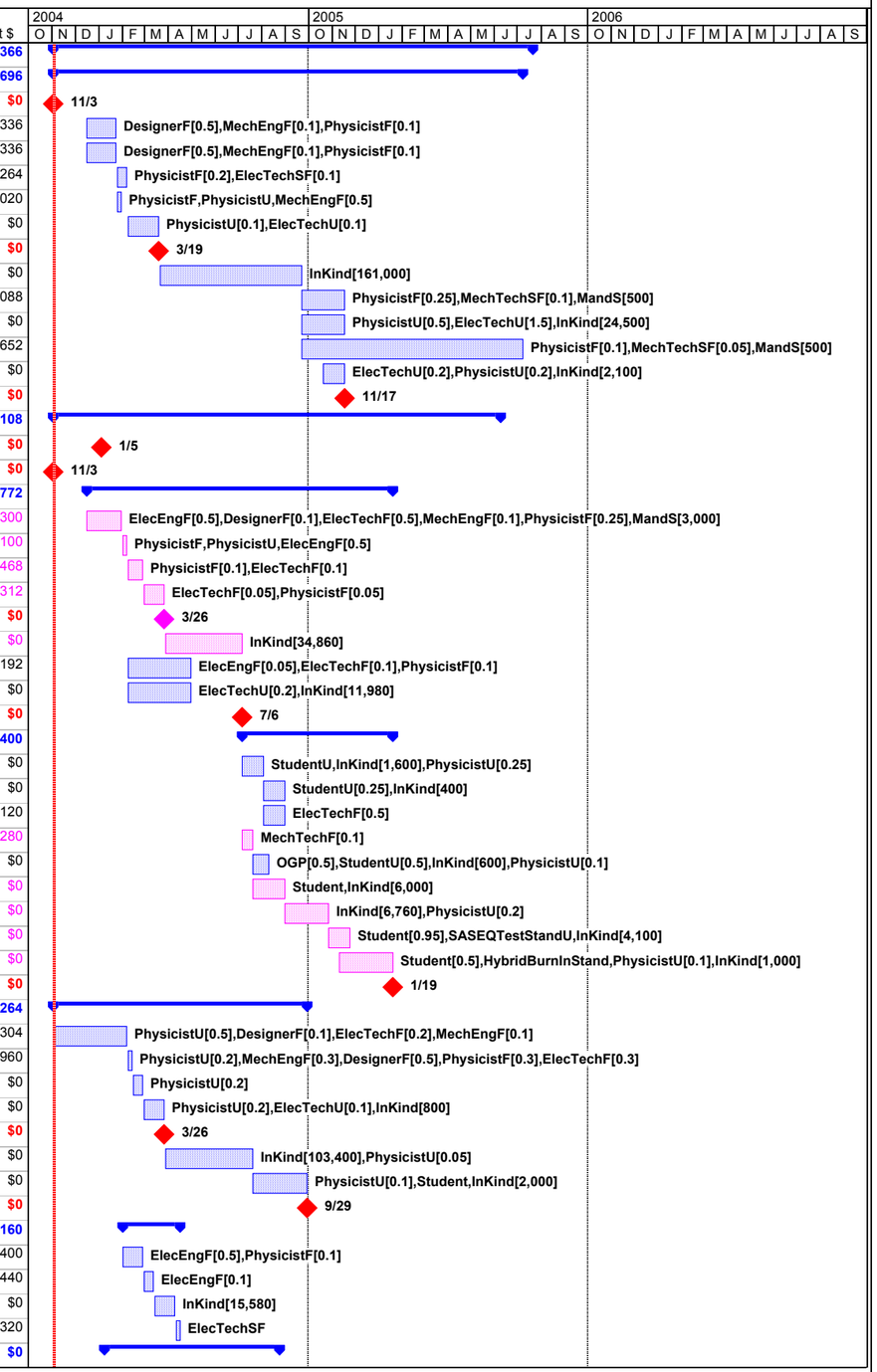
Layer 0 Silicon Tracker

ID	WBS	Task Name	Duration	Start	Finish	Predecessors	M&S Cost $	Institution	Funding Source	FNAL Labor Cost $
1	1.6	Layer 0 Silicon Detector	424 d	11/3/03	7/21/05		$816,315			$537,366
2	1.6.1	Sensors	415 d	11/3/03	7/8/05		$188,600			$13,696
3	1.6.1.1	Probe Stations Ready	0 w	11/3/03	11/3/03		$0			$0
4	1.6.1.2	Design short sensors	4 w	12/17/03	1/23/04	112	$0	FNAL	EQU	$4,336
5	1.6.1.3	Design long sensors	4 w	12/17/03	1/23/04	4SS,112	$0	FNAL	EQU	$4,336
6	1.6.1.4	Vendor RFQ	2 w	1/26/04	2/6/04	5	$0	FNAL	EQU	$264
7	1.6.1.5	Conduct sensor production readiness review	1 w	1/26/04	1/30/04	5	$0	FNAL	EQU	$1,020
8	1.6.1.6	Prepare sensor req and PO	6 w	2/9/04	3/19/04	7,6	$0	SUNYSB	INK-MRI1	$0
9	1.6.1.7	Release Sensors for Production	0 w	3/19/04	3/19/04	7,8	$0			$0
10	1.6.1.8	Produce sensors	26 w	3/22/04	9/22/04	9	$161,000	SUNYSB	INK-MRI1	$0
11	1.6.1.9	Probe sensors (FNAL)	8 w	9/23/04	11/17/04	3,10	$500	FNAL	EQU	$1,088
12	1.6.1.10	Probe sensors (MRI)	8 w	9/23/04	11/17/04	3,10	$24,500	SUNYSB	INK-MRI1	$0
13	1.6.1.11	Long-term sensor tests	39 w	9/23/04	7/8/05	10	$500	FNAL	EQU	$2,652
14	1.6.1.12	Irradiate test structures	4 w	10/21/04	11/17/04	10FS+4 w	$2,100	KSU	INK-MRI1	$0
15	1.6.1.13	All Sensors Delivered and Tested	0 w	11/17/04	11/17/04	11,12	$0			$0
16	1.6.2	Readout Electronics	395 d	11/3/03	6/9/05		$374,962			$167,108
17	1.6.2.1	SVX4 Chips Available	0 w	1/5/04	1/5/04		$0			$0
18	1.6.2.2	SASEQ Test Stands Available	0 w	11/3/03	11/3/03		$0			$0
19	1.6.2.3	Hybrids	265 d	12/17/03	1/19/05		$70,300			$19,772
20	1.6.2.3.1	Design hybrids	5 w	12/17/03	1/30/04	112	$3,000	FNAL	EQU	$11,300
21	1.6.2.3.2	Conduct hybrid production readiness review	1 w	2/2/04	2/6/04	20	$0	FNAL	EQU	$1,100
22	1.6.2.3.3	Bid hybrid production	3 w	2/9/04	2/27/04	21	$0	FNAL	EQU	$468
23	1.6.2.3.4	Prepare hybrid req and PO	4 w	3/1/04	3/26/04	22	$0	FNAL	EQU	$312
24	1.6.2.3.5	Release Hybrids for Production	0 w	3/26/04	3/26/04	21,23	$0			$0
25	1.6.2.3.6	Produce hybrids	14 w	3/29/04	7/6/04	24	$34,860	KU	INK-MRI1	$0
26	1.6.2.3.7	Procure parts (FNAL)	12 w	2/9/04	4/30/04	21	$0	FNAL	EQU	$3,192
27	1.6.2.3.8	Procure parts (Fresno)	12 w	2/9/04	4/30/04	21	$11,980	CALF	INK-MRI1	$0
28	1.6.2.3.9	Hybrid Boxes Available	0 w	7/6/04	7/6/04	25FF	$0			$0
29	1.6.2.3.10	Test Hybrids	130 d	7/7/04	1/19/05		$20,460			$3,400
30	1.6.2.3.10.1	Develop functionality test (Fresno)	4 w	7/7/04	8/3/04	25	$1,600	CALF	INK-MRI1	$0
