

GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:	Page: 1 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 25mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 30mm		
Pole Spacers: None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	2.40000	1.76209	0.88179	0.56808	0.00000	0.00000	0.00000	0.00000	0.00000
40	2.99679	2.52319	1.72326	1.13339	0.00000	0.00000	0.00000	0.00000	0.00000
60	3.34151	2.90890	2.18343	1.63832	0.00000	0.00000	0.00000	0.00000	0.00000
80	3.57612	3.17203	2.48556	1.94940	0.00000	0.00000	0.00000	0.00000	0.00000
100	3.73061	3.34746	2.69673	2.19030	0.00000	0.00000	0.00000	0.00000	0.00000
120	3.83552	3.47082	2.85216	2.36727	0.00000	0.00000	0.00000	0.00000	0.00000
140	3.92326	3.56241	2.94994	2.47168	0.00000	0.00000	0.00000	0.00000	0.00000
160	3.98873	3.63019	3.03003	2.56474	0.00000	0.00000	0.00000	0.00000	0.00000
180	4.02305	3.67404	3.08295	2.62987	0.00000	0.00000	0.00000	0.00000	0.00000
200	4.05469	3.70868	3.12344	2.67094	0.00000	0.00000	0.00000	0.00000	0.00000

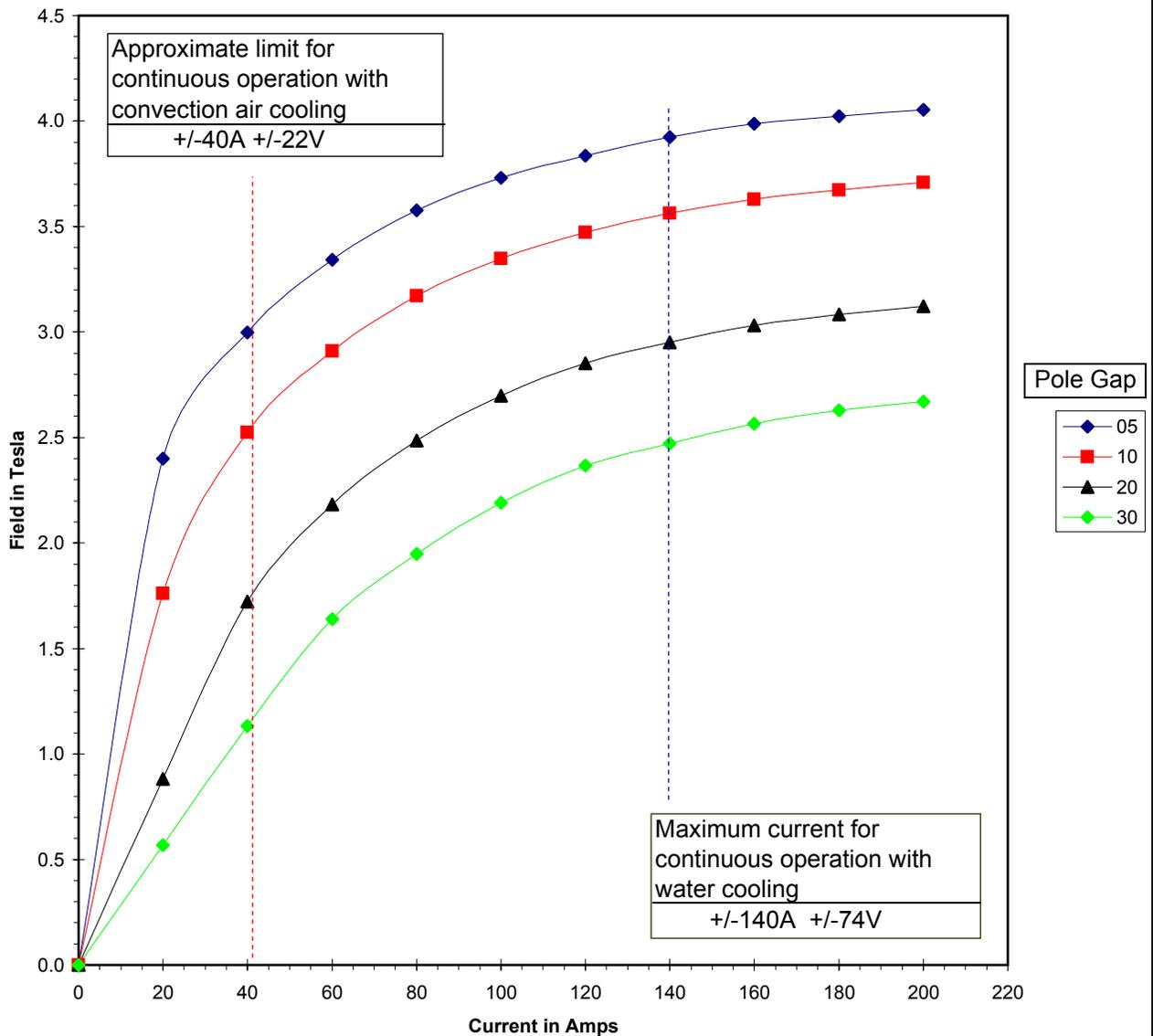
Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.00000	0.00000	0.00000	0.00000	0.00000				
40	0.00000	0.00000	0.00000	0.00000	0.00000				
60	0.00000	0.00000	0.00000	0.00000	0.00000				
80	0.00000	0.00000	0.00000	0.00000	0.00000				
100	0.00000	0.00000	0.00000	0.00000	0.00000				
120	0.00000	0.00000	0.00000	0.00000	0.00000				
140	0.00000	0.00000	0.00000	0.00000	0.00000				
160	0.00000	0.00000	0.00000	0.00000	0.00000				
180	0.00000	0.00000	0.00000	0.00000	0.00000				
200	0.00000	0.00000	0.00000	0.00000	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 25mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 30mm		
Pole Spacers: None		



GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:	Page: 1 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 50mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 40mm		
Pole Spacers: None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	2.20000	1.77989	0.89573	0.59498	0.44154	0.00000	0.00000	0.00000	0.00000
40	2.72276	2.43938	1.78240	1.18917	0.88325	0.00000	0.00000	0.00000	0.00000
60	3.00376	2.75239	2.23177	1.76069	1.31741	0.00000	0.00000	0.00000	0.00000
80	3.19760	2.96516	2.49462	2.07609	1.69979	0.00000	0.00000	0.00000	0.00000
100	3.30868	3.10205	2.66947	2.27992	1.95328	0.00000	0.00000	0.00000	0.00000
120	3.39577	3.19388	2.78577	2.42174	2.10994	0.00000	0.00000	0.00000	0.00000
140	3.46875	3.26919	2.87604	2.52627	2.21466	0.00000	0.00000	0.00000	0.00000
160	3.51439	3.33131	2.94109	2.59606	2.29379	0.00000	0.00000	0.00000	0.00000
180	3.54847	3.36982	2.98799	2.64930	2.35755	0.00000	0.00000	0.00000	0.00000
200	3.57900	3.40260	3.02295	2.69265	2.40653	0.00000	0.00000	0.00000	0.00000

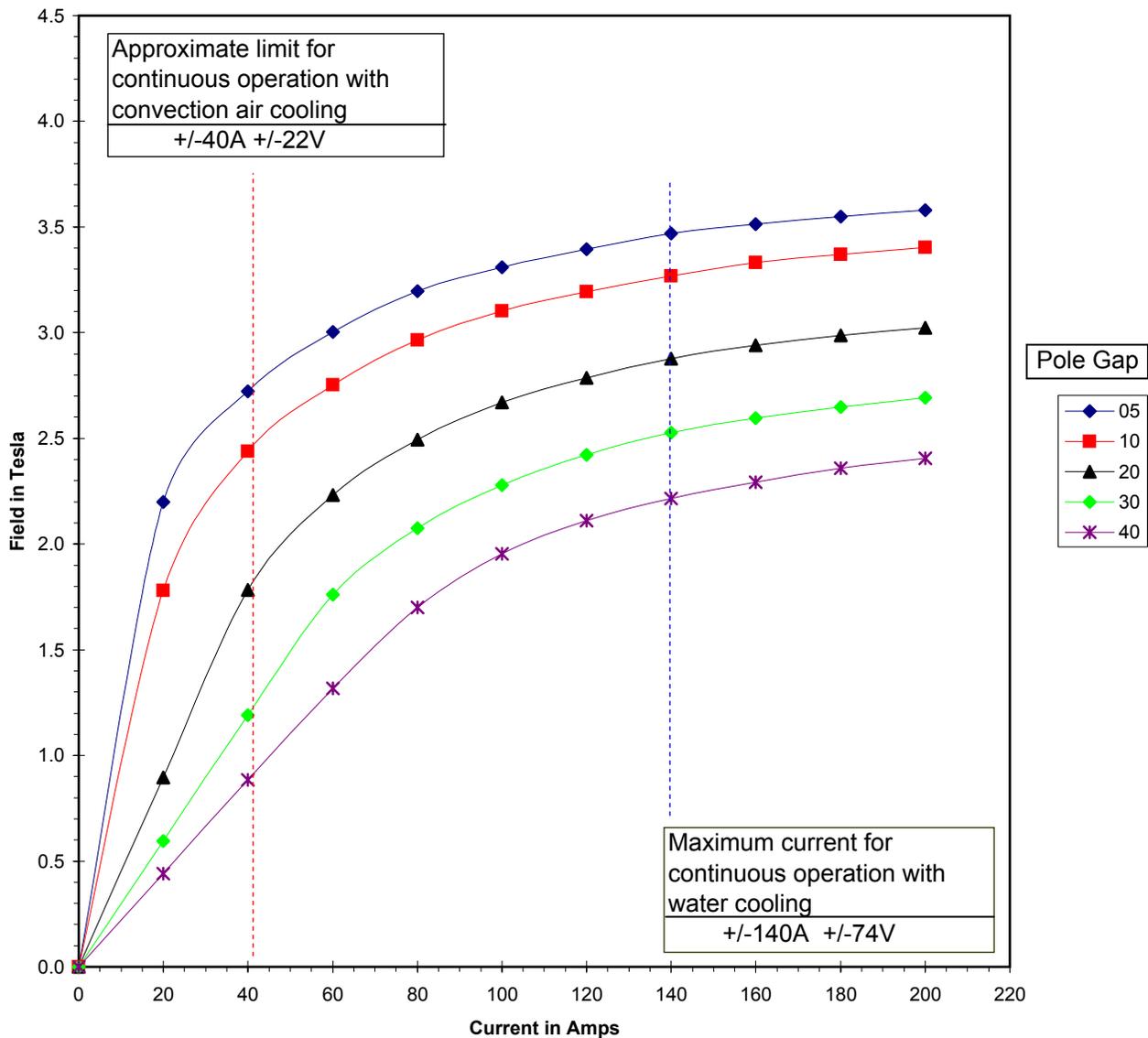
Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.00000	0.00000	0.00000	0.00000	0.00000				
40	0.00000	0.00000	0.00000	0.00000	0.00000				
60	0.00000	0.00000	0.00000	0.00000	0.00000				
80	0.00000	0.00000	0.00000	0.00000	0.00000				
100	0.00000	0.00000	0.00000	0.00000	0.00000				
120	0.00000	0.00000	0.00000	0.00000	0.00000				
140	0.00000	0.00000	0.00000	0.00000	0.00000				
160	0.00000	0.00000	0.00000	0.00000	0.00000				
180	0.00000	0.00000	0.00000	0.00000	0.00000				
200	0.00000	0.00000	0.00000	0.00000	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 50mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 40mm		
Pole Spacers: None		



GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:		Page: 1 of 2	Date: Sept 28, 2004
Customer:			Engr: G.Douglas
Model:	3474	Power Supply:	Set Current:
Serial No:	None	Serial No:	Target Field:
Pole Face:	75mm	Position:	X=0, Y=0, Z=0
Serial No:	None	Notes:	Data taken in Magneto simulation software
Pole Gap:	05 to 80mm		
Pole Spacers:	None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	2.20000	1.74868	0.88695	0.59740	0.44740	0.35377	0.29269	0.24844	0.21497
40	2.60000	2.37156	1.76037	1.19583	0.89594	0.70923	0.58669	0.49790	0.43076
60	2.76747	2.60862	2.22880	1.76740	1.34214	1.06209	0.87860	0.74550	0.64489
80	2.91453	2.77823	2.41684	2.10223	1.75105	1.40823	1.17029	0.99368	0.85919
100	3.00380	2.87606	2.55240	2.26185	1.98681	1.70110	1.43639	1.22965	1.06626
120	3.07772	2.95750	2.64051	2.37116	2.11035	1.88278	1.63668	1.42021	1.23946
140	3.12945	3.01297	2.70891	2.44669	2.20262	1.99005	1.78069	1.57410	1.40391
160	3.16743	3.05258	2.75968	2.51287	2.26839	2.06429	1.87271	1.68811	1.53260
180	3.19975	3.08246	2.80005	2.56068	2.32439	2.11636	1.93446	1.76534	1.61401
200	3.22936	3.11336	2.83334	2.59842	2.36506	2.15828	1.98559	1.82097	1.67543

