

| 10°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 760330 | 6648.5 | 753225 | 6873.2 | 746239 | 7101.6 | 739367                        | 7333.9 | 732605 | 7569.9 | 725951 | 7809.8 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 760187 | 6653.0 | 753085 | 6877.7 | 746101 | 7106.2 | 739231                        | 7338.6 | 732471 | 7574.7 | 725819 | 7814.6 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 760043 | 6657.5 | 752944 | 6882.3 | 745962 | 7110.9 | 739094                        | 7343.2 | 732337 | 7579.4 | 725687 | 7819.4 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 759900 | 6661.9 | 752803 | 6886.8 | 745824 | 7115.5 | 738958                        | 7347.9 | 732203 | 7584.2 | 725555 | 7824.3 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 759757 | 6666.4 | 752662 | 6891.3 | 745685 | 7120.1 | 738822                        | 7352.6 | 732069 | 7589.0 | 725424 | 7829.1 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 759614 | 6670.8 | 752522 | 6895.9 | 745547 | 7124.7 | 738686                        | 7357.3 | 731935 | 7593.7 | 725292 | 7834.0 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 759471 | 6675.3 | 752381 | 6900.4 | 745408 | 7129.3 | 738550                        | 7362.0 | 731801 | 7598.5 | 725160 | 7838.8 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 759328 | 6679.8 | 752240 | 6904.9 | 745270 | 7133.9 | 738414                        | 7366.7 | 731668 | 7603.3 | 725028 | 7843.6 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 759185 | 6684.2 | 752100 | 6909.5 | 745132 | 7138.5 | 738278                        | 7371.4 | 731534 | 7608.0 | 724896 | 7848.5 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 759042 | 6688.7 | 751959 | 6914.0 | 744994 | 7143.2 | 738142                        | 7376.1 | 731400 | 7612.8 | 724765 | 7853.3 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 758899 | 6693.2 | 751819 | 6918.6 | 744856 | 7147.8 | 738006                        | 7380.8 | 731266 | 7617.6 | 724633 | 7858.2 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 758757 | 6697.6 | 751678 | 6923.1 | 744718 | 7152.4 | 737870                        | 7385.5 | 731132 | 7622.4 | 724501 | 7863.0 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 758614 | 6702.1 | 751538 | 6927.7 | 744579 | 7157.0 | 737734                        | 7390.2 | 730999 | 7627.1 | 724370 | 7867.9 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 758471 | 6706.6 | 751398 | 6932.2 | 744441 | 7161.7 | 737598                        | 7394.9 | 730865 | 7631.9 | 724238 | 7872.8 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 758328 | 6711.1 | 751258 | 6936.8 | 744304 | 7166.3 | 737463                        | 7399.6 | 730732 | 7636.7 | 724107 | 7877.6 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 758186 | 6715.5 | 751117 | 6941.3 | 744166 | 7170.9 | 737327                        | 7404.3 | 730598 | 7641.5 | 723975 | 7882.5 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 758043 | 6720.0 | 750977 | 6945.9 | 744028 | 7175.5 | 737191                        | 7409.0 | 730465 | 7646.3 | 723844 | 7887.3 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 757901 | 6724.5 | 750837 | 6950.4 | 743890 | 7180.2 | 737056                        | 7413.7 | 730331 | 7651.0 | 723713 | 7892.2 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 757758 | 6729.0 | 750697 | 6955.0 | 743752 | 7184.8 | 736920                        | 7418.4 | 730198 | 7655.8 | 723581 | 7897.0 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 757616 | 6733.5 | 750557 | 6959.6 | 743614 | 7189.4 | 736785                        | 7423.1 | 730064 | 7660.6 | 723450 | 7901.9 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 757474 | 6737.9 | 750417 | 6964.1 | 743477 | 7194.1 | 736649                        | 7427.8 | 729931 | 7665.4 | 723319 | 7906.8 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 757331 | 6742.4 | 750277 | 6968.7 | 743339 | 7198.7 | 736514                        | 7432.6 | 729798 | 7670.2 | 723188 | 7911.6 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 757189 | 6746.9 | 750137 | 6973.2 | 743201 | 7203.4 | 736378                        | 7437.3 | 729665 | 7675.0 | 723057 | 7916.5 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 757047 | 6751.4 | 749997 | 6977.8 | 743064 | 7208.0 | 736243                        | 7442.0 | 729531 | 7679.8 | 722926 | 7921.4 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 756905 | 6755.9 | 749858 | 6982.4 | 742926 | 7212.6 | 736108                        | 7446.7 | 729398 | 7684.6 | 722794 | 7926.2 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 756763 | 6760.4 | 749718 | 6986.9 | 742789 | 7217.3 | 735973                        | 7451.4 | 729265 | 7689.4 | 722663 | 7931.1 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 756621 | 6764.9 | 749578 | 6991.5 | 742652 | 7221.9 | 735837                        | 7456.1 | 729132 | 7694.2 | 722532 | 7936.0 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 756479 | 6769.4 | 749438 | 6996.1 | 742514 | 7226.6 | 735702                        | 7460.9 | 728999 | 7699.0 | 722402 | 7940.9 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 756337 | 6773.9 | 749299 | 7000.7 | 742377 | 7231.2 | 735567                        | 7465.6 | 728866 | 7703.8 | 722271 | 7945.7 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 756195 | 6778.4 | 749159 | 7005.2 | 742240 | 7235.9 | 735432                        | 7470.3 | 728733 | 7708.6 | 722140 | 7950.6 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 756053 | 6782.9 | 749020 | 7009.8 | 742102 | 7240.5 | 735297                        | 7475.0 | 728600 | 7713.4 | 722009 | 7955.5 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 755911 | 6787.4 | 748880 | 7014.4 | 741965 | 7245.2 | 735162                        | 7479.8 | 728467 | 7718.2 | 721878 | 7960.4 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 755769 | 6791.9 | 748741 | 7019.0 | 741828 | 7249.8 | 735027                        | 7484.5 | 728335 | 7723.0 | 721747 | 7965.3 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 755627 | 6796.4 | 748601 | 7023.5 | 741691 | 7254.5 | 734892                        | 7489.2 | 728202 | 7727.8 | 721617 | 7970.2 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 755486 | 6800.9 | 748462 | 7028.1 | 741554 | 7259.1 | 734757                        | 7494.0 | 728069 | 7732.6 | 721486 | 7975.0 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 755344 | 6805.4 | 748323 | 7032.7 | 741417 | 7263.8 | 734623                        | 7498.7 | 727936 | 7737.4 | 721355 | 7979.9 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 755203 | 6809.9 | 748184 | 7037.3 | 741280 | 7268.5 | 734488                        | 7503.4 | 727804 | 7742.2 | 721225 | 7984.8 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 755061 | 6814.4 | 748044 | 7041.9 | 741143 | 7273.1 | 734353                        | 7508.2 | 727671 | 7747.0 | 721094 | 7989.7 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 754920 | 6818.9 | 747905 | 7046.5 | 741006 | 7277.8 | 734218                        | 7512.9 | 727539 | 7751.9 | 720964 | 7994.6 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 754778 | 6823.4 | 747766 | 7051.1 | 740869 | 7282.5 | 734084                        | 7517.7 | 727406 | 7756.7 | 720833 | 7999.5 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 754637 | 6828.0 | 747627 | 7055.6 | 740732 | 7287.1 | 733949                        | 7522.4 | 727274 | 7761.5 | 720703 | 8004.4 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 754495 | 6832.5 | 747488 | 7060.2 | 740596 | 7291.8 | 733815                        | 7527.2 | 727141 | 7766.3 | 720573 | 8009.3 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 754354 | 6837.0 | 747349 | 7064.8 | 740459 | 7296.5 | 733680                        | 7531.9 | 727009 | 7771.1 | 720442 | 8014.2 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 754213 | 6841.5 | 747210 | 7069.4 | 740322 | 7301.1 | 733546                        | 7536.6 | 726877 | 7776.0 | 720312 | 8019.1 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 754072 | 6846.0 | 747071 | 7074.0 | 740186 | 7305.8 | 733411                        | 7541.4 | 726744 | 7780.8 | 720182 | 8024.0 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 753931 | 6850.6 | 746933 | 7078.6 | 740049 | 7310.5 | 733277                        | 7546.1 | 726612 | 7785.6 | 720052 | 8028.9 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 753789 | 6855.1 | 746794 | 7083.2 | 739913 | 7315.2 | 733142                        | 7550.9 | 726480 | 7790.4 | 719921 | 8033.8 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 753648 | 6859.6 | 746655 | 7087.8 | 739776 | 7319.8 | 733008                        | 7555.6 | 726348 | 7795.3 | 719791 | 8038.7 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 753507 | 6864.1 | 746516 | 7092.4 | 739640 | 7324.5 | 732874                        | 7560.4 | 726215 | 7800.1 | 719661 | 8043.6 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 753366 | 6868.7 | 746378 | 7097.0 | 739503 | 7329.2 | 732740                        | 7565.2 | 726083 | 7804.9 | 719531 | 8048.5 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 753225 | 6873.2 | 746239 | 7101.6 | 739367 | 7333.9 | 732605                        | 7569.9 | 725951 | 7809.8 | 719401 | 8053.4 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 169°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |



| 12°                                                                                                                               |        |        |        |        |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|-------|---------------------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |       | 30'                                         |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B     | A                                           | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 682121 | 9595.6 | 676220 | 9866.1 | 670401 | 10140 | 664663                                      | 10418 | 659004 | 10700 | 653421 | 10986 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 682002 | 9601.0 | 676103 | 9871.5 | 670286 | 10146 | 664549                                      | 10424 | 658891 | 10706 | 653310 | 10992 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 681883 | 9606.4 | 675985 | 9877.0 | 670170 | 10151 | 664435                                      | 10430 | 658779 | 10712 | 653199 | 10998 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 681765 | 9611.7 | 675868 | 9882.4 | 670055 | 10157 | 664321                                      | 10435 | 658667 | 10718 | 653088 | 11004 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 681646 | 9617.1 | 675751 | 9887.9 | 669939 | 10162 | 664208                                      | 10441 | 658554 | 10723 | 652977 | 11009 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 681527 | 9622.5 | 675634 | 9893.3 | 669824 | 10168 | 664094                                      | 10447 | 658442 | 10729 | 652866 | 11015 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 681408 | 9627.9 | 675517 | 9898.8 | 669708 | 10174 | 663980                                      | 10452 | 658330 | 10735 | 652756 | 11021 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 681290 | 9633.2 | 675400 | 9904.2 | 669593 | 10179 | 663866                                      | 10458 | 658218 | 10740 | 652645 | 11027 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 681171 | 9638.6 | 675283 | 9909.7 | 669478 | 10185 | 663753                                      | 10463 | 658105 | 10746 | 652534 | 11032 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 681053 | 9644.0 | 675166 | 9915.1 | 669363 | 10190 | 663639                                      | 10469 | 657993 | 10752 | 652424 | 11038 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 680934 | 9649.4 | 675050 | 9920.6 | 669247 | 10196 | 663525                                      | 10475 | 657881 | 10757 | 652313 | 11044 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 680816 | 9654.8 | 674933 | 9926.1 | 669132 | 10201 | 663411                                      | 10480 | 657769 | 10763 | 652202 | 11050 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 680697 | 9660.2 | 674816 | 9931.5 | 669017 | 10207 | 663298                                      | 10486 | 657657 | 10769 | 652092 | 11056 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 680579 | 9665.6 | 674699 | 9937.0 | 668902 | 10212 | 663184                                      | 10491 | 657545 | 10774 | 651981 | 11061 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 680460 | 9670.9 | 674582 | 9942.5 | 668787 | 10218 | 663071                                      | 10497 | 657433 | 10780 | 651871 | 11067 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 680342 | 9676.3 | 674466 | 9947.9 | 668671 | 10223 | 662957                                      | 10503 | 657321 | 10786 | 651760 | 11073 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 680224 | 9681.7 | 674349 | 9953.4 | 668556 | 10229 | 662844                                      | 10508 | 657209 | 10792 | 651650 | 11079 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 680105 | 9687.1 | 674232 | 9958.9 | 668441 | 10234 | 662730                                      | 10514 | 657097 | 10797 | 651539 | 11084 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 679987 | 9692.5 | 674116 | 9964.4 | 668326 | 10240 | 662617                                      | 10520 | 656985 | 10803 | 651429 | 11090 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 679869 | 9697.9 | 673999 | 9969.8 | 668211 | 10246 | 662503                                      | 10525 | 656873 | 10809 | 651319 | 11096 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 679751 | 9703.3 | 673883 | 9975.3 | 668097 | 10251 | 662390                                      | 10531 | 656761 | 10814 | 651208 | 11102 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 679632 | 9708.7 | 673766 | 9980.8 | 667982 | 10257 | 662277                                      | 10536 | 656650 | 10820 | 651098 | 11108 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 679514 | 9714.1 | 673650 | 9986.3 | 667867 | 10262 | 662164                                      | 10542 | 656538 | 10826 | 650988 | 11113 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 679396 | 9719.5 | 673533 | 9991.7 | 667752 | 10268 | 662050                                      | 10548 | 656426 | 10831 | 650877 | 11119 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 679278 | 9724.9 | 673417 | 9997.2 | 667637 | 10273 | 661937                                      | 10553 | 656314 | 10837 | 650767 | 11125 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 679160 | 9730.3 | 673300 | 10003  | 667522 | 10279 | 661824                                      | 10559 | 656203 | 10843 | 650657 | 11131 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 679042 | 9735.8 | 673184 | 10008  | 667408 | 10284 | 661711                                      | 10565 | 656091 | 10849 | 650547 | 11137 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 678924 | 9741.2 | 673068 | 10014  | 667293 | 10290 | 661597                                      | 10570 | 655979 | 10854 | 650437 | 11142 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 678806 | 9746.6 | 672951 | 10019  | 667178 | 10296 | 661484                                      | 10576 | 655868 | 10860 | 650327 | 11148 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 678688 | 9752.0 | 672835 | 10025  | 667064 | 10301 | 661371                                      | 10582 | 655756 | 10866 | 650217 | 11154 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 678570 | 9757.4 | 672719 | 10030  | 666949 | 10307 | 661258                                      | 10587 | 655645 | 10872 | 650107 | 11160 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 678452 | 9762.8 | 672603 | 10036  | 666834 | 10312 | 661145                                      | 10593 | 655533 | 10877 | 649997 | 11166 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 678335 | 9768.2 | 672487 | 10041  | 666720 | 10318 | 661032                                      | 10599 | 655422 | 10883 | 649887 | 11171 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 678217 | 9773.7 | 672370 | 10047  | 666605 | 10323 | 660919                                      | 10604 | 655310 | 10889 | 649777 | 11177 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 678099 | 9779.1 | 672254 | 10052  | 666491 | 10329 | 660806                                      | 10610 | 655199 | 10894 | 649667 | 11183 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 677981 | 9784.5 | 672138 | 10058  | 666376 | 10335 | 660693                                      | 10615 | 655088 | 10900 | 649557 | 11189 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 677864 | 9789.9 | 672022 | 10063  | 666262 | 10340 | 660581                                      | 10621 | 654976 | 10906 | 649447 | 11195 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 677746 | 9795.4 | 671906 | 10069  | 666147 | 10346 | 660468                                      | 10627 | 654865 | 10912 | 649337 | 11200 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 677628 | 9800.8 | 671790 | 10074  | 666033 | 10351 | 660355                                      | 10632 | 654754 | 10917 | 649227 | 11206 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 677511 | 9806.2 | 671674 | 10080  | 665919 | 10357 | 660242                                      | 10638 | 654642 | 10923 | 649118 | 11212 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 677393 | 9811.7 | 671558 | 10085  | 665805 | 10363 | 660129                                      | 10644 | 654531 | 10929 | 649008 | 11218 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 677276 | 9817.1 | 671443 | 10091  | 665690 | 10368 | 660017                                      | 10649 | 654420 | 10935 | 648898 | 11224 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 677158 | 9822.5 | 671327 | 10096  | 665576 | 10374 | 659904                                      | 10655 | 654309 | 10940 | 648788 | 11229 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 677041 | 9828.0 | 671211 | 10102  | 665462 | 10379 | 659791                                      | 10661 | 654198 | 10946 | 648679 | 11235 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 676924 | 9833.4 | 671095 | 10107  | 665348 | 10385 | 659679                                      | 10666 | 654087 | 10952 | 648569 | 11241 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 676806 | 9838.8 | 670979 | 10113  | 665233 | 10390 | 659566                                      | 10672 | 653976 | 10958 | 648460 | 11247 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 676689 | 9844.3 | 670864 | 10118  | 665119 | 10396 | 659454                                      | 10678 | 653864 | 10963 | 648350 | 11253 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 676572 | 9849.7 | 670748 | 10124  | 665005 | 10402 | 659341                                      | 10683 | 653753 | 10969 | 648240 | 11259 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 676454 | 9855.2 | 670632 | 10129  | 664891 | 10407 | 659229                                      | 10689 | 653642 | 10975 | 648131 | 11264 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 676337 | 9860.6 | 670517 | 10135  | 664777 | 10413 | 659116                                      | 10695 | 653532 | 10981 | 648021 | 11270 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 676220 | 9866.1 | 670401 | 10140  | 664663 | 10418 | 659004                                      | 10700 | 653421 | 10986 | 647912 | 11276 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B     | A                                           | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |       | 20'                                         |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 167°                                                                                                                              |        |        |        |        |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 * \log (1 / \sin \alpha)$                                                                                       |        |        |        |        |        |       | $B(\alpha) = 10^6 * \log (1 / \cos \alpha)$ |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

| 13°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 647912 | 11276 | 642476 | 11570 | 637111 | 11867 | 631815                        | 12168 | 626586 | 12474 | 621423 | 12783 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 647803 | 11282 | 642368 | 11576 | 637004 | 11873 | 631710                        | 12175 | 626482 | 12480 | 621321 | 12789 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 647693 | 11288 | 642260 | 11581 | 636898 | 11879 | 631604                        | 12181 | 626378 | 12486 | 621218 | 12795 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 647584 | 11294 | 642152 | 11587 | 636791 | 11885 | 631499                        | 12187 | 626275 | 12492 | 621116 | 12802 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 647474 | 11299 | 642044 | 11593 | 636685 | 11891 | 631394                        | 12193 | 626171 | 12498 | 621013 | 12808 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 647365 | 11305 | 641936 | 11599 | 636578 | 11897 | 631289                        | 12199 | 626067 | 12504 | 620911 | 12814 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 647256 | 11311 | 641828 | 11605 | 636472 | 11903 | 631184                        | 12205 | 625963 | 12511 | 620808 | 12820 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 647147 | 11317 | 641721 | 11611 | 636365 | 11909 | 631079                        | 12211 | 625859 | 12517 | 620706 | 12826 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 647037 | 11323 | 641613 | 11617 | 636259 | 11915 | 630974                        | 12217 | 625756 | 12523 | 620603 | 12833 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 646928 | 11329 | 641505 | 11623 | 636152 | 11921 | 630869                        | 12223 | 625652 | 12529 | 620501 | 12839 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 646819 | 11334 | 641397 | 11629 | 636046 | 11927 | 630764                        | 12229 | 625548 | 12535 | 620399 | 12845 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 646710 | 11340 | 641290 | 11635 | 635940 | 11933 | 630659                        | 12235 | 625445 | 12541 | 620296 | 12851 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 646601 | 11346 | 641182 | 11641 | 635834 | 11939 | 630554                        | 12241 | 625341 | 12548 | 620194 | 12858 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 646492 | 11352 | 641074 | 11647 | 635727 | 11945 | 630449                        | 12247 | 625238 | 12554 | 620092 | 12864 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 646383 | 11358 | 640967 | 11653 | 635621 | 11951 | 630344                        | 12254 | 625134 | 12560 | 619989 | 12870 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 646274 | 11364 | 640859 | 11658 | 635515 | 11957 | 630239                        | 12260 | 625030 | 12566 | 619887 | 12876 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 646165 | 11370 | 640751 | 11664 | 635409 | 11963 | 630134                        | 12266 | 624927 | 12572 | 619785 | 12883 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 646056 | 11375 | 640644 | 11670 | 635302 | 11969 | 630030                        | 12272 | 624823 | 12578 | 619683 | 12889 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 645947 | 11381 | 640536 | 11676 | 635196 | 11975 | 629925                        | 12278 | 624720 | 12585 | 619581 | 12895 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 645838 | 11387 | 640429 | 11682 | 635090 | 11981 | 629820                        | 12284 | 624617 | 12591 | 619478 | 12901 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 645729 | 11393 | 640322 | 11688 | 634984 | 11987 | 629715                        | 12290 | 624513 | 12597 | 619376 | 12908 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 645620 | 11399 | 640214 | 11694 | 634878 | 11993 | 629611                        | 12296 | 624410 | 12603 | 619274 | 12914 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 645511 | 11405 | 640107 | 11700 | 634772 | 11999 | 629506                        | 12302 | 624306 | 12609 | 619172 | 12920 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 645402 | 11411 | 639999 | 11706 | 634666 | 12005 | 629401                        | 12308 | 624203 | 12615 | 619070 | 12926 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 645294 | 11417 | 639892 | 11712 | 634560 | 12011 | 629297                        | 12315 | 624100 | 12622 | 618968 | 12933 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 645185 | 11422 | 639785 | 11718 | 634454 | 12017 | 629192                        | 12321 | 623997 | 12628 | 618866 | 12939 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 645076 | 11428 | 639677 | 11724 | 634348 | 12023 | 629088                        | 12327 | 623893 | 12634 | 618764 | 12945 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 644968 | 11434 | 639570 | 11730 | 634242 | 12029 | 628983                        | 12333 | 623790 | 12640 | 618662 | 12951 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 644859 | 11440 | 639463 | 11736 | 634137 | 12035 | 628879                        | 12339 | 623687 | 12646 | 618560 | 12958 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 644750 | 11446 | 639356 | 11742 | 634031 | 12041 | 628774                        | 12345 | 623584 | 12653 | 618458 | 12964 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 644642 | 11452 | 639248 | 11748 | 633925 | 12047 | 628670                        | 12351 | 623481 | 12659 | 618357 | 12970 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 644533 | 11458 | 639141 | 11754 | 633819 | 12054 | 628565                        | 12357 | 623378 | 12665 | 618255 | 12976 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 644425 | 11464 | 639034 | 11760 | 633713 | 12060 | 628461                        | 12363 | 623274 | 12671 | 618153 | 12983 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 644316 | 11469 | 638927 | 11766 | 633608 | 12066 | 628356                        | 12370 | 623171 | 12677 | 618051 | 12989 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 644208 | 11475 | 638820 | 11772 | 633502 | 12072 | 628252                        | 12376 | 623068 | 12684 | 617949 | 12995 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 644099 | 11481 | 638713 | 11777 | 633396 | 12078 | 628148                        | 12382 | 622965 | 12690 | 617848 | 13002 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 643991 | 11487 | 638606 | 11783 | 633291 | 12084 | 628043                        | 12388 | 622862 | 12696 | 617746 | 13008 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 643882 | 11493 | 638499 | 11789 | 633185 | 12090 | 627939                        | 12394 | 622759 | 12702 | 617644 | 13014 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 643774 | 11499 | 638392 | 11795 | 633080 | 12096 | 627835                        | 12400 | 622656 | 12708 | 617543 | 13020 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 643666 | 11505 | 638285 | 11801 | 632974 | 12102 | 627731                        | 12406 | 622554 | 12715 | 617441 | 13027 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 643557 | 11511 | 638178 | 11807 | 632869 | 12108 | 627627                        | 12412 | 622451 | 12721 | 617339 | 13033 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 643449 | 11517 | 638071 | 11813 | 632763 | 12114 | 627522                        | 12418 | 622348 | 12727 | 617238 | 13039 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 643341 | 11522 | 637965 | 11819 | 632658 | 12120 | 627418                        | 12425 | 622245 | 12733 | 617136 | 13046 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 643233 | 11528 | 637858 | 11825 | 632552 | 12126 | 627314                        | 12431 | 622142 | 12739 | 617035 | 13052 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 643125 | 11534 | 637751 | 11831 | 632447 | 12132 | 627210                        | 12437 | 622039 | 12746 | 616933 | 13058 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 643016 | 11540 | 637644 | 11837 | 632341 | 12138 | 627106                        | 12443 | 621937 | 12752 | 616832 | 13064 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 642908 | 11546 | 637537 | 11843 | 632236 | 12144 | 627002                        | 12449 | 621834 | 12758 | 616730 | 13071 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 642800 | 11552 | 637431 | 11849 | 632131 | 12150 | 626898                        | 12455 | 621731 | 12764 | 616629 | 13077 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 642692 | 11558 | 637324 | 11855 | 632025 | 12156 | 626794                        | 12461 | 621629 | 12770 | 616528 | 13083 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 642584 | 11564 | 637217 | 11861 | 631920 | 12162 | 626690                        | 12468 | 621526 | 12777 | 616426 | 13090 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 642476 | 11570 | 637111 | 11867 | 631815 | 12168 | 626586                        | 12474 | 621423 | 12783 | 616325 | 13096 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 166°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

