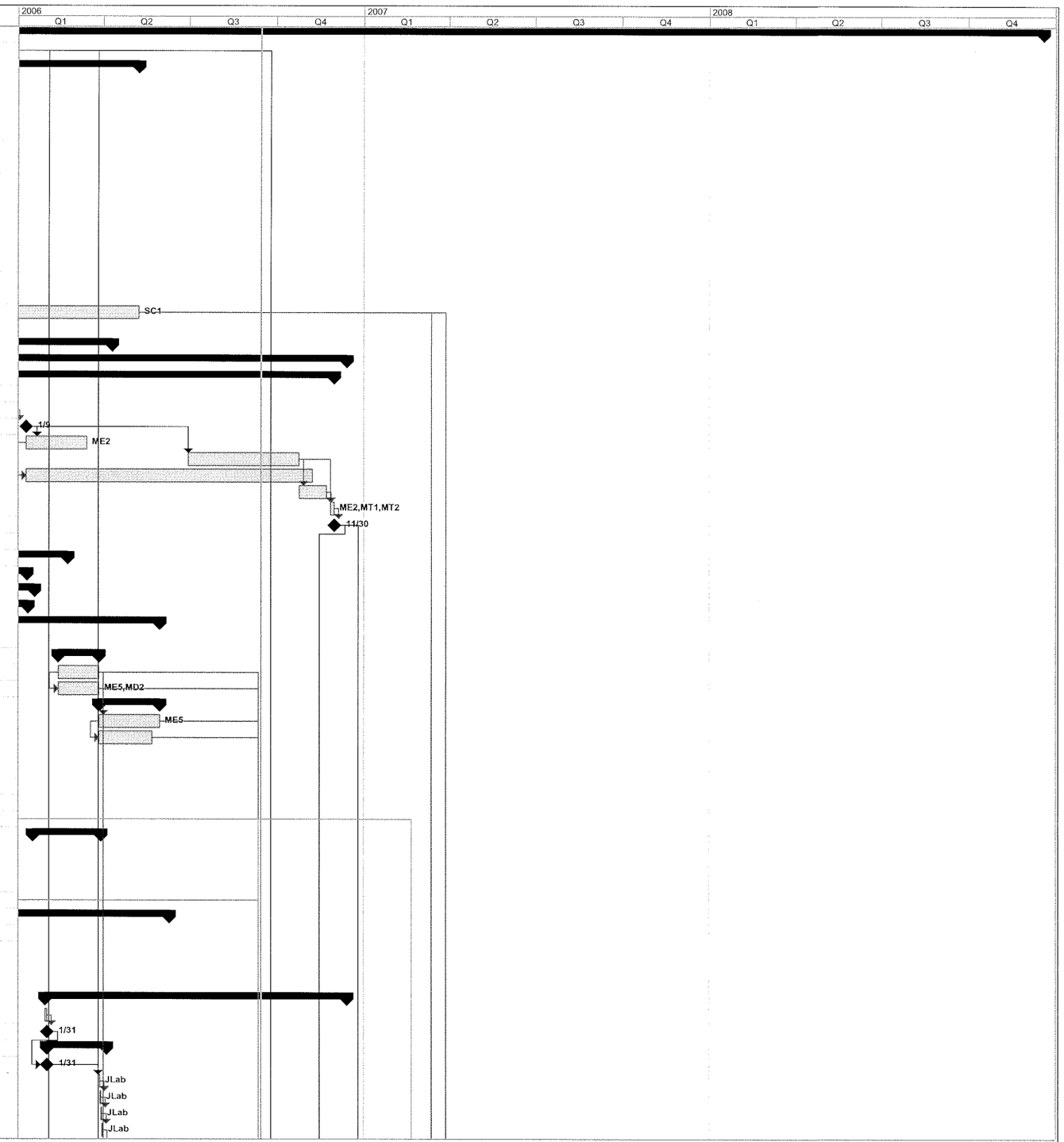
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1	**e-CX / ERL Project**	**1475 days**	**Mon 2/3/03**	**Fri 12/19/08**		
2	Project Start	0 days	Mon 2/3/03	Mon 2/3/03		
3	**Develop & Procure the SC 5-cell RF cavity**	**822 days**	**Mon 2/3/03**	**Mon 5/8/06**		
4	develop cavity: reseach & computations	18 days	Mon 2/3/03	Wed 2/26/03	2	SC1,SC4
5	write specification and statement of work	45 days	Wed 2/19/03	Tue 4/22/03	4SS+12 days	ME1
6	write acceptance test requirements	10 days	Wed 2/19/03	Tue 3/4/03	5SS	SC1
7	**Cavity / Cryomodule Procurement Cycle**	**110 days**	**Tue 2/25/03**	**Mon 7/28/03**		
8	Write Technical Specification and SOW for Cavity / Cryomodule	45 days	Tue 2/25/03	Mon 4/28/03	5FF	
9	**Prepare purchase order**	**72 days**	**Fri 4/18/03**	**Mon 7/28/03**		
10	prepare documentation package	7 days	Fri 4/18/03	Mon 4/28/03	6,8FF	
11	complete PO package	0 days	Mon 4/28/03	Mon 4/28/03	10	
12	**PPM liaison**	**65 days**	**Tue 4/29/03**	**Mon 7/28/03**		
13	PO released at PPM	3 days	Tue 4/29/03	Thu 5/1/03	11	
14	Bids returned	0 days	Tue 6/10/03	Tue 6/10/03	13FS+28 days	
15	Evaluation committee reaches decision	10 days	Tue 7/1/03	Mon 7/14/03	14SF+24 days	
16	order placed	0 days	Thu 7/24/03	Thu 7/24/03	15	
17	tracking of order	3 days	Thu 7/24/03	Mon 7/28/03	16	
18	Initiate Safety Reviews of SRF Cavity Systems	160 days	Fri 9/16/05	Mon 5/8/06	2	SC1
19	**Phase 1 Procurement**	**423 days**	**Mon 2/3/03**	**Thu 9/30/04**		
49	**Phase 2 Procurement**	**679 days**	**Thu 7/24/03**	**Mon 4/10/06**		
60	**5-Cell Cavity Preparation & String Assembly**	**972.5 days**	**Mon 2/3/03**	**Thu 12/14/06**		
61	**Cavity Tuner Design & Development**	**709 days**	**Wed 2/4/04**	**Thu 11/30/06**		
62	Develop concept	250 days	Wed 2/4/04	Mon 1/31/05	2FS+254 days	
63	Complete final layout	120 days	Tue 2/1/05	Fri 7/22/05	62	ME2
64	Release tuner's cavity & vessel specs to AES/reviews complete	0 days	Mon 1/9/06	Mon 1/9/06	63	ME2,MD1
65	Fabricate tuner components	44 days	Tue 1/10/06	Tue 3/14/06	64	ME2
66	Tuner design reviewed & modified	80 days	Fri 6/30/06	Tue 10/24/06	64FS+120 days	
67	Procure vendor-supplied items	210 days	Tue 1/10/06	Tue 11/7/06	65SS	
68	Fabricate tuner modification components	20 days	Wed 10/25/06	Wed 11/22/06	66	
69	Assembly components in mock-up & test	4 days	Mon 11/27/06	Thu 11/30/06	66,68	ME2,MT1,MT2
70	Deliver tuner components for installation	0 days	Thu 11/30/06	Thu 11/30/06	69	ME2
71	**All Metal RF Shielded Gate Valves for Cavity**	**194 days**	**Mon 5/24/04**	**Wed 3/2/05**		
77	**Cavity BCP Adapting Tooling**	**181 days**	**Wed 6/1/05**	**Wed 2/22/06**		
95	**Cavity Cage Assembly - BCP / VTA / Transport**	**152 days**	**Wed 6/1/05**	**Tue 1/10/06**		
102	**High Pressure Rinse Equipment (1st Shpmt)**	**321 days**	**Mon 10/4/04**	**Wed 1/18/06**		
109	**Weld Fixture Adaptive Tooling for SNS Helium Vessel (1st Shpmt)**	**143 days**	**Wed 6/15/05**	**Wed 1/11/06**		
115	**Cavity String Assembly Tooling (3rd Shpmt)**	**249 days**	**Wed 6/1/05**	**Tue 5/30/06**		
116	Develop concept w/ JLab existing tooling	20 days	Wed 6/1/05	Tue 6/28/05	78FS-80 days	ME5,MD2
117	**Design Cavity Assembly tooling**	**30 days**	**Mon 2/13/06**	**Mon 3/27/06**		
118	Strong back and component clamps	30 days	Mon 2/13/06	Mon 3/27/06	87	
119	Slide support	30 days	Mon 2/13/06	Mon 3/27/06	118SS	ME5,MD2
120	**Fabricate components & test**	**45 days**	**Tue 3/28/06**	**Tue 5/30/06**		
121	Strong back and component clamps	45 days	Tue 3/28/06	Tue 5/30/06	118	ME5
122	Slide support	40 days	Tue 3/28/06	Mon 5/22/06	121SS	
123	**Vacuum VTA Flanges and Seals (1st Shpmt)**	**229 days**	**Mon 11/29/04**	**Tue 10/25/05**		
130	**BC HOM Probes (3rd Shpmt)**	**143 days**	**Mon 11/1/04**	**Fri 5/27/05**		
131	Determine type required	45 days	Mon 11/1/04	Fri 1/7/05	55SS	BCE1
132	Procure components, receive & accept	88 days	Mon 1/10/05	Fri 5/13/05	131	BCE1,BCMT1
133	Probes shipped to JLab	10 days	Mon 5/16/05	Fri 5/27/05	132	BCE1,BCMT1
134	**Pick-up Probe & Hardware (Shipped 4/14/06)**	**51 days**	**Tue 1/17/06**	**Wed 3/29/06**		
136	**Cavity String Vacuum Components Required at Jlab (3rd Shpt)**	**63 days**	**Mon 11/8/04**	**Thu 2/10/05**		
137	Determine type required	45 days	Mon 11/8/04	Fri 1/14/05	55SS	VME1,VEE1
138	Procure components	15 days	Tue 1/18/05	Mon 2/7/05	137	VME1,VEE1
139	Cavity vacuum components (gauging & pumping) shipped to JLab	3 days	Tue 2/8/05	Thu 2/10/05	138	VME1,VEE1
140	**Conditioning Of Fundamental Mode Coupler**	**306 days**	**Wed 3/23/05**	**Fri 6/9/06**		
149	**Modification of SNS Shipping Fixture**	**107 days**	**Mon 2/3/03**	**Tue 7/1/03**		
150	Determine required modifications	43 days	Mon 2/3/03	Wed 4/2/03		ME5
151	Modify shipping fixture & fit-test	61 days	Thu 4/3/03	Thu 6/26/03	150	ME5
152	Available to ship to Jlab	3 days	Fri 6/27/03	Tue 7/1/03	151	ME5
153	**Cavity BCP Cleaning**	**220.5 days**	**Mon 1/30/06**	**Thu 12/14/06**		
154	Receive 1st Shipment from BNL	2 days	Mon 1/30/06	Tue 1/31/06	92,101,108,129,114,94	
155	Receive cavity from BNL	0 days	Tue 1/31/06	Tue 1/31/06	154	AES,ME1
156	**Intial Bulk chemistry on cavity**	**44 days**	**Tue 1/31/06**	**Tue 4/4/06**		
157	Cage, HPR, BCP tooling received from BNL	0 days	Tue 1/31/06	Tue 1/31/06	155,129	ME1
158	CMM inspection	2 days	Mon 3/27/06	Tue 3/28/06	157	JLab
159	RF measurements & bead pulls, adjust Input & field coupling	1 day	Wed 3/29/06	Wed 3/29/06	158	JLab
160	Degrease cavity (ultra sonic tank)	1 day	Thu 3/30/06	Thu 3/30/06	159	JLab
161	Remove 100 microns	1 day	Fri 3/31/06	Fri 3/31/06	160	JLab



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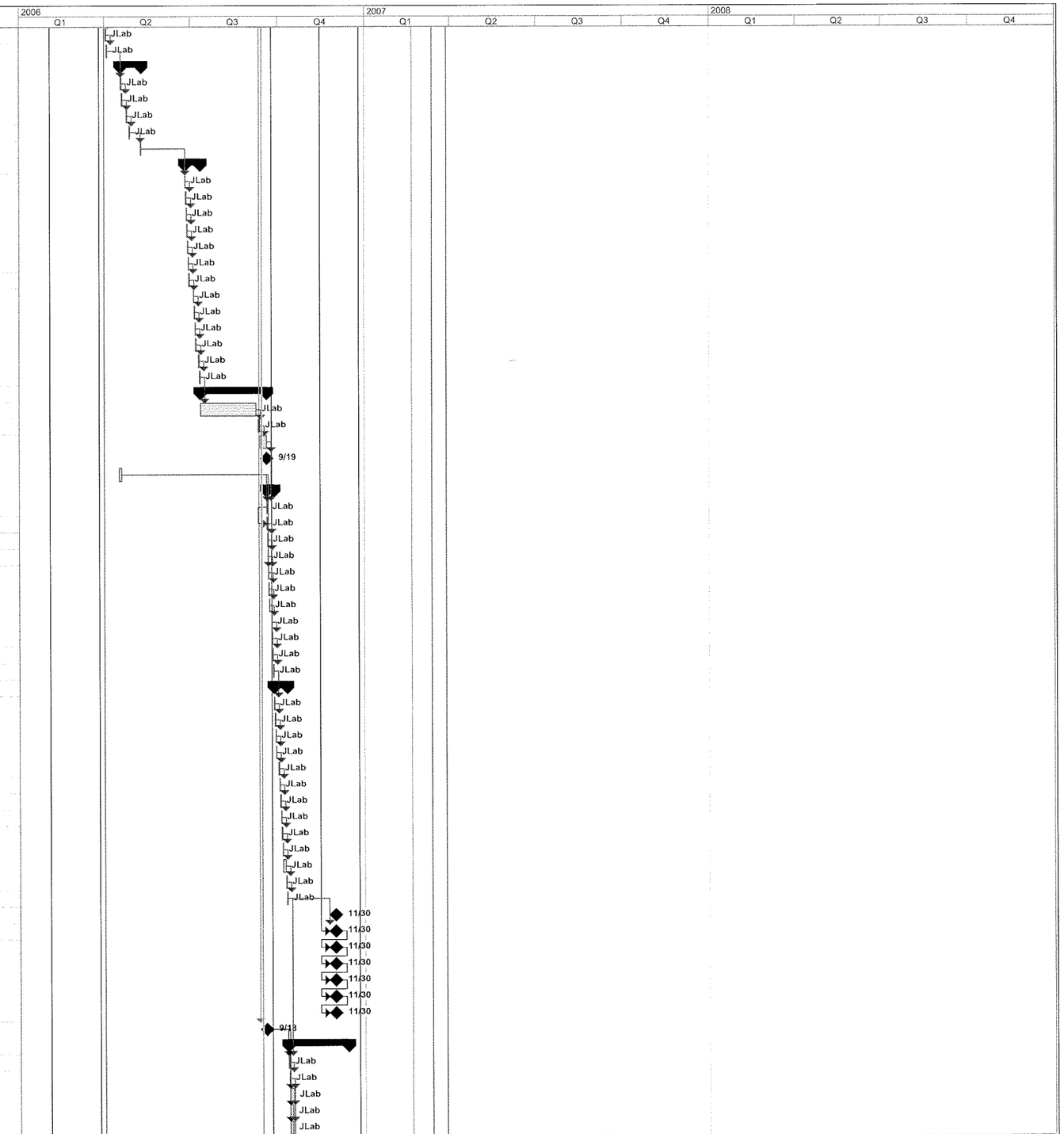
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
162	HPR of cavity	1 day	Mon 4/3/06	Mon 4/3/06	161	JLab
