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Complete Data Listings for CSEM soundings on Kilauea Volcano, Hawai'i

by

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This document contains complete data from a controlled-source electromagnetic (CSEM) sounding/mapping project at Kilauea volcano, Hawai'i (Kauahikaua and others, 1979 and 1981; Kauahikaua, 1982). The data were obtained at 46 locations about a fixed-location, horizontal, polygonal loop source in the summit area of the volcano. The coordinates of those locations are listed in table 1 while those of the loop corners are listed in table 2. Coordinate origin is at the center of the loop source; +X is geographic east, +Y is geographic south, and +Z is down.

The data consist of magnetic field amplitudes and phases at excitation frequencies between 0.04 and 8 Hz. The vector components were measured in a cylindrical coordinate system centered on the loop source. The number of components measured was not consistent because of sensor limitations; several different types were used and some could measure only one or two components simultaneously. All data listed in the appendix are normalized by the theoretical primary (free space) field magnitude at each location. Also included in the appendix listings are the polarization ellipse parameters in the vertical-radial and horizontal planes. Because they are normalized, amplitudes and ellipticities (denoted in appendix as 'e') are dimensionless; all phases, tilt and strike angles (denoted in appendix as 'alpha' for vertical-radial and horizontal planes, respectively) are in degrees. The polarization ellipse parameters are defined graphically in fig. 1 and are calculated via the definitions in Smith and Ward (1974).

Many of the locations were reoccupied during the two-year

duration of this project. Data sets obtained during a reoccupation are signified by a letter after the sounding number in the appendix. The induced vertical magnetic field at two of these locations (numbers 22 and 25) has been remeasured semiregularly since 1979 for a CSEM resistivity monitoring experiment aimed at studying and predicting volcanic processes at Kilauea volcano (Jackson and others, 1981).

TABLE 1

Sounding location coordinates (meters) and dates

Sounding number	X, m	Y, m	Z, m	dates	
1	5352	1080	0	1/24/79	8/01/79
2	1680	3420	76	1/26/79	
4	5304	8448	192	2/01/79	10/09/80
5	5352	2568	52	2/03/79	10/30/80
6	6732	6096	162	2/06/79	10/06/80
7	8352	4752	113	2/07/79	
8	9120	6072	190	2/08/79	10/05/80
9	5928	4512	88	2/09/79	
10	8232	8352	226	2/14/79	
11	7200	2352	6	2/15/79	8/03/79
					10/30/80
12	-792	-12790	-461	2/16/79	
13	4284	6648	150	2/17/79	
14	3456	5496	113	2/17/79	
15	1788	6744	168	2/18/79	
16	3276	3504	73	3/08/79	
17	768	2280	34	3/09/79	
18	4560	2712	46	3/09/79	
19	204	4968	104	3/10/79	
20	-480	3912	92	3/10/79	
21	4212	4584	98	3/11/79	
22	2520	4632	107	3/23/79	7/27/79
23	-3384	-2928	-268	4/05/79	
24	-4704	-4032	-378	4/05/79	
25	4128	3720	61	4/06/79	10/16/80
26	552	5904	153	4/07/79	
27	-2412	5016	174	4/20/79	9/18/79
30	3072	9744	216	7/28/79	

31	4608	-264	-15	8/01/79	
32	2952	2184	85	8/02/79	
33	-1836	7800	232	9/12/79	
35	-4656	3072	116	10/01/80	
36	-7320	6504	244	10/02/80	10/02/80
37	-5112	696	-101	10/03/80	
38	6144	6744	162	10/07/80	
39	2760	7584	149	10/10/80	
40	1512	4752	91	10/11/80	
41	8760	984	61	10/13/80	
42	-672	6744	192	10/15/80	
43	3252	4248	62	10/16/80	
44	6720	3744	58	10/17/80	
45	-8527	-7008	-857	10/18/80	
46	7560	3372	58	10/20/80	
47	5364	3456	64	10/21/80	
48	6360	5100	107	10/21/80	
49	7512	6360	168	10/21/80	
50	9384	7164	195	10/21/80	

TABLE 2
Coordinates for loop corners

X, m	Y, m	Z, m
-230	-1092	-18
1637	106	-34
-689	1224	40
-1300	-103	6

REFERENCES

Jackson, D.B., Kauahikaua, J., and Zablocki, C.J., 1981, Resistivity monitoring of an active volcano: application of the controlled-source electromagnetic technique at Kilauea volcano, Hawaii: EOS, vol. 62, p. 1072.

Kauahikaua, J., 1982, The subsurface resistivity structure of Kilauea volcano, Hawai'i: Ph. D. dissertation, Dept. of Geology and geophysics, Univ. of Hawaii, 189 p.

Kauahikaua, J., Zablocki, C.J., and Jackson, D.B., 1979, Controlled-source electromagnetic mapping at the summit of Kilauea volcano, Hawaii: EOS, vol. 60, p. 811.

Kauahikaua, J., Jackson, D.B., and Zablocki, C.J., 1981, The subsurface resistivity structure of Kilauea volcano, Hawaii: EOS, vol. 62, p. 1072.

Smith, B.D. and Ward, S.H., 1974, On the computation of polarization ellipse parameters: Geophysics, v. 39, p. 867-869.

APPENDIX

Complete Data Listing

SOUNDING: 1

vertical component:

f=	0.100	ampl=	0.708	phase=	11.6
f=	0.160	ampl=	1.053	phase=	5.7
f=	0.250	ampl=	1.272	phase=	8.8
f=	0.400	ampl=	1.161	phase=	0.6
f=	0.630	ampl=	1.196	phase=	-5.3
f=	1.000	ampl=	1.142	phase=	-12.3
f=	1.600	ampl=	1.043	phase=	-19.0
f=	4.000	ampl=	0.832	phase=	-28.9
f=	6.300	ampl=	0.800	phase=	-39.0
f=	8.000	ampl=	0.780	phase=	-43.7

SOUNDING: 1a

radial component:

f=	0.400	ampl=	0.522	phase=	46.3
f=	0.630	ampl=	0.671	phase=	35.9
f=	1.000	ampl=	0.761	phase=	26.2
f=	1.600	ampl=	0.852	phase=	16.5
f=	2.500	ampl=	0.849	phase=	12.3
f=	4.000	ampl=	0.849	phase=	4.1
f=	6.300	ampl=	0.840	phase=	0.6
f=	8.000	ampl=	0.856	phase=	0.9

vertical component:

f=	0.100	ampl=	1.079	phase=	6.6
f=	0.160	ampl=	1.026	phase=	3.4
f=	0.250	ampl=	1.137	phase=	2.5
f=	0.400	ampl=	1.170	phase=	-0.8
f=	0.630	ampl=	1.179	phase=	-7.0
f=	1.000	ampl=	1.106	phase=	-14.0
f=	1.600	ampl=	1.041	phase=	-21.0
f=	2.500	ampl=	0.898	phase=	-23.9
f=	4.000	ampl=	0.813	phase=	-33.8
f=	6.300	ampl=	0.739	phase=	-43.6
f=	8.000	ampl=	0.735	phase=	-47.1

vertical-radial ellipticity:

f=	0.400	e=	-0.297	alpha=	71.4
f=	0.630	e=	-0.323	alpha=	64.5
f=	1.000	e=	-0.336	alpha=	58.3
f=	1.600	e=	-0.332	alpha=	52.1
f=	2.500	e=	-0.326	alpha=	47.0

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 f= 4.000     e= -0.342 alpha=  43.4
 f= 6.300     e= -0.401 alpha=  39.9
 f= 8.000     e= -0.438 alpha=  38.6

SOUNDING:  2

 radial component:

 f= 0.400 ampl=  0.293 phase=  49.0
 f= 0.630 ampl=  0.386 phase=  48.0
 f= 1.000 ampl=  0.483 phase=  39.1
 f= 1.600 ampl=  0.565 phase=  30.6
 f= 2.500 ampl=  0.614 phase=  23.3
 f= 4.000 ampl=  0.670 phase=  19.3
 f= 6.300 ampl=  0.747 phase=  14.8
 f= 8.000 ampl=  0.769 phase=  11.3

 vertical component:

 f= 0.400 ampl=  0.913 phase=   8.6
 f= 0.630 ampl=  0.882 phase=   1.2
 f= 1.000 ampl=  0.892 phase=  -1.6
 f= 1.600 ampl=  0.894 phase=  -2.9
 f= 2.500 ampl=  0.847 phase=  -6.1
 f= 4.000 ampl=  0.824 phase=  -7.8
 f= 6.300 ampl=  0.793 phase= -10.8
 f= 8.000 ampl=  0.796 phase= -13.8

 vertical-radial ellipticity:

 f= 0.400     e= -0.196 alpha=  75.7
 f= 0.630     e= -0.290 alpha=  71.7
 f= 1.000     e= -0.297 alpha=  65.4
 f= 1.600     e= -0.267 alpha=  59.8
 f= 2.500     e= -0.247 alpha=  55.3
 f= 4.000     e= -0.235 alpha=  51.6
 f= 6.300     e= -0.227 alpha=  46.9
 f= 8.000     e= -0.222 alpha=  46.1

SOUNDING:  4

 radial component:

 f= 0.100 ampl=  0.479 phase=  37.2
 f= 0.125 ampl=  0.419 phase=  33.1
 f= 0.160 ampl=  0.708 phase=  39.2
 f= 0.200 ampl=  0.340 phase=   3.5
 f= 0.250 ampl=  0.846 phase=  18.2
 f= 0.315 ampl=  0.543 phase=   9.4
 f= 0.400 ampl=  0.577 phase=  22.7
 f= 0.500 ampl=  0.519 phase=   2.5
 f= 0.630 ampl=  0.460 phase=   0.2
 f= 0.800 ampl=  0.369 phase=   6.1
 f= 1.000 ampl=  0.338 phase=   1.8
 f= 1.250 ampl=  0.412 phase=  19.9
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f= 1.600 ampl= 0.465 phase= 10.2
f= 2.000 ampl= 0.378 phase= 18.0
f= 2.500 ampl= 0.372 phase= 27.2
f= 3.150 ampl= 0.380 phase= 38.7
f= 4.000 ampl= 0.396 phase= 46.2
f= 5.000 ampl= 0.376 phase= 61.0
f= 6.300 ampl= 0.393 phase= 82.8
f= 8.000 ampl= 0.395 phase= 99.6

vertical component:

f= 0.100 ampl= 0.853 phase= -17.1
f= 0.160 ampl= 0.772 phase= -28.0
f= 0.200 ampl= 0.727 phase= -32.8
f= 0.250 ampl= 0.667 phase= -35.9
f= 0.315 ampl= 0.606 phase= -47.7
f= 0.400 ampl= 0.528 phase= -47.6
f= 0.500 ampl= 0.367 phase= -53.3
f= 0.630 ampl= 0.282 phase= -58.2
f= 0.800 ampl= 0.254 phase= -49.7
f= 1.000 ampl= 0.203 phase= -41.7
f= 1.250 ampl= 0.197 phase= -36.3
f= 1.600 ampl= 0.190 phase= -26.8
f= 2.000 ampl= 0.195 phase= -26.8
f= 2.500 ampl= 0.181 phase= -22.3
f= 3.150 ampl= 0.170 phase= -21.0
f= 4.000 ampl= 0.154 phase= -17.9
f= 5.000 ampl= 0.149 phase= -15.3
f= 6.300 ampl= 0.136 phase= -15.9
f= 8.000 ampl= 0.133 phase= -5.1

vertical-radial ellipticity:

f= 0.100 e= -0.403 alpha= 68.2
f= 0.160 e= -0.658 alpha= 51.3
f= 0.200 e= -0.241 alpha= 68.0
f= 0.250 e= -0.487 alpha= 33.9
f= 0.315 e= -0.538 alpha= 50.7
f= 0.400 e= -0.696 alpha= 37.6
f= 0.500 e= -0.480 alpha= 28.9
f= 0.630 e= -0.459 alpha= 22.9
f= 0.800 e= -0.473 alpha= 27.9
f= 1.000 e= -0.338 alpha= 26.8
f= 1.250 e= -0.367 alpha= 17.3
f= 1.600 e= -0.221 alpha= 19.0
f= 2.000 e= -0.315 alpha= 22.4
f= 2.500 e= -0.332 alpha= 19.8
f= 3.150 e= -0.365 alpha= 14.7
f= 4.000 e= -0.339 alpha= 10.9
f= 5.000 e= -0.381 alpha= 6.2
f= 6.300 e= -0.342 alpha= -3.4
f= 8.000 e= -0.323 alpha= -5.5

SOUNDING: 4a

tangential component:

f= 0.400 ampl= 0.112 phase= 0.6
f= 1.000 ampl= 0.072 phase= -6.4
f= 4.000 ampl= 0.072 phase= -18.4
f= 8.000 ampl= 0.056 phase= -23.5

radial component:

f= 0.400 ampl= 0.560 phase= 0.2
f= 1.000 ampl= 0.400 phase= -10.3
f= 4.000 ampl= 0.371 phase= -6.4
f= 8.000 ampl= 0.337 phase= -6.2

vertical component:

f= 0.100 ampl= 0.963 phase= -8.0
f= 0.400 ampl= 0.613 phase= -48.5
f= 1.000 ampl= 0.242 phase= -39.8
f= 4.000 ampl= 0.196 phase= -30.6
f= 8.000 ampl= 0.152 phase= -32.9

vertical-radial ellipticity:

f= 0.400 e= -0.449 alpha= 48.9
f= 1.000 e= -0.230 alpha= 29.5
f= 4.000 e= -0.174 alpha= 26.6
f= 8.000 e= -0.173 alpha= 22.7

horizontal ellipticity:

f= 0.400 e= -0.001 alpha= 78.7
f= 1.000 e= -0.012 alpha= 79.8
f= 4.000 e= 0.039 alpha= 79.3
f= 8.000 e= 0.049 alpha= 80.9

