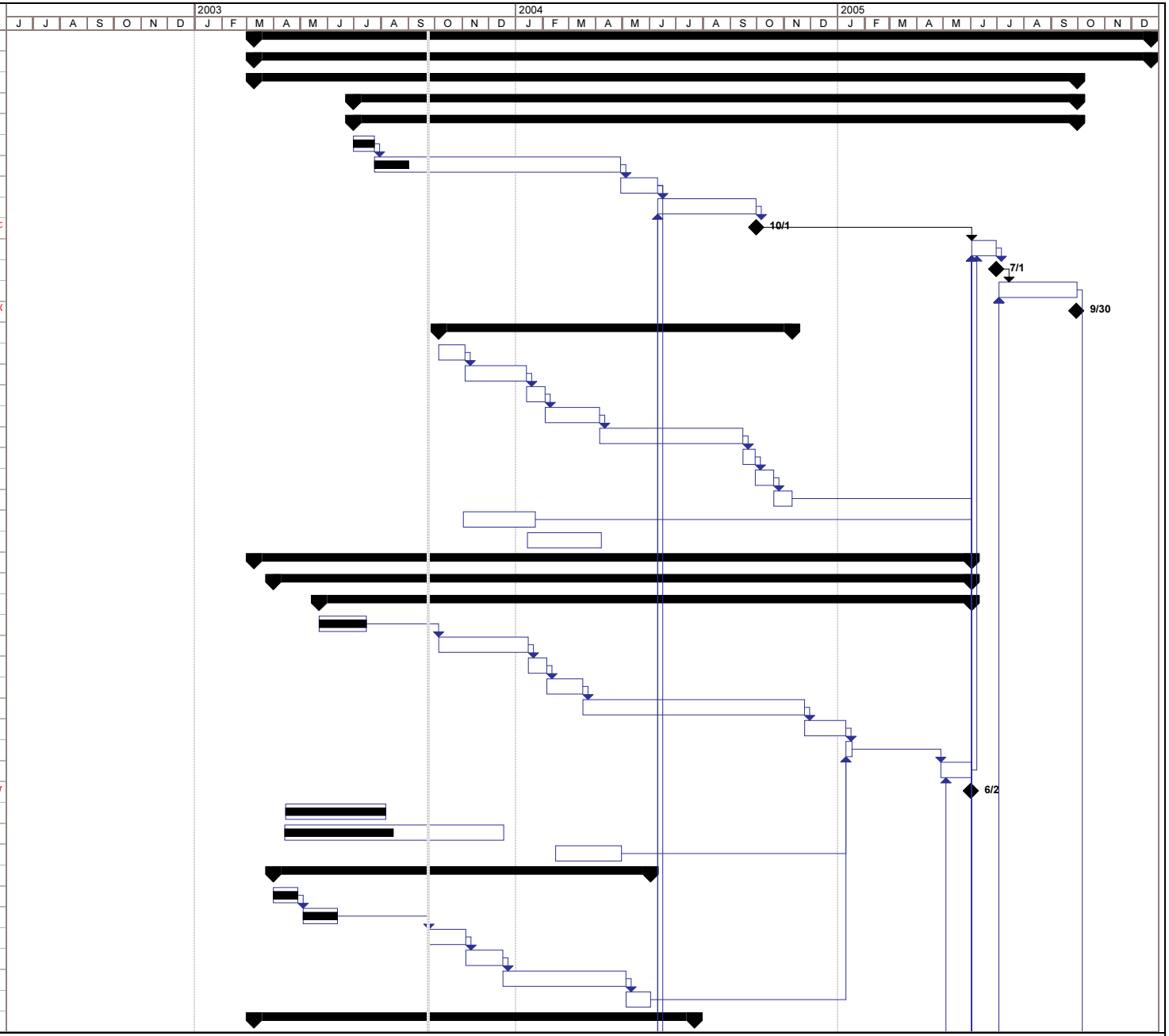
ID	WBS	Task Name
1	1	**SPARC Project**
2	1.1	**LINAC SYSTEM**
3	1.1.1	**GUN LASER SYSTEM**
4	1.1.1.1	**Electron Gun System**
5	1.1.1.1.1	**RF GUN**
6	1.1.1.1.1.2	Order Approval and Signature
7	1.1.1.1.1.3	Construction
8	1.1.1.1.1.4	Delivery
9	1.1.1.1.1.5	Installation and alignment
10		*Milestone: RF Gun Installation Completed*
11	1.1.1.1.1.6	Power Tests
12		*Milestone: RF Gun Test Completed*
13	1.1.1.1.1.7	Gun Emittance Measurement
14		*Milestone: Gun Emittance Measurement C*
15	1.1.1.1.2	**Focusing Coil Power Supply**
16	1.1.1.1.2.1	Tender Request Authorization
17	1.1.1.1.2.1	Tender Execution
18	1.1.1.1.2.7	Tender Approval
19	1.1.1.1.2.2	Order Approval and Signature
20	1.1.1.1.2.3	Construction
21	1.1.1.1.2.4	Delivery
22	1.1.1.1.2.5	Test before installation
23	1.1.1.1.2.6	Installation
24	1.1.1.1.3	**Vacuum System**
25	1.1.1.1.4	**Control System**
26	1.1.1.3	**LASER**
27	1.1.1.3.1	**Laser System**
28	1.1.1.3.1.1	**Laser System Set Up**
29	1.1.1.3.1.1.1	Tender Request Authorization
30	1.1.1.3.1.1.2	Tender Execution
31	1.1.1.3.1.1.3	Tender Approval
