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seen to be resolved into two separate vertical interfaces. are obtained from the horizontal derivative. The thick dyke can be data. However, for the thick dyke and fault-like body the best solutions

Depth to magnetic basement

8.1 together with all solutions given in Behrendt and Wold (1963) and All solutions obtained by the method described are listed below in

residual field, excessively noisy original data and aircraft manoeuvres italics. Sections of flight without solutions may be due to a quiet the best solutions). Solutions for fault-like bodies are denoted by based on tightness and number of points in each cluster (1 denotes from Werner deconvolution have been ranked on a scale of 1 to 3 are ranked in increasing thickness of non-magnetic rock. Solutions several control points where magnetic basement crops out. Entries

presence of high level bodies not part of the true magnetic basement. nature of the basement, crossing of bodies at random angles, and The depths shown in 8.1 are very variable, probably due to the

of the solutions indicated in 8.1. Solutions from Behrendt and Wold intervals. Individual solutions were weighted according to the quality

was fitted to the data by least-squares and then contoured at 1 km In order to study the overall trend in the solutions a bi-cubic equation

8.1 Summary of depth solutions in West Antarctica

(E) $(x)A x_{\mu+n}A + (x)A_{\varepsilon+n}A +^{\varsigma+n}X_{\varsigma+n}A \dots$

k = 0

 $V(x) = f(x) + \sum_{k} a_k x^k$

Equation (1) can now be extended to accommodate the effect of a nearby target source plus interference from the superimposed effects of all other adjacent sources. If the interference can be represented by a polynomial of some degree, n_i then (1) can be rewritten as

 $x_0=B_3/2$ and $z=\pm1/2\sqrt{-4}B_2-B_3^2$

at four x values and corresponding f(x) values. It is thus possible to

Since there are four unknowns (2) can be solved for Bo, B1, B2 and B3

82-8476 61-9429 77-8700 120-0390 82-8475 48-7085 77-9484 119-9329

Lat.(°S) Long.(°W) Q

(B) Solutions from Behrendt and Wold (1963) O Rock outcrop

0.0 9.0 9.0 0.0 9.0 9.0 0.0 9.0 9.0 0.0 9.0 9.0

88-4943 76-707-37 76-707-37 789-37

\$20.28 \$9.6917 \$69.511 \$57.781

2 -1.0 1(B) -1.8 3 -2.8 1 -1.0

O Quality of solution
H Magnetic basement elevation (km)
H B Bedrock surface elevation (km)
h Thickness of non-magnetic rock (km)

↑·0 ↑·0 0·0 3·0

ranked in increasing thickness of non-magnetic rock (h)

where $A_0 = B_0 - a_0 B_2$ $A_1 = B_1 - a_1 B_2 - a_0 B_3$ $A_2 = a_0 - a_1 B_3 - a_2 B_2$

optain values of xo and z:

 $\dots +^{\varepsilon} X_{\varepsilon} A +^{\zeta} X_{\zeta} A + X_{1} A +_{0} A = (X) A^{\zeta} X$

