



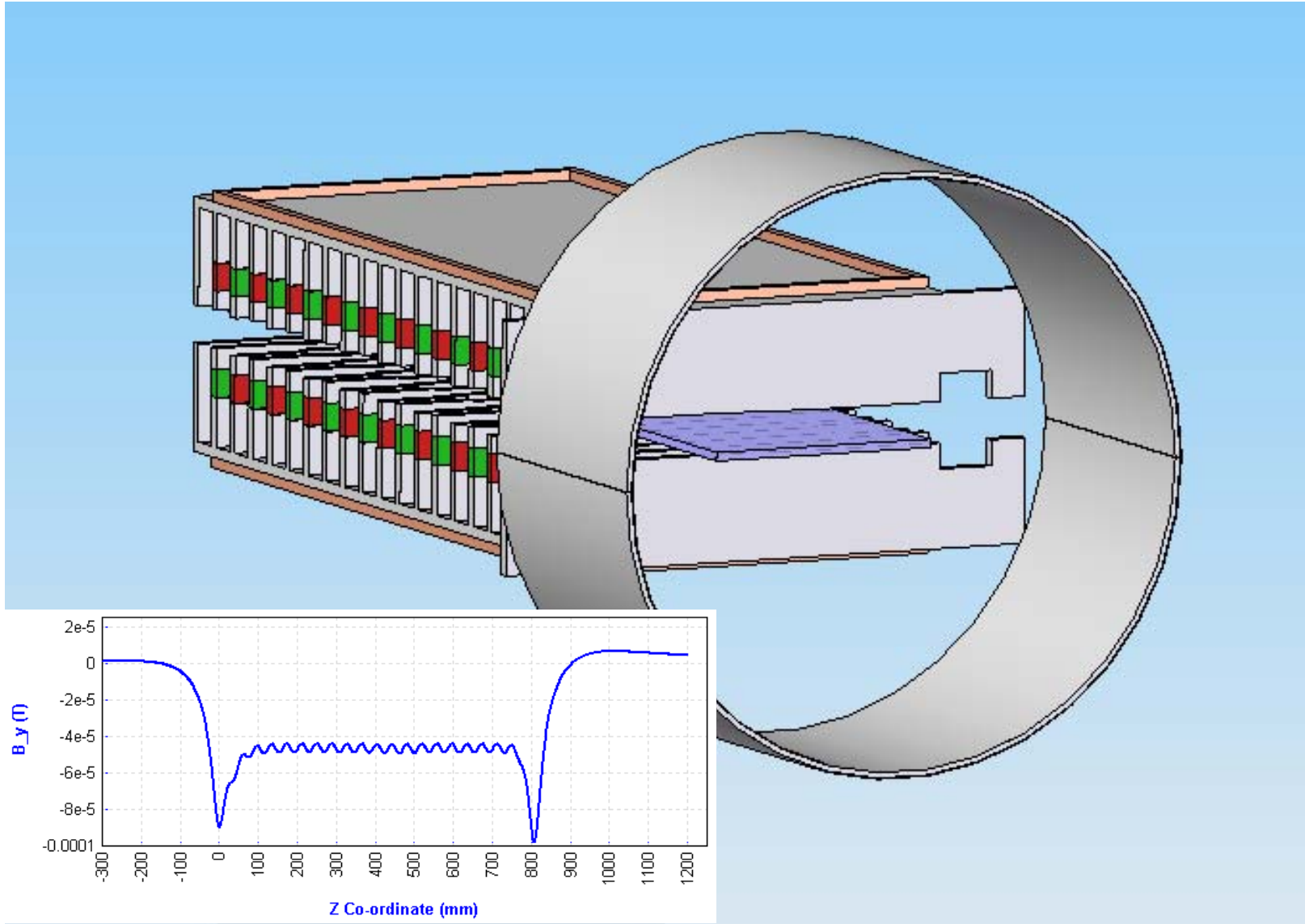
International Linear Collider
at Stanford Linear Accelerator Center