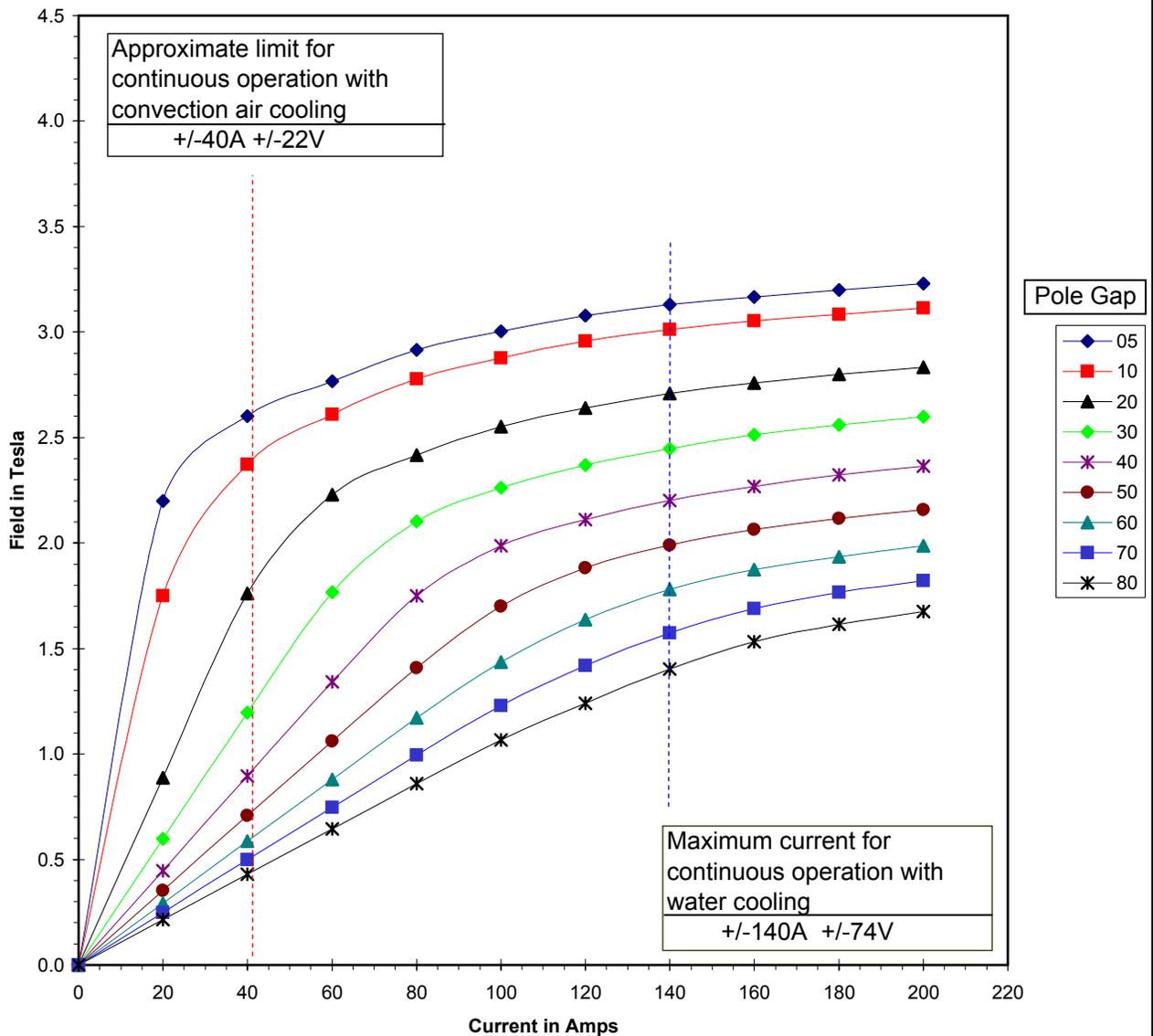
Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.00000	0.00000	0.00000	0.00000	0.00000				
40	0.00000	0.00000	0.00000	0.00000	0.00000				
60	0.00000	0.00000	0.00000	0.00000	0.00000				
80	0.00000	0.00000	0.00000	0.00000	0.00000				
100	0.00000	0.00000	0.00000	0.00000	0.00000				
120	0.00000	0.00000	0.00000	0.00000	0.00000				
140	0.00000	0.00000	0.00000	0.00000	0.00000				
160	0.00000	0.00000	0.00000	0.00000	0.00000				
180	0.00000	0.00000	0.00000	0.00000	0.00000				
200	0.00000	0.00000	0.00000	0.00000	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 75mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 80mm		
Pole Spacers: None		



GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:		Page: 1 of 2	Date: Sept 28, 2004
Customer:			Engr: G.Douglas
Model:	3474	Power Supply:	Set Current:
Serial No:	None	Serial No:	Target Field:
Pole Face:	100mm	Position:	X=0, Y=0, Z=0
Serial No:	None	Notes:	Data taken in Magneto simulation software
Pole Gap:	05 to 100mm		
Pole Spacers:	None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	2.00000	1.76043	0.89412	0.59724	0.44826	0.35573	0.29585	0.25418	0.21974
40	2.42834	2.30000	1.77591	1.19358	0.89685	0.71142	0.59187	0.50836	0.43968
60	2.62310	2.50696	2.21918	1.75786	1.33866	1.06428	0.88711	0.76236	0.65997
80	2.76859	2.67102	2.38320	2.08464	1.73929	1.41126	1.17519	1.00966	0.87644
100	2.85037	2.76412	2.49786	2.22923	1.97364	1.68864	1.43241	1.24397	1.08025
120	2.91483	2.83165	2.58958	2.32671	2.09736	1.87345	1.63434	1.43201	1.26190
140	2.95899	2.87901	2.65431	2.40985	2.17914	1.98890	1.77712	1.57885	1.41303
160	2.99275	2.91137	2.69831	2.46557	2.24442	2.05891	1.87624	1.69112	1.53113
180	3.02039	2.93534	2.72601	2.50281	2.28947	2.10935	1.94321	1.78350	1.63470
200	3.03822	2.95727	2.75373	2.53002	2.32407	2.14895	1.99082	1.83649	1.70428