31	1.6.2.3.10.2	Develop hybrid burn-in test (KU)	4 w	8/4/04	8/31/04	30	$400	KU	INK-MRI1	$0
32	1.6.2.3.10.3	Develop hybrid burn-in test (FNAL)	4 w	8/4/04	8/31/04	30	$0	FNAL	EQU	$3,120
33	1.6.2.3.10.4	Wipe hybrids	2 w	7/7/04	7/20/04	25	$0	FNAL	EQU	$280
34	1.6.2.3.10.5	Measure hybrids (mechanical)	3 w	7/21/04	8/10/04	33	$600	KU	INK-MRI1	$0
35	1.6.2.3.10.6	Probe bare hybrids	6 w	7/21/04	8/31/04	28,33	$6,000	CALF	INK-MRI1	$0
36	1.6.2.3.10.7	Stuff and wirebond hybrids	8 w	9/1/04	10/27/04	17,26,35,34	$6,760	CALF	INK-MRI1	$0
37	1.6.2.3.10.8	Perform initial functionality test	4 w	10/28/04	11/24/04	30,36	$4,100	CALF	INK-MRI1	$0
38	1.6.2.3.10.9	Perform hybrid burn-in tests	8 w	11/11/04	1/19/05	31,37SS+2 w,32	$1,000	KU	INK-MRI1	$0
39	1.6.2.3.11	All L0 Hybrids Delivered, Stuffed, and Tested	0 w	1/19/05	1/19/05	38	$0			$0
40	1.6.2.4	Analog Cables	225 d	11/3/03	9/29/04		$106,200			$10,264
41	1.6.2.4.1	Design analog cables and spacers	12 w	11/3/03	2/6/04	112FF+2 w	$0	FNAL	EQU	$8,304
42	1.6.2.4.2	Conduct analog cable production readiness review	1 w	2/9/04	2/13/04	41	$0	FNAL	EQU	$1,960
43	1.6.2.4.3	Bid analog cable production	2 w	2/16/04	2/27/04	42	$0	BRN	INK-MRI1	$0
44	1.6.2.4.4	Prepare analog cable req and PO	4 w	3/1/04	3/26/04	43	$800	BRN	INK-MRI1	$0
45	1.6.2.4.5	Release Analog Cables for Production	0 w	3/26/04	3/26/04	42,44	$0			$0
46	1.6.2.4.6	Produce analog cables	16 w	3/29/04	7/20/04	45	$103,400	BRN	INK-MRI1	$0
47	1.6.2.4.7	Test analog cables	10 w	7/21/04	9/29/04	46	$2,000	KU	INK-MRI1	$0
48	1.6.2.4.8	All Analog Cables Delivered and Tested	0 w	9/29/04	9/29/04	47	$0			$0
49	1.6.2.5	Flex Grounding Circuits	55 d	2/2/04	4/16/04		$15,580			$6,160
50	1.6.2.5.1	Design grounding circuits	4 w	2/2/04	2/27/04	115	$0	FNAL	EQU	$4,400
51	1.6.2.5.2	Bid grounding circuits	2 w	3/1/04	3/12/04	50	$0	FNAL	EQU	$440
52	1.6.2.5.3	Procure grounding circuits	4 w	3/15/04	4/9/04	51	$15,580	KU	INK-MRI1	$0
53	1.6.2.5.4	Test grounding circuits	1 w	4/12/04	4/16/04	52	$0	FNAL	EQU	$1,320
54	1.6.2.6	Digital Cables	160 d	1/9/04	8/24/04		$30,429			$0



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ID	WBS	Task Name	Duration	Start	Finish	Predecessors	M&S Cost $	Institution	Funding Source	FNAL Labor Cost $
55	1.6.2.6.1	Design digital cables	4 w	1/9/04	2/6/04	75FF-50%,112	$6,000	KU	INK-MRI1	$0
56	1.6.2.6.2	Conduct digital cable production readiness review	1 w	2/9/04	2/13/04	55	$0	KU	INK-MRI1	$0
57	1.6.2.6.3	Bid digital cable production	4 w	2/16/04	3/12/04	56	$0	KU	INK-MRI1	$0