SOUNDING: 5

radial component:

f= 0.125 ampl= 0.223 phase= 57.8
f= 0.200 ampl= 0.331 phase= 47.3
f= 0.250 ampl= 0.404 phase= 48.8
f= 0.315 ampl= 0.439 phase= 43.8
f= 0.400 ampl= 0.492 phase= 41.0
f= 0.500 ampl= 0.550 phase= 35.5
f= 0.630 ampl= 0.595 phase= 29.5
f= 0.800 ampl= 0.620 phase= 26.8
f= 1.000 ampl= 0.662 phase= 23.0
f= 1.250 ampl= 0.685 phase= 18.0
f= 1.600 ampl= 0.717 phase= 15.2
f= 2.000 ampl= 0.710 phase= 13.8
f= 2.500 ampl= 0.722 phase= 11.2
f= 3.150 ampl= 0.723 phase= 10.3
f= 4.000 ampl= 0.726 phase= 9.8
f= 5.000 ampl= 0.741 phase= 9.3
f= 6.300 ampl= 0.738 phase= 8.9
f= 8.000 ampl= 0.753 phase= 9.0

vertical component:

f=	0.100	ampl=	0.878	phase=	-2.3
f=	0.125	ampl=	0.884	phase=	0.6
f=	0.160	ampl=	0.945	phase=	-0.6
f=	0.200	ampl=	0.965	phase=	-7.1
f=	0.250	ampl=	0.935	phase=	-6.5
f=	0.315	ampl=	0.959	phase=	-6.3
f=	0.400	ampl=	0.936	phase=	-10.6
f=	0.500	ampl=	0.884	phase=	-12.3
f=	0.630	ampl=	0.859	phase=	-17.1
f=	0.800	ampl=	0.827	phase=	-20.4
f=	1.000	ampl=	0.762	phase=	-22.9
f=	1.250	ampl=	0.694	phase=	-23.4
f=	1.600	ampl=	0.669	phase=	-25.6
f=	2.000	ampl=	0.602	phase=	-25.8
f=	2.500	ampl=	0.561	phase=	-25.8
f=	3.150	ampl=	0.533	phase=	-25.8
f=	4.000	ampl=	0.506	phase=	-26.9
f=	5.000	ampl=	0.484	phase=	-29.2
f=	6.300	ampl=	0.442	phase=	-33.9
f=	8.000	ampl=	0.427	phase=	-35.8

vertical-radial ellipticity:

f=	0.125	e=	-0.208	alpha=	81.9
f=	0.200	e=	-0.267	alpha=	77.8
f=	0.250	e=	-0.333	alpha=	74.4
f=	0.315	e=	-0.320	alpha=	71.7
f=	0.400	e=	-0.365	alpha=	69.0
f=	0.500	e=	-0.380	alpha=	63.1
f=	0.630	e=	-0.393	alpha=	59.3
f=	0.800	e=	-0.412	alpha=	56.6
f=	1.000	e=	-0.418	alpha=	50.7
f=	1.250	e=	-0.378	alpha=	45.5
f=	1.600	e=	-0.371	alpha=	42.4
f=	2.000	e=	-0.354	alpha=	38.9
f=	2.500	e=	-0.322	alpha=	36.2
f=	3.150	e=	-0.309	alpha=	34.5
f=	4.000	e=	-0.307	alpha=	32.6
f=	5.000	e=	-0.313	alpha=	30.4
f=	6.300	e=	-0.332	alpha=	26.9
f=	8.000	e=	-0.337	alpha=	24.9

SOUNDING: 5a

tangential component:

f=	0.250	ampl=	0.175	phase=	29.4
f=	0.630	ampl=	0.278	phase=	-25.7
f=	1.000	ampl=	0.276	phase=	-65.6
f=	2.500	ampl=	0.208	phase=	174.0
f=	6.300	ampl=	0.185	phase=	-96.6

radial component:

f= 0.250 ampl= 0.423 phase= 31.8
f= 0.630 ampl= 0.693 phase= -14.6
f= 1.000 ampl= 0.764 phase= -47.8
f= 2.500 ampl= 0.792 phase=-162.8
f= 6.300 ampl= 0.778 phase= -75.6

vertical component:

f= 0.630 ampl= 1.003 phase= -58.0
f= 1.000 ampl= 0.909 phase= -86.6
f= 2.500 ampl= 0.702 phase= 166.8
f= 6.300 ampl= 0.551 phase=-108.4

vertical-radial ellipticity:

f= 0.630 e= -0.364 alpha= 58.7
f= 1.000 e= -0.346 alpha= 51.3
f= 2.500 e= -0.269 alpha= 41.0
f= 6.300 e= -0.275 alpha= 33.6

horizontal ellipticity:

f= 0.250 e= 0.014 alpha= 67.6
f= 0.630 e= 0.067 alpha= 68.4
f= 1.000 e= 0.098 alpha= 70.8
f= 2.500 e= 0.098 alpha= 76.3
f= 6.300 e= 0.081 alpha= 77.4

SOUNDING: 6

radial component:

f= 0.200 ampl= 0.529 phase= 24.9
f= 0.250 ampl= 0.595 phase= 22.8
f= 0.315 ampl= 0.604 phase= 15.1
f= 0.400 ampl= 0.630 phase= 8.8
f= 0.500 ampl= 0.614 phase= 1.2
f= 0.630 ampl= 0.557 phase= -1.8
f= 0.800 ampl= 0.534 phase= -3.7
f= 1.000 ampl= 0.502 phase= -4.8
f= 1.250 ampl= 0.485 phase= -3.8
f= 1.600 ampl= 0.486 phase= -3.5
f= 2.000 ampl= 0.474 phase= -1.6
f= 2.500 ampl= 0.482 phase= -1.6
f= 3.150 ampl= 0.479 phase= -2.1
f= 4.000 ampl= 0.478 phase= -2.9
f= 5.000 ampl= 0.472 phase= -2.6
f= 6.300 ampl= 0.458 phase= -4.8
f= 8.000 ampl= 0.457 phase= -2.8

vertical component:

f= 0.100 ampl= 0.827 phase= -10.9
f= 0.125 ampl= 0.842 phase= -11.0
f= 0.160 ampl= 0.809 phase= -19.5
f= 0.200 ampl= 0.788 phase= -29.1

f= 0.250 ampl= 0.754 phase= -27.3
f= 0.315 ampl= 0.710 phase= -35.3
f= 0.400 ampl= 0.617 phase= -42.9
f= 0.500 ampl= 0.532 phase= -46.5
f= 0.630 ampl= 0.409 phase= -51.5
f= 0.800 ampl= 0.340 phase= -51.7
f= 1.000 ampl= 0.282 phase= -46.2
f= 1.250 ampl= 0.249 phase= -41.1
f= 1.600 ampl= 0.236 phase= -35.9
f= 2.000 ampl= 0.223 phase= -33.8
f= 2.500 ampl= 0.213 phase= -32.9
f= 3.150 ampl= 0.203 phase= -33.8
f= 4.000 ampl= 0.183 phase= -34.3
f= 5.000 ampl= 0.173 phase= -33.7
f= 6.300 ampl= 0.149 phase= -35.8
f= 8.000 ampl= 0.142 phase= -34.8

vertical-radial ellipticity:

f= 0.200 e= -0.450 alpha= 62.4
f= 0.250 e= -0.448 alpha= 55.2
f= 0.315 e= -0.462 alpha= 52.2
f= 0.400 e= -0.484 alpha= 44.1
f= 0.500 e= -0.436 alpha= 39.0
f= 0.630 e= -0.431 alpha= 32.1
f= 0.800 e= -0.387 alpha= 27.6
f= 1.000 e= -0.309 alpha= 25.4
f= 1.250 e= -0.264 alpha= 24.0
f= 1.600 e= -0.221 alpha= 23.5
f= 2.000 e= -0.214 alpha= 22.8
f= 2.500 e= -0.200 alpha= 21.6
f= 3.150 e= -0.196 alpha= 20.6
f= 4.000 e= -0.180 alpha= 18.7
f= 5.000 e= -0.172 alpha= 18.0
f= 6.300 e= -0.155 alpha= 16.0
f= 8.000 e= -0.154 alpha= 15.1

SOUNDING: 6a

tangential component:

f= 0.160 ampl= 0.165 phase= 44.5
f= 0.400 ampl= 0.314 phase= 8.6
f= 0.630 ampl= 0.293 phase= -12.0
f= 1.000 ampl= 0.234 phase= -24.9
f= 4.000 ampl= 0.148 phase= -18.0
f= 8.000 ampl= 0.148 phase= -25.8

radial component:

f= 0.160 ampl= 0.498 phase= 54.7
f= 0.400 ampl= 0.592 phase= 10.9
f= 0.630 ampl= 0.558 phase= -0.5
f= 1.000 ampl= 0.510 phase= -3.8
f= 1.600 ampl= 0.477 phase= -3.4
f= 4.000 ampl= 0.459 phase= -4.9

f= 8.000 ampl= 0.441 phase= -7.6

vertical component:

f= 0.063 ampl= 0.929 phase= -1.6
f= 0.160 ampl= 0.976 phase= -1.2
f= 0.400 ampl= 0.734 phase= -38.1
f= 0.630 ampl= 0.498 phase= -47.5
f= 1.000 ampl= 0.345 phase= -42.9
f= 1.600 ampl= 0.297 phase= -32.4
f= 4.000 ampl= 0.233 phase= -31.2
f= 8.000 ampl= 0.182 phase= -33.6

vertical-radial ellipticity:

f= 0.160 e= -0.385 alpha= 71.2
f= 0.400 e= -0.440 alpha= 54.2
f= 0.630 e= -0.431 alpha= 40.3
f= 1.000 e= -0.323 alpha= 31.4
f= 1.600 e= -0.229 alpha= 30.3
f= 4.000 e= -0.185 alpha= 25.4
f= 8.000 e= -0.158 alpha= 20.8

horizontal ellipticity:

f= 0.160 e= 0.053 alpha= 71.9
f= 0.400 e= 0.016 alpha= 62.1
f= 0.630 e= 0.083 alpha= 62.6
f= 1.000 e= 0.139 alpha= 66.3
f= 4.000 e= 0.067 alpha= 72.5
f= 8.000 e= 0.095 alpha= 72.2

SOUNDING: 7

radial component:

f= 0.200 ampl= 0.624 phase= 19.9
f= 0.250 ampl= 0.711 phase= 16.8
f= 0.315 ampl= 0.679 phase= 15.4
f= 0.400 ampl= 0.704 phase= 10.9
f= 0.500 ampl= 0.701 phase= 3.0
f= 0.630 ampl= 0.670 phase= -1.7
f= 0.800 ampl= 0.639 phase= -3.9
f= 1.000 ampl= 0.597 phase= -8.3
f= 1.250 ampl= 0.557 phase= -8.5
f= 1.600 ampl= 0.536 phase= -8.6
f= 2.000 ampl= 0.518 phase= -6.9
f= 2.500 ampl= 0.515 phase= -5.5
f= 3.150 ampl= 0.512 phase= -5.5
f= 4.000 ampl= 0.508 phase= -5.9
f= 5.000 ampl= 0.507 phase= -6.2
f= 6.300 ampl= 0.489 phase= -8.7
f= 8.000 ampl= 0.482 phase= -5.9

vertical component:

f= 0.100 ampl= 0.878 phase= -7.4

```
 f= 0.125 ampl=  0.824 phase=  -4.9
 f= 0.160 ampl=  0.860 phase= -16.0
 f= 0.200 ampl=  0.890 phase= -25.4
 f= 0.250 ampl=  0.821 phase= -21.5
 f= 0.315 ampl=  0.818 phase= -30.2
 f= 0.400 ampl=  0.741 phase= -38.8
 f= 0.500 ampl=  0.645 phase= -43.6
 f= 0.630 ampl=  0.528 phase= -52.3
 f= 0.800 ampl=  0.444 phase= -55.4
 f= 1.000 ampl=  0.353 phase= -57.0
 f= 1.250 ampl=  0.283 phase= -54.8
 f= 1.600 ampl=  0.241 phase= -48.7
 f= 2.000 ampl=  0.214 phase= -43.6
 f= 2.500 ampl=  0.205 phase= -39.4
 f= 3.150 ampl=  0.197 phase= -40.1
 f= 4.000 ampl=  0.185 phase= -41.8
 f= 5.000 ampl=  0.175 phase= -42.8
 f= 6.300 ampl=  0.155 phase= -47.7
 f= 8.000 ampl=  0.149 phase= -48.5

 vertical-radial ellipticity:

 f= 0.200     e= -0.384 alpha=  58.7
 f= 0.250     e= -0.343 alpha=  50.2
 f= 0.315     e= -0.410 alpha=  52.5
 f= 0.400     e= -0.462 alpha=  47.3
 f= 0.500     e= -0.429 alpha=  41.5
 f= 0.630     e= -0.452 alpha=  34.6
 f= 0.800     e= -0.437 alpha=  29.6
 f= 1.000     e= -0.376 alpha=  25.0
 f= 1.250     e= -0.323 alpha=  21.7
 f= 1.600     e= -0.256 alpha=  20.4
 f= 2.000     e= -0.221 alpha=  19.3
 f= 2.500     e= -0.200 alpha=  19.1
 f= 3.150     e= -0.198 alpha=  18.3
 f= 4.000     e= -0.196 alpha=  17.1
 f= 5.000     e= -0.190 alpha=  16.1
 f= 6.300     e= -0.187 alpha=  14.4
 f= 8.000     e= -0.199 alpha=  13.4


SOUNDING:  8


 radial component:

 f= 0.200 ampl=  0.643 phase=  20.8
 f= 0.250 ampl=  0.681 phase=  15.5
 f= 0.315 ampl=  0.700 phase=   6.7
 f= 0.400 ampl=  0.716 phase=   0.3
 f= 0.500 ampl=  0.664 phase=  -7.1
 f= 0.630 ampl=  0.590 phase=  -9.9
 f= 0.800 ampl=  0.551 phase= -14.4
 f= 1.000 ampl=  0.508 phase= -14.0
 f= 1.250 ampl=  0.466 phase= -14.7
 f= 1.600 ampl=  0.439 phase= -11.7
 f= 2.000 ampl=  0.426 phase=  -9.7
 f= 2.500 ampl=  0.430 phase=  -7.0
```