163	Dry & bag in class 10 cleanroom & transport to furnace	1 day	Tue 4/4/06	Tue 4/4/06	162	JLab
164	**Heat treat Cavity**	**16 days**	**Wed 4/19/06**	**Wed 5/10/06**		
165	Insert into furnace	1 day	Wed 4/19/06	Wed 4/19/06	163FS+10 days	JLab
166	Heat-treat @ 600 C for 10 hours	1 day	Thu 4/20/06	Thu 4/20/06	165	JLab
167	Check RF tuning	1 day	Tue 4/25/06	Tue 4/25/06	166FS+2 days	JLab
168	Recheck dimensions on CMM	1 day	Fri 4/28/06	Fri 4/28/06	167FS+2 days	JLab
169	2nd BCP, remove 100 microns	1 day	Wed 5/10/06	Wed 5/10/06	168FS+7 days	
170	**Qualify Cavity (VTA 1)**	**10 days**	**Mon 6/26/06**	**Tue 7/11/06**		
171	Degrease cavity (ultra sonic tank)	0.5 days	Mon 6/26/06	Mon 6/26/06	169	JLab
172	Perform 2nd BCP (50 microns) on cavity	1 day	Mon 6/26/06	Tue 6/27/06	171	JLab
173	HPR of cavity	0.5 days	Tue 6/27/06	Tue 6/27/06	172	JLab
174	Transfer to roll-cart, dry in Class 10	0.5 days	Wed 6/28/06	Wed 6/28/06	173	JLab
175	Assemble input probe, field probe & end flange	1 day	Wed 6/28/06	Thu 6/29/06	174	JLab
176	HPR of cavity	0.5 days	Thu 6/29/06	Thu 6/29/06	175	JLab
177	Assemble vacuum pumpout port	1 day	Fri 6/30/06	Fri 6/30/06	176	JLab
178	Evacuate cavity and pump over night	0.5 days	Wed 7/5/06	Wed 7/5/06	177	JLab
179	Perform leak test on cavity, transport to VTA	1 day	Wed 7/5/06	Thu 7/6/06	178	JLab
180	Insert into teststand	0.5 days	Thu 7/6/06	Thu 7/6/06	179	JLab
181	Insert into dewar & cooldown	1 day	Fri 7/7/06	Fri 7/7/06	180	JLab
182	Fill & pump to 2K	1 day	Mon 7/10/06	Mon 7/10/06	181	JLab
183	Perform RF test & warm up	1 day	Tue 7/11/06	Tue 7/11/06	182	JLab
184	**Qualify Cavity (VTA 2 & 3)**	**49 days**	**Wed 7/12/06**	**Tue 9/19/06**		
185	Repeat Qualify Cavity (VTA1)	42 days	Wed 7/12/06	Fri 9/8/06	183	JLab
186	Disassemble & measure frequency & field flatness	2 days	Mon 9/11/06	Tue 9/12/06	185	JLab
187	Qualify Cavity (VTA 3)	5 days	Wed 9/13/06	Tue 9/19/06	186	
188	Repeat Qualify Cavity (VTA)	0 days	Tue 9/19/06	Tue 9/19/06	187	
189	Second Equipment Shipment arrives at Jlab	3 days	Mon 4/17/06	Wed 4/19/06	90,92,94	
190	**Weld Helium Vessel**	**5.5 days**	**Wed 9/20/06**	**Wed 9/27/06**		
191	QA helium vessel components & mock fitup	0.5 days	Wed 9/20/06	Wed 9/20/06	189,187	JLab
192	Degrease cavity (ultra sonic tank)	0.5 days	Wed 9/20/06	Wed 9/20/06	191SS	JLab
193	Transport to tuning area	0.5 days	Wed 9/20/06	Wed 9/20/06	192	JLab
194	Seal cavitywith argon gas	0.5 days	Thu 9/21/06	Thu 9/21/06	193	JLab
195	Assemble and align cavity in tooling	0.5 days	Thu 9/21/06	Thu 9/21/06	194,189	JLab
196	Assemble instrumentation to cavity	0.5 days	Fri 9/22/06	Fri 9/22/06	195	JLab
197	Tack weld assembly	0.5 days	Fri 9/22/06	Fri 9/22/06	196	JLab
198	Check field flatness, perform RF bead pull	0.5 days	Mon 9/25/06	Mon 9/25/06	197	JLab
199	Complete welds	0.5 days	Mon 9/25/06	Mon 9/25/06	198	JLab
200	CMM inspection	0.5 days	Tue 9/26/06	Tue 9/26/06	199	JLab
201	Leak Check Helium Vessel (Helium Circuit)	1 day	Tue 9/26/06	Wed 9/27/06	200	JLab
202	**Qualify Cavity with Helium Vessel**	**10 days**	**Wed 9/27/06**	**Wed 10/11/06**		
203	Degrease cavity (ultra sonic tank)	0.5 days	Wed 9/27/06	Wed 9/27/06	201	JLab
204	Perform final BCP (10 microns) on cavity	1 day	Thu 9/28/06	Thu 9/28/06	203	JLab
205	HPR of cavity	0.5 days	Fri 9/29/06	Fri 9/29/06	204	JLab
206	Transfer to roll-cart, dry in Class 10	0.5 days	Fri 9/29/06	Fri 9/29/06	205	JLab
207	Assemble input probe, field probe & end flange	1 day	Mon 10/2/06	Mon 10/2/06	206	JLab
208	HPR of cavity	0.5 days	Tue 10/3/06	Tue 10/3/06	207	JLab
209	Assemble vacuum pumpout port to cavity	1 day	Tue 10/3/06	Wed 10/4/06	208	JLab
210	Evacuate cavity and pump over night	0.5 days	Wed 10/4/06	Wed 10/4/06	209	JLab
211	Perform leak test on cavity, transport to VTA	1 day	Thu 10/5/06	Thu 10/5/06	210	JLab
212	Insert into teststand	0.5 days	Fri 10/6/06	Fri 10/6/06	211	JLab
213	Insert into dewar & cooldown	1 day	Fri 10/6/06	Mon 10/9/06	212	JLab
214	Fill & pump to 2K	1 day	Mon 10/9/06	Tue 10/10/06	213	JLab
215	Perform RF test & warm up	1 day	Tue 10/10/06	Wed 10/11/06	214	JLab
216	**Qualify RF Tuner (Removed)**	**0 days**	**Thu 11/30/06**	**Thu 11/30/06**		
217	Receive & inspect Tuner components	0 days	Thu 11/30/06	Thu 11/30/06	70,215	JLab
218	Assemble tuner to cavity & adjust	0 days	Thu 11/30/06	Thu 11/30/06	217	JLab
219	Insert into dewar & cooldown	0 days	Thu 11/30/06	Thu 11/30/06	218	JLab
220	Fill & pump to 2K	0 days	Thu 11/30/06	Thu 11/30/06	219	JLab
221	Perform tuner test & warm up	0 days	Thu 11/30/06	Thu 11/30/06	220	JLab
222	Disassemble cavity & components	0 days	Thu 11/30/06	Thu 11/30/06	221	JLab
223	Receive third equipment shipment from BNL	0 days	Mon 9/18/06	Mon 9/18/06	121,122,118,119,139,133,57	JLab
224	**String Assembly (includes Mock-up & Shipping)**	**43 days**	**Wed 10/11/06**	**Thu 12/14/06**		
225	Inspect modifications to stands (lollipops)	1 day	Wed 10/11/06	Thu 10/12/06	76,148,135,223,215	JLab
226	Clean Rail tooling & bring into cleanroom	1 day	Thu 10/12/06	Fri 10/13/06	225	JLab
227	Receive & inspect valves, BT transitions (4), ferrite dampers seals	2 days	Fri 10/13/06	Tue 10/17/06	223,226	JLab
228	Clean gate valves	1 day	Fri 10/13/06	Mon 10/16/06	223,226	JLab
229	Clean beam line components	1 day	Fri 10/13/06	Mon 10/16/06	223,226	JLab



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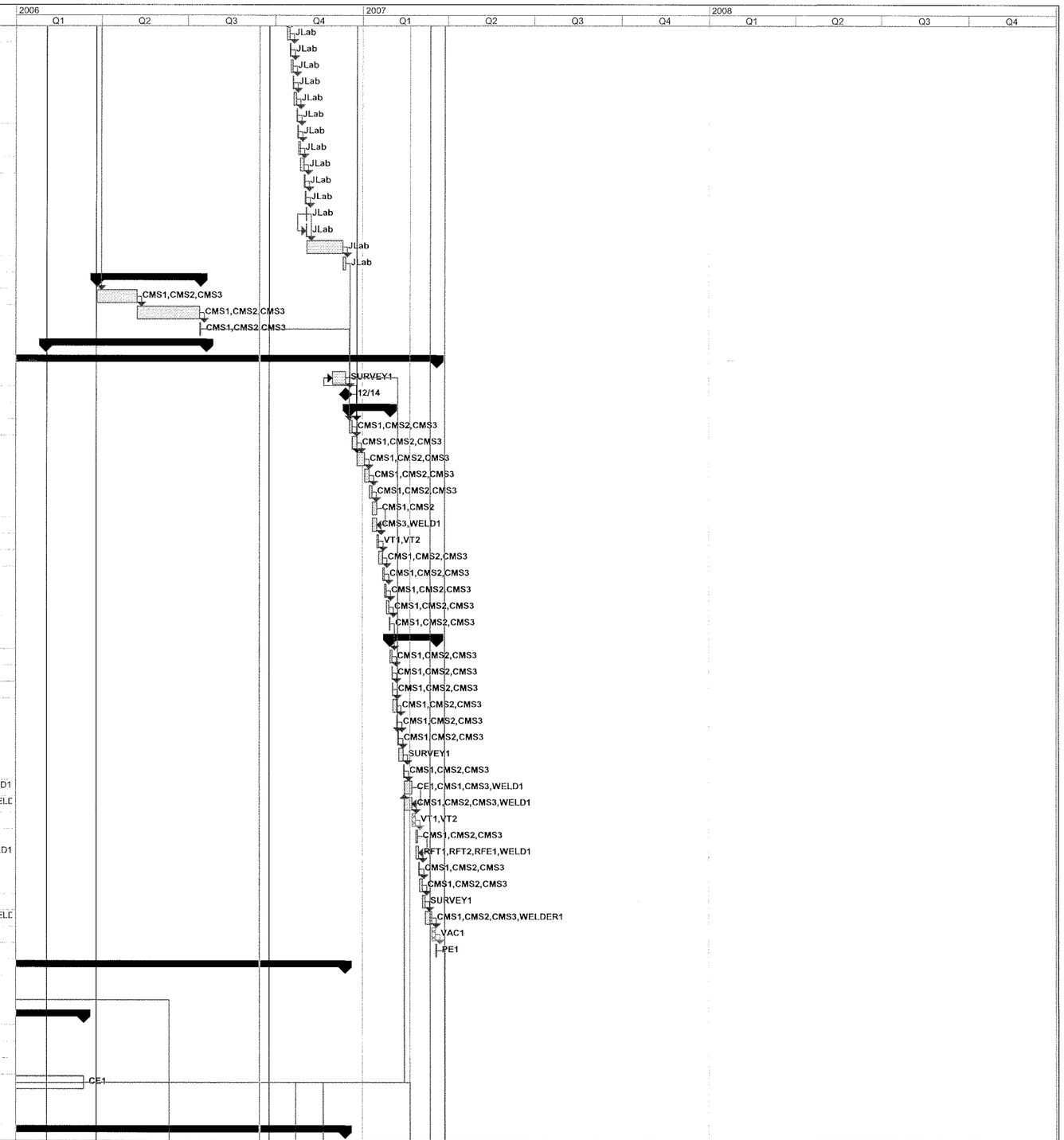
Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
230	Receive & inspect couplers (SNS), clean exterior, transfer to cleanro	1 day	Fri 10/13/06	Mon 10/16/06	223,226	JLab
231	Degrease cavity (ultra sonic tank)	1 day	Mon 10/16/06	Tue 10/17/06	230	JLab
232	?? Perform final BCP (10 microns) on cavity	2 days	Tue 10/17/06	Thu 10/19/06	231	JLab
233	HPR of cavity	1 day	Thu 10/19/06	Fri 10/20/06	232	JLab
234	Transfer to roll-cart, dry in Class 10	1 day	Fri 10/20/06	Mon 10/23/06	233	JLab
235	Assemble field probe	1 day	Mon 10/23/06	Tue 10/24/06	234	JLab