58	1.6.2.6.4	Prepare digital cable req and PO	4 w	3/15/04	4/9/04	57	$0	KU	INK-MRI1	$0
59	1.6.2.6.5	Release Digital Cables for Production	0 w	4/9/04	4/9/04	56,58	$0			$0
60	1.6.2.6.6	Produce digital cables	12 w	4/12/04	7/6/04	59	$13,569	KU	INK-MRI1	$0
61	1.6.2.6.7	Terminate digital cables	3 w	7/7/04	7/27/04	26,60	$9,860	KU	INK-MRI1	$0
62	1.6.2.6.8	Test digital cables	4 w	7/28/04	8/24/04	61	$1,000	KU	INK-MRI1	$0
63	1.6.2.6.9	All Digital Cables Delivered and Tested	0 w	8/24/04	8/24/04	62	$0			$0
64	1.6.2.7	Twisted-Pair Cables	195 d	1/9/04	10/13/04		$27,253			$10,232
65	1.6.2.7.1	Design twisted-pair cables	2 w	1/9/04	1/23/04	112FS+2 w	$0	FNAL	EQU	$6,096
66	1.6.2.7.2	Conduct twisted-pair cable production readiness review	1 w	1/26/04	1/30/04	65	$0	FNAL	EQU	$1,640
67	1.6.2.7.3	Bid twisted-pair cable production	4 w	2/2/04	2/27/04	66	$0	FNAL	EQU	$624
68	1.6.2.7.4	Prepare twisted-pair cable req and PO	4 w	3/1/04	3/26/04	67	$0	KU	INK-MRI1	$0
69	1.6.2.7.5	Release Twisted-pair Cables for Production	0 w	3/26/04	3/26/04	66,68	$0			$0
70	1.6.2.7.6	Procure parts for twisted-pair cables	12 w	3/29/04	6/21/04	69	$5,886	FNAL	EQU	$1,872
71	1.6.2.7.7	Assemble twisted-pair cables	12 w	6/22/04	9/15/04	70	$20,867	KU	INK-MRI1	$0
72	1.6.2.7.8	Test twisted-pair cables	4 w	9/16/04	10/13/04	71	$500	KU	INK-MRI1	$0
73	1.6.2.7.9	All Twisted-pair Cables Assembled and Tested	0 w	10/13/04	10/13/04	72	$0			$0
74	1.6.2.8	Junction Cards	145 d	12/17/03	7/20/04		$24,280			$0
75	1.6.2.8.1	Design junction cards	12 w	12/17/03	3/19/04	112	$6,400	KSU	INK-MRI1	$0
76	1.6.2.8.2	Conduct junction card production readiness review	1 w	3/22/04	3/26/04	75	$600	KSU	INK-MRI1	$0
77	1.6.2.8.3	Prepare junction card req and PO	4 w	3/29/04	4/23/04	76	$960	KSU	INK-MRI1	$0
78	1.6.2.8.4	Release Junction Cards for Production	0 w	4/23/04	4/23/04	76,77	$0			$0
79	1.6.2.8.5	Produce junction cards	8 w	4/26/04	6/21/04	78	$14,400	KSU	INK-MRI1	$0
80	1.6.2.8.6	Test junction cards	4 w	6/22/04	7/20/04	79	$1,920	KSU	INK-MRI1	$0
81	1.6.2.8.7	All Junction Cards Produced and Tested	0 w	7/20/04	7/20/04	80	$0			$0
82	1.6.2.9	Adapter Cards	320 d	11/3/03	2/23/05		$93,920			$7,840
83	1.6.2.9.1	Design adapter cards	16 w	11/3/03	3/5/04		$27,520	KSU	INK-MRI1	$0
84	1.6.2.9.2	Procure prototypes	8 w	3/8/04	4/30/04	83	$9,600	KSU	INK-MRI1	$0
85	1.6.2.9.3	Test prototypes	4 w	5/3/04	5/28/04	84	$6,400	KSU	INK-MRI1	$0
86	1.6.2.9.4	Develop final specifications (KSU)	4 w	8/18/04	9/15/04	85,102,103	$2,400	KSU	INK-MRI1	$0
