

ID	Task Name	Duration	Start	Finish	Predecessors	Constraint	WBS	Resource Names
111	FIBER TRACKER FABRICATION	258.4 w	7/3/95	9/11/00		As Soon As		
112	Tracker Engineering Design	105 w	1/2/96	2/11/98		As Soon As		
113	Define Layer Structure	18 w	1/2/96	5/6/96		Start No Ear		
114	Develop Mechanical Support Conceptual Design	18 w	5/7/96	9/12/96	113	As Soon As f		MEF112,DesF112[0.25]
115	Develop Engineering Detail and Final Specifications	69 w	9/13/96	2/11/98	114	As Soon As f		MEF112[0.5],DesF112,PhysF112
116	Engineering Design Complete	0 w	2/11/98	2/11/98	115	As Soon As		
117	M3-Fiber Tracker TDR Submitted	0 w	1/8/98	1/8/98	116FS-5 w	Start No Ear		
118	Ribbon/Waveguide Connector Fabrication	97.3 w	2/12/98	2/4/00		As Soon As		
119	Perform R&D for Connector	24 w	2/12/98	7/31/98	115	Start No Ear		MTF112[0.1],DesF112[0.25],MEF112[0.25],PhysU112[0.5]
120	Test Connector	36 w	3/12/98	11/23/98	119SS+4 w	As Soon As f		MTU112[0.25],MEU112[0.25],PhysU112[0.2]
121	Connector Designed	0 w	11/23/98	11/23/98	116,120	As Soon As		
122	Connector Production	57.3 w	11/24/98	2/4/00		As Soon As	1.1.2.2.3,1.1.2.3.2,1.1.2.3.3	k\$[1.75],k\$c[0.34]
123	Produce Connectors- Cylinder 3 (Torlon)	8 w	11/24/98	2/3/99	121	As Soon As f		MTF112[0.5],MEF112[0.25]
124	Produce Connectors- Cylinder 8 (Torlon)	10 w	3/25/99	6/3/99	123FS+7 w	As Soon As f		MTF112[0.4],MEF112[0.4]
125	Produce Connectors- Cylinder 7 (Torlon)	9 w	6/4/99	8/6/99	124	As Soon As f		MTF112[0.4],MEF112[0.4]
126	Generate Drawings for connectors - Cylinders 6,5,4,2, and 1	6 w	6/4/99	7/16/99	124	As Soon As f		DesF112
127	Connector Decision	0 w	9/21/99	9/21/99		Start No Ear		
128	Produce Connectors 8 Stereo (Aluminum)	2.5 w	9/21/99	10/7/99	127	As Soon As f		MTF112[0.5],MEF112[0.5]
129	Produce Connectors 7	3 w	10/7/99	10/28/99	128	As Soon As f		MTF112[0.5],MEF112[0.5]
130	Produce Connectors 6	3 w	10/28/99	11/18/99	129	As Soon As f		MTF112[0.5],MEF112[0.5]
131	Produce Connectors 5	2 w	11/18/99	12/6/99	130	As Soon As f		MTF112[0.5],MEF112[0.5]
132	Produce Connectors 4	1 w	12/6/99	12/13/99	131	As Soon As f		MTF112[0.5],MEF112[0.5]
133	Produce Connectors 3	0.5 w	2/2/00	2/4/00	132	Start No Ear		MTF112[0.5],MEF112[0.5]
134	Produce Connectors 2	0.5 w	12/16/99	1/3/00	133	As Soon As f		MTF112[0.5],MEF112[0.5]
135	Produce Connectors 1	0.5 w	1/3/00	1/5/00	134	As Soon As f		MTF112[0.5],MEF112[0.5]
136	Connectorization Tooling	52.6 w	11/24/98	1/3/00		As Soon As		
137	Design Tooling	4 w	11/24/98	1/6/99	121	As Soon As f		MEF112[0.5]
138	Fabricate Axial B3 Prototype Tooling	4 w	1/7/99	2/3/99	137	As Soon As f		MEF112[0.1]
139	Fabricate Stereo B3 Prototype Tooling	4 w	2/4/99	3/3/99	138	As Soon As f		MEF112[0.1]
140	Debug Connectorization Tooling	7.2 w	2/17/99	4/7/99	122SS+4 w,139	As Soon As f		MTF112,MEF112[0.15]
141	Modify Connectorization design	1 w	9/21/99	9/27/99	127	As Soon As f		MEF112[0.5]
142	Procure Full Connectorization Tooling Set	12.6 w	9/21/99	1/3/00		As Soon As	1.1.2.2.8	k\$[0.4],k\$c[0.04]
143	Procure 8 axial tooling	1 w	9/21/99	9/27/99	127	As Soon As f		MEF112[0.1]
144	Procure Cylinder 8 Stereo, 7, and 6 Tooling	1.5 w	9/28/99	10/7/99	143	As Soon As f		MEF112[0.2]
145	Generate Drawings for connector tooling - Cylinders 1-5	2 w	9/28/99	10/11/99	143	As Soon As f		DesF112
146	Procure Cylinders 1-5 Tooling	8 w	10/22/99	1/3/00	145	As Soon As f		MEF112[0.1]
147	Fiber Procurement	234 w	7/3/95	3/20/00		As Soon As		
148	Perform Fiber R&D	63 w	7/3/95	9/24/96		Start No Ear		PhysU112[0.25]
149	Submit Fiber Orders	10 w	9/25/96	12/5/96	148	As Soon As f	1.1.2.3.1(.85),1.1.2.2.1	k\$[9.22],k\$c[0.92]
150	Procure Waveguide Fiber	98.2 w	3/3/97	2/26/99		Start No Ear		
151	Procure Scintillating Fiber	29.6 w	2/3/97	8/29/97		Start No Ear		