32	1.1.1.3.1.1.4	Contract Signature
33	1.1.1.3.1.1.5	Construction Laser System
34	1.1.1.3.1.1.6	Delivery
35	1.1.1.3.1.1.7	Installation
36	1.1.1.3.1.1.8	Commissioning
37		*Milestone: Drive Laser System Comm*
38	1.1.1.3.1.2	DAZZLER
39	1.1.1.3.1.3	LCM
40	1.1.1.3.1.5	Optical Table + Lenses
41	1.1.1.3.1.4	**CLEAN ROOM**
42	1.1.1.3.1.4.1	Specification
43	1.1.1.3.1.4.6	Tender Authorization
44	1.1.1.3.1.4.2	Tender Execution
45	1.1.1.3.1.4.3	Order Approval
46	1.1.1.3.1.4.4	Construction and Delivery
47	1.1.1.3.1.4.5	Installation
48	1.1.1.3.2	**LASER-GUN TL System**



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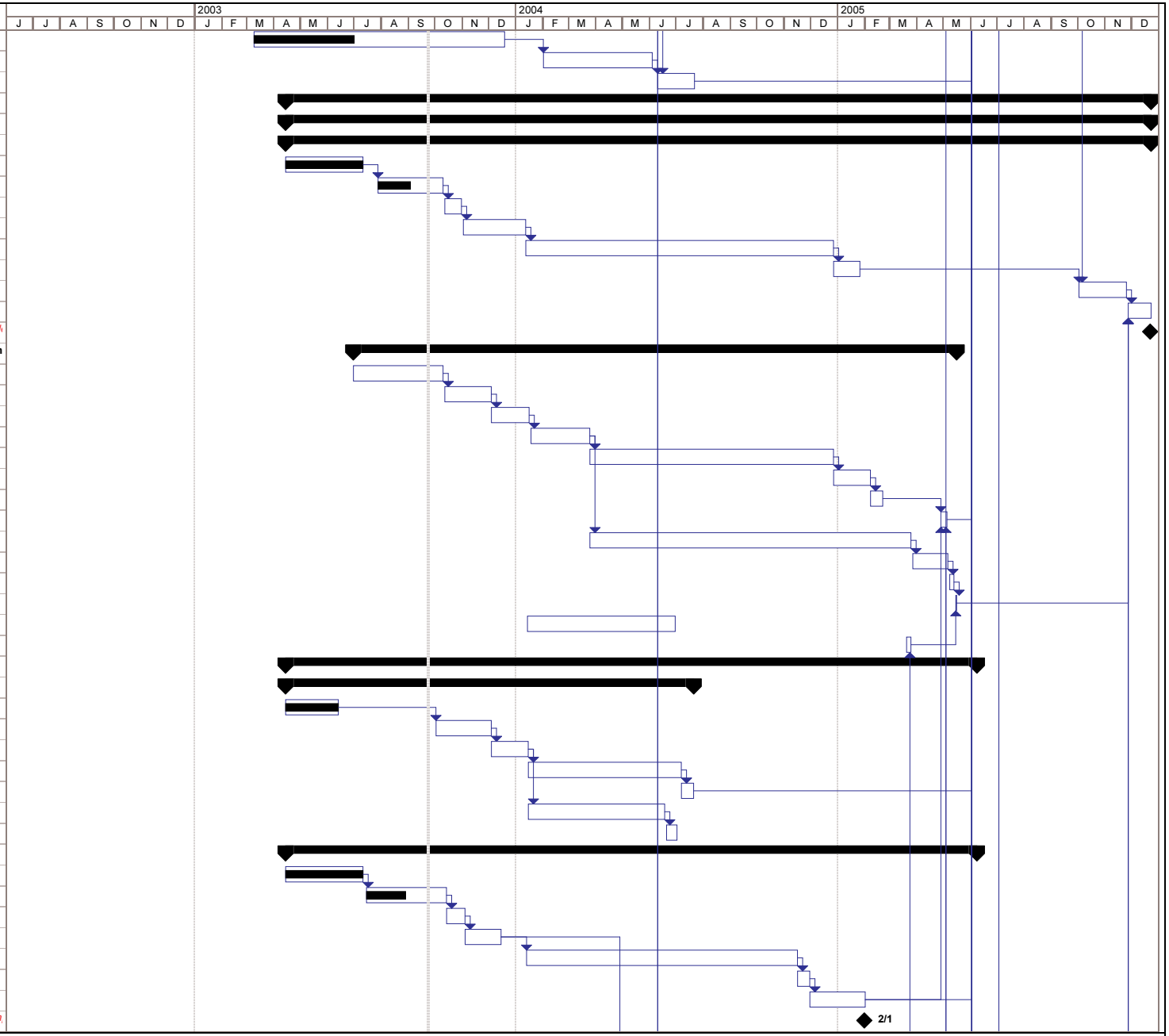
ID	WBS	Task Name
49	1.1.1.3.2.1	Study and Design
50	1.1.1.3.2.2	Component Procurement
51	1.1.1.3.2.3	Installation
52	**1.1.2**	**LINAC ASSEMBLY**
53	**1.1.2.1**	**S-BAND RF SYSTEM**
54	**1.1.2.1.1**	**Accelerating System**
55	1.1.2.1.1.1	Tender Request Authorization
56	1.1.2.1.1.2	Tender Execution
57	1.1.2.1.1.3	Tender Approval
58	1.1.2.1.1.4	Contract Signature
59	1.1.2.1.1.5	Construction
60	1.1.2.1.1.6	Delivery
61	1.1.2.1.1.7	Installation and alignment