LSBK Development Status

April 24, 2008

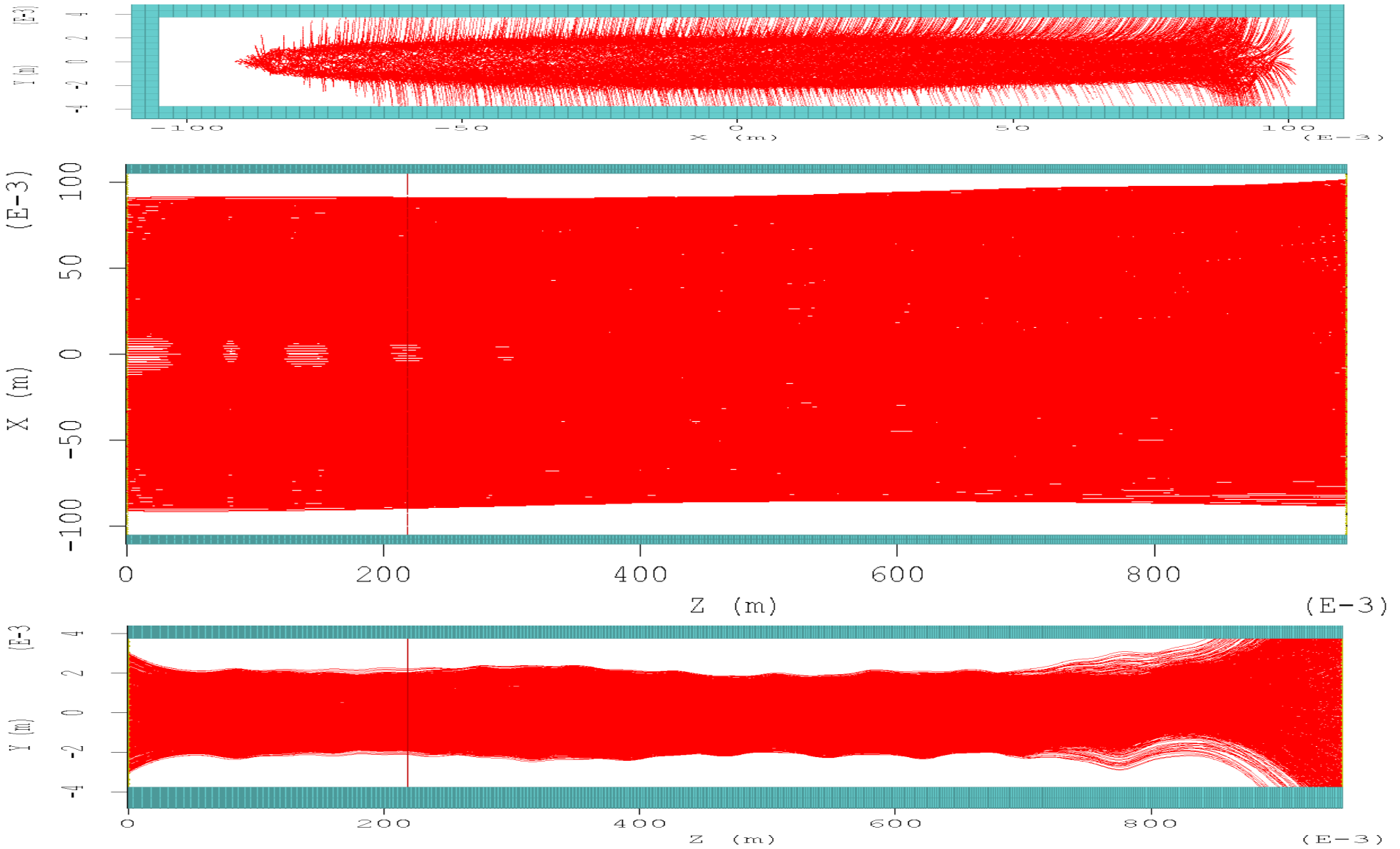


Magnetic Shield and Canceling Coil



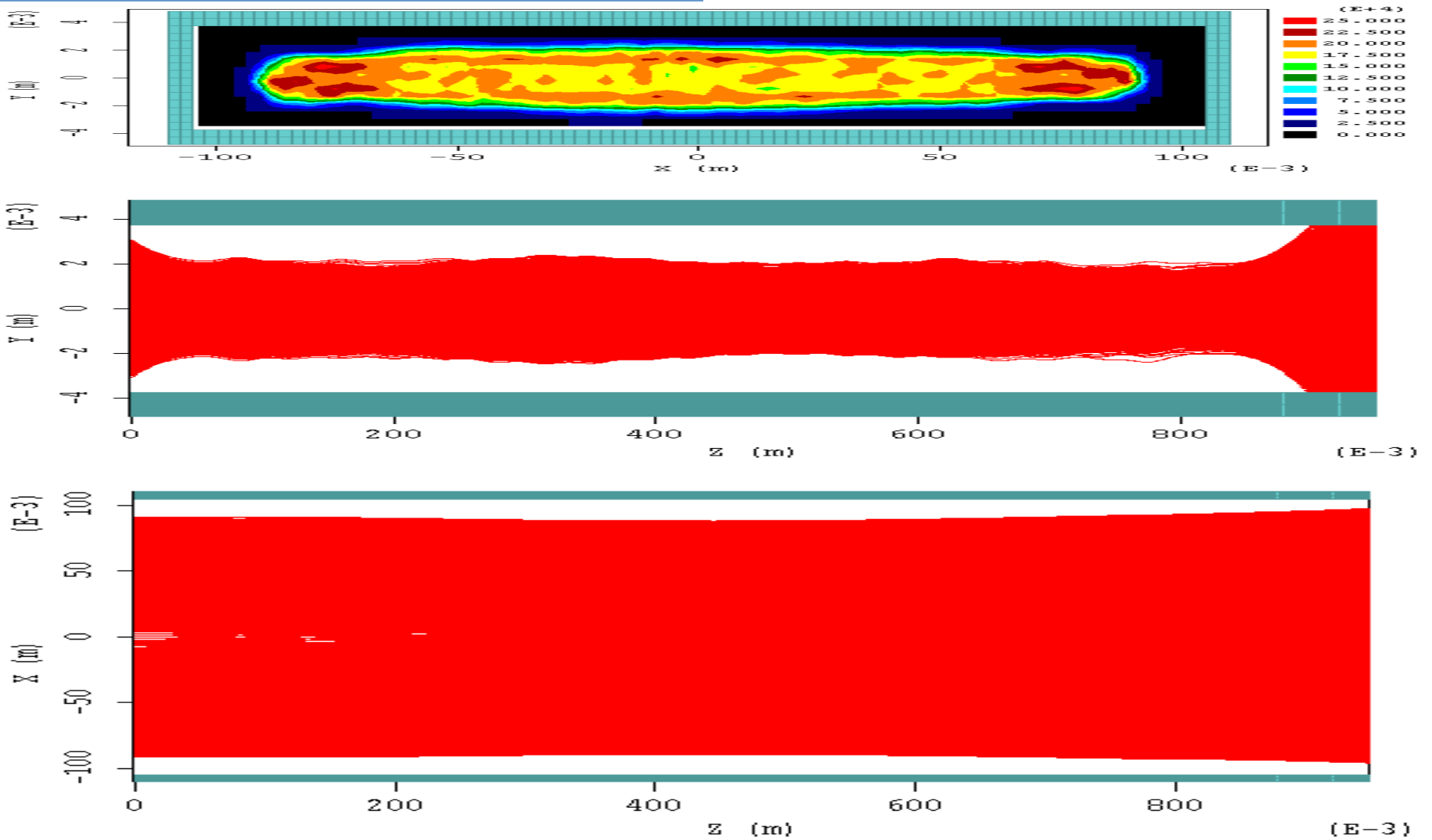


Transport with Canceling Coil Off



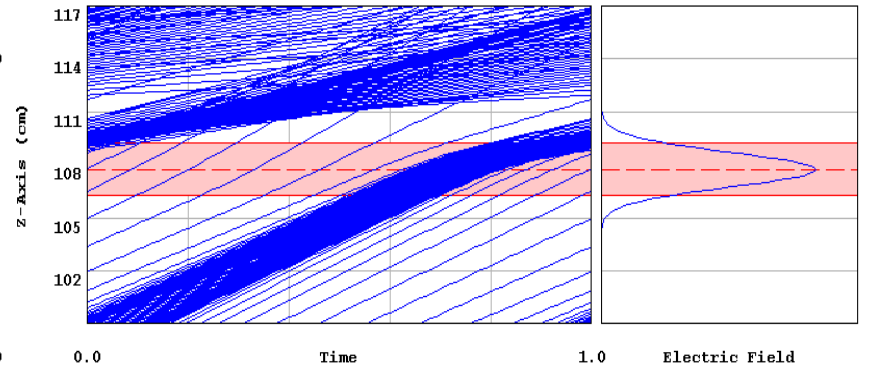
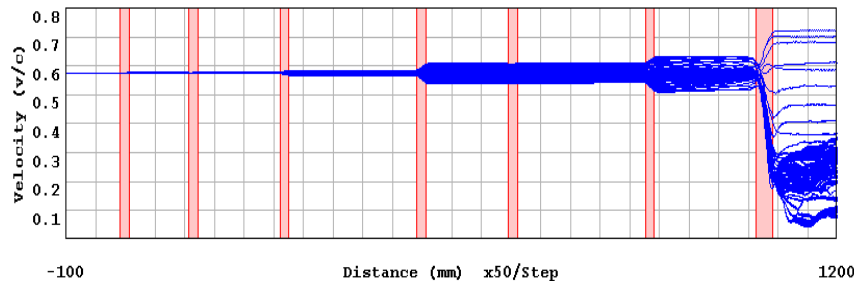
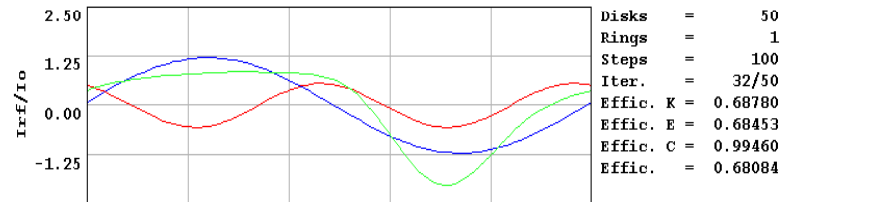
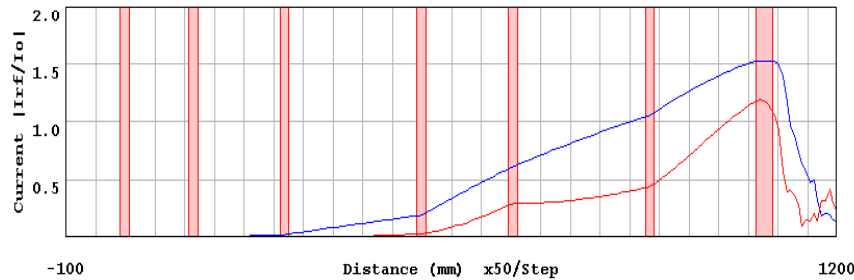
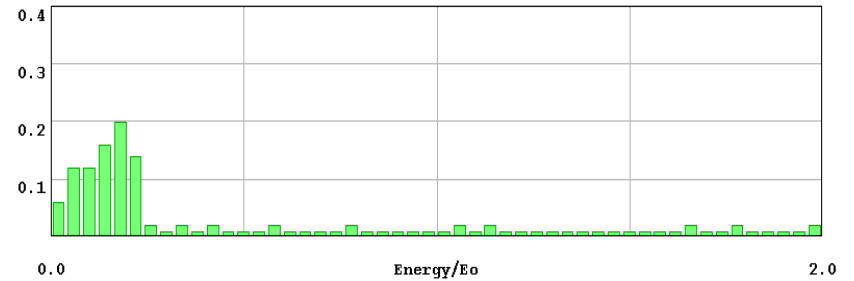
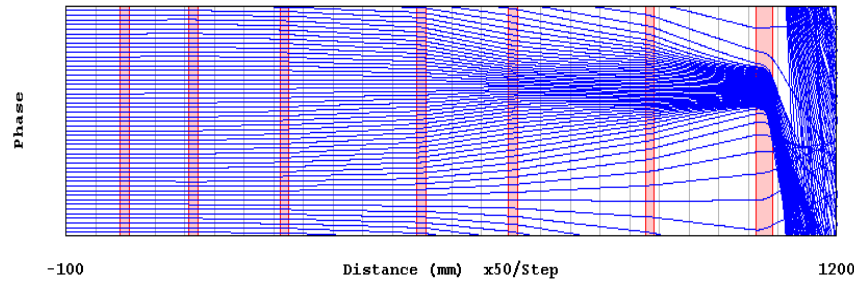


Transport with Canceling Coil On



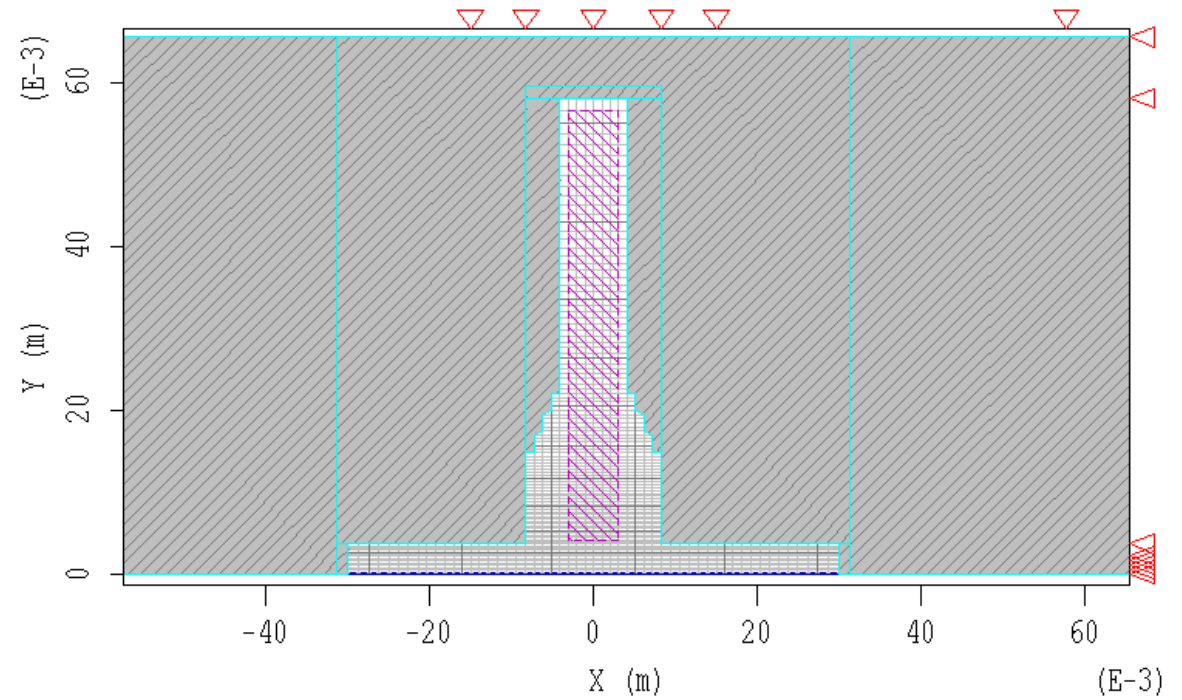
AJ ILC - AJ_ILC.dsk (01/31/08)

Vo = 115.000 kV	z(m)	0.0000	0.1154	0.2694	0.5003	0.6542	0.8851	1.0775
Io = 130.000 A	f(MHz)	1300.00	1298.00	1307.00	1313.00	2535.00	1365.00	1300.00
f = 1.300 GHz	Qe	110.00	95000.00	95000.00	95000.00	95000.00	95000.00	38.00
yd = 7.500 mm	Qo	1000.00	200.00	400.00	500.00	1000.00	1000.00	7000.00
yb = 4.500 mm	RQ	12.00	12.00	12.00	12.00	15.00	12.00	22.00
Pin = 20.000 W	M	0.9600	0.9600	0.9600	0.9600	0.8500	0.9600	0.9000
Pout = 10.124 MW	d(mm)	16.510	16.510	16.510	16.510	16.510	16.510	30.480
Gain = 57.043 dB	V(kV)	0.3983	1.5226	3.9352	15.1845	9.5256	16.2599	130.1041

