

The crystal structure of a ternary (Ba,K,Na)-feldspar and its significance

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Abstract

The crystal structure of a monoclinic ternary barium feldspar with the formula $(\text{Ba}_{0.19}\text{K}_{0.59}\text{Na}_{0.22})(\text{Si}_{2.82}\text{Al}_{1.13}\text{Fe}^{3+}_{0.05})\text{O}_8$ [$a = 8.516(1)$, $b = 13.023(2)$, $c = 7.206(1)\text{\AA}$, $\beta = 115.90(5)^\circ$, space group $C2/m$] has been refined to $R = 0.042$. The mean T-O distances are $(\text{T}_1-\text{O}) = 1.665$; $(\text{T}_2-\text{O}) = 1.636\text{\AA}$, yielding the average Al contents: $\text{Al}_{\text{T}_1} = 0.405$, $\text{Al}_{\text{T}_2} = 0.185$.

If the structural state of the ternary feldspar is compared with those of pure potassium feldspars after normalizing the total Al in the tetrahedral sites of the former to the same amount as that possessed by the latter, the ternary feldspar has a disordered structural state similar to that of Spencer "C". As the investigated specimen occurs in the same metamorphic area where unmixed barium-rich feldspars have been found, it appears likely that the latter tend to reach the state of "maximum possible" order earlier and unmix earlier than the barium-poor varieties.

Introduction

Though alkali feldspars and plagioclases have been studied intensively, barium feldspars¹ have not been subjected to a similar examination, mainly because of their comparatively rare occurrence. The only detailed investigation is that of Gay and Roy (1968), who observed that barium feldspars are also influenced by the order/disorder of the Si/Al atoms, and that the lattice constants, especially c , behave similarly to those in other feldspars. Viswanathan (1978) and Viswanathan and Brandt (1978) showed that the barium feldspars from the highly metamorphosed manganese ore deposit of Otjosondu, Namibia, contain two interesting types: (1) barium-rich feldspars, which have unmixed into an almost pure celsian and a hyalophane of approximate composition $\text{Or}_{52}\text{Cn}_{44}\text{Ab}_4$ (wt%); and (2) ternary barium feldspars which contain, besides high Or contents, as much as 20% (wt%) Ab molecule.

Single-crystal studies of the ternary feldspar were undertaken for the following reasons:

(1) Homogeneous, natural ternary feldspars have not been observed in the corresponding plagioclase series

and hence the barium analogs should provide useful information regarding the distribution of the Al and Si atoms in the different tetrahedral positions of such Al-rich feldspars.

(2) The influence of different parameters on the average (Si,Al)-O bond lengths in monoclinic potassium-rich feldspars has been investigated earlier (Phillips and Ribbe, 1973a). A structural investigation of Al-rich barium feldspars should reveal how far the results obtained with potassium feldspars are applicable to them.

Experimental and results

A typical feature of most barium feldspars from Otjosondu is that the cleavages, including (001), are usually not well developed. As a result the shape of the crystal used only approximates that of a parallelepiped ($\sim 0.06 \times 0.14 \times 0.28$ mm). Precession and Weissenberg photographs of this crystal confirmed the absence of unmixed albite, though thin sections of bigger crystals showed occasional albite lamellae. Moreover, b -split reflections were not observed in spite of long exposures (maximum ≈ 72 hours). Hence the space group was determined as $C2/m$.

The chemical composition was determined on larger crystals with an electron microprobe. The

¹ The term "Ba-feldspars" has been used in this paper to designate all Ba-K-feldspars with or without sodium.

| | | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
|---|--------------|------------|--------------|---------------|---------------|------------|
| L | 0 | 49 - 6342 | 54 - 1871 | - 54 - 1490 | - 2 - C38 | - 4 - 5529 |
| | 136 - 1854 | 140 - 0756 | 140 - 0597 | 2 - 1124 | - 2 - 8502 | |
| | 88 - 4713 | 87 - 9649 | 87 - 9648 | - C653 | - 5C65 | |
| | 5 - 1627 | 2 - 8545 | - 2 - 8540 | - C545 | 2 - 2 C82 | |
| | 13 - 1260 | 11 - 5356 | 11 - 5280 | - 3690 | 1 - 5921 | |
| | 69 - 6163 | 72 - 1097 | 72 - 0894 | 1 - 7094 | - 2 - 4934 | |
| | 25 - 8510 | 25 - 9672 | - 25 - 9044 | - 1 - 8054 | - 1 - 1162 | |
| | 73 - 9355 | 75 - 9146 | 75 - 8859 | 2 - 0882 | - 1 - 9791 | |
| | 6 - 7666 | 2 - 0864 | - 32 - 1285 | - 1 - 3570 | - 8545 | |
| | 159 - 6068 | 166 - 1120 | - 166 - 0937 | - 2 - 4691 | - 6 - 5052 | |
| | 35 - 7643 | 32 - 6089 | - 32 - 5906 | 1 - C916 | 3 - 1555 | |
| | 51 - 8257 | 52 - 7474 | - 52 - 7400 | - 8854 | - 9217 | |
| | 20 - 2430 | 18 - 4280 | - 18 - 4251 | - 3295 | 1 - 8150 | |
| | 116 - 6511 | 116 - 0706 | - 116 - 0673 | - 8761 | - 5305 | |
| | 27 - 1271 | 26 - 7441 | - 26 - 7360 | - 6555 | - 3830 | |
| | 75 - 1445 | 75 - 8734 | - 75 - 8520 | - 1 - 8029 | - 729 | |
| | 31 - 2290 | 31 - 8499 | - 31 - 8328 | 1 - 0444 | - 6209 | |
| | 114 - 1480 | 103 - 8685 | - 103 - 8566 | 1 - 5734 | 1C - 2796 | |
| | 29 - 1039 | 23 - 7153 | 23 - 6626 | - 1 - 5806 | 5 - 3855 | |
| | 10 - 6405 | 9 - 1167 | - 9 - 0504 | 1 - C975 | 1 - 5323 | |
| | 53 - 9691 | 57 - 0636 | - 57 - 0586 | - 7514 | - 3 - 0544 | |
| | 32 - 6181 | 32 - 8717 | 32 - 8713 | - 1565 | - 2536 | |
| | 10 - 8268 | 8 - 7212 | - 8 - 7211 | - C280 | 2 - 1C56 | |
| | 55 - 3220 | 56 - 8897 | 56 - 8755 | 1 - 2704 | - 1 - 5677 | |
| | 30 - 5342 | 25 - 8386 | 25 - 8243 | - 8586 | 4 - 6956 | |
| | 23 - 1506 | 23 - 2721 | 23 - 2228 | 1 - 5141 | - 1215 | |
| | 0 177 - 6415 | 179 - 6913 | 179 - 6749 | rcal 2 - 2297 | rcal 2 - 0698 | |

72 C 6 0 177-6415 179-6913 179-6749 1-5141 -1215
 000-4297 2-0498 2-0498

| 2 | 6 | 0 | 38.1234 | 32.9556 | 32.9284 | -1.3384 | 5.1679 | | |
|----|----|----|----------|----------|-----------|-----------|---------|----------|--|
| 2 | 6 | 0 | 67.5133 | 69.8140 | 69.7961 | 1.5789 | -2.3006 | | |
| 6 | 6 | 0 | 35.8206 | 36.5596 | 36.5589 | -0.2218 | -0.7390 | | |
| 4 | 8 | 0 | 28.3210 | 27.9602 | 27.9592 | 0.2271 | -0.3608 | | |
| 1 | 7 | 0 | 14.0850 | 11.0412 | 11.0297 | -0.5050 | 3.0438 | | |
| 0 | 3 | 0 | 24.1045 | 26.6421 | 26.6175 | 1.1443 | -2.5376 | | |
| 0 | 5 | 0 | 20.8665 | 22.0792 | -22.0180 | -1.6433 | -1.2127 | | |
| 0 | 7 | 0 | 34.9819 | 35.3279 | 35.2954 | 1.5143 | -0.3460 | | |
| 0 | 8 | 0 | 86.3378 | 89.4802 | 89.4585 | 1.9725 | -3.1424 | | |
| 10 | 2 | 0 | 180.2294 | 183.9291 | -183.9108 | -2.5913 | -3.6997 | | |
| 4 | 8 | 0 | 24.5619 | 23.7795 | -23.7627 | .8932 | -0.7824 | | |
| 12 | 6 | 0 | 25.2704 | 23.8402 | -23.8280 | -0.7624 | 1.4302 | | |
| 1 | 9 | 0 | 58.5341 | 56.2404 | -56.2352 | -0.7630 | 2.2938 | | |
| 14 | 3 | 0 | 26.7544 | 29.4719 | 29.4530 | 1.0547 | -2.7175 | | |
| 5 | 9 | 0 | 74.9622 | 76.9844 | -76.9611 | -1.8970 | -2.0222 | | |
| 16 | 7 | 0 | 29.5530 | 29.6000 | 29.5663 | 1.4110 | -0.4470 | | |
| 0 | 10 | 0 | 87.0406 | 89.8311 | 89.8058 | 2.1315 | -2.7905 | | |
| 18 | 2 | 0 | 13.0324 | 15.0018 | -14.9313 | -1.4532 | -1.9694 | | |
| 4 | 10 | 0 | 47.6716 | 48.0829 | 48.0650 | 1.3134 | -0.4113 | | |
| 20 | 6 | 0 | 3.6805 | 1.3882 | 1.3618 | -0.2697 | 2.2922 | | |
| 1 | 11 | 0 | 6.0649 | 3.7666 | 3.7662 | -0.0568 | 2.2983 | | |
| 22 | 3 | 0 | 59.2069 | 60.9281 | 60.9164 | 1.1954 | -1.7212 | | |
| 5 | 11 | 0 | 5.3703 | 2.2981 | 2.1796 | -0.7285 | 3.0722 | | |
| 24 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC | |
| 26 | E | 12 | 0 | 9.4447 | 7.9460 | -7.8566 | 1.1883 | 1.4987 | |
| 2 | 12 | 0 | 26.1661 | 24.6203 | 24.6057 | -0.8479 | 1.5458 | | |
| 28 | 4 | 12 | 0 | 9.0437 | 8.6516 | 8.6093 | .8538 | .3921 | |
| 30 | 1 | 13 | 0 | 11.4425 | 11.8107 | -11.8033 | -0.4181 | -0.3681 | |
| 30 | 3 | 13 | 0 | 20.9236 | 19.9771 | -19.9761 | .1975 | .9466 | |
| 30 | 0 | 14 | 0 | 18.1451 | 17.6923 | -17.6799 | .6619 | .4528 | |
| 32 | 2 | 14 | 0 | 39.5025 | 37.8792 | -37.8584 | -1.2529 | 1.6234 | |
| 34 | 1 | 15 | 0 | 8.0627 | 6.9518 | -6.9473 | -0.2497 | 1.1109 | |
| -8 | 0 | 1 | 51.3999 | 50.9331 | 50.9174 | 1.2627 | -0.4668 | | |
| -6 | 0 | 1 | 33.1987 | 30.5875 | 30.5642 | -1.1939 | 2.6113 | | |
| 36 | -4 | 0 | 1 | 83.1099 | 82.0399 | 82.0182 | 1.8894 | 1.0699 | |
| -2 | 0 | 1 | 114.4954 | 108.8147 | 108.8059 | -1.3883 | 5.6806 | | |
| 38 | 0 | 0 | 1 | 4.6543 | 1.6907 | -1.0734 | 1.3063 | 2.9636 | |
| 40 | 2 | 0 | 1 | 7.1891 | 4.0284 | 3.9785 | -0.6319 | 3.1607 | |
| 40 | 4 | 0 | 1 | 9.6739 | 10.2216 | 10.2216 | .0141 | -0.5478 | |
| 40 | 6 | 0 | 1 | 38.3921 | 40.1217 | -40.1200 | .3748 | -1.7296 | |
| 42 | 8 | 0 | 1 | 9.4017 | 6.3758 | 6.3183 | -.8544 | 3.0259 | |
| 44 | -9 | 1 | 1 | 6.7953 | 6.6822 | 6.6286 | -.8440 | .1131 | |
| 44 | -7 | 1 | 1 | 6.7093 | 5.8298 | 5.7757 | .7925 | .8795 | |
| 44 | -5 | 1 | 1 | 23.5664 | 22.8684 | 22.8681 | -.1220 | .6580 | |
| 44 | -3 | 1 | 1 | 8.2775 | 6.4208 | 6.4090 | -.3891 | 1.8567 | |
| 46 | -1 | 1 | 1 | 11.0848 | 8.3757 | -8.2955 | 1.1564 | 2.7091 | |
| 48 | 1 | 1 | 1 | 43.4412 | 39.1531 | 39.1224 | -1.5502 | 4.2881 | |
| 50 | 3 | 1 | 1 | 59.4141 | 60.4102 | 60.3829 | 1.8189 | -.9961 | |
| 50 | 5 | 1 | 1 | 28.7876 | 31.3020 | -31.2598 | -1.6247 | -2.5143 | |
| 52 | 7 | 1 | 1 | 24.9838 | 24.3946 | 24.3677 | 1.1453 | .5892 | |
| -8 | 2 | 2 | 1 | 0.0000 | 1.6262 | -1.3347 | .9290 | -1.6262 | |
| -6 | 2 | 2 | 1 | 76.6033 | 77.5357 | -77.5130 | -1.8739 | -.9324 | |
| -4 | 2 | 2 | 1 | 10.0392 | 14.4324 | 14.3046 | 1.9163 | -4.3931 | |
| -2 | 2 | 2 | 1 | 61.2815 | 63.3648 | -63.3308 | -2.0752 | -2.0833 | |
| 0 | 2 | 2 | 1 | 26.8352 | 28.7237 | 28.6883 | 1.4256 | -1.8885 | |
| 2 | 2 | 2 | 1 | 42.9935 | 43.8768 | -43.8709 | -.7203 | -.8833 | |
| 4 | 2 | 2 | 1 | 20.4942 | 20.8194 | 20.8190 | -.1222 | -.3252 | |
| 6 | 2 | 2 | 1 | 33.4136 | 33.4825 | 33.4711 | -.8749 | -.0689 | |
| 8 | 2 | 2 | 1 | 12.1656 | 9.0049 | -8.9466 | -1.0233 | 3.1607 | |
| -9 | 3 | 3 | 1 | 56.3074 | 55.9924 | -55.9701 | -1.5791 | .4000 | |
| -7 | 3 | 3 | 1 | 37.5731 | 37.7604 | 37.7472 | .9978 | -.1853 | |
| -5 | 3 | 3 | 1 | 32.6913 | 32.2245 | -32.2183 | -.6356 | .4687 | |
| -3 | 3 | 3 | 1 | 77.7650 | 76.2105 | -76.2072 | -.7163 | 1.5544 | |
| -1 | 3 | 3 | 1 | 63.8936 | 63.2861 | 63.2696 | 1.4446 | .0078 | |
| 1 | 3 | 3 | 1 | 137.6872 | 141.0760 | -141.0573 | -2.8998 | -2.3323 | |
| 3 | 3 | 3 | 1 | 52.5828 | 57.4560 | 57.4095 | 2.3105 | -4.8732 | |
| 5 | 3 | 3 | 1 | 68.9232 | 70.9605 | -70.9342 | -1.9293 | -2.0373 | |
| 7 | 3 | 3 | 1 | 12.1728 | 10.4608 | 10.3875 | 1.2304 | 1.7120 | |
| -8 | 4 | 1 | 19.5557 | 19.8930 | 19.8621 | 1.1080 | -3.3773 | | |
| -6 | 4 | 1 | 83.5671 | 84.6712 | -84.6467 | -0.2267 | -1.1031 | | |
| -4 | 4 | 1 | 91.4681 | 93.7795 | 93.7474 | 2.4529 | -2.3115 | | |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|-----|----|----|----------|----------|-----------|----------|---------|----------|
| -2 | 4 | 1 | 135.3377 | 139.1225 | -139.1008 | -2.4572 | -3.7848 | |
| 0 | 4 | 1 | 98.1967 | 97.8823 | 97.8667 | 1.7467 | .3144 | |
| 2 | 4 | 1 | 87.7103 | 86.8212 | -86.8180 | -.7427 | .8891 | |
| 4 | 4 | 1 | 34.6755 | 34.7651 | -34.7625 | -.4181 | -.0895 | |
| 6 | 4 | 1 | 64.2801 | 66.2292 | 66.2180 | 1.2129 | -1.9491 | |
| 8 | 4 | 1 | 61.6804 | 61.3191 | -61.3018 | -1.4581 | .3612 | |
| -9 | 5 | 1 | 42.4014 | 40.9501 | -40.9302 | -1.2745 | 1.4513 | |
| -7 | 5 | 1 | 52.3401 | 53.1707 | 53.1540 | 1.3336 | -.8306 | |
| | | | | | | | | |
| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 10 | -5 | 5 | 1 | 10.8267 | 11.7429 | -11.7375 | -.3534 | -.9161 |
| 12 | -3 | 5 | 1 | 51.5290 | 50.7800 | -50.7780 | -.4529 | .7489 |
| -1 | 5 | 1 | 75.1762 | 74.4399 | 74.4221 | 1.6291 | .7363 | |
| 14 | 1 | 5 | 1 | 65.5829 | 70.1821 | -70.1489 | -2.1604 | -4.5992 |
| 16 | 3 | 5 | 1 | 101.4409 | 103.3363 | 103.3090 | 2.3732 | -1.8954 |
| 18 | 5 | 5 | 1 | 53.6823 | 54.8597 | -54.8254 | -1.9389 | -1.1774 |
| 20 | 7 | 5 | 1 | 27.9844 | 27.6882 | 27.6650 | 1.1340 | .2963 |
| 22 | -8 | 6 | 1 | 41.4853 | 41.1625 | 41.1449 | 1.2035 | .3228 |
| 24 | -6 | 6 | 1 | 19.6991 | 20.5221 | -20.4689 | -1.4770 | -.8230 |
| 26 | -4 | 6 | 1 | 111.6206 | 114.7547 | 114.7331 | 2.2262 | -3.1341 |
| 28 | -2 | 6 | 1 | 31.7518 | 36.6758 | -36.6295 | -1.8430 | -4.9240 |
| 30 | 0 | 6 | 1 | 67.8782 | 68.6789 | 68.6620 | 1.5214 | -.8006 |
| 32 | 2 | 6 | 1 | 14.7511 | 15.7954 | -15.7839 | -.6035 | -1.0443 |
| 34 | 4 | 6 | 1 | 24.8790 | 26.1474 | -26.1458 | -.2858 | -1.2773 |
| 36 | 6 | 6 | 1 | 23.9742 | 23.7384 | 23.7246 | .8104 | -.2357 |
| 38 | -7 | 7 | 1 | 10.8553 | 10.9031 | 10.8819 | .6798 | -.0478 |
| 40 | -5 | 7 | 1 | 23.0292 | 23.1347 | 23.1339 | -.1989 | -.1055 |
| 42 | -3 | 7 | 1 | 10.3828 | 9.3317 | 9.3232 | -.3996 | 1.0510 |
| 44 | -1 | 7 | 1 | 4.3392 | 1.7952 | 1.4856 | 1.0077 | 2.5440 |
| 46 | 1 | 7 | 1 | 16.2474 | 11.2193 | 11.1245 | -1.4552 | 5.0281 |
| 48 | 3 | 7 | 1 | 35.7235 | 39.5987 | 39.5648 | 1.6382 | -3.8752 |
| 50 | 5 | 7 | 1 | 38.0414 | 39.1355 | -39.1078 | -1.4723 | -1.0940 |
| 52 | 7 | 7 | 1 | 20.4794 | 19.5033 | 19.4770 | 1.0131 | .9761 |
| 54 | -8 | 8 | 1 | 11.5570 | 10.4525 | -10.4342 | .6179 | 1.1045 |
| 56 | -6 | 8 | 1 | 36.0788 | 37.4949 | -37.4704 | -1.3551 | -1.4161 |
| 58 | -4 | 8 | 1 | 33.1063 | 29.5446 | -29.5225 | 1.1430 | 3.5616 |
| 60 | -2 | 8 | 1 | 20.0860 | 16.1380 | 16.0817 | -1.3476 | 3.9479 |
| 62 | 0 | 8 | 1 | 27.4773 | 22.0832 | -22.0650 | .8967 | 5.3941 |
| 64 | 2 | 8 | 1 | 4.2175 | 3.1974 | 3.1506 | -.5451 | 1.0201 |
| 66 | 4 | 8 | 1 | 41.1371 | 42.0587 | 42.0585 | .1222 | -.9216 |
| 68 | 6 | 8 | 1 | 7.9552 | 2.1625 | -2.1179 | .4370 | 5.7927 |
| 70 | -7 | 9 | 1 | 11.8363 | 12.5386 | -12.5340 | .3417 | -.7023 |
| 72 | -5 | 9 | 1 | 5.1555 | 6.0303 | -6.0260 | -.2299 | -.8748 |
| 74 | -3 | 9 | 1 | 14.5791 | 14.4922 | -14.4858 | -.4304 | .0869 |
| 76 | -1 | 9 | 1 | 20.4512 | 16.7890 | -16.7740 | .7111 | 3.6622 |
| 78 | 1 | 9 | 1 | 3.0718 | 1.4729 | -.9330 | -1.1397 | 1.5990 |
| 80 | 3 | 9 | 1 | 5.8071 | 6.8596 | 6.7423 | 1.2631 | -1.0525 |
| 82 | 5 | 9 | 1 | 10.4114 | 10.6909 | -10.6319 | -1.1221 | -.2795 |
| 84 | -6 | 10 | 1 | 5.3775 | 5.9209 | -5.8251 | -1.0605 | -.5434 |
| 86 | -4 | 10 | 1 | 10.2897 | 11.7278 | 11.6451 | 1.3898 | -1.4381 |
| 88 | -2 | 10 | 1 | 14.4358 | 12.6605 | 12.6023 | -1.2135 | 1.7752 |
| 90 | 0 | 10 | 1 | .9452 | 2.4694 | 2.2569 | 1.0020 | -1.5242 |
| 92 | 2 | 10 | 1 | 39.1905 | 41.0023 | -40.9987 | -.5409 | -1.8118 |
| 94 | 4 | 10 | 1 | 6.5804 | 5.3054 | 5.3052 | -.0384 | 1.2751 |
| 96 | 6 | 10 | 1 | 12.0726 | 11.4753 | -11.4674 | .4244 | .5973 |
| 98 | -5 | 11 | 1 | .0000 | 2.4259 | -2.4211 | -.1528 | -2.4259 |
| 100 | -3 | 11 | 1 | 20.2220 | 19.6128 | -19.6108 | -.2812 | .6092 |
| 102 | -1 | 11 | 1 | 32.1263 | 32.1085 | 32.0899 | 1.0913 | .0178 |
| 104 | 1 | 11 | 1 | 33.1722 | 34.1363 | -34.1072 | -1.4081 | -.9640 |
| 106 | 3 | 11 | 1 | 36.3229 | 36.6069 | 36.5745 | 1.5409 | -.2840 |
| 108 | 5 | 11 | 1 | 25.7145 | 25.5627 | -25.5286 | -1.3202 | .1518 |
| 110 | -6 | 12 | 1 | 38.9144 | 37.6072 | -37.5854 | -1.2798 | 1.3072 |
| 112 | -4 | 12 | 1 | 65.2387 | 65.0648 | 65.0411 | 1.7567 | .1740 |
| 114 | -2 | 12 | 1 | 60.3396 | 61.3155 | -61.2942 | -1.6150 | -.9759 |
| 116 | 0 | 12 | 1 | 51.0060 | 51.3934 | 51.3790 | 1.2160 | -.3875 |
| 118 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 120 | 2 | 12 | 1 | 21.1458 | 20.8775 | -20.8721 | -.4748 | .2683 |
| 122 | 4 | 12 | 1 | 21.6684 | 22.1661 | -22.1636 | -.3326 | -.4974 |
| 124 | -5 | 13 | 1 | 3.6733 | 3.4211 | -3.3968 | -.4075 | .2522 |
| 126 | -3 | 13 | 1 | 18.7466 | 17.7794 | -17.7743 | -.4275 | -.9672 |
| 128 | -1 | 13 | 1 | 31.1154 | 30.8852 | 30.8699 | 1.0033 | -.2292 |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|----|----|---|----------|----------|-----------|----------|---------|----------|
| 1 | 13 | 1 | 44.8694 | 43.7856 | -43.7585 | -1.5420 | 1.0837 | .4807 |
| 2 | 13 | 1 | 47.3909 | 46.9102 | 46.8833 | 1.5876 | -1.4533 | 1.4533 |
| -4 | 14 | 1 | 37.9551 | 36.5018 | 36.4799 | 1.2638 | 1.1455 | 1.1455 |
| -2 | 14 | 1 | 47.6916 | 46.5460 | -46.5243 | -1.4221 | -1.3603 | -1.2601 |
| C | 14 | 1 | 27.2690 | 27.6293 | 27.6142 | .9159 | -1.5843 | 1.5843 |
| 2 | 14 | 1 | .0000 | 1.2601 | -1.2063 | -1.3644 | -1.1065 | 1.1065 |
| -1 | 15 | 1 | 7.0316 | 6.4473 | 6.4162 | .6322 | -1.6775 | 1.6775 |
| 1 | 15 | 1 | 6.7595 | 6.0819 | -6.0158 | -1.8944 | -1.5753 | 1.5753 |
| -8 | 0 | 2 | 41.4571 | 42.0324 | 41.9972 | 1.7183 | -1.1184 | 1.1184 |
| 10 | -6 | 0 | 158.7246 | 159.8311 | -159.8110 | -2.5372 | 2.5185 | 2.5185 |
| -4 | 0 | 2 | 91.0839 | 89.9054 | 89.8950 | 1.3680 | 2.8103 | 2.8103 |
| 12 | -2 | 0 | 178.7685 | 176.2500 | -176.2455 | -1.2493 | -1.0643 | -1.2258 |
| C | 0 | 2 | 198.0738 | 195.2634 | -195.2608 | -1.0112 | -1.4204 | 1.4204 |
| 14 | 2 | 0 | 59.7280 | 59.5022 | 59.4927 | 1.0643 | -1.9899 | 1.9899 |
| 15 | 4 | 0 | 157.7041 | 158.1246 | -158.1052 | -2.4772 | -1.3907 | -2.8391 |
| 16 | 6 | 0 | 28.4141 | 27.4242 | 27.3794 | 1.5673 | -3.750 | 3.750 |
| -9 | 1 | 2 | 10.8839 | 10.5089 | -10.5000 | -1.4329 | -1.1759 | 1.1759 |
| 18 | -7 | 1 | 28.8944 | 29.0703 | -29.0647 | -1.5710 | -1.0785 | 1.0785 |
| -5 | 1 | 2 | 44.6565 | 45.7350 | 45.7170 | 1.2829 | -2.4461 | 5.8081 |
| 20 | -3 | 1 | 90.0712 | 92.9103 | -92.8795 | -2.3907 | -4.9410 | -2.4137 |
| -1 | 1 | 2 | 125.7125 | 119.9044 | 119.8794 | -2.5080 | -1.8344 | -1.6040 |
| 22 | 1 | 1 | 73.6033 | 78.5443 | -78.5043 | -1.4429 | -1.2851 | 1.8676 |
| 23 | 3 | 1 | 33.7452 | 36.1590 | 36.1302 | 1.4429 | -1.5710 | -1.0038 |
| 24 | 5 | 1 | 29.4031 | 31.0071 | -30.9959 | -1.4622 | -3.8417 | -1.2521 |
| 25 | 7 | 1 | 17.8584 | 15.9908 | -15.9883 | 1.7937 | -1.6829 | -1.6470 |
| 26 | -8 | 2 | 46.8510 | 46.8472 | 46.8129 | -1.4622 | -1.3232 | -1.3232 |
| -6 | 2 | 2 | .0000 | 3.8417 | -3.5526 | -1.4622 | 2.9011 | 4.8483 |
| 28 | -4 | 2 | 108.9078 | 108.2608 | 108.2477 | 1.4390 | -1.2521 | -1.2521 |
| -2 | 2 | 2 | 45.5041 | 40.6558 | 40.6545 | -1.2521 | -1.2521 | -1.9792 |
| 30 | 0 | 2 | 58.6652 | 55.7642 | 55.7642 | 1.8652 | -1.1635 | -1.1635 |
| 31 | 2 | 2 | 101.5567 | 100.0173 | 100.0069 | 1.0471 | -1.0471 | -0.244 |
| 32 | 4 | 2 | 11.4425 | 10.4633 | 10.3881 | -1.1311 | -1.1311 | -0.598 |
| 33 | 6 | 2 | 60.3355 | 60.4991 | 60.4703 | 1.3605 | -1.2914 | -1.2914 |
| 34 | -9 | 3 | 15.7532 | 15.7288 | 15.7285 | 1.9418 | -1.2914 | -1.048 |
| -7 | 3 | 2 | 31.6947 | 31.6844 | 31.6842 | -1.2102 | -1.2102 | -1.2102 |
| -5 | 3 | 2 | 16.6485 | 16.5487 | 16.4927 | 1.3605 | -1.3605 | -0.598 |
| -3 | 3 | 2 | 50.4339 | 49.8578 | -49.8410 | -1.2914 | -1.2914 | -0.5761 |
| 36 | -1 | 3 | 108.4746 | 104.4500 | 104.4242 | 2.3210 | -1.4110 | -1.0025 |
| 37 | 1 | 3 | 30.0794 | 31.0819 | -31.0499 | -1.7220 | -1.3531 | -1.3531 |
| 38 | 3 | 3 | 28.2005 | 28.5535 | 28.5016 | -1.7220 | -1.3927 | -0.9555 |
| 39 | 5 | 3 | 19.1045 | 18.1491 | 18.1448 | -1.3927 | -1.4991 | -1.3917 |
| 40 | 7 | 3 | 37.5025 | 37.1108 | 37.1075 | 1.1538 | -1.1157 | 1.4705 |
| 41 | -8 | 4 | 13.8627 | 12.3922 | -12.3384 | -1.1157 | -1.4290 | -1.4290 |
| 42 | -6 | 4 | 32.6262 | 32.1972 | 32.1779 | -1.4622 | -1.4622 | -1.4622 |
| 43 | -4 | 4 | 50.1172 | 46.2539 | -46.2443 | -1.4622 | -1.9418 | -1.8634 |
| 44 | -2 | 4 | .0000 | 1.2976 | -1.2105 | -1.4672 | -1.0367 | -1.2976 |
| 45 | 0 | 4 | 5.7069 | 6.7770 | 6.7769 | -1.0367 | -1.6212 | -1.0701 |
| 46 | 2 | 4 | 59.6107 | 57.5217 | -57.5183 | 1.6212 | -1.9398 | 2.0890 |
| 47 | 4 | 4 | 39.6819 | 39.4041 | 39.3929 | -1.9398 | -1.2778 | -1.2778 |
| 48 | 6 | 4 | 10.9841 | 8.4448 | -8.3610 | 1.1868 | -2.5394 | -2.5394 |
| 49 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 50 | -9 | 5 | 2 | 10.6047 | 10.2144 | -10.2115 | -1.2451 | -3.902 |
| 51 | -7 | 5 | 2 | 21.2029 | 22.0994 | -22.0898 | -1.6518 | -8.965 |
| 52 | -5 | 5 | 2 | 45.1418 | 42.8304 | -42.8260 | -1.6112 | 2.3114 |
| 53 | -3 | 5 | 2 | 36.2776 | 38.4453 | -38.4057 | -1.7459 | -2.1678 |
| 54 | -1 | 5 | 2 | 18.9204 | 21.4641 | 21.4227 | 1.3333 | -2.5437 |
| 55 | 1 | 5 | 2 | 50.3146 | 53.6200 | -53.5839 | -1.9676 | -3.3054 |
| 56 | 3 | 5 | 2 | 21.3174 | 17.6424 | -17.6198 | -1.8939 | -3.6749 |
| 57 | 5 | 5 | 2 | 50.4207 | 52.3644 | -52.3531 | -1.0901 | -1.9437 |
| 58 | 7 | 5 | 2 | 9.5592 | 6.8723 | -6.8721 | -1.0501 | 2.6869 |
| 59 | -8 | 6 | 2 | 1.8259 | 1.1331 | -1.1483 | 1.1233 | .6928 |
| 60 | -6 | 6 | 2 | 55.2386 | 57.5759 | -57.5516 | -1.6725 | -2.3273 |
| 61 | -4 | 6 | 2 | 7.2392 | 3.6988 | -3.6044 | .8301 | 3.5404 |
| 62 | -2 | 6 | 2 | 71.6717 | 70.1345 | -70.1286 | -1.9086 | 1.5372 |
| 63 | 0 | 6 | 2 | 94.7819 | 91.4917 | -91.4897 | -1.6111 | 3.2901 |
| 64 | 2 | 6 | 2 | 25.6721 | 23.4066 | -23.4012 | .5002 | 2.2655 |
| 65 | 4 | 6 | 2 | 47.4991 | 49.6238 | -49.5985 | -1.5828 | -2.1247 |
| 66 | 6 | 6 | 2 | 18.7678 | 15.8466 | -15.8146 | 1.0076 | 2.9212 |
| 67 | 7 | 7 | 2 | 7.5758 | 6.9203 | -6.9129 | -1.3199 | .6554 |
| 68 | -5 | 7 | 2 | 40.5140 | 40.6035 | 40.5847 | 1.2351 | -1.0866 |

| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
|----|----|----|----------|----------|----------|---------|---------|----------|
| 1 | 7 | 2 | 68.8643 | 70.1023 | 70.0680 | 2.1945 | -1.2380 | |
| 2 | 7 | 2 | 32.5004 | 34.5049 | -34.4564 | -1.8299 | -2.0045 | |
| 3 | 7 | 2 | 43.6739 | 44.3437 | 44.3206 | 1.4333 | -.6699 | |
| 4 | 5 | 7 | 10.0533 | 9.3570 | -9.3420 | -.5297 | .6963 | |
| 5 | -8 | 8 | 71.5086 | 71.1421 | 71.1172 | 1.8846 | -.3665 | |
| 6 | -6 | 8 | 31.7597 | 32.9209 | -32.8889 | -1.4513 | -1.1613 | |
| 7 | -4 | 8 | 153.3291 | 156.2636 | 156.3524 | 1.8761 | -3.0345 | |
| 8 | -2 | 8 | 37.4643 | 34.0558 | 34.0553 | -.1856 | 3.4085 | |
| 9 | 0 | 8 | 43.6281 | 42.0968 | 42.0968 | .0615 | 1.5312 | |
| 10 | 2 | 8 | 149.7868 | 153.1662 | 153.1563 | 1.7351 | -3.3794 | |
| 11 | 4 | 8 | 17.1712 | 18.1895 | -18.1463 | -1.2535 | -1.0183 | |
| 12 | 6 | 8 | 86.3294 | 85.7154 | 85.6928 | 1.9692 | .6140 | |
| 13 | -7 | 9 | .0000 | 2.2717 | 2.2637 | -.1908 | -2.2717 | |
| 14 | -5 | 9 | 60.0064 | 61.0213 | 61.0061 | 1.3588 | -1.0149 | |
| 15 | -3 | 9 | 62.8718 | 64.9685 | -64.9470 | -1.6714 | -2.0967 | |
| 16 | -1 | 9 | 116.3079 | 113.9450 | 113.9195 | 2.4135 | 2.3629 | |
| 17 | 1 | 9 | 32.9008 | 34.8177 | -34.7775 | -1.6729 | -1.9170 | |
| 18 | 3 | 9 | 42.2478 | 43.6861 | 43.6606 | 1.4924 | -1.4383 | |
| 19 | 5 | 9 | 13.8341 | 13.2140 | 13.2113 | -.2668 | .6201 | |
| 20 | -6 | 10 | 51.6679 | 52.2124 | -52.1891 | -1.5599 | -.5445 | |
| 21 | -4 | 10 | .0000 | 1.2065 | -.7966 | .9061 | -1.2065 | |
| 22 | -2 | 10 | 66.2488 | 66.8123 | -66.8120 | -.7549 | -.5674 | |
| 23 | 0 | 10 | 54.7147 | 54.3008 | -54.2984 | -.5131 | .4139 | |
| 24 | 2 | 10 | 13.1252 | 10.4098 | -10.3864 | .6974 | 2.7154 | |
| 25 | 4 | 10 | 60.5254 | 60.4145 | -60.3957 | -1.5042 | .1110 | |
| 26 | -7 | 11 | 17.6079 | 17.6287 | -17.6204 | -.5400 | -.0207 | |
| 27 | -5 | 11 | 26.6743 | 25.4412 | -25.4372 | -.4505 | 1.2331 | |
| 28 | -3 | 11 | 62.8008 | 64.3887 | -64.3693 | -1.5827 | -1.5879 | |
| 29 | -1 | 11 | 7.0173 | 7.1920 | 7.1119 | 1.0700 | -.1747 | |
| 30 | 1 | 11 | 60.4771 | 62.5426 | -62.5192 | -1.7133 | -2.0656 | |
| 31 | 3 | 11 | 26.5167 | 25.2392 | -25.2325 | .5826 | 1.2775 | |
| 32 | -6 | 12 | 6.9385 | 6.4243 | 6.3736 | -.8056 | .5142 | |
| 33 | -4 | 12 | 23.1365 | 21.9697 | -21.9643 | .4869 | 1.1669 | |
| 34 | -2 | 12 | .0000 | 3.7094 | -3.6850 | -.4246 | -3.7094 | |
| 35 | 0 | 12 | 11.0272 | 10.6487 | -10.6472 | -.1764 | -.3785 | |
| 36 | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |

| | | | | | | | | |
|----|-----|----|---|----------|----------|-----------|---------|---------|
| 37 | 2 | 12 | 2 | 29.5680 | 29.2736 | -29.2726 | .2433 | .2945 |
| 38 | 4 | 12 | 2 | 13.3401 | 12.5634 | 12.5428 | -.7184 | .7767 |
| 39 | -5 | 13 | 2 | .0000 | 1.3069 | 1.1005 | -.7049 | -1.3069 |
| 40 | -3 | 13 | 2 | 33.0848 | 32.4452 | 32.4414 | -.4940 | .6396 |
| 41 | -1 | 13 | 2 | 12.0225 | 11.9870 | 11.9325 | 1.1421 | .0355 |
| 42 | 1 | 13 | 2 | 19.0330 | 17.8659 | 17.8545 | -.6384 | 1.1672 |
| 43 | 3 | 13 | 2 | 25.2634 | 24.9594 | 24.9395 | .9963 | .3040 |
| 44 | -4 | 14 | 2 | 41.4438 | 40.6291 | 40.6193 | -.8910 | .8147 |
| 45 | -2 | 14 | 2 | 35.7637 | 35.9828 | 35.9828 | .0549 | -.2191 |
| 46 | 0 | 14 | 2 | 34.0086 | 33.5378 | 33.5366 | .2837 | .4708 |
| 47 | 2 | 14 | 2 | 38.3707 | 38.0674 | 38.0600 | .7492 | .3033 |
| 48 | -1 | 15 | 2 | 28.5792 | 27.5539 | 27.5304 | 1.1371 | 1.0253 |
| 49 | -10 | 0 | 3 | 36.7287 | 35.7090 | -35.6905 | -1.1488 | 1.0197 |
| 50 | -8 | 0 | 3 | 37.3812 | 37.1757 | -37.1738 | .3757 | .2056 |
| 51 | -6 | 0 | 3 | 19.0474 | 19.0432 | -19.0328 | -.6288 | .0442 |
| 52 | -4 | 0 | 3 | 112.3071 | 107.0833 | -107.0817 | -.5900 | .52238 |
| 53 | -2 | 0 | 3 | 2.1983 | .5930 | .2280 | .5474 | 1.6053 |
| 54 | 0 | 0 | 3 | 16.2474 | 12.6808 | 12.5988 | -1.4401 | .5666 |
| 55 | 2 | 0 | 3 | 30.0119 | 27.1140 | -27.0818 | 1.3203 | .8979 |
| 56 | 4 | 0 | 3 | 26.1372 | 27.2604 | 27.2206 | -1.4724 | -1.1232 |
| 57 | 6 | 0 | 3 | 15.6744 | 15.0939 | 15.0522 | 1.1207 | .5806 |
| 58 | -9 | 1 | 3 | 3.4800 | 1.5820 | -1.4173 | .7030 | 1.9979 |
| 59 | -7 | 1 | 3 | .0000 | 2.3631 | 1.9258 | -1.3696 | -2.3631 |
| 60 | -5 | 1 | 3 | 21.5536 | 17.2077 | -17.1459 | 1.4561 | 4.3460 |
| 61 | -3 | 1 | 3 | 5.5995 | 2.7347 | -2.1160 | -1.7324 | 2.8648 |
| 62 | -1 | 1 | 3 | 70.2908 | 67.2004 | 67.1873 | 1.3269 | .30404 |
| 63 | 1 | 1 | 3 | 86.9373 | 86.1865 | -86.1810 | -.9726 | .7508 |
| 64 | 3 | 1 | 3 | 24.8554 | 25.5474 | 25.5469 | .1472 | -.6919 |
| 65 | 5 | 1 | 3 | 5.0696 | 2.8406 | -2.8151 | .3802 | 2.2290 |
| 66 | -8 | 2 | 3 | 46.7651 | 46.8658 | 46.8509 | 1.1824 | -.1007 |
| 67 | -6 | 2 | 3 | 36.7589 | 35.0518 | 35.0512 | -.2182 | 1.7070 |
| 68 | -4 | 2 | 3 | 29.6832 | 27.7887 | 27.7886 | -.0687 | 1.8944 |
| 69 | -2 | 2 | 3 | 36.1149 | 35.2197 | 35.1978 | 1.2424 | -.8951 |
| 70 | 0 | 2 | 3 | 13.9849 | 15.5023 | -15.4286 | -1.5106 | -1.5175 |
| 71 | 2 | 2 | 3 | 57.3422 | 58.9921 | 58.9582 | 1.9989 | -1.6499 |

| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
|----|----|---|---|----------|----------|-----------|---------|----------|
| 4 | 2 | 3 | | 45.7276 | 46.4121 | -46.3830 | -1.6433 | -6844 |
| 2 | 6 | 2 | 3 | 16.0181 | 15.5239 | 15.4772 | 1.2032 | .4942 |
| -9 | 3 | 3 | | 44.2212 | 43.6740 | 43.6561 | 1.2507 | .5471 |
| 4 | -7 | 3 | 3 | 68.9052 | 71.0408 | -71.0246 | -1.5146 | -2.1355 |
| 6 | -5 | 3 | 3 | 115.9153 | 115.9854 | 115.9587 | 2.4886 | -.0701 |
| -3 | 3 | 3 | | 59.2066 | 60.6654 | -60.6350 | -1.9181 | -1.4587 |
| -1 | 3 | 3 | | 32.4829 | 34.9950 | 34.9476 | 1.8206 | -2.5121 |
| 0 | 1 | 3 | 3 | 33.7299 | 30.0408 | 30.0360 | -.5374 | 3.6891 |
| 10 | 3 | 3 | | 12.0297 | 12.0566 | -12.0564 | -.0686 | -.0269 |
| 5 | 5 | 3 | | 45.3249 | 44.1056 | 44.0951 | .9605 | 1.2193 |
| -8 | 4 | 3 | | 40.3466 | 40.0438 | 40.0235 | 1.2729 | .3028 |
| 12 | -6 | 4 | 3 | 36.7879 | 36.3959 | -36.3910 | -.5987 | .3919 |
| -4 | 4 | 3 | | 8.5640 | 8.4855 | 8.4796 | -.3161 | .0785 |
| 14 | -2 | 4 | 3 | 2.9501 | 2.3416 | 1.9081 | 1.3572 | .6085 |
| 0 | 4 | 3 | | 104.1900 | 103.8678 | -103.8463 | -2.1137 | .3222 |
| 10 | 2 | 4 | 3 | 126.1812 | 129.2794 | 129.2580 | 2.3545 | -3.0982 |
| 4 | 4 | 3 | | 97.8777 | 99.3068 | -99.2871 | -1.9780 | -1.4291 |
| 18 | 6 | 4 | 3 | 26.9458 | 25.4042 | 25.3770 | 1.1760 | 1.5417 |
| 20 | -9 | 5 | 3 | 17.3071 | 17.2063 | 17.1895 | .7612 | .1008 |
| -7 | 5 | 3 | | 92.4595 | 94.4505 | -94.4294 | -1.9989 | -1.9910 |
| 22 | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
| 24 | -5 | 5 | 3 | 76.0979 | 78.4358 | 78.4108 | 1.9796 | -2.3379 |
| -3 | 5 | 3 | | 95.4055 | 94.6893 | -94.6590 | -2.3970 | .7162 |
| -1 | 5 | 3 | | 8.3493 | 10.7821 | 10.6928 | 1.3847 | -2.4328 |
| 26 | 1 | 5 | 3 | 39.3911 | 39.6498 | -39.6399 | -.8868 | -.2587 |
| 3 | 5 | 3 | | 57.1074 | 55.8234 | -55.8219 | -.4069 | 1.2840 |
| 28 | 5 | 5 | 3 | 22.6349 | 22.0471 | 22.0315 | .8303 | .5878 |
| -8 | 6 | 3 | | 5.5637 | 5.9353 | 5.8892 | .7377 | -.3716 |
| 30 | -6 | 6 | 3 | 39.4028 | 40.2324 | -40.2259 | -.7239 | -.8296 |
| -4 | 6 | 3 | | 60.4059 | 58.7283 | -58.7255 | -.5725 | 1.6776 |
| 32 | -2 | 6 | 3 | 19.4995 | 20.1361 | 20.1160 | .9005 | -.6366 |
| 0 | 6 | 3 | | 64.8776 | 64.9922 | -64.9661 | -1.8417 | -.1147 |
| 34 | 2 | 6 | 3 | 50.2181 | 53.3031 | 53.2742 | 1.7548 | -3.0850 |
| 4 | 6 | 3 | | 32.7190 | 33.0315 | -32.9901 | -1.6540 | -.3125 |
| 35 | 6 | 6 | 3 | 19.1331 | 17.7902 | 17.7592 | 1.0493 | 1.3429 |
| -9 | 7 | 7 | 3 | 8.5711 | 8.8194 | 8.7859 | .7686 | -.2484 |
| 38 | -7 | 7 | 3 | 4.7116 | 4.5146 | 4.3795 | -1.0961 | .1970 |
| -5 | 7 | 3 | | 3.5301 | 2.5593 | 2.0835 | 1.4863 | .9708 |
| 40 | -3 | 7 | 3 | 5.9074 | 3.2545 | 2.9269 | -1.4230 | 2.6528 |
| -1 | 7 | 3 | | 71.0136 | 72.0811 | 72.0686 | 1.3418 | -1.0675 |
| 42 | 1 | 7 | 3 | 39.5990 | 41.0971 | -41.0910 | -.7056 | -1.4981 |
| 3 | 7 | 3 | | 37.2461 | 36.2330 | 36.2326 | .1848 | 1.0130 |
| 44 | 5 | 7 | 3 | 21.6825 | 21.8853 | 21.8796 | .5012 | -.2028 |
| -8 | 8 | 3 | | 33.9649 | 34.4808 | 34.4700 | .8612 | -.5159 |
| 46 | -6 | 8 | 3 | 65.9523 | 64.9412 | 64.9411 | .1003 | 1.0111 |
| -4 | 8 | 3 | | 22.6927 | 21.0735 | 21.0733 | .1000 | 1.6192 |
| 48 | -2 | 8 | 3 | 43.6934 | 44.3536 | 44.3444 | .9017 | -.6602 |
| 0 | 8 | 3 | | 53.0492 | 49.0117 | 49.0059 | -.7573 | 4.0375 |
| 50 | 2 | 8 | 3 | 7.6187 | 6.1541 | 6.0128 | 1.3112 | 1.4646 |
| 4 | 8 | 3 | | 13.9773 | 11.8853 | 11.8392 | -1.0458 | 2.0920 |
| 52 | -7 | 9 | 3 | 16.8918 | 16.5307 | 16.5151 | -.7187 | .3611 |
| -5 | 9 | 3 | | .0000 | 3.1920 | 2.9316 | 1.2626 | -3.1920 |
| -3 | 9 | 3 | | 27.2046 | 23.1287 | 23.1078 | -.9823 | 4.0759 |
| -1 | 9 | 3 | | 26.3894 | 28.6728 | 28.6502 | 1.1371 | -2.2833 |
| 1 | 9 | 3 | | 22.2129 | 21.5714 | -21.5635 | -.5834 | .6415 |
| 3 | 9 | 3 | | 28.6079 | 27.1324 | 27.1309 | .2844 | 1.4755 |
| 5 | 9 | 3 | | 7.2535 | 5.9060 | 5.9013 | .2359 | 1.3475 |
| -6 | 10 | 3 | | 20.2791 | 20.4398 | -20.4351 | -.4361 | -.1607 |
| -4 | 10 | 3 | | 21.8692 | 22.2351 | -22.2329 | -.3157 | -.3659 |
| -2 | 10 | 3 | | 42.0847 | 41.6265 | -41.6237 | .4836 | .4562 |
| 0 | 10 | 3 | | 10.0821 | 11.7870 | -11.7309 | -1.1482 | -1.7049 |
| 2 | 10 | 3 | | 10.7193 | 11.6713 | 11.6132 | 1.1633 | -.9520 |
| 4 | 10 | 3 | | 27.1683 | 27.4116 | -27.3841 | -1.2292 | -.2433 |
| -7 | 11 | 3 | | 59.9641 | 59.0375 | -59.0202 | -1.4317 | .9265 |
| -5 | 11 | 3 | | 22.6997 | 21.9918 | 21.9593 | 1.1960 | .7078 |
| -3 | 11 | 3 | | 55.2200 | 54.8182 | -54.7928 | -1.6722 | .4017 |
| -1 | 11 | 3 | | 18.0019 | 16.7920 | -16.7711 | .8390 | 1.2099 |
| 1 | 11 | 3 | | 24.6263 | 24.8258 | -24.8159 | -.7007 | -.1994 |
| 3 | 11 | 3 | | 31.4298 | 31.0750 | -31.0741 | -.2377 | .3548 |
| -6 | 12 | 3 | | 24.2894 | 24.3489 | -24.3433 | -.5221 | -.0595 |
| -4 | 12 | 3 | | 9.2585 | 9.9357 | -9.9302 | -.3305 | -.6777 |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|-----|----|---|-------|--------|----------|-----------|---------|----------|
| -2 | 12 | 3 | 14 | .9585 | 14.6748 | 14.6501 | .8512 | -.2837 |
| 0 | 12 | 3 | 58 | .0352 | 58.0597 | -58.0403 | -1.5019 | -.0245 |
| 2 | 12 | 3 | 59 | .0862 | 59.7155 | 59.6953 | 1.5513 | -.6292 |
| -5 | 13 | 3 | 60 | .0598 | 59.4378 | 59.4141 | 1.6783 | .6220 |
| -3 | 13 | 3 | 28 | .4292 | 27.9773 | -27.9466 | -1.3100 | .4519 |
| H | | | | | | | | |
| -1 | 13 | 3 | 48 | .2149 | 46.9443 | 46.9278 | 1.2429 | 1.2706 |
| 1 | 13 | 3 | 6 | .8526 | 6.7216 | 6.7147 | -.3040 | .1309 |
| -2 | 14 | 3 | 52 | .5137 | 51.9099 | 51.9003 | 1.0026 | .6038 |
| 0 | 14 | 3 | 18 | .6678 | 18.1837 | -18.1566 | -.9934 | .4e41 |
| -10 | 0 | 4 | 9 | .1797 | 8.8671 | -8.8601 | -.3525 | .3126 |
| -8 | 0 | 4 | 28 | .3066 | 26.7728 | 26.7727 | -.0670 | 1.5339 |
| -6 | 0 | 4 | 98 | .0833 | 97.2159 | 97.2039 | 1.5250 | .8674 |
| -4 | 0 | 4 | 31 | .0158 | 32.9936 | -32.9479 | -1.7346 | -1.9778 |
| -2 | 0 | 4 | 225 | .0735 | 222.8858 | 222.8670 | 2.8948 | 2.1877 |
| 0 | 0 | 4 | 11 | .6572 | 7.0985 | 6.8663 | -1.8009 | 4.5587 |
| 2 | 0 | 4 | 111 | .1462 | 112.5605 | 112.5432 | 1.9767 | -1.4143 |
| 4 | 0 | 4 | 39 | .9954 | 38.4021 | 38.4012 | -.2657 | 1.5933 |
| -9 | 1 | 4 | 55 | .0603 | 54.8790 | 54.8512 | 1.7470 | .1813 |
| -7 | 1 | 4 | 51 | .3296 | 50.6825 | -50.6520 | -1.7589 | .6471 |
| -5 | 1 | 4 | 82 | .5675 | 81.5058 | 81.4889 | 1.6616 | 1.0617 |
| -3 | 1 | 4 | .0000 | | 5.7261 | -5.6925 | -.6197 | -5.7261 |
| -1 | 1 | 4 | 26 | .1376 | 23.9706 | -23.9703 | -.1190 | 2.1670 |
| 1 | 1 | 4 | 82 | .6017 | 80.1401 | 80.1298 | 1.2894 | 2.4616 |
| 3 | 1 | 4 | 37 | .5251 | 37.6451 | -37.6173 | -1.4455 | -.1200 |
| 5 | 1 | 4 | 57 | .6829 | 57.3349 | 57.3078 | 1.7636 | .3480 |
| 10 | 2 | 4 | 11 | .5427 | 9.9227 | -9.9150 | -.3893 | 1.6200 |
| -8 | 2 | 4 | 17 | .0135 | 16.3642 | -16.3596 | -.3857 | .6493 |
| -6 | 2 | 4 | 15 | .0659 | 15.0855 | -15.0650 | -.7874 | -.0197 |
| -4 | 2 | 4 | 97 | .4664 | 96.0078 | -95.9893 | -1.8850 | 1.4585 |
| -2 | 2 | 4 | 11 | .6506 | 14.8368 | 14.7343 | 1.7409 | -3.1862 |
| C | 2 | 4 | 103 | .9914 | 102.9180 | -102.8947 | -2.1877 | 1.0734 |
| 2 | 2 | 4 | 16 | .5266 | 14.0651 | -14.0184 | 1.1454 | 2.4614 |
| 4 | 2 | 4 | 48 | .3628 | 48.4071 | -48.3963 | -1.0201 | -.0443 |
| -9 | 3 | 4 | 12 | .1370 | 11.7743 | -11.7318 | -.5995 | .3627 |
| -7 | 3 | 4 | 33 | .2994 | 35.3462 | -35.3150 | -1.4830 | -2.0467 |
| -5 | 3 | 4 | 8 | .2918 | 4.2960 | -4.2059 | -.8751 | 3.9958 |
| -3 | 3 | 4 | 42 | .0369 | 41.0099 | -40.9985 | -.9686 | 1.0270 |
| -1 | 3 | 4 | 35 | .1713 | 32.8526 | -32.8514 | -.2856 | 2.3187 |
| 1 | 3 | 4 | 47 | .7204 | 44.9530 | -44.9526 | -.1959 | 2.7674 |
| 3 | 3 | 4 | 21 | .5825 | 23.3527 | -23.3158 | -1.3123 | -1.7702 |
| 5 | 3 | 4 | 22 | .0691 | 21.6444 | -21.6284 | -.8338 | .4247 |
| -8 | 4 | 4 | 7 | .4827 | 8.8344 | -8.8308 | -.2531 | -1.3518 |
| -6 | 4 | 4 | 21 | .7687 | 22.1227 | -22.1139 | .6247 | -.3540 |
| -4 | 4 | 4 | 4 | .9479 | 8.2223 | -8.1400 | -1.1601 | -3.2744 |
| -2 | 4 | 4 | 17 | .3432 | 13.5596 | -13.4912 | 1.3601 | 3.7837 |
| 0 | 4 | 4 | 8 | .1201 | 11.0699 | -10.9670 | -1.5056 | -2.9498 |
| 2 | 4 | 4 | 6 | .6091 | 6.2096 | -6.0968 | 1.1786 | .3995 |
| 4 | 4 | 4 | 33 | .2915 | 32.9406 | -32.9277 | -.9193 | .3509 |
| -9 | 5 | 4 | 1 | .4321 | 1.4612 | -.9529 | 1.1077 | -.0291 |
| -7 | 5 | 4 | 20 | .0140 | 19.5509 | 19.5292 | -.9211 | .4631 |
| -5 | 5 | 4 | 24 | .0466 | 26.4573 | 26.4297 | 1.2095 | -2.4107 |
| 3 | 5 | 4 | 10 | .3042 | 14.4813 | -14.4754 | -.4123 | -4.1771 |
| -1 | 5 | 4 | 33 | .6020 | 30.5681 | 30.5657 | .3886 | 3.0339 |
| 1 | 5 | 4 | 8 | .1415 | 7.0968 | -7.0637 | -.6843 | 1.0447 |
| 3 | 5 | 4 | 38 | .6637 | 37.6308 | 37.6271 | -.5286 | 1.0329 |
| 5 | 5 | 4 | 25 | .6856 | 25.3614 | 25.3277 | 1.3063 | .3242 |
| 8 | 6 | 4 | 15 | .1732 | 14.3635 | 14.3633 | -.0766 | .8096 |
| 6 | 6 | 4 | 44 | .2745 | 45.4071 | 45.3958 | 1.0150 | -1.1327 |
| 4 | 6 | 4 | 12 | .7672 | 9.1568 | 9.0926 | -1.0829 | 3.6164 |
| 2 | 6 | 4 | 88 | .1642 | 88.9019 | 88.8806 | 1.9467 | -.7377 |
| H | K | L | | | | | | |
| | | | | | | | | OBS-CALC |
| 0 | 6 | 4 | 44 | .0681 | 41.1067 | 41.0882 | -1.2348 | 2.9614 |
| 2 | 6 | 4 | 54 | .1998 | 56.8057 | 56.7844 | 1.5538 | -2.6059 |
| 4 | 6 | 4 | 16 | .0969 | 15.2490 | 15.2430 | -.4279 | .8479 |
| 7 | 7 | 4 | 33 | .6144 | 34.5319 | -34.4984 | -1.5210 | -.9175 |
| 5 | 7 | 4 | 49 | .9301 | 51.5394 | 51.5246 | 1.2359 | -1.6093 |
| 3 | 7 | 4 | 8 | .7072 | 9.3762 | -9.3518 | -.6763 | -.6600 |
| 1 | 7 | 4 | 8 | .2417 | 7.0368 | -7.0340 | -.1991 | 1.2049 |
| 1 | 7 | 4 | 44 | .3546 | 45.2682 | 45.2603 | -.8464 | -.9176 |