14°

| ↓   | 0'     |       | 10'    |       | 20'    |       | 30'    |       | 40'    |       | 50'    |       |     |
|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-----|
|     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     |     |
| 0   | 616325 | 13096 | 611289 | 13413 | 606315 | 13734 | 601400 | 14058 | 596545 | 14387 | 591746 | 14720 | 10  |
| 0.2 | 616223 | 13102 | 611189 | 13419 | 606216 | 13740 | 601303 | 14065 | 596448 | 14394 | 591651 | 14726 | 9.8 |
| 0.4 | 616122 | 13108 | 611089 | 13426 | 606117 | 13747 | 601205 | 14071 | 596352 | 14400 | 591555 | 14733 | 9.6 |
| 0.6 | 616021 | 13115 | 610989 | 13432 | 606018 | 13753 | 601107 | 14078 | 596255 | 14407 | 591460 | 14740 | 9.4 |
| 0.8 | 615920 | 13121 | 610889 | 13438 | 605919 | 13759 | 601010 | 14085 | 596159 | 14414 | 591365 | 14746 | 9.2 |
| 1   | 615818 | 13127 | 610789 | 13445 | 605821 | 13766 | 600912 | 14091 | 596062 | 14420 | 591269 | 14753 | 9   |
| 1.2 | 615717 | 13134 | 610689 | 13451 | 605722 | 13772 | 600815 | 14098 | 595966 | 14427 | 591174 | 14760 | 8.8 |
| 1.4 | 615616 | 13140 | 610589 | 13457 | 605623 | 13779 | 600717 | 14104 | 595869 | 14433 | 591079 | 14767 | 8.6 |
| 1.6 | 615515 | 13146 | 610489 | 13464 | 605524 | 13785 | 600620 | 14111 | 595773 | 14440 | 590984 | 14773 | 8.4 |
| 1.8 | 615414 | 13153 | 610389 | 13470 | 605426 | 13792 | 600522 | 14117 | 595677 | 14447 | 590888 | 14780 | 8.2 |
| 2   | 615313 | 13159 | 610289 | 13477 | 605327 | 13798 | 600425 | 14124 | 595580 | 14453 | 590793 | 14787 | 8   |
| 2.2 | 615212 | 13165 | 610190 | 13483 | 605228 | 13805 | 600327 | 14130 | 595484 | 14460 | 590698 | 14793 | 7.8 |
| 2.4 | 615111 | 13172 | 610090 | 13489 | 605130 | 13811 | 600230 | 14137 | 595388 | 14467 | 590603 | 14800 | 7.6 |
| 2.6 | 615010 | 13178 | 609990 | 13496 | 605031 | 13818 | 600132 | 14143 | 595292 | 14473 | 590508 | 14807 | 7.4 |
| 2.8 | 614909 | 13184 | 609890 | 13502 | 604933 | 13824 | 600035 | 14150 | 595195 | 14480 | 590413 | 14814 | 7.2 |
| 3   | 614808 | 13191 | 609790 | 13509 | 604834 | 13831 | 599938 | 14157 | 595099 | 14486 | 590318 | 14820 | 7   |
| 3.2 | 614707 | 13197 | 609691 | 13515 | 604736 | 13837 | 599840 | 14163 | 595003 | 14493 | 590223 | 14827 | 6.8 |
| 3.4 | 614606 | 13203 | 609591 | 13521 | 604637 | 13844 | 599743 | 14170 | 594907 | 14500 | 590128 | 14834 | 6.6 |
| 3.6 | 614505 | 13210 | 609491 | 13528 | 604539 | 13850 | 599646 | 14176 | 594811 | 14506 | 590032 | 14840 | 6.4 |
| 3.8 | 614404 | 13216 | 609392 | 13534 | 604440 | 13857 | 599548 | 14183 | 594714 | 14513 | 589938 | 14847 | 6.2 |
| 4   | 614303 | 13222 | 609292 | 13541 | 604342 | 13863 | 599451 | 14189 | 594618 | 14520 | 589843 | 14854 | 6   |
| 4.2 | 614202 | 13229 | 609192 | 13547 | 604243 | 13870 | 599354 | 14196 | 594522 | 14526 | 589748 | 14861 | 5.8 |
| 4.4 | 614101 | 13235 | 609093 | 13554 | 604145 | 13876 | 599257 | 14203 | 594426 | 14533 | 589653 | 14867 | 5.6 |
| 4.6 | 614001 | 13241 | 608993 | 13560 | 604047 | 13883 | 599160 | 14209 | 594330 | 14540 | 589558 | 14874 | 5.4 |
| 4.8 | 613900 | 13248 | 608894 | 13566 | 603948 | 13889 | 599062 | 14216 | 594234 | 14546 | 589463 | 14881 | 5.2 |
| 5   | 613799 | 13254 | 608794 | 13573 | 603850 | 13896 | 598965 | 14222 | 594138 | 14553 | 589368 | 14887 | 5   |
| 5.2 | 613699 | 13260 | 608695 | 13579 | 603752 | 13902 | 598868 | 14229 | 594042 | 14560 | 589273 | 14894 | 4.8 |
| 5.4 | 613598 | 13267 | 608595 | 13586 | 603654 | 13909 | 598771 | 14235 | 593946 | 14566 | 589178 | 14901 | 4.6 |
| 5.6 | 613497 | 13273 | 608496 | 13592 | 603555 | 13915 | 598674 | 14242 | 593850 | 14573 | 589084 | 14908 | 4.4 |
| 5.8 | 613397 | 13279 | 608397 | 13598 | 603457 | 13922 | 598577 | 14249 | 593755 | 14580 | 588989 | 14914 | 4.2 |
| 6   | 613296 | 13286 | 608297 | 13605 | 603359 | 13928 | 598480 | 14255 | 593659 | 14586 | 588894 | 14921 | 4   |
| 6.2 | 613195 | 13292 | 608198 | 13611 | 603261 | 13935 | 598383 | 14262 | 593563 | 14593 | 588799 | 14928 | 3.8 |
| 6.4 | 613095 | 13298 | 608099 | 13618 | 603163 | 13941 | 598286 | 14268 | 593467 | 14599 | 588705 | 14935 | 3.6 |
| 6.6 | 612994 | 13305 | 607999 | 13624 | 603065 | 13948 | 598189 | 14275 | 593371 | 14606 | 588610 | 14941 | 3.4 |
| 6.8 | 612894 | 13311 | 607900 | 13631 | 602967 | 13954 | 598092 | 14281 | 593275 | 14613 | 588515 | 14948 | 3.2 |
| 7   | 612793 | 13317 | 607801 | 13637 | 602868 | 13961 | 597995 | 14288 | 593180 | 14619 | 588421 | 14955 | 3   |
| 7.2 | 612693 | 13324 | 607701 | 13643 | 602770 | 13967 | 597898 | 14295 | 593084 | 14626 | 588326 | 14962 | 2.8 |
| 7.4 | 612592 | 13330 | 607602 | 13650 | 602672 | 13974 | 597802 | 14301 | 592988 | 14633 | 588231 | 14968 | 2.6 |
| 7.6 | 612492 | 13336 | 607503 | 13656 | 602574 | 13980 | 597705 | 14308 | 592893 | 14640 | 588137 | 14975 | 2.4 |
| 7.8 | 612392 | 13343 | 607404 | 13663 | 602476 | 13987 | 597608 | 14314 | 592797 | 14646 | 588042 | 14982 | 2.2 |
| 8   | 612291 | 13349 | 607305 | 13669 | 602379 | 13993 | 597511 | 14321 | 592701 | 14653 | 587948 | 14989 | 2   |
| 8.2 | 612191 | 13355 | 607206 | 13676 | 602281 | 14000 | 597414 | 14328 | 592606 | 14660 | 587853 | 14995 | 1.8 |
| 8.4 | 612091 | 13362 | 607107 | 13682 | 602183 | 14006 | 597318 | 14334 | 592510 | 14666 | 587759 | 15002 | 1.6 |
| 8.6 | 611990 | 13368 | 607008 | 13689 | 602085 | 14013 | 597221 | 14341 | 592415 | 14673 | 587664 | 15009 | 1.4 |
| 8.8 | 611890 | 13375 | 606908 | 13695 | 601987 | 14019 | 597124 | 14347 | 592319 | 14680 | 587570 | 15016 | 1.2 |
| 9   | 611790 | 13381 | 606809 | 13701 | 601889 | 14026 | 597028 | 14354 | 592223 | 14686 | 587476 | 15022 | 1   |
| 9.2 | 611690 | 13387 | 606710 | 13708 | 601791 | 14032 | 596931 | 14361 | 592128 | 14693 | 587381 | 15029 | 0.8 |
| 9.4 | 611590 | 13394 | 606612 | 13714 | 601694 | 14039 | 596834 | 14367 | 592032 | 14700 | 587287 | 15036 | 0.6 |
| 9.6 | 611489 | 13400 | 606513 | 13721 | 601596 | 14045 | 596738 | 14374 | 591937 | 14706 | 587192 | 15043 | 0.4 |
| 9.8 | 611389 | 13406 | 606414 | 13727 | 601498 | 14052 | 596641 | 14380 | 591842 | 14713 | 587098 | 15049 | 0.2 |
| 10  | 611289 | 13413 | 606315 | 13734 | 601400 | 14058 | 596545 | 14387 | 591746 | 14720 | 587004 | 15056 | 0   |
|     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | ↑   |
|     | 50'    |       | 40'    |       | 30'    |       | 20'    |       | 10'    |       | 0'     |       |     |

165°

When meridian angle, t, is greater than 90°, take K from bottom of table.

Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table.