substituting for f(x) into (2) and collecting terms yields

120-1975

120.9726

1894-94

78.5615

87.2773

\$260.711 50.757.66 5757.69 5757.69 5757.69

\$65.34 865.348 865.348

-2.5 -1.0 -1.3

8-11 4-0- 8-21- 8 8712-67 0694-88	Z·t 8·0- 0·9- 1 066t·2t 1662·18	86-1898 69-8961 3 -3-0 -0-1 2-9	84:6767 65:9685 1 -2:3 -0:2 2:0 84:7743 92:4963 1 -2:3 -0:2 2:0	2-1 2-0- 8-1- 1 9819-011 4216-18	89-6308 86-5430 2 0·0 0·1 0·0 0·0 0·0 0·0 0·0 0·0 0·0 0·0
7:11 2:1 9:01- 1 9289-97 Z912:18	81-1106 95-8230 1 -3-3 0-8 4-1	79-3457 101-5645 2 -4:0 -1:1 2:9 83-4561 71-5779 1 -3:0 -0:1 2:9	6.1 1.1- 0.5- 2 3050.011 3389.08	2.1 6.1 6.2 2 1770.201 86.3997 1.2 2 1.7 1.2	0.0 1.0 1.0 8 8916.814 8449.77
7.01 6.1- 0.21- 1 8788.3h Catc.18	86-9774 72-9919 2 -3-5 0.6 4-1	81.0919 45.1345 1 -4.0 -1.2 2.8	79.0079 96.9302 2 -3.6 -1.6 1.9	1.1 8.0 - 0.5 - 2 118.8492 3 - 0.5 - 0.5	7-6275 114-1948 1 -0.6 -0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
84-6316 89-6672 2 -10-0 -0-1 9-9	1.7 6.0 -0.9 E 8996.9E 69E0.48 0.7 0.1 0.9 L 9206.ELL 2987.92	80-3369 80-4656 3 -3·0 -0·5 5·8 80-3369 80-4654 3 -3·0 -0·5 5·8	81-5400 106-8975 1 -2-5 -0-6 1-9	1.1 6.0- 0.2- 1 48.35.811 88.35.87	77-4445 116-0286 2 -0-5 -0-5 0.0
81-0919 46-1345 3 -11-0 -1-2 9-8	81.0798 79.2307 1 -5.0 -1.0 4.0	78-9668 96-7766 2 -4-0 -1-2 2-8	78-2357 96-4521 2 -3·0 -1·1 1·9 78-2357 96-4521 2 -2·8 -0·9 1·9	75-7221 111-4286 1(8) -1-6 -0-9 1-1	78-3933 116-8206 1(B) 0-9 0-9 0-9 0-0
88-4552 121-0934 4 -8-5 0-4 8-9	76-1138 91-4723 1(B) -6-0 -1-0 4-0 81-4637 43-0063 3 -6-0 -1-0 4-0	83-4512 58-6270 1 -3-0 -0-2 2-8	80-4267 112-8298 3 -4-0 -2-1 1-9	11 8-92 0 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	85.6256 51.1929 0 1.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0
816-50 4-6 8-6 8-6 8-6 8-6 8-6 8-6 8-6 8-6 8-6 8	0.4 0.1 - 0.3 - 1 25742.4 6384.18	81-0168 108-1357 1 -3-5 -0-8 2-8	82-4365 84-3437 2 -2-3 -0-4 1-9 87-4362 84-3437 1-1 -1-0 0-9 1-9	0.1 8.1- 8.5- 1 8767.47 88.6839	78-3503 119-3932 3 -0-9 -0-9 0-0
81-3073 110-4637 2 -9-6 -1-0 8-5	80.3462 103.0784 2 -4.8 -0.9 3.9	86-3220 6-9-6-13 1 -3-3 -0-4 2-8 86-3230 65-6113 1 -2-5 0-3 2-8	87-3870 106-4502 2 -1-0 0-8 1-8	86-1605 78-3752 1 -7-5 -0-5 1-0 1-0 1-0 1-0 1-0 1-0 1-0 1-0 1-0 1-0	0.0 1.1- 1.1- 1 6009.911 6949.87
E-8 8.0 G-T- E E4-8-E9 7881-78	80-9692 43-9192 1 -2-0 -1-7 3-8 80-9693 2 -4-3 -0-9 3-4	78-6229 99-5452 3 -3-5 -0-7 2-8 86-5083 99-8044 1 -0-8 2-0 2-8	87-82-18 80-3833 2 -2-5 -0-7 1-8 81-0120 110-6598 2 -2-5 -0-7 1-8	0.1 6.0 - 6.1 - 2 05480 2 -1.5 -0.5 1.0	75-8667 129-0583 0 0-3 0-3 0-0