| 2 | 3 | 7 | 4 | 31.5516 | 32.1740 | -32.1471 | -1.3177 | -.6225 |
|----|----|----|---|----------|----------|-----------|---------|----------|
| | -8 | 8 | 4 | 12.7743 | 12.2716 | -12.2657 | -.3800 | .5028 |
| | -6 | 8 | 4 | 4.3893 | 3.5591 | 3.4741 | .7731 | .8303 |
| 4 | -4 | 8 | 4 | 109.5126 | 110.0943 | -110.0760 | -2.0085 | -.5818 |
| | -2 | 8 | 4 | 39.6786 | 40.6246 | 40.5889 | 1.7027 | -.9459 |
| 6 | 0 | 8 | 4 | 110.8569 | 113.2374 | -113.2158 | -2.2112 | -2.3805 |
| | 2 | 8 | 4 | 7.9768 | 6.9205 | -6.8602 | .9119 | 1.0562 |
| 8 | 4 | 8 | 4 | 41.0558 | 40.1259 | -40.1165 | -.8678 | .9298 |
| | -7 | 9 | 4 | 65.3118 | 65.2587 | -65.2376 | -1.6607 | .0531 |
| 10 | -5 | 9 | 4 | 33.2355 | 33.4126 | 33.3935 | 1.1307 | -.1771 |
| | -3 | 9 | 4 | 21.3537 | 21.3570 | -21.3443 | -.7388 | -.0033 |
| 12 | -1 | 9 | 4 | 61.2009 | 61.2646 | -61.2626 | -.4916 | -.0637 |
| | 1 | 9 | 4 | 30.7644 | 31.5351 | 31.5252 | .7883 | -.7707 |
| 14 | 3 | 9 | 4 | 57.5716 | 57.6998 | -57.6791 | -1.5463 | -.1282 |
| | -6 | 10 | 4 | 22.7568 | 21.5364 | 21.5175 | .9026 | 1.2204 |
| 16 | -4 | 10 | 4 | 21.2103 | 21.5318 | -21.4979 | -1.2079 | -.3215 |
| | -2 | 10 | 4 | 74.7359 | 75.0632 | 75.0416 | 1.7993 | -.3273 |
| 18 | 0 | 10 | 4 | 24.5118 | 24.7142 | -24.6769 | -1.3574 | -.2024 |
| | 2 | 10 | 4 | 41.6588 | 41.5126 | 41.4938 | 1.2517 | -.1461 |
| 20 | -5 | 11 | 4 | 27.0827 | 26.7323 | 26.7119 | 1.0417 | .3504 |
| | -3 | 11 | 4 | 0.0000 | 3.2633 | 3.2548 | -.2358 | -3.2633 |
| 22 | -1 | 11 | 4 | 12.1729 | 11.0461 | 11.0432 | .2551 | 1.1267 |
| | 1 | 11 | 4 | 16.1328 | 16.2419 | 16.2250 | .7392 | -.1090 |
| 24 | -4 | 12 | 4 | 3.9597 | 4.6671 | 4.6218 | -.6483 | -.7073 |
| | -2 | 12 | 4 | 0.0000 | 2.0276 | 1.7752 | .9796 | -2.0276 |
| 26 | 0 | 12 | 4 | 16.9563 | 16.2579 | 16.2378 | -.8082 | .6984 |
| | -3 | 13 | 4 | 19.3267 | 19.8687 | -19.8605 | -.5730 | -.5420 |
| 28 | -1 | 13 | 4 | 14.9799 | 13.9202 | 13.9202 | .0137 | 1.0597 |
| | -8 | 0 | 5 | 37.1015 | 35.3605 | 35.3563 | -.5467 | 1.7409 |
| 30 | -6 | 0 | 5 | 74.9497 | 76.4767 | 76.4580 | 1.6913 | -1.5270 |
| | -4 | 0 | 5 | 95.4684 | 90.3927 | 90.3885 | -.8696 | 5.0757 |
| 32 | -2 | 0 | 5 | 43.9089 | 42.7282 | 42.6986 | 1.5915 | 1.1807 |
| | 0 | 0 | 5 | 42.6260 | 42.1857 | 42.1827 | -.5095 | .4402 |
| 34 | 2 | 0 | 5 | 48.2776 | 49.1442 | 49.1397 | .6616 | -.8665 |
| | 4 | 0 | 5 | 11.2348 | 11.7013 | -11.6981 | .2764 | -.4665 |
| 36 | -9 | 1 | 5 | 6.5518 | 6.3999 | 6.3428 | .8531 | .1519 |
| | -7 | 1 | 5 | 14.3998 | 13.4645 | 13.4612 | -.2993 | .9353 |
| 38 | -5 | 1 | 5 | 51.7617 | 52.0905 | 52.0901 | .2096 | -.3288 |
| | -3 | 1 | 5 | 24.4118 | 23.5486 | -23.5394 | .6593 | .8631 |
| 40 | -1 | 1 | 5 | 41.5799 | 38.5376 | 38.5278 | -.8692 | 3.0422 |
| | 1 | 1 | 5 | 45.2769 | 46.8644 | 46.8401 | 1.5108 | -1.5875 |
| 42 | 3 | 1 | 5 | 14.1134 | 14.0025 | -13.9454 | -1.2632 | .1109 |
| | -8 | 2 | 5 | 56.1576 | 56.2988 | -56.2792 | -1.4832 | -.1412 |
| 44 | -6 | 2 | 5 | 17.4360 | 15.8923 | -15.8400 | 1.2876 | 1.5438 |
| | -4 | 2 | 5 | 72.4207 | 72.3425 | -72.3163 | -1.9483 | .0782 |
| 46 | -2 | 2 | 5 | 3.1864 | 6.3733 | 6.2694 | 1.1462 | -3.1869 |
| | C | 2 | 5 | 55.2806 | 55.2834 | -55.2731 | -1.0630 | -.0027 |
| 48 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 50 | 2 | 2 | 5 | 12.9462 | 13.2087 | -13.2086 | -.0366 | -.2625 |
| | 4 | 2 | 5 | 6.0148 | 3.6716 | 3.6587 | .3082 | 2.3431 |
| 52 | -9 | 3 | 5 | 13.2613 | 12.8711 | 12.8483 | .7665 | .3902 |
| | -7 | 3 | 5 | 35.7702 | 36.7727 | -36.7613 | -.9142 | -1.0025 |
| 54 | -5 | 3 | 5 | 83.0040 | 82.5750 | -82.5727 | .6251 | .4289 |
| | -3 | 3 | 5 | 12.7460 | 14.2641 | 14.2479 | .6792 | -1.5181 |
| 56 | -1 | 3 | 5 | 112.1047 | 110.1257 | -110.1077 | -1.9917 | 1.9790 |
| | 1 | 3 | 5 | 7.9982 | 6.2251 | 6.0421 | 1.4983 | 1.7731 |
| 58 | 3 | 3 | 5 | 61.8613 | 60.9095 | -60.8824 | -1.8164 | .9518 |
| | -8 | 4 | 5 | 45.0243 | 45.3540 | -45.3278 | -1.5395 | -.3297 |
| 60 | -6 | 4 | 5 | 43.2496 | 44.2218 | 44.1813 | 1.8934 | -.9723 |
| | -4 | 4 | 5 | 88.9377 | 88.7419 | -88.7176 | -2.0767 | .1958 |
| 62 | -2 | 4 | 5 | 71.2757 | 72.1404 | 72.1239 | 1.5407 | -.8047 |
| | 0 | 4 | 5 | 56.1439 | 58.7879 | -58.7821 | -.8285 | -2.0440 |
| 64 | 2 | 4 | 5 | 27.8558 | 27.9989 | -27.9983 | -.1962 | -.1431 |
| | 4 | 4 | 5 | 42.6528 | 42.8847 | 42.8771 | .8081 | -.2319 |
| 66 | -9 | 5 | 5 | 55.9420 | 56.4516 | 56.4347 | 1.3807 | -.5096 |
| | -7 | 5 | 5 | 10.4257 | 9.5881 | 9.5844 | -.2695 | .8375 |
| 68 | -5 | 5 | 5 | 5.3847 | 6.0753 | -6.0750 | .0576 | -.6006 |
| | -3 | 5 | 5 | 90.1340 | 86.2228 | 86.2114 | 1.3997 | 3.9113 |
| 70 | -1 | 5 | 5 | 41.0311 | 41.3323 | -41.3089 | -1.3896 | -.3012 |
| | 1 | 5 | 5 | 96.0785 | 97.9210 | 97.8981 | 2.1164 | -1.8425 |
| 72 | 3 | 5 | 5 | 10.0390 | 9.6329 | -9.5420 | -1.3203 | .4069 |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|----|----|----|---|---------|---------|----------|---------|----------|
| 31 | -8 | 6 | 5 | 3.7163 | 3.0044 | -2.8619 | -.9143 | .7119 |
| | -6 | 6 | 5 | 85.5046 | 86.2568 | 86.2351 | 1.9333 | -.7522 |
| | -4 | 6 | 5 | 15.3953 | 14.0663 | 14.0078 | -1.2820 | 1.3290 |
| 4 | -2 | 6 | 5 | 67.2510 | 67.3439 | 67.3246 | 1.6134 | -.0929 |
| | 0 | 6 | 5 | 16.5125 | 17.0705 | 17.0646 | -.4480 | -.5580 |
| | 2 | 6 | 5 | 13.1252 | 12.6577 | 12.6556 | .2304 | .4676 |
| | -7 | 7 | 5 | .0000 | 3.1799 | -3.1464 | -.4602 | -3.1799 |
| 8 | -5 | 7 | 5 | 28.1357 | 28.1194 | 28.1193 | -.0306 | .0164 |
| | -3 | 7 | 5 | 26.3814 | 25.3474 | -25.3435 | .4449 | 1.0340 |
| 10 | -1 | 7 | 5 | .0000 | 1.4176 | -.9662 | -1.0373 | -1.4176 |
| | 1 | 7 | 5 | 26.2448 | 27.2433 | 27.2162 | 1.2147 | -.9985 |
| 12 | 3 | 7 | 5 | 33.7858 | 33.8514 | -33.8269 | -1.2870 | -.0655 |
| | -8 | 8 | 5 | 44.0718 | 44.3711 | -44.3569 | -1.1206 | -.2993 |
| 14 | -6 | 8 | 5 | 40.8201 | 38.6313 | -38.6265 | .6075 | 2.1888 |
| | -4 | 8 | 5 | 27.7566 | 28.6923 | -28.6573 | -1.4170 | -.9356 |
| 16 | -2 | 8 | 5 | 40.4073 | 40.0038 | -39.9988 | .6296 | .4035 |
| | 0 | 8 | 5 | 31.3585 | 30.0996 | -30.0834 | -.9880 | 1.2588 |
| 18 | 2 | 8 | 5 | .0000 | 1.0382 | 1.0332 | .1017 | -1.0382 |
| | -7 | 9 | 5 | 12.4163 | 12.3349 | -12.3238 | -.5215 | .0815 |
| 20 | -5 | 9 | 5 | 8.5568 | 7.5638 | -7.5619 | -.1686 | -.9930 |
| | -3 | 9 | 5 | 54.9397 | 52.9652 | -52.9652 | .0710 | 1.9744 |
| 22 | -1 | 9 | 5 | 6.3442 | 5.1869 | 5.1185 | -.8394 | 1.1573 |
| | 1 | 9 | 5 | 17.5936 | 17.0052 | -16.9881 | .7632 | .5884 |
| 24 | -6 | 10 | 5 | 17.8371 | 17.0406 | 17.0005 | 1.1677 | .7965 |
| | -4 | 10 | 5 | 6.9958 | 6.1870 | 6.1173 | -.9259 | .8088 |
| 26 | -2 | 11 | 5 | 36.1081 | 35.6390 | 35.6208 | 1.1389 | .4691 |
| | 0 | 10 | 5 | 18.2310 | 18.1644 | -18.1567 | -.5287 | .0667 |
| 28 | -5 | 11 | 5 | .0000 | 1.0201 | 1.0062 | .1683 | -1.0201 |
| | -3 | 11 | 5 | 47.1049 | 46.1474 | 46.1371 | -.9709 | .9575 |
| 30 | -1 | 11 | 5 | 5.4992 | 4.6023 | -4.5386 | -.7632 | .8969 |
| | -4 | 12 | 5 | 30.5776 | 29.1127 | -29.0860 | -1.2452 | 1.4649 |
| 32 | -2 | 12 | 5 | 44.7183 | 44.2133 | 44.1982 | 1.1539 | .5051 |
| 34 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 35 | -8 | 0 | 6 | 52.5528 | 51.9623 | -51.9344 | -1.7026 | .5906 |
| | -6 | 0 | 6 | 21.3531 | 21.2546 | 21.2176 | 1.2533 | .0985 |
| | -4 | 0 | 6 | 28.4144 | 27.4449 | -27.4312 | -.8697 | .9694 |
| 36 | -2 | 0 | 6 | 53.7728 | 51.5931 | -51.5916 | -.3917 | 2.1797 |
| | 0 | 0 | 6 | 3.7592 | 4.9560 | -4.9148 | .6382 | -1.1968 |
| 38 | 2 | 0 | 6 | 63.8103 | 63.5691 | -63.5487 | -1.6093 | .2412 |
| | -9 | 1 | 6 | 7.9696 | 6.0553 | 6.0539 | -.1290 | 1.9143 |
| 40 | -7 | 1 | 6 | 31.5225 | 31.4753 | 31.4633 | -.8675 | .0472 |
| | -5 | 1 | 6 | 72.9044 | 72.8541 | -72.8357 | -1.6366 | .0504 |
| 42 | -3 | 1 | 6 | 95.2003 | 94.4166 | 94.3975 | 1.8991 | .7837 |
| | -1 | 1 | 6 | 57.6009 | 58.3029 | -58.2726 | -1.8768 | -.7019 |
| 44 | 1 | 1 | 6 | 17.9158 | 18.1298 | 18.0906 | 1.1924 | -.2140 |
| | 3 | 1 | 6 | 5.9217 | 1.1453 | -.9162 | -.6872 | 4.7764 |
| 46 | -8 | 2 | 6 | 24.3321 | 24.1110 | -24.0769 | -1.2827 | .2211 |
| | -6 | 2 | 6 | 47.0239 | 47.4649 | 47.4476 | 1.2828 | -.4410 |
| 48 | -4 | 2 | 6 | 6.3728 | 4.3039 | 4.2643 | -.5820 | 2.0689 |
| | -2 | 2 | 6 | 17.8229 | 17.9166 | 17.9154 | .2016 | -.0937 |
| 50 | 0 | 2 | 6 | 40.3401 | 40.7135 | 40.7063 | .7647 | -.3733 |
| | 2 | 2 | 6 | 1.4321 | 2.2596 | 2.1074 | -.8152 | -.8275 |
| 52 | -9 | 3 | 6 | 7.8049 | 6.4858 | -6.4854 | -.0701 | 1.3191 |
| | -7 | 3 | 6 | 3.7735 | 2.3778 | -2.3086 | .5697 | 1.3957 |
| 54 | -5 | 3 | 6 | 2.1481 | 1.8961 | 1.6918 | -.8563 | .2520 |
| | -3 | 3 | 6 | 14.0419 | 12.5180 | -12.4419 | 1.3789 | 1.5239 |
| 56 | -1 | 3 | 6 | 7.7763 | 7.3897 | 7.2994 | -1.1521 | .3865 |
| | 1 | 3 | 6 | 28.1351 | 28.4473 | 28.4134 | 1.3296 | -.3123 |
| | 3 | 3 | 6 | 24.6113 | 23.2031 | -23.1944 | -.6337 | 1.4002 |
| 58 | -8 | 4 | 6 | 6.5661 | 7.5323 | -7.4741 | -.9341 | -.9661 |
| | -6 | 4 | 6 | 14.3713 | 15.9312 | 15.9042 | .9271 | -1.5599 |
| 60 | -4 | 4 | 6 | 26.9830 | 26.7198 | -26.7107 | -.7002 | .2631 |
| | -2 | 4 | 6 | 3.5301 | 2.5711 | 2.5556 | .2818 | .9590 |
| 62 | 0 | 4 | 6 | 13.2183 | 11.8529 | -11.8513 | .1940 | 1.3054 |
| | 2 | 4 | 6 | 9.9459 | 8.8690 | 8.8528 | -.5367 | 1.0768 |
| 64 | -7 | 5 | 6 | 16.4479 | 16.6350 | -16.6317 | .3284 | -.1871 |
| | -5 | 5 | 6 | 13.2326 | 11.0229 | 10.9873 | -.8859 | 2.2097 |
| 66 | -3 | 5 | 6 | 20.7805 | 18.7668 | -18.7427 | .9507 | 2.0137 |
| | -1 | 5 | 6 | 5.4276 | 6.1436 | -5.9904 | -1.2636 | -.7100 |
| 68 | 1 | 5 | 6 | 9.4661 | 9.3289 | 9.2822 | .9327 | .1372 |
| | -8 | 6 | 6 | 15.4596 | 15.5859 | -15.5466 | -1.1064 | -.1264 |

| | | | | | | | OBS-CALC |
|----|----|---|---|---------|---------|----------|----------|
| | | | | | | | |
| 2 | -6 | 6 | 6 | 4.6686 | 4.3022 | 4.2095 | .8887 |
| | -4 | 6 | 6 | 20.3510 | 20.2910 | -20.2769 | -.7570 |
| | -2 | 6 | 6 | 20.5801 | 20.8349 | -20.8348 | -.0563 |
| 4 | 0 | 6 | 6 | 29.2381 | 27.9742 | -27.9737 | .1629 |
| | 2 | 6 | 6 | 16.3404 | 16.7554 | -16.7283 | -.9510 |
| 6 | -7 | 7 | 6 | 19.1046 | 19.4147 | 19.4012 | .7225 |
| | -5 | 7 | 6 | 44.2607 | 43.8869 | -43.8694 | -1.2396 |
| 8 | -3 | 7 | 6 | 67.9332 | 67.2420 | 67.2224 | 1.6241 |
| | -1 | 7 | 6 | 37.8487 | 38.5727 | -38.5453 | -1.4535 |
| 10 | 1 | 7 | 6 | 20.7659 | 20.2757 | 20.2445 | 1.1245 |
| | -6 | 8 | 6 | 48.9093 | 48.6472 | 48.6307 | 1.2679 |
| 12 | -4 | 8 | 6 | 21.7616 | 20.6569 | 20.6533 | -.3854 |
| | -2 | 8 | 6 | 19.2622 | 18.5406 | 18.5404 | .0888 |
| 14 | 0 | 8 | 6 | 55.0936 | 55.721 | 55.7029 | 1.0099 |
| | -5 | 9 | 6 | 57.0658 | 56.7721 | -56.7573 | -1.2990 |
| 16 | -3 | 9 | 6 | 69.3914 | 67.4532 | 67.4316 | 1.7061 |
| | -1 | 9 | 6 | 30.8497 | 29.6327 | -29.6027 | -1.3341 |
| 18 | H | K | L | Y(OBS) | Y(CALC) | A | B |

| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
|-----|----|---|---|----------|----------|----------|---------|----------|
| -6 | 4 | 8 | | .0000 | 2.3369 | -2.2816 | -.5054 | -2.3369 |
| -4 | 4 | 8 | | 4.0098 | 4.4261 | 4.3556 | .7871 | -.4162 |
| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
| -2 | 4 | 8 | | 14.5574 | 13.4121 | -13.3768 | -.9720 | 1.1453 |
| -5 | 5 | 8 | | 15.3595 | 15.5018 | -15.4890 | -.6301 | -.1423 |
| -3 | 5 | 8 | | 14.5073 | 13.9353 | 13.9303 | .3734 | .5720 |
| 4 | 0 | 0 | | 135.6357 | 140.0756 | 140.0597 | 2.1124 | -.4399 |
| 10 | 0 | 0 | | 53.4808 | 52.7938 | 52.7820 | 1.1193 | -.6869 |
| 11 | 1 | 0 | | 28.7367 | 27.8739 | 27.8584 | .9279 | -.8629 |
| 10 | 2 | 0 | | .3410 | .9923 | -.9043 | .4085 | -.6514 |
| 12 | 9 | 3 | 0 | 32.5682 | 32.3917 | -32.3605 | -1.4210 | -.1765 |
| 11 | 3 | 0 | | 10.7332 | 10.5919 | -10.5776 | .5502 | .1413 |
| 10 | 4 | 0 | | 18.4129 | 19.5334 | -19.5325 | .1908 | -1.1205 |
| 9 | 5 | 0 | | 13.6814 | 14.2832 | 14.2609 | -.7967 | -.6018 |
| 11 | 5 | 0 | | 23.2938 | 22.9000 | 22.8813 | .9258 | .3939 |
| 0 | 6 | 0 | | 179.1564 | 179.6913 | 179.6749 | 2.4297 | -.5349 |
| 10 | 6 | 0 | | 16.2458 | 15.6024 | 15.5909 | .6009 | .6434 |
| 9 | 7 | 0 | | 37.6012 | 37.1063 | -37.0840 | -1.2873 | .4948 |
| 20 | 8 | 0 | | 47.0331 | 47.2989 | -47.2950 | -.6105 | -.2658 |
| 10 | 8 | 0 | | 13.8660 | 13.6861 | 13.6768 | .5043 | .1799 |
| 22 | 9 | 9 | 0 | 41.2994 | 41.4877 | -41.4664 | -1.3307 | -.1883 |
| 8 | 10 | 0 | | 8.2682 | 7.4235 | 7.4235 | -.0127 | .8447 |
| 7 | 11 | 0 | | 28.6390 | 28.6257 | 28.5952 | 1.3215 | .0132 |
| 9 | 11 | 0 | | 6.6913 | 8.0303 | 8.0084 | -.5923 | -1.3390 |
| 6 | 12 | 0 | | 11.3513 | 10.9793 | -10.9734 | -.3599 | .3720 |
| 8 | 12 | 0 | | 25.0001 | 25.5493 | 25.5484 | .2206 | -.5492 |
| 5 | 13 | 0 | | 1.2360 | 1.2995 | 1.0027 | -.8265 | -.0635 |
| 7 | 13 | 0 | | 19.5075 | 20.3592 | -20.3543 | .4461 | -.8517 |
| 4 | 14 | 0 | | 27.2402 | 27.5423 | -27.5404 | .3206 | -.3020 |
| 6 | 14 | 0 | | 21.2411 | 21.0279 | -21.0191 | -.6069 | .2132 |
| 8 | 14 | 0 | | 7.4798 | 6.5941 | -6.5923 | -.1541 | .8856 |
| 3 | 15 | 0 | | 5.1356 | 4.4778 | 4.4361 | .6094 | .6578 |
| 5 | 15 | 0 | | 6.8760 | 6.0670 | -6.012 | -.8137 | .8089 |
| 7 | 15 | 0 | | 13.1060 | 12.6709 | 12.5437 | .8293 | .4351 |
| 0 | 16 | 0 | | 85.7781 | 85.6484 | 85.6316 | 1.6962 | .1297 |
| 2 | 16 | 0 | | 8.2469 | 7.3028 | -7.2552 | -.8320 | .9442 |
| 4 | 16 | 0 | | 38.5014 | 38.5689 | 38.5552 | 1.0250 | -.0675 |
| 6 | 16 | 0 | | 20.3318 | 20.9615 | 20.9615 | .0427 | -.6297 |
| 1 | 17 | 0 | | .0000 | .6756 | -.6728 | -.0620 | -.6756 |
| 3 | 17 | 0 | | 43.0881 | 42.7863 | 42.7744 | 1.0105 | .3018 |
| 5 | 17 | 0 | | 19.5781 | 17.6494 | -17.6319 | -.7854 | 1.9287 |
| 0 | 18 | 0 | | 17.5390 | 16.3820 | 16.3531 | .9720 | 1.1571 |
| 2 | 18 | 0 | | 39.5233 | 38.4853 | -38.4704 | -1.0699 | 1.0381 |
| 4 | 18 | 0 | | .0000 | .6159 | .3707 | .4919 | -.6159 |
| 1 | 19 | 0 | | 23.5860 | 23.7456 | -23.7411 | -.4624 | -.1596 |
| -12 | 0 | 1 | | 27.5647 | 28.4264 | 28.4242 | .3596 | -.8618 |
| -10 | 0 | 1 | | 15.2086 | 14.1091 | 14.1058 | -.3069 | 1.0994 |
| 10 | 0 | 1 | | 15.3011 | 16.6596 | -16.6446 | .7075 | -1.3585 |
| -11 | 1 | 1 | | 7.4442 | 7.2533 | 7.1881 | .9706 | .1909 |
| 9 | 1 | 1 | | 9.2699 | 9.9642 | -.9.9422 | -.6611 | -.6943 |
| -10 | 2 | 1 | | 21.7166 | 22.1623 | -22.1542 | -.5971 | -.4457 |
| 10 | 2 | 1 | | 23.0165 | 21.6782 | 21.6402 | 1.1175 | 1.3383 |
| -11 | 3 | 1 | | 16.1391 | 14.3695 | 14.3328 | 1.0260 | 1.7696 |
| 9 | 3 | 1 | | 4.0630 | 3.0849 | -3.0603 | -.3885 | .9781 |
| -10 | 4 | 1 | | 3.9707 | 1.4019 | -1.3545 | -.3612 | 2.5688 |
| 10 | 4 | 1 | | 32.9585 | 32.1504 | 32.1251 | 1.2754 | .8080 |
| -11 | 5 | 1 | | 35.6665 | 34.6048 | 34.5785 | 1.3490 | 1.0617 |
| 9 | 5 | 1 | | .7814 | 1.7826 | -1.7206 | -.4660 | -1.0012 |
| H | K | L | | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
| -10 | 6 | 1 | | 19.5637 | 18.9488 | 18.9480 | -.1745 | .6149 |
| 8 | 6 | 1 | | 34.0755 | 34.0383 | -34.0171 | -1.2004 | .0372 |
| 10 | 6 | 1 | | 7.4043 | 5.9211 | 5.8504 | .9117 | 1.4805 |
| -11 | 7 | 1 | | 10.0221 | 8.4572 | 8.4180 | .8130 | 1.5656 |
| -9 | 7 | 1 | | .3196 | 1.6111 | -1.3537 | -.8737 | -1.2915 |
| 9 | 7 | 1 | | 7.7426 | 7.8097 | -.7.7926 | .5168 | -.0071 |
| -10 | 8 | 1 | | 27.2663 | 27.0124 | -27.0048 | .6404 | .2539 |
| 8 | 8 | 1 | | 28.6811 | 29.3300 | 29.3261 | .4818 | -.6490 |
| -9 | 9 | 1 | | 5.6542 | 3.5488 | -3.4705 | .7413 | 2.1053 |
| 7 | 9 | 1 | | 8.9573 | 8.4708 | 8.4217 | .9108 | .4865 |
| 9 | 9 | 1 | | 4.4182 | 4.1718 | -.4.1477 | -.4479 | .2464 |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|-----|----|---|----------|----------|-----------|---------|---------|----------|
| -10 | 10 | 1 | 3.4664 | 2.0264 | -2.0051 | -2934 | 1.4399 | |
| -8 | 10 | 1 | 23.4292 | 22.3176 | 22.3014 | .8505 | 1.1116 | |
| 8 | 10 | 1 | 15.3863 | 14.7938 | -14.7758 | .7288 | .5925 | |
| -9 | 11 | 1 | 15.8979 | 15.5688 | -15.5507 | .7491 | .5291 | |
| -7 | 11 | 1 | 28.4254 | 27.1780 | 27.1631 | .9009 | 1.2474 | |
| 7 | 11 | 1 | 7.2738 | 7.3009 | 7.2617 | .7556 | .0272 | |
| 9 | 11 | 1 | 7.9486 | 6.1142 | -6.0998 | .4192 | 1.8344 | |
| -8 | 12 | 1 | 17.3045 | 15.8145 | 15.7928 | .8282 | 1.4899 | |
| 6 | 12 | 1 | 37.7681 | 38.4692 | 38.4608 | .8041 | .7011 | |
| 8 | 12 | 1 | 37.1685 | 36.4783 | -36.4633 | -1.0465 | .6902 | |
| -9 | 13 | 1 | 30.4438 | 30.0673 | -30.0481 | -1.0724 | .3766 | |
| -7 | 13 | 1 | 28.3902 | 27.8106 | 27.8000 | .7674 | .5796 | |
| 5 | 13 | 1 | 44.6965 | 44.3653 | -44.3459 | -1.3150 | .3312 | |
| 7 | 13 | 1 | 15.3651 | 14.9141 | 14.8938 | .7776 | .4510 | |
| -8 | 14 | 1 | .0000 | 2.0055 | -1.9496 | .4702 | -2.0055 | |
| -6 | 14 | 1 | 44.6457 | 43.4099 | -43.3916 | -1.2604 | 1.2358 | |
| 4 | 14 | 1 | 6.8263 | 6.6384 | -6.6357 | -.1891 | .1878 | |
| 6 | 14 | 1 | 35.0086 | 34.8222 | 34.8145 | .7327 | .1864 | |
| -7 | 15 | 1 | 7.4513 | 4.9095 | 4.8916 | .4182 | 2.5419 | |
| -5 | 15 | 1 | 2.7490 | 4.6074 | -4.6036 | -.1863 | -1.8585 | |
| -3 | 15 | 1 | 6.2864 | 6.2972 | -6.2918 | -.2614 | -.0108 | |
| 3 | 15 | 1 | 29.7487 | 29.3535 | 29.3346 | 1.0554 | .3952 | |
| 5 | 15 | 1 | 14.3705 | 13.0345 | -13.0077 | -.8363 | 1.3359 | |
| -6 | 16 | 1 | 9.4048 | 8.4758 | 8.4632 | -.4611 | .9290 | |
| -4 | 16 | 1 | 6.7268 | 3.8889 | 3.8128 | .7658 | 2.8378 | |
| -2 | 16 | 1 | 24.6175 | 26.2582 | 26.2533 | -.5086 | -1.6407 | |
| C | 16 | 1 | 5.3559 | 6.3059 | -6.2835 | .5303 | -.9500 | |
| 2 | 16 | 1 | 11.2589 | 10.6590 | -10.6549 | -.2966 | .5999 | |
| 4 | 16 | 1 | 9.2699 | 8.1924 | 8.1923 | .0485 | 1.0774 | |
| 6 | 16 | 1 | 17.4966 | 17.6220 | -17.6217 | .1005 | -.1253 | |
| -5 | 17 | 1 | 6.9897 | 7.8112 | 7.8106 | .0937 | -.8215 | |
| -3 | 17 | 1 | 1.7687 | 2.1244 | 2.1229 | -.0790 | -.3557 | |
| -1 | 17 | 1 | 3.5801 | 6.1545 | -6.1445 | .3495 | -2.5744 | |
| 1 | 17 | 1 | 6.8334 | 7.4025 | 7.3906 | -.4189 | -.5691 | |
| 3 | 17 | 1 | 4.5674 | 7.0615 | -7.0448 | .4866 | -2.4941 | |
| 5 | 17 | 1 | 6.0662 | 3.8183 | -3.7789 | -.5470 | 2.2479 | |
| -4 | 18 | 1 | 15.0383 | 14.2219 | -14.2150 | .4459 | .8163 | |
| -2 | 18 | 1 | 5.3062 | 6.4970 | 6.4791 | -.4820 | -1.1908 | |
| C | 18 | 1 | 4.9723 | 7.0668 | -7.0580 | .3517 | -2.0944 | |
| 2 | 18 | 1 | 12.8359 | 11.3883 | -11.3849 | -.2777 | 1.4477 | |
| -3 | 19 | 1 | 13.5249 | 11.2417 | -11.2388 | -.2552 | 2.2832 | |
| -1 | 19 | 1 | .0000 | 1.4513 | -1.4130 | .3310 | -1.4513 | |
| 1 | 19 | 1 | 5.3630 | 5.0043 | -4.9686 | -.5967 | .3586 | |
| -12 | 0 | 2 | 4.3045 | 1.8003 | 1.6996 | -.5935 | 2.5043 | |
| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| -10 | 0 | 2 | 40.7009 | 40.8368 | -40.8057 | -1.5939 | -.1359 | |
| 0 | 0 | 2 | 200.2844 | 195.2634 | -195.2608 | -1.0112 | 5.0210 | |
| 8 | 0 | 2 | 55.9949 | 55.9138 | -55.8859 | -1.7657 | .0811 | |
| 10 | 0 | 2 | 5.6329 | 4.4924 | -4.4569 | .5634 | 1.1405 | |
| -11 | 1 | 2 | 18.7323 | 17.5731 | 17.5573 | .7447 | 1.1592 | |
| 9 | 1 | 2 | 15.9900 | 14.5541 | 14.5433 | .5588 | 1.4259 | |
| -12 | 2 | 2 | 17.8940 | 17.4901 | 17.4716 | .8052 | .4039 | |
| -10 | 2 | 2 | 14.2923 | 14.6512 | -14.6105 | -1.0913 | -.3590 | |
| 8 | 2 | 2 | 11.8414 | 11.5088 | -11.4560 | -1.1009 | .3326 | |
| 10 | 2 | 2 | 23.7697 | 22.8364 | 22.8149 | .9907 | .9334 | |
| -11 | 3 | 2 | 10.8895 | 11.0541 | 11.0385 | .5889 | -.1647 | |
| 9 | 3 | 2 | 15.4927 | 14.1188 | 14.1091 | .5230 | 1.3739 | |
| -12 | 4 | 2 | 16.9846 | 16.3930 | 16.3789 | .6813 | .5916 | |
| -10 | 4 | 2 | 15.3862 | 14.8428 | -14.8109 | -.9715 | .5435 | |
| 8 | 4 | 2 | 16.0966 | 15.2786 | -15.2410 | -1.0723 | .8180 | |
| 10 | 4 | 2 | 19.4357 | 18.3897 | 18.3598 | .8561 | 1.0460 | |
| -11 | 5 | 2 | 20.4450 | 22.2372 | -22.2366 | .1585 | -1.7922 | |
| 9 | 5 | 2 | 25.3903 | 26.0852 | -26.0851 | -.0793 | -.6949 | |
| -10 | 6 | 2 | 22.6402 | 22.1963 | -22.1657 | -1.1649 | .4439 | |
| 8 | 6 | 2 | 33.2362 | 32.6298 | -32.6017 | -1.3533 | .6064 | |
| -11 | 7 | 2 | 18.3489 | 18.8354 | 18.8228 | .6881 | -.4865 | |
| -9 | 7 | 2 | 12.9638 | 12.3241 | 12.3230 | -.1674 | .6397 | |
| 7 | 7 | 2 | 8.8153 | 9.3316 | 9.3316 | .1103 | -.5164 | |
| 9 | 7 | 2 | 21.3399 | 20.8412 | 20.8333 | .5785 | .4986 | |
| -10 | 8 | 2 | 9.8452 | 9.0125 | -8.9609 | -.9628 | -.5327 | |
| 8 | 8 | 2 | 5.5902 | 5.7837 | 5.7121 | -.9059 | -.1932 | |

| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
|----|-----|----|---|---------|---------|----------|---------|----------|
| 1 | -11 | 9 | 2 | 27.8846 | 27.7336 | 27.7223 | .7931 | .1510 |
| 2 | -9 | 9 | 2 | 3.8855 | 4.3179 | -4.3118 | -.2284 | -.4324 |
| 3 | 7 | 9 | 2 | 5.1427 | 3.1223 | 3.1223 | -.0092 | 2.0204 |
| 4 | 9 | 9 | 2 | 26.7835 | 27.5993 | 27.5892 | .7467 | -.8158 |
| 5 | -10 | 10 | 2 | 29.7679 | 29.0317 | -29.0116 | -1.0817 | .7362 |
| 6 | -8 | 10 | 2 | 11.5643 | 10.4872 | 10.4237 | 1.1524 | 1.0771 |
| 7 | 6 | 10 | 2 | 15.3225 | 14.9207 | 14.8782 | 1.1246 | .4018 |
| 8 | 8 | 10 | 2 | 34.8720 | 34.7992 | -34.7796 | -1.1676 | .0728 |
| 9 | -9 | 11 | 2 | 19.7275 | 20.3027 | -20.3001 | -.3251 | -.5752 |
| 10 | 5 | 11 | 2 | 33.3175 | 34.3254 | -34.3148 | -.8531 | -1.0079 |
| 11 | 7 | 11 | 2 | 17.5960 | 18.3958 | -18.3944 | -.2267 | -.7997 |
| 12 | -8 | 12 | 2 | 6.9116 | 8.8435 | -8.8179 | -.6721 | -1.9320 |
| 13 | 6 | 12 | 2 | 16.8642 | 16.9487 | -16.9375 | .6165 | -.0845 |
| 14 | -9 | 13 | 2 | 24.2751 | 24.3235 | 24.3225 | .2181 | -.0483 |
| 15 | -7 | 13 | 2 | 13.9159 | 14.3592 | 14.3591 | -.0615 | -.4433 |
| 16 | 5 | 13 | 2 | 3.4237 | .6897 | .6289 | -.2832 | .7340 |
| 17 | 7 | 13 | 2 | 29.3920 | 29.0095 | 29.0060 | -.4460 | .3825 |
| 18 | -8 | 14 | 2 | 18.1854 | 16.2777 | 16.2550 | -.8594 | 1.9077 |
| 19 | -6 | 14 | 2 | 20.1898 | 20.7775 | 20.7729 | -.4373 | -.5877 |
| 20 | 4 | 14 | 2 | 34.7125 | 36.9808 | 36.9799 | -.2499 | -2.2683 |
| 21 | 6 | 14 | 2 | 19.9761 | 19.1889 | 19.1660 | .9383 | .7872 |
| 22 | -7 | 15 | 2 | 5.4269 | 6.0432 | -6.0388 | -.2308 | -.6163 |
| 23 | -5 | 15 | 2 | 14.0083 | 13.8796 | 13.8659 | .6173 | .1287 |
| 24 | -3 | 15 | 2 | 9.8098 | 8.8240 | -8.7754 | -.9247 | .9858 |
| 25 | 1 | 15 | 2 | 4.0559 | 3.9628 | -3.8416 | -.9728 | .0931 |
| 26 | 3 | 15 | 2 | 14.2001 | 14.1088 | 14.0889 | .7482 | .0913 |
| 27 | 5 | 15 | 2 | 5.4411 | 4.8530 | -4.8411 | -.3405 | .5880 |
| 28 | -6 | 16 | 2 | 48.0813 | 46.2384 | -46.2223 | -1.2214 | 1.8429 |
| 29 | -4 | 16 | 2 | 7.3377 | 7.3164 | 7.2971 | .5306 | .0213 |
| 30 | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC |
| 31 | -2 | 16 | 2 | 49.0531 | 49.1984 | -49.1937 | -.6788 | -.1453 |
| 32 | 0 | 16 | 2 | 42.6269 | 42.4582 | -42.4546 | -.5521 | .1687 |
| 33 | 2 | 16 | 2 | 4.0559 | .9838 | -.9042 | .3878 | 3.0721 |
| 34 | 4 | 16 | 2 | 52.3969 | 52.8313 | -52.8170 | -1.2268 | -.4344 |
| 35 | -5 | 17 | 2 | 8.5594 | 6.0879 | 6.0693 | .4759 | 2.4715 |
| 36 | -3 | 17 | 2 | 57.5310 | 58.0594 | -58.0442 | -1.3255 | -.5284 |
| 37 | -1 | 17 | 2 | 25.4408 | 24.8561 | 24.8351 | 1.0216 | .5247 |
| 38 | 1 | 17 | 2 | 46.2254 | 46.0188 | -45.9905 | -1.3333 | .2066 |
| 39 | 3 | 17 | 2 | 7.8634 | 9.6984 | -9.6887 | .4332 | -1.8349 |
| 40 | -4 | 18 | 2 | 26.7411 | 26.0538 | 26.0432 | .7416 | .6873 |
| 41 | -2 | 18 | 2 | .0000 | .8823 | -.8623 | -.1868 | -.8823 |
| 42 | 0 | 18 | 2 | .3623 | .2179 | -.1914 | -.1041 | .1444 |
| 43 | 2 | 18 | 2 | 26.3290 | 25.8445 | 25.8357 | .6736 | .4815 |
| 44 | -3 | 19 | 2 | 1.1365 | .6127 | -.4702 | -.3929 | .5238 |
| 45 | -1 | 19 | 2 | 33.8345 | 32.8608 | 32.8451 | 1.0180 | .9736 |
| 46 | -12 | 0 | 3 | 14.4415 | 16.0910 | -16.0828 | .5116 | -1.6494 |
| 47 | 8 | 0 | 3 | 13.5251 | 14.9641 | -14.9451 | -.7535 | -1.4390 |
| 48 | -11 | 1 | 3 | 12.5944 | 12.6299 | -12.6214 | -.4630 | -.0356 |
| 49 | 7 | 1 | 3 | 10.2501 | 8.7601 | -.87260 | -.7729 | 1.4899 |
| 50 | 9 | 1 | 3 | 7.8207 | 6.5771 | 6.5238 | -.8355 | .2436 |
| 51 | -12 | 2 | 3 | 27.3650 | 25.6430 | 25.6179 | 1.1331 | 1.7220 |
| 52 | -10 | 2 | 3 | 3.3172 | 2.2368 | 2.0449 | -.9064 | 1.0804 |
| 53 | 8 | 2 | 3 | 13.3473 | 12.5486 | -12.5339 | -.6081 | .7987 |
| 54 | -11 | 3 | 3 | 14.6758 | 14.5277 | 14.5277 | -.0262 | .1481 |
| 55 | 7 | 3 | 3 | 13.8234 | 14.3843 | -14.3430 | -1.0890 | -.5609 |
| 56 | 9 | 3 | 3 | 18.1355 | 17.1239 | 17.0910 | 1.0598 | 1.0117 |
| 57 | -12 | 4 | 3 | 25.5036 | 24.9063 | 24.8771 | 1.2044 | .5973 |
| 58 | -10 | 4 | 3 | 37.8851 | 37.3652 | -37.3397 | -1.3808 | .5200 |
| 59 | 8 | 4 | 3 | 3.6653 | 4.7070 | 4.6880 | -.4221 | -1.0417 |
| 60 | -11 | 5 | 3 | 8.6803 | 9.7476 | -9.7378 | -.4387 | -1.0674 |
| 61 | 7 | 5 | 3 | 41.7675 | 41.1114 | -41.0926 | -1.2418 | .6561 |
| 62 | 9 | 5 | 3 | 14.2212 | 14.0740 | 14.0355 | 1.0398 | .1472 |
| 63 | -12 | 6 | 3 | 4.7521 | 3.4239 | 3.3378 | .7629 | 1.3282 |
| 64 | -10 | 6 | 3 | 50.8223 | 50.8508 | -50.8322 | -1.3751 | -.0285 |
| 65 | 8 | 6 | 3 | 1.5911 | 1.2657 | 1.1728 | -.4760 | .3254 |
| 66 | -11 | 7 | 3 | 3.7363 | 4.2250 | -4.2167 | -.2649 | -.4887 |
| 67 | -9 | 7 | 3 | 2.2769 | 8.8194 | 8.7859 | .7686 | .4575 |
| 68 | 7 | 7 | 3 | 5.7892 | 5.6586 | -5.6168 | -.6859 | .1306 |
| 69 | -10 | 8 | 3 | 24.1821 | 23.3807 | 23.3775 | -.3855 | .8015 |
| 70 | 6 | 8 | 3 | 5.2848 | 5.1237 | 5.0316 | -.9675 | -.1611 |
| 71 | 8 | 8 | 3 | 30.7218 | 20.0326 | -20.0228 | -.6269 | .6892 |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|----|-----|----|---|---------|---------|-----------|---------|----------|
| | -11 | 9 | 3 | 3.5516 | 4.5649 | 4.5626 | -1424 | -1.0132 |
| 2 | -9 | 9 | 3 | 10.7688 | 10.9305 | 10.9048 | .7492 | -.1617 |
| | 7 | 9 | 3 | 6.0165 | 5.7668 | 5.7476 | -.4707 | .2496 |
| 4 | -10 | 10 | 3 | 16.3880 | 15.5394 | -15.5179 | -.8176 | .8465 |
| | -8 | 10 | 3 | 21.2054 | 21.0437 | -21.0393 | .4282 | -.1618 |
| 6 | 6 | 10 | 3 | 15.3791 | 13.6206 | 13.5956 | .8259 | 1.7585 |
| | -9 | 11 | 3 | .5825 | .7458 | .6150 | .4219 | -.1634 |
| 8 | 5 | 11 | 3 | .0000 | 1.3969 | -1.3265 | .4380 | -1.3969 |
| | 7 | 11 | 3 | 17.2973 | 16.0642 | -16.0456 | -.7718 | 1.2232 |
| 10 | -10 | 12 | 3 | 30.0032 | 30.2373 | -30.2188 | -1.0559 | -.2341 |
| | -8 | 12 | 3 | 20.9070 | 20.8676 | 20.8536 | .7657 | .0394 |
| 12 | 4 | 12 | 3 | 48.6308 | 48.3910 | -48.3728 | -1.3267 | .2399 |
| | 6 | 12 | 3 | 13.8021 | 12.8158 | 12.7918 | .7841 | .9862 |
| 14 | -9 | 13 | 3 | 25.2346 | 25.5607 | 25.5479 | .8088 | -.3261 |
| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 16 | -7 | 13 | 3 | 32.6481 | 31.7118 | -31.6949 | -1.0361 | .9363 |
| 18 | 3 | 13 | 3 | 3.6724 | .6425 | -.6325 | -.1126 | 3.0299 |
| | 5 | 13 | 3 | 40.9745 | 40.9078 | 40.9000 | .7990 | .0668 |
| 20 | -8 | 14 | 3 | 46.6286 | 45.0183 | 45.0082 | .9526 | 1.6103 |
| | -6 | 14 | 3 | 17.7453 | 17.5019 | 17.5018 | -.0668 | .2434 |
| 22 | -4 | 14 | 3 | 10.3213 | 10.2493 | 10.2493 | .0062 | .0720 |
| | 2 | 14 | 3 | 46.5405 | 46.2344 | 46.2140 | 1.3757 | .3061 |
| 24 | 4 | 14 | 3 | 17.8728 | 15.7257 | -15.6962 | -.9637 | 2.1471 |
| | -7 | 15 | 3 | .0000 | 1.1854 | -.9731 | -.6770 | -1.1854 |
| 26 | -5 | 15 | 3 | 15.4007 | 14.5989 | 14.5691 | .9324 | .8018 |
| | -3 | 15 | 3 | 1.9960 | 5.2939 | -.5.2190 | -.8876 | -3.2979 |
| 28 | -1 | 15 | 3 | 24.6663 | 23.3404 | 23.3278 | .7674 | 1.3260 |
| | 1 | 15 | 3 | 20.4667 | 19.7753 | -19.7705 | -.4371 | .6913 |
| 30 | 3 | 15 | 3 | 4.7805 | .6447 | -.6447 | -.0094 | 4.1357 |
| | 5 | 15 | 3 | 7.7852 | 6.4678 | 6.4615 | .2871 | 1.3174 |
| 32 | -6 | 16 | 3 | 8.6946 | 9.9535 | -9.9485 | -.3170 | -1.2590 |
| | -4 | 16 | 3 | 24.7164 | 25.2046 | -25.2026 | -.3098 | -.4881 |
| 34 | -2 | 16 | 3 | 21.3340 | 22.5538 | --22.5535 | .1086 | -1.2198 |
| | 0 | 16 | 3 | .0000 | 1.1533 | .9726 | -.6197 | -1.1533 |
| 36 | 2 | 16 | 3 | 9.6394 | 12.1272 | -12.1176 | .4820 | -2.4877 |
| | 4 | 16 | 3 | 1.3212 | 1.4439 | -1.2813 | -.6657 | -.1227 |
| 38 | -5 | 17 | 3 | 21.0355 | 22.8405 | -22.8392 | .2479 | -1.8050 |
| | -3 | 17 | 3 | 5.2422 | 3.2842 | -.3.2260 | -.6157 | 1.9580 |
| 40 | -1 | 17 | 3 | 10.6694 | 11.9788 | -11.9750 | .3006 | -1.3094 |
| | 1 | 17 | 3 | 21.1128 | 19.3222 | -19.3169 | -.4560 | 1.7906 |
| 42 | 3 | 17 | 3 | 5.4695 | 4.6375 | 4.6359 | .1211 | .8320 |
| | -4 | 18 | 3 | 7.2524 | 6.3349 | 6.3349 | .0051 | .9175 |
| 44 | -2 | 18 | 3 | 9.4476 | 11.2075 | -11.2053 | .2231 | -1.7599 |
| | 0 | 18 | 3 | 10.0158 | 11.2213 | 11.2173 | -.2980 | -1.2054 |
| 46 | -12 | 0 | 4 | 31.2315 | 31.2933 | 31.2793 | .9367 | -.0618 |
| | 6 | 0 | 4 | 17.5249 | 18.2843 | 18.2831 | .2082 | -.7594 |
| 48 | 8 | 0 | 4 | 48.7137 | 46.9951 | 46.9863 | .9100 | 1.7186 |
| | -11 | 1 | 4 | 25.1911 | 25.2657 | -25.2393 | -1.1546 | -.0746 |
| 50 | 7 | 1 | 4 | 15.3863 | 15.1738 | -15.1310 | -1.1383 | .2125 |
| | -12 | 2 | 4 | 7.8846 | 6.2613 | 6.2357 | .5660 | 1.6233 |
| 52 | 6 | 2 | 4 | 17.3258 | 17.1128 | -17.1125 | -.1106 | .2130 |
| | 8 | 2 | 4 | 2.5287 | 3.1792 | -3.1746 | .1701 | -.6504 |
| 54 | -11 | 3 | 4 | 17.8727 | 17.2014 | -17.1741 | -.9683 | .6713 |
| | 7 | 3 | 4 | 42.8333 | 41.8948 | -41.8721 | -1.3808 | .9385 |
| 56 | -12 | 4 | 4 | 11.0813 | 12.1638 | -12.1599 | .3102 | -1.0825 |
| | -10 | 4 | 4 | 9.9944 | 10.2939 | 10.2932 | -.1150 | -.2994 |
| 58 | 6 | 4 | 4 | 17.7308 | 18.1582 | 18.1547 | .3554 | -.4274 |
| | 8 | 4 | 4 | 17.7379 | 18.4221 | -18.4221 | -.0283 | -.6842 |
| 60 | -11 | 5 | 4 | 7.8065 | 8.9399 | 8.9156 | -.6585 | -1.1333 |
| | 7 | 5 | 4 | .0994 | .8843 | .4560 | .7577 | -.7549 |
| 62 | -12 | 6 | 4 | 8.2043 | 8.0362 | 8.0192 | .5216 | .1681 |
| | -10 | 6 | 4 | 6.4072 | 6.6182 | 6.6169 | -.1345 | -.2111 |
| 64 | 6 | 6 | 4 | 36.5350 | 36.1496 | 36.1465 | .4784 | .3854 |
| | 8 | 6 | 4 | 13.7878 | 13.1390 | 13.1324 | .4191 | .6488 |
| 66 | -11 | 7 | 4 | 22.2494 | 21.6148 | -21.5914 | -1.0049 | .6346 |
| | -9 | 7 | 4 | 26.5135 | 26.7939 | 26.7618 | 1.3121 | -.2904 |
| 68 | 5 | 7 | 4 | 29.3000 | 30.6007 | 30.5740 | 1.2785 | -1.3107 |
| | 7 | 7 | 4 | 22.2493 | 20.8787 | -20.8496 | -1.1024 | 1.3700 |
| 70 | -10 | 8 | 4 | 20.3099 | 20.3032 | -20.2970 | -.5025 | .0066 |
| | 6 | 8 | 4 | 32.3345 | 32.8137 | -32.8111 | -.4168 | -.4793 |
| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|----|-----|----|---|---------|---------|----------|---------|----------|
| 2 | -11 | 9 | 4 | 31.6156 | 30.6026 | -30.5851 | -1.0348 | 1.0129 |
| | -9 | 9 | 4 | 38.6198 | 39.3156 | 39.2924 | 1.3513 | -0.6950 |
| | 5 | 9 | 4 | 17.5745 | 16.7148 | 16.6764 | 1.1312 | .8597 |
| | 7 | 9 | 4 | 30.6352 | 30.1410 | -30.1181 | -1.1751 | -0.4942 |
| | -10 | 10 | 4 | 0.0000 | 1.9565 | -1.9452 | -.2100 | -1.9565 |
| | -8 | 10 | 4 | 5.3061 | 5.6570 | 5.6561 | -.1023 | -0.3509 |
| | 4 | 10 | 4 | 2486 | 3.3618 | 3.3416 | -.3682 | -3.1132 |
| | 6 | 10 | 4 | 0426 | 1.2215 | 1.2169 | -.1055 | -1.1789 |
| 10 | -9 | 11 | 4 | 15.0595 | 13.9712 | 13.9365 | .9841 | 1.0883 |
| | -7 | 11 | 4 | 4.8373 | 4.6538 | -4.5843 | -.8012 | .1835 |
| 12 | 3 | 11 | 4 | 15.8484 | 15.9454 | 15.9388 | -.4607 | -.0971 |
| | 5 | 11 | 4 | 25.2417 | 25.5051 | 25.4794 | 1.1430 | -.2634 |
| 14 | -10 | 12 | 4 | 6.7552 | 7.8069 | 7.8068 | -.0466 | -1.0517 |
| | -8 | 12 | 4 | 0.0000 | 1.7955 | -1.7908 | -.1303 | -1.7955 |
| 16 | -6 | 12 | 4 | 3.4806 | 1.4068 | 1.3227 | -.4791 | 2.0737 |
| | 2 | 12 | 4 | 5.5619 | 5.1286 | 5.0501 | .8938 | .4333 |
| 18 | 4 | 12 | 4 | 5.1499 | 5.5224 | -5.5022 | -.4723 | -.3725 |
| | 6 | 12 | 4 | 23.0172 | 22.4639 | 22.4605 | .3918 | .5532 |
| 20 | -9 | 13 | 4 | 20.4453 | 21.2021 | -21.1986 | .3839 | -.7568 |
| | -7 | 13 | 4 | 8.6306 | 8.1923 | 8.1646 | -.6736 | .4382 |
| 22 | -5 | 13 | 4 | 1.2857 | 3.1363 | -3.1096 | .4082 | -1.8506 |
| | 1 | 13 | 4 | 26.2732 | 26.7723 | -26.7722 | -.0536 | -.4991 |
| 24 | 3 | 13 | 4 | 5.2848 | 4.5798 | 4.5436 | -.5746 | .7050 |
| | 5 | 13 | 4 | 7.6077 | 8.3205 | -8.3116 | .3837 | -.7128 |
| 26 | -8 | 14 | 4 | 7.1743 | 6.7859 | -6.7818 | -.2362 | .3884 |
| | -6 | 14 | 4 | 7.6717 | 10.0682 | -10.0656 | .2278 | -2.3565 |
| 28 | -4 | 14 | 4 | 22.8968 | 21.3338 | -21.3101 | -.8689 | 1.5631 |
| | -2 | 14 | 4 | 17.2767 | 18.0260 | -18.0171 | .5651 | -.7493 |
| 30 | 0 | 14 | 4 | 19.5001 | 17.5254 | -17.4923 | -.10768 | 1.9747 |
| | 2 | 14 | 4 | 18.3352 | 19.2413 | -19.2369 | .4121 | .9061 |
| 32 | 4 | 14 | 4 | 29.1011 | 29.2205 | -29.2110 | -.7429 | -.1194 |
| | -7 | 15 | 4 | 12.0190 | 10.6782 | -10.6516 | -.7540 | 1.3408 |
| 34 | -5 | 15 | 4 | 15.1165 | 14.3030 | 14.2872 | .6724 | .8135 |
| | -3 | 15 | 4 | 8.5737 | 6.7492 | -6.7397 | -.3582 | 1.8245 |
| 36 | -1 | 15 | 4 | 12.0190 | 10.6464 | -10.6461 | -.0829 | 1.3726 |
| | 1 | 15 | 4 | 6.1373 | 7.7433 | 7.7327 | .4053 | -1.6061 |
| 38 | 3 | 15 | 4 | 10.9676 | 9.6215 | -9.5991 | -.6563 | 1.3461 |
| | -6 | 16 | 4 | 21.9302 | 20.8979 | 20.8857 | .7124 | 1.0323 |
| 40 | -4 | 16 | 4 | 8.8933 | 7.0243 | -6.9861 | -.7310 | 1.8690 |
| | -2 | 16 | 4 | 58.7265 | 57.7971 | 57.7806 | 1.3800 | -.9794 |
| 42 | 0 | 16 | 4 | 7.5011 | 7.1963 | -7.1543 | -.7759 | .3048 |
| | 2 | 16 | 4 | 37.3197 | 37.4188 | 37.4066 | .9544 | -.0990 |
| 44 | -5 | 17 | 4 | 29.1859 | 27.8233 | 27.8102 | .8512 | 1.3626 |
| | -3 | 17 | 4 | 3.8145 | 7.8045 | 7.8032 | -.1391 | -3.9500 |
| 46 | -1 | 17 | 4 | 12.2677 | 12.4980 | -12.4979 | -.0537 | -.2303 |
| | 1 | 17 | 4 | 35.1866 | 35.3997 | 35.3903 | .8136 | -.2131 |
| 48 | -2 | 18 | 4 | 18.6900 | 17.5941 | 17.5730 | .8616 | 1.0959 |
| | -12 | 0 | 5 | 24.0687 | 25.6099 | 25.6097 | .1025 | -1.5412 |
| | -10 | 0 | 5 | 49.8689 | 50.1057 | 50.0967 | .9512 | -.2368 |
| | 6 | 0 | 5 | 27.3804 | 28.7403 | 28.7389 | -.2864 | -1.3599 |
| | -11 | 1 | 5 | 15.1519 | 15.8934 | 15.8810 | .6276 | -.7415 |
| | 5 | 1 | 5 | 33.4421 | 32.6731 | 32.0509 | 1.1930 | 1.3690 |
| | 7 | 1 | 5 | 9.6250 | 9.1213 | -9.0977 | .6554 | .5037 |
| | -12 | 2 | 5 | 18.5334 | 18.0651 | -18.0609 | .3872 | .4684 |
| | -10 | 2 | 5 | 14.5266 | 13.9474 | -13.9407 | .4336 | .5792 |
| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| | 6 | 2 | 5 | 14.2993 | 13.6601 | -13.6347 | -.8313 | .6292 |
| | -11 | 3 | 5 | 60.4427 | 60.9476 | -60.9290 | -.15034 | -.5048 |
| | 5 | 3 | 5 | 15.0311 | 14.4674 | -14.4433 | .8342 | .5636 |
| | 7 | 3 | 5 | 17.8940 | 16.4384 | -16.4270 | -.6119 | 1.4555 |
| | -12 | 4 | 5 | 5.7181 | 5.7828 | -5.7796 | -.1929 | -.0647 |
| | -10 | 4 | 5 | 11.3867 | 11.1122 | 11.0867 | .7529 | .2745 |
| | 6 | 4 | 5 | 45.2588 | 44.4752 | -44.4617 | -.0955 | .7836 |
| | -11 | 5 | 5 | 29.7459 | 28.1903 | -28.1730 | -.9870 | 1.5556 |
| | 5 | 5 | 5 | 24.4243 | 25.7274 | 25.7016 | 1.1518 | -.13031 |
| | 7 | 5 | 5 | 14.1289 | 13.9699 | 13.9672 | -.2758 | .1589 |
| | -12 | 6 | 5 | 17.2406 | 17.9137 | 17.9135 | .6784 | -.6731 |
| | -10 | 6 | 5 | 46.0419 | 45.6037 | 45.5933 | .9718 | .4383 |
| | 4 | 6 | 5 | 26.5704 | 26.8083 | 26.8001 | .6661 | -.2379 |
| | 6 | 6 | 5 | 8.7442 | 8.1351 | -.1074 | -.6707 | .6091 |