f= 3.150 ampl= 0.429 phase= -6.6
f= 4.000 ampl= 0.431 phase= -6.6
f= 5.000 ampl= 0.428 phase= -6.0
f= 6.300 ampl= 0.416 phase= -7.9
f= 8.000 ampl= 0.401 phase= -6.6

vertical component:

f= 0.100 ampl= 0.934 phase= -12.5
f= 0.125 ampl= 0.932 phase= -3.7
f= 0.160 ampl= 0.844 phase= -21.8
f= 0.200 ampl= 0.870 phase= -27.8
f= 0.250 ampl= 0.812 phase= -32.1
f= 0.315 ampl= 0.779 phase= -39.8
f= 0.400 ampl= 0.685 phase= -46.5
f= 0.500 ampl= 0.586 phase= -54.2
f= 0.630 ampl= 0.444 phase= -64.4
f= 0.800 ampl= 0.358 phase= -65.4
f= 1.000 ampl= 0.266 phase= -64.0
f= 1.250 ampl= 0.225 phase= -57.9
f= 1.600 ampl= 0.194 phase= -45.3
f= 2.000 ampl= 0.173 phase= -44.3
f= 2.500 ampl= 0.166 phase= -40.6
f= 3.150 ampl= 0.159 phase= -41.1
f= 4.000 ampl= 0.146 phase= -41.8
f= 5.000 ampl= 0.137 phase= -43.4
f= 6.300 ampl= 0.120 phase= -45.6
f= 8.000 ampl= 0.116 phase= -48.2

vertical-radial ellipticity:

f= 0.200 e= -0.423 alpha= 57.5
f= 0.250 e= -0.431 alpha= 52.4
f= 0.315 e= -0.426 alpha= 49.4
f= 0.400 e= -0.432 alpha= 43.1
f= 0.500 e= -0.431 alpha= 39.7
f= 0.630 e= -0.482 alpha= 31.8
f= 0.800 e= -0.417 alpha= 27.4
f= 1.000 e= -0.354 alpha= 21.4
f= 1.250 e= -0.291 alpha= 21.2
f= 1.600 e= -0.214 alpha= 21.2
f= 2.000 e= -0.207 alpha= 19.4
f= 2.500 e= -0.193 alpha= 18.5
f= 3.150 e= -0.191 alpha= 17.7
f= 4.000 e= -0.181 alpha= 16.1
f= 5.000 e= -0.182 alpha= 14.7
f= 6.300 e= -0.168 alpha= 13.2
f= 8.000 e= -0.183 alpha= 12.6

SOUNDING: 8a

tangential component:

f= 0.400 ampl= 0.440 phase= 2.7
f= 1.000 ampl= 0.309 phase= -34.9
f= 4.000 ampl= 0.188 phase= -26.4

f= 8.000 ampl= 0.173 phase= -37.5

radial component:

f= 0.400 ampl= 0.699 phase= 2.0
f= 1.000 ampl= 0.517 phase= -14.8
f= 4.000 ampl= 0.420 phase= -9.0
f= 8.000 ampl= 0.394 phase= -13.7

vertical component:

f= 0.400 ampl= 0.783 phase= -42.1
f= 1.000 ampl= 0.330 phase= -59.2
f= 4.000 ampl= 0.186 phase= -39.2
f= 8.000 ampl= 0.147 phase= -46.6

vertical-radial ellipticity:

f= 0.400 e= -0.401 alpha= 49.5
f= 1.000 e= -0.358 alpha= 28.5
f= 4.000 e= -0.194 alpha= 21.8
f= 8.000 e= -0.184 alpha= 18.1

horizontal ellipticity:

f= 0.400 e= -0.005 alpha= 57.8
f= 1.000 e= 0.155 alpha= 59.9
f= 4.000 e= 0.113 alpha= 66.5
f= 8.000 e= 0.152 alpha= 67.5

SOUNDING: 9

radial component:

f= 0.200 ampl= 0.394 phase= 34.8
f= 0.250 ampl= 0.462 phase= 33.8
f= 0.315 ampl= 0.491 phase= 28.2
f= 0.400 ampl= 0.519 phase= 24.3
f= 0.500 ampl= 0.548 phase= 16.2
f= 0.630 ampl= 0.548 phase= 12.1
f= 0.800 ampl= 0.540 phase= 8.8
f= 1.000 ampl= 0.539 phase= 5.9
f= 1.250 ampl= 0.524 phase= 3.7
f= 1.600 ampl= 0.525 phase= 2.0
f= 2.000 ampl= 0.518 phase= 2.0
f= 2.500 ampl= 0.520 phase= 1.9
f= 3.150 ampl= 0.520 phase= 1.2
f= 4.000 ampl= 0.515 phase= 1.1
f= 5.000 ampl= 0.516 phase= 1.3
f= 6.300 ampl= 0.512 phase= -0.0
f= 8.000 ampl= 0.506 phase= 0.5

vertical component:

f= 0.100 ampl= 0.744 phase= -6.3
f= 0.125 ampl= 0.747 phase= -4.8
f= 0.160 ampl= 0.748 phase= -11.5

```
 f= 0.200 ampl=  0.754 phase= -18.4
 f= 0.250 ampl=  0.727 phase= -15.6
 f= 0.315 ampl=  0.711 phase= -21.6
 f= 0.400 ampl=  0.663 phase= -27.4
 f= 0.500 ampl=  0.599 phase= -31.0
 f= 0.630 ampl=  0.512 phase= -36.2
 f= 0.800 ampl=  0.457 phase= -37.6
 f= 1.000 ampl=  0.396 phase= -37.5
 f= 1.250 ampl=  0.347 phase= -36.2
 f= 1.600 ampl=  0.326 phase= -34.0
 f= 2.000 ampl=  0.297 phase= -31.7
 f= 2.500 ampl=  0.284 phase= -31.1
 f= 3.150 ampl=  0.270 phase= -31.7
 f= 4.000 ampl=  0.251 phase= -33.2
 f= 5.000 ampl=  0.237 phase= -34.1
 f= 6.300 ampl=  0.212 phase= -38.3
 f= 8.000 ampl=  0.200 phase= -38.4

 vertical-radial ellipticity:

 f= 0.200     e= -0.374 alpha=  69.6
 f= 0.250     e= -0.398 alpha=  62.9
 f= 0.315     e= -0.420 alpha=  60.2
 f= 0.400     e= -0.463 alpha=  55.8
 f= 0.500     e= -0.435 alpha=  48.7
 f= 0.630     e= -0.446 alpha=  42.0
 f= 0.800     e= -0.420 alpha=  38.2
 f= 1.000     e= -0.374 alpha=  33.4
 f= 1.250     e= -0.327 alpha=  30.5
 f= 1.600     e= -0.284 alpha=  29.3
 f= 2.000     e= -0.255 alpha=  27.4
 f= 2.500     e= -0.242 alpha=  26.2
 f= 3.150     e= -0.234 alpha=  25.0
 f= 4.000     e= -0.234 alpha=  23.3
 f= 5.000     e= -0.231 alpha=  21.7
 f= 6.300     e= -0.230 alpha=  19.0
 f= 8.000     e= -0.225 alpha=  18.0


SOUNDING:  10


 radial component:

 f= 0.200 ampl=  0.593 phase=   4.1
 f= 0.250 ampl=  0.632 phase=   2.8
 f= 0.315 ampl=  0.615 phase=  -5.2
 f= 0.400 ampl=  0.593 phase= -10.1
 f= 0.500 ampl=  0.526 phase= -19.4
 f= 0.630 ampl=  0.420 phase= -20.0
 f= 0.800 ampl=  0.393 phase= -20.1
 f= 1.000 ampl=  0.346 phase= -16.8
 f= 1.250 ampl=  0.332 phase= -14.0
 f= 1.600 ampl=  0.341 phase= -10.8
 f= 2.000 ampl=  0.335 phase=  -7.8
 f= 2.500 ampl=  0.340 phase=  -7.2
 f= 3.150 ampl=  0.339 phase=  -7.1
 f= 4.000 ampl=  0.330 phase=  -7.3
```

f= 5.000 ampl= 0.333 phase= -7.3
f= 6.300 ampl= 0.321 phase= -6.8
f= 8.000 ampl= 0.324 phase= -6.6

vertical component:

f= 0.100 ampl= 0.874 phase= -20.7
f= 0.125 ampl= 0.853 phase= -22.7
f= 0.160 ampl= 0.801 phase= -33.5
f= 0.200 ampl= 0.741 phase= -44.1
f= 0.250 ampl= 0.676 phase= -46.5
f= 0.315 ampl= 0.595 phase= -55.3
f= 0.400 ampl= 0.487 phase= -63.5
f= 0.500 ampl= 0.376 phase= -70.0
f= 0.630 ampl= 0.253 phase= -72.4
f= 0.800 ampl= 0.196 phase= -69.3
f= 1.000 ampl= 0.155 phase= -56.9
f= 1.250 ampl= 0.142 phase= -48.9
f= 1.600 ampl= 0.138 phase= -44.2
f= 2.000 ampl= 0.127 phase= -42.0
f= 2.500 ampl= 0.124 phase= -40.6
f= 3.150 ampl= 0.113 phase= -41.8
f= 4.000 ampl= 0.101 phase= -43.1
f= 5.000 ampl= 0.092 phase= -43.7
f= 6.300 ampl= 0.079 phase= -43.4
f= 8.000 ampl= 0.074 phase= -45.9

vertical-radial ellipticity:

f= 0.200 e= -0.432 alpha= 54.3
f= 0.250 e= -0.457 alpha= 48.0
f= 0.315 e= -0.467 alpha= 43.5
f= 0.400 e= -0.488 alpha= 35.8
f= 0.500 e= -0.435 alpha= 30.8
f= 0.630 e= -0.408 alpha= 24.4
f= 0.800 e= -0.337 alpha= 20.5
f= 1.000 e= -0.257 alpha= 20.3
f= 1.250 e= -0.216 alpha= 20.3
f= 1.600 e= -0.199 alpha= 19.5
f= 2.000 e= -0.193 alpha= 18.1
f= 2.500 e= -0.184 alpha= 17.6
f= 3.150 e= -0.176 alpha= 15.8
f= 4.000 e= -0.168 alpha= 14.3
f= 5.000 e= -0.156 alpha= 12.8
f= 6.300 e= -0.141 alpha= 11.4
f= 8.000 e= -0.140 alpha= 10.3

SOUNDING: 11

radial component:

f= 0.630 ampl= 0.757 phase= 20.2
f= 1.000 ampl= 0.794 phase= 9.3
f= 1.600 ampl= 0.769 phase= 1.7
f= 2.500 ampl= 0.726 phase= 0.6
f= 4.000 ampl= 0.713 phase= -0.2

f= 6.300 ampl= 0.720 phase= -0.7

vertical component:

f= 0.100 ampl= 0.850 phase= 5.1
f= 0.400 ampl= 0.875 phase= -35.2
f= 0.630 ampl= 0.818 phase= -28.1
f= 1.000 ampl= 0.678 phase= -36.5
f= 1.600 ampl= 0.534 phase= -40.9
f= 2.500 ampl= 0.429 phase= -39.7
f= 4.000 ampl= 0.376 phase= -41.3
f= 6.300 ampl= 0.336 phase= -50.3

vertical-radial ellipticity:

f= 0.630 e= -0.447 alpha= 48.4
f= 1.000 e= -0.415 alpha= 38.6
f= 1.600 e= -0.357 alpha= 31.6
f= 2.500 e= -0.310 alpha= 27.1
f= 4.000 e= -0.295 alpha= 23.9
f= 6.300 e= -0.323 alpha= 18.9