81:1532 112:7500 3 -8:0 -0:7 7:9	86-7487 104-7307 2 -2-5 1.2 3.7	87-4817 104-2323 2 -2-0 0-7 2-7	81-2726 76-6945 2 -3:3 -1.4 1.8	81.9295 51.7092 2 -2.0 -1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	76-0000 124-3000 0 1-3 1-3 0-0 00 75-8167 116-7667 0 0-7 0-7 0-7 0-0
8-7 4-0- 8-8- 1 3-7-18	80-5806 109-4806 3 -5-5 1-5 3-7 80-5806 109-4806 3 -5-5 1-9 3-6	77-9045 100-7036 1 -3-5 -0-8 2-7	78.7415 107.0055 1(B) -3.1 -1.3 1.8 78.7415 107.0055 2 -2.0 -0.2 1.8	0-1 2-0- 2-1- (8)1 1600-911 9609-87	0.0 0.1 0.1 2.4964 2 11.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0 0.0 0.
79-4605 110-8972 2 -8-0 -1-4 6-6	79.6576 103.3528 2 -5.0 -1.4 3.6	78-1334 105-4397 1 -3-3 -0-6 2-7	75-1302 105-8468 2 -2-3 -0-5 1-8 87-5277 66-0615 2 -1-5 0-3 1-8	0·1 9·0- 9·1- 7 266·901 6949·1/2 10·0 9·0- 9·1- 1 196·9401 10960·94	0.0 1.1- 0.0 2 8707.411 7782.67
8-9 8-0 - 2-7 - 2-8-87 101-01-01-01-01-01-01-01-01-01-01-01-01-	86-8312 38-7180 3 -4.0 -0.4 3.6 86-8312 38-7180 3 -4.0 -0.4 3.6	78-6323 98-1045 2 -3-6 -0-8 2-7 7-7 7-8-6328 98-1045 2 -3-6 -0-8 2-7	76-3223 114-3184 2 -2-0 -0-2 1-8	29.671 106.4407 2 -2.3 -1.5 -0.5 1.0	79:2607 114:1724 3 0:0 -1-3 0:0 0:0 0:0 0:0 0:0 0:0 0:0 0:0 0:0 0:
80-4416 85-6538 2 -7-0 -0-6 6-4	76-6418 109-0152 2 -4-8 -1-2 3-6	78-3003 104-9849 2 -3-3 -0-6 2-7	80.2327 98.2278 2 -1.5 0.3 1.8 78.9247 101.1587 2 -2.5 -0.7 1.8	6.0 6.0 - 8.1 1 6998.601 1489.87	78-6233 118-3667 0 1·0 0·0 0·0 0·0 0·0 0·0 0·0
84-578 68-5366 3 -6-5 -0-1 6-4 84-6706 92-6936 2 -6-0 0-1 6-1	78-9767 102-9159 1 -4-0 -0-4 3-6	75-6808 98-8844 1(B) -3-0 -0-4 2-6 78-6150 98-8932 2 -3-3 -0-7 2-6	78-9860 101-6171 2 -2-5 -0-7 1-8	6.0 6.0 0.0 £ \$890.89 \$1979.48	83.2216 50.4280 0 1.7 1.7 0.0
80.2388 110.4518 2 -8.5 -2.4 6.1 8.1 8.1 8.1	86-8701 53-2756 2 -2-8 0-8 3-6	76-1609 112-5860 2 -3-0 -0-4 2-6	79-3600 113-1435 2 0-0 1-7 1-7 1-7 1-7 1-7 1-7 1-7 1-7 1-7 1-7	83.9958 82.7027 1 -1.5 -0.6 0.9	78-3380 112-2428 2 -1:1 -1:1 0:0
86-6949 103-4846 2 -5·0 1·1 6·1 6·1	85.2115 116.1243 3 -4.0 -0.5 3.5 86.2115 116.1243	16-6434 118-4151 1 -1-5 1-0 2-6 87-6215 103-6623 3 -2-0 0-6 2-6	79.2776 144.8556 2 -2.0 -0.3 1,7	6·0 9·0 - 9·1 - 7 981·1 2160·98	89.0681 13.9695 2 0.0 -0.0 0.0
81.0454 114.6645 2 -6.0 -0.1 5.9	86-4156 112-6294 2 -2-0 1-5 3-5 84-9426 110-5436 2 -3-0 0-5 3-5	77-6308 118-6984 2 -2-5 0.1 2-6	76.0644 102.3224 1(B) -2.2 -0.5 1.7	79.7041 107.6699 1 -2.3 -1.4 0.9	0.0 0.1 0.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0
81-2317 109-7623 3 -6-6 -7-2 5-8	9.8 8.1- 8.4- 1 7044.301 1738.95	78-8979 118-1703 1(B) -3-2 -0-6 2-6	26-1163 114-1948 2 -2-3 -0-5 1-7	86-9002 36-3913 2 -1-5 -0-6 0-9 76-8485 104-5903 1(B) -2-3 -1-4 0-9	78-3150 114-7666 1 -0.2 -0.2 0.0 86-7801 36-7451 2 -0.5 -0.4 0.0