| 2 | -11 | 7 | 5 | 2.5785 | 3.5062 | 3.4260 | -7454 | -9277 |
|----|-----|----|---|---------|---------|----------|---------|----------|
| | -9 | 7 | 5 | .0000 | 1.7636 | 1.6507 | .6208 | -1.7636 |
| | 5 | 7 | 5 | 14.8108 | 13.2153 | 13.1850 | .8944 | 1.5955 |
| 4 | -10 | 8 | 5 | 20.6864 | 20.5575 | -20.5570 | -1378 | .1290 |
| | 4 | 8 | 5 | 23.2805 | 24.4021 | -24.4018 | -1171 | -1.1216 |
| 6 | 6 | 8 | 5 | 13.0065 | 13.0422 | 13.0346 | -4453 | -.0357 |
| | -11 | 9 | 5 | 4.5461 | 4.4417 | -4.3905 | -6725 | .1044 |
| 8 | -9 | 9 | 5 | 21.6105 | 22.2307 | -22.2290 | -2757 | -.6202 |
| | 3 | 9 | 5 | 23.9554 | 23.3504 | -23.3237 | -1.1151 | .6050 |
| 10 | 5 | 9 | 5 | 9.1277 | 7.4962 | 7.4568 | .7678 | 1.6315 |
| | -10 | 10 | 5 | 13.7523 | 12.4806 | 12.4672 | .5780 | 1.2717 |
| 12 | -8 | 10 | 5 | 13.7241 | 14.1255 | 14.1134 | -5852 | -.4014 |
| | 2 | 10 | 5 | 11.3868 | 11.0623 | 11.0581 | .3040 | .3245 |
| 14 | 4 | 10 | 5 | .0000 | 1.6243 | 1.5991 | .2846 | -1.6243 |
| | -9 | 11 | 5 | 33.0814 | 33.2891 | 33.2743 | .9930 | -.2077 |
| 16 | -7 | 11 | 5 | 15.4151 | 16.1821 | 16.1820 | -.0661 | -.7670 |
| | 1 | 11 | 5 | 43.2683 | 43.6393 | 43.6155 | 1.4424 | -.3710 |
| 18 | 3 | 11 | 5 | 4.2335 | 3.1786 | 3.0672 | -.8341 | 1.0549 |
| | 5 | 11 | 5 | 16.9494 | 16.5631 | 16.5401 | .8738 | .3862 |
| 20 | -10 | 12 | 5 | 18.0292 | 17.3316 | 17.3198 | .6388 | .6976 |
| | -8 | 12 | 5 | 20.1609 | 19.4199 | -19.3982 | -.9170 | .7410 |
| 22 | -6 | 12 | 5 | 40.0305 | 39.3052 | 39.2791 | 1.4326 | .7252 |
| | 0 | 12 | 5 | 12.8645 | 12.7010 | -12.6940 | -.4241 | .1635 |
| 24 | 2 | 12 | 5 | 4.3259 | 5.1772 | -5.1768 | -.0621 | -.8513 |
| | 4 | 12 | 5 | 28.9658 | 28.8523 | 28.8457 | .6128 | .1135 |
| 26 | -9 | 13 | 5 | 19.0026 | 18.0181 | 18.0083 | .5931 | .9846 |
| | -7 | 13 | 5 | 18.1361 | 17.9441 | -17.9344 | -.5894 | .1919 |
| 28 | -5 | 13 | 5 | 21.5684 | 21.6672 | -21.6636 | -.3907 | -.0988 |
| | -3 | 13 | 5 | 18.2683 | 18.9672 | 18.9586 | .5720 | -.0989 |
| 30 | -1 | 13 | 5 | 60.8791 | 60.6123 | -60.5960 | -1.4038 | .2668 |
| | 1 | 13 | 5 | 31.0345 | 30.1683 | 30.1480 | 1.1051 | .8662 |
| 32 | 3 | 13 | 5 | 37.6745 | 37.1542 | -37.1347 | -1.2035 | .5203 |
| | -8 | 14 | 5 | 46.2319 | 46.1039 | -46.0900 | -1.1316 | .1280 |
| 34 | -6 | 14 | 5 | 11.6496 | 10.1838 | 10.1512 | .8131 | 1.4658 |
| | -4 | 14 | 5 | 43.3958 | 42.6977 | -42.6760 | -1.3632 | .6981 |
| 36 | -2 | 14 | 5 | .0000 | 1.9685 | -1.8824 | .5757 | -.19685 |
| | 0 | 14 | 5 | 18.3207 | 17.0311 | -17.0201 | -.6103 | 1.2896 |
| 38 | 2 | 14 | 5 | 17.7098 | 17.9565 | -17.9547 | -.2576 | -.2468 |
| | -7 | 15 | 5 | 4.6313 | 4.3779 | -4.3700 | -.2623 | .2534 |
| 40 | -5 | 15 | 5 | 2.8626 | 3.9629 | 3.9627 | -.0414 | -.1103 |
| | -3 | 15 | 5 | 6.0591 | 5.3535 | -5.3428 | .3384 | .7056 |
| 42 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |

| | | | | | | | | |
|----|-----|----|---|---------|---------|----------|---------|---------|
| 44 | -1 | 15 | 5 | 5.3487 | 3.0029 | -2.9375 | -.6234 | 2.3458 |
| | 1 | 15 | 5 | 23.0456 | 21.4337 | 21.4185 | .8060 | 1.6119 |
| 46 | -6 | 16 | 5 | 18.3138 | 18.6029 | 18.5877 | .7507 | -.2891 |
| | -4 | 16 | 5 | 21.2275 | 23.2766 | 23.2750 | -.2728 | -2.0491 |
| 48 | -2 | 16 | 5 | 19.0525 | 18.1042 | 18.0885 | .7523 | .9483 |
| | 0 | 16 | 5 | 5.9455 | 7.0650 | 7.0627 | -.1803 | -1.1196 |
| 50 | -3 | 17 | 5 | 4.6385 | 7.0849 | -7.0813 | .2265 | -2.4465 |
| | -1 | 17 | 5 | 21.8818 | 26.0685 | 26.0685 | -.0222 | -4.1867 |
| 52 | -12 | 0 | 6 | 26.0933 | 25.4053 | -25.3854 | -1.0074 | .6880 |
| | -10 | 0 | 6 | 48.4742 | 48.4950 | 48.4721 | 1.4904 | -.0208 |
| 54 | 4 | 0 | 6 | 21.1096 | 21.3004 | 21.2698 | 1.1406 | -.1308 |
| | 6 | 0 | 6 | 46.4108 | 45.5533 | -45.5337 | -1.3375 | .8575 |
| | -11 | 1 | 6 | 13.3119 | 13.6136 | -13.6069 | -.4280 | -.3017 |
| | 5 | 1 | 6 | 20.5372 | 20.6576 | -20.6573 | -.1188 | -.1204 |
| | -12 | 2 | 6 | 13.8944 | 14.4497 | -14.4263 | -.8217 | -.5552 |
| | -10 | 2 | 6 | 18.6755 | 17.4538 | 17.4151 | 1.1626 | 1.2217 |
| | 4 | 2 | 6 | 37.1605 | 36.8729 | 36.8498 | 1.3063 | .2876 |
| | 6 | 2 | 6 | 8.9856 | 7.1307 | -7.0823 | -.8293 | 1.8550 |
| | -11 | 3 | 6 | 3.4948 | 4.2592 | 4.2528 | -.2330 | -.7644 |
| | 5 | 3 | 6 | 36.1085 | 36.4263 | 36.4211 | .6161 | -.3178 |
| | -12 | 4 | 6 | 4.4466 | 4.7677 | 4.7367 | -.5427 | -.3211 |
| | -10 | 4 | 6 | 12.7081 | 13.8921 | -13.8732 | -.7246 | -1.1840 |
| | 4 | 4 | 6 | 5.6084 | 3.8280 | -3.7400 | .8159 | -.2195 |
| | 6 | 4 | 6 | 4.3756 | 3.2290 | -3.1278 | -.8019 | 1.1466 |
| | -11 | 5 | 6 | 3.9849 | 3.4780 | 3.4724 | -.1974 | -.5669 |
| | -9 | 5 | 6 | .0000 | .6086 | -.6022 | -.0881 | -.6086 |
| | 3 | 5 | 6 | 46.0442 | 46.0439 | -46.0320 | -1.0463 | .0003 |
| | 5 | 5 | 6 | 12.2108 | 11.5399 | 11.5374 | .4419 | .6709 |
| | 4 | 4 | 6 | 3.1040 | 3.9793 | -4.1940 | -.4254 | 1.0863 |

| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC | |
|-----|-----|----|---------|---------|----------|----------|---------|----------|--|
| -10 | 6 | 6 | 13.3332 | 12.6264 | 12.5919 | .9329 | .7067 | | |
| 4 | 6 | 6 | 7.3022 | 6.2402 | -6.1998 | .7091 | 1.0620 | | |
| -11 | 7 | 6 | 4.6384 | 6.3273 | -6.3192 | -.3205 | -1.6889 | | |
| -9 | 7 | 6 | 12.5731 | 12.5076 | 12.5075 | -.0484 | .0655 | | |
| 3 | 7 | 6 | 3.5587 | 5.1604 | 5.1362 | -.4987 | -1.6016 | | |
| 5 | 7 | 6 | 3.9565 | 6.0614 | 6.0609 | .0757 | -2.1048 | | |
| -10 | 8 | 6 | 36.3142 | 34.7118 | 34.6894 | 1.2450 | 1.6024 | | |
| -8 | 8 | 6 | 27.1964 | 27.7198 | -27.6900 | -1.2854 | -.5234 | | |
| 2 | 8 | 6 | 4.0559 | 2.6255 | -2.4819 | -.8566 | 1.4304 | | |
| 10 | 4 | 8 | 53.8146 | 53.6879 | 53.6697 | 1.3984 | .1267 | | |
| -11 | 9 | 6 | 12.9141 | 13.0092 | -13.0034 | -.3872 | -.0951 | | |
| 12 | -9 | 9 | 5.5760 | 4.1839 | -4.1820 | -.190 | 1.3921 | | |
| -7 | 9 | 6 | 31.7178 | 31.9970 | 31.9867 | .8105 | -.2792 | | |
| 1 | 1 | 9 | 21.0565 | 21.0495 | 21.0193 | 1.1279 | .0070 | | |
| 3 | 9 | 6 | 9.4405 | 11.4220 | 11.4187 | -.2759 | -1.9816 | | |
| 18 | -10 | 10 | 6 | 12.3032 | 12.8902 | 12.8574 | .9190 | -.5870 | |
| -8 | 10 | 6 | 35.8474 | 35.4656 | -35.4469 | -1.1517 | .3818 | | |
| 18 | -6 | 10 | 6 | 18.3567 | 18.9112 | 18.8906 | .8816 | -.5545 | |
| 0 | 10 | 6 | 2.6495 | 5.0404 | 5.0206 | .4459 | -2.3909 | | |
| 20 | 2 | 10 | 6 | 38.3234 | 39.7246 | -39.7120 | -1.0016 | -1.4012 | |
| 4 | 10 | 6 | 12.0261 | 11.1455 | 11.1156 | .8156 | .8306 | | |
| 22 | -9 | 11 | 6 | 6.8902 | 7.3375 | -7.3367 | -.1121 | -.4473 | |
| -7 | 11 | 6 | .3552 | 1.9253 | -1.8957 | .3363 | -1.5701 | | |
| 24 | -5 | 11 | 6 | 13.9799 | 13.4142 | -13.3870 | -.8540 | .5657 | |
| -1 | 11 | 6 | 15.3511 | 15.4411 | -15.3978 | -1.1546 | -.0900 | | |
| 25 | 1 | 11 | 6 | 4.2761 | 1.0322 | -.8223 | .6255 | 3.2430 | |
| | H | K | L | Y(OBS) | Y(CALC) | A | E | OBS-CALC | |
| 30 | 3 | 11 | 6 | 33.8775 | 33.2776 | -33.2684 | -.7825 | .5999 | |
| -8 | 12 | 6 | 3.1112 | 1.1537 | -.9995 | -.5762 | 1.9576 | | |
| -6 | 12 | 6 | 5.9312 | 5.6507 | 5.6221 | -.5677 | .2805 | | |
| 32 | -4 | 12 | 6 | 10.1436 | 8.3446 | -8.3306 | -.4831 | 1.7990 | |
| -2 | 12 | 6 | 4.3330 | 1.1781 | -1.1707 | .1323 | 3.1548 | | |
| 34 | 0 | 12 | 6 | 13.2837 | 13.4712 | -13.4712 | -.0048 | -.1876 | |
| 2 | 12 | 6 | .0000 | 4.1861 | 4.1661 | -.4085 | -4.1861 | | |
| 36 | -7 | 13 | 5 | 11.9765 | 11.7570 | -11.7551 | .2113 | .2195 | |
| -5 | 13 | 6 | 17.0352 | 18.6215 | 18.6193 | -.2870 | -1.5863 | | |
| 38 | -3 | 13 | 6 | 2.3086 | 6.1407 | -.6.1054 | .6576 | -3.8322 | |
| -1 | 13 | 6 | 4.1270 | 6.6923 | 6.6683 | -.5660 | -2.5653 | | |
| 40 | 1 | 13 | 6 | 17.0347 | 16.7761 | 16.7563 | .8137 | .2586 | |
| -8 | 14 | 6 | 2.1239 | 6.0987 | 6.0806 | -.4698 | -3.9748 | | |
| 42 | -6 | 14 | 6 | 12.8075 | 11.1289 | 11.1130 | .5957 | 1.6786 | |
| -4 | 14 | 6 | 13.8663 | 14.2536 | 14.2518 | -.2280 | -.3873 | | |
| 44 | -2 | 14 | 6 | 22.7904 | 22.6323 | 22.6299 | .3280 | .1582 | |
| 0 | 14 | 6 | 6.2651 | 6.0129 | 6.0064 | .2789 | .2522 | | |
| 46 | -5 | 15 | 6 | 14.3349 | 12.8770 | -12.8611 | -.6392 | 1.4579 | |
| -3 | 15 | 6 | 27.3598 | 26.4207 | 26.4073 | .8405 | .9391 | | |
| 48 | -1 | 15 | 6 | 9.8310 | 6.8627 | -.6.8212 | -.7533 | 2.9683 | |
| -4 | 16 | 6 | 18.4630 | 18.7462 | -18.7408 | -.4477 | -.2832 | | |
| 50 | -2 | 16 | 6 | 19.2163 | 20.2943 | -20.2928 | -.2453 | -1.0780 | |
| -12 | 0 | 7 | 23.3577 | 22.5850 | -22.5687 | -.8568 | .7727 | | |
| -10 | 0 | 7 | 30.3582 | 31.9433 | -31.9426 | .2108 | -1.5850 | | |
| 2 | 0 | 7 | 20.9424 | 21.5389 | -21.4983 | -1.3209 | -.5965 | | |
| 54 | 4 | 0 | 7 | 1.8184 | .9805 | -.6890 | .6976 | .8379 | |
| -11 | 1 | 7 | 9.1348 | 7.9704 | -.7.9671 | .2307 | 1.1644 | | |
| -9 | 1 | 7 | .0639 | .9188 | .4512 | -.8004 | -.8549 | | |
| 56 | 3 | 1 | 7 | 21.3971 | 21.9379 | -21.9377 | -.0988 | -.5409 | |
| 58 | 5 | 1 | 7 | 4.0488 | .5746 | -.3687 | -.4407 | .4742 | |
| -12 | 2 | 7 | 3.7647 | 3.7168 | 3.6706 | -.5839 | .0480 | | |
| -10 | 2 | 7 | 34.2099 | 33.7725 | 33.7574 | 1.0078 | .4374 | | |
| 2 | 2 | 7 | 6.4214 | 6.6450 | -6.5742 | -.9676 | -.2237 | | |
| 60 | 4 | 2 | 7 | 18.4910 | 18.3026 | 18.2723 | 1.0522 | .1884 | |
| -11 | 3 | 7 | 34.1600 | 33.8849 | 33.8739 | .8625 | .2751 | | |
| -9 | 3 | 7 | 21.2834 | 21.7763 | -21.7613 | -.8061 | -.4929 | | |
| 62 | 3 | 3 | 7 | 43.6321 | 44.2468 | 44.2401 | .768 | -.6146 | |
| 5 | 3 | 7 | .0000 | .6190 | -.3844 | -.485 | -.6190 | | |
| -12 | 4 | 7 | 24.4097 | 25.3202 | -25.2999 | -1.0153 | -.9105 | | |
| -10 | 4 | 7 | 25.4043 | 24.5952 | 24.5753 | .9882 | .8091 | | |
| 2 | 4 | 7 | 34.8296 | 35.0645 | -35.0409 | -1.2873 | -.2349 | | |
| 4 | 4 | 7 | 10.9250 | 10.8275 | 10.7945 | .8442 | .0975 | | |
| -11 | 5 | 7 | 6.8546 | 4.3449 | 4.3315 | .3406 | 2.5097 | | |
| -9 | 5 | 7 | 58.3695 | 58.9039 | -58.8862 | -1.4404 | -.5343 | | |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|----|-----|----|---------|---------|----------|----------|---------|----------|
| 1 | 5 | 7 | 51.6554 | 53.3785 | -53.3770 | -3964 | -1.7231 | |
| 2 | 3 | 5 | 7 | 5.5263 | 6.5555 | 6.5487 | .2993 | -1.0292 |
| | -10 | 6 | 7 | 8.5666 | 8.4038 | -8.3901 | .4796 | .1628 |
| 4 | -8 | 6 | 7 | 26.8196 | 27.5360 | -27.5255 | -.7624 | -.7164 |
| | 2 | 6 | 7 | 33.8351 | 34.5809 | -34.5549 | -1.3418 | -.7458 |
| 6 | 4 | 6 | 7 | 3.8286 | 1.9783 | 1.8802 | .6149 | 1.8504 |
| | -11 | 7 | 7 | 1.4277 | 2.9929 | 2.9670 | .3925 | -1.5651 |
| 8 | -9 | 7 | 7 | 7.8136 | 6.9014 | 6.8780 | -.5673 | .9122 |
| | -7 | 7 | 7 | 7.2454 | 7.5458 | 7.4814 | .9837 | -.3004 |
| 10 | 1 | 7 | 7 | 22.6905 | 21.9577 | 21.9544 | .3796 | .7328 |
| | 3 | 7 | 7 | 5.4482 | 5.7022 | 5.6994 | .1787 | -.2540 |
| 12 | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| 14 | -10 | 8 | 7 | 27.9206 | 28.2608 | 28.2497 | .7916 | -.3401 |
| | -8 | 8 | 7 | 36.0539 | 36.4981 | 36.4981 | .0257 | -.4442 |
| 16 | -6 | 8 | 7 | 47.3480 | 47.8324 | 47.8291 | .5643 | -.4844 |
| | 0 | 8 | 7 | 25.9599 | 25.7781 | 25.7559 | 1.0707 | .1818 |
| 18 | 2 | 8 | 7 | 15.1307 | 15.4081 | 15.3987 | -.5389 | -.2774 |
| | -9 | 9 | 7 | 17.5040 | 19.9667 | 19.9653 | .2357 | -2.4627 |
| 20 | -7 | 9 | 7 | 7.7956 | 3.2389 | -3.1323 | .8243 | -2.4434 |
| | -5 | 9 | 7 | 28.4918 | 29.2083 | 29.2034 | -.5352 | -.7165 |
| 22 | -3 | 9 | 7 | 24.5942 | 25.1918 | 25.1705 | 1.0356 | -.1976 |
| | -1 | 9 | 7 | 9.2131 | 8.7936 | -8.7800 | .4897 | .4195 |
| 24 | 1 | 9 | 7 | 36.8578 | 37.3706 | 37.3658 | .6034 | -.5128 |
| | 3 | 9 | 7 | 8.2114 | 7.7406 | -7.7404 | -.0540 | .4709 |
| 26 | -10 | 10 | 7 | 9.5399 | 10.9926 | -10.9879 | .3182 | -1.4527 |
| | -8 | 10 | 7 | 27.9281 | 26.9771 | -26.9713 | -.5594 | .9510 |
| 28 | -6 | 10 | 7 | 11.3585 | 12.2655 | -12.2651 | -.0983 | -.9070 |
| | -4 | 10 | 7 | 28.3068 | 28.5540 | -28.5540 | .0298 | -.2472 |
| 30 | -2 | 10 | 7 | 22.4494 | 22.3049 | -22.2916 | -.7705 | .1445 |
| | 0 | 10 | 7 | 3.0473 | 1.8741 | -1.7684 | .6206 | 1.1732 |
| 32 | 2 | 10 | 7 | 18.5480 | 18.2386 | -18.2141 | .9464 | .3094 |
| | -9 | 11 | 7 | 39.0684 | 38.7218 | -38.7082 | -1.0275 | .3465 |
| 34 | -7 | 11 | 7 | 4.8586 | 2.6449 | -2.5725 | .6143 | 2.2137 |
| | -5 | 11 | 7 | 44.4795 | 44.7638 | -44.7429 | -1.3678 | -.2844 |
| 36 | -3 | 11 | 7 | 13.2553 | 13.6785 | -13.6703 | .4742 | -.4231 |
| | -1 | 11 | 7 | 33.4812 | 34.7363 | -34.7263 | -.8329 | -1.2551 |
| 38 | 1 | 11 | 7 | 29.0663 | 30.8997 | -30.8987 | .2562 | -1.8334 |
| | -8 | 12 | 7 | 10.3141 | 10.2898 | -10.2796 | -.4599 | .0243 |
| 40 | -6 | 12 | 7 | 12.9072 | 13.3181 | -13.3165 | -.2043 | -.4109 |
| | -4 | 12 | 7 | 5.4127 | 5.7055 | 5.6877 | .4501 | -.2928 |
| 42 | -2 | 12 | 7 | 34.4836 | 34.8466 | -34.8310 | -1.0425 | -.3630 |
| | 0 | 12 | 7 | 22.0582 | 21.8843 | 21.8640 | .9443 | -.1738 |
| 44 | -7 | 13 | 7 | 47.7632 | 47.9671 | 47.9495 | 1.3023 | -.2040 |
| | -5 | 13 | 7 | 21.9371 | 19.1102 | -19.0917 | -.8401 | 2.8269 |
| 46 | -3 | 13 | 7 | 41.9502 | 40.2457 | 40.2317 | 1.0612 | 1.7045 |
| | -1 | 13 | 7 | 16.6373 | 18.8139 | 18.8137 | -.0944 | -2.1767 |
| 48 | -6 | 14 | 7 | 16.2676 | 16.8797 | 16.8781 | .2374 | -.6121 |
| | -4 | 14 | 7 | 36.6245 | 37.1386 | 37.1305 | .7734 | -.5141 |
| 50 | -2 | 14 | 7 | 1.0797 | 4.6633 | 4.6429 | .4356 | -.5836 |
| | -3 | 15 | 7 | 14.1503 | 13.4442 | 13.4313 | .5877 | .7061 |
| 52 | -10 | 0 | 8 | 17.7096 | 18.9470 | -18.9459 | -.2028 | -1.2374 |
| | -8 | 0 | 8 | 34.0181 | 33.2798 | 33.2729 | .6777 | .7383 |
| 54 | 0 | 0 | 8 | 41.4129 | 41.0050 | 40.9883 | 1.1701 | .4079 |
| | 2 | 0 | 8 | 4.0204 | 4.9565 | 4.9444 | -.3453 | -.9360 |
| 56 | -11 | 1 | 8 | 26.1433 | 25.9235 | 25.9028 | 1.0361 | .2198 |
| | -9 | 1 | 8 | 43.4105 | 43.5599 | -43.5409 | -1.2882 | -.1494 |
| 58 | 1 | 1 | 8 | 32.2982 | 31.4522 | -31.4392 | .9070 | .8460 |
| | 3 | 1 | 8 | 29.6755 | 28.9233 | 28.9044 | 1.0473 | .7521 |
| 60 | -10 | 2 | 8 | 4.6029 | 6.7159 | 6.7157 | .0597 | -2.1130 |
| | -8 | 2 | 8 | 8.1475 | 9.0305 | 9.0172 | .4903 | -.8830 |
| 62 | 0 | 2 | 8 | .8027 | 3.9011 | 3.7954 | .9019 | -.0984 |
| | 2 | 2 | 8 | 21.0274 | 20.2965 | -20.2842 | .7060 | .7300 |
| 64 | -11 | 3 | 8 | 2.3796 | 2.4995 | 2.3921 | .7248 | -.1199 |
| | -9 | 3 | 8 | 7.7213 | 8.7498 | 8.7219 | -.6977 | -1.0285 |
| 66 | -7 | 3 | 8 | .0000 | .8237 | .0742 | .8204 | -.8237 |
| | -1 | 3 | 8 | 31.3608 | 30.7898 | -30.7898 | -.0272 | .5711 |
| 68 | 1 | 3 | 8 | 9.8808 | 10.0662 | 10.0530 | -.5153 | -.1855 |
| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
| | 3 | 3 | 8 | 3.6297 | 3.6875 | -3.6482 | .5369 | -.5771 |
| | -10 | 4 | 8 | 15.3569 | 16.0086 | 16.0080 | .1285 | -.6377 |