SOUNDING: 11a

tangential component:

f= 4.000 ampl= 0.204 phase= 143.7
f= 8.000 ampl= 0.208 phase= 132.6

radial component:

f= 1.000 ampl= 0.743 phase= 10.5
f= 1.600 ampl= 0.749 phase= 0.5
f= 2.500 ampl= 0.679 phase= -0.1
f= 4.000 ampl= 0.665 phase= -5.1
f= 8.000 ampl= 0.645 phase= -7.3

vertical component:

f= 1.000 ampl= 0.824 phase= -32.6
f= 1.600 ampl= 0.638 phase= -37.0
f= 2.500 ampl= 0.513 phase= -34.0
f= 4.000 ampl= 0.466 phase= -39.2
f= 8.000 ampl= 0.411 phase= -50.4

vertical-radial ellipticity:

f= 1.000 e= -0.391 alpha= 49.0
f= 1.600 e= -0.335 alpha= 39.3
f= 2.500 e= -0.291 alpha= 35.6
f= 4.000 e= -0.285 alpha= 33.2
f= 8.000 e= -0.347 alpha= 28.7

horizontal ellipticity:

f= 4.000 e= -0.148 alpha= -75.0

```
 f= 8.000     e= -0.195 alpha= -75.6

SOUNDING:  11b


 tangential component:

 f= 1.000 ampl=  0.326 phase= -79.8
 f= 2.500 ampl=  0.209 phase=  24.0
 f= 4.000 ampl=  0.168 phase= -43.9
 f= 8.000 ampl=  0.195 phase= -49.1

 radial component:

 f= 0.250 ampl=  0.569 phase=  28.7
 f= 1.000 ampl=  0.823 phase= -57.4
 f= 2.500 ampl=  0.746 phase=  61.2
 f= 4.000 ampl=  0.716 phase=  -2.7
 f= 8.000 ampl=  0.699 phase=  -6.2

 vertical component:

 f= 0.250 ampl=  1.141 phase= -23.1
 f= 1.000 ampl=  0.856 phase= -99.1
 f= 2.500 ampl=  0.546 phase=  27.2
 f= 4.000 ampl=  0.484 phase= -37.1
 f= 8.000 ampl=  0.419 phase= -51.2

 vertical-radial ellipticity:

 f= 0.250     e= -0.353 alpha=  70.3
 f= 1.000     e= -0.381 alpha=  46.5
 f= 2.500     e= -0.289 alpha=  34.5
 f= 4.000     e= -0.283 alpha=  32.0
 f= 8.000     e= -0.350 alpha=  26.5

 horizontal ellipticity:

 f= 1.000     e=  0.133 alpha=  69.5
 f= 2.500     e=  0.161 alpha=  77.1
 f= 4.000     e=  0.150 alpha=  79.7
 f= 8.000     e=  0.182 alpha=  78.0

SOUNDING:  12


 radial component:

 f= 0.250 ampl=  0.603 phase=-150.1
 f= 0.400 ampl=  0.627 phase= -49.6
 f= 0.630 ampl=  0.596 phase=  20.2

 vertical component:

 f= 0.100 ampl=  0.626 phase=-176.6
 f= 0.160 ampl=  0.556 phase=  97.9
 f= 0.250 ampl=  0.483 phase= 168.4
 f= 0.400 ampl=  0.405 phase= -86.9
```

f= 0.630 ampl= 0.317 phase= -1.6

vertical-radial ellipticity:

f= 0.250 e= -0.367 alpha= 36.7
f= 0.400 e= -0.301 alpha= 30.2
f= 0.630 e= -0.157 alpha= 27.0

SOUNDING: 13

radial component:

f= 0.250 ampl= 0.533 phase= 25.0
f= 0.400 ampl= 0.564 phase= 13.2
f= 0.630 ampl= 0.527 phase= 0.6
f= 1.000 ampl= 0.472 phase= -2.9
f= 1.600 ampl= 0.459 phase= -1.9
f= 2.500 ampl= 0.454 phase= 0.1
f= 4.000 ampl= 0.453 phase= -0.5
f= 6.300 ampl= 0.443 phase= -2.2

vertical component:

f= 0.100 ampl= 0.797 phase= -11.3
f= 0.160 ampl= 0.782 phase= -18.0
f= 0.250 ampl= 0.715 phase= -24.4
f= 0.400 ampl= 0.615 phase= -37.3
f= 0.630 ampl= 0.430 phase= -44.0
f= 1.000 ampl= 0.313 phase= -39.8
f= 1.600 ampl= 0.273 phase= -33.6
f= 2.500 ampl= 0.245 phase= -31.8
f= 4.000 ampl= 0.212 phase= -33.8
f= 6.300 ampl= 0.173 phase= -37.4

vertical-radial ellipticity:

f= 0.250 e= -0.431 alpha= 57.3
f= 0.400 e= -0.469 alpha= 48.9
f= 0.630 e= -0.398 alpha= 36.9
f= 1.000 e= -0.302 alpha= 31.1
f= 1.600 e= -0.245 alpha= 28.7
f= 2.500 e= -0.233 alpha= 26.2
f= 4.000 e= -0.221 alpha= 22.5
f= 6.300 e= -0.203 alpha= 18.5

SOUNDING: 14

radial component:

f= 0.250 ampl= 0.438 phase= 35.4
f= 0.400 ampl= 0.495 phase= 25.3
f= 0.630 ampl= 0.517 phase= 12.2
f= 1.000 ampl= 0.503 phase= 5.7
f= 1.600 ampl= 0.505 phase= 3.6

```
 f= 2.500 ampl=  0.505 phase=   4.7
 f= 4.000 ampl=  0.507 phase=   4.8
 f= 6.300 ampl=  0.512 phase=   5.8

 vertical component:

 f= 0.100 ampl=  0.728 phase=  -7.3
 f= 0.160 ampl=  0.731 phase= -12.4
 f= 0.250 ampl=  0.708 phase= -16.5
 f= 0.400 ampl=  0.640 phase= -26.8
 f= 0.630 ampl=  0.504 phase= -34.5
 f= 1.000 ampl=  0.396 phase= -36.3
 f= 1.600 ampl=  0.328 phase= -34.0
 f= 2.500 ampl=  0.286 phase= -31.5
 f= 4.000 ampl=  0.246 phase= -32.5
 f= 6.300 ampl=  0.202 phase= -32.9

 vertical-radial ellipticity:

 f= 0.250     e= -0.412 alpha=  64.5
 f= 0.400     e= -0.464 alpha=  56.5
 f= 0.630     e= -0.431 alpha=  44.0
 f= 1.000     e= -0.369 alpha=  35.9
 f= 1.600     e= -0.304 alpha=  30.3
 f= 2.500     e= -0.272 alpha=  26.7
 f= 4.000     e= -0.253 alpha=  22.7
 f= 6.300     e= -0.224 alpha=  18.1


SOUNDING:  15


 radial component:

 f= 0.100 ampl=  0.352 phase=  44.7
 f= 0.160 ampl=  0.426 phase=  30.9
 f= 0.250 ampl=  0.590 phase=  34.5
 f= 0.400 ampl=  0.668 phase=  24.6
 f= 0.630 ampl=  0.688 phase=  11.0
 f= 1.000 ampl=  0.667 phase=   3.2
 f= 1.600 ampl=  0.634 phase=   0.4
 f= 2.500 ampl=  0.615 phase=   2.2
 f= 4.000 ampl=  0.613 phase=   2.7
 f= 6.300 ampl=  0.615 phase=   2.4

 vertical component:

 f= 0.100 ampl=  0.883 phase=  -5.2
 f= 0.160 ampl=  0.889 phase=  -9.8
 f= 0.250 ampl=  0.887 phase= -13.4
 f= 0.400 ampl=  0.829 phase= -24.1
 f= 0.630 ampl=  0.663 phase= -33.3
 f= 1.000 ampl=  0.523 phase= -38.7
 f= 1.600 ampl=  0.409 phase= -37.9
 f= 2.500 ampl=  0.339 phase= -34.4
 f= 4.000 ampl=  0.294 phase= -34.9
 f= 6.300 ampl=  0.244 phase= -37.8
```

vertical-radial ellipticity:

f= 0.100	e= -0.285	alpha=	74.3
f= 0.160	e= -0.273	alpha=	68.3
f= 0.250	e= -0.396	alpha=	61.0
f= 0.400	e= -0.437	alpha=	54.1
f= 0.630	e= -0.407	alpha=	43.5
f= 1.000	e= -0.368	alpha=	35.9
f= 1.600	e= -0.310	alpha=	30.0
f= 2.500	e= -0.271	alpha=	26.0
f= 4.000	e= -0.253	alpha=	22.3
f= 6.300	e= -0.233	alpha=	17.9

SOUNDING: 16

radial component:

f= 0.250	ampl=	0.336	phase=	56.0
f= 0.400	ampl=	0.475	phase=	43.7
f= 0.630	ampl=	0.600	phase=	35.4
f= 1.000	ampl=	0.686	phase=	26.4
f= 1.600	ampl=	0.746	phase=	17.7
f= 2.500	ampl=	0.778	phase=	12.5
f= 4.000	ampl=	0.813	phase=	8.2
f= 6.300	ampl=	0.832	phase=	1.4
f= 8.000	ampl=	0.839	phase=	1.0

vertical component:

f= 0.160	ampl=	1.010	phase=	-1.4
f= 0.250	ampl=	1.018	phase=	-2.5
f= 0.400	ampl=	1.025	phase=	-4.7
f= 0.630	ampl=	0.969	phase=	-9.3
f= 1.000	ampl=	0.904	phase=	-13.9
f= 1.600	ampl=	0.838	phase=	-16.7
f= 2.500	ampl=	0.763	phase=	-19.4
f= 4.000	ampl=	0.700	phase=	-22.1
f= 6.300	ampl=	0.611	phase=	-27.5
f= 8.000	ampl=	0.581	phase=	-28.3

vertical-radial ellipticity:

f= 0.250	e= -0.273	alpha=	79.4
f= 0.400	e= -0.313	alpha=	70.9
f= 0.630	e= -0.354	alpha=	62.5
f= 1.000	e= -0.350	alpha=	55.1
f= 1.600	e= -0.307	alpha=	49.0
f= 2.500	e= -0.285	alpha=	44.3
f= 4.000	e= -0.267	alpha=	40.1
f= 6.300	e= -0.244	alpha=	35.2
f= 8.000	e= -0.243	alpha=	33.3

SOUNDING: 17

radial component:

f= 0.630 ampl= 0.126 phase= 56.7
f= 1.000 ampl= 0.160 phase= 48.0
f= 1.600 ampl= 0.200 phase= 39.6
f= 2.500 ampl= 0.234 phase= 32.0
f= 4.000 ampl= 0.262 phase= 26.1
f= 6.300 ampl= 0.289 phase= 20.4
f= 8.000 ampl= 0.299 phase= 19.4

vertical component:

f= 0.100 ampl= 0.692 phase= 2.2
f= 0.630 ampl= 0.737 phase= 5.1
f= 1.000 ampl= 0.759 phase= 3.5
f= 1.600 ampl= 0.774 phase= 2.6
f= 8.000 ampl= 0.795 phase= -1.6

vertical-radial ellipticity:

f= 0.630 e= -0.132 alpha= 83.8
f= 1.000 e= -0.145 alpha= 81.3
f= 1.600 e= -0.149 alpha= 78.1
f= 8.000 e= -0.120 alpha= 70.3

SOUNDING: 18

radial component:

f= 0.400 ampl= 0.497 phase= 42.6
f= 0.630 ampl= 0.614 phase= 34.5
f= 1.000 ampl= 0.714 phase= 23.8
f= 1.600 ampl= 0.767 phase= 14.5
f= 2.500 ampl= 0.776 phase= 9.5
f= 4.000 ampl= 0.801 phase= 4.0
f= 6.300 ampl= 0.806 phase= -1.3
f= 8.000 ampl= 0.801 phase= -2.4

vertical component:

f= 0.100 ampl= 1.009 phase= 8.3
f= 0.250 ampl= 1.042 phase= -2.4
f= 0.400 ampl= 1.066 phase= -4.9
f= 0.630 ampl= 1.023 phase= -10.0
f= 1.000 ampl= 0.959 phase= -15.3
f= 1.600 ampl= 0.868 phase= -19.5
f= 2.500 ampl= 0.770 phase= -21.8
f= 4.000 ampl= 0.705 phase= -25.8
f= 6.300 ampl= 0.619 phase= -30.5
f= 8.000 ampl= 0.583 phase= -32.3

vertical-radial ellipticity:

f= 0.400 e= -0.310 alpha= 70.6
f= 0.630 e= -0.347 alpha= 63.4
f= 1.000 e= -0.337 alpha= 55.6

f= 1.600 e= -0.304 alpha= 49.2
f= 2.500 e= -0.280 alpha= 44.8
f= 4.000 e= -0.264 alpha= 40.8
f= 6.300 e= -0.250 alpha= 36.5
f= 8.000 e= -0.252 alpha= 34.8

SOUNDING: 19

radial component:

f= 0.400 ampl= 0.424 phase= 46.0
f= 0.630 ampl= 0.520 phase= 34.1
f= 1.000 ampl= 0.570 phase= 21.0
f= 1.600 ampl= 0.588 phase= 13.3
f= 2.500 ampl= 0.601 phase= 8.9
f= 4.000 ampl= 0.603 phase= 5.2
f= 6.300 ampl= 0.613 phase= 2.9
f= 8.000 ampl= 0.613 phase= 1.1

vertical component:

f= 0.100 ampl= 0.882 phase= 1.7
f= 0.160 ampl= 0.927 phase= -0.3
f= 0.250 ampl= 0.932 phase= 1.7
f= 0.400 ampl= 0.925 phase= -5.1
f= 0.630 ampl= 0.889 phase= -9.6
f= 1.000 ampl= 0.823 phase= -15.2
f= 1.600 ampl= 0.727 phase= -18.8
f= 2.500 ampl= 0.639 phase= -19.4
f= 4.000 ampl= 0.586 phase= -19.7
f= 6.300 ampl= 0.530 phase= -21.0
f= 8.000 ampl= 0.512 phase= -21.5

vertical-radial ellipticity:

f= 0.400 e= -0.326 alpha= 72.0
f= 0.630 e= -0.335 alpha= 64.0
f= 1.000 e= -0.301 alpha= 57.5
f= 1.600 e= -0.280 alpha= 52.1
f= 2.500 e= -0.252 alpha= 47.0
f= 4.000 e= -0.221 alpha= 44.1
f= 6.300 e= -0.209 alpha= 40.4
f= 8.000 e= -0.196 alpha= 39.4

