

TS-SSC 92-028

February 24, 1992

EFFECT OF REDUCING CABLE INSULATION ON HARMONIC  
COEFFICIENTS IN 50 mm SSC MAGNETS

Enclosed are analytical calculations on modeling the effect of insulation thickness on harmonics. On the inner coil, the cable size was reduced by 3 mils and the wedge sizes were increased to keep the poles fixed. The increase in wedge sizes were: 30 mils for wedge #1 (the largest wedge) and 15 mils each on the remaining two wedges. The total change for the outer coil was 10 mils (10/26 mils per cable) and again pole positions were kept fixed by increasing the wedge size by this amount. Tables 1 and 2 show the harmonics for the ideal and modified coil geometries. More detailed outputs and plots of coil geometry for each case are also included. Note that table 2 is only for the above effect on harmonics, and contributions from any other manufacturing errors should be added to this. I have also included the cable coordinates for both the original and modified cross-sections. Each line in this table gives the coordinates for the four corners of each cable in all four quadrants (SEG= cable #, KA= quadrant). It should also be noted that for this run the thickness of the midplane is unchanged (8 mils)

Akbar Mokhtarani

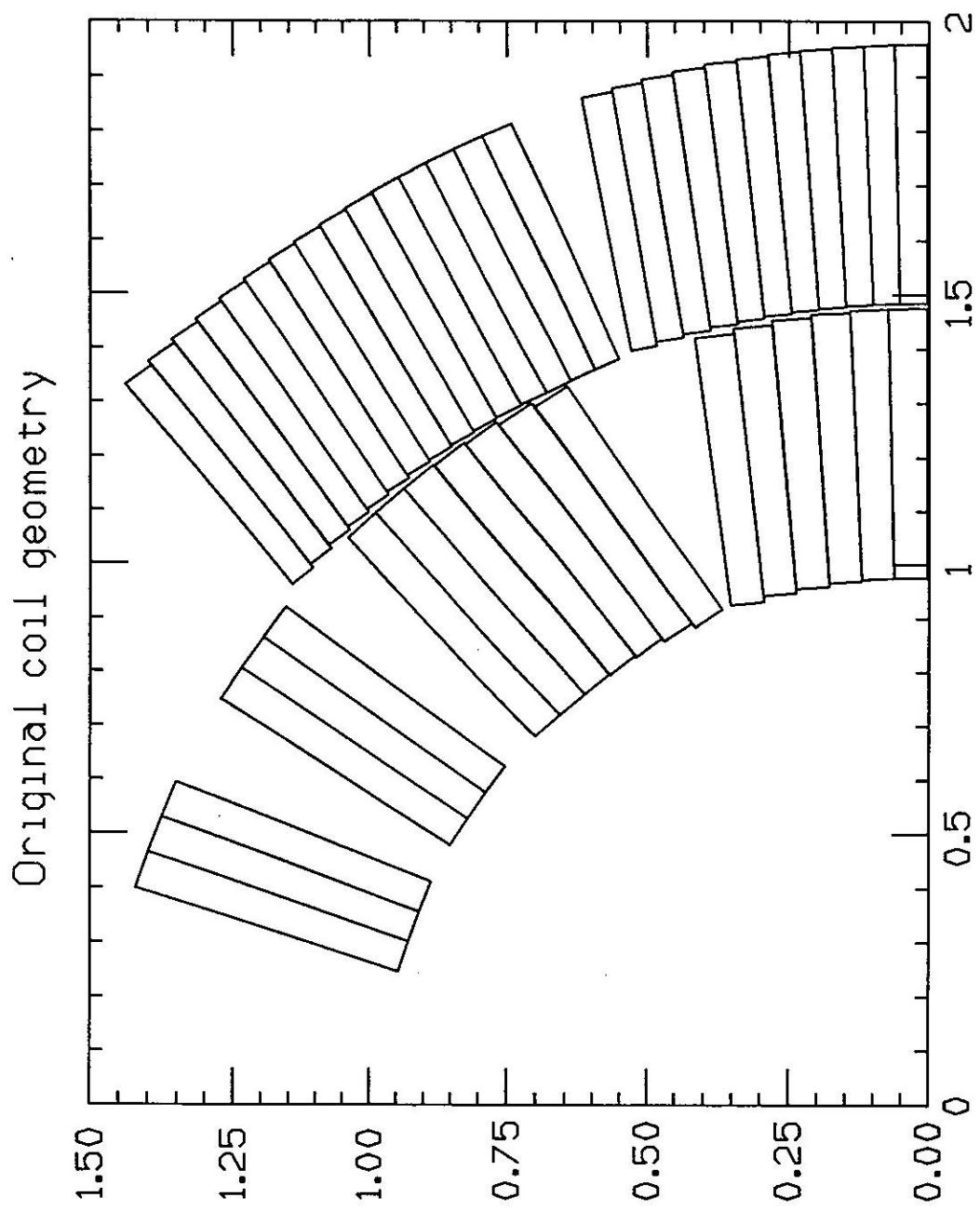
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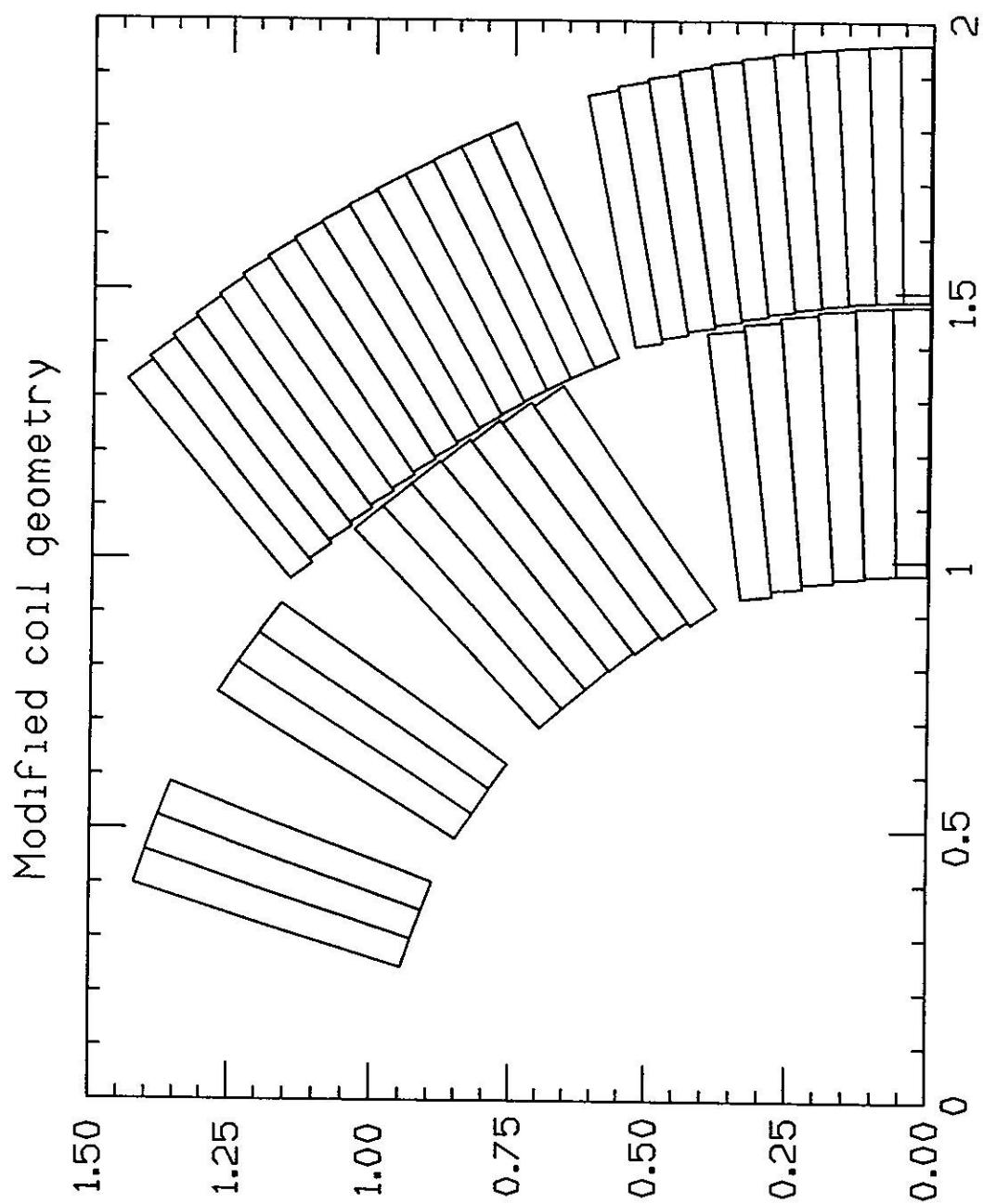
Table 1.  
Multipole coefficients (total).  
Original cross section

n	a_n	b_n	an/b1	bn/b1
1	0.000000000	52.227629081	0.000	10000.000
2	0.000000000	0.000000000	0.000	0.000
3	0.000000000	0.001207632	0.000	0.231
4	0.000000000	0.000000000	0.000	0.000
5	0.000000000	0.000295969	0.000	0.057
6	0.000000000	0.000000000	0.000	0.000
7	0.000000000	-0.000126138	0.000	-0.024
8	0.000000000	0.000000000	0.000	0.000
9	0.000000000	0.000211505	0.000	0.040

