4.3 Production Linker Modules \$202,670.00 0 0

1.3.3.4.3.1 Production Linker Module pc board fabrication \$170,670.00 0.3 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Thu 4/15/04	Wed 5/26/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$170,670.00	\$0.00	\$0.00	\$170,670.00

Notes

Require 24 + (6 spares) Linker Modules Cost = \$170,670.00

Linker System:

Major Components:

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Production Linker Module pc board fabrication" continued

Notes

Altera Stratix:	\$3300
Altera Flex 10K:	\$1035
Secondary Components:	\$ 384
PCB Fabrication:	\$ 600
PCB Assembly:	\$ 370

Total Cost/Board	\$5689

1.3.3.4.3.2 Production Linker Module pc board testing \$32,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	200%	640 hrs	0 days	Fri 5/28/04	Mon 7/26/04
13	ElecEngOSU	100%	320 hrs	0 days	Fri 5/28/04	Mon 7/26/04
15	ElecTechOSU	100%	320 hrs	0 days	Fri 5/28/04	Mon 7/26/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
13	ElecEngOSU	100%	\$21,760.00	\$0.00	\$0.00	\$21,760.00
15	ElecTechOSU	100%	\$10,240.00	\$0.00	\$0.00	\$10,240.00

1.3.3.5 Linker Output Module II \$27,840.00 0 0

Notes

need 24 boards + 6 spares

1.3.3.5.1 Linker Output Module Schematic Design and Layout \$3,840.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
15	ElecTechOSU	100%	120 hrs	0 days	Fri 7/2/04	Fri 7/23/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
15	ElecTechOSU	100%	\$3,840.00	\$0.00	\$0.00	\$3,840.00

1.3.3.5.2 Linker Output Module board Fabrication \$24,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Fri 7/23/04	Fri 7/23/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$24,000.00	\$0.00	\$0.00	\$24,000.00

Notes

Includes PC board fabrication and stuffing - 24 boards + 6 spares - \$24,000 + contingency

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.3.5.3 Production Link Output Module board checkout \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	100%	240 hrs	0 days	Tue 9/7/04	Mon 10/18/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.6 TDC Transition Module \$29,000.00 0 0

Notes
need 54 boards + 6 spares

1.3.3.6.1 TDC Transition Module board Fabrication \$29,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 2/19/03	Wed 2/19/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$29,000.00	\$0.00	\$0.00	\$29,000.00

Notes
This board using an existing Design -
This includes stuffing board
PC board cost - 54+ 6 spares = \$29,000 + contingency

1.3.3.6.2 TDC Transition Module board production checkout \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	100%	472 hrs	0 days	Thu 5/15/03	Thu 8/7/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.7 Finder Transition Module \$20,000.00 0 0

Notes
need 18 boards + 2 spares

1.3.3.7.1 Finder Transition board Fabrication \$20,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Fri 8/8/03	Fri 8/8/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$20,000.00	\$0.00	\$0.00	\$20,000.00

Notes
Fabricate and stuff 18 + 2 spare Finder Transition Module cost \$20K with contingency
This board uses an existing design

WBS	Name	Cost	M&S Cont.	Labor Cont.
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1.3.3.7.2 Production Finder Transition Module checkout \$0.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	100%	480 hrs	0 days	Tue 10/7/03	Tue 1/6/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.3.8 Finder3D Tester Board \$11,680.00 0 0

Notes
need 1 board

1.3.3.8.1 Finder3D schematic design and layout \$7,680.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
8	PhysicistU	100%	240 hrs	0 days	Thu 11/14/02	Thu 1/2/03
15	ElecTechOSU	100%	240 hrs	0 days	Thu 11/14/02	Thu 1/2/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00
15	ElecTechOSU	100%	\$7,680.00	\$0.00	\$0.00	\$7,680.00

1.3.3.8.2 Finder3D board fabrication \$4,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 1/8/03	Wed 1/8/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$4,000.00	\$0.00	\$0.00	\$4,000.00