152	Perform Scintillating Fiber QC	36 w	8/3/98	4/28/99		Start No Ear		PhysU112[0.15],MTU112[0.15]
153	Procure Additional Scintillating Fiber-FY99	21.2 w	10/7/99	3/20/00		As Soon As	1.1.2.3.1(.15)	k\$[1.13],k\$c[0.11]
154	Delivery - 12,000 canes	1 d	10/7/99	10/7/99		Start No Ear		
155	Fiber Aluminization	5.2 w	10/8/99	11/12/99	154	As Soon As f		PhysF112[0.2]
156	Delivery - 8,000 canes	0.2 w	12/13/99	12/13/99		Start No Ear		
157	Fiber Aluminization	2 w	12/14/99	1/10/00	156	As Soon As f		PhysF112[0.2]
158	Delivery - 8,000 canes	0.2 w	1/4/00	1/4/00		Start No Ear		
159	Fiber Aluminization	2 w	1/5/00	1/18/00	158	As Soon As f		PhysF112[0.2]
160	Delivery - 8,000 canes	0.2 w	2/14/00	2/14/00		Start No Ear		
161	Fiber Aluminization	2 w	2/15/00	2/28/00	160	As Soon As f		PhysF112[0.2]
162	Delivery - 9,000 canes	0.2 w	3/6/00	3/6/00		Start No Ear		
163	Fiber Aluminization	2 w	3/7/00	3/20/00	162	As Soon As f		PhysF112[0.2]
164	Cylinder Procurement	132.6 w	8/3/97	4/14/00		As Soon As		
165	Perform Cylinder R&D	52 w	8/3/97	8/20/98		Start No Ear		MTF112[0.5],MEF112[0.5],PhysF112[0.5]
166	Integrate Design- Connectors/Ribbons	4 w	11/24/98	1/6/99	121,165	As Soon As f		DesF112,PhysF112[0.5]
167	Final Cylinder Engineering Design	0 w	1/6/99	1/6/99	166	As Soon As		
168	Procure Cylinder Parts	30.2 w	8/21/98	4/7/99		As Soon As		
169	Procure Carbon Fiber	20 w	8/21/98	1/26/99	165	As Soon As f	1.1.2.7.1.1(.59)	k\$[0.88],k\$c[0.13]
170	Procure Mandrels and Perform QC	30.2 w	8/21/98	4/7/99		As Soon As		
171	Mandrel 3	4 w	8/21/98	9/18/98	165	As Soon As f		
172	Mandrel 7	7 w	1/7/99	2/24/99	167	As Soon As f		MTF112[0.15],PhysF112[0.1]
173	Mandrel 8	2 w	2/25/99	3/10/99	172	As Soon As f		MTF112[0.15],PhysF112[0.1],CMM112[0.2]
174	Mandrel 6	2 w	3/11/99	3/24/99	173	As Soon As f		PhysF112[0.1],CMM112[0.2],MTF112[0.15]
175	Mandrel 5	2 w	3/11/99	3/24/99	173	As Soon As f		PhysF112[0.1],CMM112[0.2],MTF112[0.15]
176	Mandrel 4	2 w	3/25/99	4/7/99	175	As Soon As f		PhysF112[0.1],MTF112[0.15],CMM112[0.2]
177	Mandrel 2	2 w	3/25/99	4/7/99	175	As Soon As f		PhysF112[0.1],MTF112[0.15],CMM112[0.2]
178	Mandrel 1	2 w	3/25/99	4/7/99	175	As Soon As f	1.1.2.7.1.2	PhysF112[0.1],MTF112[0.15],CMM112[0.2],k\$c[0.68],k\$c[0.1]
179	Fabricate Cylinders and Bands	52.3 w	11/2/98	11/23/99		As Soon As		
180	Cylinders 3A B	14 w	11/2/98	2/23/99	169SS+10 w,171	As Soon As f	1.1.2.7.1.1(.12)	MTF112,PhysF112[0.5],MEF112[0.25],k\$[0.18],k\$c[0.03]
181	Cylinder 6	4 w	3/25/99	4/21/99	174	As Soon As f	1.1.2.7.1.1(.29)	MTF112[3],PhysF112[0.5],CMM112[0.2],k\$[0.43],k\$c[0.06],MEF112[0.2]
182	Cylinder 8 AB	3 w	4/22/99	5/12/99	181	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.3],MEF112[0.2]

ID	Task Name	Duration	Start	Finish	Predecessors	Constraint	WBS	Resource Names
183	Cylinder 7 AB	9 w	5/13/99	7/16/99	182	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.2],MEF112[0.2]
184	Cylinder 2	2 w	7/19/99	7/30/99	183	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.25],MEF112[0.2]
185	Cylinder 4	3.5 w	9/21/99	10/14/99	127	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.2],MEF112[0.2]
186	Cylinder 7 C	1 w	10/7/99	10/14/99	185FS-1 w	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.2],MEF112[0.2]
187	Cylinder 5	1 w	10/14/99	10/21/99	186	Start No Earl		MTF112[3],PhysF112[0.5],CMM112[0.2],MEF112[0.2]
188	Cylinder 3C	3 w	10/26/99	11/16/99	187FS+3 d	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.25],MEF112[0.2]
189	Cylinder 1	1 w	11/16/99	11/23/99	188	As Soon As f		MTF112[3],PhysF112[0.5],CMM112[0.25],MEF112[0.2]
190	Fabricate End Rings, AI support disks, and QC	52.8 w	1/7/99	2/1/00		As Soon As		
191	Specify End Ring Material	2 w	1/7/99	1/20/99	167	As Soon As f		MEF112[0.25]
192	Procure End Ring Material	7 w	1/21/99	3/10/99	191	As Soon As f	1.1.2.7.1.3,1.1.2.7.1.4	k\$[0.73],k\$c[0.14]
