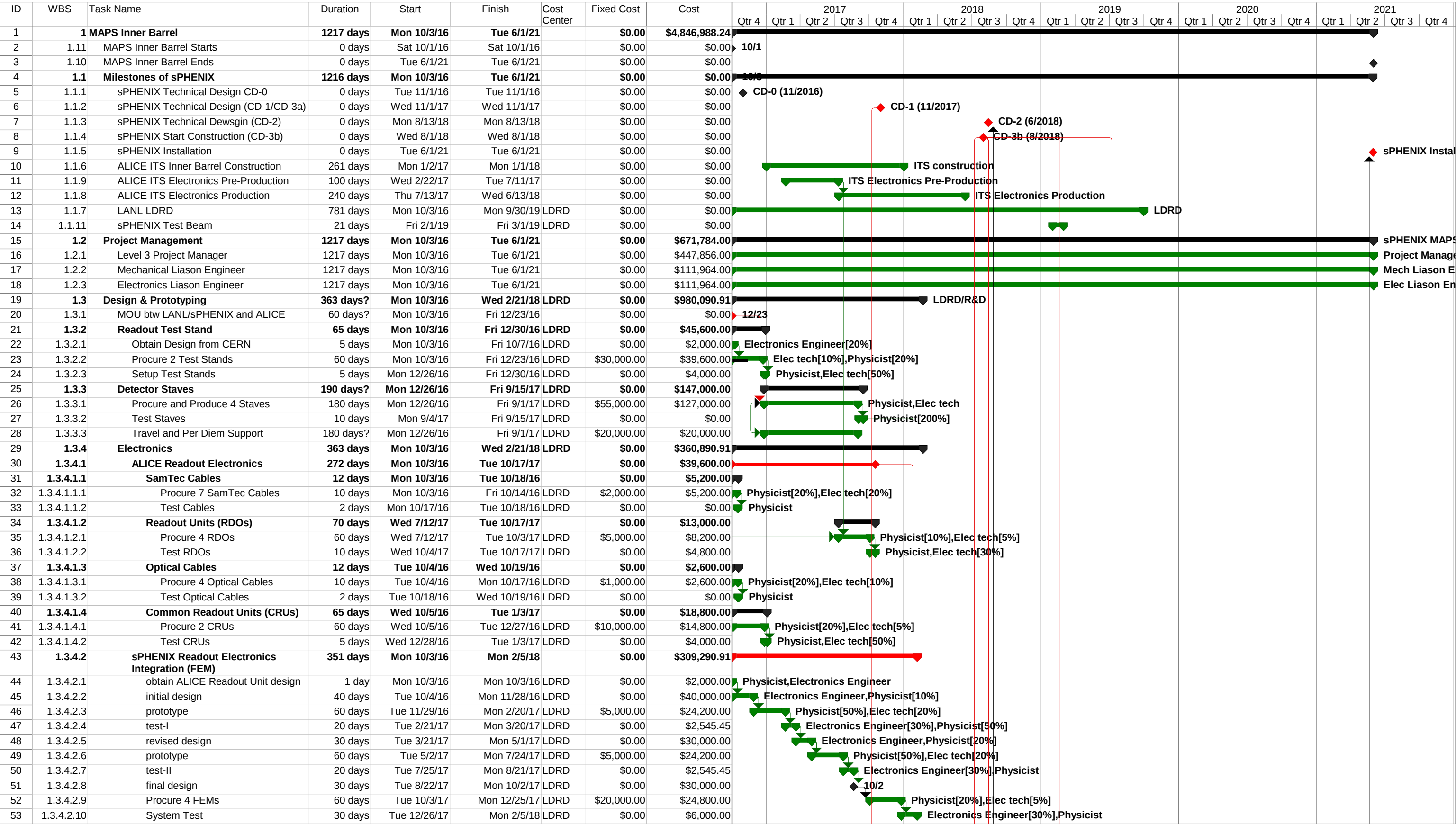




ID	WBS	Task Name	Duration	Start	Finish	Cost Center	Fixed Cost	Cost	2017				2018				2019				2020				2021				
									Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
54	1.3.4.2.11	sPHENIX DAQ System Integration	180 days	Mon 10/3/16	Fri 6/9/17		\$0.00	\$123,000.00																					
55	1.3.4.2.11.4	Slow Control Design	60 days	Mon 10/3/16	Fri 12/23/16	LDRD	\$5,000.00	\$41,000.00	Physicist[50%],Electronics Engineer[30%]																				
56	1.3.4.2.11.5	Trigger Interface Design	60 days	Mon 12/26/16	Fri 3/17/17	LDRD	\$5,000.00	\$41,000.00	Physicist[50%],Electronics Engineer[30%]																				
57	1.3.4.2.11.6	DAQ Interface Design	60 days	Mon 3/20/17	Fri 6/9/17	LDRD	\$5,000.00	\$41,000.00	Physicist[50%],Electronics Engineer[30%]																				
58	1.3.4.4	Electronics Final Design Review	12 days	Tue 2/6/18	Wed 2/21/18		\$0.00	\$12,000.00					Electronics Engineer,Physicist																
59	1.3.4.4.1	Electronics Design Review	1 day	Tue 2/6/18	Tue 2/6/18	LDRD	\$0.00	\$2,000.00					Elec tech,Physicist[20%]																
60	1.3.4.4.2	Incorporate Review Comments	10 days	Wed 2/7/18	Tue 2/20/18	LDRD	\$0.00	\$8,000.00					2/21																
61	1.3.4.4.3	Complete Final Electronics Design	1 day	Wed 2/21/18	Wed 2/21/18	LDRD	\$0.00	\$2,000.00																					
62	1.3.5	Ancillaries	64 days	Tue 10/4/16	Fri 12/30/16	LDRD	\$0.00	\$56,200.00																					
63	1.3.5.1	Procure LV,HV,etc	60 days	Tue 10/4/16	Mon 12/26/16	LDRD	\$25,000.00	\$34,600.00	Physicist[10%],Elec tech[10%]																				
64	1.3.5.2	Procure Racks	60 days	Thu 10/6/16	Wed 12/28/16	LDRD	\$5,000.00	\$9,800.00	Physicist[10%],Elec tech[5%]																				
65	1.3.5.3	Procure Chiller	60 days	Mon 10/10/16	Fri 12/30/16	LDRD	\$7,000.00	\$11,800.00	Physicist[10%],Elec tech[5%]																				
66	1.3.6	Mechanics	227 days	Mon 10/3/16	Tue 8/15/17	LDRD	\$0.00	\$370,400.00																					
67	1.3.6.1	obtain ALICE CAD model	0 days	Mon 10/3/16	Mon 10/3/16	LDRD	\$0.00	\$0.00	ALICE CAD model																				
68	1.3.6.2	Specifications	55 days	Mon 10/3/16	Fri 12/16/16		\$0.00	\$55,000.00																					
69	1.3.6.2.1	review heat load	40 days	Mon 10/3/16	Fri 11/25/16	LDRD	\$0.00	\$40,000.00	Mechanical Engineer[50%]																				