236	HPR of cavity	1 day	Tue 10/24/06	Wed 10/25/06	235	JLab
237	Assemble coupler to cavity, then to rail	2 days	Wed 10/25/06	Fri 10/27/06	236	JLab
238	Assemble beamline components to rail	2 days	Fri 10/27/06	Tue 10/31/06	237	JLab
239	Evacuate string and pump over night	1 day	Tue 10/31/06	Wed 11/1/06	238	JLab
240	Perform leak check & establish vacuum	1 day	Wed 11/1/06	Thu 11/2/06	239	JLab
241	Transfer to "cryomodule" group for shipping	1 day	Thu 11/2/06	Fri 11/3/06	240	JLab
242	Clean Cleanroom	1 day	Thu 11/2/06	Fri 11/3/06	241SS	JLab
243	Prepare string for shipping	23 days	Fri 11/3/06	Mon 12/11/06	241	JLab
244	Shipping of cavity/cryomodule to BNL	3 days	Mon 12/11/06	Thu 12/14/06	243	JLab
245	**Cryomodule Installation Assembly Tooling**	**76 days**	**Tue 3/28/06**	**Fri 7/14/06**		
246	Develop / design tooling	30 days	Tue 3/28/06	Mon 5/8/06	119	CMS1,CMS2,CMS3
247	Buy / fabricate components	45 days	Tue 5/9/06	Thu 7/13/06	246	CMS1,CMS2,CMS3
248	Inspect components	1 day	Fri 7/14/06	Fri 7/14/06	247	CMS1,CMS2,CMS3
249	**Cryomodule Stand**	**117 days**	**Thu 2/2/06**	**Thu 7/20/06**		
253	**Cavity Mechanical Installation**	**1035.5 days**	**Mon 2/3/03**	**Tue 3/20/07**		
254	Survey key cavity position on 912 floor	10 days	Thu 11/30/06	Thu 12/14/06	255FS-10 days	SURVEY1
255	SCRF Cavity Arrives at BNL	0 days	Thu 12/14/06	Thu 12/14/06	244	
256	**Construction of SCRF Cavity thru to Nitronic rod installation**	**27 days**	**Mon 12/18/06**	**Tue 1/30/07**		
257	Place Cavity on interim stands	3 days	Mon 12/18/06	Thu 12/21/06	255FS+2 days,248	CMS1,CMS2,CMS3
258	Remove space frame	1 day	Thu 12/21/06	Tue 12/26/06	257	CMS1,CMS2,CMS3
259	Install tuner & test	5 days	Tue 12/26/06	Wed 1/3/07	258,70	CMS1,CMS2,CMS3
260	Install inner magnetic shield	3 days	Wed 1/3/07	Mon 1/8/07	259	CMS1,CMS2,CMS3
261	Install heatshield in space frame	3 days	Mon 1/8/07	Thu 1/11/07	260	CMS1,CMS2,CMS3
262	Install LN2 line in SF/HS assembly	2 days	Thu 1/11/07	Tue 1/16/07	261	CMS1,CMS2
263	Weld SST extension to helium vessel	2 days	Thu 1/11/07	Tue 1/16/07	262FF	CMS3,WELD1
264	Leak check all cryo-lines and SST extension	2 days	Tue 1/16/07	Thu 1/18/07	263	VT1,VT2
265	Insulate H/S with MLI	2 days	Thu 1/18/07	Mon 1/22/07	264	CMS1,CMS2,CMS3
266	Place SF/HS with external supports around cavity	2 days	Mon 1/22/07	Wed 1/24/07	265	CMS1,CMS2,CMS3
267	Mount support rods between cavity & SF	2 days	Wed 1/24/07	Fri 1/26/07	266	CMS1,CMS2,CMS3
268	Secure cavity to rods	1 day	Fri 1/26/07	Mon 1/29/07	267	CMS1,CMS2,CMS3
269	Remove cavity interim supports	1 day	Mon 1/29/07	Tue 1/30/07	268	CMS1,CMS2,CMS3
270	**Construction of SCRF Cavity thru closing vacuum vessel**	**34 days**	**Tue 1/30/07**	**Tue 3/20/07**		
271	Mount H/S end caps & bottom of H/S	2 days	Tue 1/30/07	Thu 2/1/07	269	CMS1,CMS2,CMS3
272	Install bottom arc to SF	0.5 days	Thu 2/1/07	Thu 2/1/07	271	CMS1,CMS2,CMS3
273	Mount bottom of outer magnetic shield	0.5 days	Fri 2/2/07	Fri 2/2/07	272	CMS1,CMS2,CMS3
274	Install vacuum vessel lower shell & align penetrations	2 days	Fri 2/2/07	Tue 2/6/07	273	CMS1,CMS2,CMS3
275	Secure lower shell to SF assembly	1 day	Tue 2/6/07	Wed 2/7/07	274	CMS1,CMS2,CMS3
276	Roll in base stand assembly	1 day	Wed 2/7/07	Thu 2/8/07	275,252,254	CMS1,CMS2,CMS3
277	Survey stand into position & adjust stand	3 days	Thu 2/8/07	Tue 2/13/07	276	SURVEY1
278	Remove external supports	1 day	Tue 2/13/07	Wed 2/14/07	277	CMS1,CMS2,CMS3
279	Attach ballast tank to He vessel and secure	5 days	Wed 2/14/07	Thu 2/22/07	278,297	CE1,CMS1,CMS3,WELD1
280	Attach all cryo-lines to feedthroughs	5 days	Wed 2/14/07	Thu 2/22/07	279FF	CMS1,CMS2,CMS3,WELD
281	Leak check all cryo-lines and feedthroughs	2 days	Thu 2/22/07	Mon 2/26/07	280	VT1,VT2
282	Assemble remaining magnetic shield components	2 days	Mon 2/26/07	Wed 2/28/07	281	CMS1,CMS2,CMS3
283	Mount FPC port	3 days	Mon 2/26/07	Thu 3/1/07	282FF+1 day	RFT1,RFT2,RFE1,WELD1
284	Install interim supports w/o F damper supports	1 day	Thu 3/1/07	Fri 3/2/07	283	CMS1,CMS2,CMS3
285	Install valve supports & remove SF-based supports	1 day	Fri 3/2/07	Mon 3/5/07	284	CMS1,CMS2,CMS3
286	Verify survey position of cavity prior to closing shell/connect X-fer lines	3 days	Mon 3/5/07	Thu 3/8/07	285	SURVEY1
287	Assemble remaining vacuum vessel components	5 days	Thu 3/8/07	Thu 3/15/07	286	CMS1,CMS2,CMS3,WELD
288	Leak check & repair vacuum vessel	2 days	Thu 3/15/07	Mon 3/19/07	287	VAC1
289	Have stands grouted	1 day	Mon 3/19/07	Tue 3/20/07	288	PE1
290	**Required SCRF Cavity Components**	**972 days**	**Mon 2/3/03**	**Wed 12/13/06**		
291	Procure & receive 500L Helium dewars (2)	270 days	Mon 2/3/03	Thu 2/26/04		CE1
292	Procure, receive & install vacuum pumps	260 days	Thu 7/29/04	Thu 8/11/05	40FS+60 days	CE1
293	**Procure Ballast Tank & Transfer Lines**	**252 days**	**Thu 3/10/05**	**Mon 3/13/06**		
294	Design ballast He tank, heat exchanger & transfer lines	112 days	Thu 3/10/05	Wed 8/17/05	40	CE1
295	Design review of ballast tank & transfer lines	0 days	Wed 8/17/05	Wed 8/17/05	294	CE1
296	Procurement bid cycle	20 days	Thu 8/18/05	Thu 9/15/05	295	PPM
297	Receive & inspect ballast He tank & transfer lines	120 days	Fri 9/16/05	Mon 3/13/06	296	CE1
298	**50kW transmitter, dummy load & associated equipment**	**277 days**	**Fri 11/7/03**	**Fri 12/17/04**		
307	**Procure Ferrite Absorbers**	**304 days**	**Thu 9/4/03**	**Thu 11/18/04**		
313	**Assemble Cryo Systems & Test**	**702 days**	**Fri 2/27/04**	**Wed 12/13/06**		



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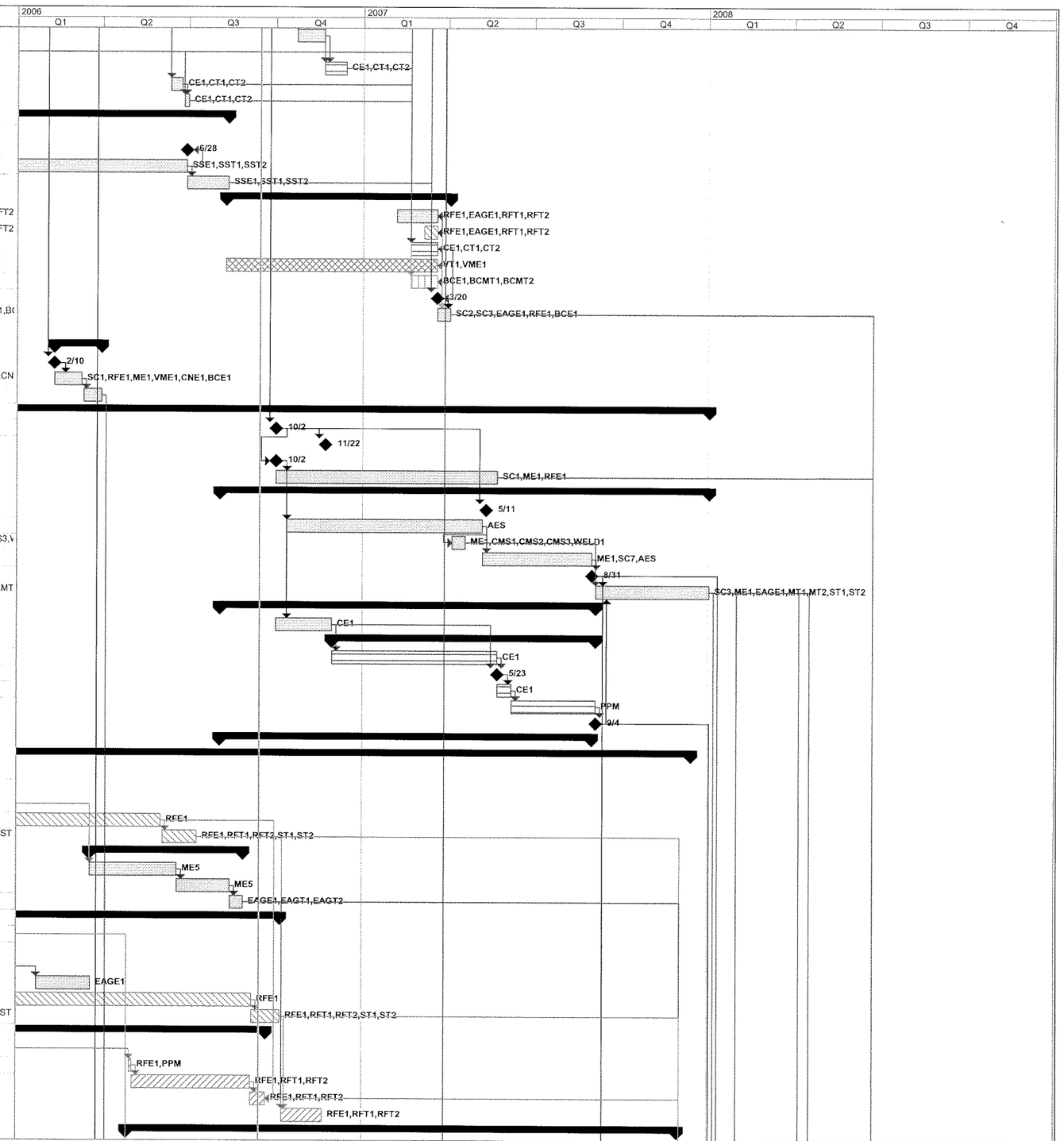
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
314	Install & test ballast tank & stand assembly	20 days	Mon 10/23/06	Mon 11/20/06	297	
315	Install & test helium supply system	15 days	Fri 2/27/04	Thu 3/18/04	291	CE1,CT1,CT2