193	End Rings- 3A	4 w	2/18/99	3/17/99	192SS+4 w	As Soon As f		MTF112[0.25]
194	Finalize End Ring-Disk interface design	5 w	3/18/99	4/21/99	193	As Soon As f		MEF112[0.5],MTF112[0.2],DesF112
195	Cylinder 3B ER&D	4 w	4/15/99	5/12/99	180,193FS+4 w	As Soon As f		CMM112[0.1]
196	Cylinder 8 ER&D	2 w	9/21/99	10/4/99	127	As Soon As f		CMM112[0.1]
197	Cylinder 7 ER&D	4 w	10/5/99	11/1/99	196	As Soon As f		CMM112[0.1]
198	Cylinder 6 ER&D	9 d	11/2/99	11/12/99	181,197	As Soon As f		CMM112[0.1]
199	Cylinder 5 ER&D	5 w	11/15/99	1/4/00	198	As Soon As f		CMM112[0.1]
200	Cylinder 4 ER&D	1 w	1/5/00	1/11/00	199	As Soon As f		CMM112[0.1]
201	Cylinder 3C ER&D	1 w	1/12/00	1/18/00	188,200	As Soon As f		CMM112[0.1]
202	Cylinder 2 ER&D	1 w	1/19/00	1/25/00	201	As Soon As f		CMM112[0.1]
203	Cylinder 1 ER&D	1 w	1/26/00	2/1/00	202	As Soon As f		CMM112[0.1]
204	Cylinder QC	13.4 w	10/5/99	1/21/00		As Soon As		
205	QC Cylinder 8	2 d	10/5/99	10/6/99	182,196	As Soon As f		CMM112
206	QC Cylinder 7	2 d	11/2/99	11/3/99	186,197	As Soon As f		CMM112
207	QC Cylinder 6	2 d	11/15/99	11/16/99	181,198	As Soon As f		CMM112
208	QC Cylinder 5	2 d	1/5/00	1/6/00	187,199	As Soon As f		CMM112
209	QC Cylinder 4	2 d	1/12/00	1/13/00	185,200	As Soon As f		CMM112
210	QC Cylinder 3C	2 d	1/19/00	1/20/00	188,201	As Soon As f		CMM112
211	QC Cylinder 2	3 d	11/11/99	11/15/99	184,202	As Soon As f		CMM112
212	QC Cylinder 1	3 d	1/19/00	1/21/00	189,203	As Soon As f		CMM112
213	Mate End Rings to Cylinders	44.4 w	5/20/99	4/14/00		As Soon As		
214	Cylinder 3B	1 w	5/20/99	5/27/99	180,195FS+1 w	As Soon As f		MTF112,PhysF112[0.25],CMM112[0.5],MEF112[0.2]
215	Cylinder 8	1 w	10/25/99	10/29/99	205	Start No Earl		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
216	Cylinder 7	1 w	11/18/99	11/24/99	206	Start No Earl		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
217	Cylinder 6	1 w	11/17/99	11/23/99	207	As Soon As f		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
218	Cylinder 5	1 w	1/7/00	1/13/00	208	As Soon As f		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
219	Cylinder 4	1 w	1/14/00	1/20/00	209	As Soon As f		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
220	Cylinder 3C	1 w	2/21/00	2/25/00	210	Start No Earl		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
221	Cylinder 2	1 w	2/28/00	3/3/00	211,202,220	As Soon As f		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
222	Cylinder 1	1 w	4/10/00	4/14/00	212,221	Start No Earl		PhysF112[0.25],MTF112,CMM112[0.5],MEF112[0.2]
223	Ribbon Production	166.2 w	1/2/97	5/10/00		As Soon As		
224	Perform Ribbon R&D	75 w	1/2/97	7/1/98		Start No Earl		MTF112[0.5],MEF112
225	Design Ribbon Tooling	12 w	9/16/97	12/10/97		As Soon As f		DesF112[2],MEF112[0.25]
226	Final Ribbon Design	0 w	11/23/98	11/23/98	121,225	As Soon As		
227	Procure Positioning Devices	0.42 w	9/2/97	9/4/97		Start No Earl	1.1.2.2.6(0.57)	k\$[0.23],k\$c[0.02]
228	Procure Ribbon Tooling	75.3 w	8/3/98	2/18/00		As Soon As		
229	Fabricate Aluminum Backbones	35 w	8/3/98	4/21/99	119	As Soon As f	1.1.2.2.5(.63)	MEF112[0.1],k\$[0.52],k\$c[0.05]
230	Align/Setup Thermwood	8 w	3/18/99	5/12/99		Start No Earl	1.1.2.2.5(.37)	k\$[0.3],k\$c[0.03]
231	3B Axial Setup and Alignment	1 w	5/13/99	5/19/99	229FS-12 w,230	As Soon As f		MTF112,MEF112[0.5],DesF112[0.5]
232	3B Stereo Setup and Alignment	1 w	5/20/99	5/27/99	231	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
233	8 Axial Setup and Alignment	1 w	7/12/99	7/16/99	232FS+6 w	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
234	8 Stereo Setup and Alignment	0.8 w	8/7/99	8/12/99	233FS+3 w	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
235	6 Axial Setup and Alignment	0.8 w	8/13/99	8/18/99	302	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
