Table 7: NuMI POWER SUPPLY REQUIREMENTS

Ramp Cycle Time: 1.9 seconds 04/17/02

CIRCUIT(ACNET if different then CKT Name)	MAGNET TYPE	# MAGs	MAG. IND. (henry)	MAG. RES. (ohms)	MAG. Max. Pwr. (kW)	CABLE TYPE kcmil	CABLE # 1 way	CABLE R/kFt ohms	CABLE L (ft)	CABLE RES. ohms	Passive Filter R ohms	Passive Filter L henry	Total Res. ohms	Total Ind. henry	PEAK CURR. (amps)	Min. Curr. (amps)	dI/dT (A/s)	PEAK VOLT. (volts)	RMS CURR. (amps)	Power per Mag. (kW)	PEAK PWR (kW)	Power Supply TYPE #, Man./Pwr	Power Supply Volt (volts)	Power Supply Curr. (amps)	Power Supply PS Loses (kW)	Total RMS PWR (kW)	Fdr Load kVA	Peak Fdr kVA
MI60 Power Supplies																												
Kicker (I:KPS6N))	kicker	3																										
LAMB (I:LAM601)	Lamb.	1	0.017	0.0130		500	2	0.026	132	0.0034	0.002	0.001	0.018	0.018	765.85	0	note 7	200	400	2	153	**1, Xrex/500kW**	**200**	**2500**	4.00	7	112	214
LAMB (I:LAM6023)	Lamb.	2	0.017	0.0130		500	3	0.026	154	0.0027	0.002	0.001	0.031	0.035	1806.25	0	note 8	200	794	8	361	**1, Xrex/500kW**	**200**	**2500**	7.94	27	222	506
CMAG (E:V100)	Cmagnet	1	0.002	0.0070		500	5	0.026	165	0.0017	0.002	0.001	0.011	0.003	3482.5	0	note 7	50	1560	17	174	**1, Xrex/500kW**	**50**	**5000**	3.90	30	109	244
E:Q101	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	98	0.0245	0.000	0.000	2.274	1.500	64.64	64.64	0	147	65	9	10	1, PEI/20kW	200	100	0.65	10	18	18
BND1(E:HV101)	EPB	6	0.030	0.0175	50.0	500	3	0.026	244	0.0042	0.002	0.001	0.111	0.181	1645.67	0	note 7	600	914	15	987	**3, Xrex/500kW**	**600**	**2500**	27.42	120	768	1382
E:HT102	MI Corr.	1	0.950	4.4000		10ga	1	1.2	197	0.4719	0.000	0.000	4.872	0.950	25	0	26	147	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q102	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	148	0.0371	0.000	0.000	2.287	1.500	64.64	64.64	0	148	65	9	10	1, PEI/20kW	200	100	0.65	10	18	18
E:Q103	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	206	0.0514	0.000	0.000	2.301	1.500	72.36	72.36	0	167	72	12	12	1, PEI/20kW	200	100	0.72	13	20	20
E:VT103	MI Corr.	1	0.950	4.4000		10ga	1	1.2	267	0.6397	0.000	0.000	5.040	0.950	25	0	26	151	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q104	3Q60	1	1.100	1.6000	17.0	1/0	1	0.125	225	0.0562	0.000	0.000	1.656	1.100	33.68	33.68	0	56	34	2	2	1, PEI/20kW	100	200	0.17	2	5	5
E:H104	200 Turn SY Trims	1	1.500	2.2500	24.1	1/0	1	0.125	250	0.0625	0.000	0.000	2.313	1.500	80	80		185	80	14	15	1, PEI/20kW	200	100	0.80	16	22	22
E:HT105	MI Corr.	1	0.950	4.4000		10ga	1	1.2	301	0.7227	0.000	0.000	5.123	0.950	25	0	26	153	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q105	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	253	0.0632	0.000	0.000	2.313	1.500	60.04	60.04	0	139	60	8	8	1, PEI/20kW	200	100	0.60	9	17	17
E:VT106	MI Corr.	1	0.950	4.4000		10ga	1	1.2	358	0.8584	0.000	0.000	5.258	0.950	25	0	26	156	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q106	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	310	0.0774	0.000	0.000	2.327	1.500	60.04	60.04	0	140	60	8	8	1, PEI/20kW	200	100	0.60	9	17	17