A(α) = 10^6 \* log (1 / sin α)

B(α) = 10^6 \* log (1 / cos α)

| 15°                                                                                                                               |        |       |        |       |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|---------------------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                                         |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                           | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 587004 | 15056 | 582316 | 15397 | 577682 | 15741 | 573101                                      | 16089 | 568571 | 16442 | 564092 | 16798 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 586909 | 15063 | 582223 | 15404 | 577590 | 15748 | 573010                                      | 16096 | 568481 | 16449 | 564003 | 16805 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 586815 | 15070 | 582130 | 15410 | 577498 | 15755 | 572919                                      | 16104 | 568391 | 16456 | 563914 | 16812 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 586721 | 15077 | 582037 | 15417 | 577406 | 15762 | 572828                                      | 16111 | 568301 | 16463 | 563825 | 16820 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 586627 | 15083 | 581944 | 15424 | 577314 | 15769 | 572737                                      | 16118 | 568211 | 16470 | 563736 | 16827 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 586533 | 15090 | 581850 | 15431 | 577222 | 15776 | 572646                                      | 16125 | 568121 | 16477 | 563647 | 16834 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 586438 | 15097 | 581757 | 15438 | 577130 | 15783 | 572555                                      | 16132 | 568031 | 16484 | 563558 | 16841 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 586344 | 15104 | 581664 | 15445 | 577038 | 15790 | 572464                                      | 16139 | 567941 | 16491 | 563469 | 16848 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 586250 | 15110 | 581571 | 15452 | 576946 | 15797 | 572373                                      | 16146 | 567851 | 16499 | 563380 | 16855 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 586156 | 15117 | 581478 | 15458 | 576854 | 15804 | 572282                                      | 16153 | 567761 | 16506 | 563291 | 16863 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 586062 | 15124 | 581385 | 15465 | 576762 | 15810 | 572191                                      | 16160 | 567671 | 16513 | 563202 | 16870 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 585968 | 15131 | 581292 | 15472 | 576670 | 15817 | 572100                                      | 16167 | 567582 | 16520 | 563113 | 16877 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 585874 | 15138 | 581199 | 15479 | 576578 | 15824 | 572009                                      | 16174 | 567492 | 16527 | 563024 | 16884 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 585780 | 15144 | 581106 | 15486 | 576486 | 15831 | 571919                                      | 16181 | 567402 | 16534 | 562935 | 16891 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 585686 | 15151 | 581013 | 15493 | 576394 | 15838 | 571828                                      | 16188 | 567312 | 16541 | 562847 | 16899 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 585592 | 15158 | 580921 | 15500 | 576303 | 15845 | 571737                                      | 16195 | 567222 | 16548 | 562758 | 16906 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 585498 | 15165 | 580828 | 15506 | 576211 | 15852 | 571646                                      | 16202 | 567133 | 16555 | 562669 | 16913 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 585404 | 15172 | 580735 | 15513 | 576119 | 15859 | 571555                                      | 16209 | 567043 | 16563 | 562580 | 16920 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 585310 | 15178 | 580642 | 15520 | 576027 | 15866 | 571465                                      | 16216 | 566953 | 16570 | 562492 | 16927 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 585216 | 15185 | 580549 | 15527 | 575935 | 15873 | 571374                                      | 16223 | 566863 | 16577 | 562403 | 16935 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 585122 | 15192 | 580456 | 15534 | 575844 | 15880 | 571283                                      | 16230 | 566774 | 16584 | 562314 | 16942 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 585028 | 15199 | 580364 | 15541 | 575752 | 15887 | 571192                                      | 16237 | 566684 | 16591 | 562225 | 16949 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 584935 | 15206 | 580271 | 15548 | 575660 | 15894 | 571102                                      | 16244 | 566594 | 16598 | 562137 | 16956 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 584841 | 15212 | 580178 | 15555 | 575569 | 15901 | 571011                                      | 16251 | 566505 | 16605 | 562048 | 16963 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 584747 | 15219 | 580085 | 15562 | 575477 | 15908 | 570921                                      | 16258 | 566415 | 16612 | 561959 | 16971 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 584653 | 15226 | 579993 | 15568 | 575385 | 15915 | 570830                                      | 16265 | 566325 | 16619 | 561871 | 16978 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 584559 | 15233 | 579900 | 15575 | 575294 | 15922 | 570739                                      | 16272 | 566236 | 16627 | 561782 | 16985 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 584466 | 15240 | 579807 | 15582 | 575202 | 15929 | 570649                                      | 16279 | 566146 | 16634 | 561694 | 16992 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 584372 | 15246 | 579715 | 15589 | 575111 | 15936 | 570558                                      | 16286 | 566057 | 16641 | 561605 | 16999 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 584278 | 15253 | 579622 | 15596 | 575019 | 15943 | 570468                                      | 16293 | 565967 | 16648 | 561517 | 17007 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 584185 | 15260 | 579530 | 15603 | 574927 | 15950 | 570377                                      | 16300 | 565878 | 16655 | 561428 | 17014 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 584091 | 15267 | 579437 | 15610 | 574836 | 15957 | 570287                                      | 16307 | 565788 | 16662 | 561340 | 17021 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 583998 | 15274 | 579345 | 15617 | 574744 | 15964 | 570196                                      | 16315 | 565699 | 16669 | 561251 | 17028 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 583904 | 15280 | 579252 | 15624 | 574653 | 15971 | 570106                                      | 16322 | 565609 | 16677 | 561163 | 17035 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 583810 | 15287 | 579159 | 15630 | 574562 | 15978 | 570015                                      | 16329 | 565520 | 16684 | 561074 | 17043 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 583717 | 15294 | 579067 | 15637 | 574470 | 15985 | 569925                                      | 16336 | 565431 | 16691 | 560986 | 17050 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 583623 | 15301 | 578975 | 15644 | 574379 | 15992 | 569835                                      | 16343 | 565341 | 16698 | 560897 | 17057 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 583530 | 15308 | 578882 | 15651 | 574287 | 15999 | 569744                                      | 16350 | 565252 | 16705 | 560809 | 17064 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 583436 | 15315 | 578790 | 15658 | 574196 | 16006 | 569654                                      | 16357 | 565162 | 16712 | 560721 | 17072 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 583343 | 15321 | 578697 | 15665 | 574105 | 16013 | 569564                                      | 16364 | 565073 | 16719 | 560632 | 17079 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 583249 | 15328 | 578605 | 15672 | 574013 | 16019 | 569473                                      | 16371 | 564984 | 16727 | 560544 | 17086 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 583156 | 15335 | 578513 | 15679 | 573922 | 16026 | 569383                                      | 16378 | 564895 | 16734 | 560456 | 17093 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 583063 | 15342 | 578420 | 15686 | 573831 | 16033 | 569293                                      | 16385 | 564805 | 16741 | 560367 | 17100 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 582969 | 15349 | 578328 | 15693 | 573739 | 16040 | 569202                                      | 16392 | 564716 | 16748 | 560279 | 17108 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 582876 | 15356 | 578236 | 15700 | 573648 | 16047 | 569112                                      | 16399 | 564627 | 16755 | 560191 | 17115 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 582783 | 15362 | 578143 | 15706 | 573557 | 16054 | 569022                                      | 16406 | 564538 | 16762 | 560103 | 17122 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 582689 | 15369 | 578051 | 15713 | 573466 | 16061 | 568932                                      | 16413 | 564448 | 16769 | 560015 | 17129 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 582596 | 15376 | 577959 | 15720 | 573375 | 16068 | 568842                                      | 16421 | 564359 | 16777 | 559926 | 17137 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 582503 | 15383 | 577867 | 15727 | 573283 | 16075 | 568752                                      | 16428 | 564270 | 16784 | 559838 | 17144 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 582409 | 15390 | 577775 | 15734 | 573192 | 16082 | 568661                                      | 16435 | 564181 | 16791 | 559750 | 17151 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 582316 | 15397 | 577682 | 15741 | 573101 | 16089 | 568571                                      | 16442 | 564092 | 16798 | 559662 | 17158 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                           | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                                         |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 164°                                                                                                                              |        |       |        |       |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                                             |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 * \log (1 / \sin \alpha)$                                                                                       |        |       |        |       |        |       | $B(\alpha) = 10^6 * \log (1 / \cos \alpha)$ |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