236	6 Stereo Setup and Alignment	1 w	10/18/99	10/22/99	261	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
237	7 Axial Setup and Alignment	3 d	9/27/99	9/29/99	257FS+3 d	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
238	7 Stereo Setup and Alignment	4 d	9/15/99	9/20/99	255FS+2 w	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
239	5 Axial Setup and Alignment	4 d	11/8/99	11/11/99	264	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
240	5 Stereo Setup and Alignment	4 d	11/8/99	11/11/99	259	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
241	4 Axial Setup and Alignment	4 d	12/7/99	12/10/99	266	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
242	4 Stereo Setup and Alignment	4 d	1/5/00	1/10/00	268	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
243	3 Axial Setup and Alignment	4 d	2/14/00	2/18/00	270	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
244	3 Stereo Setup and Alignment	4 d	2/10/00	2/15/00	272	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
245	2 Axial Setup and Alignment	4 d	10/6/99	10/11/99		Start No Earl		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
246	2 Stereo Setup and Alignment	9 d	10/12/99	10/22/99	245	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
247	1 Axial Setup and Alignment	4 d	1/7/00	1/12/00	278FS+4 w	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
248	1 Stereo Setup and Alignment	4 d	1/7/00	1/12/00	280	As Soon As f		MTF112[0.5],MEF112[0.5],CMM112,DesF112[0.5]
249	Ribbon Fabrication, Connectorization, and QC	47 w	5/28/99	5/10/00		As Soon As	1.1.2.2.2.1.1.2.2.4,1.1.2.2.6(0.4)	k\$[0.33],k\$c[0.03]
250	Cylinder 3B	4 w	5/28/99	6/24/99	123,140,231FS+1 w	As Soon As f		MTF112[5.5],MEF112[0.5],PhysF112[0.5]
251	Cylinder 8 A 1	10 d	9/21/99	10/4/99	127,233FS+1 w,250	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
252	Connectorize 8 A 1	8 d	9/30/99	10/11/99	143FS+2 d,251SS+2 d	As Soon As f		MTF112
253	Cylinder 8 A 2	8 d	10/20/99	10/29/99	305	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
254	Connectorize 8 A 2	8 d	10/22/99	11/2/99	143,253FF+2 d	As Soon As f		MTF112

DO Upgrade Schedule
Fiber Tracker

ID	Task Name	Duration	Start	Finish	Predecessors	Constraint	WBS	Resource Names
255	Cylinder 8 S	2.4 w	8/13/99	8/30/99	234	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
256	Connectorize 8 S	3 w	10/7/99	10/28/99	128,255FF+1 w	As Soon As f		MTF112
257	Cylinder 6 A	4.6 w	8/19/99	9/21/99	235	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
258	Connectorize 6 A	12 d	11/18/99	12/8/99	130,144,257SS+1 w	As Soon As f		MTF112
259	Cylinder 6 S	2 w	10/25/99	11/5/99	155SS+1 w,236	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
260	Connectorize 6 S	3 w	11/18/99	12/13/99	130,259SS+4 d	As Soon As f		MTF112
261	Cylinder 7 A	12 d	9/30/99	10/15/99	125,237	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
262	Connectorize 7 A	3 w	10/28/99	11/18/99	129,144,261SS+2 d	As Soon As f		MTF112
263	Cylinder 7 S 1	10 d	10/5/99	10/18/99	238,251	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
264	Cylinder 7 S 2	1 w	11/1/99	11/5/99	253,263	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
265	Connectorize 7 S	20 d	11/4/99	12/6/99	129FS+1 w,263SS+2 d	As Soon As f		MTF112
266	Cylinder 5 A	3 w	11/12/99	12/6/99	155SS+1 w,239	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
267	Connectorize 5 A	2 w	11/23/99	12/9/99	131SS+3 d,266SS+2 d	As Soon As f		MTF112
268	Cylinder 5 S	2 w	1/7/00	1/20/00	157SS+1 w,240,280	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
269	Connectorize 5 S	3 w	1/11/00	1/31/00	131,268SS+2 d	As Soon As f		MTF112
270	Cylinder 4 A	2.5 w	1/27/00	2/14/00	159SS+1 w,241,282	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