70	1.3.6.2.2	review mechanical tolerances/distortions	10 days	Mon 11/28/16	Fri 12/9/16	LDRD	\$0.00	\$10,000.00	Mechanical Engineer[50%]																				
71	1.3.6.2.3	review disassembly/repair options	5 days	Mon 12/12/16	Fri 12/16/16	LDRD	\$0.00	\$5,000.00	Mechanical Engineer[50%]																				
72	1.3.6.3	Stave Support Frame & Global Interface to sPHENIX	115 days	Mon 12/19/16	Fri 5/26/17		\$0.00	\$159,800.00																					
73	1.3.6.3.1	initial design	30 days	Mon 12/19/16	Fri 1/27/17	LDRD	\$0.00	\$60,000.00	Mechanical Engineer,Physicist[20%]																				
74	1.3.6.3.2	prototype	60 days	Mon 1/30/17	Fri 4/21/17	LDRD	\$25,000.00	\$53,800.00	Mech Tech[30%],Physicist																				
75	1.3.6.3.3	test	10 days	Mon 4/24/17	Fri 5/5/17	LDRD	\$0.00	\$16,000.00	Mech Tech,Physicist[50%]																				
76	1.3.6.3.4	final design	15 days	Mon 5/8/17	Fri 5/26/17	LDRD	\$0.00	\$30,000.00	Mechanical Engineer																				
77	1.3.6.4	Cooling System	20 days	Mon 11/28/16	Fri 12/23/16		\$0.00	\$38,000.00																					
78	1.3.6.4.1	Design	10 days	Mon 11/28/16	Fri 12/9/16	LDRD	\$0.00	\$20,000.00	Mechanical Engineer																				
79	1.3.6.4.2	Mock up Testing	10 days	Mon 12/12/16	Fri 12/23/16	LDRD	\$10,000.00	\$18,000.00	Mech Tech[50%]																				
80	1.3.6.5	Safety Systems	70 days	Mon 12/26/16	Fri 3/31/17		\$0.00	\$56,000.00																					
81	1.3.6.5.1	review sensors & interlocks	10 days	Mon 12/26/16	Fri 1/6/17	LDRD	\$0.00	\$10,000.00	Mechanical Engineer[50%]																				
82	1.3.6.5.2	electrical interlock design	30 days	Mon 1/9/17	Fri 2/17/17	LDRD	\$5,000.00	\$23,000.00	Electronics Engineer[30%]																				
83	1.3.6.5.3	cooling interlocks design	30 days	Mon 2/20/17	Fri 3/31/17	LDRD	\$5,000.00	\$23,000.00	Mechanical Engineer[30%]																				
84	1.3.6.6	Stave Assembly Tooling	45 days	Mon 5/29/17	Fri 7/28/17		\$0.00	\$41,600.00																					
85	1.3.6.6.1	design	10 days	Mon 5/29/17	Fri 6/9/17	LDRD	\$0.00	\$20,000.00	Mechanical Engineer																				
86	1.3.6.6.2	prototype	30 days	Mon 6/12/17	Fri 7/21/17	LDRD	\$2,000.00	\$11,600.00	Physicist[30%],Mech Tech[20%]																				
87	1.3.6.6.3	final design	5 days	Mon 7/24/17	Fri 7/28/17	LDRD	\$0.00	\$10,000.00	Mechanical Engineer																				
88	1.3.6.7	Mechanics Coneptual Design Review	12 days	Mon 7/31/17	Tue 8/15/17		\$0.00	\$20,000.00																					