316	Ballast tank & transfer lines incorporated in cryo system	15 days	Tue 11/21/06	Wed 12/13/06	315,297,314	CE1,CT1,CT2
317	Test vacuum pumping systems	10 days	Mon 6/12/06	Fri 6/23/06	292	CE1,CT1,CT2
318	Test helium return systems	5 days	Mon 6/26/06	Fri 6/30/06	315,317	CE1,CT1,CT2
319	**e-CX Safety System (PASS)**	**552 days**	**Tue 6/1/04**	**Fri 8/11/06**		
320	Determine safety criteria required	194 days	Tue 6/1/04	Wed 3/9/05	2	SSE1
321	System reviewed & approved by RSC, ASSRC, etc.	0 days	Wed 6/28/06	Wed 6/28/06	322FF	SSE1
322	PASS system installed	328 days	Thu 3/10/05	Wed 6/28/06	320	SSE1,SST1,SST2
323	PASS system running	30 days	Thu 6/29/06	Fri 8/11/06	322	SSE1,SST1,SST2
324	**Assemble SRf Cavity & Associated Components**	**160 days**	**Wed 8/9/06**	**Tue 4/3/07**		
325	Assemble transmitter, circulator, etc.	30 days	Mon 2/5/07	Tue 3/20/07	306,44,289FF	RFE1,EAGE1,RFT1,RFT2
326	Connect Cavity to Transmitter, et. al. & test	10 days	Tue 3/6/07	Tue 3/20/07	325FF,289FF	RFE1,EAGE1,RFT1,RFT2
327	Assemble Cryo system to cavity	20 days	Tue 2/20/07	Tue 3/20/07	326FF,297,318,317,316,315	CE1,CT1,CT2
328	Design, procure & install Temporary beam dump tees	150 days	Wed 8/9/06	Tue 3/20/07	326FF	VT1,VME1
329	Instrument HOM probes	20 days	Tue 2/20/07	Tue 3/20/07	133,325FF	BCE1,BCMT1,BCMT2
330	Receive approval to run	0 days	Tue 3/20/07	Tue 3/20/07	327FF,323,18	SC1
331	Cavity SystemsTesting & Cold Emissions Testing	10 days	Tue 3/20/07	Tue 4/3/07	325,326,330,327,328,329	SC2,SC3,EAGE1,RFE1,BC
332						
333	**Gun-to-Dump Test Planning**	**35 days**	**Fri 2/10/06**	**Fri 3/31/06**		
334	GtD Test Meeting	0 days	Fri 2/10/06	Fri 2/10/06	2	ME1
335	Determine test paramaters	20 days	Fri 2/10/06	Fri 3/10/06	334	SC1,RFE1,ME1,VME1,CN
336	Determine equipment requirements for test	15 days	Mon 3/13/06	Fri 3/31/06	335	
337	**SC Electron Gun Procurement**	**999 days**	**Mon 1/5/04**	**Wed 1/2/08**		
338	Funding available	0 days	Mon 10/2/06	Mon 10/2/06	2	AES
339	Hi-Temp SC Solenoid - envelope defined	0 days	Wed 11/22/06	Wed 11/22/06	338	BNL
340	Design RF gun & tuner complete	0 days	Mon 10/2/06	Mon 10/2/06	338	AES
341	Preparation of Safety Documentation/SOP for RF Gun/Photocathode, incl. Re	160 days	Mon 10/2/06	Wed 5/23/07	340	SC1,ME1,RFE1
342	**Procure & Install SRF gun system**	**350 days**	**Fri 8/4/06**	**Wed 1/2/08**		
343	Process Tooling Complete	0 days	Fri 5/11/07	Fri 5/11/07	338	
344	Gun cavity fabrication	139 days	Fri 10/13/06	Mon 5/7/07	340	AES
345	Preliminary assembly of Gun cryomodule at BNL	10 days	Fri 4/6/07	Thu 4/19/07	344FS-22 days	ME1,CMS1,CMS2,CMS3,V
346	Gun Cavity BCP, test & assembly	81 days	Tue 5/8/07	Fri 8/31/07	344	ME1,SC7,AES
347	Gun cavity string delivered to e-CX	0 days	Fri 8/31/07	Fri 8/31/07	346	ME1,SC7,AES
348	Gun installed in BLG 912	80 days	Wed 9/5/07	Wed 1/2/08	347,345,356,362	SC3,ME1,EAGE1,MT1,MT
349	**SRF gun cryo system**	**270 days**	**Fri 8/4/06**	**Tue 9/4/07**		
350	Development of RF gun's cryo system	40 days	Mon 10/2/06	Wed 11/29/06	340	CE1
351	**Procure Ballast Tank & Transfer Lines**	**190 days**	**Thu 11/30/06**	**Tue 9/4/07**		
352	Design transfer lines & valves required	120 days	Thu 11/30/06	Wed 5/23/07	350	CE1
353	Design review of transfer lines / valving complete	0 days	Wed 5/23/07	Wed 5/23/07	350,352	CE1
354	Specifications & SOWs written for X-fer lines & valves	10 days	Thu 5/24/07	Thu 6/7/07	353	CE1
355	Procure transfer lines & valves	60 days	Fri 6/8/07	Tue 9/4/07	354	PPM
356	Receive & inspect X-fer lines & valves	0 days	Tue 9/4/07	Tue 9/4/07	355	CE1,CT1,CT2
357	**Cavity Tuner Design & Development**	**269 days**	**Fri 8/4/06**	**Fri 8/31/07**		
363	**Procure 1MW Klystron, Power Supply & Waveguide**	**989 days**	**Mon 1/5/04**	**Fri 12/14/07**		
364	Write specification & SOW	58 days	Mon 1/5/04	Fri 3/26/04	2	RFE1
365	Bidding cycle	20 days	Mon 3/29/04	Fri 4/23/04	364	RFE1
366	PO awarded	8 days	Mon 4/26/04	Wed 5/5/04	365	PPM
367	Receipt of Klystron	521 days	Thu 5/6/04	Fri 6/2/06	366	RFE1
368	Install klystron	24 days	Mon 6/5/06	Mon 7/10/06	367	RFE1,RFT1,RFT2,ST1,ST
369	**Klystron Lead Enclosure**	**113 days**	**Mon 3/20/06**	**Mon 8/28/06**		
370	Design & engineer structure	65 days	Mon 3/20/06	Mon 6/19/06	366	ME5
371	Fabricate structure & inspect	38 days	Tue 6/20/06	Mon 8/14/06	370	ME5
372	Erect in BLG 912	10 days	Tue 8/15/06	Mon 8/28/06	371	EAGE1,EAGT1,EAGT2
373	**Procure 1MW Klystron X-mitter & Power Supply**	**646 days**	**Mon 3/15/04**	**Fri 10/6/06**		
374	Write specification & SOW & Requisition	70 days	Mon 3/15/04	Mon 6/21/04	2	RFE1
375	Bidding cycle	59 days	Tue 6/22/04	Mon 9/13/04	374	RFE1
376	PO awarded	35 days	Tue 9/14/04	Mon 11/1/04	375	PPM
377	Procure & install IBGT enclosure	40 days	Mon 1/23/06	Mon 3/20/06	376	EAGE1
378	Receipt of power supply (IBGT)	460 days	Tue 11/2/04	Wed 9/6/06	376	RFE1
379	Installation & test	22 days	Thu 9/7/06	Fri 10/6/06	378	RFE1,RFT1,RFT2,ST1,ST
380	**Procure 1MW Dummy Load**	**487 days**	**Mon 10/11/04**	**Thu 9/21/06**		
381	Write specification & SOW	56 days	Mon 10/11/04	Mon 1/3/05	2	RFE1
382	Bidding cycle & place order (Reorder after failure)	3 days	Mon 5/1/06	Wed 5/3/06	381	RFE1,PPM
383	Receive & inspect equipment	85 days	Thu 5/4/06	Tue 9/5/06	382	RFE1,RFT1,RFT2
384	Install & test, returned w/ klystron	12 days	Wed 9/6/06	Thu 9/21/06	367FF,383	RFE1,RFT1,RFT2
385	Acceptance Test Klystron & IBGT	30 days	Mon 10/9/06	Mon 11/20/06	368,372,379,384	RFE1,RFT1,RFT2
386	**Procure 1MW Circulator**	**397 days**	**Fri 4/28/06**	**Fri 11/30/07**		



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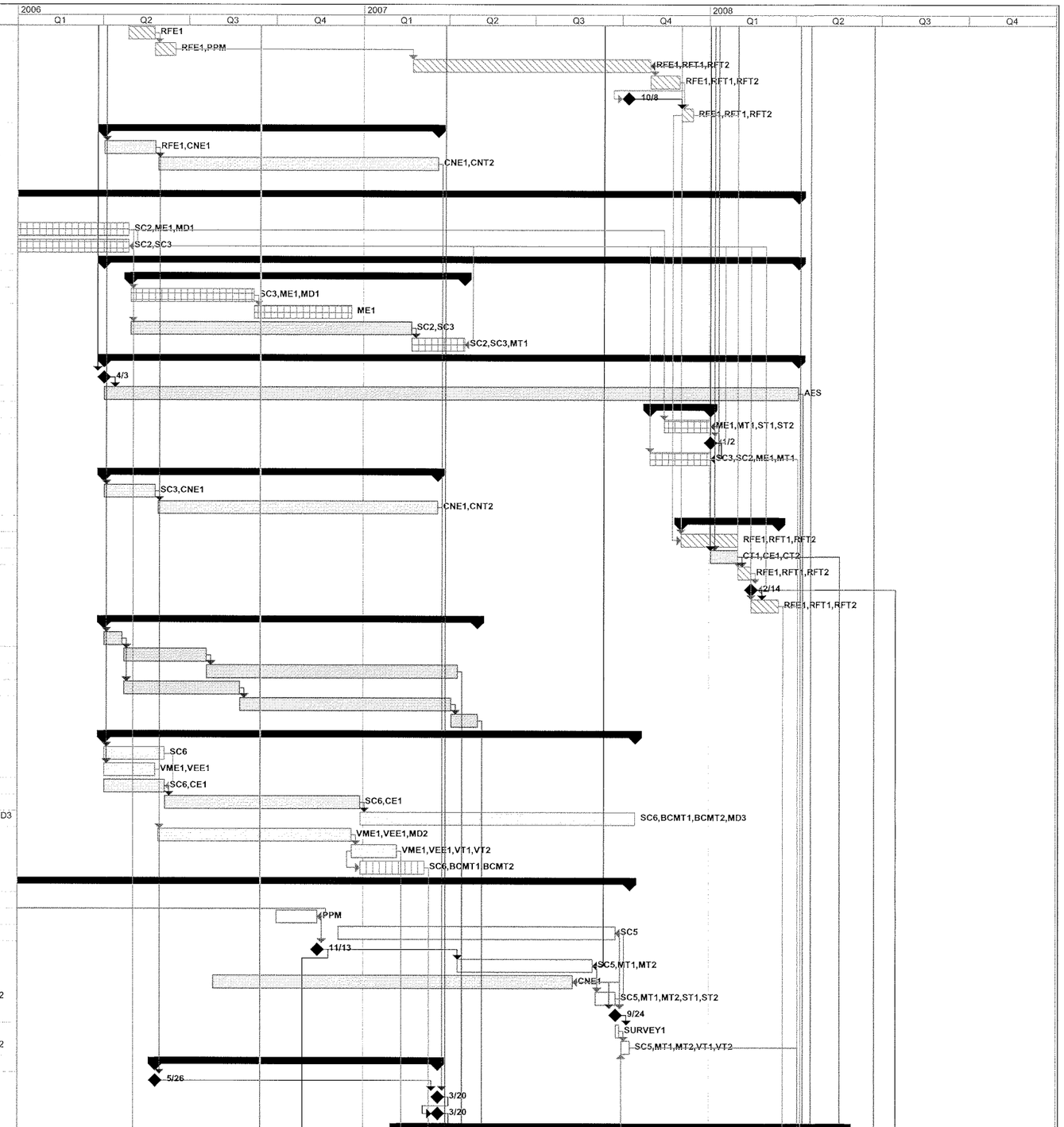
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
387	Write specification & SOW	20 days	Fri 4/28/06	Thu 5/25/06	374	RFE1
388	Bidding cycle	15 days	Fri 5/26/06	Fri 6/16/06	387	RFE1,PPM
389	Receive & inspect equipment	175 days	Thu 2/22/07	Tue 10/30/07	388,348FF-40 days	RFE1,RFT1,RFT2