Notes
Fabrication and stuffing of 1 Finder3D tester board \$4K + contingency

1.3.3.9 Cables \$8,960.00 0 0

1.3.3.9.1 Finder3D to Stereo Association Module cables fab \$4,480.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 5/14/03	Wed 5/14/03
7	ElecTechF	50%	20 hrs	0 days	Thu 5/15/03	Wed 5/21/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$4,000.00	\$0.00	\$0.00	\$4,000.00
7	ElecTechF	50%	\$480.00	\$0.00	\$0.00	\$480.00

Notes
Finder3D to Stereo Association Module cable fabrication + installation - cost \$8000 + contingency

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.3.9.2	Linker Output Module-II to Stereo Assoc. Module cable Fab.	\$4,480.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Wed 5/21/03	Wed 5/21/03
7	ElecTechF	50%	20 hrs	0 days	Thu 5/22/03	Thu 5/29/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$4,000.00	\$0.00	\$0.00	\$4,000.00
7	ElecTechF	50%	\$480.00	\$0.00	\$0.00	\$480.00
<u>Notes</u>						
Linker Output Module-II to Stereo Association Module cables fabrication and installation \$8000 + 15% contingency - done at Shutdown						
1.3.3.10	Stereo Association Modules	\$259,086.00	0	0		
<u>Notes</u>						
need 12 boards + 4 spares						
1.3.3.10.1	Prototype Stereo Association Module	\$77,456.00	0	0		
1.3.3.10.1.1	Prototype Stereo Association Module Schematic Design	\$13,600.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
12	ElecEngLL	100%	200 hrs	0 days	Mon 3/4/02	Fri 4/5/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
12	ElecEngLL	100%	\$13,600.00	\$0.00	\$0.00	\$13,600.00
1.3.3.10.1.2	Prototype Stereo Association Module pc board layout	\$21,216.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	100%	312 hrs	0 days	Thu 9/26/02	Tue 11/19/02
12	ElecEngLL	100%	312 hrs	0 days	Thu 9/26/02	Tue 11/19/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngLL	100%	\$21,216.00	\$0.00	\$0.00	\$21,216.00
1.3.3.10.1.3	Prototype Stereo Association Module pc board fabrication	\$10,000.00	0.3	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
2	FNALR&D	0%	0 hrs	0 days	Mon 11/25/02	Fri 1/24/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
2	FNALR&D	0%	\$10,000.00	\$0.00	\$0.00	\$10,000.00
<u>Notes</u>						
Prototype Stereo Association Module pc board fabrication and assembly (1 board?) \$10,000 + 25% contingency						

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.3.10.1.4	Prototype Stereo Association Module testing	\$32,640.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	200%	960 hrs	0 days	Tue 9/2/03	Mon 11/24/03
12	ElecEngILL	100%	480 hrs	0 days	Tue 9/2/03	Mon 11/24/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngILL	100%	\$32,640.00	\$0.00	\$0.00	\$32,640.00
1.3.3.10.2	Preproduction Stereo Association Module	\$24,630.00	0	0		
1.3.3.10.2.1	Modification of Schematic Design and Layout	\$10,880.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
12	ElecEngILL	100%	160 hrs	0 days	Tue 11/25/03	Fri 12/26/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
12	ElecEngILL	100%	\$10,880.00	\$0.00	\$0.00	\$10,880.00
1.3.3.10.2.2	Preproduction Stereo Association Module pc board fabrication	\$13,750.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Wed 1/7/04	Wed 1/7/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$13,750.00	\$0.00	\$0.00	\$13,750.00
<u>Notes</u>						
Preproduction Stereo Association Module pc board fabrication and assembly						
Production board cost - 12 + 4 spares - \$110,000 + contingency - assume 2 boards assembled						
Two boards - \$13,750						
Note:						
Prototype board cost for one board - \$10,000						
1.3.3.10.2.3	Preproduction Stereo Association Module pc board testing	\$0.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	100%	120 hrs	0 days	Thu 2/19/04	Wed 3/10/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.3.10.3	Production Stereo Association Module	\$142,000.00	0	0		
1.3.3.10.3.1	Production Stereo Association Module pc board fabrication	\$110,000.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Wed 3/10/04	Wed 3/10/04