Table 2.  
Multipole coefficients (total).  
Reducing insulation by 60 and 10 mils on  
inner and outer coils, respectively.  
(Shimmed the wedges, poles fixed)

n	a_n	b_n	an/b1	bn/b1
1	0.000000000	52.214041186	0.000	10000.000
2	0.000000000	0.000000000	0.000	0.000
3	0.000000000	0.011196011	0.000	2.144
4	0.000000000	0.000000000	0.000	0.000
5	0.000000000	0.002210802	0.000	0.423
6	0.000000000	0.000000000	0.000	0.000
7	0.000000000	0.000206014	0.000	0.039
8	0.000000000	0.000000000	0.000	0.000
9	0.000000000	0.000356600	0.000	0.068







1.900	1.900	52.265832463	39.546569893	12.719282769	100007.315
2.000	2.000	52.283267441	39.567913681	12.725353860	10010.653
2.100	2.100	52.307889466	39.576189964	12.731699503	10015.367
2.200	2.200	52.342170714	39.603879633	12.738291081	10021.931
2.300	2.300	52.389258267	39.644138823	12.745119584	10030.947
2.478	2.478	52.517934827	39.760084960	12.757849867	10055.585

5 cm SSC magnet, new coil geometry, No (-SNOW2E)

NSEGS =	45	SEGMENTS;	DIPOLE SYMMETRY
RIRON =	6.7820	CN	CN
RIRON =	2.8701	INCHES	INCHES
RREF =	1.0000	CW	CW
RREF =	0.3937	INCHES	INCHES
ROFF =	0.0000	CW	CW
ROFF =	0.0000	INCHES	INCHES
CURRENT =	5.0000	KAMPS/TURN	KAMPS/TURN
SEGMENT AREA =	0.0319	SQINS	SQINS
CDENSE =	156.7836	KAMPS/SQIN	KAMPS/SQIN
FACTOR =	2.4302	KGAUSS*INCH	KGAUSS*INCH
SEGMENT AREA =	0.0249	SQINS	SQINS
CDENSE =	200.5953	KAMPS/SQIN	KAMPS/SQIN
FACTOR =	3.1092	KGAUSS*RREF	KGAUSS*RREF

Comments for this run:  
run on case 9

Case: 9 Reduced insulation, shims on wedges, poles fixed

errors 10.00 mils

Multipole coefficients for inner and outer coils  
higher coefficients (n>1) are in 10\*\*-4  
pole a(in) b(in)

		a(out)	b(out)	a(in)/b1	b(in)/b1	a(out)/b1	b(out)/b1
1	0.0000000	22.4440517	0.0000000	29.7699895	0.0000000	4298.4705295	0.0000000
2	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
3	0.0000000	-0.2704582	0.0000000	0.2816522	0.0000000	-51.7975967	0.0000000
4	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	53.9418496	0.0000000
5	0.0000000	0.0171947	0.0000000	0.0149839	0.0000000	3.2931197	0.0000000
6	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-2.697083	0.0000000
7	0.0000000	0.0002889	0.0000000	-0.0000000	0.0000000	0.0000000	0.0000000
8	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	-0.0116689	0.0000000
9	0.0000000	0.0003155	0.0000000	0.00000411	0.0000000	0.0000000	0.0000000
10	0.0000000	52.214041186	0.0000	10000.0000	0.0000	0.0000	0.0000
11	0.0000000	0.0000000	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000000	0.0111198011	0.0000	0.0000	0.0000	2.144	0.000
13	0.0000000	0.0000000	0.0000	0.0000	0.0000	0.000	0.000
14	0.0000000	0.002210802	0.0000	0.0000	0.0000	0.423	0.000
15	0.0000000	0.0000000	0.0000	0.0000	0.0000	0.000	0.000
16	0.0000000	0.0000000	0.0000	0.0000	0.0000	0.000	0.000
17	0.0000000	0.0002008014	0.0000	0.0000	0.0000	0.039	0.000
18	0.0000000	0.0000000	0.0000	0.0000	0.0000	0.000	0.000
19	0.0000000	0.0003566000	0.0000	0.0000	0.0000	0.068	0.000

RREF	units	cm	BOTH	AIR	IRON	RATIO	DIFF
X =	0.000	0.000	52.214041186	39.564871686	12.659339573	10000.000	0.000
X =	0.100	0.100	52.214153368	39.554813795	12.659339573	10000.000	0.021
X =	0.200	0.200	52.214492578	39.554644798	12.659447780	10000.000	0.086
X =	0.300	0.300	52.215068699	39.554372817	12.660694091	10000.000	0.196
X =	0.400	0.400	52.215890222	39.564012784	12.661877458	10000.000	0.354
X =	0.500	0.500	52.216982976	39.563686566	12.66249610	10000.000	0.563
X =	0.600	0.600	52.218373872	39.563124815	12.663249057	10000.000	0.839
X =	0.700	0.700	52.220102840	39.562869753	12.667433087	10000.000	1.161
X =	0.800	0.800	52.222228611	39.562288241	12.669945770	10000.000	1.568
X =	0.900	0.900	52.22482352	39.552039501	12.672723951	10000.000	2.065
X =	1.000	1.000	52.2268109613	39.562066553	12.675440556	10000.000	2.676
X =	1.100	1.100	52.231951565	39.552532477	12.679422088	10000.000	3.431
X =	1.200	1.200	52.236896230	39.553682598	12.683212632	10000.000	4.377
X =	1.300	1.300	52.243180090	39.555866152	12.687313848	10000.000	5.581
X =	1.400	1.400	52.251292234	39.559574754	12.691717480	10000.000	7.134

1.500	1.500	52.261910284	39.585491433	12.698418851	10009.168
1.600	1.600	52.275983867	39.574551998	12.701411869	10011.859
1.700	1.700	52.294710702	39.588020678	12.706890024	10015.450
1.800	1.800	52.319828513	39.607582113	12.71248400	10020.260
1.900	1.900	52.353525815	39.635451945	12.718073670	10026.714
2.000	2.000	52.398672468	39.674508362	12.724164106	10035.360
2.100	2.100	52.458958897	39.728447115	12.736509583	10046.906
2.200	2.200	52.539064260	39.801982673	12.737101588	10062.248
2.300	2.300	52.644889549	39.900958322	12.743931226	10082.616
2.478	2.478	52.921328304	40.164862600	12.753635703	10135.459
135.459					

5 cm SSC magnet, new coil geometry, No

(-SNOW2E)

24-FEB-9 15:18:26

NSEGS = 45 SEGMENTS; DIPOLE SYMMETRY

RIRON =	6.7820	CM
RIRON =	2.6701	INCHES
RREF =	1.0000	CM
RREF =	0.3937	INCHES
ROFF =	0.0000	CM
ROFF =	0.0000	INCHES
CURRENT =	5.0000	KAMPS/TURN
SEGMENT AREA =	0.0319	SQINS
CDENSE =	156.7836	KAMPS/SQIN
FACTOR =	2.4302	KGAUSS*INCH
SEGMENT AREA =	0.0249	SQINS
CDENSE =	200.5953	KAMPS/SQIN
FACTOR =	3.1092	KGAUSS*RREF

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comments for this run:  
Reduced insulation

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Original (unperturbed) coil cross section