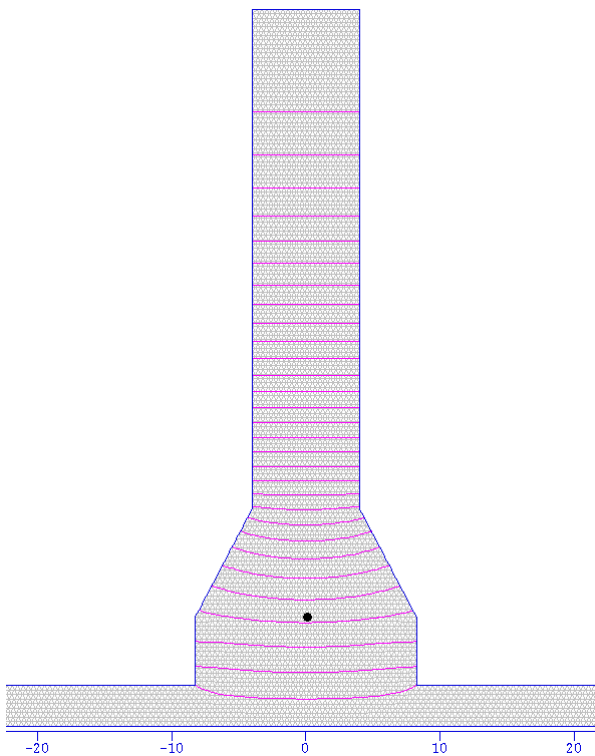




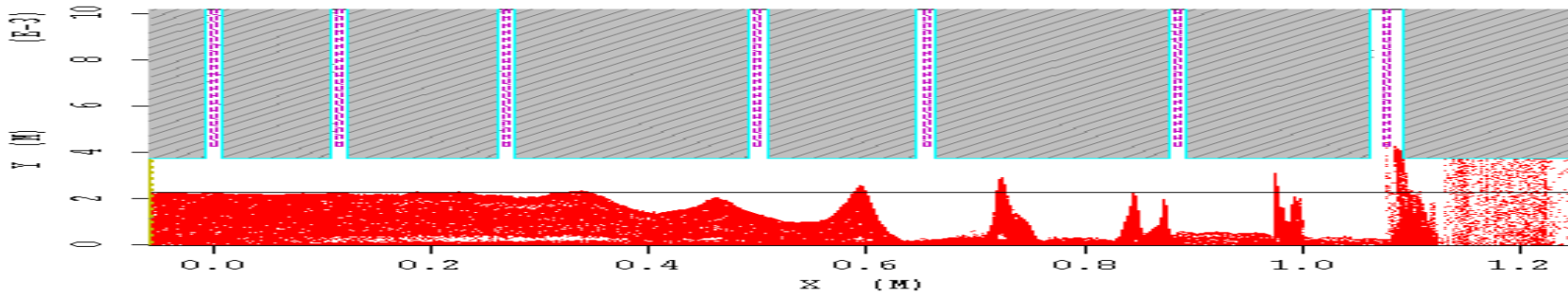
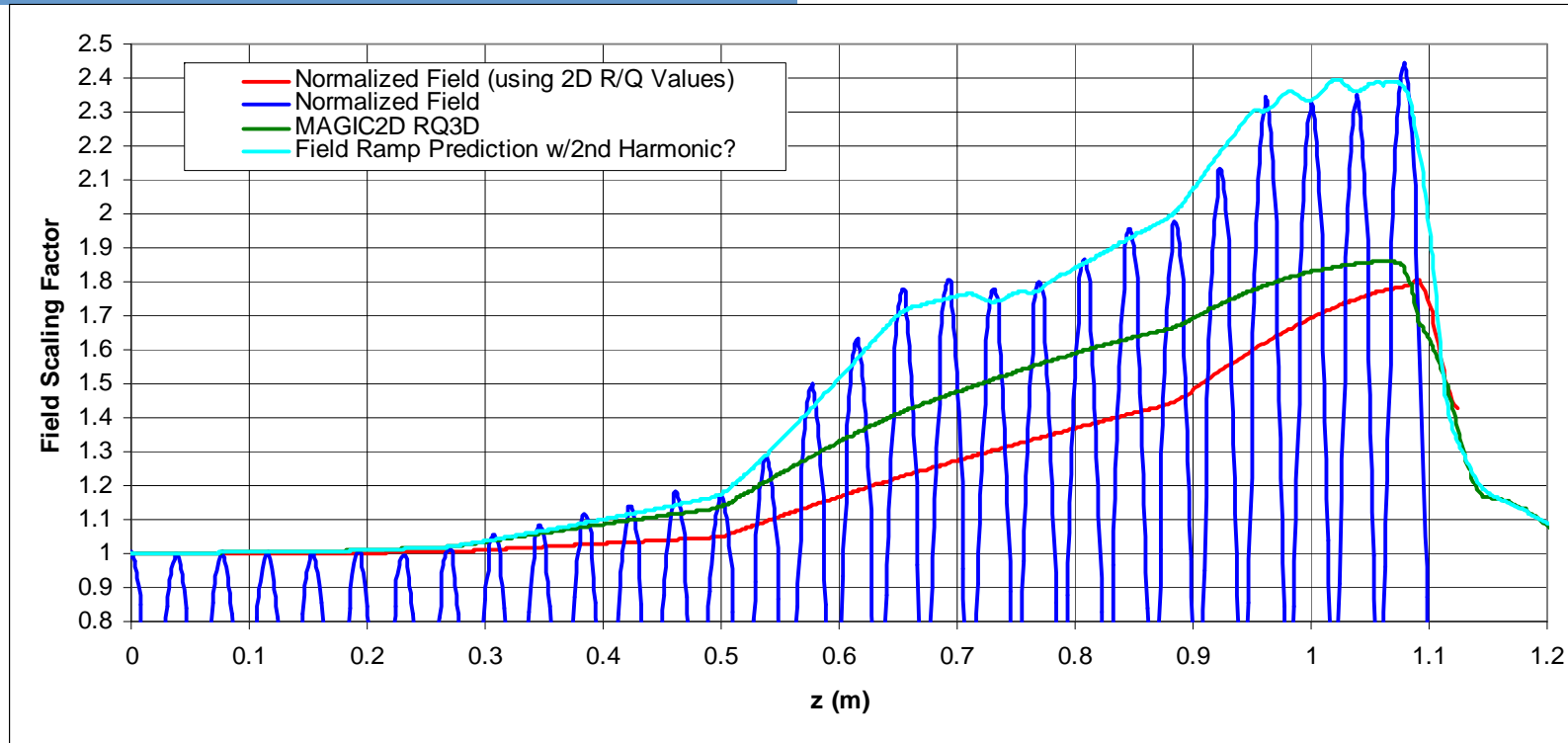
VIEW OF GRID, CONDUCTORS, AND SYMMETRY BOUNDARIES



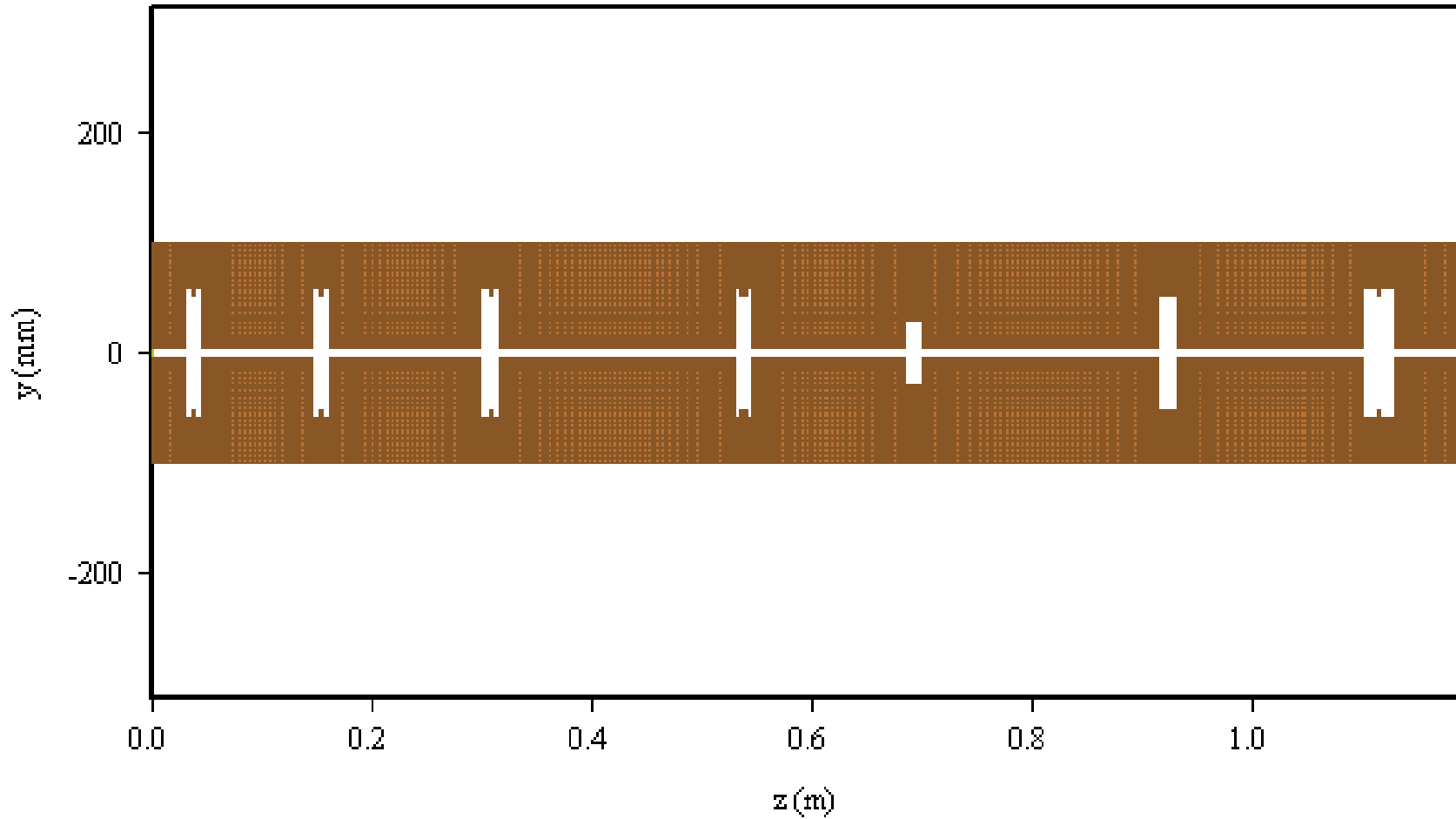
In MAGIC2D...



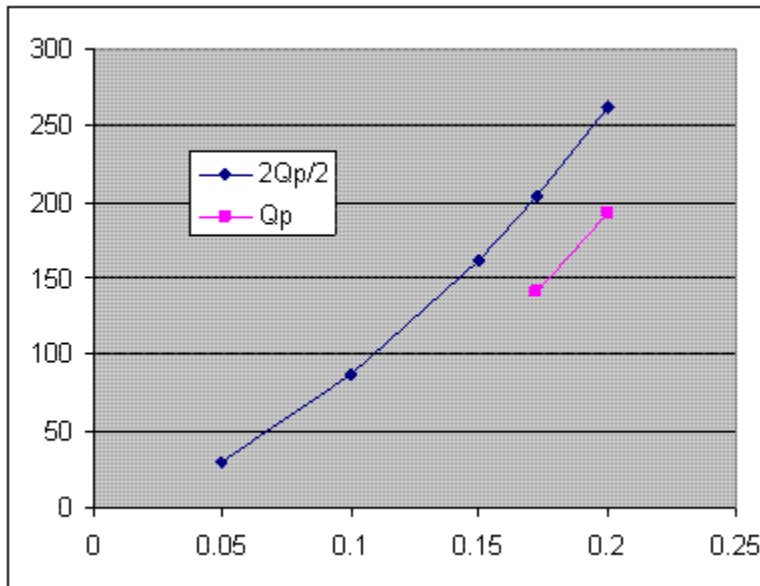
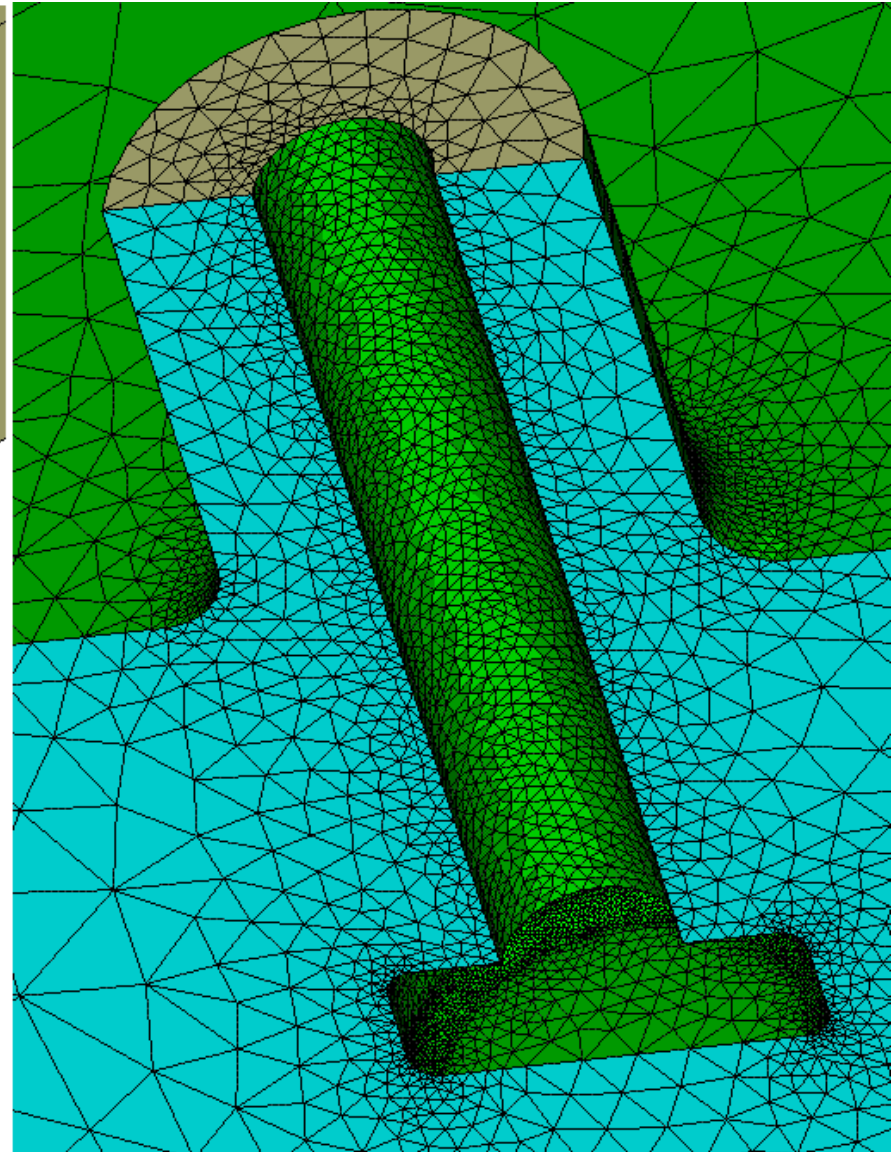
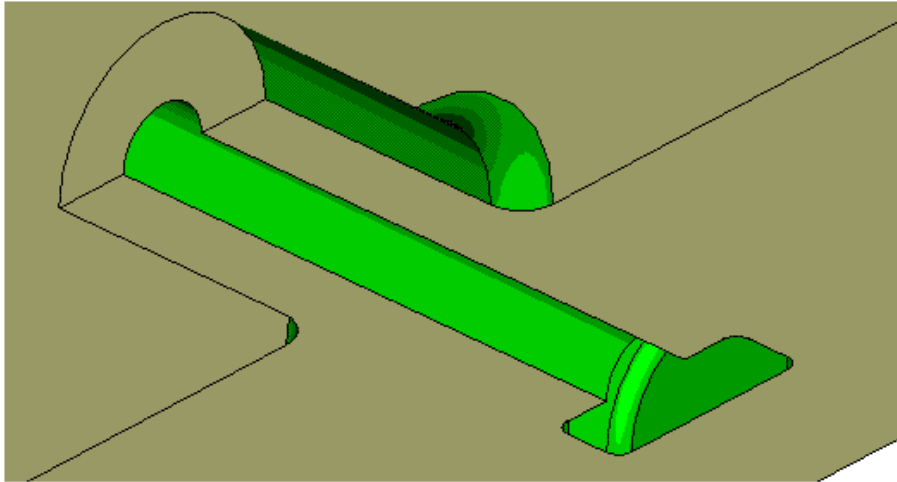
Modeling the 3D R/Q and M in 2D