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Production Stereo Association Module pc board fabrication" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$110,000.00	\$0.00	\$0.00	\$110,000.00

Notes

Production Stereo Association Module pc board fabrication and assembly
cost - 12 + 4 spares - \$110,000 + contingency

1.3.3.10.3.2	Production Stereo Association Module pc board testing	\$32,000.00	0.5	0.5
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ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	200%	640 hrs	0 days	Thu 4/8/04	Thu 6/3/04
12	ElecEngILL	100%	320 hrs	0 days	Thu 4/8/04	Thu 6/3/04
14	ElecTechILL	100%	320 hrs	0 days	Thu 4/8/04	Thu 6/3/04

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngILL	100%	\$21,760.00	\$0.00	\$0.00	\$21,760.00
14	ElecTechILL	100%	\$10,240.00	\$0.00	\$0.00	\$10,240.00

1.3.3.10.4	Purchase VME crate	\$15,000.00	0.5	0.5
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ID	Resource Name	Units	Work	Delay	Start	Finish
2	FNALR&D	0%	0 hrs	0 days	Wed 9/18/02	Wed 9/18/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
2	FNALR&D	0%	\$15,000.00	\$0.00	\$0.00	\$15,000.00

Notes

Purchase VME crate \$15,000 + contingency

1.3.3.11	Stereo Association Module Custom Backplane	\$48,816.00	0	0
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Notes

needs 2 boards + 1 spare

1.3.3.11.1	Stereo Assoc. Module Custom Backplane Schematic design	\$10,880.00	0.5	0.5
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ID	Resource Name	Units	Work	Delay	Start	Finish
12	ElecEngILL	100%	160 hrs	0 days	Mon 11/25/02	Fri 12/20/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
12	ElecEngILL	100%	\$10,880.00	\$0.00	\$0.00	\$10,880.00

1.3.3.11.2	Stereo Association Module Backplane layout	\$5,440.00	0.5	0.5
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ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	100%	80 hrs	0 days	Mon 12/23/02	Thu 1/9/03

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Stereo Association Module Backplane layout" continued

ID	Resource Name	Units	Work	Delay	Start	Finish
12	ElecEngILL	100%	80 hrs	0 days	Mon 12/23/02	Thu 1/9/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngILL	100%	\$5,440.00	\$0.00	\$0.00	\$5,440.00

1.3.3.11.3 Stereo Association Module Backplane fabrication \$10,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 1/15/03	Wed 1/15/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$10,000.00	\$0.00	\$0.00	\$10,000.00

Notes

Fabrication of Stereo Association Module Backplane - 2 + 1spare boards - \$10,000 + contingency

1.3.3.11.4 Stereo Association Module Backplane assembly \$1,280.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
14	ElecTechILL	25%	40 hrs	0 days	Thu 2/13/03	Wed 3/12/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
14	ElecTechILL	25%	\$1,280.00	\$0.00	\$0.00	\$1,280.00

1.3.3.11.5 Stereo Association Module Backplane testing \$21,216.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	200%	624 hrs	0 days	Thu 3/13/03	Tue 5/6/03
12	ElecEngILL	100%	312 hrs	0 days	Thu 3/13/03	Tue 5/6/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngILL	100%	\$21,216.00	\$0.00	\$0.00	\$21,216.00

1.3.3.12 Stereo Association Module Tester Board \$111,832.00 0 0

Notes

require 2 boards + 1 spare

1.3.3.12.1 Stereo Association Module Tester Board schematic design \$10,336.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
12	ElecEngILL	100%	152 hrs	0 days	Thu 2/13/03	Tue 3/11/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
12	ElecEngILL	100%	\$10,336.00	\$0.00	\$0.00	\$10,336.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Stereo Association Module Tester Board schematic design" continued

1.3.3.12.2 Stereo Association Module Tester Board layout \$10,880.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	100%	160 hrs	0 days	Thu 3/13/03	Wed 4/9/03
12	ElecEngLL	100%	160 hrs	0 days	Thu 3/13/03	Wed 4/9/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngLL	100%	\$10,880.00	\$0.00	\$0.00	\$10,880.00