SOUNDING: 20

radial component:

f= 0.630 ampl= 0.339 phase= 43.7
f= 1.000 ampl= 0.412 phase= 34.6
f= 1.600 ampl= 0.472 phase= 24.8
f= 2.500 ampl= 0.514 phase= 18.4
f= 4.000 ampl= 0.539 phase= 13.1
f= 6.300 ampl= 0.555 phase= 8.2

f= 8.000 ampl= 0.562 phase= 6.6

vertical component:

f= 0.160 ampl= 0.827 phase= 3.5
f= 0.250 ampl= 0.879 phase= 3.2
f= 0.400 ampl= 0.915 phase= 1.9
f= 0.630 ampl= 0.908 phase= -1.4
f= 1.000 ampl= 0.899 phase= -6.1
f= 1.600 ampl= 0.853 phase= -9.9
f= 2.500 ampl= 0.788 phase= -12.3
f= 4.000 ampl= 0.755 phase= -12.1
f= 6.300 ampl= 0.705 phase= -15.2
f= 8.000 ampl= 0.695 phase= -14.8

vertical-radial ellipticity:

f= 0.630 e= -0.246 alpha= 74.3
f= 1.000 e= -0.264 alpha= 69.3
f= 1.600 e= -0.257 alpha= 63.7
f= 2.500 e= -0.248 alpha= 58.5
f= 4.000 e= -0.210 alpha= 55.4
f= 6.300 e= -0.201 alpha= 52.3
f= 8.000 e= -0.184 alpha= 51.5

SOUNDING: 21

radial component:

f= 0.630 ampl= 0.798 phase= 22.3
f= 1.000 ampl= 0.835 phase= 14.0
f= 1.600 ampl= 0.839 phase= 7.6
f= 2.500 ampl= 0.842 phase= 3.2
f= 4.000 ampl= 0.833 phase= -0.6
f= 6.300 ampl= 0.809 phase= -5.5
f= 8.000 ampl= 0.798 phase= -6.2

vertical component:

f= 0.630 ampl= 1.048 phase= -19.3
f= 1.000 ampl= 0.884 phase= -23.3
f= 1.600 ampl= 0.777 phase= -25.6
f= 2.500 ampl= 0.683 phase= -25.8
f= 4.000 ampl= 0.599 phase= -28.2
f= 6.300 ampl= 0.506 phase= -32.5
f= 8.000 ampl= 0.481 phase= -32.3

vertical-radial ellipticity:

f= 0.630 e= -0.362 alpha= 55.1
f= 1.000 e= -0.337 alpha= 47.1
f= 1.600 e= -0.297 alpha= 42.4
f= 2.500 e= -0.253 alpha= 38.2
f= 4.000 e= -0.231 alpha= 34.6
f= 6.300 e= -0.213 alpha= 30.7
f= 8.000 e= -0.202 alpha= 29.7

SOUNDING: 22

vertical component:

f= 0.100 ampl= 0.912 phase= 0.2
f= 0.160 ampl= 0.914 phase= -2.4
f= 0.250 ampl= 0.916 phase= -5.7
f= 0.400 ampl= 0.904 phase= -9.1
f= 0.630 ampl= 0.815 phase= -18.2
f= 1.000 ampl= 0.719 phase= -18.8
f= 1.600 ampl= 0.631 phase= -21.5
f= 2.500 ampl= 0.568 phase= -21.1
f= 4.000 ampl= 0.510 phase= -24.1
f= 6.300 ampl= 0.438 phase= -26.2
f= 8.000 ampl= 0.415 phase= -25.3

SOUNDING: 22a

radial component:

f= 0.100 ampl= 0.194 phase= 61.9
f= 1.000 ampl= 0.620 phase= 18.8
f= 4.000 ampl= 0.678 phase= 6.4
f= 6.300 ampl= 0.683 phase= 5.2
f= 8.000 ampl= 0.679 phase= 5.3

vertical component:

f= 0.100 ampl= 0.922 phase= 0.7
f= 1.000 ampl= 0.715 phase= -19.4
f= 4.000 ampl= 0.514 phase= -19.4
f= 6.300 ampl= 0.454 phase= -20.8
f= 8.000 ampl= 0.429 phase= -20.2

vertical-radial ellipticity:

f= 0.100 e= -0.182 alpha= 84.0
f= 1.000 e= -0.341 alpha= 50.2
f= 4.000 e= -0.220 alpha= 36.3
f= 6.300 e= -0.211 alpha= 32.4
f= 8.000 e= -0.202 alpha= 31.1

SOUNDING: 23

radial component:

f= 0.630 ampl= 0.224 phase= 72.0
f= 1.000 ampl= 0.267 phase= 57.1
f= 1.600 ampl= 0.313 phase= 43.6
f= 2.500 ampl= 0.356 phase= 33.0
f= 4.000 ampl= 0.392 phase= 24.2

f= 6.300 ampl= 0.424 phase= 16.4
f= 8.000 ampl= 0.433 phase= 15.0

vertical component:

f= 0.160 ampl= 0.873 phase= 4.6
f= 0.250 ampl= 0.907 phase= 5.3
f= 0.400 ampl= 0.958 phase= 4.2
f= 0.630 ampl= 0.958 phase= 2.6
f= 1.000 ampl= 0.973 phase= -0.2
f= 1.600 ampl= 0.967 phase= -2.7
f= 2.500 ampl= 0.934 phase= -4.6
f= 4.000 ampl= 0.903 phase= -6.4
f= 6.300 ampl= 0.850 phase= -6.9
f= 8.000 ampl= 0.838 phase= -6.6

vertical-radial ellipticity:

f= 0.630 e= -0.218 alpha= 85.1
f= 1.000 e= -0.225 alpha= 81.1
f= 1.600 e= -0.222 alpha= 76.7
f= 2.500 e= -0.212 alpha= 72.4
f= 4.000 e= -0.193 alpha= 68.7
f= 6.300 e= -0.163 alpha= 64.7
f= 8.000 e= -0.154 alpha= 63.7

SOUNDING: 24

radial component:

f= 0.400 ampl= 0.317 phase= 47.3
f= 0.630 ampl= 0.413 phase= 41.6
f= 1.000 ampl= 0.444 phase= 29.6
f= 1.600 ampl= 0.486 phase= 18.8
f= 2.500 ampl= 0.511 phase= 11.8
f= 4.000 ampl= 0.519 phase= 6.1
f= 6.300 ampl= 0.514 phase= 0.8
f= 8.000 ampl= 0.511 phase= -0.3

vertical component:

f= 0.160 ampl= 0.900 phase= 11.5
f= 0.250 ampl= 0.913 phase= 2.0
f= 0.400 ampl= 0.932 phase= -0.2
f= 0.630 ampl= 0.943 phase= -5.8
f= 1.000 ampl= 0.911 phase= -9.8
f= 1.600 ampl= 0.868 phase= -14.5
f= 2.500 ampl= 0.801 phase= -19.4
f= 4.000 ampl= 0.747 phase= -25.0
f= 6.300 ampl= 0.668 phase= -34.6
f= 8.000 ampl= 0.642 phase= -37.8

vertical-radial ellipticity:

f= 0.400 e= -0.237 alpha= 76.2
f= 0.630 e= -0.294 alpha= 71.9

f= 1.000 e= -0.268 alpha= 67.7
f= 1.600 e= -0.249 alpha= 63.1
f= 2.500 e= -0.249 alpha= 59.3
f= 4.000 e= -0.259 alpha= 56.7
f= 6.300 e= -0.306 alpha= 54.0
f= 8.000 e= -0.328 alpha= 53.1

SOUNDING: 25

vertical component:

f= 0.100 ampl= 0.911 phase= 2.5
f= 0.160 ampl= 0.867 phase= -0.7
f= 0.250 ampl= 0.895 phase= -8.4
f= 0.400 ampl= 0.889 phase= -8.6
f= 0.630 ampl= 0.792 phase= -18.7
f= 1.000 ampl= 0.715 phase= -19.6
f= 1.600 ampl= 0.617 phase= -23.5
f= 2.500 ampl= 0.558 phase= -24.5
f= 4.000 ampl= 0.494 phase= -27.6
f= 6.300 ampl= 0.426 phase= -30.5
f= 8.000 ampl= 0.405 phase= -30.9

SOUNDING: 25a

tangential component:

f= 0.250 ampl= 0.041 phase= 56.2
f= 0.630 ampl= 0.064 phase= 10.3
f= 1.000 ampl= 0.059 phase= -18.1
f= 2.500 ampl= 0.036 phase= -59.8
f= 6.300 ampl= 0.044 phase= -81.1

radial component:

f= 0.100 ampl= 0.219 phase= 66.7
f= 0.250 ampl= 0.397 phase= 49.0
f= 0.630 ampl= 0.610 phase= 27.7
f= 1.000 ampl= 0.655 phase= 18.4
f= 2.500 ampl= 0.677 phase= 7.6
f= 6.300 ampl= 0.669 phase= 2.9

vertical component:

f= 0.100 ampl= 0.915 phase= 0.3
f= 0.250 ampl= 0.942 phase= -6.3
f= 0.630 ampl= 0.823 phase= -17.3
f= 1.000 ampl= 0.727 phase= -20.4
f= 2.500 ampl= 0.570 phase= -23.3
f= 6.300 ampl= 0.432 phase= -29.0

vertical-radial ellipticity:

f= 0.100 e= -0.217 alpha= 84.2

```
 f= 0.250     e= -0.326 alpha=  74.9
 f= 0.630     e= -0.390 alpha=  56.6
 f= 1.000     e= -0.350 alpha=  48.8
 f= 2.500     e= -0.272 alpha=  39.3
 f= 6.300     e= -0.257 alpha=  31.0

 horizontal ellipticity:

 f= 0.250     e= -0.013 alpha=  84.2
 f= 0.630     e=  0.031 alpha=  84.3
 f= 1.000     e=  0.053 alpha=  85.9
 f= 2.500     e=  0.049 alpha=  88.8
 f= 6.300     e=  0.065 alpha=  89.6

SOUNDING:  26


 radial component:

 f= 0.400 ampl=  0.477 phase=  32.4
 f= 0.630 ampl=  0.575 phase=  24.5
 f= 1.000 ampl=  0.601 phase=  11.9
 f= 1.600 ampl=  0.599 phase=   4.9
 f= 2.500 ampl=  0.570 phase=   1.6
 f= 4.000 ampl=  0.572 phase=  -0.4
 f= 6.300 ampl=  0.561 phase=  -3.3
 f= 8.000 ampl=  0.556 phase=  -4.9

 vertical component:

 f= 0.250 ampl=  0.942 phase=  -6.0
 f= 0.400 ampl=  0.915 phase= -12.5
 f= 0.630 ampl=  0.837 phase= -19.0
 f= 1.000 ampl=  0.703 phase= -25.7
 f= 1.600 ampl=  0.581 phase= -27.0
 f= 2.500 ampl=  0.490 phase= -26.0
 f= 4.000 ampl=  0.445 phase= -26.3
 f= 6.300 ampl=  0.385 phase= -29.4
 f= 8.000 ampl=  0.364 phase= -29.9

 vertical-radial ellipticity:

 f= 0.400     e= -0.319 alpha=  67.3
 f= 0.630     e= -0.364 alpha=  59.0
 f= 1.000     e= -0.335 alpha=  50.6
 f= 1.600     e= -0.286 alpha=  43.9
 f= 2.500     e= -0.242 alpha=  40.2
 f= 4.000     e= -0.222 alpha=  37.1
 f= 6.300     e= -0.215 alpha=  33.4
 f= 8.000     e= -0.202 alpha=  32.2

SOUNDING:  27


 radial component:

 f= 0.630 ampl=  0.627 phase=  33.7
```

f= 1.000 ampl= 0.695 phase= 24.3
f= 1.600 ampl= 0.735 phase= 2.8
f= 2.500 ampl= 0.730 phase= 12.7
f= 4.000 ampl= 0.736 phase= 13.7
f= 6.300 ampl= 0.768 phase= 18.3
f= 8.000 ampl= 0.789 phase= 19.7

vertical component:

f= 0.160 ampl= 0.935 phase= 4.8
f= 0.250 ampl= 0.931 phase= 0.7
f= 0.400 ampl= 1.030 phase= -0.3
f= 0.630 ampl= 1.015 phase= -5.5
f= 1.000 ampl= 0.967 phase= -12.3
f= 1.600 ampl= 0.853 phase= -29.8
f= 2.500 ampl= 0.736 phase= -15.8
f= 4.000 ampl= 0.677 phase= -12.1
f= 6.300 ampl= 0.644 phase= -7.2
f= 8.000 ampl= 0.640 phase= -7.4

vertical-radial ellipticity:

f= 0.630 e= -0.310 alpha= 61.4
f= 1.000 e= -0.309 alpha= 56.4
f= 1.600 e= -0.289 alpha= 50.0
f= 2.500 e= -0.254 alpha= 45.3
f= 4.000 e= -0.228 alpha= 42.3
f= 6.300 e= -0.222 alpha= 39.5
f= 8.000 e= -0.235 alpha= 38.3

SOUNDING: 27a

radial component:

f= 2.500 ampl= 0.490 phase= 0.9
f= 4.000 ampl= 0.455 phase= -5.4
f= 6.300 ampl= 0.407 phase= 57.4
f= 8.000 ampl= 0.363 phase= 56.3

vertical component:

f= 2.500 ampl= 0.477 phase= -26.1
f= 4.000 ampl= 0.412 phase= -30.8
f= 6.300 ampl= 0.322 phase= 32.6
f= 8.000 ampl= 0.285 phase= 30.2

vertical-radial ellipticity:

f= 2.500 e= -0.240 alpha= 44.1
f= 4.000 e= -0.224 alpha= 41.9
f= 6.300 e= -0.213 alpha= 37.7
f= 8.000 e= -0.224 alpha= 37.4