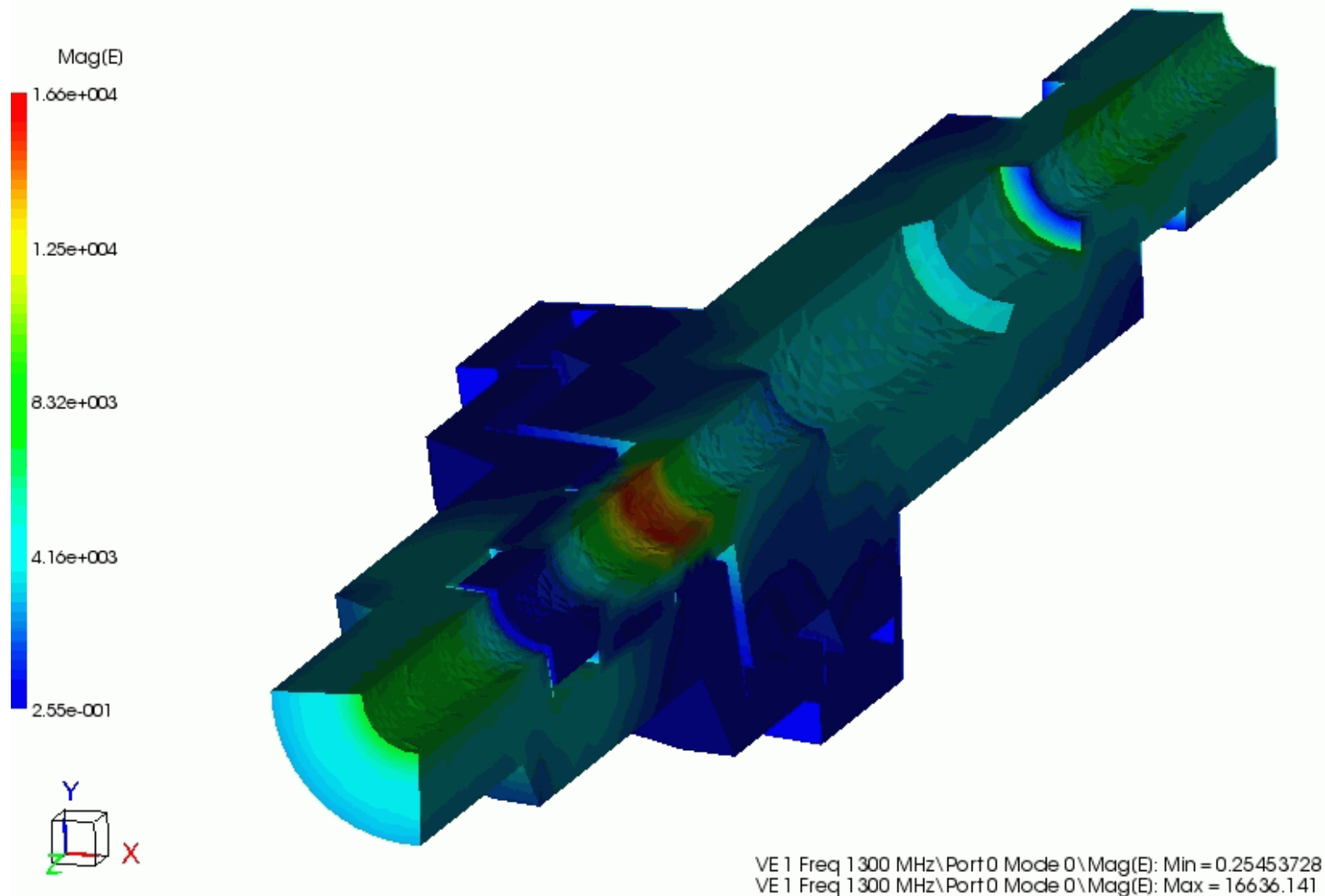


10MW+



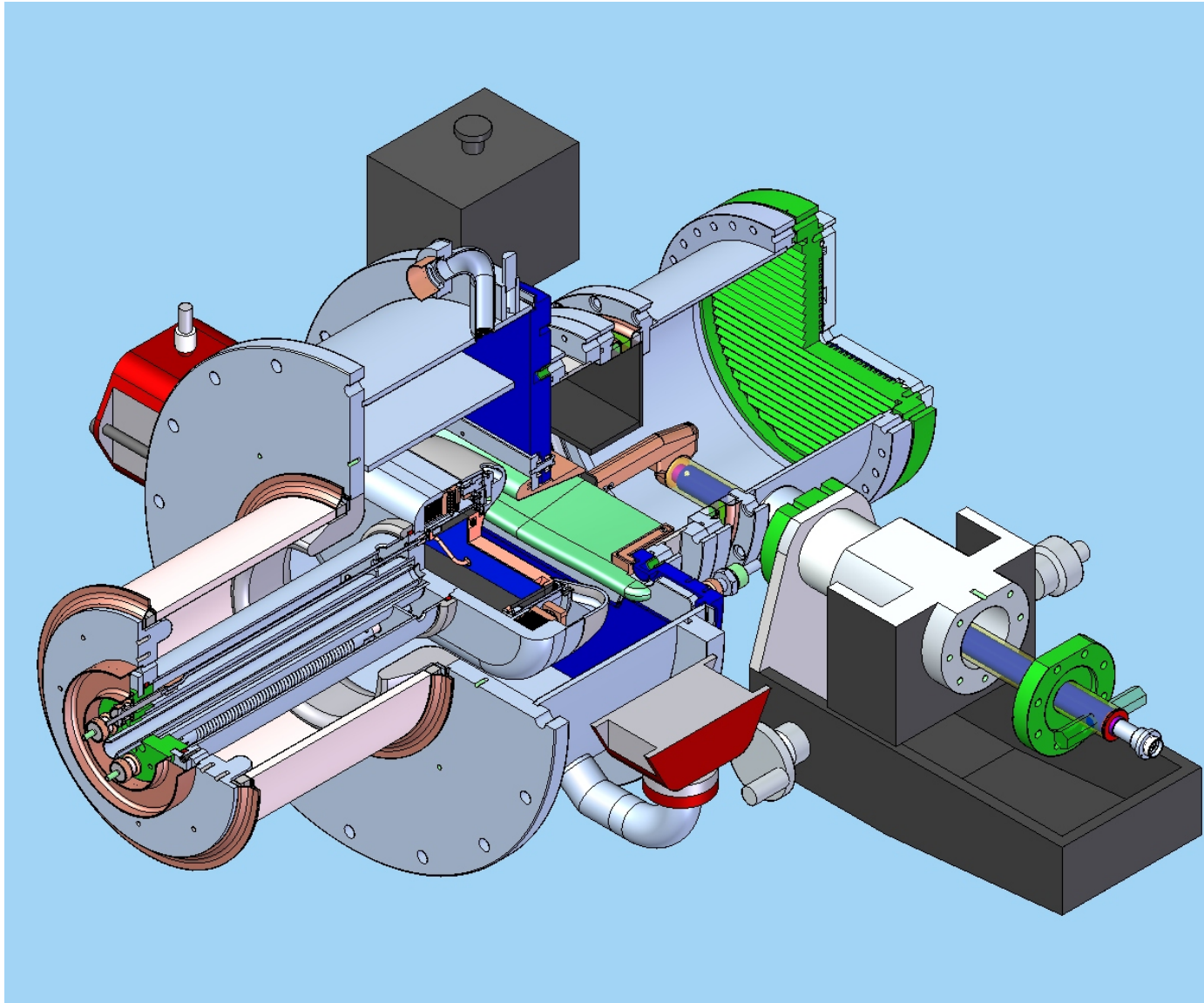
MAGIC3D with Magnet Modeling...

