

ID	WBS	Task Name	Duration	Start	Finish	Fixed Cost	Cost	Activity	Cost per Unit	Gantt Chart																							
										Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4							
56	3.9	Mechanical Support and Cooling	200 days	Mon 1/23/17	Fri 10/27/17	\$0.00	\$236,160.00		\$0.00																								
57	3.9.1	Specifications	60 days	Mon 1/23/17	Fri 4/14/17	\$0.00	\$65,120.00		\$0.00																								
58	3.9.1.1	Review & Simulate Heat Load	40 days	Mon 1/23/17	Fri 3/17/17	\$0.00	\$42,560.00		\$0.00																								
59	3.9.1.2	review mechanical tolerances/distortions	10 days	Mon 3/20/17	Fri 3/31/17	\$0.00	\$11,040.00		\$0.00																								
60	3.9.1.3	review disassembly/repair options	10 days	Mon 4/3/17	Fri 4/14/17	\$0.00	\$11,520.00		\$0.00																								
61	3.9.2	Prototype Stave Space Frame Design	20 days	Mon 4/17/17	Fri 5/12/17	\$0.00	\$32,960.00		\$0.00																								
62	3.9.3	Safety Systems	60 days	Mon 8/7/17	Fri 10/27/17	\$0.00	\$35,440.00		\$0.00																								
63	3.9.3.1	review sensors & interlocks	20 days	Mon 8/7/17	Fri 9/1/17	\$0.00	\$7,200.00		\$0.00																								
64	3.9.3.2	electrical interlock design	20 days	Mon 9/4/17	Fri 9/29/17	\$5,000.00	\$12,200.00		\$0.00																								
65	3.9.3.3	cooling interlocks design	20 days	Mon 10/2/17	Fri 10/27/17	\$5,000.00	\$16,040.00		\$0.00																								
66	3.9.4	Cooling System	50 days	Mon 5/15/17	Fri 7/21/17	\$0.00	\$54,280.00		\$0.00																								
67	3.9.4.1	Prototype Design (modify ALICE)	10 days	Mon 5/15/17	Fri 5/26/17	\$0.00	\$9,200.00		\$0.00																								
68	3.9.4.2	Chiller	30 days	Mon 5/29/17	Fri 7/7/17	\$20,000.00	\$21,800.00		\$0.00																								
69	3.9.4.3	Mock up Testing	10 days	Mon 7/10/17	Fri 7/21/17	\$10,000.00	\$23,280.00		\$0.00																								
70	3.9.5	Stave Assembly Tooling	60 days	Mon 5/29/17	Fri 8/18/17	\$0.00	\$48,360.00		\$0.00																								
71	3.9.5.1	Jig Design (modify ALICE)	10 days	Mon 5/29/17	Fri 6/9/17	\$0.00	\$7,360.00		\$0.00																								
72	3.9.5.2	Prototype Jigs	30 days	Mon 6/12/17	Fri 7/21/17	\$5,000.00	\$20,120.00		\$0.00																								
73	3.9.5.3	Final Jigs Design and Production	20 days	Mon 7/24/17	Fri 8/18/17	\$10,000.00	\$20,880.00		\$0.00																								
74	3.10	Prototype Assembly and Test	90 days	Mon 2/26/18	Fri 6/29/18	\$0.00	\$114,240.00		\$0.00																								
75	3.10.1	Assemble prototype	30 days	Mon 2/26/18	Fri 4/6/18	\$0.00	\$35,040.00		\$0.00																								
76	3.10.2	Prototype Full System Test	60 days	Mon 4/9/18	Fri 6/29/18	\$0.00	\$79,200.00		\$0.00																								
77	3.11	Mechanical Conceptual Design	60 days	Mon 7/2/18	Fri 9/21/18	\$0.00	\$18,240.00		\$0.00																								
78	3.12	Mechanical Conceptual Design Review	12 days	Mon 9/24/18	Tue 10/9/18	\$0.00	\$33,920.00		\$0.00																								
79	3.12.1	Mechanics Design Review	1 day	Mon 9/24/18	Mon 9/24/18	\$10,000.00	\$13,680.00		\$0.00																								
80	3.12.2	Incorporate Review Comments	10 days	Tue 9/25/18	Mon 10/8/18	\$0.00	\$18,400.00		\$0.00																								
81	3.12.3	Complete Mechanical Conceptual Design	1 day	Tue 10/9/18	Tue 10/9/18	\$0.00	\$1,840.00		\$0.00																								
82	3.13	Software Tool Development and Analysis	500 days	Mon 1/23/17	Fri 12/21/18	\$0.00	\$351,200.00		\$0.00																								
83	3.13.1	FPGA, Online Monitoring and Contorls	200 days	Mon 1/23/17	Fri 10/27/17	\$0.00	\$176,000.00		\$0.00																								
84	3.13.2	Offline Software and Analysis	300 days	Mon 10/30/17	Fri 12/21/18	\$0.00	\$175,200.00		\$0.00																								
85	3.14	Detector Optimizaation and Physics Simulations (MIE)	700 days	Mon 10/3/16	Fri 6/7/19	\$0.00	\$946,000.00		\$0.00																								
86	3.14.1	MIE preproposal development	300 days	Mon 10/3/16	Fri 11/24/17	\$20,000.00	\$404,000.00		\$0.00																								
87	3.14.2	MIE full proposal development and reviews	400 days	Mon 11/27/17	Fri 6/7/19	\$30,000.00	\$542,000.00		\$0.00																								
88	3.15	Test Beam Operation	187 days	Fri 1/11/19	Mon 9/30/19	\$0.00	\$132,420.00		\$0.00																								
89	3.15.1	Shipping/Transport	10 days	Fri 1/11/19	Thu 1/24/19	\$10,000.00	\$12,400.00		\$0.00																								
90	3.15.2	Setup	5 days	Fri 1/25/19	Thu 1/31/19	\$0.00	\$8,720.00		\$0.00																								
91	3.15.3	Operations	10 days	Fri 2/1/19	Thu 2/14/19	\$20,000.00	\$45,600.00		\$0.00																								
92	3.15.4	Test Beam Data Analysis & Publication	152 days	Fri 3/1/19	Mon 9/30/19	\$0.00	\$65,700.00		\$0.00																								
93	3.16	Theory R&D	781 days	Mon 10/3/16	Mon 9/30/19	\$1,800,000.00	\$1,800,000.00		\$0.00																								