SOUNDING: 30

radial component:

f= 0.250 ampl= 0.566 phase= 13.1
f= 0.400 ampl= 0.560 phase= -2.8
f= 0.630 ampl= 0.465 phase= -16.2
f= 1.000 ampl= 0.355 phase= -16.0
f= 1.600 ampl= 0.347 phase= -9.4
f= 2.500 ampl= 0.331 phase= -5.4
f= 4.000 ampl= 0.326 phase= -7.0
f= 6.300 ampl= 0.305 phase= -8.8

vertical component:

f= 0.040 ampl= 0.933 phase= 0.3
f= 0.063 ampl= 0.957 phase= -7.1
f= 0.100 ampl= 0.956 phase= -14.8
f= 0.160 ampl= 0.890 phase= -27.3
f= 0.250 ampl= 0.763 phase= -41.2
f= 0.400 ampl= 0.560 phase= -55.4
f= 0.630 ampl= 0.319 phase= -62.8
f= 1.000 ampl= 0.203 phase= -51.1
f= 1.600 ampl= 0.182 phase= -46.3
f= 2.500 ampl= 0.158 phase= -31.6
f= 4.000 ampl= 0.137 phase= -34.8
f= 6.300 ampl= 0.116 phase= -33.3

vertical-radial ellipticity:

f= 0.250 e= -0.478 alpha= 58.7
f= 0.400 e= -0.494 alpha= 45.1
f= 0.630 e= -0.390 alpha= 30.3
f= 1.000 e= -0.265 alpha= 27.1
f= 1.600 e= -0.265 alpha= 24.6
f= 2.500 e= -0.177 alpha= 24.0
f= 4.000 e= -0.171 alpha= 21.0
f= 6.300 e= -0.140 alpha= 19.5

SOUNDING: 31

radial component:

f= 1.000 ampl= 0.687 phase= 40.2
f= 1.600 ampl= 0.817 phase= 33.0
f= 2.500 ampl= 0.910 phase= 30.0
f= 4.000 ampl= 1.002 phase= 23.0
f= 6.300 ampl= 1.103 phase= 21.6
f= 8.000 ampl= 1.165 phase= 22.5

vertical component:

f= 0.100 ampl= 1.128 phase= 3.9
f= 0.160 ampl= 1.152 phase= 2.0
f= 0.250 ampl= 1.207 phase= 6.2
f= 0.400 ampl= 1.304 phase= 3.1

```
 f= 0.630 ampl=  1.378 phase=  -0.9
 f= 1.000 ampl=  1.387 phase=  -7.3
 f= 1.600 ampl=  1.425 phase= -16.8
 f= 2.500 ampl=  1.381 phase= -25.0
 f= 4.000 ampl=  1.384 phase= -41.8
 f= 6.300 ampl=  1.504 phase= -60.0
 f= 8.000 ampl=  1.619 phase= -66.4

 vertical-radial ellipticity:

 f= 1.000    e= -0.324 alpha=  69.2
 f= 1.600    e= -0.376 alpha=  66.1
 f= 2.500    e= -0.453 alpha=  63.4
 f= 4.000    e= -0.569 alpha=  63.8
 f= 6.300    e= -0.709 alpha=  77.6
 f= 8.000    e= -0.719 alpha=  88.3


SOUNDING:  32


 radial component:

 f= 1.000 ampl=  0.558 phase=  35.5
 f= 1.600 ampl=  0.676 phase=  29.0
 f= 2.500 ampl=  0.744 phase=-152.4
 f= 4.000 ampl=  0.806 phase=  18.7
 f= 6.300 ampl=  0.874 phase=  17.1
 f= 8.000 ampl=  0.923 phase=  18.1

 vertical component:

 f= 0.250 ampl=  1.078 phase=   5.1
 f= 0.400 ampl=  1.104 phase=   4.3
 f= 0.630 ampl=  1.150 phase=   3.8
 f= 1.000 ampl=  1.156 phase=   1.9
 f= 1.600 ampl=  1.188 phase=  -0.4
 f= 2.500 ampl=  1.153 phase=   0.4
 f= 4.000 ampl=  1.143 phase=  -6.9
 f= 6.300 ampl=  1.114 phase=  -8.4
 f= 8.000 ampl=  1.133 phase=  -7.8

 vertical-radial ellipticity:

 f= 1.000    e= -0.228 alpha=  66.8
 f= 1.600    e= -0.222 alpha=  62.2
 f= 2.500    e=  0.218 alpha= -58.5
 f= 4.000    e= -0.212 alpha=  55.8
 f= 6.300    e= -0.219 alpha=  52.6
 f= 8.000    e= -0.224 alpha=  51.5


SOUNDING:  33


 radial component:

 f= 0.100 ampl=  0.355 phase=  59.1
```

f= 0.160 ampl= 0.500 phase= 50.2
f= 0.250 ampl= 0.655 phase= 36.4
f= 0.400 ampl= 0.759 phase= 24.2
f= 0.630 ampl= 0.803 phase= 9.0
f= 1.000 ampl= 0.749 phase= -0.7
f= 1.600 ampl= 0.693 phase= -6.0
f= 2.500 ampl= 0.625 phase= -3.3
f= 4.000 ampl= 0.611 phase= -7.6
f= 6.300 ampl= 0.575 phase= -8.9
f= 8.000 ampl= 0.580 phase= -9.2

vertical component:

f= 0.040 ampl= 0.824 phase= 2.8
f= 0.063 ampl= 0.880 phase= 4.8
f= 0.100 ampl= 0.932 phase= 3.3
f= 0.160 ampl= 0.972 phase= -1.9
f= 0.250 ampl= 1.000 phase= -8.4
f= 0.400 ampl= 0.958 phase= -17.7
f= 0.630 ampl= 0.813 phase= -31.9
f= 1.000 ampl= 0.614 phase= -39.1
f= 1.600 ampl= 0.461 phase= -38.4
f= 2.500 ampl= 0.376 phase= -30.4
f= 4.000 ampl= 0.342 phase= -34.3
f= 6.300 ampl= 0.283 phase= -37.6
f= 8.000 ampl= 0.268 phase= -37.2

vertical-radial ellipticity:

f= 0.100 e= -0.299 alpha= 76.7
f= 0.160 e= -0.364 alpha= 69.7
f= 0.250 e= -0.367 alpha= 60.8
f= 0.400 e= -0.369 alpha= 53.7
f= 0.630 e= -0.373 alpha= 45.5
f= 1.000 e= -0.340 alpha= 37.8
f= 1.600 e= -0.264 alpha= 31.8
f= 2.500 e= -0.210 alpha= 29.6
f= 4.000 e= -0.200 alpha= 27.7
f= 6.300 e= -0.197 alpha= 24.4
f= 8.000 e= -0.185 alpha= 23.0

SOUNDING: 35

tangential component:

f= 0.100 ampl= 0.024 phase= 42.0
f= 0.160 ampl= 0.073 phase= 87.4
f= 0.250 ampl= 0.110 phase= 61.5
f= 0.400 ampl= 0.127 phase= 52.1
f= 0.630 ampl= 0.175 phase= 44.6
f= 1.000 ampl= 0.205 phase= 34.5
f= 1.600 ampl= 0.221 phase= 27.0
f= 2.500 ampl= 0.236 phase= 24.8
f= 4.000 ampl= 0.249 phase= 24.6
f= 6.300 ampl= 0.278 phase= 27.4
f= 8.000 ampl= 0.291 phase= 27.7

radial component:

f=	0.100	ampl=	0.171	phase=	68.5
f=	0.160	ampl=	0.252	phase=	77.0
f=	0.250	ampl=	0.354	phase=	58.8
f=	0.400	ampl=	0.454	phase=	49.1
f=	0.630	ampl=	0.593	phase=	39.8
f=	1.000	ampl=	0.703	phase=	30.7
f=	1.600	ampl=	0.782	phase=	21.1
f=	2.500	ampl=	0.829	phase=	14.0
f=	4.000	ampl=	0.818	phase=	9.0
f=	6.300	ampl=	0.809	phase=	7.0
f=	8.000	ampl=	0.803	phase=	7.0

vertical component:

f=	0.040	ampl=	0.910	phase=	2.0
f=	0.063	ampl=	0.856	phase=	7.9
f=	0.100	ampl=	0.915	phase=	9.1
f=	0.160	ampl=	0.979	phase=	24.8
f=	0.250	ampl=	1.067	phase=	9.5
f=	0.400	ampl=	1.153	phase=	6.6
f=	0.630	ampl=	1.207	phase=	1.4
f=	1.000	ampl=	1.193	phase=	-4.1
f=	1.600	ampl=	1.107	phase=	-9.6
f=	2.500	ampl=	0.981	phase=	-11.5
f=	4.000	ampl=	0.844	phase=	-8.7
f=	6.300	ampl=	0.784	phase=	1.3
f=	8.000	ampl=	0.787	phase=	4.9

vertical-radial ellipticity:

f=	0.100	e=	-0.160	alpha=	84.4
f=	0.160	e=	-0.198	alpha=	80.7
f=	0.250	e=	-0.240	alpha=	77.1
f=	0.400	e=	-0.244	alpha=	72.7
f=	0.630	e=	-0.263	alpha=	67.3
f=	1.000	e=	-0.268	alpha=	62.0
f=	1.600	e=	-0.257	alpha=	56.2
f=	2.500	e=	-0.223	alpha=	50.3
f=	4.000	e=	-0.156	alpha=	45.9
f=	6.300	e=	-0.050	alpha=	44.1
f=	8.000	e=	-0.018	alpha=	44.4

horizontal ellipticity:

f=	0.100	e=	0.062	alpha=	82.7
f=	0.160	e=	-0.048	alpha=	74.1
f=	0.250	e=	-0.013	alpha=	72.7
f=	0.400	e=	-0.014	alpha=	74.4
f=	0.630	e=	-0.023	alpha=	73.6
f=	1.000	e=	-0.018	alpha=	73.7
f=	1.600	e=	-0.027	alpha=	74.3
f=	2.500	e=	-0.049	alpha=	74.3
f=	4.000	e=	-0.076	alpha=	73.5
f=	6.300	e=	-0.108	alpha=	71.9
f=	8.000	e=	-0.115	alpha=	71.1

SOUNDING: 36

tangential component:

f= 1.000 ampl= 0.323 phase=-101.6
f= 8.000 ampl= 2.041 phase=-111.6

radial component:

f= 1.000 ampl= 0.783 phase= -3.9
f= 8.000 ampl= 0.762 phase= 33.7

vertical component:

f= 1.000 ampl= 1.497 phase= 68.4
f= 8.000 ampl= 12.640 phase= 67.3

vertical-radial ellipticity:

f= 1.000 e= 0.482 alpha= 78.2
f= 8.000 e= 0.033 alpha= 87.1

horizontal ellipticity:

f= 1.000 e= 0.407 alpha= -86.2
f= 8.000 e= 0.194 alpha= -17.7

SOUNDING: 36a

tangential component:

f= 0.400 ampl= 0.076 phase=-155.7
f= 1.000 ampl= 0.106 phase= 162.4
f= 4.000 ampl= 0.180 phase= 113.8
f= 8.000 ampl= 0.311 phase= 100.1

radial component:

f= 0.160 ampl= 0.730 phase= 65.6
f= 0.400 ampl= 1.125 phase= 27.8
f= 1.000 ampl= 1.216 phase= -3.8
f= 4.000 ampl= 0.741 phase= -10.6
f= 8.000 ampl= 0.733 phase= -6.0

vertical component:

f= 0.063 ampl= 1.102 phase= 12.5
f= 0.100 ampl= 1.232 phase= 15.9
f= 0.160 ampl= 1.367 phase= 26.0
f= 0.400 ampl= 1.412 phase= 0.8
f= 1.000 ampl= 0.907 phase= 11.6
f= 4.000 ampl= 2.938 phase= 72.6
f= 8.000 ampl= 5.720 phase= 70.1

vertical-radial ellipticity:

```
 f= 0.160     e= -0.287 alpha=  65.5
 f= 0.400     e= -0.233 alpha=  52.2
 f= 1.000     e=  0.129 alpha=  36.4
 f= 4.000     e=  0.250 alpha=  88.2
 f= 8.000     e=  0.124 alpha=  88.2

 horizontal ellipticity:

 f= 0.400     e= -0.004 alpha= -86.2
 f= 1.000     e= -0.021 alpha= -85.1
 f= 4.000     e= -0.196 alpha= -81.9
 f= 8.000     e= -0.402 alpha= -82.0

SOUNDING:  37


 tangential component:

 f= 1.000 ampl=  0.039 phase=-105.2
 f= 1.600 ampl=  0.059 phase=-124.0
 f= 2.500 ampl=  0.074 phase=-143.9
 f= 4.000 ampl=  0.078 phase=-158.8
 f= 6.300 ampl=  0.078 phase=-172.1
 f= 8.000 ampl=  0.076 phase=-174.5

 radial component:

 f= 0.063 ampl=  0.074 phase= 114.5
 f= 0.100 ampl=  0.126 phase=  92.2
 f= 0.160 ampl=  0.184 phase= 102.0
 f= 0.250 ampl=  0.265 phase=  74.6
 f= 0.400 ampl=  0.352 phase=  62.2
 f= 0.630 ampl=  0.466 phase=  48.5
 f= 1.000 ampl=  0.562 phase=  38.8
 f= 1.600 ampl=  0.649 phase=  29.0
 f= 2.500 ampl=  0.712 phase=  22.1
 f= 4.000 ampl=  0.742 phase=  16.7
 f= 6.300 ampl=  0.771 phase=  13.5
 f= 8.000 ampl=  0.788 phase=  13.0

 vertical component:

 f= 0.040 ampl=  0.910 phase=   4.7
 f= 0.063 ampl=  0.930 phase=   6.5
 f= 0.100 ampl=  0.966 phase=   7.4
 f= 0.160 ampl=  1.019 phase=  22.8
 f= 0.250 ampl=  1.089 phase=   8.0
 f= 0.400 ampl=  1.157 phase=   6.1
 f= 0.630 ampl=  1.209 phase=   2.3
 f= 1.000 ampl=  1.219 phase=  -1.1
 f= 1.600 ampl=  1.170 phase=  -5.0
 f= 2.500 ampl=  1.107 phase=  -6.8
 f= 4.000 ampl=  1.016 phase=  -6.6
 f= 6.300 ampl=  0.950 phase=  -3.1
 f= 8.000 ampl=  0.953 phase=  -0.8

 vertical-radial ellipticity:
```

f= 0.063 e= -0.076 alpha= -88.6
f= 0.100 e= -0.130 alpha= 89.3
f= 0.160 e= -0.177 alpha= 88.0
f= 0.250 e= -0.221 alpha= 84.2
f= 0.400 e= -0.245 alpha= 79.7
f= 0.630 e= -0.258 alpha= 73.9
f= 1.000 e= -0.260 alpha= 69.0
f= 1.600 e= -0.253 alpha= 63.5
f= 2.500 e= -0.232 alpha= 58.8
f= 4.000 e= -0.196 alpha= 54.6
f= 6.300 e= -0.142 alpha= 51.2
f= 8.000 e= -0.119 alpha= 50.6

horizontal ellipticity:

f= 1.000 e= 0.041 alpha= -86.8
f= 1.600 e= 0.041 alpha= -85.4
f= 2.500 e= 0.025 alpha= -84.2
f= 4.000 e= 0.008 alpha= -84.0
f= 6.300 e= -0.010 alpha= -84.3
f= 8.000 e= -0.013 alpha= -84.5