271	Connectorize 4 A	1.9 w	2/3/00	2/16/00	132SS+2 d,146SS+2 w,270FF+	As Soon As f		MTF112
272	Cylinder 4 S	2 w	1/27/00	2/9/00	159SS+1 w,242	Start No Earl		MTF112[3],MEF112[0.25],PhysF112[0.25]
273	Connectorize 4 S	2 w	2/1/00	2/14/00	132,146,272FF+3 d	As Soon As f		MTF112
274	Cylinder 3C A	1.5 w	2/22/00	3/2/00	161SS+1 w,243	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
275	Connectorize 3C A	1.5 w	2/24/00	3/6/00	133SS+2 d,146,274SS+2 d	As Soon As f		MTF112
276	Cylinder 3C S	1.5 w	2/22/00	3/2/00	161SS+1 w,244,284	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
277	Connectorize 3C S	1.5 w	2/24/00	3/6/00	133,146,276SS+2 d	As Soon As f		MTF112
278	Cylinder 2 A	2 w	3/6/00	3/17/00	245,264	Start No Earl		MTF112[3],MEF112[0.25],PhysF112[0.25]
279	Connectorize 2 A	2 w	3/8/00	3/21/00	134,278SS+2 d	Start No Earl		MTF112
280	Cylinder 2 S	2 w	3/20/00	3/31/00	246,278	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
281	Connectorize 2 S	2 w	3/23/00	4/5/00	134,146,280FF+3 d,279	As Soon As f		MTF112
282	Cylinder 1 A	4 d	4/3/00	4/6/00	247,280	Start No Earl		MTF112[3],MEF112[0.25],PhysF112[0.25]
283	Connectorize 1 A	4 d	4/5/00	4/10/00	135,146,282SS+2 d	As Soon As f		MTF112
284	Cylinder 1 S	3 w	4/7/00	4/27/00	248,282	As Soon As f		MTF112[3],MEF112[0.25],PhysF112[0.25]
285	Connectorize 1 S	4.4 w	4/11/00	5/10/00	135,146,284SS+2 d	As Soon As f		MTF112
286	<i>M3-Fiber Tracker Ribbon Fabrication Begun</i>	<i>0 w</i>	<i>5/28/99</i>	<i>5/28/99</i>	<i>249SS</i>	<i>As Soon As</i>		
287	<i>M3-Fiber Tracker Ribbon Fabrication 50% Complete</i>	<i>0 w</i>	<i>11/5/99</i>	<i>11/5/99</i>	<i>249SS+64 %</i>	<i>As Soon As</i>		
288	<i>M3-Fiber Tracker Ribbon Fabrication Complete</i>	<i>0 w</i>	<i>5/10/00</i>	<i>5/10/00</i>	<i>249</i>	<i>As Soon As</i>		
289	Ribbon Mounting	123.8 w	11/3/97	5/13/00		As Soon As		
290	Perform Mounting R&D	8 w	11/3/97	1/12/98		Start No Earl		MEF112,PhysF112
291	Finalize Tooling Design	20 w	11/3/97	4/6/98	290SS	As Soon As f		MEF112[0.5],DesF112
292	<i>Finalize Mounting Procedures</i>	<i>0 w</i>	<i>1/6/99</i>	<i>1/6/99</i>	<i>166,291</i>	<i>As Soon As</i>		
293	Setup Mounting Facility-CMM	4 w	6/1/98	6/26/98	115	Start No Earl		MEF112[0.2],MTF112[0.25],DesF112[0.4],PhysF112[0.25]
294	Procure and Fabricate Mounting Machine Parts	19 w	4/7/98	8/19/98	291	As Soon As f	1.1.2.2.7.1	MEF112[0.5],DesF112.k[0.9],kSc[0.18]
295	Perform Mounting Machine Final Assembly	3 w	8/20/98	9/10/98	294	Start No Earl		ETF112,MTF112[0.5],MEF112[0.5]
296	Perform Mounting Machine Final Setup and Test	5 w	9/11/98	10/15/98	293,295	As Soon As f		ETF112,MTF112,MEF112[0.5]
297	Debug Ribbon Mounting Procedures	20 w	1/7/99	5/27/99		As Soon As		
298	Debug Ribbon Mounting Procedures - 6" Cylinder	8 w	1/7/99	3/3/99	292,296	As Soon As f		MTF112,MEF112[0.5],PhysF112
299	Mounting Machine Final Setup	1 w	3/4/99	3/10/99	298	As Soon As f		
300	Debug Ribbon Mounting Procedures - 3A	6 w	4/15/99	5/27/99	299FS+5 w	As Soon As f		MTF112,MEF112[0.5],PhysF112
301	Mount Ribbons	39.4 w	7/26/99	5/13/00		As Soon As		
302	Cylinder 3B A	2.8 w	7/26/99	8/12/99	214,250SS+50 %,300FS+8 w	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
303	Cylinder 3B Stereo alignment	2 d	8/13/99	8/16/99	302	As Soon As f		CMM112,PhysF112
304	Cylinder 3B S	2.6 w	8/17/99	9/2/99	303	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
305	Cylinder 8 Glue Tests	8 d	10/8/99	10/19/99	304FS+24 d	As Soon As f		MEF112,PhysF112[0.5]
306	Mold Setup 8A	3 d	9/21/99	9/23/99	127	As Soon As f		CMM112,MTF112[0.5]
307	MM Align 8A	9 d	11/1/99	11/11/99	215,253,305,306	As Soon As f		CMM112,PhysF112
308	Mount 8 A	12 d	11/12/99	12/1/99	253,307	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
309	Mold Setup 8 S	3 d	9/21/99	9/23/99	127	As Soon As f		CMM112,MTF112[0.5]