87	1.6.2.9.5	Develop final specifications (Fermilab)	4 w	8/18/04	9/15/04	85,103,102	$0	FNAL	EQU	$7,840
88	1.6.2.9.6	Conduct adapter card production readiness review	1 w	9/16/04	9/22/04	87,86	$1,600	KSU	INK-MRI1	$0
89	1.6.2.9.7	Bid adapter card production	3 w	9/23/04	10/13/04	88	$0	KSU	INK-MRI1	$0
90	1.6.2.9.8	Prepare adapter card req and PO	4 w	10/14/04	11/10/04	89	$0	KSU	INK-MRI1	$0
91	1.6.2.9.9	Release Adapter Cards for Production	0 w	11/10/04	11/10/04	88,90	$0			$0
92	1.6.2.9.10	Produce adapter cards	9 w	11/11/04	1/26/05	91	$38,400	KSU	INK-MRI1	$0
93	1.6.2.9.11	Test adapter cards	4 w	1/27/05	2/23/05	92	$8,000	KSU	INK-MRI1	$0
94	1.6.2.9.12	All Adapter Cards Delivered and Tested	0 w	2/23/05	2/23/05	93	$0			$0
95	1.6.2.10	High-Voltage System	120 d	6/1/04	11/17/04		$5,000			$14,360
96	1.6.2.10.1	Design HV System	10 w	6/1/04	8/10/04	112	$0	FNAL	EQU	$8,800
97	1.6.2.10.2	Release HV System for Production	0 w	8/10/04	8/10/04	96	$0			$0
98	1.6.2.10.3	Produce HV System	10 w	8/11/04	10/20/04	97	$5,000	FNAL	EQU	$1,560
99	1.6.2.10.4	Test HV System	4 w	10/21/04	11/17/04	98	$0	FNAL	EQU	$4,000
100	1.6.2.11	Readout Chain Integration	78 w	11/3/03	6/2/05		$0	FNAL	EQU	$73,320
101	1.6.2.12	Full Chain Tests	395 d	11/3/03	6/9/05		$2,000			$25,160
102	1.6.2.12.1	Test mixed SVX2/SVX4 readout	24 w	11/3/03	4/30/04		$0	FNAL	EQU	$5,280
103	1.6.2.12.2	Test adapter card schemes	12 w	5/24/04	8/17/04	85SS+3 w	$0	FNAL	EQU	$6,600
104	1.6.2.12.3	Move test setup to Lab C	2 w	8/18/04	8/31/04	103	$2,000	FNAL	EQU	$1,360
105	1.6.2.12.4	Test with final adapter cards	8 w	2/17/05	4/13/05	93SS+3 w,104	$0	FNAL	EQU	$7,520
106	1.6.2.12.5	Test full, final system	8 w	4/14/05	6/9/05	105	$0	FNAL	EQU	$4,400
107	1.6.2.12.6	Full Chain System Test Completed	0 w	6/9/05	6/9/05	106	$0			$0
108	1.6.3	Mechanical Design and Fabrication	220 d	11/3/03	9/22/04		$147,548			$151,872

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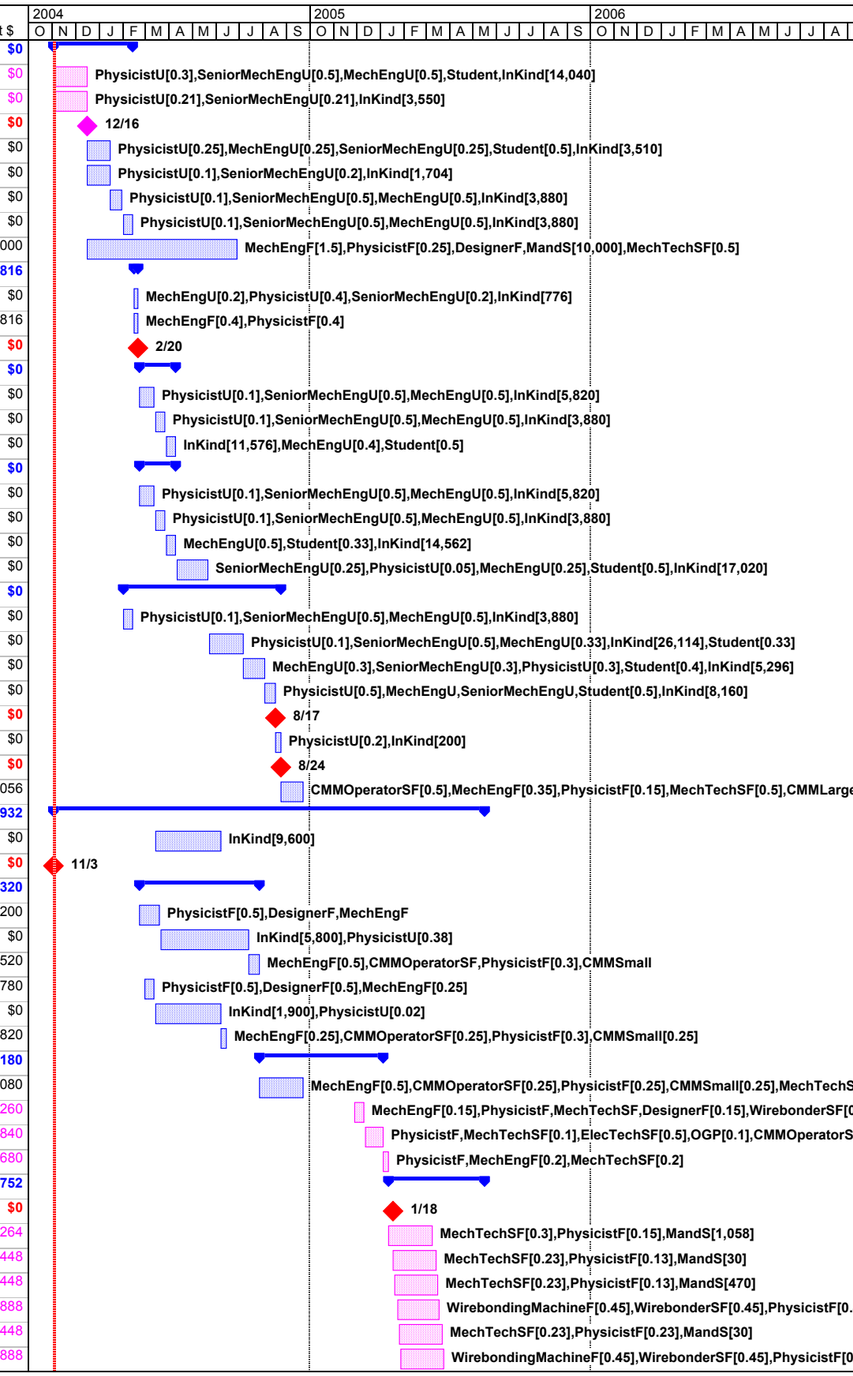
ID	WBS	Task Name	Duration	Start	Finish	Predecessors	M&S Cost $	Institution	Funding Source	FNAL Labor Cost $
109	1.6.3.1	**Support Structures Design**	**65 d**	**11/3/03**	**2/13/04**		**$30,564**			**$0**
110	1.6.3.1.1	Design mechanical structures	6 w	11/3/03	12/16/03		$14,040	UW	INK-MRI1	$0
111	1.6.3.1.2	Conduct finite element analysis (mechanical)	6 w	11/3/03	12/16/03	110SS	$3,550	UW	INK-MRI1	$0
112	1.6.3.1.3	**Freeze Mechanical Parameters**	**0 w**	**12/16/03**	**12/16/03**	**111**	**$0**			**$0**