62	1.1.2.1.1.8	Power Tests
63		*Milestone: RF System Power Test Compl*
64	**1.1.2.1.2**	**RF Power Distribution (Phase shifter+Atten**
65	1.1.2.1.2.25	Tender Request Authorization
66	1.1.2.1.2.26	Tender Execution
67	1.1.2.1.2.27	Tender Approval
68	1.1.2.1.2.28	Contract Signature
69	1.1.2.1.2.29	Construction 1st Phase
70	1.1.2.1.2.30	Delivery
71	1.1.2.1.2.31	Installation
72	1.1.2.1.2.32	Power Tests
73	1.1.2.1.2.33	Construction 2nd Phase
74	1.1.2.1.2.34	Delivery
75	1.1.2.1.2.35	Installation
76	1.1.2.1.2.36	Power Tests
77	**1.1.2.1.3**	**PLC System**
78	**1.1.2.1.4**	**Electrical Services**
79	**1.1.2.2**	**POWER PLANTS**
80	**1.1.2.2.1**	**250 W RF Driver**
81	1.1.2.2.1.1	Tender Request
82	1.1.2.2.1.2	Tender Execution
83	1.1.2.2.1.3	Order Approval
84	1.1.2.2.1.4	Construction 1 Unit
85	1.1.2.2.1.5	Delivery
86	1.1.2.2.1.6	Construction 2nd Unit
87	1.1.2.2.1.7	Delivery
88	**1.1.2.2.3**	**Modulator System**
89	1.1.2.2.3.1	Tender Request Authorization
90	1.1.2.2.3.2	Tender Execution
91	1.1.2.2.3.3	Tender Approval
92	1.1.2.2.3.4	Contract Signature
93	1.1.2.2.3.5	Construction 1st Modulator
94	1.1.2.2.3.6	Delivery 1st Mod.