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KA, SEG = 1 1	0.9757	0.0040	1.4747	0.0040	1.4740	0.0732	0.9751	0.0626
KA, SEG = 2 1	0.9757	-0.0040	1.4747	-0.0040	1.4740	-0.0732	0.9751	-0.0626
KA, SEG = 3 1	-0.9757	-0.0040	-1.4747	-0.0040	-1.4740	-0.0732	-0.9751	-0.0626
KA, SEG = 4 1	-0.9757	0.0040	-1.4747	0.0040	-1.4740	0.0732	-0.9751	0.0626
KA, SEG = 1 2	0.9737	0.0625	1.4726	0.0732	1.4704	0.1424	0.9718	0.1211
KA, SEG = 2 2	0.9737	-0.0625	1.4726	-0.0732	1.4704	-0.1424	0.9718	-0.1211
KA, SEG = 3 2	-0.9737	-0.0625	-1.4726	-0.0732	-1.4704	-0.1424	-0.9718	-0.1211
KA, SEG = 4 2	-0.9737	0.0625	-1.4726	0.0732	-1.4704	0.1424	-0.9718	0.1211
KA, SEG = 1 3	0.9682	0.1209	1.4667	0.1423	1.4631	0.2114	0.9650	0.1794
KA, SEG = 2 3	0.9682	-0.1209	1.4667	-0.1423	1.4631	-0.2114	0.9650	-0.1794
KA, SEG = 3 3	-0.9682	-0.1209	-1.4667	-0.1423	-1.4631	-0.2114	-0.9650	-0.1794
KA, SEG = 4 3	-0.9682	0.1209	-1.4667	0.1423	-1.4631	0.2114	-0.9650	0.1794
KA, SEG = 1 4	0.9591	0.1790	1.4571	0.2110	1.4520	0.2801	0.9548	0.2375
KA, SEG = 2 4	0.9591	-0.1790	1.4571	-0.2110	1.4520	-0.2801	0.9548	-0.2375
KA, SEG = 3 4	-0.9591	-0.1790	-1.4571	-0.2110	-1.4520	-0.2801	-0.9548	-0.2375
KA, SEG = 4 4	-0.9591	0.1790	-1.4571	0.2110	-1.4520	0.2801	-0.9548	0.2375
KA, SEG = 1 5	0.9465	0.2368	1.4437	0.2794	1.4371	0.3483	0.9409	0.2951
KA, SEG = 2 5	0.9465	-0.2368	1.4437	-0.2794	1.4371	-0.3483	0.9409	-0.2951
KA, SEG = 3 5	-0.9465	-0.2368	-1.4437	-0.2794	-1.4371	-0.3483	-0.9409	-0.2951
KA, SEG = 4 5	-0.9465	0.2368	-1.4437	0.2794	-1.4371	0.3483	-0.9409	0.2951
KA, SEG = 1 6	0.9304	0.2939	1.4266	0.3472	1.4184	0.4159	0.9235	0.3521
KA, SEG = 2 6	0.9304	-0.2939	1.4266	-0.3472	1.4184	-0.4159	0.9235	-0.3521
KA, SEG = 3 6	-0.9304	-0.2939	-1.4266	-0.3472	-1.4184	-0.4159	-0.9235	-0.3521
KA, SEG = 4 6	-0.9304	0.2939	-1.4266	0.3472	-1.4184	0.4159	-0.9235	0.3521
KA, SEG = 1 7	0.9160	0.3676	1.3296	0.6468	1.2902	0.7038	0.8827	0.4158
KA, SEG = 2 7	0.9160	-0.3676	1.3296	-0.6468	1.2902	-0.7038	0.8827	-0.4158
KA, SEG = 3 7	-0.9160	-0.3676	-1.3296	-0.6468	-1.2902	-0.7038	-0.8827	-0.4158
KA, SEG = 4 7	-0.9160	0.3676	-1.3296	0.6468	-1.2902	0.7038	-0.8827	0.4158
KA, SEG = 1 8	0.8901	0.4211	1.2977	0.7091	1.2571	0.7652	0.8558	0.4686
KA, SEG = 2 8	0.8901	-0.4211	1.2977	-0.7091	1.2571	-0.7652	0.8558	-0.4686
KA, SEG = 3 8	-0.8901	-0.4211	-1.2977	-0.7091	-1.2571	-0.7652	-0.8558	-0.4686
KA, SEG = 4 8	-0.8901	0.4211	-1.2977	0.7091	-1.2571	0.7652	-0.8558	0.4686
KA, SEG = 1 9	0.8613	0.4726	1.2626	0.7693	1.2209	0.8245	0.8260	0.5193
KA, SEG = 2 9	0.8613	-0.4726	1.2626	-0.7693	1.2209	-0.8245	0.8260	-0.5193
KA, SEG = 3 9	-0.8613	-0.4726	-1.2626	-0.7693	-1.2209	-0.8245	-0.8260	-0.5193
KA, SEG = 4 9	-0.8613	0.4726	-1.2626	0.7693	-1.2209	0.8245	-0.8260	0.5193
KA, SEG = 1 10	0.8296	0.5221	1.2244	0.8273	1.1815	0.8816	0.7933	0.5681
KA, SEG = 2 10	0.8296	-0.5221	1.2244	-0.8273	1.1815	-0.8816	0.7933	-0.5681
KA, SEG = 3 10	-0.8296	-0.5221	-1.2244	-0.8273	-1.1815	-0.8816	-0.7933	-0.5681
KA, SEG = 4 10	-0.8296	0.5221	-1.2244	0.8273	-1.1815	0.8816	-0.7933	0.5681
KA, SEG = 1 11	0.7950	0.5695	1.1833	0.8830	1.1392	0.9364	0.7577	0.6147
KA, SEG = 2 11	0.7950	-0.5695	1.1833	-0.8830	1.1392	-0.9364	0.7577	-0.6147
KA, SEG = 3 11	-0.7950	-0.5695	-1.1833	-0.8830	-1.1392	-0.9364	-0.7577	-0.6147