310	MM Align 8 S	1 d	12/2/99	12/2/99	308,309	As Soon As f		CMM112,PhysF112
311	Mount 8 S	7 d	12/3/99	12/13/99	255,308,310	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
312	Mold Setup 7A	3 d	12/2/99	12/6/99	261,308	As Soon As f		CMM112,MTF112[0.5]
313	MM Align 7 A	2 d	12/14/99	12/15/99	216,311,312	As Soon As f		CMM112,PhysF112
314	Mount 7 A	7 d	12/16/99	1/7/00	313	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
315	Mold Setup 7 S	3 d	12/14/99	12/16/99	264,311	As Soon As f		CMM112,MTF112[0.5]
316	MM Align 7 S	1 d	1/10/00	1/10/00	314,315	As Soon As f		CMM112,PhysF112
317	Mount 7 S	2 w	1/11/00	1/24/00	316	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
318	Mold Setup 6 A	3 d	1/10/00	1/12/00	257,314	As Soon As f		CMM112,MTF112[0.5]
319	MM Align 6 A	2 d	1/25/00	1/26/00	217,317,318	As Soon As f		CMM112,PhysF112
320	Mount 6 A	6 d	1/27/00	2/3/00	319	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
321	Mold Setup 6 S	3 d	1/25/00	1/27/00	259,317	As Soon As f		CMM112,MTF112[0.5]
322	MM Align 6 S	1 d	2/4/00	2/4/00	320,321	As Soon As f		CMM112,PhysF112
323	Mount 6 S	6 d	2/7/00	2/14/00	322	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
324	Mold Setup 5 A	3 d	2/4/00	2/8/00	266,320	As Soon As f		CMM112,MTF112[0.5]
325	MM Align 5 A	2 d	2/15/00	2/16/00	218,323,324	As Soon As f		CMM112,PhysF112
326	Mount 5 A	5 d	2/17/00	2/23/00	325	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112

DO Upgrade Schedule
Fiber Tracker

ID	Task Name	Duration	Start	Finish	Predecessors	Constraint	WBS	Resource Names
327	Mold Setup 5 S	3 d	2/15/00	2/17/00	268,323	As Soon As f		CMM112,MTF112[0.5]
328	MM Align 5 S	1 d	2/24/00	2/24/00	326,327	As Soon As f		CMM112,PhysF112
329	Mount 5 S	5 d	2/25/00	3/2/00	328	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
330	Mold Setup 4 A	3 d	2/24/00	2/28/00	270,326	As Soon As f		CMM112,MTF112[0.5]
331	MM Align 4 A	2 d	3/3/00	3/6/00	219,329,330	As Soon As f		CMM112,PhysF112
332	Mount 4 A	5 d	3/7/00	3/13/00	331	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
333	Mold Setup 4 S	3 d	3/3/00	3/7/00	329	As Soon As f		CMM112,MTF112[0.5]
334	MM Align 4 S	1 d	3/14/00	3/14/00	332,333	As Soon As f		CMM112,PhysF112
335	Mount 4 S	4 d	3/15/00	3/20/00	272,334	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
336	Mold Setup 3C A	3 d	3/14/00	3/16/00	274,332	As Soon As f		CMM112,MTF112[0.5]
337	MM Align 3C A	2 d	3/21/00	3/22/00	220,335,336	As Soon As f		CMM112,PhysF112
338	Mount 3C A	7 d	3/23/00	3/31/00	337	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
339	Mold Setup 3C S	3 d	3/21/00	3/23/00	276,335	As Soon As f		CMM112,MTF112[0.5]
340	MM Align 3C S	1 d	4/3/00	4/3/00	338,339	As Soon As f		CMM112,PhysF112
341	Mount 3C S	5 d	4/4/00	4/10/00	340	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
342	Mold Setup 2 A	3 d	3/20/00	3/22/00	278	As Soon As f		CMM112,MTF112[0.5]
343	MM Align 2 A	1 w	4/11/00	4/17/00	221,341,342	As Soon As f		CMM112,PhysF112
344	Mount 2 A	4 d	4/18/00	4/21/00	343	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
345	Mold Setup 2 S	3 d	4/24/00	4/26/00	280,344	As Soon As f		CMM112,MTF112[0.5]
346	MM Align 2 S	2 d	4/27/00	4/28/00	344,345	As Soon As f		CMM112,PhysF112
347	Mount 2 S	3 d	5/1/00	5/3/00	346	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
348	Mold Setup 1 A	3 d	4/7/00	4/11/00	282	As Soon As f		CMM112,MTF112[0.5]
349	MM Align 1 A	2 d	5/4/00	5/5/00	222,347,348	As Soon As f		CMM112,PhysF112
350	Mount 1 A	2 d	5/8/00	5/9/00	349	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
351	Mold Setup 1 S	3 d	4/28/00	5/2/00	284	As Soon As f		CMM112,MTF112[0.5]
352	MM Align 1 S	1 d	5/10/00	5/10/00	350,351	As Soon As f		CMM112,PhysF112
353	Mount 1 S	2 d	5/11/00	5/13/00	284,352	As Soon As f		MTF112[1.5],MEF112[0.5],PhysF112