95	1.1.2.2.3.7	Installation 1st Modulator
96		*Milestone: 1st Modulator Installation Com*



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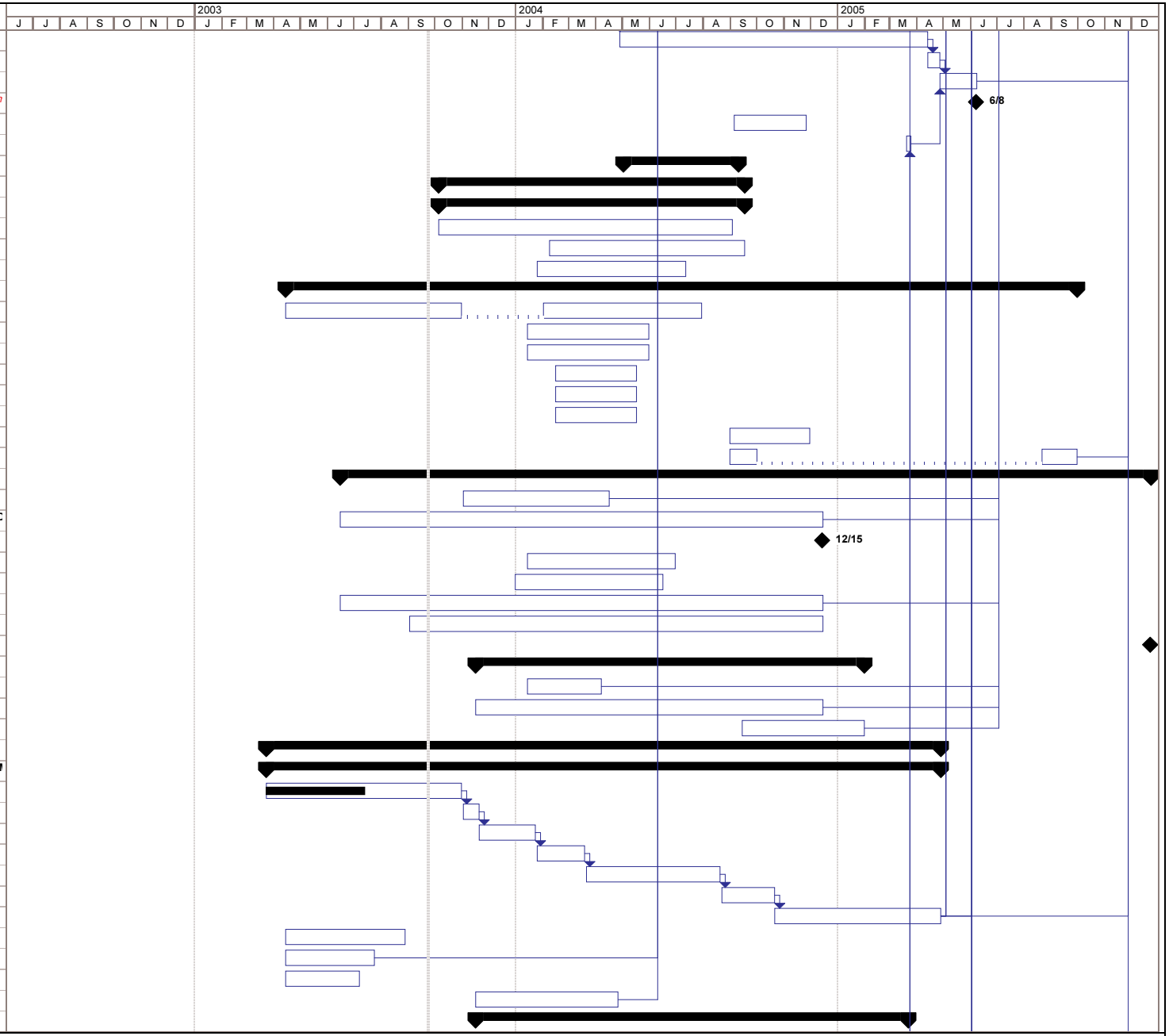
ID	WBS	Task Name
97	1.1.2.2.3.8	Construction 2nd Modulator
98	1.1.2.2.3.9	Delivery 2nd Mod.