| | H | K | L | Y(OBS) | Y(CALC) | A | E | CBS-CALC |
|----|-----|----|---|---------|---------|----------|---------|----------|
| 2 | -8 | 4 | 8 | 18.4556 | 18.6205 | -18.6199 | .1456 | -1.1648 |
| 2 | 0 | 4 | 8 | 7.5366 | 6.1399 | 6.0740 | .8974 | 1.3967 |
| 2 | 2 | 4 | 8 | 18.1215 | 17.2857 | -17.2685 | -.7706 | -8358 |
| 4 | -11 | 5 | 8 | 10.6551 | 11.1180 | -11.1093 | .4392 | -4629 |
| 6 | -9 | 5 | 8 | .0000 | .7809 | -.2641 | -.7349 | -7809 |
| 6 | -7 | 5 | 8 | 8.2683 | 8.6698 | -8.6447 | .6591 | -4515 |
| 8 | -1 | 5 | 8 | 32.5699 | 31.6255 | -31.6255 | -.0022 | .9444 |
| 8 | 1 | 5 | 8 | 19.2870 | 19.6862 | 19.6848 | -.2305 | -3.3992 |
| 8 | 3 | 5 | 8 | 5.3132 | 3.8820 | 3.8240 | .6685 | 1.4313 |
| 10 | -10 | 6 | 8 | .4546 | 3.6188 | -3.6184 | -.0569 | -3.1642 |
| 10 | -8 | 6 | 8 | .6535 | 1.1902 | 1.1581 | .2743 | -.5367 |
| 12 | -6 | 6 | 8 | 1.4775 | .8527 | -.5170 | -.6781 | -6247 |
| 14 | -4 | 6 | 8 | 13.8167 | 14.9078 | 14.8763 | .9686 | -1.0911 |
| 14 | -2 | 6 | 8 | .0000 | 4.8130 | 4.7236 | -.9231 | -4.8130 |
| 16 | 0 | 6 | 8 | 27.2959 | 27.6204 | 27.6023 | 1.0006 | -3.246 |
| 16 | 2 | 6 | 8 | 7.6218 | 4.9736 | -4.9483 | -.5016 | 2.6482 |
| 18 | -9 | 7 | 8 | 28.1197 | 27.9486 | -27.9305 | -1.0045 | .1712 |
| 18 | -7 | 7 | 8 | 39.9443 | 39.2291 | 39.2177 | .9455 | .7152 |
| 20 | -5 | 7 | 8 | 5.6187 | 4.2757 | -4.2444 | -.5162 | 1.3430 |
| 20 | -3 | 7 | 8 | 6.0804 | 7.1747 | -7.1747 | .0274 | -1.0943 |
| 22 | -1 | 7 | 8 | 32.1941 | 32.6253 | 32.6218 | .4809 | -.4312 |
| 22 | 1 | 7 | 8 | 19.4078 | 19.3432 | -19.3292 | -.7374 | -.0645 |
| 24 | -10 | 8 | 8 | .9518 | 2.5120 | -2.5120 | -.0026 | -1.5601 |
| 24 | -8 | 8 | 8 | 27.0401 | 27.4994 | 27.4917 | .6544 | -.4593 |
| 26 | -6 | 8 | 8 | 31.6411 | 32.9950 | -32.9791 | -1.0250 | -1.3539 |
| 26 | -4 | 8 | 8 | 21.9170 | 22.8648 | 22.8328 | 1.2097 | -.9477 |
| 26 | -2 | 8 | 8 | 28.2773 | 28.9689 | -28.9430 | -1.2257 | -.6916 |
| 28 | 0 | 8 | 8 | 5.7252 | 4.7916 | 4.7354 | .7318 | .9337 |
| 28 | 2 | 8 | 8 | 18.1075 | 17.6118 | -17.6042 | -.5163 | .4957 |
| 30 | -9 | 9 | 8 | 28.7169 | 28.1219 | -28.1045 | -.9890 | .5549 |
| 30 | -7 | 9 | 8 | 29.0093 | 29.2127 | 29.1982 | .9204 | -.2034 |
| 32 | -5 | 9 | 8 | 5.8744 | 4.3856 | -4.3631 | .4440 | 1.4887 |
| 32 | -3 | 9 | 8 | 18.3211 | 19.3147 | -19.3142 | .1318 | -.9935 |
| 34 | -1 | 9 | 8 | 25.1639 | 25.3845 | 25.3791 | .5258 | -.2207 |
| 34 | 1 | 9 | 8 | 32.1506 | 32.3450 | -32.3324 | -.9021 | -.1944 |
| 36 | -8 | 10 | 8 | 7.3662 | 8.5138 | 8.5041 | .4059 | -1.1476 |
| 36 | -6 | 10 | 8 | 27.9573 | 27.2692 | -27.2569 | -.8197 | .6881 |
| 38 | -4 | 10 | 8 | 32.5007 | 32.3354 | 32.3189 | 1.0320 | .1653 |
| 38 | -2 | 10 | 8 | 18.3915 | 16.2244 | -16.1971 | -.9404 | 2.1671 |
| 40 | 0 | 10 | 8 | 14.5693 | 12.9851 | 12.9628 | .7595 | 1.5842 |
| 42 | -7 | 11 | 8 | .3410 | 7.8634 | -7.8470 | .5073 | -7.5224 |
| 42 | -5 | 11 | 8 | 7.2810 | 8.6766 | -8.6654 | -.4409 | -1.3956 |
| 42 | -3 | 11 | 8 | .8169 | 1.4554 | 1.4442 | .1805 | -.6385 |
| 44 | -1 | 11 | 8 | 13.8733 | 14.6802 | -14.6795 | .1443 | -.8069 |
| 44 | -6 | 12 | 8 | .0000 | .8720 | .8143 | .3117 | -.8720 |
| 46 | -4 | 12 | 8 | 3.4237 | .4884 | -.0078 | .4883 | 2.9353 |
| 46 | -2 | 12 | 8 | .0000 | 2.7816 | -2.7204 | .5801 | -2.7816 |
| 48 | -5 | 13 | 8 | 2.6992 | .4898 | .3164 | -.3739 | 2.2094 |
| 48 | -3 | 13 | 8 | 18.2072 | 18.1094 | 18.1069 | .3007 | -.0978 |
| 50 | -10 | 0 | 9 | 39.4510 | 41.6998 | 41.6998 | .0230 | -2.2488 |
| 50 | -8 | 0 | 9 | 19.7556 | 19.8991 | 19.8775 | .9279 | -.1435 |
| 52 | -6 | 0 | 9 | 42.0466 | 43.2573 | 43.2560 | -.3345 | -1.2107 |
| 52 | -4 | 0 | 9 | 57.4308 | 58.1901 | 58.1756 | 1.2971 | -.7592 |
| 54 | H | K | L | Y(OBS) | Y(CALC) | A | E | CBS-CALC |
| 56 | -2 | 0 | 9 | 5.2706 | 5.9061 | 5.8945 | -.3709 | -.6355 |
| 56 | 0 | 0 | 9 | 46.0153 | 46.4723 | 46.4642 | .8659 | -.4570 |
| 56 | -11 | 1 | 9 | 9.7884 | 8.8072 | 8.7870 | .5965 | .9812 |
| 60 | -9 | 1 | 9 | 5.1854 | 5.9337 | 5.9269 | -.2843 | -.7483 |
| 60 | -7 | 1 | 9 | 21.4680 | 21.3261 | 21.3226 | .3868 | -.1419 |
| 60 | -5 | 1 | 9 | .0000 | .4354 | .3709 | .2280 | -.4354 |
| 62 | -3 | 1 | 9 | 23.6214 | 24.3346 | 24.3335 | -.2275 | -.7131 |
| 62 | -1 | 1 | 9 | 11.1737 | 11.1529 | 11.1223 | .8261 | -.0207 |
| 62 | 1 | 1 | 9 | 7.3378 | 9.2272 | 9.2061 | -.6240 | -1.8894 |
| 62 | -10 | 2 | 9 | 26.6055 | 26.9835 | -26.9712 | -.8148 | -.3780 |
| 62 | -8 | 2 | 9 | 10.8256 | 11.2322 | -11.2160 | .6028 | -.4066 |
| 62 | -6 | 2 | 9 | 39.8368 | 39.9539 | -39.9340 | -1.2591 | -.1171 |
| 62 | -4 | 2 | 9 | 7.0181 | 6.3275 | -.6.2959 | .6309 | .6906 |
| 62 | -2 | 2 | 9 | 32.5616 | 31.5527 | -31.5402 | -.8885 | 1.0089 |
| 62 | 0 | 2 | 9 | 12.6372 | 14.0052 | -14.0052 | -.0013 | -1.3681 |
| 62 | -9 | 3 | 9 | 24.2890 | 24.4630 | -24.4518 | -.7406 | -.1740 |
| 62 | -7 | 3 | 9 | 26.0802 | 26.1315 | -26.1293 | -.3352 | -.0513 |

| | H | K | L | Y(OBS) | Y(CALC) | A | B | OBS-CALC |
|----|----|----|----|---------|---------|----------|---------|----------|
| 40 | -5 | 11 | 9 | 17.4900 | 19.1640 | 19.1551 | .5836 | -1.6739 |
| 41 | -8 | 0 | 10 | 23.6565 | 23.8493 | 23.8297 | .9643 | -1.927 |
| 42 | -6 | 0 | 10 | 11.5075 | 11.4756 | 11.4724 | -2.2728 | .0319 |
| 43 | -4 | 0 | 10 | 4.8515 | 6.8467 | -6.8465 | .0440 | -1.9951 |
| 44 | -2 | 0 | 10 | 14.8183 | 17.0996 | 17.0919 | .5142 | -2.2814 |
| 45 | -9 | 1 | 10 | 21.3403 | 22.5501 | 22.5442 | .5169 | -1.2098 |
| 46 | -7 | 1 | 10 | 23.3227 | 23.5929 | -23.5808 | .7574 | -2.2702 |
| 47 | -5 | 1 | 10 | 41.5168 | 41.1944 | 41.1796 | 1.1050 | .3224 |
| 48 | -3 | 1 | 10 | 17.6242 | 16.5569 | -16.5304 | .9352 | 1.0673 |
| 49 | -1 | 1 | 10 | 16.1464 | 15.1439 | 15.1255 | .7481 | 1.0025 |
| 50 | -8 | 2 | 10 | 6.8618 | 6.1008 | 6.0722 | .5896 | -7.610 |
| 51 | -6 | 2 | 10 | 9.7245 | 8.9039 | -8.8858 | .5679 | .8206 |
| 52 | -4 | 2 | 10 | .0000 | 2.9291 | -2.9276 | .0927 | -2.9291 |
| 53 | -2 | 2 | 10 | .9305 | 3.6769 | 3.6737 | .1530 | -2.7464 |
| 54 | -9 | 3 | 10 | 19.7204 | 20.7484 | -20.7482 | .0985 | -1.0280 |
| 55 | -7 | 3 | 10 | 7.4727 | 8.0927 | -8.0769 | .5045 | -.6200 |
| 56 | -5 | 3 | 10 | 21.5686 | 23.3571 | -23.3534 | .4126 | -1.7885 |
| 57 | -3 | 3 | 10 | 13.7311 | 13.1956 | -13.1706 | .8111 | .5356 |
| 58 | -1 | 3 | 10 | 1.6550 | 2.6252 | 2.5399 | .6638 | -.9701 |
| 59 | -8 | 4 | 10 | 8.8933 | 6.7422 | 6.7205 | .5402 | 2.1511 |
| 60 | -6 | 4 | 10 | 18.1008 | 18.1294 | -18.1201 | .5811 | -.0286 |
| 61 | -4 | 4 | 10 | 10.2431 | 10.3749 | 10.3680 | .3801 | -.1318 |
| 62 | -2 | 4 | 10 | 14.6337 | 17.0250 | -17.0241 | .1680 | -2.3313 |
| 63 | -7 | 5 | 10 | 19.2521 | 20.8773 | 20.8771 | .0964 | -1.6252 |
| 64 | -5 | 5 | 10 | .0000 | .8784 | .6648 | .5741 | -.8784 |
| 65 | -3 | 5 | 10 | 12.8006 | 12.9996 | 12.9886 | .5347 | -.1990 |
| 66 | -8 | 6 | 10 | 16.3314 | 16.1617 | 16.1455 | .7255 | -.1697 |
| 67 | -6 | 6 | 10 | .0000 | .8813 | -.8053 | .3580 | -.6813 |
| 68 | -4 | 6 | 10 | 12.4879 | 12.2194 | 12.2154 | .3149 | -.2685 |
| 69 | -7 | 7 | 10 | 22.3998 | 22.8286 | -22.8188 | .6674 | -.4288 |

END OF FOURIER TAPE PROCESSING

CPU-ZEIT SEIT LETZTEM CALL DAUERT:

0 STUNDEN, 0 MINUTEN, 49 SEKUNDE

10 - ZEIT SEIT LETZTER CALL DAUER: 0 STUNDEN, 0 MINUTEN, 13 SEKUNDE
 ORXFLSS VON BARIUMFELDSPAT 0-65 DEGREE
 TIME FOR MATRIX SETUP WAS 49 SEC.
 NUMBER OF OBSERVATIONS ACCEPTED IS 1346, NUMBER OF DEGREES OF FREEDOM
 NUMBER OF PARAMETERS VARIED IN THIS CYCLE WAS 34, TOTAL NUMBER OF

***** MEASURES OF AGREEMENT BEFORE CYCLE

R(F) R(F**2)

FOR REFLECTIONS

ACCEPTED BY LOGIC

ALL INTENSITIES (1346 REFLECTIONS)

| | | |
|-------------|---------------|---------------|
| RATIO | .0416 | .0473 |
| NUMERATOR | .152485042+04 | .940936230+05 |
| DENOMINATOR | .366306094+05 | .198895430+07 |

GREATER THAN YMIN = .00 (1298 REFLECTIONS)

| | | |
|-------------|---------------|---------------|
| RATIO | .0390 | .0472 |
| NUMERATOR | .142881984+04 | .938249043+05 |
| DENOMINATOR | .366306094+05 | .198895430+07 |

NO TEST ON LOGIC

ALL INTENSITIES (1346 REFLECTIONS)

| | | |
|-------------|---------------|---------------|
| RATIO | .0416 | .0473 |
| NUMERATOR | .152485042+04 | .940936230+05 |
| DENOMINATOR | .366306094+05 | .198895430+07 |

GREATER THAN YMIN = .00 (1298 REFLECTIONS)

| | | |
|-------------|---------------|---------------|
| RATIO | .0390 | .0472 |
| NUMERATOR | .142881984+04 | .938249043+05 |
| DENOMINATOR | .366306094+05 | .198895430+07 |

ORXFLSS VON BARIUMFELDSPAT 0-65 DEGREE

ELEMENTS OF CORRELATION MATRIX OF MAGNITUDE GREATER THAN .30

| | | | | | |
|--------|-----|---|--------|-----|-------|
| K(1) | X | - | K(1) | Z | .3996 |
| T1(4) | X | - | T1(4) | Z | .4559 |
| T2(4) | X | - | T2(4) | Z | .4359 |
| OA1(6) | B11 | - | OA1(6) | B13 | .5632 |
| OA1(6) | B33 | - | OA1(6) | B13 | .5611 |
| OA2(7) | B11 | - | OA2(7) | B13 | .4539 |
| OA2(7) | B33 | - | OA2(7) | B13 | .4559 |
| OB(8) | B11 | - | OB(8) | B13 | .5921 |
| OB(8) | B33 | - | OB(8) | B13 | .5825 |
| OB(8) | B12 | - | OB(8) | B23 | .5062 |
| OC(9) | B11 | - | OC(9) | B13 | .5176 |
| OC(9) | B33 | - | OC(9) | B13 | .5192 |
| OC(9) | B12 | - | OC(9) | B23 | .4287 |
| OD(10) | B11 | - | OD(10) | B13 | .4652 |
| OD(10) | B33 | - | OD(10) | B13 | .4711 |
| OD(10) | B12 | - | OD(10) | B23 | .3945 |

SPRT,N BMP00B
FURPUR 27R3AG E32 SL73R1 12/01/78 19:02:57

* * * PROJECT: SCHWEIG ACCOUNT: BMP00B * * *

BRAUNSCHWEIG*BMP00B015749(1), F4C/C/PCS/15

MODES: PUBLIC,X-USE,V-OPT,ASG-D

NO. OF GRANULES ASSIGNED: 0

HIGHEST GRANULE ASSIGNED: 0

TOTAL ASSIGNMENTS: 2

HIGHEST TRACK WRITTEN: 0

MINUTES ASSIGNED: 0

CAT: 12/01/78 AT 18:57:49, LAST REF: 12/01/78 AT 18:57:49

BRAUNSCHWEIG*BMP00B015839(1), F4C/C/PCS/15

MODES: PUBLIC,X-USE,V-OPT,ASG-D

NO. OF GRANULES ASSIGNED: 0

TOTAL ASSIGNMENTS: 2

HIGHEST GRANULE ASSIGNED: 0

MINUTES ASSIGNED: 0

HIGHEST TRACK WRITTEN: 0

MINUTES ASSIGNED: 0

CAT: 12/01/78 AT 18:58:39, LAST REF: 12/01/78 AT 18:58:40

SCHWEIG*BA5060(1), F4C/0/TRK/128

MODES: PUBLIC,ASG-D

NO. OF GRANULES ASSIGNED: 22

22=F4C/F30

HIGHEST GRANULE ASSIGNED: 21

TOTAL ASSIGNMENTS: 21

HIGHEST TRACK WRITTEN: 21

MINUTES ASSIGNED: 0

CAT: 10/19/78 AT 05:08:16, LAST REF: 12/01/78 AT 18:57:51, BACKUP:

SCHWEIG*FELDOR(1), F4C/0/TRK/128

MODES: PUBLIC,ASG-D

NO. OF GRANULES ASSIGNED: 69

69=F4C/