113	1.6.3.1.4	Design cooling components/assembly	3 w	12/17/03	1/15/04	112	$3,510	UW	INK-MRI1	$0
114	1.6.3.1.5	Conduct finite element analysis (thermal)	3 w	12/17/03	1/15/04	113SS	$1,704	UW	INK-MRI1	$0
115	1.6.3.1.6	Integrate designs (sensors, grounding, cooling)	2 w	1/16/04	1/30/04	114	$3,880	UW	INK-MRI1	$0
116	1.6.3.1.7	Prepare drawings	2 w	2/2/04	2/13/04	115	$3,880	UW	INK-MRI1	$0
117	1.6.3.2	Development and integration of design (FNAL)	26 w	12/17/03	6/28/04	112	$10,000	FNAL	EQU	$143,000
118	1.6.3.3	**Production Readiness Review**	**5 d**	**2/16/04**	**2/20/04**		**$776**			**$816**
119	1.6.3.3.1	Conduct production readiness review (UW)	1 w	2/16/04	2/20/04	116	$776	UW	INK-MRI1	$0
120	1.6.3.3.2	Conduct production readiness review (Fermilab)	1 w	2/16/04	2/20/04	119SS	$0	FNAL	EQU	$816
121	1.6.3.3.3	**Support Structures Ready For Production**	**0 w**	**2/20/04**	**2/20/04**	**120**	**$0**			**$0**
122	1.6.3.4	**Final Fabrication Tooling**	**35 d**	**2/23/04**	**4/9/04**		**$21,276**			**$0**
123	1.6.3.4.1	Design final production tooling	3 w	2/23/04	3/12/04	121	$5,820	UW	INK-MRI1	$0
124	1.6.3.4.2	Prepare final production tooling drawings	2 w	3/15/04	3/26/04	123	$3,880	UW	INK-MRI1	$0
125	1.6.3.4.3	Fabricate final production tooling	2 w	3/29/04	4/9/04	124,120	$11,576	UW	INK-MRI1	$0
126	1.6.3.5	**Final Quality Assurance Tooling**	**35 d**	**2/23/04**	**4/9/04**		**$24,262**			**$0**
127	1.6.3.5.1	Design final QA tooling	3 w	2/23/04	3/12/04	121	$5,820	UW	INK-MRI1	$0
128	1.6.3.5.2	Prepare final QA tooling drawings	2 w	3/15/04	3/26/04	127	$3,880	UW	INK-MRI1	$0
129	1.6.3.5.3	Fabricate final QA tooling	2 w	3/29/04	4/9/04	128,120	$14,562	UW	INK-MRI1	$0
130	1.6.3.6	Produce preproduction samples for testing	6 w	4/12/04	5/21/04	125,129	$17,020	UW	INK-MRI1	$0
131	1.6.3.7	**Final Support Structures Production**	**145 d**	**2/2/04**	**8/24/04**		**$43,650**			**$0**
132	1.6.3.7.1	Prepare final production and assembly drawings	2 w	2/2/04	2/13/04	115	$3,880	UW	INK-MRI1	$0
133	1.6.3.7.2	Procure/manufacture final production parts	6 w	5/24/04	7/6/04	53,132,130	$26,114	UW	INK-MRI1	$0
134	1.6.3.7.3	Assemble final support structures	4 w	7/7/04	8/3/04	133,125	$5,296	UW	INK-MRI1	$0
135	1.6.3.7.4	Perform quality assurance checks on final support structu	2 w	8/4/04	8/17/04	134,129	$8,160	UW	INK-MRI1	$0
136	1.6.3.7.5	**All Support Structures Completed**	**0 w**	**8/17/04**	**8/17/04**	**135**	**$0**			**$0**
137	1.6.3.7.6	Ship to Fermilab	1 w	8/18/04	8/24/04	136	$200	UW	INK-MRI1	$0