354	M2-First Cylinder Complete	0 w	9/2/99	9/2/99	304	As Soon As		
355	Cylinders 8&7 Complete	0 w	1/24/00	1/24/00	317	As Soon As		
356	M3-Fiber Tracker Cylinders 8, 7, 6, and 5 Complete	0 w	3/2/00	3/2/00	329	As Soon As		
357	M3-Fiber Tracker Ribbon Mounting Complete	0 w	5/13/00	5/13/00	301	As Soon As		
358	Waveguide Production	216.8 w	4/1/96	8/16/00		As Soon As		
359	Design and Setup Factory	30 w	4/1/96	10/30/96		Start No Ear	1.1.2.3.5.1.1.2.3.6	MEU112[0.5],k\$[0.5]
360	Notre Dame MOU FY98	0.2 w	8/3/98	8/3/98		Start No Ear	1.1.2.3.4.(27),1.1.2.3.7(0.43),1.1	k\$[1.35],k\$c[0.19]
361	Perform Design R&D	16 w	9/15/98	1/20/99		As Soon As f		MTF112[0.7],PhysU112,MTU112
362	Perform Pre-production Checkout	28 w	1/21/99	8/6/99	359,361	As Soon As f		MEU112[0.5],MTU112,PhysU112
363	Waveguide Facility Ready	0 w	8/6/99	8/6/99	362	As Soon As		
364	Indiana Univ MOU FY99	0.2 w	3/3/99	3/3/99		Start No Ear	1.1.2.3.7.(36)	k\$[0.65],k\$c[0.06]
365	Produce Waveguides	50.6 w	8/7/99	8/16/00		As Soon As		
366	Spool Fiber	44 w	8/7/99	6/29/00	363	As Soon As f	1.1.2.3.4.(73)	PhysU112[0.05],MTU112[1.5],MEU112[0.1],k\$[0.48],k\$c[0.1]
367	Optical tests of fiber	22 w	2/1/00	7/5/00		Start No Ear		
368	Sheath fiber	25 w	2/1/00	7/26/00	367SS	As Soon As f		
369	Connectorize curved end	27 w	2/8/00	8/16/00	368SS+1 w	As Soon As f	1.1.2.3.7.(21)	MTU112,PhysU112[0.1],k\$[0.38],k\$c[0.04]
370	Connectorize/map 128 X 2 End	27 w	2/8/00	8/16/00	369SS	As Soon As f		MTU112,MEU112[0.1],PhysU112[0.2]
371	Perform Final Test	27 w	2/8/00	8/16/00	370SS	As Soon As f		MTU112[0.2],PhysU112[0.2]
372	M3-Fiber Tracker Waveguide Production Begun	0 w	8/7/99	8/7/99	365SS	As Soon As		
373	Waveguide Production 50% Complete	0 w	7/12/00	7/12/00	365SS+90 %	As Soon As		
374	M3-Waveguide Production Complete	0 w	8/16/00	8/16/00	365	As Soon As		
375	Waveguide Routing	50 w	8/3/98	8/6/99		Start No Ear		MEF112[0.1],DesF112,PhysF112[0.75]
376	Calibration System	84 w	11/24/98	8/11/00		As Soon As		
377	Perform R&D/Design	10 w	11/24/98	2/17/99	226	As Soon As f		PhysU112[0.5],MTU112
378	Prototype and Test System	10 w	2/18/99	4/28/99	377	As Soon As f	1.1.2.6(0.39)	PhysU112[0.5],MTU112,k\$[0.65],k\$c[0.12]
379	Integrate design with cylinder nesting	13 w	4/29/99	7/30/99	378,391	As Soon As f		
380	Final Mechanical Design Complete	0 w	7/30/99	7/30/99	379	As Soon As		
381	Procure LED Panels	8 w	8/2/99	9/27/99	380	As Soon As f		
382	Design and Fabricate Calibration Electronics	51 w	8/2/99	8/11/00		As Soon As	1.1.2.6(0.38)	k\$,k\$c
383	Design LED Card	26 w	8/2/99	2/16/00	380	As Soon As f		EEU112[0.1]
384	Fabricate LED Cards	17 w	2/17/00	6/15/00	383	As Soon As f		MTU112[0.25]
385	Design driver card	19 w	2/17/00	6/29/00	383	As Soon As f		EEU112[0.5]
386	Fabricate driver cards	6 w	6/30/00	8/11/00	385	As Soon As f		MTU112[0.5]
387	Install calibration system electronics	4 w	8/14/00	9/11/00	384,386	As Soon As f		PhysU112[0.5]
388	Assembly Engineering	67.2 w	10/15/98	3/6/00		As Soon As		
389	Design Assembly/Support	58.2 w	10/15/98	1/3/00		As Soon As		
390	Develop Conceptual Design	18 w	10/15/98	3/5/99		Start No Ear		MEF112[0.5],DesF112[0.2]
391	M2 - Assembly Design Complete	0 w	3/5/99	3/5/99	390	As Soon As		
392	Procure Support Tooling	14 w	3/8/99	6/14/99	391	As Soon As f	1.1.2.7.2.3	MEF112[0.5],k\$[0.13],k\$c[0.05]
393	Design Transportation/insertion cart and produce full drawing	17 w	3/8/99	7/6/99	392	Start No Ear		MEF112[0.25],DesF112[0.5]
394	Design nesting cart and produce full drawings	25.2 w	4/12/99	10/7/99	391,393SS+5 w	Start No Ear		MEF112[0.25],DesF112[0.5]
395	Fabricate transportation cart	5.6 w	7/7/99	8/14/99	393	As Soon As f		MEF112[0.1]
396	Fabricate nesting cart	7 w	10/8/99	11/29/99	394	As Soon As f		MEF112[0.1]