SOUNDING: 38

tangential component:

f= 0.160 ampl= 0.148 phase= 51.5
f= 0.400 ampl= 0.181 phase= 5.6
f= 1.000 ampl= 0.138 phase= -26.3
f= 2.500 ampl= 0.089 phase= -20.8
f= 4.000 ampl= 0.087 phase= -22.5
f= 8.000 ampl= 0.086 phase= -31.9

radial component:

f= 0.100 ampl= 0.363 phase= 51.1
f= 0.160 ampl= 0.508 phase= 51.2
f= 0.250 ampl= 0.564 phase= 22.5
f= 0.400 ampl= 0.585 phase= 8.2
f= 0.630 ampl= 0.518 phase= -3.9
f= 1.000 ampl= 0.473 phase= -6.8
f= 2.500 ampl= 0.443 phase= -3.9
f= 4.000 ampl= 0.431 phase= -4.6
f= 6.300 ampl= 0.417 phase= -7.3
f= 8.000 ampl= 0.420 phase= -9.1

vertical component:

f= 0.100 ampl= 0.929 phase= -5.7
f= 0.160 ampl= 0.917 phase= -5.4
f= 0.250 ampl= 0.828 phase= -28.8
f= 0.400 ampl= 0.675 phase= -41.8
f= 0.630 ampl= 0.432 phase= -46.7
f= 1.000 ampl= 0.309 phase= -40.2
f= 2.500 ampl= 0.257 phase= -30.5
f= 4.000 ampl= 0.220 phase= -32.7

```
 f= 6.300 ampl=  0.183 phase= -34.9
 f= 8.000 ampl=  0.170 phase= -35.1

 vertical-radial ellipticity:

 f= 0.100    e= -0.311 alpha=  76.6
 f= 0.160    e= -0.415 alpha=  69.4
 f= 0.250    e= -0.431 alpha=  61.1
 f= 0.400    e= -0.460 alpha=  51.3
 f= 0.630    e= -0.383 alpha=  38.0
 f= 1.000    e= -0.270 alpha=  31.2
 f= 2.500    e= -0.202 alpha=  28.7
 f= 4.000    e= -0.198 alpha=  25.3
 f= 6.300    e= -0.176 alpha=  21.9
 f= 8.000    e= -0.156 alpha=  20.5

 horizontal ellipticity:

 f= 0.160    e= -0.001 alpha=  73.8
 f= 0.400    e=  0.013 alpha=  72.8
 f= 1.000    e=  0.090 alpha=  74.5
 f= 2.500    e=  0.056 alpha=  79.1
 f= 4.000    e=  0.059 alpha=  79.1
 f= 8.000    e=  0.077 alpha=  79.2

SOUNDING:  39


 tangential component:

 f= 0.250 ampl=  0.025 phase=-125.5
 f= 0.630 ampl=  0.048 phase= 136.7
 f= 1.000 ampl=  0.050 phase= 112.7
 f= 2.500 ampl=  0.016 phase=  71.9
 f= 6.300 ampl=  0.008 phase=   6.1

 radial component:

 f= 0.100 ampl=  0.355 phase=  54.0
 f= 0.250 ampl=  0.571 phase=  28.6
 f= 0.630 ampl=  0.587 phase=  -0.1
 f= 1.000 ampl=  0.519 phase=  -5.7
 f= 2.500 ampl=  0.456 phase=  -2.4
 f= 6.300 ampl=  0.438 phase=  -3.1

 vertical component:

 f= 0.040 ampl=  0.899 phase=   0.5
 f= 0.063 ampl=  0.885 phase=  -0.9
 f= 0.100 ampl=  0.922 phase=  -6.9
 f= 0.250 ampl=  0.827 phase= -24.4
 f= 0.630 ampl=  0.504 phase= -43.6
 f= 1.000 ampl=  0.361 phase= -41.7
 f= 2.500 ampl=  0.260 phase= -31.0
 f= 6.300 ampl=  0.192 phase= -32.6

 vertical-radial ellipticity:
```

f= 0.100 e= -0.324 alpha= 78.1
f= 0.250 e= -0.448 alpha= 61.1
f= 0.630 e= -0.393 alpha= 39.1
f= 1.000 e= -0.300 alpha= 32.7
f= 2.500 e= -0.215 alpha= 28.0
f= 6.300 e= -0.187 alpha= 21.7

horizontal ellipticity:

f= 0.250 e= 0.019 alpha= -87.7
f= 0.630 e= -0.056 alpha= -86.6
f= 1.000 e= -0.084 alpha= -87.4
f= 2.500 e= -0.034 alpha= 89.4
f= 6.300 e= -0.003 alpha= 89.0

SOUNDING: 40

tangential component:

f= 0.100 ampl= 0.029 phase= -30.0
f= 0.250 ampl= 0.024 phase=-107.1
f= 0.630 ampl= 0.019 phase= 122.8
f= 1.000 ampl= 0.037 phase= 89.4
f= 2.500 ampl= 0.055 phase= 37.2
f= 6.300 ampl= 0.053 phase= 9.9
f= 8.000 ampl= 0.048 phase= 10.8

radial component:

f= 0.063 ampl= 0.075 phase= 60.4
f= 0.100 ampl= 0.172 phase= 63.4
f= 0.250 ampl= 0.329 phase= 51.7
f= 0.400 ampl= 0.427 phase= 42.4
f= 0.630 ampl= 0.528 phase= 31.5
f= 1.000 ampl= 0.582 phase= 23.0
f= 2.500 ampl= 0.628 phase= 11.9
f= 4.000 ampl= 0.634 phase= 11.1
f= 6.300 ampl= 0.653 phase= 9.0
f= 8.000 ampl= 0.657 phase= 10.0

vertical component:

f= 0.040 ampl= 0.810 phase= 2.0
f= 0.063 ampl= 0.836 phase= 2.4
f= 0.100 ampl= 0.851 phase= 1.6
f= 0.250 ampl= 0.896 phase= -3.7
f= 0.400 ampl= 0.891 phase= -7.6
f= 0.630 ampl= 0.831 phase= -13.4
f= 1.000 ampl= 0.760 phase= -17.0
f= 2.500 ampl= 0.599 phase= -18.7
f= 4.000 ampl= 0.540 phase= -18.1
f= 6.300 ampl= 0.486 phase= -19.8
f= 8.000 ampl= 0.462 phase= -18.9

vertical-radial ellipticity:

f= 0.063 e= -0.076 alpha= 87.3

```
 f= 0.100     e= -0.176 alpha=  84.4
 f= 0.250     e= -0.288 alpha=  77.1
 f= 0.400     e= -0.331 alpha=  70.7
 f= 0.630     e= -0.361 alpha=  61.8
 f= 1.000     e= -0.347 alpha=  54.7
 f= 2.500     e= -0.273 alpha=  43.5
 f= 4.000     e= -0.258 alpha=  39.8
 f= 6.300     e= -0.245 alpha=  35.6
 f= 8.000     e= -0.241 alpha=  33.8

 horizontal ellipticity:

 f= 0.100     e=  0.170 alpha= -89.4
 f= 0.250     e=  0.027 alpha= -86.1
 f= 0.630     e= -0.037 alpha= -90.0
 f= 1.000     e= -0.059 alpha=  88.5
 f= 2.500     e= -0.037 alpha=  85.5
 f= 6.300     e= -0.001 alpha=  85.4
 f= 8.000     e= -0.001 alpha=  85.9

SOUNDING:  41


 tangential component:

 f= 0.100 ampl=  0.207 phase=  77.0
 f= 0.250 ampl=  0.336 phase=  42.9
 f= 0.400 ampl=  0.414 phase=  33.5
 f= 0.630 ampl=  0.444 phase=  11.1
 f= 1.000 ampl=  0.441 phase=  -7.3
 f= 1.600 ampl=  0.394 phase= -23.9
 f= 2.500 ampl=  0.339 phase= -35.6
 f= 4.000 ampl=  0.327 phase= -42.8
 f= 6.300 ampl=  0.383 phase= -56.5
 f= 8.000 ampl=  0.415 phase= -61.9

 radial component:

 f= 0.100 ampl=  0.386 phase=  54.3
 f= 0.160 ampl=  0.523 phase=  61.3
 f= 0.250 ampl=  0.693 phase=  41.1
 f= 0.400 ampl=  0.854 phase=  30.7
 f= 0.630 ampl=  0.962 phase=  13.9
 f= 1.000 ampl=  0.964 phase=   2.3
 f= 1.600 ampl=  0.863 phase=  -7.5
 f= 2.500 ampl=  0.763 phase=  -9.6
 f= 4.000 ampl=  0.710 phase=  -8.6
 f= 6.300 ampl=  0.711 phase= -10.9
 f= 8.000 ampl=  0.716 phase= -12.9

 vertical component:

 f= 0.040 ampl=  0.928 phase=  13.0
 f= 0.063 ampl=  1.069 phase=   7.4
 f= 0.100 ampl=  1.140 phase=   5.8
 f= 0.160 ampl=  1.217 phase=  16.8
 f= 0.250 ampl=  1.240 phase=  -4.7
 f= 0.400 ampl=  1.275 phase= -15.2
```

f= 0.630 ampl= 1.174 phase= -29.2
f= 1.000 ampl= 0.992 phase= -42.1
f= 1.600 ampl= 0.758 phase= -53.2
f= 2.500 ampl= 0.611 phase= -58.4
f= 4.000 ampl= 0.585 phase= -63.4
f= 6.300 ampl= 0.681 phase= -79.7
f= 8.000 ampl= 0.733 phase= -86.6

vertical-radial ellipticity:

f= 0.100 e= -0.241 alpha= 76.6
f= 0.160 e= -0.273 alpha= 71.5
f= 0.250 e= -0.340 alpha= 65.7
f= 0.400 e= -0.380 alpha= 60.3
f= 0.630 e= -0.385 alpha= 52.7
f= 1.000 e= -0.408 alpha= 46.2
f= 1.600 e= -0.416 alpha= 39.7
f= 2.500 e= -0.438 alpha= 35.6
f= 4.000 e= -0.503 alpha= 35.6
f= 6.300 e= -0.682 alpha= 41.6
f= 8.000 e= -0.749 alpha= 47.4

horizontal ellipticity:

f= 0.100 e= -0.165 alpha= 62.8
f= 0.250 e= -0.012 alpha= 64.2
f= 0.400 e= -0.019 alpha= 64.2
f= 0.630 e= 0.018 alpha= 65.3
f= 1.000 e= 0.064 alpha= 65.6
f= 1.600 e= 0.108 alpha= 66.0
f= 2.500 e= 0.168 alpha= 67.6
f= 4.000 e= 0.225 alpha= 68.0
f= 6.300 e= 0.331 alpha= 66.6
f= 8.000 e= 0.374 alpha= 65.6

SOUNDING: 42

tangential component:

f= 0.250 ampl= 0.145 phase=-130.6
f= 0.400 ampl= 0.221 phase=-151.8
f= 0.630 ampl= 0.237 phase=-168.6
f= 1.000 ampl= 0.234 phase= 176.3
f= 2.500 ampl= 0.160 phase= 161.0
f= 4.000 ampl= 0.140 phase= 163.3
f= 6.300 ampl= 0.136 phase= 163.4
f= 8.000 ampl= 0.130 phase= 166.6

radial component:

f= 0.100 ampl= 0.286 phase= 63.7
f= 0.250 ampl= 0.498 phase= 42.7
f= 0.400 ampl= 0.616 phase= 32.4
f= 0.630 ampl= 0.701 phase= 18.8
f= 1.000 ampl= 0.689 phase= 9.4
f= 2.500 ampl= 0.650 phase= 1.2
f= 4.000 ampl= 0.636 phase= 2.5

f= 6.300 ampl= 0.637 phase= 1.4
f= 8.000 ampl= 0.643 phase= 4.3

vertical component:

f= 0.040 ampl= 0.886 phase= 7.4
f= 0.063 ampl= 0.902 phase= 4.6
f= 0.100 ampl= 0.938 phase= 3.7
f= 0.250 ampl= 1.012 phase= -4.4
f= 0.400 ampl= 1.002 phase= -11.6
f= 0.630 ampl= 0.898 phase= -21.9
f= 1.000 ampl= 0.746 phase= -28.3
f= 2.500 ampl= 0.516 phase= -24.8
f= 4.000 ampl= 0.474 phase= -24.2
f= 6.300 ampl= 0.415 phase= -28.1
f= 8.000 ampl= 0.398 phase= -27.2

vertical-radial ellipticity:

f= 0.100 e= -0.257 alpha= 80.7
f= 0.250 e= -0.320 alpha= 69.2
f= 0.400 e= -0.347 alpha= 62.6
f= 0.630 e= -0.357 alpha= 54.1
f= 1.000 e= -0.341 alpha= 47.9
f= 2.500 e= -0.225 alpha= 37.8
f= 4.000 e= -0.226 alpha= 35.8
f= 6.300 e= -0.238 alpha= 31.6
f= 8.000 e= -0.248 alpha= 29.8

horizontal ellipticity:

f= 0.250 e= 0.031 alpha= -73.8
f= 0.400 e= -0.023 alpha= -70.3
f= 0.630 e= -0.039 alpha= -71.4
f= 1.000 e= -0.069 alpha= -71.6
f= 2.500 e= -0.081 alpha= -76.9
f= 4.000 e= -0.070 alpha= -78.2
f= 6.300 e= -0.063 alpha= -78.5
f= 8.000 e= -0.059 alpha= -79.1