KA, SEG =	4 11	-0.7950	0.5695	-1.1833	0.8830	-1.1392	0.9364	-0.7577	0.6147
KA, SEG =	1 12	0.7577	0.6147	1.1392	0.9364	1.0940	0.9889	0.7195	0.6590
KA, SEG =	2 12	0.7577	-0.6147	1.1392	-0.9364	1.0940	-0.9889	0.7195	-0.6590
KA, SEG =	3 12	-0.7577	-0.6147	-1.1392	-0.9364	-1.0940	-0.9889	-0.7195	-0.6590
KA, SEG =	4 12	-0.7577	0.6147	-1.1392	0.9364	-1.0940	0.9889	-0.7195	0.6590
KA, SEG =	1 13	0.7195	0.6590	1.0940	0.9889	1.0477	1.0403	0.6803	0.7026
KA, SEG =	2 13	0.7195	-0.6590	1.0940	-0.9889	1.0477	-1.0403	0.6803	-0.7026
KA, SEG =	3 13	-0.7195	-0.6590	-1.0940	-0.9889	-1.0477	-1.0403	-0.6803	-0.7026
KA, SEG =	4 13	-0.7195	0.6590	-1.0940	0.9889	-1.0477	1.0403	-0.6803	0.7026
KA, SEG =	1 14	0.6238	0.7532	0.9193	1.1553	0.8631	1.1957	0.5762	0.7874
KA, SEG =	2 14	0.6238	-0.7532	0.9193	-1.1553	0.8631	-1.1957	0.5762	-0.7874
KA, SEG =	3 14	-0.6238	-0.7532	-0.9193	-1.1553	-0.8631	-1.1957	-0.5762	-0.7874
KA, SEG =	4 14	-0.6238	0.7532	-0.9193	1.1553	-0.8631	1.1957	-0.5762	0.7874
KA, SEG =	1 15	0.5762	0.7874	0.8631	1.1957	0.8060	1.2349	0.5279	0.8206
KA, SEG =	2 15	0.5762	-0.7874	0.8631	-1.1957	0.8060	-1.2349	0.5279	-0.8206
KA, SEG =	3 15	-0.5762	-0.7874	-0.8631	-1.1957	-0.8060	-1.2349	-0.5279	-0.8206
KA, SEG =	4 15	-0.5762	0.7874	-0.8631	1.1957	-0.8060	1.2349	-0.5279	0.8206
KA, SEG =	1 16	0.5279	0.8206	0.8060	1.2349	0.7481	1.2729	0.4789	0.8527
KA, SEG =	2 16	0.5279	-0.8206	0.8060	-1.2349	0.7481	-1.2729	0.4789	-0.8527
KA, SEG =	3 16	-0.5279	-0.8206	-0.8060	-1.2349	-0.7481	-1.2729	-0.4789	-0.8527
KA, SEG =	4 16	-0.5279	0.8206	-0.8060	1.2349	-0.7481	1.2729	-0.4789	0.8527
KA, SEG =	1 17	0.4114	0.8872	0.5949	1.3513	0.5302	1.3761	0.3567	0.9082
KA, SEG =	2 17	0.4114	-0.8872	0.5949	-1.3513	0.5302	-1.3761	0.3567	-0.9082
KA, SEG =	3 17	-0.4114	-0.8872	-0.5949	-1.3513	-0.5302	-1.3761	-0.3567	-0.9082
KA, SEG =	4 17	-0.4114	0.8872	-0.5949	1.3513	-0.5302	1.3761	-0.3567	0.9082
KA, SEG =	1 18	0.3567	0.9082	0.5302	1.3761	0.4650	1.3994	0.3016	0.9279
KA, SEG =	2 18	0.3567	-0.9082	0.5302	-1.3761	0.4650	-1.3994	0.3016	-0.9279
KA, SEG =	3 18	-0.3567	-0.9082	-0.5302	-1.3761	-0.4650	-1.3994	-0.3016	-0.9279
KA, SEG =	4 18	-0.3567	0.9082	-0.5302	1.3761	-0.4650	1.3994	-0.3016	0.9279
KA, SEG =	1 19	0.3016	0.9279	0.4650	1.3994	0.3994	1.4214	0.2460	0.9465
KA, SEG =	2 19	0.3016	-0.9279	0.4650	-1.3994	0.3994	-1.4214	0.2460	-0.9465
KA, SEG =	3 19	-0.3016	-0.9279	-0.4650	-1.3994	-0.3994	-1.4214	-0.2460	-0.9465
KA, SEG =	4 19	-0.3016	0.9279	-0.4650	1.3994	-0.3994	1.4214	-0.2460	0.9465
KA, SEG =	1 20	1.4847	0.0040	1.9583	0.0040	1.9578	0.0607	1.4843	0.0525
KA, SEG =	2 20	1.4847	-0.0040	1.9583	-0.0040	1.9578	-0.0607	1.4843	-0.0525
KA, SEG =	3 20	-1.4847	-0.0040	-1.9583	-0.0040	-1.9578	-0.0607	-1.4843	-0.0525
KA, SEG =	4 20	-1.4847	0.0040	-1.9583	0.0040	-1.9578	0.0607	-1.4843	0.0525
KA, SEG =	1 21	1.4838	0.0525	1.9573	0.0607	1.9558	0.1175	1.4825	0.1010
KA, SEG =	2 21	1.4838	-0.0525	1.9573	-0.0607	1.9558	-0.1175	1.4825	-0.1010
KA, SEG =	3 21	-1.4838	-0.0525	-1.9573	-0.0607	-1.9558	-0.1175	-1.4825	-0.1010
KA, SEG =	4 21	-1.4838	0.0525	-1.9573	0.0607	-1.9558	0.1175	-1.4825	0.1010
KA, SEG =	1 22	1.4813	0.1010	1.9546	0.1174	1.9521	0.1741	1.4792	0.1494
KA, SEG =	2 22	1.4813	-0.1010	1.9546	-0.1174	1.9521	-0.1741	1.4792	-0.1494
KA, SEG =	3 22	-1.4813	-0.1010	-1.9546	-0.1174	-1.9521	-0.1741	-1.4792	-0.1494
KA, SEG =	4 22	-1.4813	0.1010	-1.9546	0.1174	-1.9521	0.1741	-1.4792	0.1494
KA, SEG =	1 23	1.4772	0.1493	1.9501	0.1740	1.9467	0.2306	1.4742	0.1978
KA, SEG =	2 23	1.4772	-0.1493	1.9501	-0.1740	1.9467	-0.2306	1.4742	-0.1978
KA, SEG =	3 23	-1.4772	-0.1493	-1.9501	-0.1740	-1.9467	-0.2306	-1.4742	-0.1978
KA, SEG =	4 23	-1.4772	0.1493	-1.9501	0.1740	-1.9467	0.2306	-1.4742	0.1978
KA, SEG =	1 24	1.4715	0.1976	1.9440	0.2305	1.9395	0.2870	1.4677	0.2459
KA, SEG =	2 24	1.4715	-0.1976	1.9440	-0.2305	1.9395	-0.2870	1.4677	-0.2459
KA, SEG =	3 24	-1.4715	-0.1976	-1.9440	-0.2305	-1.9395	-0.2870	-1.4677	-0.2459
KA, SEG =	4 24	-1.4715	0.1976	-1.9440	0.2305	-1.9395	0.2870	-1.4677	0.2459
KA, SEG =	1 25	1.4642	0.2456	1.9361	0.2867	1.9307	0.3432	1.4596	0.2939
KA, SEG =	2 25	1.4642	-0.2456	1.9361	-0.2867	1.9307	-0.3432	1.4596	-0.2939
KA, SEG =	3 25	-1.4642	-0.2456	-1.9361	-0.2867	-1.9307	-0.3432	-1.4596	-0.2939
KA, SEG =	4 25	-1.4642	0.2456	-1.9361	0.2867	-1.9307	0.3432	-1.4596	0.2939
KA, SEG =	1 26	1.4554	0.2935	1.9265	0.3428	1.9201	0.3992	1.4499	0.3417
KA, SEG =	2 26	1.4554	-0.2935	1.9265	-0.3428	1.9201	-0.3992	1.4499	-0.3417
KA, SEG =	3 26	-1.4554	-0.2935	-1.9265	-0.3428	-1.9201	-0.3992	-1.4499	-0.3417
KA, SEG =	4 26	-1.4554	0.2935	-1.9265	0.3428	-1.9201	0.3992	-1.4499	0.3417
KA, SEG =	1 27	1.4450	0.3411	1.9151	0.3985	1.9077	0.4548	1.4387	0.3892
KA, SEG =	2 27	1.4450	-0.3411	1.9151	-0.3985	1.9077	-0.4548	1.4387	-0.3892
KA, SEG =	3 27	-1.4450	-0.3411	-1.9151	-0.3985	-1.9077	-0.4548	-1.4387	-0.3892
KA, SEG =	4 27	-1.4450	0.3411	-1.9151	0.3985	-1.9077	0.4548	-1.4387	0.3892
KA, SEG =	1 28	1.4330	0.3884	1.9020	0.4540	1.8937	0.5101	1.4259	0.4364