| 16°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ' ↓                                                                                                                               | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 559662 | 17158 | 555280 | 17523 | 550946 | 17891 | 546658                        | 18263 | 542416 | 18639 | 538218 | 19019 | 10  |
| 0.2                                                                                                                               | 559574 | 17166 | 555193 | 17530 | 550860 | 17898 | 546573                        | 18271 | 542332 | 18647 | 538135 | 19027 | 9.8 |
| 0.4                                                                                                                               | 559486 | 17173 | 555106 | 17537 | 550774 | 17906 | 546488                        | 18278 | 542247 | 18654 | 538051 | 19035 | 9.6 |
| 0.6                                                                                                                               | 559398 | 17180 | 555019 | 17545 | 550687 | 17913 | 546402                        | 18285 | 542163 | 18662 | 537968 | 19042 | 9.4 |
| 0.8                                                                                                                               | 559310 | 17187 | 554932 | 17552 | 550601 | 17920 | 546317                        | 18293 | 542079 | 18670 | 537884 | 19050 | 9.2 |
| 1                                                                                                                                 | 559222 | 17195 | 554845 | 17559 | 550515 | 17928 | 546232                        | 18300 | 541994 | 18677 | 537801 | 19058 | 9   |
| 1.2                                                                                                                               | 559134 | 17202 | 554758 | 17567 | 550429 | 17935 | 546147                        | 18308 | 541910 | 18685 | 537718 | 19065 | 8.8 |
| 1.4                                                                                                                               | 559046 | 17209 | 554671 | 17574 | 550343 | 17943 | 546062                        | 18315 | 541826 | 18692 | 537634 | 19073 | 8.6 |
| 1.6                                                                                                                               | 558958 | 17216 | 554584 | 17581 | 550257 | 17950 | 545976                        | 18323 | 541741 | 18700 | 537551 | 19081 | 8.4 |
| 1.8                                                                                                                               | 558870 | 17224 | 554497 | 17589 | 550171 | 17958 | 545891                        | 18330 | 541657 | 18707 | 537468 | 19088 | 8.2 |
| 2                                                                                                                                 | 558782 | 17231 | 554410 | 17596 | 550085 | 17965 | 545806                        | 18338 | 541573 | 18715 | 537384 | 19096 | 8   |
| 2.2                                                                                                                               | 558694 | 17238 | 554323 | 17603 | 549999 | 17972 | 545721                        | 18345 | 541489 | 18723 | 537301 | 19104 | 7.8 |
| 2.4                                                                                                                               | 558606 | 17245 | 554236 | 17611 | 549913 | 17980 | 545636                        | 18353 | 541405 | 18730 | 537218 | 19111 | 7.6 |
| 2.6                                                                                                                               | 558518 | 17253 | 554149 | 17618 | 549827 | 17987 | 545551                        | 18360 | 541320 | 18738 | 537134 | 19119 | 7.4 |
| 2.8                                                                                                                               | 558430 | 17260 | 554062 | 17625 | 549741 | 17995 | 545466                        | 18368 | 541236 | 18745 | 537051 | 19127 | 7.2 |
| 3                                                                                                                                 | 558342 | 17267 | 553975 | 17633 | 549655 | 18002 | 545381                        | 18375 | 541152 | 18753 | 536968 | 19134 | 7   |
| 3.2                                                                                                                               | 558255 | 17274 | 553888 | 17640 | 549569 | 18009 | 545296                        | 18383 | 541068 | 18760 | 536884 | 19142 | 6.8 |
| 3.4                                                                                                                               | 558167 | 17282 | 553801 | 17647 | 549483 | 18017 | 545211                        | 18390 | 540984 | 18768 | 536801 | 19150 | 6.6 |
| 3.6                                                                                                                               | 558079 | 17289 | 553715 | 17655 | 549397 | 18024 | 545126                        | 18398 | 540900 | 18776 | 536718 | 19157 | 6.4 |
| 3.8                                                                                                                               | 557991 | 17296 | 553628 | 17662 | 549311 | 18032 | 545041                        | 18406 | 540816 | 18783 | 536635 | 19165 | 6.2 |
| 4                                                                                                                                 | 557904 | 17304 | 553541 | 17669 | 549225 | 18039 | 544956                        | 18413 | 540732 | 18791 | 536552 | 19173 | 6   |
| 4.2                                                                                                                               | 557816 | 17311 | 553454 | 17677 | 549140 | 18047 | 544871                        | 18421 | 540648 | 18798 | 536469 | 19180 | 5.8 |
| 4.4                                                                                                                               | 557728 | 17318 | 553367 | 17684 | 549054 | 18054 | 544786                        | 18428 | 540564 | 18806 | 536385 | 19188 | 5.6 |
| 4.6                                                                                                                               | 557640 | 17325 | 553281 | 17691 | 548968 | 18062 | 544701                        | 18436 | 540480 | 18814 | 536302 | 19196 | 5.4 |
| 4.8                                                                                                                               | 557553 | 17333 | 553194 | 17699 | 548882 | 18069 | 544616                        | 18443 | 540396 | 18821 | 536219 | 19203 | 5.2 |
| 5                                                                                                                                 | 557465 | 17340 | 553107 | 17706 | 548796 | 18076 | 544531                        | 18451 | 540312 | 18829 | 536136 | 19211 | 5   |
| 5.2                                                                                                                               | 557377 | 17347 | 553021 | 17714 | 548711 | 18084 | 544447                        | 18458 | 540228 | 18836 | 536053 | 19219 | 4.8 |
| 5.4                                                                                                                               | 557290 | 17355 | 552934 | 17721 | 548625 | 18091 | 544362                        | 18466 | 540144 | 18844 | 535970 | 19226 | 4.6 |
| 5.6                                                                                                                               | 557202 | 17362 | 552847 | 17728 | 548539 | 18099 | 544277                        | 18473 | 540060 | 18852 | 535887 | 19234 | 4.4 |
| 5.8                                                                                                                               | 557115 | 17369 | 552761 | 17736 | 548453 | 18106 | 544192                        | 18481 | 539976 | 18859 | 535804 | 19242 | 4.2 |
| 6                                                                                                                                 | 557027 | 17376 | 552674 | 17743 | 548368 | 18114 | 544107                        | 18488 | 539892 | 18867 | 535721 | 19250 | 4   |
| 6.2                                                                                                                               | 556940 | 17384 | 552587 | 17750 | 548282 | 18121 | 544023                        | 18496 | 539808 | 18875 | 535638 | 19257 | 3.8 |
| 6.4                                                                                                                               | 556852 | 17391 | 552501 | 17758 | 548197 | 18129 | 543938                        | 18503 | 539724 | 18882 | 535555 | 19265 | 3.6 |
| 6.6                                                                                                                               | 556765 | 17398 | 552414 | 17765 | 548111 | 18136 | 543853                        | 18511 | 539641 | 18890 | 535472 | 19273 | 3.4 |
| 6.8                                                                                                                               | 556677 | 17406 | 552328 | 17773 | 548025 | 18143 | 543769                        | 18518 | 539557 | 18897 | 535389 | 19280 | 3.2 |
| 7                                                                                                                                 | 556590 | 17413 | 552241 | 17780 | 547940 | 18151 | 543684                        | 18526 | 539473 | 18905 | 535306 | 19288 | 3   |
| 7.2                                                                                                                               | 556502 | 17420 | 552155 | 17787 | 547854 | 18158 | 543599                        | 18534 | 539389 | 18913 | 535223 | 19296 | 2.8 |
| 7.4                                                                                                                               | 556415 | 17428 | 552068 | 17795 | 547769 | 18166 | 543515                        | 18541 | 539306 | 18920 | 535140 | 19303 | 2.6 |
| 7.6                                                                                                                               | 556327 | 17435 | 551982 | 17802 | 547683 | 18173 | 543430                        | 18549 | 539222 | 18928 | 535058 | 19311 | 2.4 |
| 7.8                                                                                                                               | 556240 | 17442 | 551896 | 17809 | 547598 | 18181 | 543345                        | 18556 | 539138 | 18935 | 534975 | 19319 | 2.2 |
| 8                                                                                                                                 | 556153 | 17449 | 551809 | 17817 | 547512 | 18188 | 543261                        | 18564 | 539054 | 18943 | 534892 | 19327 | 2   |
| 8.2                                                                                                                               | 556065 | 17457 | 551723 | 17824 | 547427 | 18196 | 543176                        | 18571 | 538971 | 18951 | 534809 | 19334 | 1.8 |
| 8.4                                                                                                                               | 555978 | 17464 | 551636 | 17832 | 547341 | 18203 | 543092                        | 18579 | 538887 | 18958 | 534726 | 19342 | 1.6 |
| 8.6                                                                                                                               | 555891 | 17471 | 551550 | 17839 | 547256 | 18211 | 543007                        | 18586 | 538803 | 18966 | 534644 | 19350 | 1.4 |
| 8.8                                                                                                                               | 555804 | 17479 | 551464 | 17846 | 547170 | 18218 | 542923                        | 18594 | 538720 | 18974 | 534561 | 19357 | 1.2 |
| 9                                                                                                                                 | 555716 | 17486 | 551377 | 17854 | 547085 | 18226 | 542838                        | 18601 | 538636 | 18981 | 534478 | 19365 | 1   |
| 9.2                                                                                                                               | 555629 | 17493 | 551291 | 17861 | 547000 | 18233 | 542754                        | 18609 | 538553 | 18989 | 534395 | 19373 | 0.8 |
| 9.4                                                                                                                               | 555542 | 17501 | 551205 | 17869 | 546914 | 18241 | 542669                        | 18617 | 538469 | 18997 | 534313 | 19381 | 0.6 |
| 9.6                                                                                                                               | 555455 | 17508 | 551118 | 17876 | 546829 | 18248 | 542585                        | 18624 | 538385 | 19004 | 534230 | 19388 | 0.4 |
| 9.8                                                                                                                               | 555367 | 17515 | 551032 | 17883 | 546744 | 18256 | 542500                        | 18632 | 538302 | 19012 | 534147 | 19396 | 0.2 |
| 10                                                                                                                                | 555280 | 17523 | 550946 | 17891 | 546658 | 18263 | 542416                        | 18639 | 538218 | 19019 | 534065 | 19404 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 163°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

17°

| '↓  | 0'     |       | 10'    |       | 20'    |       | 30'    |       | 40'    |       | 50'    |       |     |
|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-----|
|     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     |     |
| 0   | 534065 | 19404 | 529954 | 19792 | 525885 | 20184 | 521858 | 20580 | 517872 | 20981 | 513925 | 21385 | 10  |
| 0.2 | 533982 | 19411 | 529872 | 19800 | 525804 | 20192 | 521778 | 20588 | 517792 | 20989 | 513847 | 21393 | 9.8 |
| 0.4 | 533899 | 19419 | 529790 | 19808 | 525723 | 20200 | 521698 | 20596 | 517713 | 20997 | 513768 | 21401 | 9.6 |
| 0.6 | 533817 | 19427 | 529709 | 19815 | 525643 | 20208 | 521618 | 20604 | 517634 | 21005 | 513690 | 21410 | 9.4 |
| 0.8 | 533734 | 19435 | 529627 | 19823 | 525562 | 20216 | 521538 | 20612 | 517554 | 21013 | 513611 | 21418 | 9.2 |
| 1   | 533652 | 19442 | 529545 | 19831 | 525481 | 20224 | 521458 | 20620 | 517475 | 21021 | 513533 | 21426 | 9   |
| 1.2 | 533569 | 19450 | 529463 | 19839 | 525400 | 20232 | 521378 | 20628 | 517396 | 21029 | 513454 | 21434 | 8.8 |
| 1.4 | 533487 | 19458 | 529382 | 19847 | 525319 | 20239 | 521298 | 20636 | 517317 | 21037 | 513376 | 21442 | 8.6 |
| 1.6 | 533404 | 19466 | 529300 | 19854 | 525238 | 20247 | 521218 | 20644 | 517238 | 21045 | 513297 | 21450 | 8.4 |
| 1.8 | 533322 | 19473 | 529218 | 19862 | 525157 | 20255 | 521138 | 20652 | 517158 | 21053 | 513219 | 21458 | 8.2 |
| 2   | 533239 | 19481 | 529137 | 19870 | 525077 | 20263 | 521058 | 20660 | 517079 | 21061 | 513140 | 21467 | 8   |
| 2.2 | 533157 | 19489 | 529055 | 19878 | 524996 | 20271 | 520978 | 20668 | 517000 | 21069 | 513062 | 21475 | 7.8 |
| 2.4 | 533074 | 19496 | 528974 | 19886 | 524915 | 20279 | 520898 | 20676 | 516921 | 21078 | 512984 | 21483 | 7.6 |
| 2.6 | 532992 | 19504 | 528892 | 19894 | 524834 | 20287 | 520818 | 20684 | 516842 | 21086 | 512905 | 21491 | 7.4 |
| 2.8 | 532909 | 19512 | 528810 | 19901 | 524754 | 20295 | 520738 | 20692 | 516763 | 21094 | 512827 | 21499 | 7.2 |
| 3   | 532827 | 19520 | 528729 | 19909 | 524673 | 20303 | 520658 | 20700 | 516684 | 21102 | 512749 | 21507 | 7   |
| 3.2 | 532745 | 19527 | 528647 | 19917 | 524592 | 20311 | 520578 | 20708 | 516604 | 21110 | 512670 | 21515 | 6.8 |
| 3.4 | 532662 | 19535 | 528566 | 19925 | 524512 | 20318 | 520498 | 20716 | 516525 | 21118 | 512592 | 21524 | 6.6 |
| 3.6 | 532580 | 19543 | 528484 | 19933 | 524431 | 20326 | 520418 | 20724 | 516446 | 21126 | 512514 | 21532 | 6.4 |
| 3.8 | 532498 | 19551 | 528403 | 19941 | 524350 | 20334 | 520339 | 20732 | 516367 | 21134 | 512436 | 21540 | 6.2 |
| 4   | 532415 | 19558 | 528321 | 19948 | 524270 | 20342 | 520259 | 20740 | 516288 | 21142 | 512357 | 21548 | 6   |
| 4.2 | 532333 | 19566 | 528240 | 19956 | 524189 | 20350 | 520179 | 20748 | 516209 | 21150 | 512279 | 21556 | 5.8 |
| 4.4 | 532251 | 19574 | 528159 | 19964 | 524108 | 20358 | 520099 | 20756 | 516130 | 21158 | 512201 | 21564 | 5.6 |
| 4.6 | 532168 | 19582 | 528077 | 19972 | 524028 | 20366 | 520019 | 20764 | 516051 | 21166 | 512123 | 21573 | 5.4 |
| 4.8 | 532086 | 19590 | 527996 | 19980 | 523947 | 20374 | 519940 | 20772 | 515972 | 21174 | 512045 | 21581 | 5.2 |
| 5   | 532004 | 19597 | 527914 | 19988 | 523867 | 20382 | 519860 | 20780 | 515893 | 21183 | 511966 | 21589 | 5   |
| 5.2 | 531922 | 19605 | 527833 | 19995 | 523786 | 20390 | 519780 | 20788 | 515815 | 21191 | 511888 | 21597 | 4.8 |
| 5.4 | 531840 | 19613 | 527752 | 20003 | 523706 | 20398 | 519700 | 20796 | 515736 | 21199 | 511810 | 21605 | 4.6 |
| 5.6 | 531757 | 19621 | 527670 | 20011 | 523625 | 20406 | 519621 | 20804 | 515657 | 21207 | 511732 | 21613 | 4.4 |
| 5.8 | 531675 | 19628 | 527589 | 20019 | 523545 | 20414 | 519541 | 20812 | 515578 | 21215 | 511654 | 21622 | 4.2 |
| 6   | 531593 | 19636 | 527508 | 20027 | 523464 | 20421 | 519461 | 20820 | 515499 | 21223 | 511576 | 21630 | 4   |
| 6.2 | 531511 | 19644 | 527426 | 20035 | 523384 | 20429 | 519382 | 20828 | 515420 | 21231 | 511498 | 21638 | 3.8 |
| 6.4 | 531429 | 19652 | 527345 | 20043 | 523303 | 20437 | 519302 | 20836 | 515341 | 21239 | 511420 | 21646 | 3.6 |
| 6.6 | 531347 | 19659 | 527264 | 20050 | 523223 | 20445 | 519223 | 20844 | 515262 | 21247 | 511342 | 21654 | 3.4 |
| 6.8 | 531265 | 19667 | 527183 | 20058 | 523142 | 20453 | 519143 | 20852 | 515184 | 21255 | 511264 | 21663 | 3.2 |
| 7   | 531183 | 19675 | 527102 | 20066 | 523062 | 20461 | 519063 | 20860 | 515105 | 21263 | 511186 | 21671 | 3   |
| 7.2 | 531101 | 19683 | 527020 | 20074 | 522982 | 20469 | 518984 | 20868 | 515026 | 21272 | 511108 | 21679 | 2.8 |
| 7.4 | 531019 | 19691 | 526939 | 20082 | 522901 | 20477 | 518904 | 20876 | 514947 | 21280 | 511030 | 21687 | 2.6 |
| 7.6 | 530937 | 19698 | 526858 | 20090 | 522821 | 20485 | 518825 | 20884 | 514869 | 21288 | 510952 | 21695 | 2.4 |
| 7.8 | 530855 | 19706 | 526777 | 20098 | 522741 | 20493 | 518745 | 20892 | 514790 | 21296 | 510874 | 21703 | 2.2 |
| 8   | 530773 | 19714 | 526696 | 20105 | 522660 | 20501 | 518666 | 20900 | 514711 | 21304 | 510796 | 21712 | 2   |
| 8.2 | 530691 | 19722 | 526615 | 20113 | 522580 | 20509 | 518586 | 20908 | 514633 | 21312 | 510718 | 21720 | 1.8 |
| 8.4 | 530609 | 19730 | 526534 | 20121 | 522500 | 20517 | 518507 | 20917 | 514554 | 21320 | 510640 | 21728 | 1.6 |
| 8.6 | 530527 | 19737 | 526452 | 20129 | 522420 | 20525 | 518427 | 20925 | 514475 | 21328 | 510562 | 21736 | 1.4 |
| 8.8 | 530445 | 19745 | 526371 | 20137 | 522339 | 20533 | 518348 | 20933 | 514397 | 21336 | 510484 | 21744 | 1.2 |
| 9   | 530363 | 19753 | 526290 | 20145 | 522259 | 20541 | 518269 | 20941 | 514318 | 21345 | 510407 | 21753 | 1   |
| 9.2 | 530281 | 19761 | 526209 | 20153 | 522179 | 20549 | 518189 | 20949 | 514239 | 21353 | 510329 | 21761 | 0.8 |
| 9.4 | 530199 | 19769 | 526128 | 20161 | 522099 | 20557 | 518110 | 20957 | 514161 | 21361 | 510251 | 21769 | 0.6 |
| 9.6 | 530118 | 19776 | 526047 | 20168 | 522018 | 20565 | 518030 | 20965 | 514082 | 21369 | 510173 | 21777 | 0.4 |
| 9.8 | 530036 | 19784 | 525966 | 20176 | 521938 | 20573 | 517951 | 20973 | 514004 | 21377 | 510095 | 21785 | 0.2 |
| 10  | 529954 | 19792 | 525885 | 20184 | 521858 | 20580 | 517872 | 20981 | 513925 | 21385 | 510018 | 21794 | 0   |
|     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | '↑  |
|     | 50'    |       | 40'    |       | 30'    |       | 20'    |       | 10'    |       | 0'     |       |     |