390	Install & test	20 days	Wed 10/31/07	Fri 11/30/07	389	RFE1,RFT1,RFT2
391	Receive approval to run	0 days	Mon 10/8/07	Mon 10/8/07	390FS-37 days	SC1
392	Connect circulator, anode PS, etc. to klystron & test	10 days	Mon 12/3/07	Fri 12/14/07	390,384,379,372,368,391	RFE1,RFT1,RFT2
393	**Gun to Dump Rf Controls**	**240 days**	**Mon 4/3/06**	**Tue 3/20/07**		
394	Gun to Dump Rf Controls requirements determined	40 days	Mon 4/3/06	Fri 5/26/06	336	RFE1,CNE1
395	Controls developed, built & installed	200 days	Tue 5/30/06	Tue 3/20/07	394	CNE1,CNT2
396						
397	**Photocathode System Development & Procurement**	**1297 days**	**Mon 2/3/03**	**Fri 4/4/08**		
398	PCD chamber/ gun interface development	676 days	Mon 2/3/03	Wed 10/5/05	2	SC2,SC3
399	System / Interface design & fabrication	140 days	Thu 10/6/05	Fri 4/28/06	398	SC2,ME1,MD1
400	Preparation of Safety Documentation/SOP for Photocathode, incl. Reviews	200 days	Wed 7/13/05	Fri 4/28/06	399FF	SC2,SC3
401	**Photocathode Laser System**	**501 days**	**Mon 4/3/06**	**Fri 4/4/08**		
402	**Procure Components**	**240 days**	**Mon 5/1/06**	**Tue 4/17/07**		
403	Design fabricated components	90 days	Mon 5/1/06	Thu 9/7/06	399	SC3,ME1,MD1
404	Fabricate Components	70 days	Fri 9/8/06	Tue 12/19/06	403	ME1
405	Determine laser, & assoc. component, needs and procure	200 days	Mon 5/1/06	Tue 2/20/07	399	SC2,SC3
406	Assemble & test	40 days	Wed 2/21/07	Tue 4/17/07	405,400FF	SC2,SC3,MT1
407	**Cathode Development Project (AES)**	**501 days**	**Mon 4/3/06**	**Fri 4/4/08**		
408	Project funded	0 days	Mon 4/3/06	Mon 4/3/06	2	AES
409	Expected delivery	501 days	Mon 4/3/06	Fri 4/4/08	408	AES
410	**System / Interface Installation**	**40 days**	**Wed 10/31/07**	**Wed 1/2/08**		
411	Receipt & Installation of Photocathode System / Gun Interface	30 days	Thu 11/15/07	Wed 1/2/08	399,348FF	ME1,MT1,ST1,ST2
412	Receive approval to run	0 days	Wed 1/2/08	Wed 1/2/08	411,400FF	
413	Acceptance test & install system & gun interface	40 days	Wed 10/31/07	Wed 1/2/08	347FF,412FF,400	SC3,SC2,ME1,MT1
414	**Gun to Dump Photocathode / Laser Controls**	**240 days**	**Mon 4/3/06**	**Tue 3/20/07**		
415	Gun to Dump PC/Laser Controls requirement determined	40 days	Mon 4/3/06	Fri 5/26/06	336	SC3,CNE1
416	Controls developed, built & installed	200 days	Tue 5/30/06	Tue 3/20/07	415	CNE1,CNT2
417	**Assemble & Test of Rf Gun & Associated Systems**	**70 days**	**Mon 12/3/07**	**Fri 3/14/08**		
418	Assemble & test 1MW Klystron & associated systems	40 days	Mon 12/3/07	Thu 1/31/08	384,379,368,392SS	RFE1,RFT1,RFT2
419	Install Gun cryo system connections & test	20 days	Thu 1/3/08	Thu 1/31/08	356,348	CT1,CE1,CT2
420	Connection of Rf to e-gun with PC system	10 days	Fri 2/1/08	Thu 2/14/08	348,392,419	RFE1,RFT1,RFT2
421	Receive approval to run	0 days	Thu 2/14/08	Thu 2/14/08	400FF,420	
422	Testing of Rf gun	20 days	Fri 2/15/08	Fri 3/14/08	421,400,413	RFE1,RFT1,RFT2
423	**GtD Test Magnets, Power Supplies & Stands**	**270 days**	**Mon 4/3/06**	**Tue 5/1/07**		
424	Determine GtD test requirements	15 days	Mon 4/3/06	Fri 4/21/06	336	
425	Design magnet(s) & magnet support	60 days	Mon 4/24/06	Wed 7/19/06	424	
426	Procure / build magnet(s) & stand(s)	180 days	Thu 7/20/06	Tue 4/10/07	425	
427	Design magnet power supplie(s) & controls	85 days	Mon 4/24/06	Wed 8/23/06	424	
428	Procure / build power supplie(s) & complete software development	150 days	Thu 8/24/06	Tue 4/3/07	427	
429	Test PS (s) & software	20 days	Wed 4/4/07	Tue 5/1/07	428	
430	**GtD Test Beam Instrumentation & Vacuum System**	**385 days**	**Mon 4/3/06**	**Mon 10/15/07**		
431	Determine instrumentation requirements of GtD testing	45 days	Mon 4/3/06	Mon 6/5/06	336	SC6
432	Determine vacuum system requirements of GtD testing	40 days	Mon 4/3/06	Fri 5/26/06	336	VME1,VEE1
433	Beam Instrumentation GtD controls determined & developed	45 days	Mon 4/3/06	Mon 6/5/06	431FF	SC6,CE1
434	Beam Instrumentation GtD controls determined & developed	140 days	Tue 6/6/06	Thu 12/28/06	433	SC6,CE1
435	Design,procure/build GtD required instrumentation components	200 days	Fri 12/29/06	Mon 10/15/07	434	SC6,BCMT1,BCMT2,MD3
436	Design & procure GtD required vacuum system components	140 days	Tue 5/30/06	Tue 12/19/06	432	VME1,VEE1,MD2
437	Installation of UHV vacuum system	30 days	Wed 12/20/06	Mon 2/5/07	436	VME1,VEE1,VT1,VT2
438	Installation of Beam Instrumentation	45 days	Fri 12/29/06	Tue 3/6/07	437SS+5 days	SC6,BCMT1,BCMT2
439	**Beam Dump Procurement**	**733 days**	**Mon 11/1/04**	**Tue 10/9/07**		
440	Write specification & SOW	20 days	Mon 11/1/04	Wed 12/1/04	467	SC5
441	Bidding cycle	30 days	Mon 10/2/06	Mon 11/13/06	440SF	PPM
442	Preparation of Safety Documentation/SOP for Beam Dump, incl. Reviews	200 days	Wed 12/6/06	Mon 9/24/07	446FF	SC5
443	PO awarded	0 days	Mon 11/13/06	Mon 11/13/06	441	PPM
444	Receipt of dump	100 days	Wed 4/11/07	Fri 8/31/07	443,347FF	SC5,MT1,MT2
445	Beam Dump GtD controls developed & complete	260 days	Thu 7/27/06	Fri 8/10/07	446FF-30 days	CNE1
446	Installation in GtD location	15 days	Tue 9/4/07	Mon 9/24/07	444	SC5,MT1,MT2,ST1,ST2
447	Receive approval to run	0 days	Mon 9/24/07	Mon 9/24/07	442,445,446	SC5
448	Survey into place	4 days	Tue 9/25/07	Fri 9/28/07	447	SURVEY1
449	Connect to cooling system, beamline & test	7 days	Mon 10/1/07	Tue 10/9/07	448,574	SC5,MT1,MT2,VT1,VT2
450	**GtD Test Controls**	**200 days**	**Fri 5/26/06**	**Tue 3/20/07**		
451	Determine Controls requirements of GtD testing	0 days	Fri 5/26/06	Fri 5/26/06	415,394	CNE1
452	Procurement controls components	0 days	Tue 3/20/07	Tue 3/20/07	395,451,416	CNE1
453	Hardware installation/Software development	0 days	Tue 3/20/07	Tue 3/20/07	452	CE1,CNE3
454	**Gun to Dump Test**	**326 days**	**Mon 2/5/07**	**Fri 5/23/08**		



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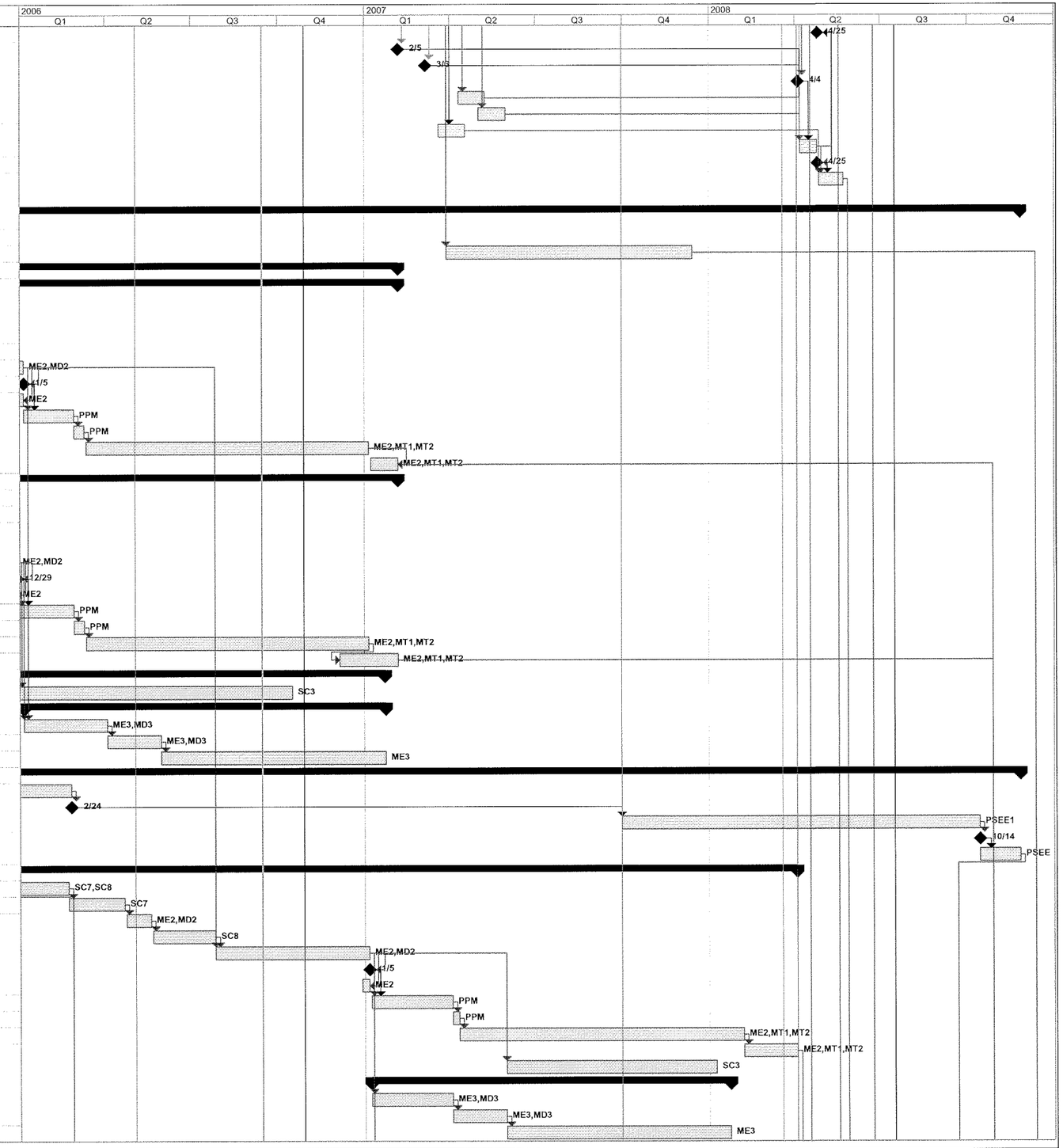
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