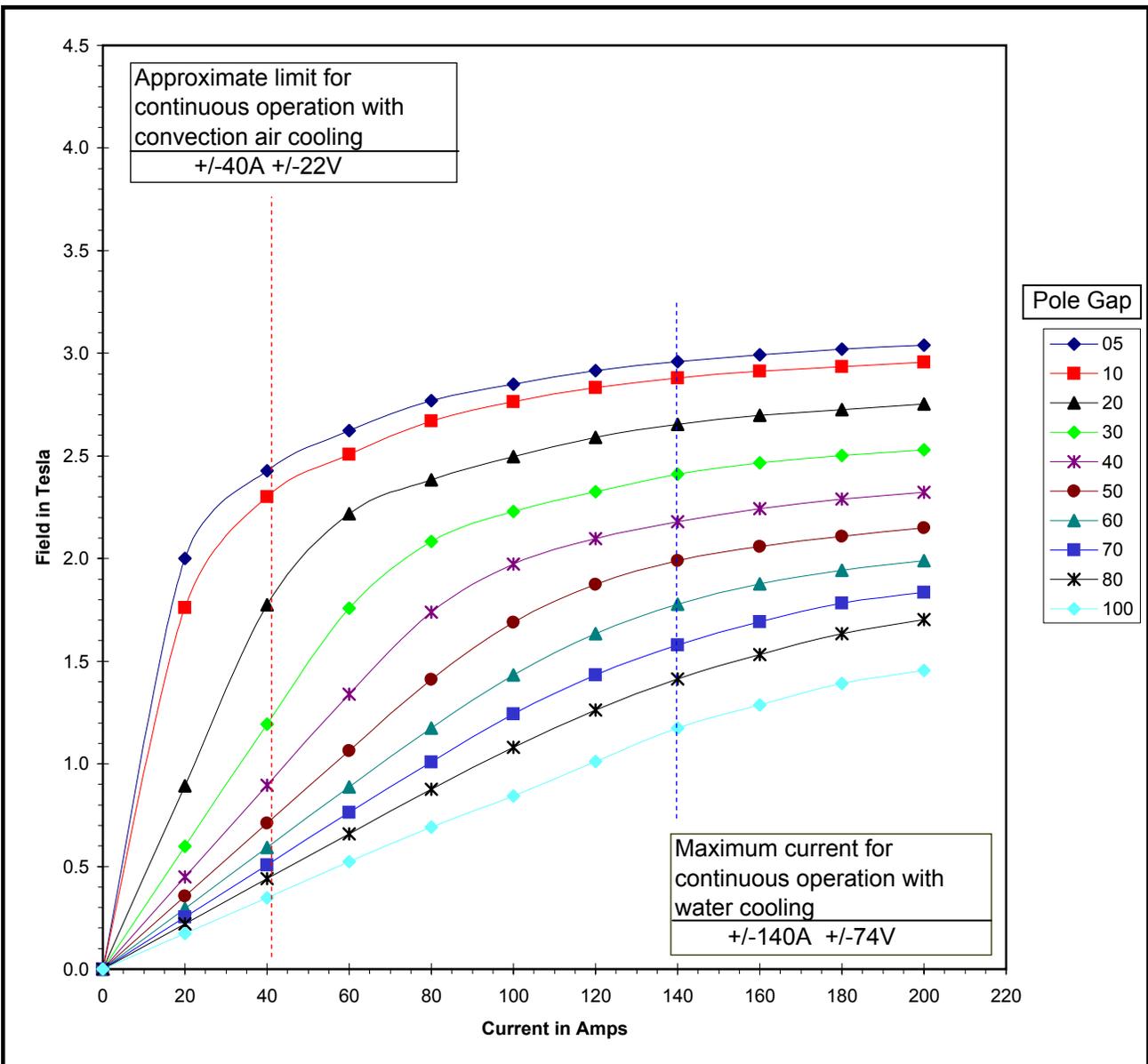
Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.17418	0.00000	0.00000	0.00000	0.00000				
40	0.34838	0.00000	0.00000	0.00000	0.00000				
60	0.52244	0.00000	0.00000	0.00000	0.00000				
80	0.69193	0.00000	0.00000	0.00000	0.00000				
100	0.84401	0.00000	0.00000	0.00000	0.00000				
120	1.01057	0.00000	0.00000	0.00000	0.00000				
140	1.17307	0.00000	0.00000	0.00000	0.00000				
160	1.28579	0.00000	0.00000	0.00000	0.00000				
180	1.39195	0.00000	0.00000	0.00000	0.00000				
200	1.45612	0.00000	0.00000	0.00000	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 100mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 100mm		
Pole Spacers: None		



GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:	Page: 1 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 150mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 160mm		
Pole Spacers: None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	2.00000	1.74560	0.89308	0.59681	0.44809	0.35876	0.29903	0.25623	0.22394
40	2.33714	2.25000	1.75365	1.19066	0.89595	0.71820	0.59843	0.51274	0.44803
60	2.42742	2.36938	2.15702	1.73097	1.33060	1.07041	0.89474	0.76777	0.67219
80	2.49388	2.43877	2.26870	2.01183	1.68738	1.39913	1.18129	1.01799	0.89211
100	2.54211	2.48302	2.31942	2.13482	1.89151	1.62967	1.41054	1.23388	1.09200
120	2.56854	2.52406	2.36283	2.19343	2.00646	1.78866	1.57898	1.39983	1.25223
140	2.60974	2.55522	2.39746	2.22469	2.06986	1.89529	1.70476	1.52687	1.37713
160	2.62849	2.57665	2.42037	2.24807	2.09805	1.96298	1.79666	1.62924	1.47942
180	2.65450	2.59910	2.44335	2.27253	2.12218	1.99445	1.85551	1.70459	1.55990
200	2.68850	2.62421	2.46081	2.29287	2.14028	2.02196	1.89362	1.75440	1.61713

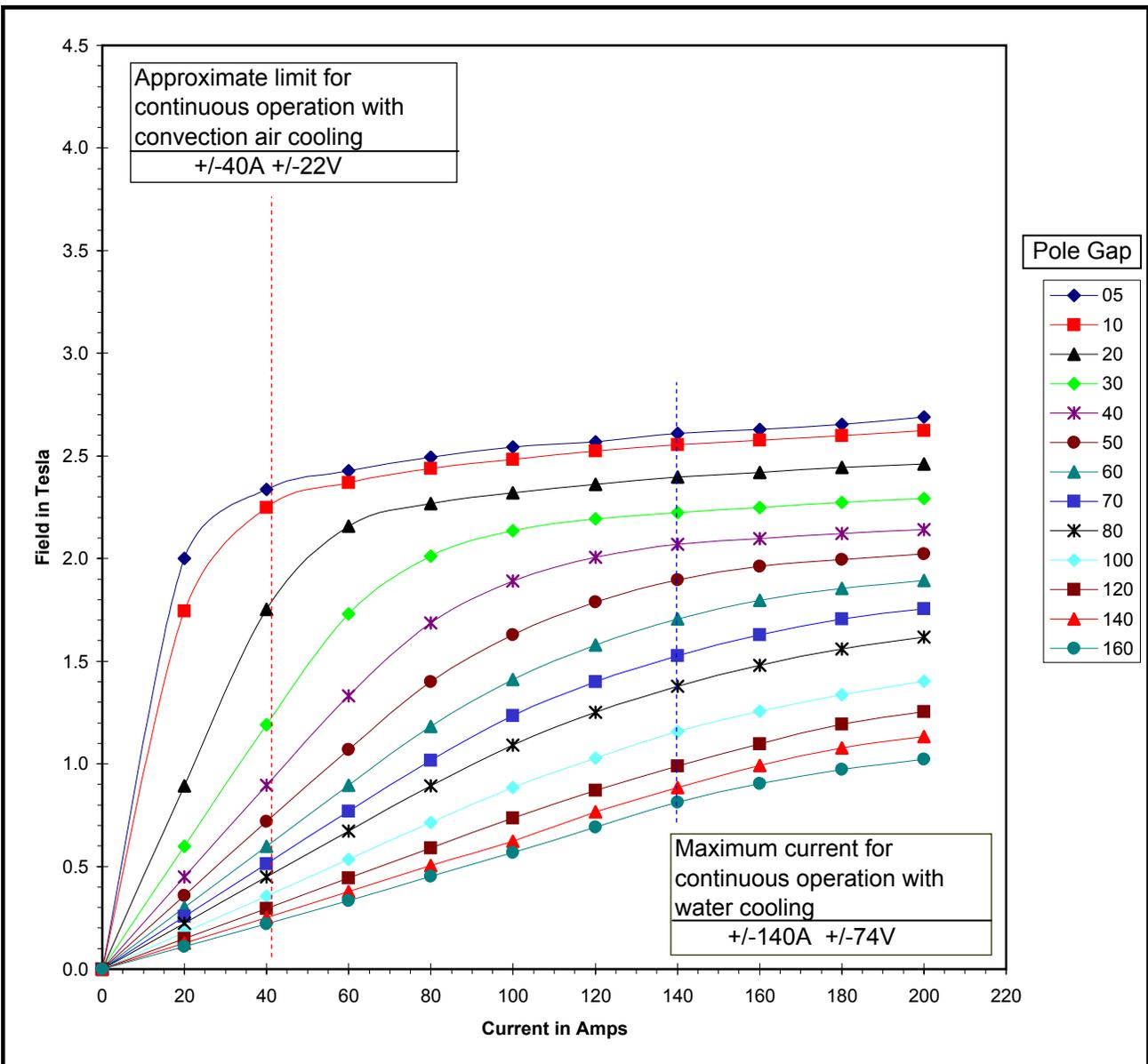
Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.17825	0.14749	0.12569	0.10996	0.00000				
40	0.35661	0.29501	0.25130	0.22049	0.00000				
60	0.53587	0.44361	0.37815	0.33416	0.00000				
80	0.71235	0.59091	0.50393	0.45092	0.00000				
100	0.88348	0.73521	0.62381	0.56829	0.00000				
120	1.02813	0.87094	0.76622	0.69071	0.00000				
140	1.15830	0.99027	0.88474	0.81383	0.00000				
160	1.25608	1.09538	0.99206	0.90516	0.00000				
180	1.33693	1.19240	1.07782	0.97266	0.00000				
200	1.40238	1.25331	1.13276	1.02116	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 150mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 160mm		
Pole Spacers: None		



GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:		Page: 1 of 2	Date: Sept 28, 2004
Customer:			Engr: G.Douglas
Model:	3474	Power Supply:	Set Current:
Serial No:	None	Serial No:	Target Field:
Pole Face:	200mm	Position:	X=0, Y=0, Z=0
Serial No:	None	Notes:	Data taken in Magneto simulation software
Pole Gap:	05 to 160mm		
Pole Spacers:	None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	2.10000	1.72192	0.88761	0.59538	0.44749	0.35836	0.29888	0.25626	0.22425
40	2.30000	2.18604	1.65299	1.18238	0.89238	0.71592	0.59751	0.51244	0.44870
60	2.34064	2.27890	2.00000	1.64390	1.31580	1.06508	0.89225	0.76645	0.67132
80	2.38031	2.31140	2.10842	1.86322	1.57524	1.36062	1.16309	1.00808	0.88597
100	2.39939	2.33392	2.17495	1.96341	1.73930	1.51860	1.35887	1.21095	1.08076
120	2.42078	2.35294	2.21226	2.03185	1.84543	1.65325	1.47323	1.33653	1.22257
140	2.44441	2.36753	2.23467	2.08034	1.90875	1.73645	1.58949	1.43775	1.31517
160	2.46000	2.38231	2.25899	2.10945	1.94507	1.80259	1.66297	1.53220	1.40661
180	2.48000	2.40333	2.27333	2.13791	1.98261	1.83873	1.71401	1.58781	1.47982
200	2.50000	2.42000	2.28676	2.16055	2.01180	1.88053	1.75683	1.64319	1.53148

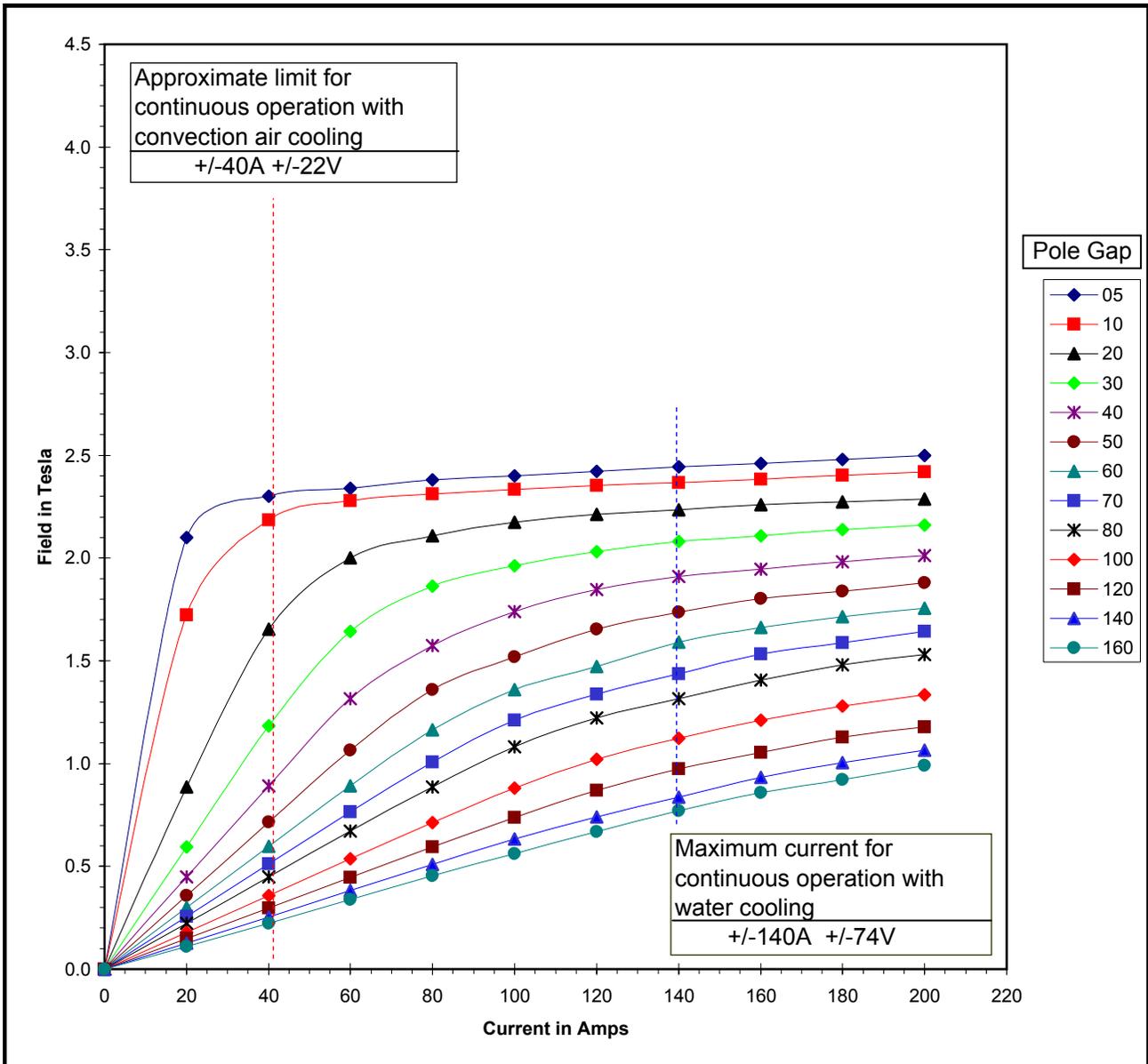
Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.17922	0.14888	0.12714	0.11122	0.00000				
40	0.35878	0.29796	0.25457	0.22295	0.00000				
60	0.53720	0.44641	0.38147	0.33790	0.00000				
80	0.71343	0.59376	0.50792	0.45345	0.00000				
100	0.88150	0.73782	0.63342	0.56157	0.00000				
120	1.02059	0.86857	0.74035	0.66998	0.00000				
140	1.12382	0.97338	0.83548	0.77182	0.00000				
160	1.21133	1.05504	0.93171	0.85739	0.00000				
180	1.27979	1.12789	1.00531	0.92283	0.00000				
200	1.33604	1.17918	1.06533	0.99078	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 200mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 160mm		
Pole Spacers: None		