397	Final Assembly	3 w	11/30/99	1/3/00	396	As Soon As f		MEF112[0.1],MTF112[0.25]
398	Nesting Tests	7.2 w	11/29/99	1/31/00		As Soon As		

DO Upgrade Schedule
Fiber Tracker

ID	Task Name	Duration	Start	Finish	Predecessors	Constraint	WBS	Resource Names
399	Produce Test Parts	2 w	11/29/99	12/10/99	216,391FS+5 w	As Soon As f		MTF112[0.25]
400	Assemble and Test	4 w	1/4/00	1/31/00	397,399FS+1 w	As Soon As f		MTF112,MEF112[0.5]
401	<i>Nesting Tests Complete</i>	<i>0 w</i>	<i>1/31/00</i>	<i>1/31/00</i>	<i>400</i>	<i>As Soon As</i>		
402	Fabricate Nesting Rings	37.6 w	5/28/99	3/6/00		As Soon As	1.1.2.7.2.1,1.1.2.7.2.2	k\$[0.47],k\$c[0.19]
403	Prepare drawings for nesting rings and washers	6 w	5/28/99	7/9/99	380	As Soon As f		DesF112
404	Fabricate OD rings	7 w	11/12/99	1/17/00	403	Start No Earl		MTF112[0.5],MEF112[0.1]
405	Fabricate washers	7 w	1/18/00	3/6/00	404	Start No Earl		
406	Tracker Assembly	20.8 w	1/4/00	5/26/00		As Soon As		
407	Install OD rings on cylinders	20.8 w	1/4/00	5/26/00		As Soon As	1.1.2.7.4,1.1.2.8	k\$[0.39],k\$c[0.08]
408	Install OD rings and LED panels on Cylinder 8	2 w	1/4/00	1/17/00	311FS+1 w,402SS+30 %,381SS	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
409	Install Cylinder 8 in Nesting Fixture	2 w	2/1/00	2/14/00	400,408	As Soon As f		MTF112,MEF112[0.5],PhysF112[0.25]
410	Install OD rings and LED panels on Cylinder 7	1 w	2/1/00	2/7/00	317FS+1 w,402SS+40 %,381SS	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
411	Install Cylinder 7 in 8	2 w	2/15/00	2/28/00	409,410	As Soon As f		MTF112,MEF112[0.5],PhysF112[0.25]
412	Install OD rings and LED panels on Cylinder 6	1 w	2/15/00	2/21/00	323,402SS+50 %,381SS+10 w	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
413	Install Cylinder 6 in 7	1 w	2/29/00	3/6/00	411,412	As Soon As f		MTF112,MEF112[0.5],PhysF112[0.25]
414	Install OD rings and LED panels on Cylinder 5	1 w	3/3/00	3/9/00	329,402SS+60 %,381SS+12 w	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
415	Install Cylinder 5 in 6	1 w	3/10/00	3/16/00	413,414	As Soon As f		MTF112,MEF112[0.5],PhysF112[0.25]
416	Install OD rings and LED panels on Cylinder 4	1 w	3/21/00	3/27/00	335,402SS+70 %,381SS+14 w	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
417	Install Cylinder 4 in 5	1 d	4/7/00	4/7/00	415,416	Start No Earl		MTF112,MEF112[0.5],PhysF112[0.25]
418	Install OD rings and LED panels on Cylinder 3C	4 d	4/11/00	4/14/00	341,402SS+10 %,381SS+4 w	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
419	Install Cylinder 3 in 4	4 d	4/24/00	4/27/00	417,418	Start No Earl		MTF112,MEF112[0.5],PhysF112[0.25]
420	Install OD rings and LED panels on Cylinder 2	4 d	5/4/00	5/9/00	347,402SS+80 %,381SS+16 w	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
421	Install Cylinder 2 in 3	4 d	5/10/00	5/15/00	419,420	As Soon As f		MTF112,MEF112[0.5],PhysF112[0.25]
422	Install OD rings and LED panels on Cylinder 1	4 d	5/15/00	5/18/00	353,402,381SS+18 w	As Soon As f		MTF112,MEF112[0.1],PhysF112[0.5]
423	Install Cylinder 1 in 2	6 d	5/19/00	5/26/00	421,422	As Soon As f		MTF112,MEF112[0.5],PhysF112[0.25]
424	<i>M2-Fiber Tracker Assembly Begun</i>	<i>0 w</i>	<i>2/1/00</i>	<i>2/1/00</i>	<i>409SS</i>	<i>As Soon As</i>		
425	<i>Cylinder 7 Installed in Cylinder 8</i>	<i>0 w</i>	<i>2/28/00</i>	<i>2/28/00</i>	<i>411</i>	<i>As Soon As</i>		
426	<i>M2-Fiber Tracker Assembly Complete</i>	<i>0 w</i>	<i>5/26/00</i>	<i>5/26/00</i>	<i>423</i>	<i>As Soon As</i>		
427	Tracker Supports	12 w	2/15/00	5/8/00		As Soon As		
428	Perform Detailed Design	6 w	2/15/00	3/27/00	409	As Soon As f		DesF112,MEF112[0.3]
429	<i>Tracker Supports Design Complete</i>	<i>0 w</i>	<i>3/27/00</i>	<i>3/27/00</i>	<i>428</i>	<i>As Soon As</i>		
430	Fabricate Tracker Supports	6 w	3/28/00	5/8/00	428	As Soon As f	1.1.2.7.3	k\$[0.05],k\$c[0.01]