KA, SEG =	2 28	1.4330	-0.3884	1.9020	-0.4540	1.8937	-0.5101	1.4259	-0.4364
KA, SEG =	3 28	-1.4330	-0.3884	-1.9020	-0.4540	-1.8937	-0.5101	-1.4259	-0.4364
KA, SEG =	4 28	-1.4330	0.3884	-1.9020	0.4540	-1.8937	0.5101	-1.4259	0.4364
KA, SEG =	1 29	1.4194	0.4354	1.8873	0.5091	1.8779	0.5651	1.4115	0.4832
KA, SEG =	2 29	1.4194	-0.4354	1.8873	-0.5091	1.8779	-0.5651	1.4115	-0.4832
KA, SEG =	3 29	-1.4194	-0.4354	-1.8873	-0.5091	-1.8779	-0.5651	-1.4115	-0.4832
KA, SEG =	4 29	-1.4194	0.4354	-1.8873	0.5091	-1.8779	0.5651	-1.4115	0.4832
KA, SEG =	1 30	1.4043	0.4820	1.8708	0.5638	1.8605	0.6196	1.3955	0.5297
KA, SEG =	2 30	1.4043	-0.4820	1.8708	-0.5638	1.8605	-0.6196	1.3955	-0.5297
KA, SEG =	3 30	-1.4043	-0.4820	-1.8708	-0.5638	-1.8605	-0.6196	-1.3955	-0.5297
KA, SEG =	4 30	-1.4043	0.4820	-1.8708	0.5638	-1.8605	0.6196	-1.3955	0.5297
KA, SEG =	1 31	1.3798	0.5516	1.8133	0.7424	1.7900	0.7941	1.3599	0.5959
KA, SEG =	2 31	1.3798	-0.5516	1.8133	-0.7424	1.7900	-0.7941	1.3599	-0.5959
KA, SEG =	3 31	-1.3798	-0.5516	-1.8133	-0.7424	-1.7900	-0.7941	-1.3599	-0.5959
KA, SEG =	4 31	-1.3798	0.5516	-1.8133	0.7424	-1.7900	0.7941	-1.3599	0.5959
KA, SEG =	1 32	1.3604	0.5961	1.7905	0.7944	1.7663	0.8457	1.3397	0.6400
KA, SEG =	2 32	1.3604	-0.5961	1.7905	-0.7944	1.7663	-0.8457	1.3397	-0.6400
KA, SEG =	3 32	-1.3604	-0.5961	-1.7905	-0.7944	-1.7663	-0.8457	-1.3397	-0.6400
KA, SEG =	4 32	-1.3604	0.5961	-1.7905	0.7944	-1.7663	0.8457	-1.3397	0.6400
KA, SEG =	1 33	1.3397	0.6400	1.7663	0.8457	1.7412	0.8966	1.3182	0.6835
KA, SEG =	2 33	1.3397	-0.6400	1.7663	-0.8457	1.7412	-0.8966	1.3182	-0.6835
KA, SEG =	3 33	-1.3397	-0.6400	-1.7663	-0.8457	-1.7412	-0.8966	-1.3182	-0.6835
KA, SEG =	4 33	-1.3397	0.6400	-1.7663	0.8457	-1.7412	0.8966	-1.3182	0.6835
KA, SEG =	1 34	1.3181	0.6834	1.7410	0.8965	1.7151	0.9469	1.2959	0.7266
KA, SEG =	2 34	1.3181	-0.6834	1.7410	-0.8965	1.7151	-0.9469	1.2959	-0.7266
KA, SEG =	3 34	-1.3181	-0.6834	-1.7410	-0.8965	-1.7151	-0.9469	-1.2959	-0.7266
KA, SEG =	4 34	-1.3181	0.6834	-1.7410	0.8965	-1.7151	0.9469	-1.2959	0.7266
KA, SEG =	1 35	1.2950	0.7261	1.7142	0.9465	1.6874	0.9965	1.2721	0.7689
KA, SEG =	2 35	1.2950	-0.7261	1.7142	-0.9465	1.6874	-0.9965	1.2721	-0.7689
KA, SEG =	3 35	-1.2950	-0.7261	-1.7142	-0.9465	-1.6874	-0.9965	-1.2721	-0.7689
KA, SEG =	4 35	-1.2950	0.7261	-1.7142	0.9465	-1.6874	0.9965	-1.2721	0.7689
KA, SEG =	1 36	1.2706	0.7681	1.6859	0.9957	1.6582	1.0452	1.2469	0.8104
KA, SEG =	2 36	1.2706	-0.7681	1.6859	-0.9957	1.6582	-1.0452	1.2469	-0.8104
KA, SEG =	3 36	-1.2706	-0.7681	-1.6859	-0.9957	-1.6582	-1.0452	-1.2469	-0.8104
KA, SEG =	4 36	-1.2706	0.7681	-1.6859	0.9957	-1.6582	1.0452	-1.2469	0.8104
KA, SEG =	1 37	1.2448	0.8092	1.6561	1.0440	1.6275	1.0931	1.2204	0.8511
KA, SEG =	2 37	1.2448	-0.8092	1.6561	-1.0440	1.6275	-1.0931	1.2204	-0.8511
KA, SEG =	3 37	-1.2448	-0.8092	-1.6561	-1.0440	-1.6275	-1.0931	-1.2204	-0.8511
KA, SEG =	4 37	-1.2448	0.8092	-1.6561	1.0440	-1.6275	1.0931	-1.2204	0.8511
KA, SEG =	1 38	1.2177	0.8495	1.6248	1.0914	1.5954	1.1400	1.1925	0.8910
KA, SEG =	2 38	1.2177	-0.8495	1.6248	-1.0914	1.5954	-1.1400	1.1925	-0.8910
KA, SEG =	3 38	-1.2177	-0.8495	-1.6248	-1.0914	-1.5954	-1.1400	-1.1925	-0.8910
KA, SEG =	4 38	-1.2177	0.8495	-1.6248	1.0914	-1.5954	1.1400	-1.1925	0.8910
KA, SEG =	1 39	1.1892	0.8889	1.5921	1.1379	1.5618	1.1859	1.1633	0.9300
KA, SEG =	2 39	1.1892	-0.8889	1.5921	-1.1379	1.5618	-1.1859	1.1633	-0.9300
KA, SEG =	3 39	-1.1892	-0.8889	-1.5921	-1.1379	-1.5618	-1.1859	-1.1633	-0.9300
KA, SEG =	4 39	-1.1892	0.8889	-1.5921	1.1379	-1.5618	1.1859	-1.1633	0.9300
KA, SEG =	1 40	1.1594	0.9274	1.5579	1.1834	1.5268	1.2309	1.1328	0.9680
KA, SEG =	2 40	1.1594	-0.9274	1.5579	-1.1834	1.5268	-1.2309	1.1328	-0.9680
KA, SEG =	3 40	-1.1594	-0.9274	-1.5579	-1.1834	-1.5268	-1.2309	-1.1328	-0.9680
KA, SEG =	4 40	-1.1594	0.9274	-1.5579	1.1834	-1.5268	1.2309	-1.1328	0.9680
KA, SEG =	1 41	1.1283	0.9650	1.5223	1.2278	1.4904	1.2748	1.1010	1.0052
KA, SEG =	2 41	1.1283	-0.9650	1.5223	-1.2278	1.4904	-1.2748	1.1010	-1.0052
KA, SEG =	3 41	-1.1283	-0.9650	-1.5223	-1.2278	-1.4904	-1.2748	-1.1010	-1.0052
KA, SEG =	4 41	-1.1283	0.9650	-1.5223	1.2278	-1.4904	1.2748	-1.1010	1.0052
KA, SEG =	1 42	1.0959	1.0016	1.4853	1.2713	1.4526	1.3176	1.0680	1.0413
KA, SEG =	2 42	1.0959	-1.0016	1.4853	-1.2713	1.4526	-1.3176	1.0680	-1.0413
KA, SEG =	3 42	-1.0959	-1.0016	-1.4853	-1.2713	-1.4526	-1.3176	-1.0680	-1.0413
KA, SEG =	4 42	-1.0959	1.0016	-1.4853	1.2713	-1.4526	1.3176	-1.0680	1.0413
KA, SEG =	1 43	1.0623	1.0372	1.4470	1.3136	1.4134	1.3594	1.0337	1.0764
KA, SEG =	2 43	1.0623	-1.0372	1.4470	-1.3136	1.4134	-1.3594	1.0337	-1.0764
KA, SEG =	3 43	-1.0623	-1.0372	-1.4470	-1.3136	-1.4134	-1.3594	-1.0337	-1.0764
KA, SEG =	4 43	-1.0623	1.0372	-1.4470	1.3136	-1.4134	1.3594	-1.0337	1.0764
KA, SEG =	1 44	1.0275	1.0717	1.4072	1.3547	1.3729	1.3999	0.9981	1.1104
KA, SEG =	2 44	1.0275	-1.0717	1.4072	-1.3547	1.3729	-1.3999	0.9981	-1.1104
KA, SEG =	3 44	-1.0275	-1.0717	-1.4072	-1.3547	-1.3729	-1.3999	-0.9981	-1.1104

KA, SEG =	4 44	-1.0275	1.0717	-1.4072	1.3547	-1.3729	1.3999	-0.9981	1.1104
KA, SEG =	1 45	0.9914	1.1052	1.3662	1.3947	1.3311	1.4393	0.9614	1.1433
KA, SEG =	2 45	0.9914	-1.1052	1.3662	-1.3947	1.3311	-1.4393	0.9614	-1.1433
KA, SEG =	3 45	-0.9914	-1.1052	-1.3662	-1.3947	-1.3311	-1.4393	-0.9614	-1.1433
KA, SEG =	4 45	-0.9914	1.1052	-1.3662	1.3947	-1.3311	1.4393	-0.9614	1.1433