E:HT107	MI Corr.	1	0.950	4.4000		10ga	1	1.2	414	0.9941	0.000	0.000	5.394	0.950	25	0	26	160	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:VT108	MI Corr.	1	0.950	4.4000		10ga	1	1.2	471	1.1298	0.000	0.000	5.530	0.950	25	0	26	163	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:HT109	MI Corr.	1	0.950	4.4000		10ga	1	1.2	527	1.2655	0.000	0.000	5.666	0.950	25	0	26	167	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:VT110	MI Corr.	1	0.950	4.4000		10ga	1	1.2	583	1.3993	0.000	0.000	5.799	0.950	25	0	26	170	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:VT111	MI Corr.	1	0.950	4.4000		10ga	1	1.2	646	1.5503	0.000	0.000	5.950	0.950	25	0	26	174	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:HT112	MI Corr.	1	0.950	4.4000		10ga	1	1.2	662	1.5884	0.000	0.000	5.988	0.950	25	0	26	175	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
																							MI60N Power Totals:		49	**266**	**1359**	**2516**
MI62 Power Supplies																												
E:Q107	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	662	0.1655	0.000	0.000	2.416	1.500	60.04	60.04	0	145	60	8	9	1, PEI/20kW	200	100	0.60	9	17	17
E:Q108	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	637	0.1593	0.000	0.000	2.409	1.500	60.04	60.04	0	145	60	8	9	1, PEI/20kW	200	100	0.60	9	17	17
BND2 (E:V109)	B2	6	0.008	0.0072	162.0	500	8	0.026	624	0.0041	0.002	0.001	0.049	0.049	4446.98	0	note 7	400	2360	40	1779	**MR - type**	**470**	**5000**	6.66	280	1553	2926
E:Q109	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	581	0.1452	0.000	0.000	2.395	1.500	60.04	60.04	0	144	60	8	9	1, PEI/20kW	200	100	0.60	9	17	17
E:Q110	3Q60	1	1.100	1.6000	17.0	1/0	1	0.125	525	0.1313	0.000	0.000	1.731	1.100	24.69	24.69	0	43	25	1	1	1, PEI/20kW	100	200	0.12	1	3	3
E:Q111	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	520	0.1300	0.000	0.000	2.380	1.500	55.99	55.99	0	133	56	7	7	1, PEI/20kW	200	100	0.56	8	16	16
E:Q112	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	542	0.1355	0.000	0.000	2.385	1.500	59.03	59.03	0	141	59	8	8	1, PEI/20kW	200	100	0.59	9	17	17
																							MI62 Power Totals:		9	**317**	**1622**	**2995**
																						minus MR PS/Xformer						
Upstream Service Building and Horn Power Supplies																												
E:Q113	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	732	0.1830	0.000	0.000	2.433	1.500	59.03	59.03	0	144	59	8	8	1, PEI/20kW	200	100	0.59	9	17	17
E:VT113	MI Corr.	1	0.950	4.4000		10ga	1	1.2	701	1.6829	0.000	0.000	6.083	0.950	25	0	26	177	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:HT114	MI Corr.	1	0.950	4.4000		10ga	1	1.2	692	1.6612	0.000	0.000	6.061	0.950	25	0	26	177	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q114	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	710	0.1776	0.000	0.000	2.428	1.500	55.99	55.99		136	56	7	8	1, PEI/20kW	200	100	0.56	8	16	16
E:HT115	MI Corr.	1	0.950	4.4000		10ga	1	1.2	637	1.5287	0.000	0.000	5.929	0.950	25	0	26	173	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q115	3Q60	1	1.100	1.6000	17.0	1/0	1	0.125	655	0.1638	0.000	0.000	1.764	1.100	24.69	24.69	0	44	25	1	1	1, PEI/20kW	100	200	0.12	1	3	3