138	1.6.3.7.7	**All Support Structures Received At Fermilab**	**0 w**	**8/24/04**	**8/24/04**	**137**	**$0**			**$0**
139	1.6.3.8	Perform final article QA checks of support structure componen	4 w	8/25/04	9/22/04	138,173	$0	FNAL	EQU	$8,056
140	1.6.4	**Layer 0 Detector Modules**	**378 d**	**11/3/03**	**5/16/05**		**$19,505**			**$76,932**
141	1.6.4.1	Fabricate module boxes	12 w	3/15/04	6/7/04	121FS+3 w	$9,600	KU	INK-MRI1	$0
142	1.6.4.2	**Module Burn-in Stands Available**	**0 w**	**11/3/03**	**11/3/03**		**$0**			**$0**
143	1.6.4.3	**Production Module Fixtures**	**110 d**	**2/23/04**	**7/27/04**		**$7,700**			**$23,320**
144	1.6.4.3.1	Finalize readout module fabrication fixtures	4 w	2/23/04	3/19/04	112,121	$0	FNAL	EQU	$15,200
145	1.6.4.3.2	Procure production layer 0 readout module fixtures	16 w	3/22/04	7/13/04	144	$5,800	MSU	INK-MRI1	$0
146	1.6.4.3.3	QC production readout module fixtures	2 w	7/14/04	7/27/04	145	$0	FNAL	EQU	$4,520
147	1.6.4.3.4	Finalize L0 wirebonding fixtures	2 w	3/1/04	3/12/04	121FS+1 w	$0	FNAL	EQU	$2,780
148	1.6.4.3.5	Procure production L0 wirebonding fixtures	12 w	3/15/04	6/7/04	147	$1,900	KU	INK-MRI1	$0
149	1.6.4.3.6	QC production L0 wirebonding fixtures	1 w	6/8/04	6/14/04	148	$0	FNAL	EQU	$820
150	1.6.4.4	**Preproduction Modules**	**105 d**	**7/28/04**	**1/4/05**		**$617**			**$24,180**
151	1.6.4.4.1	Qualify fixtures and procedures	8 w	7/28/04	9/22/04	146,149	$100	FNAL	EQU	$16,080
152	1.6.4.4.2	Produce preproduction modules	2 w	11/29/04	12/10/04	47SS+2 w,38SS+2 w,11SS+2 w,151,12S	$517	FNAL	EQU	$6,260
153	1.6.4.4.3	Test preproduction modules	2 w	12/13/04	1/4/05	152	$0	FNAL	EQU	$1,840
154	1.6.4.5	Conduct L0 module production readiness review	1 w	1/5/05	1/11/05	153	$0	FNAL	EQU	$680
155	1.6.4.6	**Module Production**	**88 d**	**1/12/05**	**5/16/05**		**$1,588**			**$28,752**
156	1.6.4.6.1	**Silicon L0 Module Production Begun**	**0 w**	**1/18/05**	**1/18/05**	**158SS**	**$0**			**$0**
157	1.6.4.6.2	Prepare sensors for module production	8 w	1/12/05	3/9/05	154	$1,058	FNAL	EQU	$3,264
158	1.6.4.6.3	Align and glue pair of flex cables	8 w	1/18/05	3/14/05	47SS+3 w,11SS+2.6 w,38SS+2.6 w,141,1	$30	FNAL	EQU	$2,448
159	1.6.4.6.4	Align and glue sensor to flex cable	8 w	1/20/05	3/16/05	11SS+3 w,158SS+2 d,12SS+3 w	$470	FNAL	EQU	$2,448
160	1.6.4.6.5	Perform sensor-to-flex cable wirebonds	8 w	1/24/05	3/18/05	159SS+2 d	$0	FNAL	EQU	$3,888
161	1.6.4.6.6	Attach end hybrids to flex cable	8 w	1/26/05	3/22/05	38SS+3 w,160SS+2 d	$30	FNAL	EQU	$2,448