89	1.3.6.7.1	Mechanics Design Review	1 day	Mon 7/31/17	Mon 7/31/17	LDRD	\$0.00	\$2,000.00	Mechanical Engineer,Physicist																				
90	1.3.6.7.2	Incorporate Review Comments	10 days	Tue 8/1/17	Mon 8/14/17	LDRD	\$0.00	\$16,000.00	Mech Tech,Physicist[20%]																				
91	1.3.6.7.3	Complete Initall Mechanical Design (for CD-1)	1 day	Tue 8/15/17	Tue 8/15/17	LDRD	\$0.00	\$2,000.00	8/15																				
92	1.4	Prototype Assembly	50 days	Tue 2/6/18	Mon 4/16/18	LDRD	\$0.00	\$72,000.00																					
93	1.4.1	Stave Framing Design	10 days	Tue 2/6/18	Mon 2/19/18	LDRD	\$0.00	\$8,000.00	Mech Tech[50%],Physicist[30%]																				
94	1.4.2	Assemble prototype	30 days	Tue 2/20/18	Mon 4/2/18	LDRD	\$0.00	\$48,000.00	Elec tech[50%],Mech Tech[50%],Physicist																				
95	1.4.3	Prototype Full System Test	10 days	Tue 4/3/18	Mon 4/16/18	LDRD	\$0.00	\$16,000.00	Physicist[200%],Elec tech[50%],Mech Tech[50%]																				
96	1.5	Test Beam Operation	35 days	Fri 1/11/19	Thu 2/28/19	LDRD	\$0.00	\$30,800.00																					
97	1.5.1	Shipping/Transport	10 days	Fri 1/11/19	Thu 1/24/19	LDRD	\$10,000.00	\$13,733.33	Elec tech[20%],Mech Tech[20%]																				
98	1.5.2	Setup	5 days	Fri 1/25/19	Thu 1/31/19	LDRD	\$0.00	\$10,666.67	Physicist,Elec tech,Mech Tech																				
99	1.5.3	Operations	20 days	Fri 2/1/19	Thu 2/28/19	LDRD	\$0.00	\$6,400.00	Physicist[200%],Elec tech[20%]																				
100	1.6	sPHENIX Mechanics Integration	42 days?	Wed 4/18/18	Thu 6/14/18		\$0.00	\$50,000.00																					
101	1.6.1	Final Mechanics Desgin	30 days?	Wed 4/18/18	Tue 5/29/18	LDRD	\$0.00	\$30,000.00	Mechanical Engineer[50%],Physicist[10%]																				
102	1.6.2	Mechanics Final Design Review	12 days	Wed 5/30/18	Thu 6/14/18		\$0.00	\$20,000.00																					
103	1.6.2.4	Mechanics Final Design Review	1 day	Wed 5/30/18	Wed 5/30/18	LDRD	\$0.00	\$2,000.00	Mechanical Engineer,Physicist																				
104	1.6.2.5	Incorporate Review Comments	10 days	Thu 5/31/18	Wed 6/13/18	LDRD	\$0.00	\$16,000.00	Mech Tech																				
105	1.6.2.6	Complete Final Mechanical Design	1 day	Thu 6/14/18	Thu 6/14/18	LDRD	\$0.00	\$2,000.00	6/14																				

ID	WBS	Task Name	Duration	Start	Finish	Cost Center	Fixed Cost	Cost	2017					2018				2019				2020				2021			