E:VT116	MI Corr.	1	0.950	4.4000		10ga	1	1.2	590	1.4168	0.000	0.000	5.817	0.950	25	0	26	170	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q116	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	608	0.1521	0.000	0.000	2.402	1.500	80.98	80.98		195	81	15	16	1, PEI/20kW	200	100	0.81	17	23	23
E:HT117	MI Corr.	1	0.950	4.4000		10ga	1	1.2	518	1.2443	0.000	0.000	5.644	0.950	25	0	26	166	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:H117	200 Turn SY Trims	1	1.500	2.2500	24.1	1/0	1	0.125	518	0.1296	0.000	0.000	2.380	1.500	80	80		190	80	14	15	1, PEI/20kW	200	100	0.80	16	22	22
E:Q117	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	537	0.1341	0.000	0.000	2.384	1.500	64.14	64.14		153	64	9	10	1, PEI/20kW	200	100	0.64	10	18	18
E:VT118	MI Corr.	1	0.950	4.4000		10ga	1	1.2	497	1.1928	0.000	0.000	5.593	0.950	25	0	26	165	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q118	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	515	0.1288	0.000	0.000	2.379	1.500	71.22	71.22	0	169	71	11	12	1, PEI/20kW	200	100	0.71	13	20	20
BND3 (E:V119)	B2	4	0.008	0.0072	162.0	500	7	0.026	483	0.0036	0.002	0.001	0.034	0.033	4142.08	0	note 7	400	1945	27	1657	**4, Xrex/500kW**	**400**	**5000**	4.67	134	1089	2320
E:HT119	MI Corr.	1	0.950	4.4000		10ga	1	1.2	441	1.0591	0.000	0.000	5.459	0.950	25	0	26	161	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:Q119	3Q60	1	1.100	1.6000	17.0	1/0	1	0.125	459	0.1149	0.000	0.000	1.715	1.100	48.09	48.09	0	82	48	4	4	1, PEI/20kW	200	100	0.48	4	13	13
E:Q120	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	399	0.0997	0.000	0.000	2.350	1.500	73.63	73.63	0	173	74	12	13	1, PEI/20kW	200	100	0.74	13	21	21
E:Q121	3Q120	1	1.500	2.2500	24.1	1/0	1	0.125	405	0.1013	0.000	0.000	2.351	1.500	73.44	73.44	0	173	73	12	13	1, PEI/20kW	200	100	0.73	13	21	21
E:HT121	MI Corr.	1	0.950	4.4000		10ga	1	1.2	347	0.8327	0.000	0.000	5.233	0.950	25	0	26	156	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
E:VT121	MI Corr.	1	0.950	4.4000		10ga	1	1.2	345	0.8291	0.000	0.000	5.229	0.950	25	0	26	156	14	1	4	MI DipoleTrim	150	15	0.11	1	3	5
HORN PS	Horn	2	3.655	0.9320		stripline	1				0.000	0.000	0.001	3.655	300	0	316	700	300	84	210	**2, PEI/240kW**	**1000**	**300**	15.00	210	420	420
																						Upstream Service Building Power Totals:			**27**	**462**	**1710**	**2960**
Upgrade with Most Addtional Magnets: Narrow Band Beam (very rough guess at NBR,NBN parameters)																												
NBB1	EPB	2	0.030	0.0175		500	2	0.026	400	0.0104			0.045	0.060	1000	0	1053	109	577	6	109	**1, Xrex/500kW**	200	2500	5.77	21	162	280
NBR	NBR	1	0.030	0.0175		500	2	0.026	400	0.0104	-	-	0.028	0.030	1000	0	1053	100	577	148	100	**1, Xrex/500kW**	200	2500	5.77	15	162	280
NBN	NBB	1	0.030	0.0175		500	2	0.026	400	0.0104	-	-	0.028	0.030	1000	0	1053	100	577	78	100	**1, Xrex/500kW**	200	2500	5.77	15	162	280
Notes:																						**Additional NBB Upstream Service Building Power Totals:**			17	**51**	**485**	**840**
1. Assumptions for transrex-type power supplies:					Regulation: +/- .05%																	**Upstream Service Building Power Totals (w/NBB):**			44	**513**	**2195**	**3800**