162°

When meridian angle, t, is greater than 90°, take K from bottom of table.

Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table.

A(α) = 10^6 \* log (1 / sin α)

B(α) = 10^6 \* log (1 / cos α)

| 18°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 510018 | 21794 | 506149 | 22206 | 502318 | 22623 | 498524                        | 23043 | 494766 | 23468 | 491044 | 23897 | 10  |
| 0.2                                                                                                                               | 509940 | 21802 | 506072 | 22214 | 502241 | 22631 | 498448                        | 23052 | 494691 | 23477 | 490970 | 23906 | 9.8 |
| 0.4                                                                                                                               | 509862 | 21810 | 505995 | 22223 | 502165 | 22640 | 498373                        | 23060 | 494617 | 23485 | 490896 | 23914 | 9.6 |
| 0.6                                                                                                                               | 509784 | 21818 | 505918 | 22231 | 502089 | 22648 | 498297                        | 23069 | 494542 | 23494 | 490822 | 23923 | 9.4 |
| 0.8                                                                                                                               | 509707 | 21827 | 505841 | 22239 | 502013 | 22656 | 498222                        | 23077 | 494467 | 23502 | 490748 | 23931 | 9.2 |
| 1                                                                                                                                 | 509629 | 21835 | 505764 | 22248 | 501936 | 22665 | 498146                        | 23086 | 494392 | 23511 | 490674 | 23940 | 9   |
| 1.2                                                                                                                               | 509551 | 21843 | 505687 | 22256 | 501860 | 22673 | 498071                        | 23094 | 494318 | 23519 | 490600 | 23949 | 8.8 |
| 1.4                                                                                                                               | 509474 | 21851 | 505610 | 22264 | 501784 | 22681 | 497995                        | 23103 | 494243 | 23528 | 490526 | 23957 | 8.6 |
| 1.6                                                                                                                               | 509396 | 21859 | 505533 | 22273 | 501708 | 22690 | 497920                        | 23111 | 494168 | 23536 | 490452 | 23966 | 8.4 |
| 1.8                                                                                                                               | 509318 | 21868 | 505456 | 22281 | 501632 | 22698 | 497845                        | 23120 | 494094 | 23545 | 490378 | 23975 | 8.2 |
| 2                                                                                                                                 | 509241 | 21876 | 505379 | 22289 | 501556 | 22707 | 497769                        | 23128 | 494019 | 23554 | 490304 | 23983 | 8   |
| 2.2                                                                                                                               | 509163 | 21884 | 505303 | 22297 | 501480 | 22715 | 497694                        | 23137 | 493944 | 23562 | 490230 | 23992 | 7.8 |
| 2.4                                                                                                                               | 509086 | 21892 | 505226 | 22306 | 501404 | 22723 | 497618                        | 23145 | 493870 | 23571 | 490157 | 24001 | 7.6 |
| 2.6                                                                                                                               | 509008 | 21901 | 505149 | 22314 | 501328 | 22732 | 497543                        | 23153 | 493795 | 23579 | 490083 | 24009 | 7.4 |
| 2.8                                                                                                                               | 508930 | 21909 | 505072 | 22322 | 501252 | 22740 | 497468                        | 23162 | 493720 | 23588 | 490009 | 24018 | 7.2 |
| 3                                                                                                                                 | 508853 | 21917 | 504995 | 22331 | 501175 | 22749 | 497393                        | 23170 | 493646 | 23596 | 489935 | 24026 | 7   |
| 3.2                                                                                                                               | 508775 | 21925 | 504919 | 22339 | 501099 | 22757 | 497317                        | 23179 | 493571 | 23605 | 489861 | 24035 | 6.8 |
| 3.4                                                                                                                               | 508698 | 21933 | 504842 | 22347 | 501023 | 22765 | 497242                        | 23187 | 493497 | 23614 | 489787 | 24044 | 6.6 |
| 3.6                                                                                                                               | 508620 | 21942 | 504765 | 22356 | 500947 | 22774 | 497167                        | 23196 | 493422 | 23622 | 489713 | 24052 | 6.4 |
| 3.8                                                                                                                               | 508543 | 21950 | 504688 | 22364 | 500871 | 22782 | 497091                        | 23204 | 493348 | 23631 | 489640 | 24061 | 6.2 |
| 4                                                                                                                                 | 508465 | 21958 | 504612 | 22372 | 500796 | 22791 | 497016                        | 23213 | 493273 | 23639 | 489566 | 24070 | 6   |
| 4.2                                                                                                                               | 508388 | 21966 | 504535 | 22381 | 500720 | 22799 | 496941                        | 23221 | 493199 | 23648 | 489492 | 24078 | 5.8 |
| 4.4                                                                                                                               | 508311 | 21975 | 504458 | 22389 | 500644 | 22807 | 496866                        | 23230 | 493124 | 23656 | 489418 | 24087 | 5.6 |
| 4.6                                                                                                                               | 508233 | 21983 | 504382 | 22397 | 500568 | 22816 | 496791                        | 23238 | 493050 | 23665 | 489344 | 24096 | 5.4 |
| 4.8                                                                                                                               | 508156 | 21991 | 504305 | 22406 | 500492 | 22824 | 496715                        | 23247 | 492975 | 23673 | 489271 | 24104 | 5.2 |
| 5                                                                                                                                 | 508078 | 21999 | 504228 | 22414 | 500416 | 22833 | 496640                        | 23255 | 492901 | 23682 | 489197 | 24113 | 5   |
| 5.2                                                                                                                               | 508001 | 22008 | 504152 | 22422 | 500340 | 22841 | 496565                        | 23264 | 492826 | 23691 | 489123 | 24122 | 4.8 |
| 5.4                                                                                                                               | 507924 | 22016 | 504075 | 22431 | 500264 | 22849 | 496490                        | 23272 | 492752 | 23699 | 489049 | 24130 | 4.6 |
| 5.6                                                                                                                               | 507846 | 22024 | 503999 | 22439 | 500188 | 22858 | 496415                        | 23281 | 492678 | 23708 | 488976 | 24139 | 4.4 |
| 5.8                                                                                                                               | 507769 | 22032 | 503922 | 22447 | 500113 | 22866 | 496340                        | 23289 | 492603 | 23716 | 488902 | 24148 | 4.2 |
| 6                                                                                                                                 | 507692 | 22041 | 503846 | 22456 | 500037 | 22875 | 496265                        | 23298 | 492529 | 23725 | 488828 | 24156 | 4   |
| 6.2                                                                                                                               | 507614 | 22049 | 503769 | 22464 | 499961 | 22883 | 496190                        | 23306 | 492454 | 23734 | 488755 | 24165 | 3.8 |
| 6.4                                                                                                                               | 507537 | 22057 | 503692 | 22472 | 499885 | 22892 | 496115                        | 23315 | 492380 | 23742 | 488681 | 24174 | 3.6 |
| 6.6                                                                                                                               | 507460 | 22065 | 503616 | 22481 | 499809 | 22900 | 496040                        | 23323 | 492306 | 23751 | 488608 | 24182 | 3.4 |
| 6.8                                                                                                                               | 507383 | 22074 | 503539 | 22489 | 499734 | 22908 | 495965                        | 23332 | 492231 | 23759 | 488534 | 24191 | 3.2 |
| 7                                                                                                                                 | 507305 | 22082 | 503463 | 22497 | 499658 | 22917 | 495890                        | 23340 | 492157 | 23768 | 488460 | 24200 | 3   |
| 7.2                                                                                                                               | 507228 | 22090 | 503386 | 22506 | 499582 | 22925 | 495815                        | 23349 | 492083 | 23777 | 488387 | 24208 | 2.8 |
| 7.4                                                                                                                               | 507151 | 22099 | 503310 | 22514 | 499506 | 22934 | 495740                        | 23357 | 492009 | 23785 | 488313 | 24217 | 2.6 |
| 7.6                                                                                                                               | 507074 | 22107 | 503234 | 22522 | 499431 | 22942 | 495665                        | 23366 | 491934 | 23794 | 488240 | 24226 | 2.4 |
| 7.8                                                                                                                               | 506997 | 22115 | 503157 | 22531 | 499355 | 22951 | 495590                        | 23374 | 491860 | 23802 | 488166 | 24234 | 2.2 |
| 8                                                                                                                                 | 506919 | 22123 | 503081 | 22539 | 499279 | 22959 | 495515                        | 23383 | 491786 | 23811 | 488093 | 24243 | 2   |
| 8.2                                                                                                                               | 506842 | 22132 | 503004 | 22547 | 499204 | 22967 | 495440                        | 23391 | 491712 | 23820 | 488019 | 24252 | 1.8 |
| 8.4                                                                                                                               | 506765 | 22140 | 502928 | 22556 | 499128 | 22976 | 495365                        | 23400 | 491638 | 23828 | 487946 | 24260 | 1.6 |
| 8.6                                                                                                                               | 506688 | 22148 | 502852 | 22564 | 499053 | 22984 | 495290                        | 23408 | 491563 | 23837 | 487872 | 24269 | 1.4 |
| 8.8                                                                                                                               | 506611 | 22156 | 502775 | 22573 | 498977 | 22993 | 495215                        | 23417 | 491489 | 23845 | 487799 | 24278 | 1.2 |
| 9                                                                                                                                 | 506534 | 22165 | 502699 | 22581 | 498901 | 23001 | 495140                        | 23426 | 491415 | 23854 | 487725 | 24286 | 1   |
| 9.2                                                                                                                               | 506457 | 22173 | 502623 | 22589 | 498826 | 23010 | 495065                        | 23434 | 491341 | 23863 | 487652 | 24295 | 0.8 |
| 9.4                                                                                                                               | 506380 | 22181 | 502546 | 22598 | 498750 | 23018 | 494990                        | 23443 | 491267 | 23871 | 487578 | 24304 | 0.6 |
| 9.6                                                                                                                               | 506303 | 22190 | 502470 | 22606 | 498675 | 23027 | 494916                        | 23451 | 491193 | 23880 | 487505 | 24313 | 0.4 |
| 9.8                                                                                                                               | 506226 | 22198 | 502394 | 22614 | 498599 | 23035 | 494841                        | 23460 | 491119 | 23888 | 487431 | 24321 | 0.2 |
| 10                                                                                                                                | 506149 | 22206 | 502318 | 22623 | 498524 | 23043 | 494766                        | 23468 | 491044 | 23897 | 487358 | 24330 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 161°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 19°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ' ↓                                                                                                                               | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 487358 | 24330 | 483706 | 24767 | 480089 | 25208 | 476505                        | 25653 | 472954 | 26103 | 469435 | 26556 | 10  |
| 0.2                                                                                                                               | 487285 | 24339 | 483634 | 24776 | 480017 | 25217 | 476433                        | 25662 | 472883 | 26112 | 469365 | 26566 | 9.8 |
| 0.4                                                                                                                               | 487211 | 24347 | 483561 | 24785 | 479945 | 25226 | 476362                        | 25671 | 472812 | 26121 | 469295 | 26575 | 9.6 |
| 0.6                                                                                                                               | 487138 | 24356 | 483488 | 24793 | 479873 | 25235 | 476291                        | 25680 | 472742 | 26130 | 469225 | 26584 | 9.4 |
| 0.8                                                                                                                               | 487065 | 24365 | 483416 | 24802 | 479801 | 25244 | 476219                        | 25689 | 472671 | 26139 | 469155 | 26593 | 9.2 |
| 1                                                                                                                                 | 486991 | 24373 | 483343 | 24811 | 479729 | 25252 | 476148                        | 25698 | 472600 | 26148 | 469085 | 26602 | 9   |
| 1.2                                                                                                                               | 486918 | 24382 | 483270 | 24820 | 479657 | 25261 | 476077                        | 25707 | 472530 | 26157 | 469015 | 26611 | 8.8 |
| 1.4                                                                                                                               | 486845 | 24391 | 483198 | 24828 | 479585 | 25270 | 476006                        | 25716 | 472459 | 26166 | 468945 | 26620 | 8.6 |
| 1.6                                                                                                                               | 486771 | 24400 | 483125 | 24837 | 479513 | 25279 | 475934                        | 25725 | 472389 | 26175 | 468875 | 26629 | 8.4 |
| 1.8                                                                                                                               | 486698 | 24408 | 483053 | 24846 | 479441 | 25288 | 475863                        | 25734 | 472318 | 26184 | 468805 | 26639 | 8.2 |
| 2                                                                                                                                 | 486625 | 24417 | 482980 | 24855 | 479369 | 25297 | 475792                        | 25743 | 472247 | 26193 | 468735 | 26648 | 8   |
| 2.2                                                                                                                               | 486552 | 24426 | 482908 | 24864 | 479297 | 25306 | 475721                        | 25752 | 472177 | 26202 | 468665 | 26657 | 7.8 |
| 2.4                                                                                                                               | 486479 | 24434 | 482835 | 24872 | 479226 | 25315 | 475649                        | 25761 | 472106 | 26211 | 468595 | 26666 | 7.6 |
| 2.6                                                                                                                               | 486405 | 24443 | 482763 | 24881 | 479154 | 25324 | 475578                        | 25770 | 472036 | 26220 | 468525 | 26675 | 7.4 |
| 2.8                                                                                                                               | 486332 | 24452 | 482690 | 24890 | 479082 | 25332 | 475507                        | 25779 | 471965 | 26229 | 468456 | 26684 | 7.2 |
| 3                                                                                                                                 | 486259 | 24461 | 482618 | 24899 | 479010 | 25341 | 475436                        | 25788 | 471895 | 26239 | 468386 | 26693 | 7   |
| 3.2                                                                                                                               | 486186 | 24469 | 482545 | 24908 | 478938 | 25350 | 475365                        | 25797 | 471824 | 26248 | 468316 | 26702 | 6.8 |
| 3.4                                                                                                                               | 486113 | 24478 | 482473 | 24917 | 478866 | 25359 | 475294                        | 25806 | 471754 | 26257 | 468246 | 26712 | 6.6 |
| 3.6                                                                                                                               | 486040 | 24487 | 482400 | 24925 | 478795 | 25368 | 475223                        | 25815 | 471683 | 26266 | 468176 | 26721 | 6.4 |
| 3.8                                                                                                                               | 485966 | 24496 | 482328 | 24934 | 478723 | 25377 | 475151                        | 25824 | 471613 | 26275 | 468106 | 26730 | 6.2 |