									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	Qtr 1	Qtr 2	Qtr 3	Qtr 4
106	1.7	MAPS Inner Barrel Review	42 days?	Fri 6/15/18	Mon 8/13/18		\$0.00	\$39,040.00																					
107	1.7.1	Final Design Review	1 day	Fri 6/15/18	Fri 6/15/18		\$0.00	\$4,000.00																					
108	1.7.2	Incorporate Review Comments	10 days	Mon 6/18/18	Fri 6/29/18		\$0.00	\$20,000.00																					
109	1.7.3	Complete Final Design (CD-2)	1 day	Mon 7/2/18	Mon 7/2/18		\$0.00	\$4,000.00																					
110	1.7.4	Update MOU for Staev Production Extension ?	30 days?	Tue 7/3/18	Mon 8/13/18		\$0.00	\$11,040.00																					
111	1.8	Productions	661 days?	Wed 8/1/18	Wed 2/10/21		\$0.00	\$3,003,273.33																					
112	1.8.1	Full Mechnicas System pre-Production Mock Up and Test Beam Analysis	100 days	Fri 3/1/19	Thu 7/18/19		\$0.00	\$88,000.00																					
113	1.8.2	Procurements	359 days?	Wed 8/1/18	Mon 12/16/19		\$0.00	\$2,299,140.00																					
114	1.8.2.1	CERN Procuments	180 days?	Wed 8/1/18	Tue 4/9/19		\$0.00	\$1,097,840.00																					
115	1.8.2.1.1	Produce 68 Inner Staves	180 days	Wed 8/1/18	Tue 4/9/19		\$920,000.00	\$1,064,000.00																					
116	1.8.2.1.2	Other ITS/CERN items	120 days	Wed 8/1/18	Tue 1/15/19		\$10,000.00	\$13,840.00																					
117	1.8.2.1.3	Travel and Per Diem at CERN	180 days?	Wed 8/1/18	Tue 4/9/19		\$20,000.00	\$20,000.00																					
118	1.8.2.2	Procure 68 Readout / FEM Units	100 days	Thu 8/2/18	Wed 12/19/18		\$322,000.00	\$338,000.00																					
119	1.8.2.3	Procure Optical Links 68	60 days	Fri 8/3/18	Thu 10/25/18		\$42,200.00	\$47,000.00																					
120	1.8.2.4	Procure 34 Common Readout Units	100 days	Mon 8/6/18	Fri 12/21/18		\$181,700.00	\$189,700.00																					
121	1.8.2.5	Procure 100 SamTec Cables	60 days	Tue 8/7/18	Mon 10/29/18		\$27,000.00	\$31,800.00																					
122	1.8.2.6	Procure Ancillary Materials (LVPS and cables etc)	100 days	Wed 8/8/18	Tue 12/25/18		\$60,000.00	\$68,000.00																					
123	1.8.2.7	Procure Cooling Plant	100 days	Fri 7/19/19	Thu 12/5/19		\$117,000.00	\$125,000.00																					
124	1.8.2.8	Procure Assembly Fixtures & Jigs	60 days	Mon 7/22/19	Fri 10/11/19		\$100,000.00	\$104,800.00																					