8:9 7:1- 0:4- 1 8778-74	84:0092 86:8026 2 -4:0 -0:5 3:5 81:6082 46:5096 1 -5:0 -1:5 3:5	87-7492 89-2285 2 -2·6 0·1 2·6 79-4944 112-2927 2 -4·0 -1·4 2·6	87-2287 63-9929 2 -1-0 0-7 1-7	81-4043 108-8988 2 -1-8 -0-9 0-9	78-3501 115-2280 1 0.0 -0.2 0.0
7-5 6-1 6-5 6-5 6-5 6-5 6-5 6-5 6-5 6-5 6-5 6-5	80.0096 117.1317 1 -4.0 -0.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3	76-1908 112-9051 2 -3-0 -0-4 2-6 86-1911 96-7831 2 -1-6 1-1 2-6	9·1 9·0 0·1- 1 829·9·8 1·9 0·9 1·9 9·9 1·9	75-6434 101-6525 1(8) -1-5 -0-6 0-9	76-5687 116-4989 1 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
2.6 5.1 0.7 1 426.574 8314.18 6.6 60.0 8 6.6 6.7 6.8 6.6 6.8 6.8 6.8 6.8 6.8 6.8 6.8 6.8	4-5 4-0 - 8-5- 1 7018-801 3719-87	86-5246 84-8188 1 -3-0 -0-5 2-5	3-1 8-0 - 2-5 - 2-5 115-8741 2 -2-5 -0-9 1-6	75.3766 100.6437 1(B) -1.1 -0.3 0.8	75-1023 99-4047 1(B) -0-5 -0-6 0-0 75-4036 106-6784 2 -0-8 0-0
81-4528 68-4554 3 -6-5 6-9 6-6	83-4613 91-0344 3 -3-3 0-1 3-4 17-1878 112-6013 1 -5-0 -1-6 3-4	86-9651 93-6976 1 -1·0 1·5 2·5 86-9661 93-6976 1 -1·0 1·5 2·5	80.9752 114.8444 2 -2.0 -0.4 1.6	81-4250 119-4365 1(8) -2-3 -1-5 0-8	81-4125 95-8279 1 -0-3 -0-3 0.0
2.6 5.6 7.0 0.6 1 5.8 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9	81-4691 104-7592 1 -4-0 -0-6 3-4	76-0310 111-3008 2 -2-8 -0-2 2-5	9-1 9-0 = -5-25-2 1-9 9-9 1-9 9-9 1-9 9-9 1-9 9-9 1-9 9-9 1-9 9-9 1-9 1	8.0 8.0 0.0 813.658 8.0 8.0 0.0 813.658 8.0 8.0 8.	0.0 2.1- 2.1- 2 4100.001 8897.97
84-4631 74-4401 3 -5-5 -0-3 5-2	\$4.9264 71.57487 3 -5.0 -1.6 3.4 \$4.9264 71.5774 3 -3.8 -0.3 3.4	75-8345 109-5278 2 -3·0 -0·5 2·5 75-8 1-8524 105-0838 1 -2·5 0·0 2·5	78-8946 111-0152 2 -2-0 -0-4 1-6	76.5633 107.0377 1 -2.0 -1.2 0.8 81.1770 110.8303 2 -2.0 -1.2 0.8	75-2020 100-1159 1(B) -0-4 0-4 0-0 0-0 0-0 0-0 0-0 0-0 0-0 0-
20-5869 88-4882 1 -6-0 -0-9 6-1 5-88 6-88 6-6-9 6-1 5-89-1 16-	84:8963 103:9157 2 -4:0 -0:6 3:4	9:0-9:0-9:0-9:0-9:0-9:0-9:0-9:0-9:0-9:0-	74.7440 106.6187 2 -2.0 -0.5 1.5	80.2803 90.1045 3 -1.3 -0.4 0.8	75-5772 102-8312 1(B) -0-7 -0-7 0.0
1.9 6.0 - 0.9 - 2 0909.62 0991.18	85-1719 64-8586 2 -2-5 0.9 3-4	81.9124 110.6186 1 -3.0 -0.5 2.5	74-6247 107-1726 1 -2-0 -0-5 1-5	80 80 0.0 1 500 0.0 80.0 0.0 80.0 0.0 80.0 0.0 1 50.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	75-3202 109-9613 1(B) 0-2 0-2 0-0 0-0 0-0 0-0 0-0 0-0 0-0 0-0
1.6 6.0 0.1 0.4 5.6060 2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	78-4222 104-6303 2 -4·0 -0·6 3·4 83·0122 108-4094 1(B) -3·7 -0·3 3·4	85-0243 88-5049 2 -2-5 0-0 2-5 2-5 82-048 116-5056 1 -3-0 -0-5 2-5	81.8202 46.0630 1 -3.0 -1.5 1.5 74.7364 107.1131 2 -2.0 -0.5 1.5	76-5249 113-5260 1 -2-0 -1-3 0-7	77.9548 105.9240 2 -1.1 -1.1 0.0