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Modified coil cross section  
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KA, SEG =	1 1	0.9757	0.0040	1.4747	0.0040	1.4741	0.0703	0.9753	0.0596
KA, SEG =	2 1	0.9757	-0.0040	1.4747	-0.0040	1.4741	-0.0703	0.9753	-0.0596
KA, SEG =	3 1	-0.9757	-0.0040	-1.4747	-0.0040	-1.4741	-0.0703	-0.9753	-0.0596
KA, SEG =	4 1	-0.9757	0.0040	-1.4747	0.0040	-1.4741	0.0703	-0.9753	0.0596
KA, SEG =	1 2	0.9739	0.0596	1.4728	0.0702	1.4710	0.1365	0.9725	0.1152
KA, SEG =	2 2	0.9739	-0.0596	1.4728	-0.0702	1.4710	-0.1365	0.9725	-0.1152
KA, SEG =	3 2	-0.9739	-0.0596	-1.4728	-0.0702	-1.4710	-0.1365	-0.9725	-0.1152
KA, SEG =	4 2	-0.9739	0.0596	-1.4728	0.0702	-1.4710	0.1365	-0.9725	0.1152
KA, SEG =	1 3	0.9689	0.1150	1.4673	0.1363	1.4643	0.2025	0.9666	0.1706
KA, SEG =	2 3	0.9689	-0.1150	1.4673	-0.1363	1.4643	-0.2025	0.9666	-0.1706
KA, SEG =	3 3	-0.9689	-0.1150	-1.4673	-0.1363	-1.4643	-0.2025	-0.9666	-0.1706
KA, SEG =	4 3	-0.9689	0.1150	-1.4673	0.1363	-1.4643	0.2025	-0.9666	0.1706
KA, SEG =	1 4	0.9607	0.1702	1.4584	0.2021	1.4542	0.2683	0.9576	0.2258
KA, SEG =	2 4	0.9607	-0.1702	1.4584	-0.2021	1.4542	-0.2683	0.9576	-0.2258
KA, SEG =	3 4	-0.9607	-0.1702	-1.4584	-0.2021	-1.4542	-0.2683	-0.9576	-0.2258
KA, SEG =	4 4	-0.9607	0.1702	-1.4584	0.2021	-1.4542	0.2683	-0.9576	0.2258
KA, SEG =	1 5	0.9494	0.2251	1.4460	0.2676	1.4405	0.3337	0.9453	0.2808
KA, SEG =	2 5	0.9494	-0.2251	1.4460	-0.2676	1.4405	-0.3337	0.9453	-0.2808
KA, SEG =	3 5	-0.9494	-0.2251	-1.4460	-0.2676	-1.4405	-0.3337	-0.9453	-0.2808
KA, SEG =	4 5	-0.9494	0.2251	-1.4460	0.2676	-1.4405	0.3337	-0.9453	0.2808
KA, SEG =	1 6	0.9348	0.2796	1.4300	0.3326	1.4234	0.3987	0.9297	0.3353
KA, SEG =	2 6	0.9348	-0.2796	1.4300	-0.3326	1.4234	-0.3987	0.9297	-0.3353
KA, SEG =	3 6	-0.9348	-0.2796	-1.4300	-0.3326	-1.4234	-0.3987	-0.9297	-0.3353
KA, SEG =	4 6	-0.9348	0.2796	-1.4300	0.3326	-1.4234	0.3987	-0.9297	0.3353
KA, SEG =	1 7	0.9118	0.3778	1.3247	0.6567	1.2863	0.7108	0.8792	0.4231
KA, SEG =	2 7	0.9118	-0.3778	1.3247	-0.6567	1.2863	-0.7108	0.8792	-0.4231
KA, SEG =	3 7	-0.9118	-0.3778	-1.3247	-0.6567	-1.2863	-0.7108	-0.8792	-0.4231
KA, SEG =	4 7	-0.9118	0.3778	-1.3247	0.6567	-1.2863	0.7108	-0.8792	0.4231
KA, SEG =	1 8	0.8867	0.4283	1.2938	0.7161	1.2545	0.7695	0.8534	0.4730
KA, SEG =	2 8	0.8867	-0.4283	1.2938	-0.7161	1.2545	-0.7695	0.8534	-0.4730
KA, SEG =	3 8	-0.8867	-0.4283	-1.2938	-0.7161	-1.2545	-0.7695	-0.8534	-0.4730
KA, SEG =	4 8	-0.8867	0.4283	-1.2938	0.7161	-1.2545	0.7695	-0.8534	0.4730
KA, SEG =	1 9	0.8589	0.4770	1.2600	0.7736	1.2197	0.8262	0.8249	0.5211
KA, SEG =	2 9	0.8589	-0.4770	1.2600	-0.7736	1.2197	-0.8262	0.8249	-0.5211
KA, SEG =	3 9	-0.8589	-0.4770	-1.2600	-0.7736	-1.2197	-0.8262	-0.8249	-0.5211
KA, SEG =	4 9	-0.8589	0.4770	-1.2600	0.7736	-1.2197	0.8262	-0.8249	0.5211
KA, SEG =	1 10	0.8285	0.5239	1.2233	0.8290	1.1821	0.8808	0.7938	0.5673
KA, SEG =	2 10	0.8285	-0.5239	1.2233	-0.8290	1.1821	-0.8808	0.7938	-0.5673
KA, SEG =	3 10	-0.8285	-0.5239	-1.2233	-0.8290	-1.1821	-0.8808	-0.7938	-0.5673
KA, SEG =	4 10	-0.8285	0.5239	-1.2233	0.8290	-1.1821	0.8808	-0.7938	0.5673
KA, SEG =	1 11	0.7956	0.5687	1.1838	0.8823	1.1417	0.9334	0.7602	0.6116
KA, SEG =	2 11	0.7956	-0.5687	1.1838	-0.8823	1.1417	-0.9334	0.7602	-0.6116
KA, SEG =	3 11	-0.7956	-0.5687	-1.1838	-0.8823	-1.1417	-0.9334	-0.7602	-0.6116
KA, SEG =	4 11	-0.7956	0.5687	-1.1838	0.8823	-1.1417	0.9334	-0.7602	0.6116
KA, SEG =	1 12	0.7602	0.6116	1.1417	0.9334	1.0986	0.9837	0.7242	0.6539
KA, SEG =	2 12	0.7602	-0.6116	1.1417	-0.9334	1.0986	-0.9837	0.7242	-0.6539
KA, SEG =	3 12	-0.7602	-0.6116	-1.1417	-0.9334	-1.0986	-0.9837	-0.7242	-0.6539
KA, SEG =	4 12	-0.7602	0.6116	-1.1417	0.9334	-1.0986	0.9837	-0.7242	0.6539
KA, SEG =	1 13	0.7241	0.6539	1.0986	0.9837	1.0546	1.0333	0.6874	0.6956
KA, SEG =	2 13	0.7241	-0.6539	1.0986	-0.9837	1.0546	-1.0333	0.6874	-0.6956
KA, SEG =	3 13	-0.7241	-0.6539	-1.0986	-0.9837	-1.0546	-1.0333	-0.6874	-0.6956
KA, SEG =	4 13	-0.7241	0.6539	-1.0986	0.9837	-1.0546	1.0333	-0.6874	0.6956
KA, SEG =	1 14	0.6204	0.7560	0.9160	1.1580	0.8620	1.1965	0.5751	0.7882
KA, SEG =	2 14	0.6204	-0.7560	0.9160	-1.1580	0.8620	-1.1965	0.5751	-0.7882
KA, SEG =	3 14	-0.6204	-0.7560	-0.9160	-1.1580	-0.8620	-1.1965	-0.5751	-0.7882
KA, SEG =	4 14	-0.6204	0.7560	-0.9160	1.1580	-0.8620	1.1965	-0.5751	0.7882
KA, SEG =	1 15	0.5751	0.7882	0.8620	1.1965	0.8074	1.2340	0.5293	0.8197
KA, SEG =	2 15	0.5751	-0.7882	0.8620	-1.1965	0.8074	-1.2340	0.5293	-0.8197