125	1.8.2.9	Procure End Wheels	100 days	Tue 7/23/19	Mon 12/9/19		\$34,000.00	\$42,000.00																					
126	1.8.2.10	Procure Cylindrical Structural Shells	100 days	Wed 7/24/19	Tue 12/10/19		\$11,000.00	\$19,000.00																					
127	1.8.2.11	Procure Detector Half Barrels	100 days	Thu 7/25/19	Wed 12/11/19		\$13,000.00	\$21,000.00																					
128	1.8.2.12	Procure Service Half Barrels	100 days	Fri 7/26/19	Thu 12/12/19		\$120,000.00	\$128,000.00																					
129	1.8.2.13	Procure Detector and Service Half Barrels	100 days	Mon 7/29/19	Fri 12/13/19		\$21,000.00	\$29,000.00																					
130	1.8.2.14	Procure Two Half Support Structures	100 days	Tue 7/30/19	Mon 12/16/19		\$50,000.00	\$58,000.00																					
131	1.8.3	Assembly and Testing at BNL	425 days	Wed 12/26/18	Tue 8/11/20		\$0.00	\$367,733.33																					
132	1.8.3.1	Test Production FEMS, e-Links, CRU, LV, optical links	90 days	Wed 12/26/18	Tue 4/30/19		\$0.00	\$43,200.00																					
133	1.8.3.2	Test Cooling System	10 days	Fri 12/6/19	Thu 12/19/19		\$0.00	\$8,000.00																					
134	1.8.3.3	Stave Reciept Inspection	10 days	Wed 4/10/19	Tue 4/23/19		\$0.00	\$1,733.33																					
135	1.8.3.4	Individual Stave Readout Test	70 days	Wed 4/24/19	Tue 7/30/19		\$0.00	\$22,400.00																					
136	1.8.3.5	Metrology on Stave Assemblies	70 days	Wed 7/31/19	Tue 11/5/19		\$0.00	\$42,000.00																					
137	1.8.3.6	Assemble full Ladders into Half support	100 days	Tue 12/17/19	Mon 5/4/20		\$0.00	\$38,400.00																					
138	1.8.3.7	Metrology on Final Assembly	10 days	Tue 5/5/20	Mon 5/18/20		\$0.00	\$20,000.00																					
139	1.8.3.8	Test Half detector Assembly	60 days	Wed 5/20/20	Tue 8/11/20		\$0.00	\$192,000.00																					
140	1.8.4	Installation	131 days	Wed 8/12/20	Wed 2/10/21		\$0.00	\$248,400.00																					
141	1.8.4.1	Installation Prep	10 days	Wed 8/12/20	Tue 8/25/20		\$0.00	\$16,000.00																					
142	1.8.4.2	Installation Review	1 day	Wed 8/26/20	Wed 8/26/20		\$0.00	\$2,000.00																					
143	1.8.4.3	Installation	60 days	Thu 8/27/20	Wed 11/18/20		\$0.00	\$192,000.00																					
144	1.8.4.4	Commissioning	60 days	Thu 11/19/20	Wed 2/10/21		\$0.00	\$38,400.00																					
145	1.9	Ready for beam	0 days	Wed 2/10/21	Wed 2/10/21		\$0.00	\$0.00																					