1.3.3.12.3 Stereo Association Module Tester Board Fabrication \$15,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 4/9/03	Wed 4/9/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$15,000.00	\$0.00	\$0.00	\$15,000.00

Notes

Stereo Association Module Tester Board Fabrication and stuffing - 2 boards + 1 spare board
\$15,000 + contingency

1.3.3.12.4 Stereo Association Module TestStand Setup and software \$43,520.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	200%	1,280 hrs	0 days	Thu 5/8/03	Fri 8/29/03
12	ElecEngLL	100%	640 hrs	0 days	Thu 5/8/03	Fri 8/29/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngLL	100%	\$43,520.00	\$0.00	\$0.00	\$43,520.00

Notes

Stereo Association Module TestStand Setup and software development
used by Stereo Association Modules and Stereo Association Module tester board

1.3.3.12.5 Stereo Association Module Tester Board testing \$32,096.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	200%	944 hrs	0 days	Tue 9/2/03	Fri 11/21/03
12	ElecEngLL	100%	472 hrs	0 days	Tue 9/2/03	Fri 11/21/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	200%	\$0.00	\$0.00	\$0.00	\$0.00

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"Stereo Association Module Tester Board testing" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
12	ElecEngILL	100%	\$32,096.00	\$0.00	\$0.00	\$32,096.00

1.3.3.13 Stereo Association Module Transition Module \$24,400.00 0 0

Notes

need 12 boards + 4 spares

1.3.3.13.1 Stereo Association Module Transition Module Schematic design \$5,440.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
12	ElecEngILL	100%	80 hrs	0 days	Mon 3/4/02	Fri 3/15/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
12	ElecEngILL	100%	\$5,440.00	\$0.00	\$0.00	\$5,440.00

1.3.3.13.2 Stereo Association Module Transition Module layout \$2,720.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	100%	40 hrs	0 days	Mon 3/18/02	Fri 3/22/02
12	ElecEngILL	100%	40 hrs	0 days	Mon 3/18/02	Fri 3/22/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngILL	100%	\$2,720.00	\$0.00	\$0.00	\$2,720.00

1.3.3.13.3 Stereo Association Module Transition Module fabrication \$6,000.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Fri 3/22/02	Fri 3/22/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$6,000.00	\$0.00	\$0.00	\$6,000.00

Notes

Stereo Association Module Transition Module fabrication
12 board + 4 spares - \$6,000.00 + contingency

1.3.3.13.4 Stereo Association Module Transition Module Assembly \$10,240.00 0.5 0.5

ID	Resource Name	Units	Work	Delay	Start	Finish
14	ElecTechILL	200%	320 hrs	0 days	Mon 5/6/02	Mon 6/3/02