162	1.6.4.6.7	Wirebond end hybrid to flex cable	8 w	1/28/05	3/24/05	161SS+2 d	$0	FNAL	EQU	$3,888



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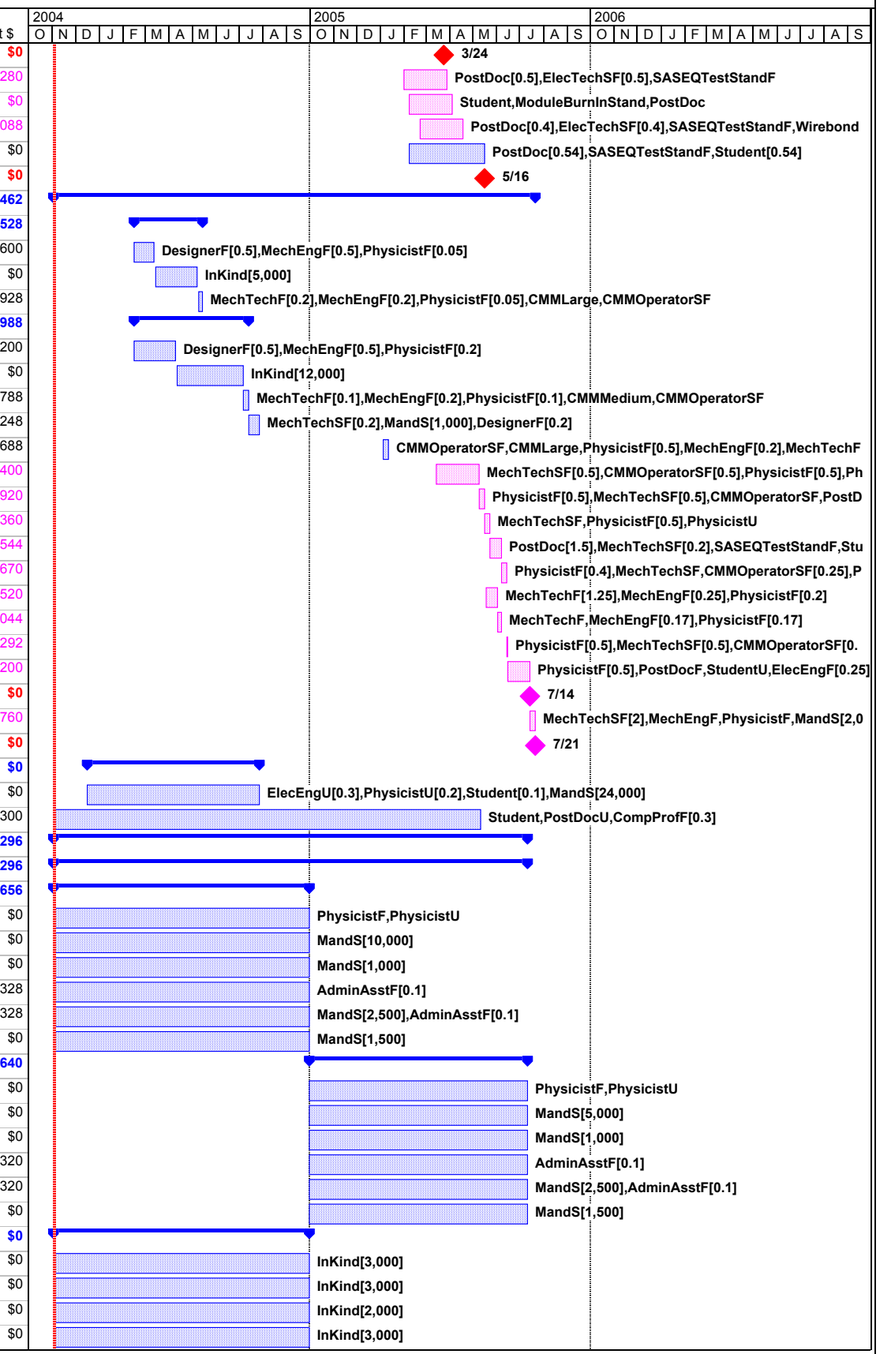
Layer 0 Silicon Tracker

ID	WBS	Task Name	Duration	Start	Finish	Predecessors	M&S Cost $	Institution	Funding Source	FNAL Labor Cost $
163	1.6.4.6.8	Silicon L0 Module Production Complete	0 w	3/24/05	3/24/05	11,162,12	$0			$0
164	1.6.4.6.9	Debug sensor modules	8 w	2/1/05	3/28/05	18,162SS+2 d	$0	FNAL	EQU	$5,280
165	1.6.4.6.10	Burn-in sensor modules	8 w	2/8/05	4/4/05	164SS+1 w,142	$0	FNAL	EQU	$0
166	1.6.4.6.11	Evaluate and repair sensor modules	8 w	2/22/05	4/18/05	165SS+2 w	$0	FNAL	EQU	$5,088
167	1.6.4.6.12	Perform quality assurance tests	14 w	2/8/05	5/16/05	165SS	$0	FNAL	EQU	$0
168	1.6.4.6.13	Silicon L0 Module Production and Testing Complete	0 w	5/16/05	5/16/05	163,167	$0			$0
169	1.6.5	Final Detector Integration and Assembly	424 d	11/3/03	7/21/05		$49,700			$104,462
170	1.6.5.1	Layer 0 Support Structure Holding Fixtures	65 d	2/16/04	5/14/04		$5,000			$9,528
171	1.6.5.1.1	Design support structure holding fixtures	4 w	2/16/04	3/12/04	116	$0	FNAL	EQU	$7,600
172	1.6.5.1.2	Procure support structure holding fixtures	8 w	3/15/04	5/7/04	171	$5,000	KU	INK-MRI1	$0
173	1.6.5.1.3	QC support structure holding fixtures	1 w	5/10/04	5/14/04	172	$0	FNAL	EQU	$1,928
174	1.6.5.2	Layer 0 Module Installation Fixtures	105 d	2/16/04	7/13/04		$12,000			$16,988
175	1.6.5.2.1	Design module installation fixtures	8 w	2/16/04	4/9/04	116	$0	FNAL	EQU	$15,200
176	1.6.5.2.2	Procure module installation fixtures	12 w	4/12/04	7/6/04	175	$12,000	MSU	INK-MRI1	$0
177	1.6.5.2.3	QC module installation fixtures	1 w	7/7/04	7/13/04	176	$0	FNAL	EQU	$1,788
178	1.6.5.3	Design and fabricate detector garage	2 w	7/14/04	7/27/04	177	$1,000	FNAL	EQU	$1,248
179	1.6.5.4	Certify module mounting procedures	1 w	1/5/05	1/11/05	153,177,130,104	$100	FNAL	EQU	$5,688
180	1.6.5.5	Mount layer 0 sensor modules	8 w	3/15/05	5/9/05	166SS+3 w,139,179,178	$600	FNAL	EQU	$10,400
181	1.6.5.6	Verify sensor alignment	1 w	5/10/05	5/16/05	180	$0	FNAL	EQU	$1,920
182	1.6.5.7	Install temperature sensors	1 w	5/17/05	5/23/05	181,193	$0	FNAL	EQU	$1,360
183	1.6.5.8	Perform initial electrical test of readout	2 w	5/24/05	6/7/05	63,182,105	$0	FNAL	EQU	$544
184	1.6.5.9	Install outer shell	1 w	6/8/05	6/14/05	183,139	$0	FNAL	EQU	$1,670
185	1.6.5.10	Beams Div bakeout and leak check of beam pipe	2 w	5/19/05	6/2/05		$0	FNAL	EQU	$4,520