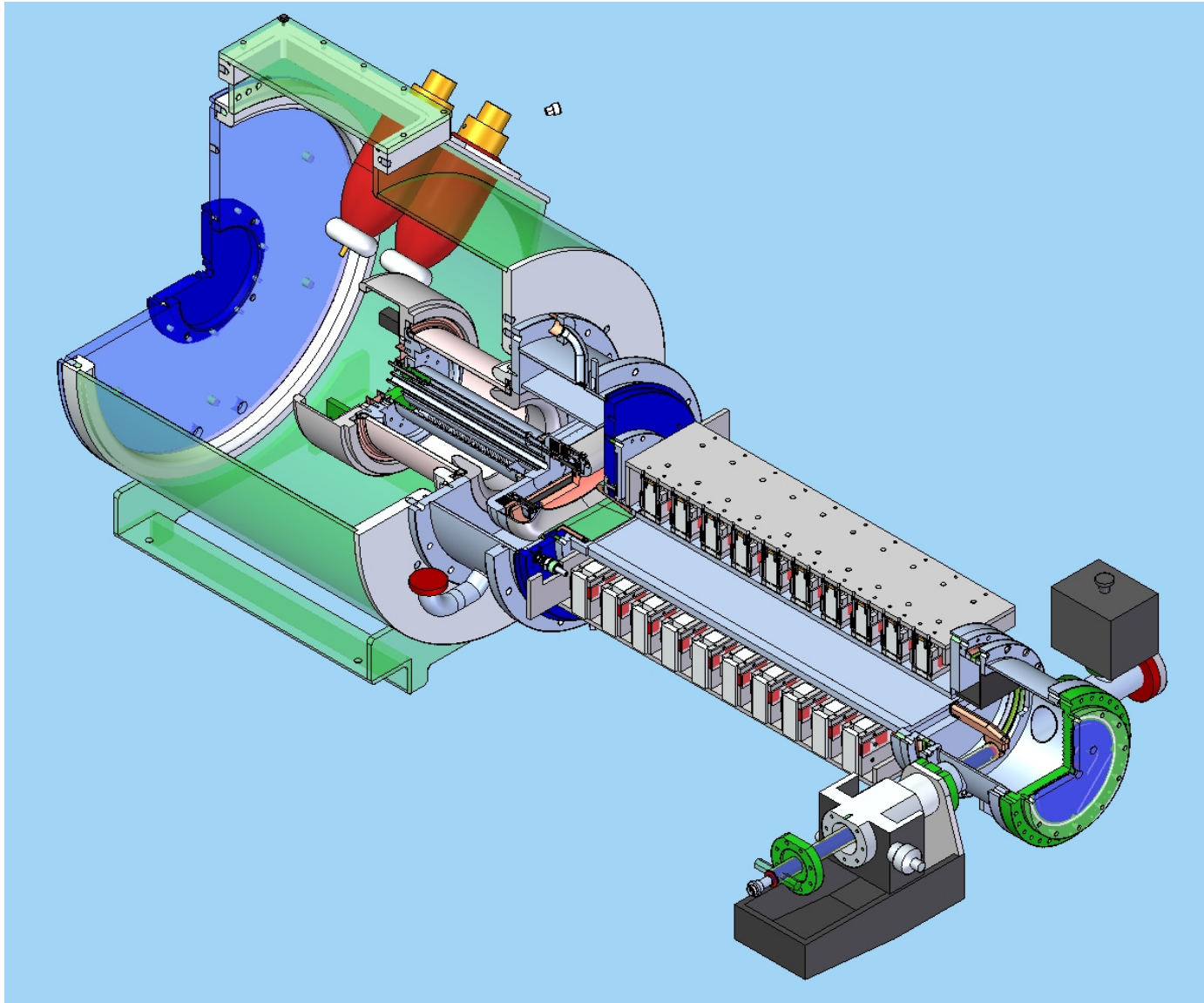


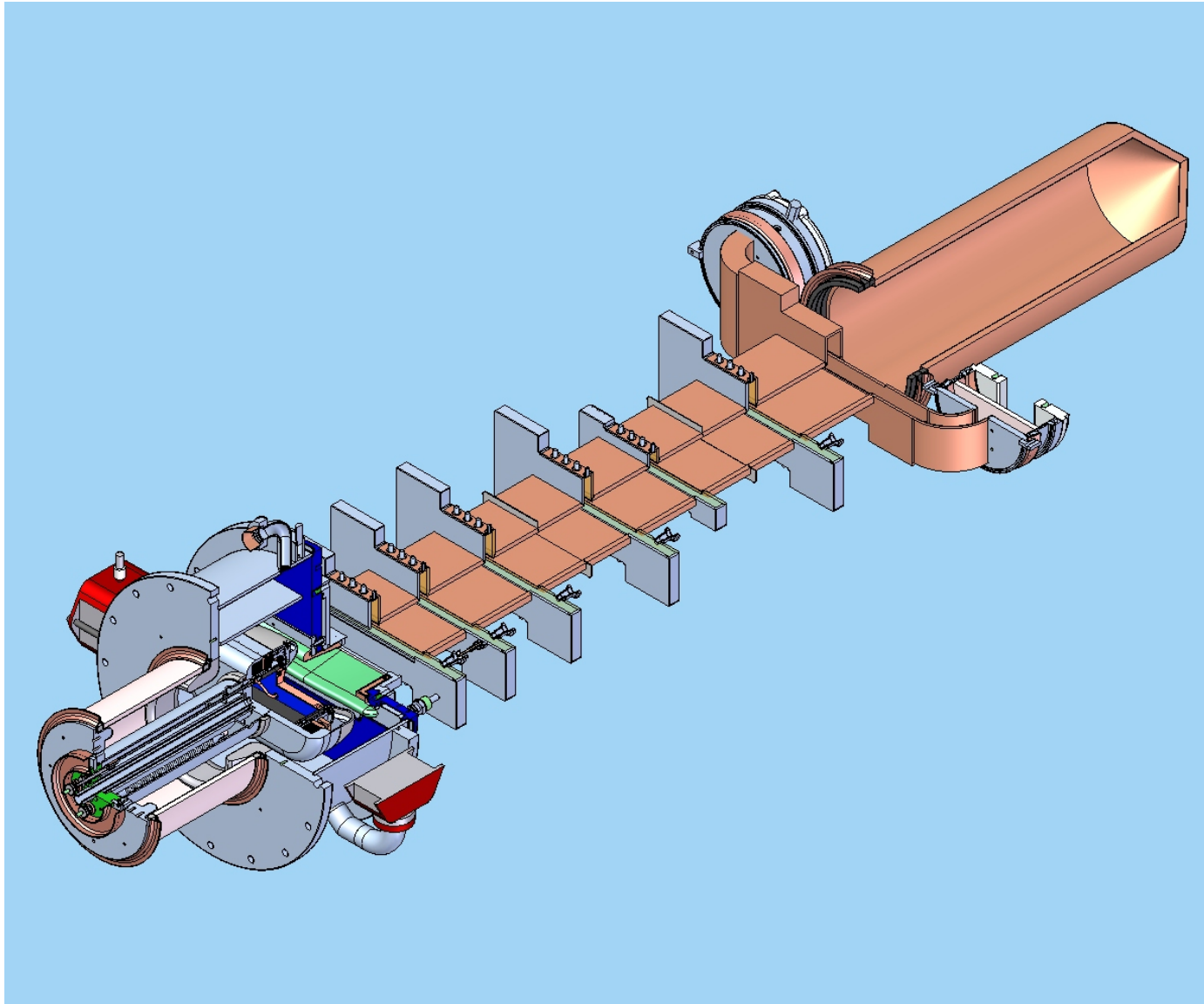




- Electron gun:
 - Simulations complete
- Beam Transport:
 - Earth field shield design complete
- RF circuit:
 - Cavity cold test complete, excellent agreement with simulations
 - Cavity loading design nearing completion
- RF-Beam Interaction:
 - Optimizing magnetic profile for 2D RF transport in preparation for 3D optimizations via PIC simulations