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
14	ElecTechILL	200%	\$10,240.00	\$0.00	\$0.00	\$10,240.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.3.13.5	Stereo Association Module Transition Module testing	\$0.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	100%	152 hrs	0 days	Tue 6/4/02	Fri 6/28/02
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.3.14	Stereo Association Module Clock and Control Board	\$30,928.00	0	0		
<i>Notes</i>						
This board uses an existing design for the XTRP Clock and Control Board need 1 board + 2 spares						
1.3.3.14.1	eo Association Module Clock and Control Board Schematic Design	\$10,880.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
12	ElecEngILL	100%	160 hrs	0 days	Tue 10/7/03	Mon 11/3/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
12	ElecEngILL	100%	\$10,880.00	\$0.00	\$0.00	\$10,880.00
1.3.3.14.2	Stereo Association Module Clock and Control Board Layout	\$5,440.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	100%	80 hrs	0 days	Tue 11/4/03	Mon 11/17/03
12	ElecEngILL	100%	80 hrs	0 days	Tue 11/4/03	Mon 11/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
12	ElecEngILL	100%	\$5,440.00	\$0.00	\$0.00	\$5,440.00
1.3.3.14.3	Stereo Association Module Clock and Control Board Fabrication	\$10,000.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Mon 11/17/03	Mon 11/17/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$10,000.00	\$0.00	\$0.00	\$10,000.00
<i>Notes</i>						
This design uses an existing design for the XTRP Clock and Control Board 1 board + 2 spares required = cost = \$10,000 + contingency						
1.3.3.14.4	Stereo Association Module Clock and Control Board assembly	\$4,608.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
14	ElecTechILL	200%	144 hrs	0 days	Thu 1/15/04	Wed 1/28/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
14	ElecTechILL	200%	\$4,608.00	\$0.00	\$0.00	\$4,608.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"Stereo Association Module Clock and Control Board assembly" continued						
1.3.3.14.5	Stereo Association Module Clock and Control Board testing	\$0.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	100%	152 hrs	0 days	Thu 1/29/04	Tue 2/24/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.3.15	Level 2 Interface Board	\$49,920.00	0	0		
<i>Notes</i>						
need 1 + 2 spare boards						
1.3.3.15.1	Level 2 Interface Board Schematic and PCB Layout	\$21,760.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
12	ElecEngILL	100%	320 hrs	0 days	Thu 4/15/04	Thu 6/10/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
12	ElecEngILL	100%	\$21,760.00	\$0.00	\$0.00	\$21,760.00
1.3.3.15.2	Prototype Level 2 Interface Board fabrication and testing	\$5,000.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
2	FNALR&D	0%	0 hrs	0 days	Thu 6/10/04	Thu 6/10/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
2	FNALR&D	0%	\$5,000.00	\$0.00	\$0.00	\$5,000.00
<i>Notes</i>						
1 board - cost \$5,000.00 + 25% contingency						
1.3.3.15.3	Modification Level 2 Interface Board Schematic and PCB Layout	\$8,160.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
12	ElecEngILL	100%	120 hrs	0 days	Tue 9/7/04	Mon 9/27/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
12	ElecEngILL	100%	\$8,160.00	\$0.00	\$0.00	\$8,160.00
1.3.3.15.4	Production Level 2 Interface Board Fabrication and stuffing	\$15,000.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	0%	0 hrs	0 days	Mon 9/27/04	Mon 9/27/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	0%	\$15,000.00	\$0.00	\$0.00	\$15,000.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"Production Level 2 Interface Board Fabrication and stuffing" continued						
<u>Notes</u> need 1 board + 2 spares - cost \$15,000.00 + contingency						
1.3.3.15.5	Level 2 Interface Board checkout	\$0.00	0.5	0.5		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
8	PhysicistU	100%	320 hrs	0 days	Tue 11/23/04	Wed 1/26/05
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
8	PhysicistU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.3.16	XFT Ready for Installation at CDF	\$0.00	0	0		
1.3.4	Event-Builder Upgrade	\$414,000.00	0	0		
<u>Notes</u>						
The Event Builder upgrade is based on the same technology as the first one except for increased bandwidth. This path has been chosen since the increase in throughput and rate a mild and using the same technology minimizes the effort needed for the upgrade.						
The details of the purchase and all parts are assumed to be equal to the purchase of the present Event Builder hardware. According to somewhat outdated quotes the hardware costs about 500k.						
Contingency is included in the sense that these are old quotes and the hardware will only become cheaper, although not by much.						
Further Details on the Hardware from a quote from December 2001						
Raw cost						
32 port ASX 4000 (Marconi)		\$215k				
16 OC12 PCI cards (ForeRunnerHE 622)		\$30k				
15 OC-12 PMC carss (Cyclonwe PMC59)		\$60k				
Total		\$305k				
Spares						
1 Spare switch backbone		\$51k				
1 Spare switch module		\$40k				
3 Spare PCI cards		\$6k				
3 Spare ATM cards		\$12k				
Total		\$109k				
Total including spares		\$414k				
Including 30% contingency		\$538k				
1.3.4.1	upgrade software	\$0.00	0	0		
<u>Notes</u>						
One postdoc/researcher type is needed 100% of the time to work on this project. Probably a second person will split the work with this person and both work 50% of their time.						