99	1.1.2.2.3.10	Installation 2nd Modulator
100		*Milestone: 2nd Modulator Installation Con*
101	**1.1.2.2.4**	**Power Plants PLC System**
102	**1.1.2.2.5**	**Electrical Services**
103	**1.1.2.3**	**RF MASTER AND CONTROLS**
111	**1.1.3**	**MAGNETIC SYSTEM**
112	**1.1.3.1**	**SOLENOIDAL MAGNETS**
113	1.1.3.1.1	Solenoids
114	1.1.3.1.2	Solenoid Support
115	1.1.3.1.4	Solenoid Power Supply System
116	**1.1.4**	**VACUUM SYSTEM**
117	**1.1.4.1**	**Vacuum Beam Pipes And Pumps**
118	**1.1.4.2**	**Vacuum Diagnostics**
119	**1.1.4.4**	**Vacuum Valves**
120	**1.1.4.5**	**Beam Pipe Supports**
121	**1.1.4.6**	**Pump Supports**
122	**1.1.4.7**	**Valve Supports**
123	**1.1.4.8**	**Vacuum Portable Equipments**
124	**1.1.4.9**	**Installation**
125	**1.1.5**	**BEAM DIAGNOSTIC**
126	**1.1.5.1**	**FLUORESCENT SCREENS**
127	**1.1.5.2**	**ENERGY DEFINING DEVICES (Emittance Mes. D**
128		*Milestone: Emittance Meas. Dev. Installed*
129	**1.1.5.3**	**FARADAY CUP**
130	**1.1.5.4**	**WALL CURRENT MONITOR**
131	**1.1.5.5**	**BPM-STRIP LINE**
132	**1.1.5.6**	**RF DEFLECTOR**
133		*Milestone: RF Deflector Power Tests*
134	**1.1.6**	**COMPUTER CONTROL**
135	**1.1.6.1**	**HARDWARE**
136	**1.1.6.2**	**SOFTWARE**
137	**1.1.6.3**	**CABLES &TRAYS**
138	**1.2**	**COMMON SERVICES**
139	**1.2.1**	**PROCESS WATER AND AIR CONDITIONING SYSTEI**
140	1.2.1.12	Preliminary Design
141	1.2.1.13	Outsource Design Assignment
142	1.2.1.14	Detailed Design
143	1.2.1.15	Tender Authorization
144	1.2.1.16	Tender Execution
145	1.2.1.17	Contract Signature
146	1.2.1.18	Work Execution
147	**1.2.2**	**COMPRESSED AIR SYSTEM**
148	**1.2.3**	**ALIGNMENT**
149	**1.2.4**	**MAGNET THERMAL CONTROL**