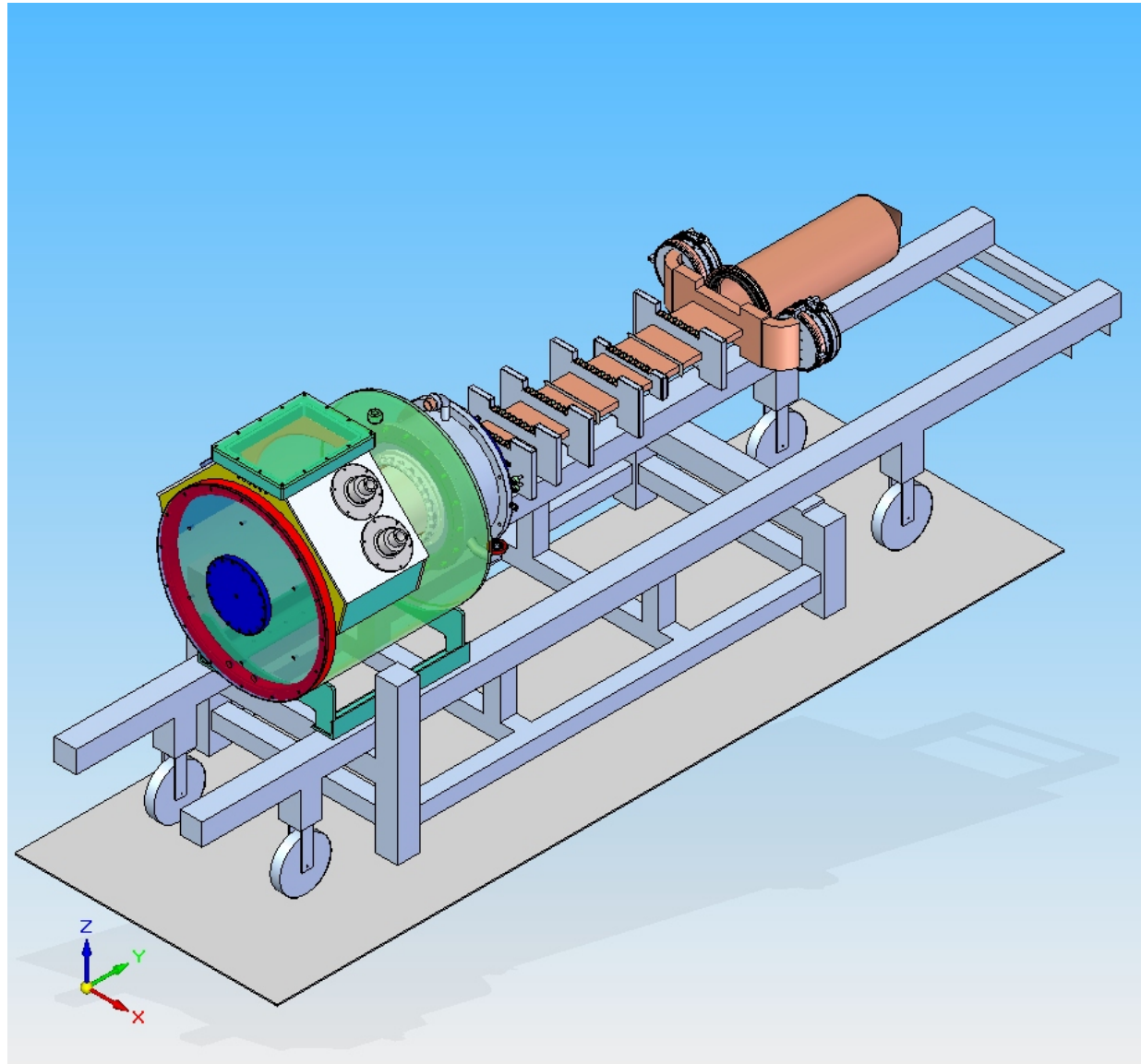






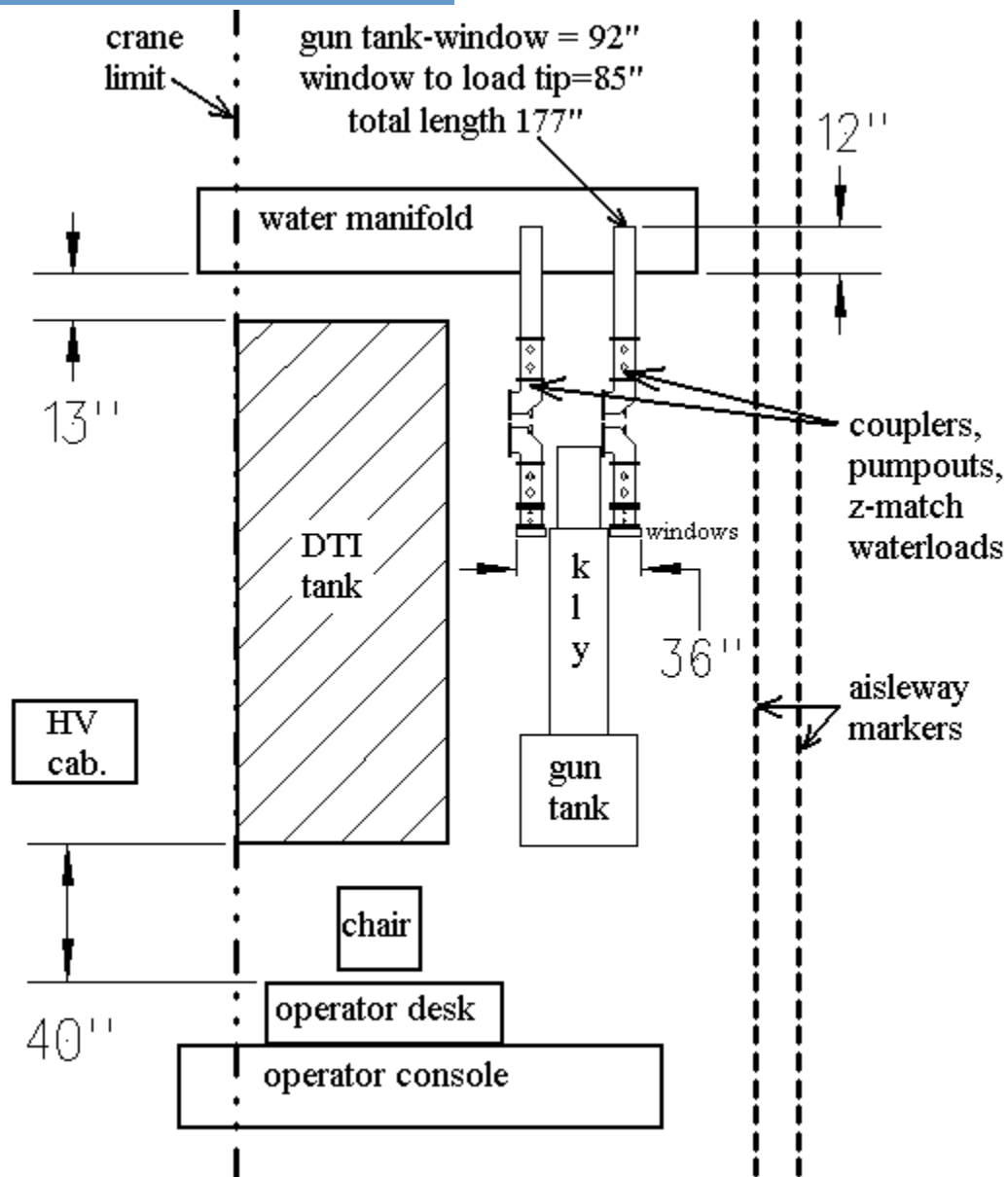


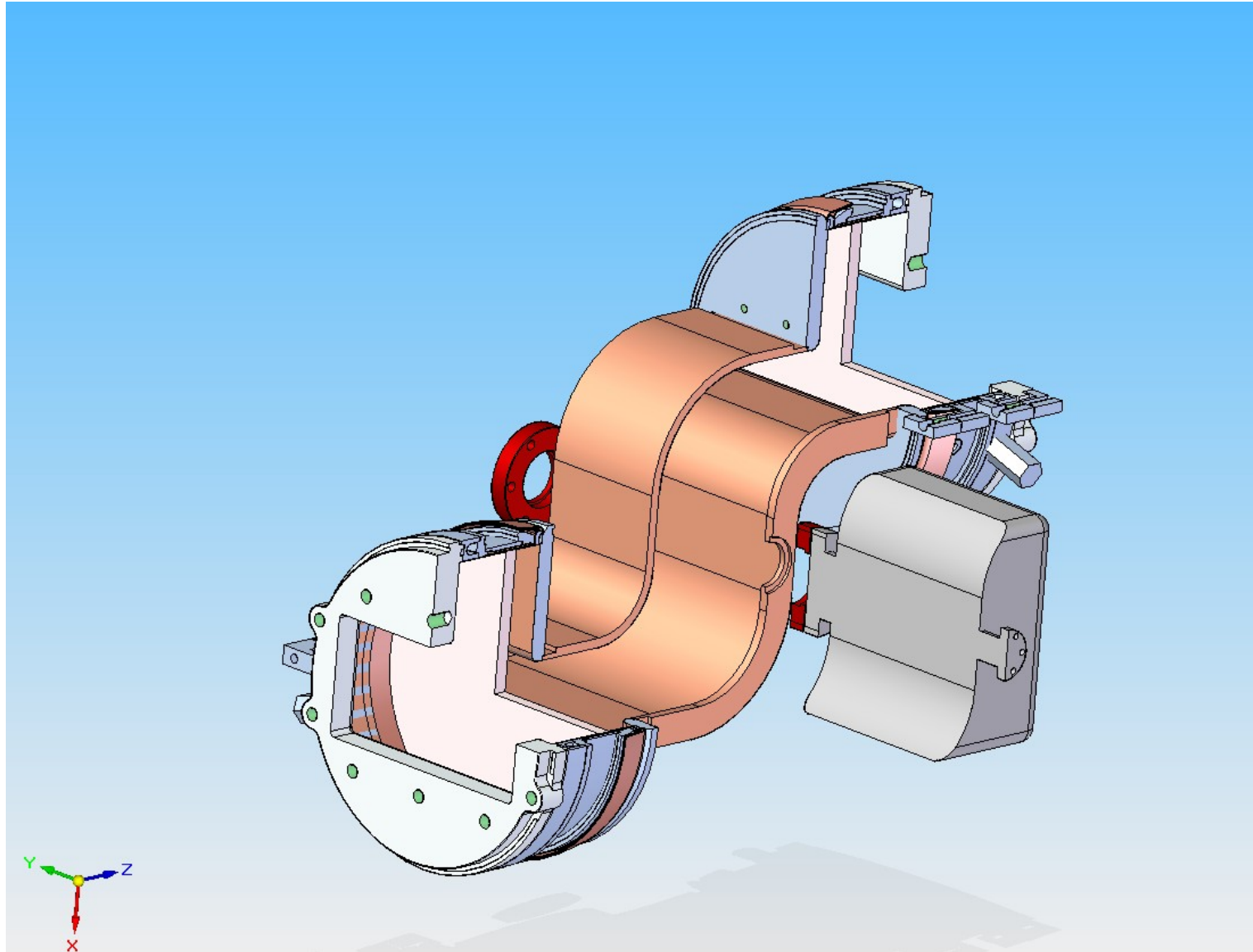
Mechanical Design-Klystron on Surplus BFK Stand

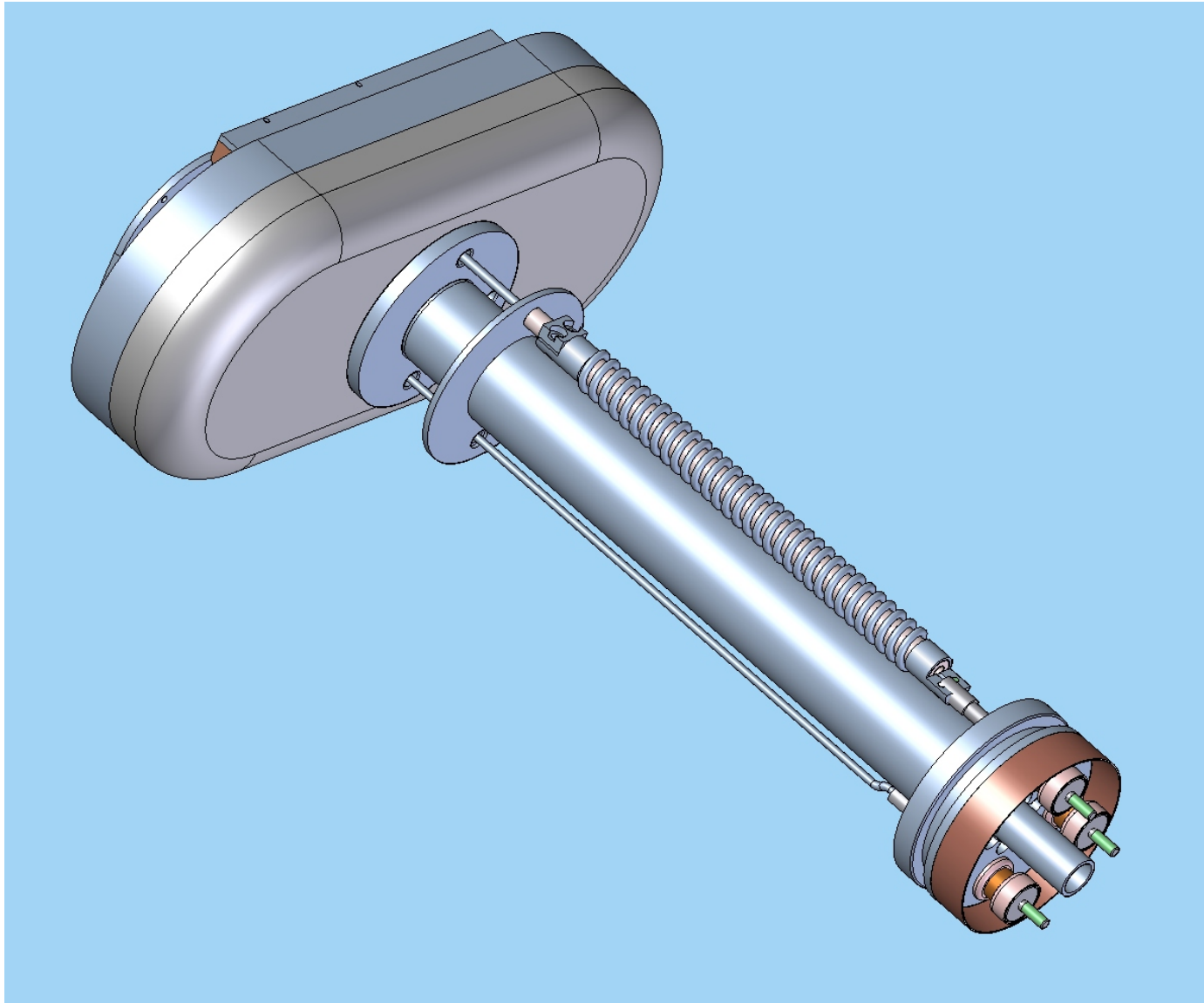




Test Stand 3 Layout

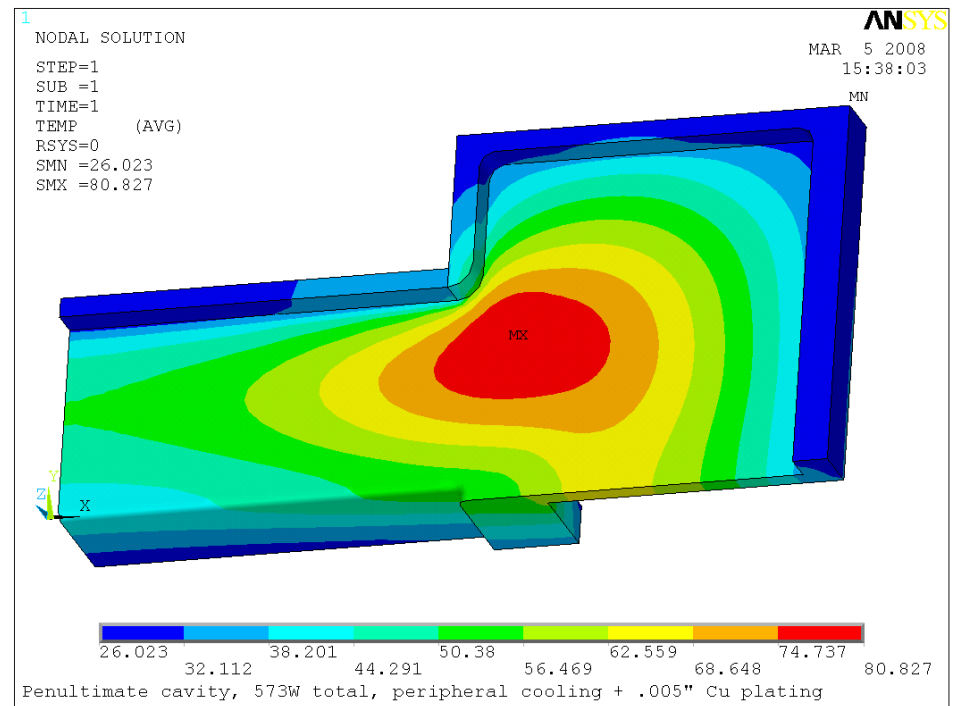
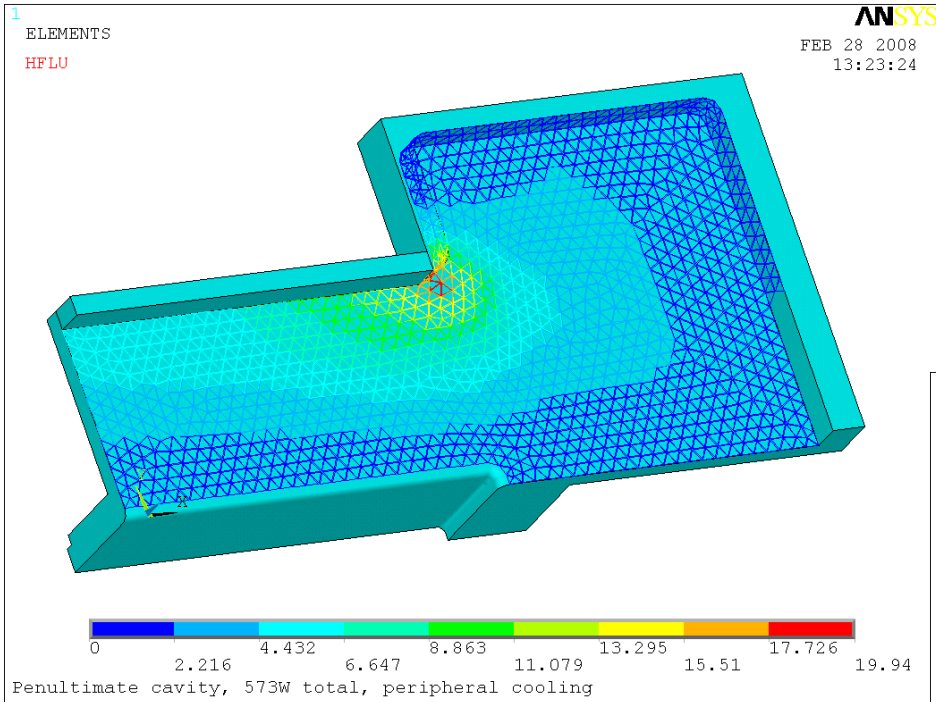