KA, SEG =	3 15	-0.5751	-0.7882	-0.8620	-1.1965	-0.8074	-1.2340	-0.5293	-0.8197
KA, SEG =	4 15	-0.5751	0.7882	-0.8620	1.1965	-0.8074	1.2340	-0.5293	0.8197
KA, SEG =	1 16	0.5293	0.8197	0.8074	1.2340	0.7521	1.2705	0.4830	0.8504
KA, SEG =	2 16	0.5293	-0.8197	0.8074	-1.2340	0.7521	-1.2705	0.4830	-0.8504
KA, SEG =	3 16	-0.5293	-0.8197	-0.8074	-1.2340	-0.7521	-1.2705	-0.4830	-0.8504
KA, SEG =	4 16	-0.5293	0.8197	-0.8074	1.2340	-0.7521	1.2705	-0.4830	0.8504
KA, SEG =	1 17	0.4028	0.8912	0.5862	1.3551	0.5241	1.3784	0.3506	0.9105
KA, SEG =	2 17	0.4028	-0.8912	0.5862	-1.3551	0.5241	-1.3784	0.3506	-0.9105
KA, SEG =	3 17	-0.4028	-0.8912	-0.5862	-1.3551	-0.5241	-1.3784	-0.3506	-0.9105
KA, SEG =	4 17	-0.4028	0.8912	-0.5862	1.3551	-0.5241	1.3784	-0.3506	0.9105
KA, SEG =	1 18	0.3506	0.9105	0.5241	1.3784	0.4617	1.4005	0.2982	0.9290
KA, SEG =	2 18	0.3506	-0.9105	0.5241	-1.3784	0.4617	-1.4005	0.2982	-0.9290
KA, SEG =	3 18	-0.3506	-0.9105	-0.5241	-1.3784	-0.4617	-1.4005	-0.2982	-0.9290
KA, SEG =	4 18	-0.3506	0.9105	-0.5241	1.3784	-0.4617	1.4005	-0.2982	0.9290
KA, SEG =	1 19	0.2982	0.9290	0.4617	1.4005	0.3989	1.4215	0.2455	0.9467
KA, SEG =	2 19	0.2982	-0.9290	0.4617	-1.4005	0.3989	-1.4215	0.2455	-0.9467
KA, SEG =	3 19	-0.2982	-0.9290	-0.4617	-1.4005	-0.3989	-1.4215	-0.2455	-0.9467
KA, SEG =	4 19	-0.2982	0.9290	-0.4617	1.4005	-0.3989	1.4215	-0.2455	0.9467
KA, SEG =	1 20	1.4847	0.0040	1.9583	0.0040	1.9578	0.0604	1.4843	0.0521
KA, SEG =	2 20	1.4847	-0.0040	1.9583	-0.0040	1.9578	-0.0604	1.4843	-0.0521
KA, SEG =	3 20	-1.4847	-0.0040	-1.9583	-0.0040	-1.9578	-0.0604	-1.4843	-0.0521
KA, SEG =	4 20	-1.4847	0.0040	-1.9583	0.0040	-1.9578	0.0604	-1.4843	0.0521
KA, SEG =	1 21	1.4838	0.0521	1.9573	0.0604	1.9559	0.1167	1.4826	0.1002
KA, SEG =	2 21	1.4838	-0.0521	1.9573	-0.0604	1.9559	-0.1167	1.4826	-0.1002
KA, SEG =	3 21	-1.4838	-0.0521	-1.9573	-0.0604	-1.9559	-0.1167	-1.4826	-0.1002
KA, SEG =	4 21	-1.4838	0.0521	-1.9573	0.0604	-1.9559	0.1167	-1.4826	0.1002
KA, SEG =	1 22	1.4813	0.1002	1.9546	0.1167	1.9522	0.1730	1.4793	0.1483
KA, SEG =	2 22	1.4813	-0.1002	1.9546	-0.1167	1.9522	-0.1730	1.4793	-0.1483
KA, SEG =	3 22	-1.4813	-0.1002	-1.9546	-0.1167	-1.9522	-0.1730	-1.4793	-0.1483
KA, SEG =	4 22	-1.4813	0.1002	-1.9546	0.1167	-1.9522	0.1730	-1.4793	0.1483
KA, SEG =	1 23	1.4773	0.1482	1.9502	0.1729	1.9469	0.2291	1.4744	0.1962
KA, SEG =	2 23	1.4773	-0.1482	1.9502	-0.1729	1.9469	-0.2291	1.4744	-0.1962
KA, SEG =	3 23	-1.4773	-0.1482	-1.9502	-0.1729	-1.9469	-0.2291	-1.4744	-0.1962
KA, SEG =	4 23	-1.4773	0.1482	-1.9502	0.1729	-1.9469	0.2291	-1.4744	0.1962
KA, SEG =	1 24	1.4717	0.1961	1.9442	0.2289	1.9398	0.2851	1.4680	0.2441
KA, SEG =	2 24	1.4717	-0.1961	1.9442	-0.2289	1.9398	-0.2851	1.4680	-0.2441
KA, SEG =	3 24	-1.4717	-0.1961	-1.9442	-0.2289	-1.9398	-0.2851	-1.4680	-0.2441
KA, SEG =	4 24	-1.4717	0.1961	-1.9442	0.2289	-1.9398	0.2851	-1.4680	0.2441
KA, SEG =	1 25	1.4646	0.2437	1.9364	0.2848	1.9311	0.3410	1.4601	0.2917
KA, SEG =	2 25	1.4646	-0.2437	1.9364	-0.2848	1.9311	-0.3410	1.4601	-0.2917
KA, SEG =	3 25	-1.4646	-0.2437	-1.9364	-0.2848	-1.9311	-0.3410	-1.4601	-0.2917
KA, SEG =	4 25	-1.4646	0.2437	-1.9364	0.2848	-1.9311	0.3410	-1.4601	0.2917
KA, SEG =	1 26	1.4559	0.2912	1.9269	0.3405	1.9206	0.3965	1.4505	0.3391
KA, SEG =	2 26	1.4559	-0.2912	1.9269	-0.3405	1.9206	-0.3965	1.4505	-0.3391
KA, SEG =	3 26	-1.4559	-0.2912	-1.9269	-0.3405	-1.9206	-0.3965	-1.4505	-0.3391
KA, SEG =	4 26	-1.4559	0.2912	-1.9269	0.3405	-1.9206	0.3965	-1.4505	0.3391
KA, SEG =	1 27	1.4456	0.3385	1.9157	0.3959	1.9084	0.4518	1.4395	0.3862
KA, SEG =	2 27	1.4456	-0.3385	1.9157	-0.3959	1.9084	-0.4518	1.4395	-0.3862
KA, SEG =	3 27	-1.4456	-0.3385	-1.9157	-0.3959	-1.9084	-0.4518	-1.4395	-0.3862
KA, SEG =	4 27	-1.4456	0.3385	-1.9157	0.3959	-1.9084	0.4518	-1.4395	0.3862
KA, SEG =	1 28	1.4338	0.3855	1.9028	0.4510	1.8946	0.5068	1.4269	0.4331
KA, SEG =	2 28	1.4338	-0.3855	1.9028	-0.4510	1.8946	-0.5068	1.4269	-0.4331
KA, SEG =	3 28	-1.4338	-0.3855	-1.9028	-0.4510	-1.8946	-0.5068	-1.4269	-0.4331
KA, SEG =	4 28	-1.4338	0.3855	-1.9028	0.4510	-1.8946	0.5068	-1.4269	0.4331
KA, SEG =	1 29	1.4204	0.4321	1.8882	0.5058	1.8790	0.5614	1.4127	0.4796
KA, SEG =	2 29	1.4204	-0.4321	1.8882	-0.5058	1.8790	-0.5614	1.4127	-0.4796
KA, SEG =	3 29	-1.4204	-0.4321	-1.8882	-0.5058	-1.8790	-0.5614	-1.4127	-0.4796
KA, SEG =	4 29	-1.4204	0.4321	-1.8882	0.5058	-1.8790	0.5614	-1.4127	0.4796
KA, SEG =	1 30	1.4055	0.4784	1.8719	0.5602	1.8618	0.6157	1.3970	0.5258
KA, SEG =	2 30	1.4055	-0.4784	1.8719	-0.5602	1.8618	-0.6157	1.3970	-0.5258
KA, SEG =	3 30	-1.4055	-0.4784	-1.8719	-0.5602	-1.8618	-0.6157	-1.3970	-0.5258
KA, SEG =	4 30	-1.4055	0.4784	-1.8719	0.5602	-1.8618	0.6157	-1.3970	0.5258
KA, SEG =	1 31	1.3779	0.5563	1.8114	0.7470	1.7881	0.7984	1.3580	0.6001
KA, SEG =	2 31	1.3779	-0.5563	1.8114	-0.7470	1.7881	-0.7984	1.3580	-0.6001
KA, SEG =	3 31	-1.3779	-0.5563	-1.8114	-0.7470	-1.7881	-0.7984	-1.3580	-0.6001
KA, SEG =	4 31	-1.3779	0.5563	-1.8114	0.7470	-1.7881	0.7984	-1.3580	0.6001