150	**1.2.5**	**INSTALLATION**
151	**1.3**	**GENERAL FACILITIES**



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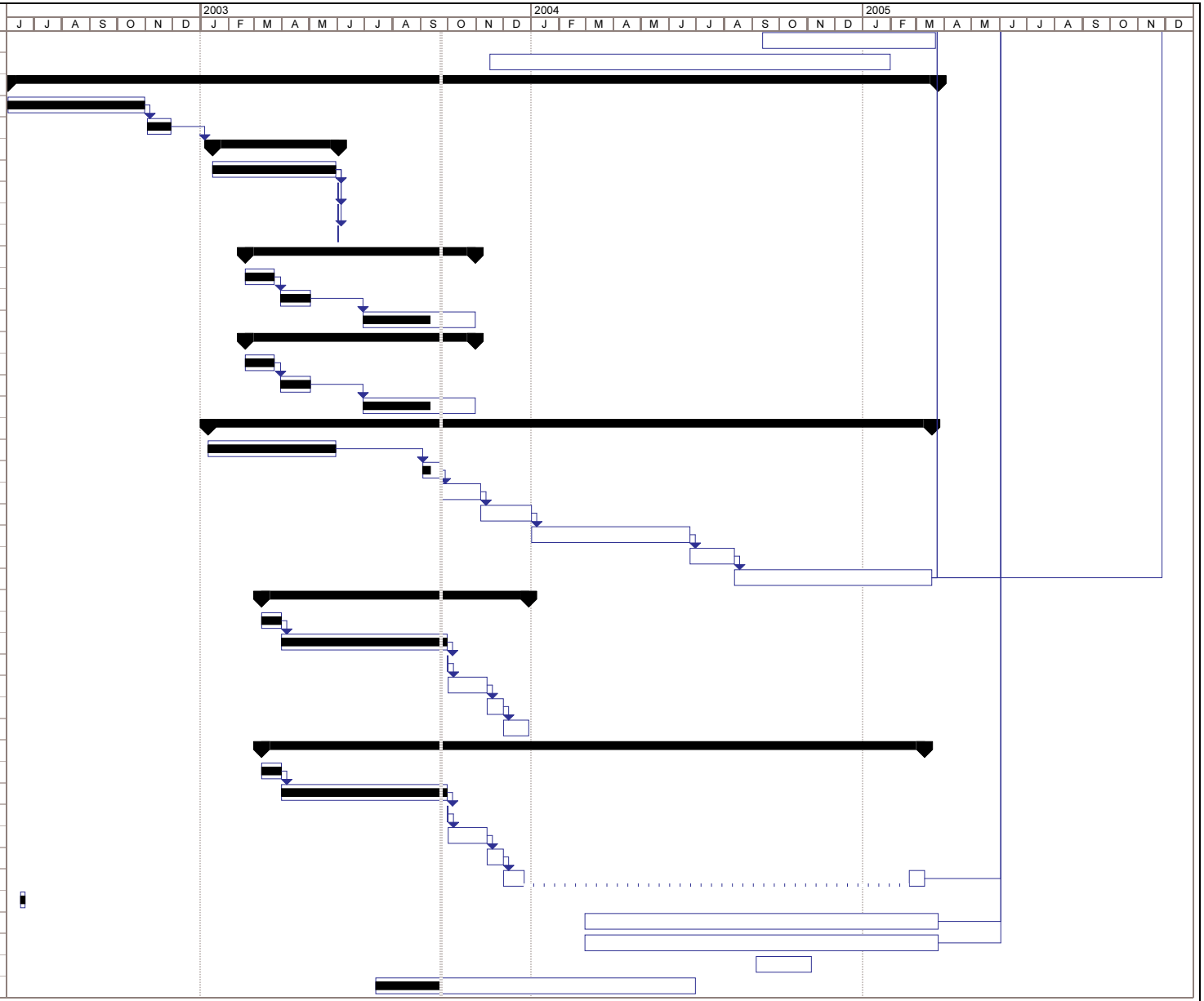
ID	WBS	Task Name
152	1.3.1	**MAGNETIC MEASUREMENTS**
153	1.3.4	**CONTROL SYSTEM**
154	3	**BUILDING MAKE-UP**
155	3.1	**BUILDING CLEARING**
156	3.2	**BUILDING CLEANING**
157	3.3	**BUILDING MODIFICATION**
158	3.3.1	**MAIN HALL MODIFICATION**
159	3.3.2	**UPPER APPARATUS AREA MODIFICATION**
160	3.3.3	**CONTROL ROOM MODIFICATION**
161	3.3.4	**EXTERNAL AREA MAKE-UP**
162	3.4	**BUILDING LIGHTING**
163	3.4.1	Tender Request
164	3.4.2	Order Approval
165	3.4.3	Work execution
166	3.5	**BUILDING EMERGENCY LIGHTING**
167	3.5.1	Tender Request
168	3.5.2	Order Approval
169	3.5.3	Work execution
170	3.6	**BUILDING POWER DISTRIBUTION**
171	3.6.1	Preliminary Design
172	3.6.2	Outsource Design Assignement
173	3.6.3	Detailed Design
174	3.6.4	Tender Authorization
175	3.6.5	Tender Execution
176	3.6.6	Contract Signature
177	3.6.7	Work Execution
178	3.7	**FIRE PROTECTION SYSTEM**
179	3.7.1	Outsource Design Assignment
180	3.7.2	Detailed Design
181	3.7.1	VVFF Approval
182	3.7.3	Tender execution
183	3.7.4	Order Approval
184	3.7.5	Work Execution
185	3.8	**FIRE EXTINGUISHING SYSTEM**
186	3.8.1	Outsource Design Assignment
187	3.8.2	Detailed Design
188	3.8.1	VVFF Approval
189	3.8.3	Tender Execution
190	3.8.4	Order Approval
191	3.8.5	Work Execution
192	3.9	**CRANE & LIFTING SYSTEM REVISION**
193	3.10	**RADIATION PROTECTION SYSTEM**
194	3.11	**RADIATION MEASUREMENT SYSTEM**
195	3.12	**RADIATION SHIELDING**
196	3.13	**CONVENTIONAL SAFETY SYSTEM**



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