Mechanical Design-Penultimate Cavity Cooling





Real Parts-Anode Halves





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Real Parts-Back FE

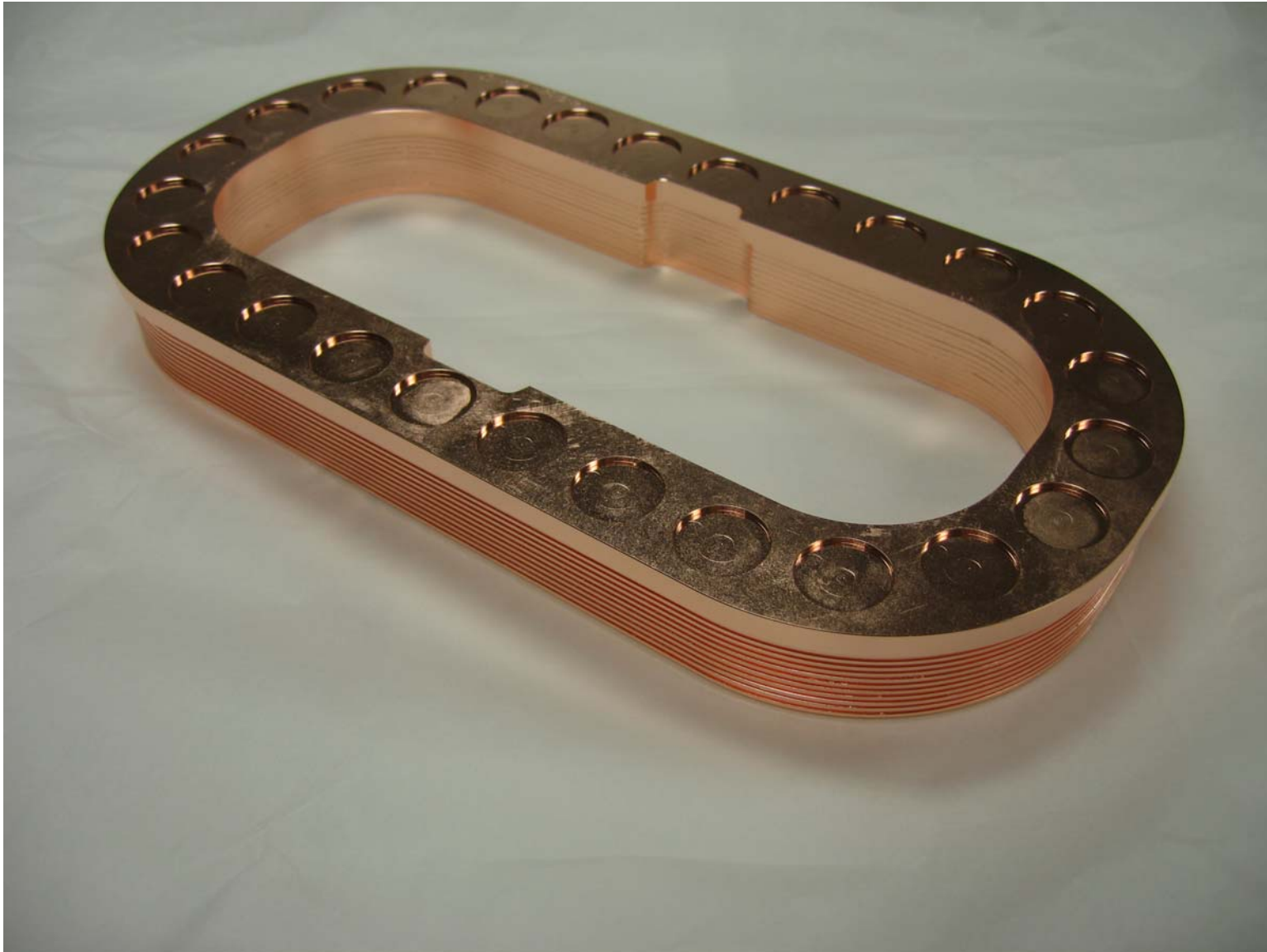


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Real Parts-FE Cooler



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Real Parts-Gun Baseplate and Stem