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.4.1.1	decide on the OS versions	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	50%	40 hrs	0 days	Tue 11/25/03	Wed 12/10/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	50%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.4.1.2	test available drivers for compatibility with hardware	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	24 hrs	0 days	Thu 12/11/03	Tue 1/6/04
10	StudentU	100%	120 hrs	0 days	Thu 12/11/03	Tue 1/6/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.4.1.3	adjust drivers for special needs	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	208 hrs	0 days	Wed 1/7/04	Fri 7/9/04
10	StudentU	100%	1,040 hrs	0 days	Wed 1/7/04	Fri 7/9/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.4.1.4	adjust remaining software	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	8 hrs	0 days	Mon 7/12/04	Fri 7/16/04
10	StudentU	100%	40 hrs	0 days	Mon 7/12/04	Fri 7/16/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.4.1.5	MS: establish general functionality of software	\$0.00	0	0		
1.3.4.2	construct prototype	\$103,500.00	0	0		
<i>Notes</i>						
Installation and commissioning of the prototype system will be done by two students using 50% of their time supervised by a postdoc/researcher type.						
1.3.4.2.1	purchase prototype system (1/4)	\$103,500.00	0	0		

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.4.2.1.1	submit PO and implementation plan	\$103,500.00	0.3	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	100%	0 hrs	0 days	Mon 2/9/04	Mon 2/9/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	100%	\$103,500.00	\$0.00	\$0.00	\$103,500.00
<u>Notes</u>						
The details of the purchase and all parts are assumed to be equal to the purchase of the present Event Builder hardware. According to somewhat outdated quotes the hardware costs about 500k. The prototype system consists of about one fourth of that (125k).						
Contingency is included in the sense that these are old quotes and the hardware will only become cheaper, although not by much.						
1.3.4.2.1.2	purchase formalities	\$0.00	0	0		
1.3.4.2.1.3	arrival of the hardware	\$0.00	0	0		
1.3.4.2.2	install test stand	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	2.67 hrs	0 days	Tue 5/4/04	Wed 5/5/04
10	StudentU	100%	13.33 hrs	0 days	Tue 5/4/04	Wed 5/5/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.4.2.3	test test stand	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	13.33 hrs	0 days	Wed 5/5/04	Mon 5/17/04
10	StudentU	100%	66.67 hrs	0 days	Wed 5/5/04	Mon 5/17/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.4.2.4	MS: establish functionality of hardware	\$0.00	0	0		
1.3.4.3	construct full size system	\$310,500.00	0	0		
<u>Notes</u>						
Similar to the construction of the prototype two students with 50% of their time supervised by a postdoc/researcher type.						
1.3.4.3.1	purchase remaining hardware	\$310,500.00	0	0		
1.3.4.3.1.1	submit PO and implementation plan	\$310,500.00	0.3	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	100%	0 hrs	0 days	Mon 5/17/04	Mon 5/17/04