455	Safety Assurance Document complete & approved	0 days	Fri 4/25/08	Fri 4/25/08	463FF	
456	Installation of GtD-required UHV vacuum system	0 days	Mon 2/5/07	Mon 2/5/07	437	
457	Installation of GtD-required Beam Instrumentation	0 days	Tue 3/6/07	Tue 3/6/07	438	
458	Installation & test of AES-provided Photocathode	0 days	Fri 4/4/08	Fri 4/4/08	409	
459	Installation of GtD-required magnets	20 days	Wed 4/11/07	Tue 5/8/07	426	
460	Installation of GtD-required magnet power supplies	20 days	Wed 5/2/07	Wed 5/30/07	429	
461	GtD controls integration	20 days	Wed 3/21/07	Tue 4/17/07	453	
462	All components integration checkout	15 days	Mon 4/7/08	Fri 4/25/08	348,422,456,457,459,460,461,45	
463	Receive approval to run	0 days	Fri 4/25/08	Fri 4/25/08	462FF	
464	Gun-to-Dump Testing	20 days	Mon 4/28/08	Fri 5/23/08	462,463,461	
465						
466	**Dev., Design & Procurement of ERL Magnets, PSs, Controls & Vacuum System**	**1224 days**	**Thu 1/8/04**	**Wed 11/26/08**		
467	Define the Energy Recovery Linac	60 days	Thu 1/8/04	Fri 4/2/04	2	SC7,SC8
468	Complete Safety Reviews of all ERL systems	180 days	Thu 3/29/07	Fri 12/14/07	18FS+220 days	
469	**ERL Loop Magnets**	**710 days**	**Mon 4/5/04**	**Mon 2/5/07**		
470	**ERL Dipoles**	**710 days**	**Mon 4/5/04**	**Mon 2/5/07**		
471	Define Loop Dipoles	150 days	Mon 4/5/04	Tue 11/2/04	467	SC7,SC8
472	Complete physics analysis	70 days	Wed 11/3/04	Wed 2/16/05	471	SC7
473	Initial magnet design & development	20 days	Thu 2/17/05	Thu 3/17/05	472	ME2,MD2
474	Magnet analysis	15 days	Fri 3/18/05	Thu 4/7/05	473	SC8
475	Final design magnet, stand & installation, check & approve	186 days	Fri 4/8/05	Thu 1/5/06	474	ME2,MD2
476	All dipole magnet reviews complete	0 days	Thu 1/5/06	Thu 1/5/06	475FF	ME2
477	Write specification & SOW	10 days	Wed 12/21/05	Thu 1/5/06	475FF	ME2
478	Bidding cycle	35 days	Fri 1/6/06	Mon 2/27/06	477,476	PPM
479	PO awarded	9 days	Tue 2/28/06	Fri 3/10/06	478	PPM
480	Fabrication & receipt of dipole magnets	205 days	Mon 3/13/06	Fri 1/5/07	479	ME2,MT1,MT2
481	Acceptance testing	20 days	Mon 1/8/07	Mon 2/5/07	480FF+20 days	ME2,MT1,MT2
482	**ERLQuadrupole**	**710 days**	**Mon 4/5/04**	**Mon 2/5/07**		
483	Define Loop Quadrupoles	140 days	Mon 4/5/04	Tue 10/19/04	467	SC7,SC8
484	Complete physics analysis	70 days	Wed 10/20/04	Wed 2/2/05	483	SC7
485	Initial magnet design & development	20 days	Thu 2/3/05	Thu 3/3/05	484	ME2,MD2
486	Magnet analysis	15 days	Fri 3/4/05	Thu 3/24/05	485	SC8
487	Final design magnet, stand & installation, check & approve	192 days	Fri 3/25/05	Thu 12/29/05	486	ME2,MD2
488	All quadrupole reviews complete	0 days	Thu 12/29/05	Thu 12/29/05	487FF	ME2
489	Write specification & SOW	110 days	Fri 7/22/05	Thu 12/29/05	487FF	ME2
490	Bidding cycle	39 days	Fri 12/30/05	Mon 2/27/06	489,488	PPM
491	PO awarded	9 days	Tue 2/28/06	Fri 3/10/06	490	PPM
492	Fabrication & receipt of quadrupole magnets	205 days	Mon 3/13/06	Fri 1/5/07	491	ME2,MT1,MT2
493	Acceptance testing	40 days	Wed 12/6/06	Mon 2/5/07	492FS-20 days	ME2,MT1,MT2
494	**ERL Solenoid**	**700 days**	**Mon 4/5/04**	**Mon 1/22/07**		
506	Develop Magnet Survey Data	200 days	Fri 12/30/05	Mon 10/16/06	499,487,474	SC3
507	**Loop Magnet Stands & Installation Development**	**260 days**	**Fri 1/6/06**	**Tue 1/23/07**		
508	Design magnet support system	60 days	Fri 1/6/06	Mon 4/3/06	475,487	ME3,MD3
509	Develop & finalize magnet installation	40 days	Tue 4/4/06	Tue 5/30/06	508	ME3,MD3
510	Procure / build magnet support system	160 days	Wed 5/31/06	Tue 1/23/07	509	ME3
511	**Design & Procurement of Loop Magnet Power Supplies**	**859 days**	**Mon 6/20/05**	**Wed 11/26/08**		
512	Design magnet power supply system	170 days	Mon 6/20/05	Fri 2/24/06	475SS+50 days	
513	Complete all power supply reviews	0 days	Fri 2/24/06	Fri 2/24/06	512	PSEE1
514	Procure power supplies and cabling	260 days	Mon 10/1/07	Tue 10/14/08	513FS+399 days	PSEE1
515	Final receipt of all components	0 days	Tue 10/14/08	Tue 10/14/08	514	PSEE1,PST1
516	Perform required acceptance testing	30 days	Wed 10/15/08	Wed 11/26/08	515	PSEE1,PST1
517	**ERL Injection & Dump Magnets**	**642 days**	**Tue 9/6/05**	**Thu 4/3/08**		
518	Define injection system	114 days	Tue 9/6/05	Tue 2/21/06	467	SC7,SC8
519	Complete physics analysis	43 days	Wed 2/22/06	Fri 4/21/06	518	SC7
520	Initial magnet design & development	20 days	Mon 4/24/06	Fri 5/19/06	519	ME2,MD2
521	Magnet analysis (15 days / magnet)	45 days	Mon 5/22/06	Wed 7/26/06	520	SC8
522	Final design of magnet, check & approve	110 days	Thu 7/27/06	Fri 1/5/07	521,475	ME2,MD2
523	Reviews of magnets complete	0 days	Fri 1/5/07	Fri 1/5/07	522FF	ME2
524	Write specification & SOW	5 days	Fri 12/29/06	Fri 1/5/07	522FF	ME2
525	Bidding cycle	60 days	Mon 1/8/07	Tue 4/3/07	524,523	PPM
526	PO awarded	5 days	Wed 4/4/07	Tue 4/10/07	525	PPM
527	Receipt of magnets	205 days	Wed 4/11/07	Wed 2/6/08	526	ME2,MT1,MT2
528	Acceptance testing	40 days	Thu 2/7/08	Thu 4/3/08	527	ME2,MT1,MT2
529	Develop survey data	150 days	Thu 5/31/07	Tue 1/8/08	522FS+100 days	SC3
530	**Injection & Dump Magnet Stands & Installation Development**	**260 days**	**Mon 1/8/07**	**Wed 1/23/08**		
531	Design magnet support system	60 days	Mon 1/8/07	Tue 4/3/07	522	ME3,MD3
532	Develop & finalize magnet installation	40 days	Wed 4/4/07	Wed 5/30/07	531	ME3,MD3
533	Procure / build magnet support system	160 days	Thu 5/31/07	Wed 1/23/08	532	ME3



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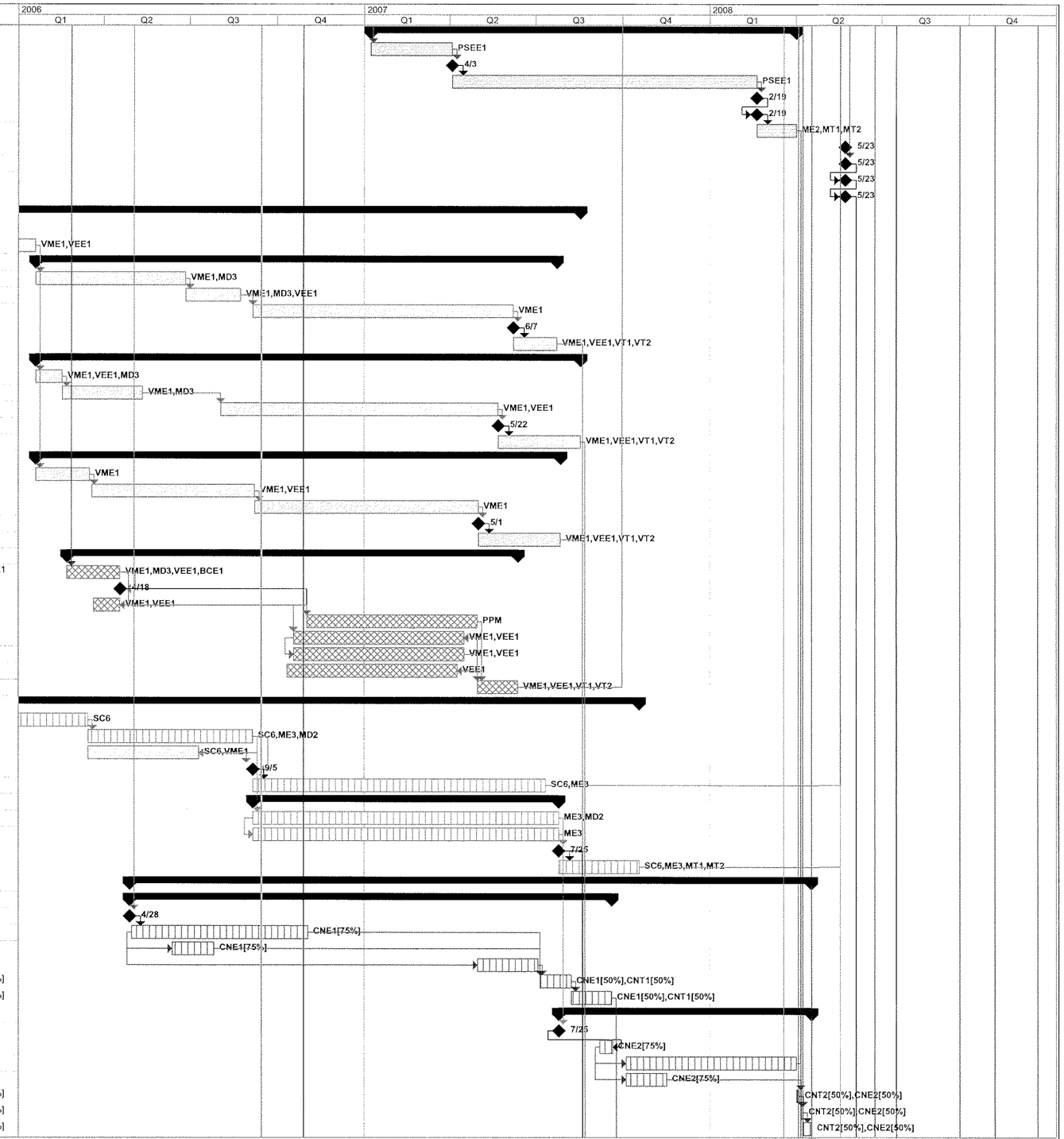
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
534	**ERL Injection & Dump Lines Magnet Power Supplies**	**308 days**	**Mon 1/8/07**	**Tue 4/1/08**		
535	Design magnet power supply system	60 days	Mon 1/8/07	Tue 4/3/07	522	PSEE1
536	Complete all power supply reviews	0 days	Tue 4/3/07	Tue 4/3/07	535	PSEE1
537	Procure power supplies and cabling	218 days	Wed 4/4/07	Tue 2/19/08	536	PSEE1