GMW Associates
Electromagnet Excitation Plot
Field Vs Current

Contract No:		Page: 1 of 2	Date: Sept 28, 2004
Customer:			Engr: G.Douglas
Model:	3474	Power Supply:	Set Current:
Serial No:	None	Serial No:	Target Field:
Pole Face:	250mm	Position:	X=0, Y=0, Z=0
Serial No:	None	Notes:	Data taken in Magneto simulation software
Pole Gap:	05 to 160mm		
Pole Spacers:	None		

Gap [mm]									
Amps	05	10	20	30	40	50	60	70	80
0	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	1.80000	1.52498	0.87147	0.58895	0.44578	0.35782	0.29859	0.25612	0.22425
40	2.07659	1.90705	1.52259	1.15074	0.88018	0.71012	0.59333	0.50921	0.44503
60	2.16681	2.02299	1.75646	1.48852	1.24812	1.03830	0.88187	0.76165	0.66931
80	2.21934	2.09032	1.86192	1.65146	1.43695	1.26621	1.12580	0.99680	0.88192
100	2.25317	2.14171	1.90470	1.71578	1.54529	1.40311	1.26766	1.14767	1.04865
120	2.26502	2.17946	1.95145	1.77668	1.63909	1.49997	1.36909	1.25025	1.15564
140	2.27288	2.19382	1.98661	1.82050	1.69392	1.57074	1.46625	1.35284	1.24578
160	2.28050	2.20343	2.01076	1.85618	1.73573	1.62318	1.52341	1.42225	1.32747
180	2.28400	2.20999	2.02937	1.88416	1.77169	1.67462	1.57538	1.47993	1.39045
200	2.28853	2.21710	2.04466	1.90539	1.80032	1.70251	1.61025	1.51854	1.43610

Gap [mm]									
Amps	100	120	140	160					
0	0.00000	0.00000	0.00000	0.00000	0.00000				
20	0.17943	0.14936	0.12771	0.11154	0.00000				
40	0.35864	0.29868	0.25564	0.22330	0.00000				
60	0.53709	0.44793	0.38513	0.33745	0.00000				
80	0.71592	0.59851	0.50992	0.44608	0.00000				
100	0.86692	0.73477	0.63196	0.55594	0.00000				
120	0.99263	0.85188	0.74470	0.65874	0.00000				
140	1.07621	0.94879	0.83314	0.74584	0.00000				
160	1.15447	1.02135	0.90699	0.81726	0.00000				
180	1.22117	1.08959	0.97512	0.87725	0.00000				
200	1.27787	1.14275	1.03340	0.93604	0.00000				

GMW Associates

Electromagnet Excitation Plot

Field Vs Current

Contract No:	Page: 2 of 2	Date: Sept 28, 2004
Customer:		Engr: G.Douglas
Model: 3474	Power Supply:	Set Current:
Serial No: None	Serial No:	Target Field:
Pole Face: 250mm	Position: X=0, Y=0, Z=0	
Serial No: None	Notes: Data taken in Magneto simulation software	
Pole Gap: 05 to 160mm		
Pole Spacers: None		