KA, SEG =	1 32	1.3585	0.6003	1.7886	0.7986	1.7645	0.8495	1.3379	0.6438
KA, SEG =	2 32	1.3585	-0.6003	1.7886	-0.7986	1.7645	-0.8495	1.3379	-0.6438
KA, SEG =	3 32	-1.3585	-0.6003	-1.7886	-0.7986	-1.7645	-0.8495	-1.3379	-0.6438
KA, SEG =	4 32	-1.3585	0.6003	-1.7886	0.7986	-1.7645	0.8495	-1.3379	0.6438
KA, SEG =	1 33	1.3379	0.6438	1.7645	0.8495	1.7394	0.9000	1.3165	0.6869
KA, SEG =	2 33	1.3379	-0.6438	1.7645	-0.8495	1.7394	-0.9000	1.3165	-0.6869
KA, SEG =	3 33	-1.3379	-0.6438	-1.7645	-0.8495	-1.7394	-0.9000	-1.3165	-0.6869
KA, SEG =	4 33	-1.3379	0.6438	-1.7645	0.8495	-1.7394	0.9000	-1.3165	0.6869
KA, SEG =	1 34	1.3163	0.6868	1.7393	0.8999	1.7134	0.9500	1.2942	0.7296
KA, SEG =	2 34	1.3163	-0.6868	1.7393	-0.8999	1.7134	-0.9500	1.2942	-0.7296
KA, SEG =	3 34	-1.3163	-0.6868	-1.7393	-0.8999	-1.7134	-0.9500	-1.2942	-0.7296
KA, SEG =	4 34	-1.3163	0.6868	-1.7393	0.8999	-1.7134	0.9500	-1.2942	0.7296
KA, SEG =	1 35	1.2933	0.7291	1.7126	0.9496	1.6858	0.9992	1.2705	0.7715
KA, SEG =	2 35	1.2933	-0.7291	1.7126	-0.9496	1.6858	-0.9992	1.2705	-0.7715
KA, SEG =	3 35	-1.2933	-0.7291	-1.7126	-0.9496	-1.6858	-0.9992	-1.2705	-0.7715
KA, SEG =	4 35	-1.2933	0.7291	-1.7126	0.9496	-1.6858	0.9992	-1.2705	0.7715
KA, SEG =	1 36	1.2690	0.7707	1.6843	0.9984	1.6568	1.0475	1.2454	0.8127
KA, SEG =	2 36	1.2690	-0.7707	1.6843	-0.9984	1.6568	-1.0475	1.2454	-0.8127
KA, SEG =	3 36	-1.2690	-0.7707	-1.6843	-0.9984	-1.6568	-1.0475	-1.2454	-0.8127
KA, SEG =	4 36	-1.2690	0.7707	-1.6843	0.9984	-1.6568	1.0475	-1.2454	0.8127
KA, SEG =	1 37	1.2433	0.8115	1.6547	1.0463	1.6262	1.0950	1.2191	0.8530
KA, SEG =	2 37	1.2433	-0.8115	1.6547	-1.0463	1.6262	-1.0950	1.2191	-0.8530
KA, SEG =	3 37	-1.2433	-0.8115	-1.6547	-1.0463	-1.6262	-1.0950	-1.2191	-0.8530
KA, SEG =	4 37	-1.2433	0.8115	-1.6547	1.0463	-1.6262	1.0950	-1.2191	0.8530
KA, SEG =	1 38	1.2163	0.8514	1.6235	1.0934	1.5943	1.1415	1.1914	0.8925
KA, SEG =	2 38	1.2163	-0.8514	1.6235	-1.0934	1.5943	-1.1415	1.1914	-0.8925
KA, SEG =	3 38	-1.2163	-0.8514	-1.6235	-1.0934	-1.5943	-1.1415	-1.1914	-0.8925
KA, SEG =	4 38	-1.2163	0.8514	-1.6235	1.0934	-1.5943	1.1415	-1.1914	0.8925
KA, SEG =	1 39	1.1880	0.8905	1.5909	1.1395	1.5609	1.1872	1.1623	0.9312
KA, SEG =	2 39	1.1880	-0.8905	1.5909	-1.1395	1.5609	-1.1872	1.1623	-0.9312
KA, SEG =	3 39	-1.1880	-0.8905	-1.5909	-1.1395	-1.5609	-1.1872	-1.1623	-0.9312
KA, SEG =	4 39	-1.1880	0.8905	-1.5909	1.1395	-1.5609	1.1872	-1.1623	0.9312
KA, SEG =	1 40	1.1584	0.9287	1.5570	1.1846	1.5261	1.2318	1.1320	0.9689
KA, SEG =	2 40	1.1584	-0.9287	1.5570	-1.1846	1.5261	-1.2318	1.1320	-0.9689
KA, SEG =	3 40	-1.1584	-0.9287	-1.5570	-1.1846	-1.5261	-1.2318	-1.1320	-0.9689
KA, SEG =	4 40	-1.1584	0.9287	-1.5570	1.1846	-1.5261	1.2318	-1.1320	0.9689
KA, SEG =	1 41	1.1275	0.9659	1.5216	1.2288	1.4899	1.2754	1.1005	1.0057
KA, SEG =	2 41	1.1275	-0.9659	1.5216	-1.2288	1.4899	-1.2754	1.1005	-1.0057
KA, SEG =	3 41	-1.1275	-0.9659	-1.5216	-1.2288	-1.4899	-1.2754	-1.1005	-1.0057
KA, SEG =	4 41	-1.1275	0.9659	-1.5216	1.2288	-1.4899	1.2754	-1.1005	1.0057
KA, SEG =	1 42	1.0954	1.0022	1.4848	1.2719	1.4523	1.3179	1.0677	1.0416
KA, SEG =	2 42	1.0954	-1.0022	1.4848	-1.2719	1.4523	-1.3179	1.0677	-1.0416
KA, SEG =	3 42	-1.0954	-1.0022	-1.4848	-1.2719	-1.4523	-1.3179	-1.0677	-1.0416
KA, SEG =	4 42	-1.0954	1.0022	-1.4848	1.2719	-1.4523	1.3179	-1.0677	1.0416
KA, SEG =	1 43	1.0620	1.0375	1.4467	1.3139	1.4134	1.3594	1.0336	1.0764
KA, SEG =	2 43	1.0620	-1.0375	1.4467	-1.3139	1.4134	-1.3594	1.0336	-1.0764
KA, SEG =	3 43	-1.0620	-1.0375	-1.4467	-1.3139	-1.4134	-1.3594	-1.0336	-1.0764
KA, SEG =	4 43	-1.0620	1.0375	-1.4467	1.3139	-1.4134	1.3594	-1.0336	1.0764
KA, SEG =	1 44	1.0274	1.0718	1.4072	1.3548	1.3732	1.3997	0.9984	1.1102
KA, SEG =	2 44	1.0274	-1.0718	1.4072	-1.3548	1.3732	-1.3997	0.9984	-1.1102
KA, SEG =	3 44	-1.0274	-1.0718	-1.4072	-1.3548	-1.3732	-1.3997	-0.9984	-1.1102
KA, SEG =	4 44	-1.0274	1.0718	-1.4072	1.3548	-1.3732	1.3997	-0.9984	1.1102
KA, SEG =	1 45	0.9917	1.1050	1.3665	1.3945	1.3317	1.4388	0.9620	1.1429
KA, SEG =	2 45	0.9917	-1.1050	1.3665	-1.3945	1.3317	-1.4388	0.9620	-1.1429
KA, SEG =	3 45	-0.9917	-1.1050	-1.3665	-1.3945	-1.3317	-1.4388	-0.9620	-1.1429
KA, SEG =	4 45	-0.9917	1.1050	-1.3665	1.3945	-1.3317	1.4388	-0.9620	1.1429