SOUNDING: 43

tangential component:

f= 0.250 ampl= 0.055 phase= 46.9
f= 0.630 ampl= 0.086 phase= 27.9
f= 1.000 ampl= 0.102 phase= 17.9
f= 2.500 ampl= 0.099 phase= -1.1
f= 6.300 ampl= 0.089 phase= -17.7

radial component:

f= 0.100 ampl= 0.223 phase= 59.8
f= 0.250 ampl= 0.381 phase= 50.2
f= 0.630 ampl= 0.584 phase= 28.7
f= 1.000 ampl= 0.629 phase= 20.3
f= 2.500 ampl= 0.679 phase= 10.4

f= 6.300 ampl= 0.692 phase= 6.1

vertical component:

f= 0.040 ampl= 0.881 phase= 2.9
f= 0.100 ampl= 0.921 phase= -0.5
f= 0.250 ampl= 0.938 phase= -6.5
f= 0.630 ampl= 0.825 phase= -16.8
f= 1.000 ampl= 0.734 phase= -19.5
f= 2.500 ampl= 0.587 phase= -22.0
f= 6.300 ampl= 0.447 phase= -26.3

vertical-radial ellipticity:

f= 0.100 e= -0.207 alpha= 82.9
f= 0.250 e= -0.321 alpha= 76.0
f= 0.630 e= -0.386 alpha= 58.3
f= 1.000 e= -0.357 alpha= 50.7
f= 2.500 e= -0.287 alpha= 40.1
f= 6.300 e= -0.261 alpha= 30.9

horizontal ellipticity:

f= 0.250 e= 0.008 alpha= 81.8
f= 0.630 e= 0.002 alpha= 81.6
f= 1.000 e= 0.007 alpha= 80.8
f= 2.500 e= 0.028 alpha= 81.9
f= 6.300 e= 0.051 alpha= 83.3

SOUNDING: 44

tangential component:

f= 0.250 ampl= 0.225 phase= 35.8
f= 0.630 ampl= 0.291 phase= 1.1
f= 1.000 ampl= 0.267 phase= -16.0
f= 2.500 ampl= 0.155 phase= -28.2
f= 6.300 ampl= 0.141 phase= -32.7

radial component:

f= 0.100 ampl= 0.302 phase= 49.7
f= 0.250 ampl= 0.523 phase= 39.7
f= 0.630 ampl= 0.678 phase= 14.3
f= 1.000 ampl= 0.682 phase= 5.6
f= 2.500 ampl= 0.614 phase= -1.5
f= 6.300 ampl= 0.588 phase= -4.7

vertical component:

f= 0.040 ampl= 0.835 phase= 1.6
f= 0.100 ampl= 0.948 phase= -1.2
f= 0.250 ampl= 0.984 phase= -11.9
f= 0.630 ampl= 0.750 phase= -30.7
f= 1.000 ampl= 0.596 phase= -35.9
f= 2.500 ampl= 0.401 phase= -29.4
f= 6.300 ampl= 0.317 phase= -35.2

vertical-radial ellipticity:

f= 0.100 e= -0.237 alpha= 78.0
f= 0.250 e= -0.369 alpha= 68.7
f= 0.630 e= -0.411 alpha= 49.1
f= 1.000 e= -0.375 alpha= 39.9
f= 2.500 e= -0.225 alpha= 31.8
f= 6.300 e= -0.222 alpha= 26.3

horizontal ellipticity:

f= 0.250 e= 0.025 alpha= 66.8
f= 0.630 e= 0.083 alpha= 67.2
f= 1.000 e= 0.127 alpha= 69.7
f= 2.500 e= 0.108 alpha= 77.1
f= 6.300 e= 0.108 alpha= 77.9

SOUNDING: 45

tangential component:

f= 0.250 ampl= 0.086 phase= -45.6
f= 0.400 ampl= 0.100 phase= -83.2
f= 0.630 ampl= 0.084 phase= -32.2
f= 1.000 ampl= 0.100 phase=-138.6
f= 2.500 ampl= 0.105 phase=-177.9
f= 6.300 ampl= 0.109 phase= 136.4
f= 8.000 ampl= 0.096 phase= 127.9

radial component:

f= 0.100 ampl= 0.355 phase= 69.7
f= 0.250 ampl= 0.587 phase= 39.3
f= 0.400 ampl= 0.637 phase= 24.2
f= 0.630 ampl= 0.690 phase= 87.6
f= 1.000 ampl= 0.690 phase=   6.1
f= 1.600 ampl= 0.673 phase=   0.9
f= 2.500 ampl= 0.649 phase= -4.1
f= 4.000 ampl= 0.615 phase= 48.1
f= 6.300 ampl= 0.570 phase= -7.0
f= 8.000 ampl= 0.558 phase= -2.4

vertical component:

f= 0.040 ampl= 0.933 phase=   3.8
f= 0.063 ampl= 0.836 phase=   0.9
f= 0.100 ampl= 0.869 phase= -0.9
f= 0.250 ampl= 0.855 phase= -9.5
f= 0.400 ampl= 0.785 phase= -14.8
f= 0.630 ampl= 0.715 phase= 55.7
f= 1.000 ampl= 0.642 phase= -20.0
f= 1.600 ampl= 0.572 phase= -22.4
f= 2.500 ampl= 0.517 phase= -25.7
f= 4.000 ampl= 0.456 phase= -27.1
f= 6.300 ampl= 0.384 phase= -34.1
f= 8.000 ampl= 0.368 phase= -33.9

vertical-radial ellipticity:

f=	0.100	e=	-0.377	alpha= 81.0
f=	0.250	e=	-0.411	alpha= 60.2
f=	0.400	e=	-0.345	alpha= 52.6
f=	0.630	e=	-0.286	alpha= 46.2
f=	1.000	e=	-0.232	alpha= 42.7
f=	1.600	e=	-0.203	alpha= 40.0
f=	2.500	e=	-0.185	alpha= 38.1
f=	4.000	e=	-0.671	alpha= 20.0
f=	6.300	e=	-0.221	alpha= 32.8
f=	8.000	e=	-0.256	alpha= 31.7

horizontal ellipticity:

f=	0.250	e=	0.146	alpha= 89.2
f=	0.400	e=	0.149	alpha= -87.2
f=	0.630	e=	0.105	alpha= -86.5
f=	1.000	e=	0.083	alpha= -83.2
f=	2.500	e=	0.017	alpha= -80.8
f=	6.300	e=	-0.111	alpha= -81.2
f=	8.000	e=	-0.129	alpha= -83.6

SOUNDING: 46

tangential component:

f=	0.250	ampl=	0.277	phase=	36.7
f=	0.630	ampl=	0.363	phase=	0.1
f=	1.000	ampl=	0.329	phase=	-18.6
f=	2.500	ampl=	0.199	phase=	-34.5
f=	6.300	ampl=	0.173	phase=	-41.2

radial component:

f=	0.100	ampl=	0.341	phase=	53.9
f=	0.250	ampl=	0.582	phase=	37.6
f=	0.630	ampl=	0.764	phase=	12.7
f=	1.000	ampl=	0.746	phase=	2.8
f=	2.500	ampl=	0.653	phase=	-4.2
f=	6.300	ampl=	0.604	phase=	-6.5

vertical component:

f=	0.100	ampl=	0.999	phase=	2.0
f=	0.250	ampl=	1.053	phase=	-12.7
f=	0.630	ampl=	0.822	phase=	-33.5
f=	1.000	ampl=	0.634	phase=	-39.7
f=	2.500	ampl=	0.394	phase=	-34.3
f=	6.300	ampl=	0.309	phase=	-40.6

vertical-radial ellipticity:

f=	0.100	e=	-0.257	alpha= 77.2
f=	0.250	e=	-0.370	alpha= 67.3
f=	0.630	e=	-0.425	alpha= 48.0

```
 f= 1.000     e= -0.382 alpha=  38.8
 f= 2.500     e= -0.234 alpha=  29.3
 f= 6.300     e= -0.240 alpha=  24.4

 horizontal ellipticity:

 f= 0.250     e=  0.006 alpha=  64.6
 f= 0.630     e=  0.085 alpha=  64.9
 f= 1.000     e=  0.137 alpha=  67.2
 f= 2.500     e=  0.143 alpha=  75.0
 f= 6.300     e=  0.154 alpha=  76.4

SOUNDING:  47


 tangential component:

 f= 1.000 ampl=  0.238 phase=  -4.0
 f= 2.500 ampl=  0.164 phase= -16.5
 f= 6.300 ampl=  0.160 phase= -20.4

 radial component:

 f= 1.000 ampl=  0.699 phase=  14.6
 f= 2.500 ampl=  0.698 phase=   4.0
 f= 6.300 ampl=  0.681 phase=   0.2

 vertical component:

 f= 1.000 ampl=  0.736 phase= -23.9
 f= 2.500 ampl=  0.557 phase= -24.1
 f= 6.300 ampl=  0.442 phase= -29.9

 vertical-radial ellipticity:

 f= 1.000     e= -0.348 alpha=  46.9
 f= 2.500     e= -0.243 alpha=  37.8
 f= 6.300     e= -0.242 alpha=  31.3

 horizontal ellipticity:

 f= 1.000     e=  0.098 alpha=  71.9
 f= 2.500     e=  0.078 alpha=  77.5
 f= 6.300     e=  0.079 alpha=  77.5

SOUNDING:  48


 tangential component:

 f= 1.000 ampl=  0.299 phase= -17.3
 f= 2.500 ampl=  0.197 phase= -15.8
 f= 6.300 ampl=  0.191 phase= -19.5

 radial component:

 f= 1.000 ampl=  0.569 phase=   2.1
 f= 2.500 ampl=  0.534 phase=  -1.3
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```
 f= 6.300 ampl=  0.500 phase=  -5.0

 vertical component:

 f= 1.000 ampl=  0.464 phase= -37.9
 f= 2.500 ampl=  0.344 phase= -28.3
 f= 6.300 ampl=  0.260 phase= -34.0

 vertical-radial ellipticity:

 f= 1.000    e= -0.354 alpha=  37.5
 f= 2.500    e= -0.217 alpha=  31.5
 f= 6.300    e= -0.207 alpha=  25.6

 horizontal ellipticity:

 f= 1.000    e=  0.140 alpha=  63.0
 f= 2.500    e=  0.082 alpha=  70.1
 f= 6.300    e=  0.084 alpha=  69.6

SOUNDING:  49


 tangential component:

 f= 1.000 ampl=  0.240 phase= -30.6
 f= 2.500 ampl=  0.134 phase= -23.2
 f= 6.300 ampl=  0.136 phase= -26.3

 radial component:

 f= 1.000 ampl=  0.504 phase=  -7.7
 f= 2.500 ampl=  0.467 phase=  -4.2
 f= 6.300 ampl=  0.440 phase=  -7.3

 vertical component:

 f= 1.000 ampl=  0.314 phase= -50.6
 f= 2.500 ampl=  0.224 phase= -35.1
 f= 6.300 ampl=  0.156 phase= -38.9

 vertical-radial ellipticity:

 f= 1.000    e= -0.341 alpha=  28.1
 f= 2.500    e= -0.208 alpha=  23.4
 f= 6.300    e= -0.169 alpha=  17.3

 horizontal ellipticity:

 f= 1.000    e=  0.154 alpha=  65.7
 f= 2.500    e=  0.087 alpha=  74.7
 f= 6.300    e=  0.093 alpha=  73.5

SOUNDING:  50


 tangential component:
```

f= 0.250 ampl= 0.431 phase= 11.8
f= 1.000 ampl= 0.287 phase= -36.9
f= 2.500 ampl= 0.181 phase= -22.5
f= 6.300 ampl= 0.176 phase= -29.8

radial component:

f= 0.250 ampl= 0.707 phase= 13.0
f= 1.000 ampl= 0.424 phase= -16.9
f= 2.500 ampl= 0.381 phase= -9.5
f= 6.300 ampl= 0.356 phase= -8.0

vertical component:

f= 0.250 ampl= 0.920 phase= -38.7
f= 6.300 ampl= 0.116 phase= -40.4

vertical-radial ellipticity:

f= 0.250 e= -0.460 alpha= 56.6
f= 6.300 e= -0.163 alpha= 15.9

horizontal ellipticity:

f= 0.250 e= 0.009 alpha= 58.6
f= 1.000 e= 0.163 alpha= 56.6
f= 2.500 e= 0.088 alpha= 64.9
f= 6.300 e= 0.151 alpha= 64.7