538	Final receipt of all components	0 days	Tue 2/19/08	Tue 2/19/08	537	PSEE1,PST1
539	P.S. controls complete	0 days	Tue 2/19/08	Tue 2/19/08	538	CNE1
540	Acceptance testing	30 days	Wed 2/20/08	Tue 4/1/08	539	ME2,MT1,MT2
541	**Relocate Beam Dump to ERL Location & Install**	**0 days**	**Fri 5/23/08**	**Fri 5/23/08**		
542	Move Dump to ERL location	0 days	Fri 5/23/08	Fri 5/23/08	464	
543	Re-connect to facilities	0 days	Fri 5/23/08	Fri 5/23/08	542	
544	Re-establish control system & test	0 days	Fri 5/23/08	Fri 5/23/08	543	
545	**Dev., Design, & Procure ERL Loop Vacuum System**	**605 days**	**Fri 3/18/05**	**Fri 8/17/07**		
546	Define the Vacuum System of the RF Gun, Cavity, ERL, etc.	130 days	Fri 3/18/05	Wed 9/21/05	467,485,497,473	VME1,VEE1
547	Complete engineering analysis of system	80 days	Thu 9/22/05	Thu 1/19/06	546	VME1,VEE1
548	**UHV System Beamtube**	**376 days**	**Fri 1/20/06**	**Mon 7/23/07**		
549	Design beamtube system	110 days	Fri 1/20/06	Mon 6/26/06	547	VME1,MD3
550	Complete Design Reviews	40 days	Tue 6/27/06	Wed 8/23/06	549	VME1,MD3,VEE1
551	Procure "Buy" components	188 days	Wed 9/6/06	Thu 6/7/07	550FS+8 days	VME1
552	Final receipt of all components	0 days	Thu 6/7/07	Thu 6/7/07	551	VME1,VEE1
553	Perform require acceptance testing	30 days	Fri 6/8/07	Mon 7/23/07	552	VME1,VEE1,VT1,VT2
554	**UHV System Pumping & Gauging**	**395 days**	**Fri 1/20/06**	**Fri 8/17/07**		
555	Engineer Pumping & Gauging System & Assoc. Controls	20 days	Fri 1/20/06	Thu 2/16/06	547	VME1,VEE1,MD3
556	Design pumping tees, gauge trees, etc.	60 days	Fri 2/17/06	Fri 5/12/06	555	VME1,MD3
557	Procure components	200 days	Thu 8/3/06	Tue 5/22/07	556FS+55 days	VME1,VEE1
558	Final receipt of all components	0 days	Tue 5/22/07	Tue 5/22/07	557	VME1,VEE1
559	Perform require acceptance testing	60 days	Wed 5/23/07	Fri 8/17/07	558	VME1,VEE1,VT1,VT2
560	**UHV Valves**	**380 days**	**Fri 1/20/06**	**Fri 7/27/07**		
561	Determine valve requirements	40 days	Fri 1/20/06	Fri 3/17/06	547	VME1
562	Engineer Valve Control System	120 days	Mon 3/20/06	Thu 9/7/06	561	VME1,VEE1
563	Procure components	160 days	Fri 9/8/06	Tue 5/1/07	562	VME1
564	Final receipt of all components	0 days	Tue 5/1/07	Tue 5/1/07	563	VME1,VEE1,VT1,VT2
565	Perform require acceptance testing	60 days	Wed 5/2/07	Fri 7/27/07	564	VME1,VEE1,VT1,VT2
566	**Design & Procurement of RF Gun to Dump Vacuum System**	**327 days**	**Wed 2/22/06**	**Tue 6/12/07**		
567	Define & design of vacuum system	40 days	Wed 2/22/06	Tue 4/18/06	518	VME1,MD3,VEE1,BCE1
568	Reviews of vacuum system complete	0 days	Tue 4/18/06	Tue 4/18/06	567FF	VME1,VEE1
569	Specification of valves, pumps, chambers & gauging	20 days	Wed 3/22/06	Tue 4/18/06	567FF	VME1,VEE1
570	Procurement of valves	120 days	Thu 11/2/06	Mon 4/30/07	569FS+137 days,568	PPM
571	Procurement of pumps & controls	120 days	Thu 10/19/06	Mon 4/16/07	570FF-10 days,569	VME1,VEE1
572	Procurement of instrumentation chambers & beamtube	120 days	Thu 10/19/06	Mon 4/16/07	571SS	VME1,VEE1
573	Procurement of gauging	120 days	Thu 10/12/06	Mon 4/9/07	570FF-15 days	VEE1
574	Reciept & acceptance testing of components	30 days	Tue 5/1/07	Tue 6/12/07	573,571,570,572	VME1,VEE1,VT1,VT2
575	**Beam Instrumentation - Develop, Design & Procure**	**490 days**	**Tue 11/1/05**	**Thu 10/18/07**		
576	Define instrumentation requirements	90 days	Tue 11/1/05	Wed 3/15/06	518FS-74 days	SC6
577	Develop & design Beam Instrumentation concepts	120 days	Thu 3/16/06	Tue 9/5/06	576	SC6,ME3,MD2
578	BI device integrated with vacuum chambers	80 days	Thu 3/16/06	Mon 7/10/06	577FF-40 days	SC6,VME1
579	All reviews complete	0 days	Tue 9/5/06	Tue 9/5/06	577FF,578	SC6
580	Preparation of Safety Documentation/SOP for Beam Instrumentation	210 days	Wed 9/6/06	Wed 7/11/07	579	SC6,ME3
581	**Procurement of components**	**220 days**	**Wed 9/6/06**	**Wed 7/25/07**		
582	Fabricate "Make" Components	220 days	Wed 9/6/06	Wed 7/25/07	577	ME3,MD2
583	Order "Buy" components	220 days	Wed 9/6/06	Wed 7/25/07	582SS	ME3
584	Receive all components	0 days	Wed 7/25/07	Wed 7/25/07	583	ME3,MT1,MT2
585	Assemble and test instrumentation for Gun-to-Dump operations	60 days	Thu 7/26/07	Thu 10/18/07	584	SC6,ME3,MT1,MT2
586	**Gun-to-Cavity-to-Dump Controls**	**490 days**	**Fri 4/28/06**	**Thu 4/17/08**		
587	**Photocathode Controls**	**347 days**	**Fri 4/28/06**	**Wed 9/19/07**		
588	Input from Photocathode Group due to Controls Group	0 days	Fri 4/28/06	Fri 4/28/06	399	
589	Develop Photocathode Controls	130 days	Mon 5/1/06	Thu 11/2/06	588	CNE1[75%]
590	Software development & Database	30 days	Tue 6/13/06	Wed 7/26/06	589SS+30 days	CNE1[75%]
591	Components delivery	45 days	Tue 5/1/07	Tue 7/3/07	589SS+20 days	
592	Configure & test	23 days	Fri 7/6/07	Tue 8/7/07	589,590,591	CNE1[50%],CNT1[50%]
593	Install system & test	30 days	Wed 8/8/07	Wed 9/19/07	592	CNE1[50%],CNT1[50%]
594	**Beam Instrumentation Controls Gun-to-Dump**	**182 days**	**Wed 7/25/07**	**Thu 4/17/08**		
595	Input from Beam Instrumentation Engineer due to Controls Group	0 days	Wed 7/25/07	Wed 7/25/07	582,583	
596	Instrumentation Controls engineering	10 days	Fri 9/7/07	Thu 9/20/07	595SF+40 days	CNE2[75%]
597	Order instrument controls	120 days	Fri 10/5/07	Tue 4/1/08	596SS+20 days	
598	Software development & Database	30 days	Fri 10/5/07	Fri 11/16/07	596SS+20 days	CNE2[75%]
599	Components delivered, inspect & test	3 days	Wed 4/2/08	Fri 4/4/08	597	CNT2[50%],CNE2[50%]
600	Configure & test	2 days	Mon 4/7/08	Tue 4/8/08	599,598	CNT2[50%],CNE2[50%]
601	Install & system checkout/doc	7 days	Wed 4/9/08	Thu 4/17/08	600	CNT2[50%],CNE2[50%]



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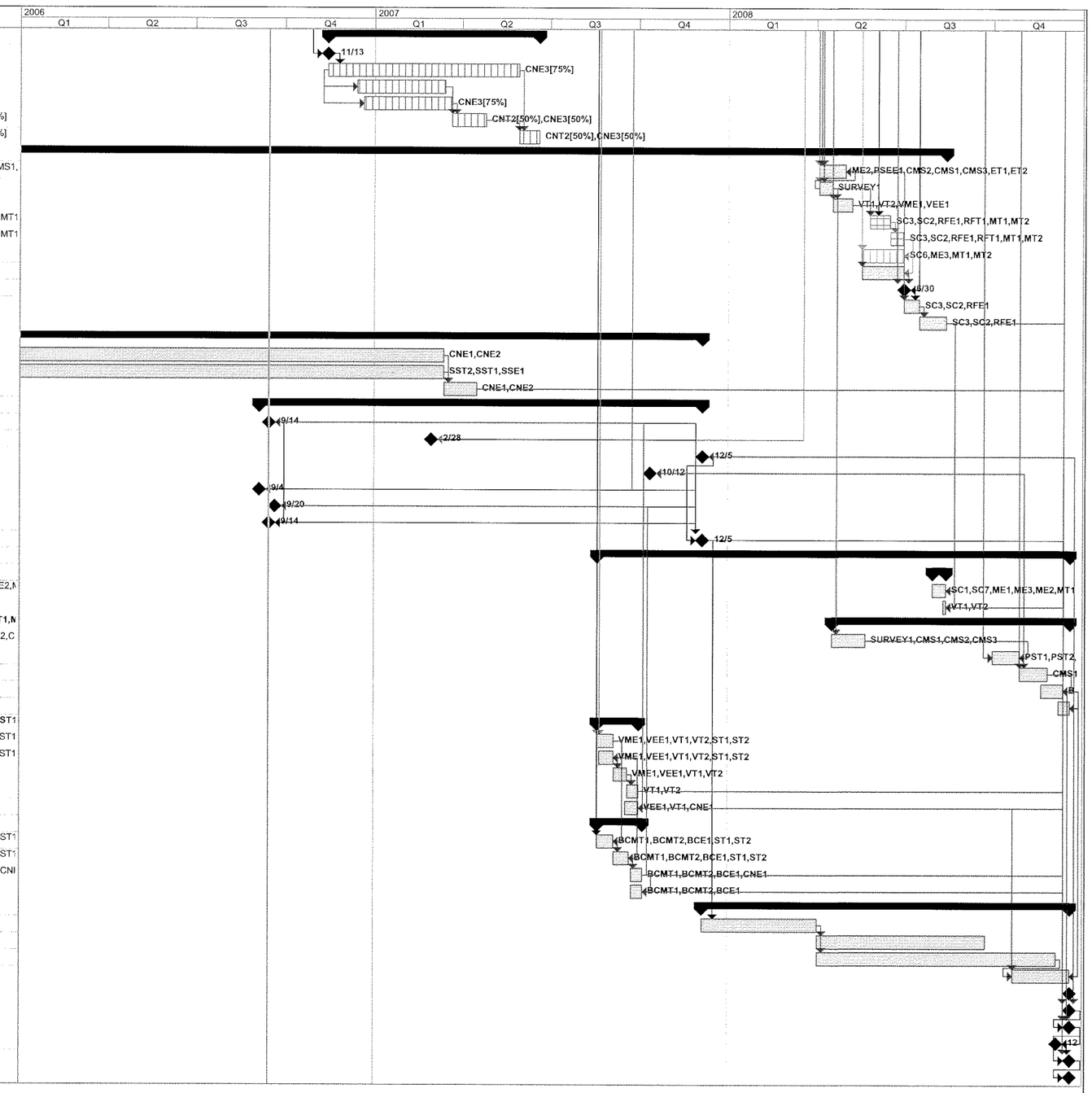
ID	Task Name	Duration	Start	Finish	Predecessors	Resource Names
602	**Beam Dump Controls**	**148 days**	**Mon 11/13/06**	**Tue 6/19/07**		