WBS	Name	Cost	M&S Cont.	Labor Cont.																					
"submit PO and implementation plan" continued																									
	<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Cost</th> <th>Baseline Cost</th> <th>Act. Cost</th> <th>Rem. Cost</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>FNALEQ</td> <td>100%</td> <td>\$310,500.00</td> <td>\$0.00</td> <td>\$0.00</td> <td>\$310,500.00</td> </tr> </tbody> </table>	ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost	1	FNALEQ	100%	\$310,500.00	\$0.00	\$0.00	\$310,500.00										
ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
1	FNALEQ	100%	\$310,500.00	\$0.00	\$0.00	\$310,500.00																			
1.3.4.3.1.2	purchase formalities	\$0.00	0	0																					
1.3.4.3.1.3	arrival of the hardware	\$0.00	0	0																					
1.3.4.3.2	assemble new hardware in B0 third floor	\$0.00	0	0																					
	<table border="1"> <thead> <tr> <th>ID</th> <th>Resource Name</th> <th>Units</th> <th>Work</th> <th>Delay</th> <th>Start</th> <th>Finish</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>PostDocU</td> <td>20%</td> <td>16 hrs</td> <td>0 days</td> <td>Thu 8/12/04</td> <td>Wed 8/25/04</td> </tr> <tr> <td>10</td> <td>StudentU</td> <td>100%</td> <td>80 hrs</td> <td>0 days</td> <td>Thu 8/12/04</td> <td>Wed 8/25/04</td> </tr> </tbody> </table>	ID	Resource Name	Units	Work	Delay	Start	Finish	9	PostDocU	20%	16 hrs	0 days	Thu 8/12/04	Wed 8/25/04	10	StudentU	100%	80 hrs	0 days	Thu 8/12/04	Wed 8/25/04			
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9	PostDocU	20%	16 hrs	0 days	Thu 8/12/04	Wed 8/25/04																			
10	StudentU	100%	80 hrs	0 days	Thu 8/12/04	Wed 8/25/04																			
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ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost																			
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00																			
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
1.3.4.3.3	test the new hardware	\$0.00	0	0																					
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10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00																			
1.3.4.3.4	MS: establish functionality of hardware	\$0.00	0	0																					
1.3.5	Computer for Level3 PC Farm / DAQ	\$390,000.00	0	0																					
	<p><u>Notes</u></p> <p>Computer purchase is part of the operations but the cost is listed here for convenient tracking. We work with the assumption that every three years PCs become obsolete and have to be replaced.</p> <p>The assumption is that a computer costs about \$1500. This number is probably going to be smaller since in the last years the computers have only gotten cheaper. Some farms group have bought computers recently for this price.</p> <p>It is not useful to get a more detailed quote at this point since the prices are going to vary.</p> <p>In terms of the human resources this project is rather light weight. The preparation work on the prototype takes 50% of the postdoc/researcher type plus 50% of one student. It takes two students 50% of their time supervised by a postdoc/researcher type to complete the installation and commissioning.</p>																								
1.3.5.1	replace 70/15 PCs (2003)	\$130,000.00	0	0																					

WBS	Name	Cost	M&S Cont.	Labor Cont.		
1.3.5.1.1	submit PO and implementation plan	\$130,000.00	0.3	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	100%	0 hrs	0 days	Tue 7/1/03	Tue 7/1/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	100%	\$130,000.00	\$0.00	\$0.00	\$130,000.00
1.3.5.1.2	purchase formalities	\$0.00	0	0		
1.3.5.1.3	install and test one prototype machine	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	16 hrs	0 days	Thu 9/25/03	Wed 10/8/03
10	StudentU	100%	80 hrs	0 days	Thu 9/25/03	Wed 10/8/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.5.1.4	arrival of 70/15 PCs from the vendor	\$0.00	0	0		
1.3.5.1.5	burn in phase	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
10	StudentU	50%	40 hrs	0 days	Fri 10/17/03	Thu 10/30/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
10	StudentU	50%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.5.1.6	installation into the level3 PC farm	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	8 hrs	0 days	Fri 10/31/03	Thu 11/6/03
10	StudentU	100%	40 hrs	0 days	Fri 10/31/03	Thu 11/6/03
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.5.2	replace 70/15 PCs (2004)	\$130,000.00	0	0		
1.3.5.2.1	submit PO and implementation plan	\$130,000.00	0.3	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	100%	0 hrs	0 days	Thu 7/1/04	Thu 7/1/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	100%	\$130,000.00	\$0.00	\$0.00	\$130,000.00