6-7 1-1- 0-9- 1 9057-97 6281-18	87-1033 67-8154 2 -2-3 1-1 3-4	74-6375 106-8271 2 -3-0 -0-5 2-5	85-6306 114-1025 3 -2·3 -0·3 1·5	86-9999 111-6158 2 0.0 0.6 0.6 0.6 78-2280 112-4701 2 -2.0 -1.3 0.7	79.0222 106.1867 1 -1.3 -1.3 0.0
6·7 0·1- 6·9- (8)1 9999·101 9092·92	77-0973 87-6233 1 -4:0 -0:8 3:3	88.2968 62.7981 2 -2.6 -0.1 2.4 86.4861 94.6428 2 -2.0 0.4 2.4	9-1 9-1 0-0 1 1887-46 1161-38	9.0 9.0- 1.1- (8)1 9681.011 8778.35	0.0 1.0- 0.0 1 9672.601 8314.88
79.0872 99.2607 1 -6.0 -1.1 4.9	80-9697 81-3467 3 -3-5 -0-5 3-3	84-9690 110-96868 2 -1-0 0-4 2-4	75.2929 111.1160 1(B) -1.8 -0.3 1.5	78.0435 119.8114 2 -1.0 -0.4 0.6	81-2344 117-4244 18) 0-0 0-0 0-0 0-0 0-0 0-0 0-0 0-0 0-0 0-
80-4231 100-4961 2 -6·0 -1·2 4·8	79-9343 99-3242 3 -4-5 -1-2 3-3	84.4772 93.2593 1 -1.3 1.2 2.4	77-5075 107-0602 2 -3-0 -1-5 1-5 80-7425 112-0334 1 -2-0 -0-5 1-5	76.0272 111.5739 1(B) -0.9 -0.5 0.6 84.1868 100.6677 1(B) -1.1 -0.5 0.6	87-8405 65-2151 2 0-5 0-5 0-0
8.4 2.1 0.9 8 6169.801 9867.97	84-4570 99-1200 3 -4-0 0-3 3-3 84-4570 99-1200 3 -3-0 0-3 3-3	79-5230 105-7465 1 -3-5 -1-2 2-3 79-5230 105-7465 1 -3-5 -1-2 2-3	80-2670 74-4482 1 -2-3 -0-8 1-5 80-5670 74-4482 1 -3-0 -1-5 1-5	88.7728 22.1018 1 -1.0 -0.4 0.6	88.7535 60.7100 1 0.0 -0.3 0.0 0.0 88.7535 8.00
7.4 4.0 6.4-7 1 6968.901 878-58 7.4 7.7 4.0 6.6-7.1 8.0-8-801 878-58	86-5970 44-4380 2 -4-0 -0-8 3-2 8-5970 44-4380 2 -2-0 0-2 3-2	80.7515 107.3501 1 -3.0 -0.7 2.3	84-8172 91-8396 1(8) 1-3 0-2 1-5	87.9626 80.969 2 0.0 0.0 0.0 0.5 0.5 0.5 0.5 0.5 0.5 0.5	88.6982 89.0662 3 0.0 -0.3 0.0 0.0 87.1279 1 -1.0 -1.3 0.0
80-1464 104-9162 1 2-6-0 -1-4 4-6 80-1464 104-9162 1 2-6-0 -1-3 4-7	79-1896 110-3178 1 -3-8 -0-6 3-2	76.3798 110.3932 1 -3.8 -1.4 2.3	86.0573 113.5493 2 0.0 1.4 1.4	9:0 9:0 0:0 0:0 0:0 0:0 0:0 0:0 0:0 0:0	74-9520 98-6712 1(B) 0-4 0-4 0-0
9.4 4.0 - 0.3 - 1 6876.701 1121.67	79.0608 98.3909 2 -4.5 -1.3 3.2 19.0608 98.3909 7 -2.5 -2.5 -2.5 3.2	80-3333 86-4438 3 -2-6 -0-2 2-3 80-3333 86-4438 3 -2-6 -0-5 2-3	→ 1 → 0 .0 · 1 − ε 1738 -83 8177.78	9.0 0.1- 3.1- (8)1 5634.76 7557.77	0.0 t.1 t.+ (8)1 8368.801 2866.77
8.63253 81.9438 2 -6.0 -0.4 4.6	1.5 6.0- 0.4- 1 4271-301 7438-08	85-0215 101-0811 1 -2-0 0-3 2-3	85.0064 69.6753 2 -1.6 -0.1 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1.4 1	77-9433 14-3991 1(B) -1-9 -1-4 0-5 0-5 0-5	8446 97-773 2 2 -0-4 0-0 6-0 6-0 6-0 6-0 6-0 6-0 6-0 6-0 6-0
9-7 7-0 -9- 1 0181-801 9660-88	82.0496 112.9013 3 -3.5 -0.4 3.1 112.907	88-7728 22-1018 2 -2-5 -0-4 2-2	82-8086 108-5400 2 -0-8 0-6 1-4	76.7573 113.4480 1(8) -2.2 - 0.7 0.5 76.7573 113.4480 1(8) -2.2 - 0.7 0.5	0.0 0.0 0.0 0.0 2 8141.001 7688.07
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