603	Input for Beam Dump due to Controls Group	0 days	Mon 11/13/06	Mon 11/13/06	443	
604	Develop Beam Dump Controls	133 days	Tue 11/14/06	Tue 5/29/07	603	CNE3[75%]
605	Order beam dump control components	60 days	Thu 12/14/06	Wed 3/14/07	604SS+20 days	
606	Software development & Database	60 days	Thu 12/21/06	Wed 3/21/07	604SS+25 days	CNE3[75%]
607	Configure & test	25 days	Thu 3/22/07	Wed 4/25/07	606,605	CNT2[50%],CNE3[50%]
608	Install & test system	15 days	Wed 5/30/07	Tue 6/19/07	604,607	CNT2[50%],CNE3[50%]
609	**Assemble Photocathode, Rf Gun, Cavity & Beam Dump**	**786 days**	**Mon 6/20/05**	**Wed 8/13/08**		
610	Install Gun-to-Cavity-Dump magnets & magnet power supplies	20 days	Fri 4/4/08	Thu 5/1/08	611SF,528,540,449	ME2,PSEE1,CMS2,CMS1,
611	Survey components into place	10 days	Fri 4/4/08	Thu 4/17/08	422,413,528	SURVEY1
612	Install Gun-to-Cavity-to-Dump vacuum system	15 days	Fri 4/18/08	Thu 5/8/08	611,348	VT1,VT2,VME1,VEE1
613	Connect RF Gun /PC system assembly & Dump to cavity	15 days	Tue 5/27/08	Mon 6/16/08	611,544	SC3,SC2,RFE1,RFT1,MT1
614	Test connections	10 days	Tue 6/17/08	Mon 6/30/08	613	SC3,SC2,RFE1,RFT1,MT1
615	Install Beam Instrumentation & test	30 days	Mon 5/19/08	Mon 6/30/08	585,614FF,580	SC6,ME3,MT1,MT2
616	Cryogenic controls in place & tested	30 days	Mon 5/19/08	Mon 6/30/08	615FF,419	
617	Receive approval to run	0 days	Mon 6/30/08	Mon 6/30/08	421FF+40 days,331,341,616	SC6,ME3,MT1,MT2
618	Test complete system (Photocathode thru Dump)	10 days	Tue 7/1/08	Wed 7/16/08	617,612,610	SC3,SC2,RFE1
619	Satisfy performance criteria	20 days	Thu 7/17/08	Wed 8/13/08	618	SC3,SC2,RFE1
620	**System Controls**	**614 days**	**Mon 6/20/05**	**Wed 12/5/07**		
621	Component controls complete	430 days	Mon 6/20/05	Tue 3/13/07	467FS+305 days	CNE1,CNE2
622	Safety Systems re-certification	430 days	Mon 6/20/05	Tue 3/13/07	467FS+305 days	SST2,SST1,SSE1
623	Control Room installation complete & tested	24 days	Wed 3/14/07	Mon 4/16/07	622,621	CNE1,CNE2
624	**Controls Integration**	**312 days**	**Mon 9/4/06**	**Wed 12/5/07**		
625	Input from Vacuum Group due to Controls Group	0 days	Thu 9/14/06	Thu 9/14/06	648FF-260 days	CNE1,CNE2
626	Input from RF Group due to Controls Group	0 days	Wed 2/28/07	Wed 2/28/07	422FF-260 days	CNE1,CNE2
627	Input from Magnet Engineer due to Controls Group	0 days	Wed 12/5/07	Wed 12/5/07	642FF-260 days	CNE1,CNE2
628	Input from Magnet P.S. Engineer due to Controls Group	0 days	Fri 10/12/07	Fri 10/12/07	639FF-260 days	CNE1,CNE2
629	Input from Photocathode Group due to Controls Group	0 days	Mon 9/4/06	Mon 9/4/06	593FF-260 days	CNE1,CNE2
630	Input from Beam Instrumentation Engineer due to Controls Grou	0 days	Wed 9/20/06	Wed 9/20/06	652FF-260 days	CNE1,CNE2
631	Final Input for Beam Dump due to Controls Group	0 days	Thu 9/14/06	Thu 9/14/06	625FF	CNE1,CNE2
632	All controls input received	0 days	Wed 12/5/07	Wed 12/5/07	625,626,627,628,629,630,631	
633	**ERL Installation, All Systems**	**334 days**	**Mon 8/20/07**	**Fri 12/19/08**		
634	**Linac (PC Sys./Gun/Cavity/Dump) modifications**	**10 days**	**Thu 7/31/08**	**Wed 8/13/08**		
635	TBD during Gun-Cavity-Dump testing	10 days	Thu 7/31/08	Wed 8/13/08	619FF	SC1,SC7,ME1,ME3,ME2,M
636	Removal vacuum tees/caps	3 days	Mon 8/11/08	Wed 8/13/08	635FF	VT1,VT2
637	**Magnet Survey & Installation**	**169 days**	**Fri 4/18/08**	**Fri 12/19/08**		**ST2,ME1,ME3,ST1,MT1,M**
638	Loop survey & stand installation	25 days	Fri 4/18/08	Thu 5/22/08	611	SURVEY1,CMS1,CMS2,C
639	Installation of magnet power supplies	20 days	Wed 10/1/08	Tue 10/28/08	638FF,516FS-40 days	PST1,PST2,PSE1
640	Magnet placement & survey	20 days	Wed 10/29/08	Wed 11/26/08	481,505,639,493	CMS1,CMS2,ST1,ST2
641	Cabling & instrumentation of magnets	15 days	Thu 11/20/08	Fri 12/12/08	640FF+10 days	BCMT1,BCMT2
642	Integration with control system	10 days	Mon 12/8/08	Fri 12/19/08	641FF+5 days	CNE1,BCE1
643	**Vacuum Component Survey & Installation**	**30 days**	**Mon 8/20/07**	**Mon 10/1/07**		**VME1,VEE1,VT1,VT2,ST1**
644	Beamtube placement & survey	12 days	Mon 8/20/07	Wed 9/5/07	553,559,565	VME1,VEE1,VT1,VT2,ST1
645	Beam instrumentation & survey	10 days	Wed 8/22/07	Wed 9/5/07	644FF	VME1,VEE1,VT1,VT2,ST1
646	Installation of pumps, gauging & controls	10 days	Thu 9/6/07	Wed 9/19/07	645	VME1,VEE1,VT1,VT2
647	System leak checking	8 days	Thu 9/20/07	Mon 10/1/07	646	VT1,VT2
648	Integration with control system	10 days	Tue 9/18/07	Mon 10/1/07	647FF	VEE1,VT1,CNE1
649	**Beam Instrumentation Installation**	**34 days**	**Mon 8/20/07**	**Fri 10/5/07**		**BCMT1,BCMT2,BCE1**
650	Device placement & survey	12 days	Mon 8/20/07	Wed 9/5/07	584,645FF	BCMT1,BCMT2,BCE1,ST1
651	In-beamtube-device placement & survey	12 days	Thu 9/6/07	Fri 9/21/07	650,645FF	BCMT1,BCMT2,BCE1,ST1
652	Integration with control system	10 days	Mon 9/24/07	Fri 10/5/07	651	BCMT1,BCMT2,BCE1,CNI
653	Device/system testing	10 days	Mon 9/24/07	Fri 10/5/07	652FF	BCMT1,BCMT2,BCE1
654	**ERL Controls Installation & Test**	**260 days**	**Thu 12/6/07**	**Fri 12/19/08**		
655	Design controls system	80 days	Thu 12/6/07	Wed 4/2/08	632	
656	Procure controls hardware	120 days	Thu 4/3/08	Tue 9/23/08	655	
657	Software develop & test	170 days	Thu 4/3/08	Fri 12/5/08	655	
658	Controls integration	40 days	Wed 10/22/08	Fri 12/19/08	657FS-35 days,652,648,642FF	
659	**Systems Integration Complete**	**0 days**	**Fri 12/19/08**	**Fri 12/19/08**		
660	All controls integrated & system testing complete	0 days	Fri 12/19/08	Fri 12/19/08	648,652,642,623,658,632	
661	All systems installations complete	0 days	Fri 12/19/08	Fri 12/19/08	636,647,653,641,660,468	
662	Receive approval to run	0 days	Fri 12/5/08	Fri 12/5/08	661FF-10 days	SC1
663	System Run & Testing Begins	0 days	Fri 12/19/08	Fri 12/19/08	661,662,619	
664	Project Complete	0 days	Fri 12/19/08	Fri 12/19/08	663	



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