WBS	Name	Cost	M&S Cont.	Labor Cont.		
"submit PO and implementation plan" continued						
1.3.5.2.2	purchase formalities	\$0.00	0	0		
1.3.5.2.3	install and test one prototype machine	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	16 hrs	0 days	Mon 9/27/04	Fri 10/8/04
10	StudentU	100%	80 hrs	0 days	Mon 9/27/04	Fri 10/8/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.5.2.4	arrival of 70/15 PCs from the vendor	\$0.00	0	0		
1.3.5.2.5	burn in phase	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
10	StudentU	50%	40 hrs	0 days	Mon 10/18/04	Fri 10/29/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
10	StudentU	50%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.5.2.6	installation into the level3 PC farm	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	8 hrs	0 days	Mon 11/1/04	Fri 11/5/04
10	StudentU	100%	40 hrs	0 days	Mon 11/1/04	Fri 11/5/04
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00
1.3.5.3	replace 70/15 PCs (2005)	\$130,000.00	0	0		
1.3.5.3.1	submit PO and implementation plan	\$130,000.00	0.3	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
1	FNALEQ	100%	0 hrs	0 days	Fri 7/1/05	Fri 7/1/05
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Cost</i>	<i>Baseline Cost</i>	<i>Act. Cost</i>	<i>Rem. Cost</i>
1	FNALEQ	100%	\$130,000.00	\$0.00	\$0.00	\$130,000.00
1.3.5.3.2	purchase formalities	\$0.00	0	0		
1.3.5.3.3	install and test one prototype machine	\$0.00	0	0		
<i>ID</i>	<i>Resource Name</i>	<i>Units</i>	<i>Work</i>	<i>Delay</i>	<i>Start</i>	<i>Finish</i>
9	PostDocU	20%	16 hrs	0 days	Tue 9/27/05	Mon 10/10/05
10	StudentU	100%	80 hrs	0 days	Tue 9/27/05	Mon 10/10/05

WBS	Name	Cost	M&S Cont.	Labor Cont.
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"install and test one prototype machine" continued

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.5.3.4 arrival of 70/15 PCs from the vendor \$0.00 0 0

1.3.5.3.5 burn in phase \$0.00 0 0

ID	Resource Name	Units	Work	Delay	Start	Finish
10	StudentU	50%	40 hrs	0 days	Mon 10/17/05	Fri 10/28/05

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
10	StudentU	50%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.5.3.6 installation into the level3 PC farm \$0.00 0 0

ID	Resource Name	Units	Work	Delay	Start	Finish
9	PostDocU	20%	8 hrs	0 days	Mon 10/31/05	Fri 11/4/05
10	StudentU	100%	40 hrs	0 days	Mon 10/31/05	Fri 11/4/05

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
9	PostDocU	20%	\$0.00	\$0.00	\$0.00	\$0.00
10	StudentU	100%	\$0.00	\$0.00	\$0.00	\$0.00

1.3.6 SVT upgrade \$294,000.00 0 0

Notes

The SVT is part of the trigger system for CDF. The upgrade consists in making more of boards already existing and/or modifying existing boards. University of Chicago and INFN-Pisa are providing engineering time, labor and equipment for these parts.

1.3.6.1 Start of SVT upgrade \$0.00 0 0

1.3.6.2 trackfitter boards \$210,000.00 0 0

1.3.6.2.1 Upgrade SVT trackfitters \$210,000.00 1 0

ID	Resource Name	Units	Work	Delay	Start	Finish
1	FNALEQ	0%	0 hrs	0 days	Wed 1/22/03	Wed 1/22/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
1	FNALEQ	0%	\$210,000.00	\$210,000.00	\$0.00	\$210,000.00

Notes

It is not yet clear whether we need to re-build these boards or the present functionality will suffice for IIb. We assume we have to re-build them.

Cost:

based on the cost of the present boards for IIa.

Total cost is 210K\$ for 17 track fitter boards which include spares.

50% contingency added

Labor:

Costed in the board except for testing.

WBS	Name	Cost	M&S Cont.	Labor Cont.
"Upgrade SVT trackfitters" continued				
<u>Notes</u>				
Testing provided by U. Chicago. No FNAL labor.				

1.3.6.3	Merger boards	\$84,000.00	0	0
1.3.6.3.1	Upgrade SVT merger boards	\$84,000.00	1	0

ID	Resource Name	Units	Work	Delay	Start	Finish
3	Italy - In Kind	0%	0 hrs	0 days	Wed 1/22/03	Wed 1/22/03

ID	Resource Name	Units	Cost	Baseline Cost	Act. Cost	Rem. Cost
3	Italy - In Kind	0%	\$84,000.00	\$84,000.00	\$0.00	\$84,000.00

Notes
 We need to build an additional 12 merger
 Cost:
 based on the cost of the present boards for IIa.
 Total cost is 84k\$ for 12 additional merger boards.
 Spares are the same as for IIa.
 50% Contingency added.
 Labor:
 Costed on the board cost except for testing.
 Testing provided by INFN-Pisa.