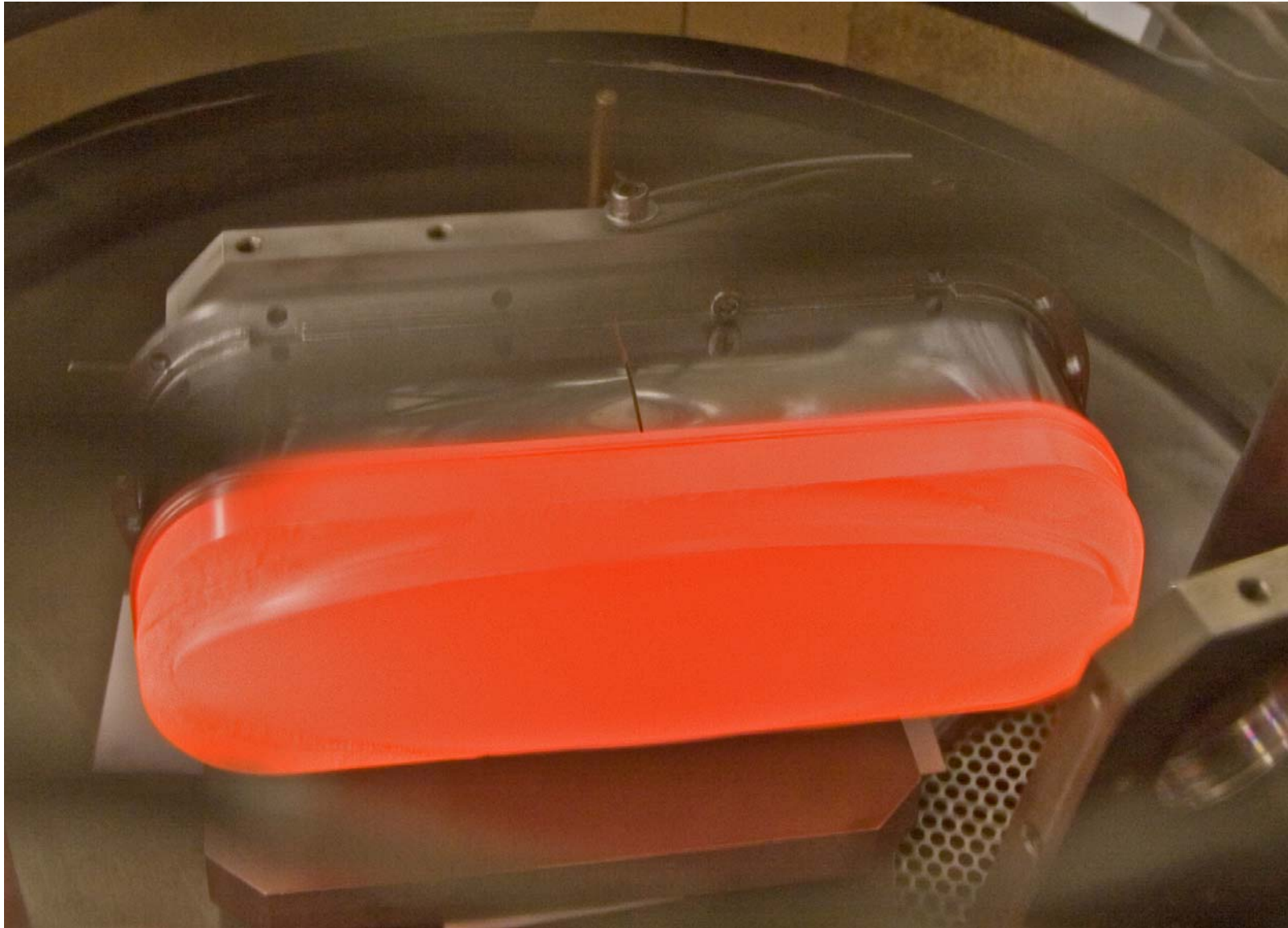


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Real Parts-Cathode



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Cold Test Cavity





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Cold Test Spacers



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Cold Test Step Transition

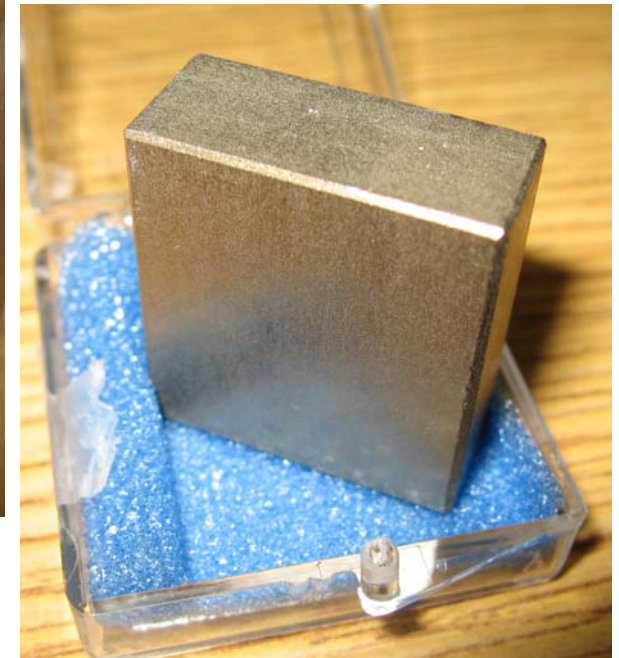


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Magnets, Lot's of Magnets



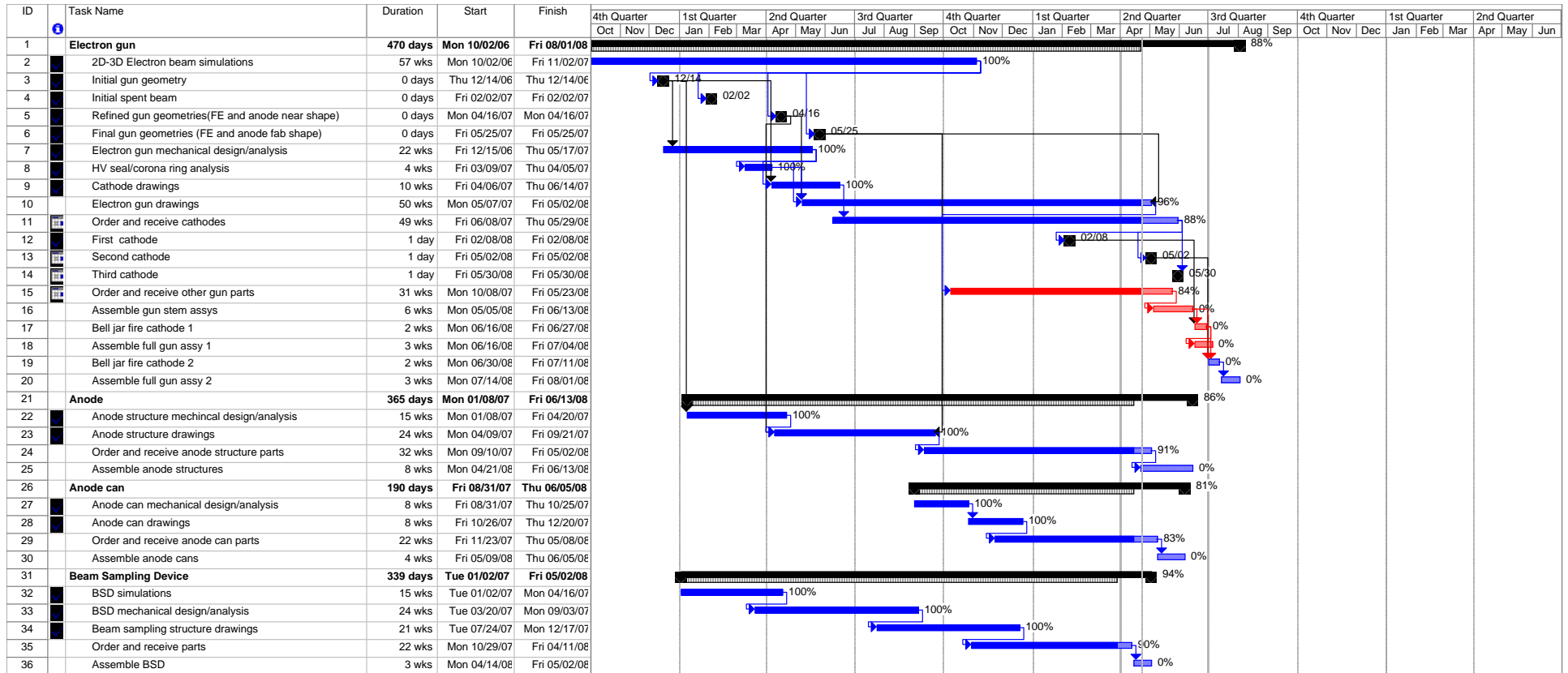
ENJ April 24, 2008



- Electron gun:
 - First cathode in QC, second cathode to be delivered this month
 - FE scaling and drawings complete, machining started
 - Almost all parts received. Assembly beginning
- Anode assembly:
 - Parts in QC
- Beam diagnostic:
 - All parts on order or already received
 - Assembly of vacuum chamber beginning
- Klystron Design Tasks Sliding:
 - Concentrating on finishing diode drawings and fabrication

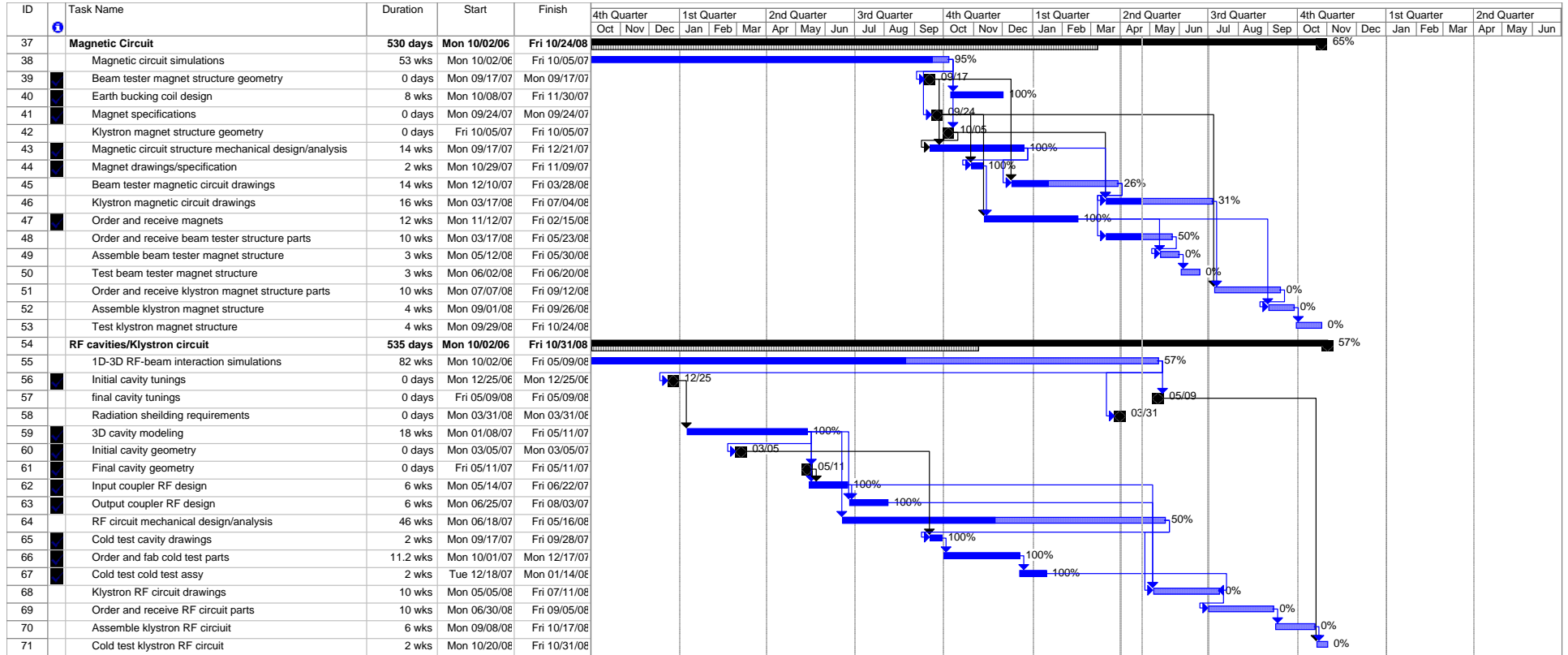


Schedule





Schedule (continued)





Schedule (continued)

ID	Task Name	Duration	Start	Finish	1st Quarter				2nd Quarter				3rd Quarter				4th Quarter				1st Quarter				2nd Quarter				3rd Quarter			
					Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
72	Klystron collector	130 days	Fri 05/09/08	Fri 11/07/08																												
73	Final spent beam	0 days	Fri 05/09/08	Fri 05/09/08																												
74	Collector mechanical design/analysis	10 wks	Mon 05/12/08	Fri 07/18/08																												
75	Collector Drawings	6 wks	Mon 07/14/08	Fri 08/22/08																												
76	Order and receive collector parts	8 wks	Mon 08/18/08	Fri 10/10/08																												
77	Assemble collector	4 wks	Mon 10/13/08	Fri 11/07/08																												
78	Windows	390 days	Mon 12/11/06	Fri 06/20/08																												
79	Window RF design	43 wks	Mon 12/11/06	Fri 10/05/07																												
80	Window mechanical design	4 wks	Mon 05/28/07	Fri 06/22/07																												
81	Window ceramic drawing	2 wks	Mon 05/28/07	Fri 06/08/07																												
82	Order and receive window ceramics	16 wks	Mon 06/11/07	Fri 09/28/07																												
83	Klystron RF window drawings	16 wks	Mon 06/18/07	Fri 10/05/07																												
84	Order and receive parts	22 wks	Mon 10/08/07	Fri 03/21/08																												
85	Assemble and coat windows	9 wks	Mon 03/24/08	Fri 05/23/08																												
86	Cold test windows	1 wk	Mon 05/26/08	Fri 05/30/08																												
87	High power test	3 wks	Mon 06/02/08	Fri 06/20/08																												
88	Tube support/Test stand interface	340 days	Mon 04/23/07	Fri 08/22/08																												
89	Gun adjuster mechanical design/analysis	42 wks	Mon 04/23/07	Fri 02/22/08																												
90	Gun adjuster drawings	10 wks	Mon 02/18/08	Fri 04/25/08																												
91	Order and receive gun adjuster parts	8 wks	Mon 04/28/08	Fri 06/20/08																												
92	Assemble gun adjusters	1 wk	Mon 06/23/08	Fri 06/27/08																												
93	Tube support structure mechanical design	12 wks	Mon 10/15/07	Fri 01/18/08																												
94	Gun oil tank mechanical design	10 wks	Mon 10/15/07	Fri 12/21/07																												
95	Radiation shielding design	4 wks	Mon 03/31/08	Fri 04/25/08																												
96	Support structure/tank drawings	17 wks	Mon 01/07/08	Fri 05/02/08																												
97	Order and receive beam tester support/oil tank parts	10 wks	Mon 05/05/08	Fri 07/11/08																												
98	Assemble beam tester supports/tank	4 wks	Mon 07/07/08	Fri 08/01/08																												
99	Order and receive klystron support/oil tank parts	12 wks	Mon 05/05/08	Fri 07/25/08																												
100	Assemble klystron tester supports/tank	4 wks	Mon 07/28/08	Fri 08/22/08																												
101	Test stand, support and diagnostics	165 days?	Mon 10/01/07	Fri 05/30/08																												
102	FE bias supply design and fab	18 wks	Mon 10/01/07	Fri 02/15/08																												
103	Beam probe diagnostic electronics design and fab	18 wks	Mon 10/01/07	Fri 02/15/08																												
104	TS 3 configuration	12 wks	Mon 01/07/08	Fri 03/28/08																												
105	Long pulse breakdown test3	8 wks	Mon 10/01/07	Fri 11/23/07																												
106	High power mismatch (E-H tuner)	10 wks	Mon 10/01/07	Fri 12/07/07																												
107	Revisit question of Klystron Dept owned drive amplifier	1 day	Mon 01/07/08	Mon 01/07/08																												
108	Daryl Vacation	12 days?	Thu 05/15/08	Fri 05/30/08																												



Schedule (continued)

ID	Task Name	Duration	Start	Finish	3rd Quarter			4th Quarter			1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			1s
					Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
109	Assemble and Test Beam Tester	172 days	Mon 07/07/08	Tue 03/03/09																			
110	Assemble beam tester	1 wk	Mon 07/07/08	Fri 07/11/08																			
111	Bake beam tester	3 wks	Mon 07/14/08	Fri 08/01/08																			
112	Dress beam tester	1 wk	Mon 08/04/08	Fri 08/08/08																			
113	Install in TS-3	2 days	Mon 08/11/08	Tue 08/12/08																			
114	Begin testing beam tester	0 days	Tue 08/12/08	Tue 08/12/08																			
115	Test beam tester (electrostatic)	3 wks	Wed 08/13/08	Tue 09/02/08																			
116	Break vacuum, install drift tube and bake	2 wks	Wed 09/03/08	Tue 09/16/08																			
117	Install magnet structure	2 days	Wed 09/17/08	Thu 09/18/08																			
118	Test beam tester (magnetic)	3 wks	Fri 09/19/08	Thu 10/09/08																			
119	Remove from TS-3	2 days	Fri 10/10/08	Mon 10/13/08																			
120	Dummy task to find critical path	29 wks	Wed 08/13/08	Tue 03/03/09																			
121	Assemble and Test Klystron S/N 1	89 days	Tue 10/14/08	Fri 02/13/09																			
122	Assemble W/G and RF test gear	2 wks	Tue 10/14/08	Mon 10/27/08																			
123	Assemble klystron	1 wk	Mon 11/10/08	Fri 11/14/08																			
124	Bake klystron	3 wks	Mon 11/17/08	Fri 12/05/08																			
125	Dress klystron	3 wks	Mon 12/08/08	Fri 12/26/08																			
126	Install in TS-3	1 wk	Mon 12/29/08	Fri 01/02/09																			
127	Begin testing klystron S/N 1	0 days	Fri 01/02/09	Fri 01/02/09																			
128	test klystron	6 wks	Mon 01/05/09	Fri 02/13/09																			