186	1.6.5.11	SiDet leak check of beam pipe	0.6 w	6/3/05	6/7/05	185	$0	FNAL	EQU	$1,044
187	1.6.5.12	Install beam pipe	0.2 w	6/15/05	6/15/05	186FS+1 w,184	$5,000	FNAL	EQU	$292
188	1.6.5.13	Test final system	4 w	6/16/05	7/14/05	187	$0	FNAL	EQU	$2,200
189	1.6.5.14	Layer 0 Silicon Detector Assembly and Testing Complete	0 w	7/14/05	7/14/05	99,106,188	$0			$0
190	1.6.5.15	Prepare for transport to DAB	1 w	7/15/05	7/21/05	189	$2,000	FNAL	EQU	$4,760
191	1.6.5.16	Layer 0 Silicon Detector Ready to Move to DAB	0 w	7/21/05	7/21/05	190	$0			$0
192	1.6.5.17	Monitoring	150 d	12/17/03	7/27/04		$24,000			$0
193	1.6.5.17.1	Temperature Monitoring	30 w	12/17/03	7/27/04	112	$24,000	RU	EQU	$0
194	1.6.5.18	Software and Simulation	75 w	11/3/03	5/11/05		$0	FNAL	EQU	$42,300
195	1.6.6	Silicon Project Administration	416 d	11/3/03	7/11/05		$36,000			$23,296
196	1.6.6.1	Fermilab Administration	416 d	11/3/03	7/11/05		$25,000			$23,296
197	1.6.6.1.1	FY04	226 d	11/3/03	9/30/04		$15,000			$12,656
198	1.6.6.1.1.1	Project management	45.2 w	11/3/03	9/30/04		$0	FNAL	EQU	$0
199	1.6.6.1.1.2	Travel	45.2 w	11/3/03	9/30/04		$10,000	FNAL	EQU	$0
200	1.6.6.1.1.3	Shipping costs	45.2 w	11/3/03	9/30/04		$1,000	FNAL	EQU	$0
201	1.6.6.1.1.4	Purchasing support	45.2 w	11/3/03	9/30/04		$0	FNAL	EQU	$6,328
202	1.6.6.1.1.5	Administrative and technical support	45.2 w	11/3/03	9/30/04		$2,500	FNAL	EQU	$6,328
203	1.6.6.1.1.6	Software licenses	45.2 w	11/3/03	9/30/04		$1,500	FNAL	EQU	$0
204	1.6.6.1.2	FY05	190 d	10/1/04	7/11/05		$10,000			$10,640
205	1.6.6.1.2.1	Project management	38 w	10/1/04	7/11/05	197	$0	FNAL	EQU	$0
206	1.6.6.1.2.2	Travel	38 w	10/1/04	7/11/05		$5,000	FNAL	EQU	$0
207	1.6.6.1.2.3	Shipping costs	38 w	10/1/04	7/11/05		$1,000	FNAL	EQU	$0
208	1.6.6.1.2.4	Purchasing support	38 w	10/1/04	7/11/05		$0	FNAL	EQU	$5,320
209	1.6.6.1.2.5	Administrative and technical support	38 w	10/1/04	7/11/05		$2,500	FNAL	EQU	$5,320
210	1.6.6.1.2.6	Software licenses	38 w	10/1/04	7/11/05		$1,500	FNAL	EQU	$0
211	1.6.6.2	MRI Administrative	226 d	11/3/03	9/30/04		$11,000			$0
212	1.6.6.2.1	Kansas University Administrative	45.2 w	11/3/03	9/30/04		$3,000	KU	INK-MRI1	$0
213	1.6.6.2.2	Kansas State University Administrative	45.2 w	11/3/03	9/30/04		$3,000	KSU	INK-MRI1	$0
214	1.6.6.2.3	SUNY- Stony Brook Administrative	45.2 w	11/3/03	9/30/04		$2,000	SUNYSB	INK-MRI1	$0
215	1.6.6.2.4	University of Washington Administrative	45.2 w	11/3/03	9/30/04		$3,000	UW	INK-MRI1	$0



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