| 4                                                                                                                                 | 485893 | 24504 | 482255 | 24943 | 478651 | 25386 | 475080                        | 25833 | 471542 | 26284 | 468037 | 26739 | 6   |
| 4.2                                                                                                                               | 485820 | 24513 | 482183 | 24952 | 478579 | 25395 | 475009                        | 25842 | 471472 | 26293 | 467967 | 26748 | 5.8 |
| 4.4                                                                                                                               | 485747 | 24522 | 482110 | 24961 | 478508 | 25404 | 474938                        | 25851 | 471401 | 26302 | 467897 | 26757 | 5.6 |
| 4.6                                                                                                                               | 485674 | 24530 | 482038 | 24969 | 478436 | 25412 | 474867                        | 25860 | 471331 | 26311 | 467827 | 26766 | 5.4 |
| 4.8                                                                                                                               | 485601 | 24539 | 481966 | 24978 | 478364 | 25421 | 474796                        | 25869 | 471261 | 26320 | 467757 | 26776 | 5.2 |
| 5                                                                                                                                 | 485528 | 24548 | 481893 | 24987 | 478293 | 25430 | 474725                        | 25878 | 471190 | 26329 | 467688 | 26785 | 5   |
| 5.2                                                                                                                               | 485455 | 24557 | 481821 | 24996 | 478221 | 25439 | 474654                        | 25887 | 471120 | 26338 | 467618 | 26794 | 4.8 |
| 5.4                                                                                                                               | 485382 | 24565 | 481749 | 25005 | 478149 | 25448 | 474583                        | 25896 | 471050 | 26347 | 467548 | 26803 | 4.6 |
| 5.6                                                                                                                               | 485309 | 24574 | 481676 | 25014 | 478078 | 25457 | 474512                        | 25905 | 470979 | 26356 | 467479 | 26812 | 4.4 |
| 5.8                                                                                                                               | 485236 | 24583 | 481604 | 25022 | 478006 | 25466 | 474441                        | 25914 | 470909 | 26365 | 467409 | 26821 | 4.2 |
| 6                                                                                                                                 | 485163 | 24592 | 481532 | 25031 | 477934 | 25475 | 474370                        | 25923 | 470839 | 26375 | 467339 | 26831 | 4   |
| 6.2                                                                                                                               | 485090 | 24600 | 481460 | 25040 | 477863 | 25484 | 474299                        | 25932 | 470768 | 26384 | 467270 | 26840 | 3.8 |
| 6.4                                                                                                                               | 485017 | 24609 | 481387 | 25049 | 477791 | 25493 | 474228                        | 25941 | 470698 | 26393 | 467200 | 26849 | 3.6 |
| 6.6                                                                                                                               | 484944 | 24618 | 481315 | 25058 | 477720 | 25502 | 474157                        | 25950 | 470628 | 26402 | 467130 | 26858 | 3.4 |
| 6.8                                                                                                                               | 484871 | 24627 | 481243 | 25067 | 477648 | 25511 | 474086                        | 25959 | 470557 | 26411 | 467061 | 26867 | 3.2 |
| 7                                                                                                                                 | 484798 | 24635 | 481171 | 25075 | 477576 | 25519 | 474016                        | 25968 | 470487 | 26420 | 466991 | 26876 | 3   |
| 7.2                                                                                                                               | 484725 | 24644 | 481098 | 25084 | 477505 | 25528 | 473945                        | 25977 | 470417 | 26429 | 466921 | 26886 | 2.8 |
| 7.4                                                                                                                               | 484653 | 24653 | 481026 | 25093 | 477433 | 25537 | 473874                        | 25986 | 470347 | 26438 | 466852 | 26895 | 2.6 |
| 7.6                                                                                                                               | 484580 | 24662 | 480954 | 25102 | 477362 | 25546 | 473803                        | 25995 | 470277 | 26447 | 466782 | 26904 | 2.4 |
| 7.8                                                                                                                               | 484507 | 24670 | 480882 | 25111 | 477290 | 25555 | 473732                        | 26004 | 470206 | 26456 | 466713 | 26913 | 2.2 |
| 8                                                                                                                                 | 484434 | 24679 | 480810 | 25120 | 477219 | 25564 | 473661                        | 26013 | 470136 | 26465 | 466643 | 26922 | 2   |
| 8.2                                                                                                                               | 484361 | 24688 | 480737 | 25128 | 477147 | 25573 | 473590                        | 26022 | 470066 | 26475 | 466574 | 26931 | 1.8 |
| 8.4                                                                                                                               | 484288 | 24697 | 480665 | 25137 | 477076 | 25582 | 473520                        | 26031 | 469996 | 26484 | 466504 | 26941 | 1.6 |
| 8.6                                                                                                                               | 484216 | 24706 | 480593 | 25146 | 477005 | 25591 | 473449                        | 26040 | 469926 | 26493 | 466435 | 26950 | 1.4 |
| 8.8                                                                                                                               | 484143 | 24714 | 480521 | 25155 | 476933 | 25600 | 473378                        | 26049 | 469856 | 26502 | 466365 | 26959 | 1.2 |
| 9                                                                                                                                 | 484070 | 24723 | 480449 | 25164 | 476862 | 25609 | 473307                        | 26058 | 469785 | 26511 | 466296 | 26968 | 1   |
| 9.2                                                                                                                               | 483997 | 24732 | 480377 | 25173 | 476790 | 25618 | 473237                        | 26067 | 469715 | 26520 | 466226 | 26977 | 0.8 |
| 9.4                                                                                                                               | 483925 | 24741 | 480305 | 25182 | 476719 | 25627 | 473166                        | 26076 | 469645 | 26529 | 466157 | 26987 | 0.6 |
| 9.6                                                                                                                               | 483852 | 24749 | 480233 | 25190 | 476647 | 25636 | 473095                        | 26085 | 469575 | 26538 | 466087 | 26996 | 0.4 |
| 9.8                                                                                                                               | 483779 | 24758 | 480161 | 25199 | 476576 | 25645 | 473024                        | 26094 | 469505 | 26547 | 466018 | 27005 | 0.2 |
| 10                                                                                                                                | 483706 | 24767 | 480089 | 25208 | 476505 | 25653 | 472954                        | 26103 | 469435 | 26556 | 465948 | 27014 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ' ↑ |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 160°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 20°                                                                                                                               |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|------------------------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                                            |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                              | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 465948 | 27014 | 462493 | 27476 | 459069 | 27942 | 455675                                         | 28412 | 452311 | 28887 | 448976 | 29365 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 465879 | 27023 | 462424 | 27485 | 459000 | 27951 | 455607                                         | 28422 | 452244 | 28896 | 448910 | 29375 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 465810 | 27033 | 462355 | 27495 | 458932 | 27961 | 455540                                         | 28431 | 452177 | 28906 | 448843 | 29385 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 465740 | 27042 | 462287 | 27504 | 458864 | 27970 | 455472                                         | 28441 | 452110 | 28915 | 448777 | 29394 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 465671 | 27051 | 462218 | 27513 | 458796 | 27980 | 455404                                         | 28450 | 452043 | 28925 | 448711 | 29404 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 465601 | 27060 | 462149 | 27522 | 458728 | 27989 | 455337                                         | 28460 | 451976 | 28934 | 448644 | 29414 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 465532 | 27069 | 462080 | 27532 | 458660 | 27998 | 455269                                         | 28469 | 451909 | 28944 | 448578 | 29423 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 465463 | 27079 | 462012 | 27541 | 458592 | 28008 | 455202                                         | 28479 | 451842 | 28954 | 448512 | 29433 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 465393 | 27088 | 461943 | 27550 | 458524 | 28017 | 455134                                         | 28488 | 451775 | 28963 | 448445 | 29442 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 465324 | 27097 | 461874 | 27560 | 458456 | 28026 | 455067                                         | 28497 | 451708 | 28973 | 448379 | 29452 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 465255 | 27106 | 461806 | 27569 | 458387 | 28036 | 455000                                         | 28507 | 451641 | 28982 | 448313 | 29462 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 465185 | 27115 | 461737 | 27578 | 458319 | 28045 | 454932                                         | 28516 | 451575 | 28992 | 448247 | 29471 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 465116 | 27125 | 461668 | 27588 | 458251 | 28055 | 454865                                         | 28526 | 451508 | 29001 | 448180 | 29481 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 465047 | 27134 | 461600 | 27597 | 458183 | 28064 | 454797                                         | 28535 | 451441 | 29011 | 448114 | 29491 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 464978 | 27143 | 461531 | 27606 | 458115 | 28073 | 454730                                         | 28545 | 451374 | 29020 | 448048 | 29500 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 464908 | 27152 | 461462 | 27615 | 458047 | 28083 | 454662                                         | 28554 | 451307 | 29030 | 447982 | 29510 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 464839 | 27162 | 461394 | 27625 | 457979 | 28092 | 454595                                         | 28564 | 451241 | 29040 | 447915 | 29519 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 464770 | 27171 | 461325 | 27634 | 457911 | 28102 | 454528                                         | 28573 | 451174 | 29049 | 447849 | 29529 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 464701 | 27180 | 461257 | 27643 | 457843 | 28111 | 454460                                         | 28583 | 451107 | 29059 | 447783 | 29539 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 464632 | 27189 | 461188 | 27653 | 457775 | 28120 | 454393                                         | 28592 | 451040 | 29068 | 447717 | 29548 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 464562 | 27198 | 461120 | 27662 | 457707 | 28130 | 454326                                         | 28602 | 450973 | 29078 | 447651 | 29558 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 464493 | 27208 | 461051 | 27671 | 457640 | 28139 | 454258                                         | 28611 | 450907 | 29087 | 447584 | 29568 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 464424 | 27217 | 460983 | 27681 | 457572 | 28149 | 454191                                         | 28621 | 450840 | 29097 | 447518 | 29577 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 464355 | 27226 | 460914 | 27690 | 457504 | 28158 | 454124                                         | 28630 | 450773 | 29106 | 447452 | 29587 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 464286 | 27235 | 460845 | 27699 | 457436 | 28167 | 454056                                         | 28640 | 450707 | 29116 | 447386 | 29597 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 464217 | 27245 | 460777 | 27709 | 457368 | 28177 | 453989                                         | 28649 | 450640 | 29126 | 447320 | 29606 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 464148 | 27254 | 460709 | 27718 | 457300 | 28186 | 453922                                         | 28659 | 450573 | 29135 | 447254 | 29616 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 464079 | 27263 | 460640 | 27727 | 457232 | 28196 | 453854                                         | 28668 | 450506 | 29145 | 447188 | 29626 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 464010 | 27272 | 460572 | 27737 | 457164 | 28205 | 453787                                         | 28678 | 450440 | 29154 | 447122 | 29635 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 463940 | 27282 | 460503 | 27746 | 457096 | 28214 | 453720                                         | 28687 | 450373 | 29164 | 447056 | 29645 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 463871 | 27291 | 460435 | 27755 | 457029 | 28224 | 453653                                         | 28697 | 450307 | 29173 | 446990 | 29655 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 463802 | 27300 | 460366 | 27765 | 456961 | 28233 | 453586                                         | 28706 | 450240 | 29183 | 446924 | 29664 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 463733 | 27309 | 460298 | 27774 | 456893 | 28243 | 453518                                         | 28716 | 450173 | 29193 | 446857 | 29674 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 463664 | 27319 | 460229 | 27783 | 456825 | 28252 | 453451                                         | 28725 | 450107 | 29202 | 446791 | 29684 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 463595 | 27328 | 460161 | 27793 | 456757 | 28261 | 453384                                         | 28735 | 450040 | 29212 | 446725 | 29693 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 463526 | 27337 | 460093 | 27802 | 456690 | 28271 | 453317                                         | 28744 | 449974 | 29221 | 446659 | 29703 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 463457 | 27346 | 460024 | 27811 | 456622 | 28280 | 453250                                         | 28754 | 449907 | 29231 | 446593 | 29713 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 463388 | 27356 | 459956 | 27821 | 456554 | 28290 | 453183                                         | 28763 | 449840 | 29241 | 446527 | 29722 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 463319 | 27365 | 459888 | 27830 | 456486 | 28299 | 453115                                         | 28773 | 449774 | 29250 | 446462 | 29732 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 463251 | 27374 | 459819 | 27839 | 456419 | 28309 | 453048                                         | 28782 | 449707 | 29260 | 446396 | 29742 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 463182 | 27383 | 459751 | 27849 | 456351 | 28318 | 452981                                         | 28792 | 449641 | 29269 | 446330 | 29751 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 463113 | 27393 | 459683 | 27858 | 456283 | 28327 | 452914                                         | 28801 | 449574 | 29279 | 446264 | 29761 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 463044 | 27402 | 459614 | 27867 | 456216 | 28337 | 452847                                         | 28811 | 449508 | 29289 | 446198 | 29771 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 462975 | 27411 | 459546 | 27877 | 456148 | 28346 | 452780                                         | 28820 | 449441 | 29298 | 446132 | 29780 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 462906 | 27420 | 459478 | 27886 | 456080 | 28356 | 452713                                         | 28830 | 449375 | 29308 | 446066 | 29790 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 462837 | 27430 | 459410 | 27895 | 456013 | 28365 | 452646                                         | 28839 | 449308 | 29317 | 446000 | 29800 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 462768 | 27439 | 459341 | 27905 | 455945 | 28375 | 452579                                         | 28849 | 449242 | 29327 | 445934 | 29809 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 462699 | 27448 | 459273 | 27914 | 455877 | 28384 | 452512                                         | 28858 | 449176 | 29337 | 445868 | 29819 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 462631 | 27458 | 459205 | 27923 | 455810 | 28393 | 452445                                         | 28868 | 449109 | 29346 | 445803 | 29829 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 462562 | 27467 | 459137 | 27933 | 455742 | 28403 | 452378                                         | 28877 | 449043 | 29356 | 445737 | 29839 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 462493 | 27476 | 459069 | 27942 | 455675 | 28412 | 452311                                         | 28887 | 448976 | 29365 | 445671 | 29848 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                              | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                                            |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 159°                                                                                                                              |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 \cdot \log(1 / \sin \alpha)$                                                                                    |        |       |        |       |        |       | $B(\alpha) = 10^6 \cdot \log(1 / \cos \alpha)$ |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |

| 21°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 445671 | 29848 | 442394 | 30335 | 439145 | 30827 | 435925                        | 31322 | 432731 | 31822 | 429565 | 32326 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 445605 | 29858 | 442329 | 30345 | 439081 | 30836 | 435860                        | 31332 | 432667 | 31832 | 429501 | 32336 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 445539 | 29868 | 442264 | 30355 | 439016 | 30846 | 435796                        | 31342 | 432604 | 31842 | 429438 | 32346 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 445473 | 29877 | 442198 | 30365 | 438951 | 30856 | 435732                        | 31352 | 432540 | 31852 | 429375 | 32356 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 445408 | 29887 | 442133 | 30374 | 438887 | 30866 | 435668                        | 31362 | 432477 | 31862 | 429312 | 32366 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 445342 | 29897 | 442068 | 30384 | 438822 | 30876 | 435604                        | 31372 | 432413 | 31872 | 429249 | 32376 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 445276 | 29906 | 442003 | 30394 | 438757 | 30886 | 435540                        | 31382 | 432350 | 31882 | 429186 | 32387 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 445210 | 29916 | 441938 | 30404 | 438693 | 30896 | 435476                        | 31392 | 432286 | 31892 | 429123 | 32397 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 445145 | 29926 | 441872 | 30414 | 438628 | 30906 | 435412                        | 31402 | 432223 | 31902 | 429060 | 32407 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 445079 | 29936 | 441807 | 30423 | 438564 | 30915 | 435348                        | 31412 | 432159 | 31912 | 428997 | 32417 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 445013 | 29945 | 441742 | 30433 | 438499 | 30925 | 435284                        | 31422 | 432096 | 31922 | 428934 | 32427 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 444948 | 29955 | 441677 | 30443 | 438434 | 30935 | 435220                        | 31432 | 432032 | 31932 | 428871 | 32437 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 444882 | 29965 | 441612 | 30453 | 438370 | 30945 | 435156                        | 31442 | 431969 | 31942 | 428809 | 32447 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 444816 | 29974 | 441547 | 30463 | 438305 | 30955 | 435092                        | 31452 | 431905 | 31952 | 428746 | 32458 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 444750 | 29984 | 441482 | 30472 | 438241 | 30965 | 435028                        | 31462 | 431842 | 31963 | 428683 | 32468 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 444685 | 29994 | 441417 | 30482 | 438176 | 30975 | 434964                        | 31472 | 431778 | 31973 | 428620 | 32478 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 444619 | 30004 | 441351 | 30492 | 438112 | 30985 | 434900                        | 31482 | 431715 | 31983 | 428557 | 32488 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 444554 | 30013 | 441286 | 30502 | 438047 | 30995 | 434836                        | 31492 | 431651 | 31993 | 428494 | 32498 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 444488 | 30023 | 441221 | 30512 | 437983 | 31004 | 434772                        | 31502 | 431588 | 32003 | 428431 | 32508 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 444422 | 30033 | 441156 | 30521 | 437918 | 31014 | 434708                        | 31512 | 431525 | 32013 | 428368 | 32519 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 444357 | 30043 | 441091 | 30531 | 437854 | 31024 | 434644                        | 31521 | 431461 | 32023 | 428305 | 32529 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 444291 | 30052 | 441026 | 30541 | 437789 | 31034 | 434580                        | 31531 | 431398 | 32033 | 428243 | 32539 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 444226 | 30062 | 440961 | 30551 | 437725 | 31044 | 434516                        | 31541 | 431335 | 32043 | 428180 | 32549 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 444160 | 30072 | 440896 | 30561 | 437660 | 31054 | 434452                        | 31551 | 431271 | 32053 | 428117 | 32559 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 444094 | 30082 | 440831 | 30571 | 437596 | 31064 | 434388                        | 31561 | 431208 | 32063 | 428054 | 32569 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 444029 | 30091 | 440766 | 30580 | 437532 | 31074 | 434324                        | 31571 | 431144 | 32073 | 427991 | 32579 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 443963 | 30101 | 440701 | 30590 | 437467 | 31084 | 434261                        | 31581 | 431081 | 32083 | 427928 | 32590 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 443898 | 30111 | 440636 | 30600 | 437403 | 31094 | 434197                        | 31591 | 431018 | 32093 | 427866 | 32600 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 443832 | 30120 | 440571 | 30610 | 437338 | 31104 | 434133                        | 31601 | 430955 | 32104 | 427803 | 32610 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 443767 | 30130 | 440506 | 30620 | 437274 | 31113 | 434069                        | 31611 | 430891 | 32114 | 427740 | 32620 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 443701 | 30140 | 440442 | 30630 | 437210 | 31123 | 434005                        | 31621 | 430828 | 32124 | 427677 | 32630 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 443636 | 30150 | 440377 | 30639 | 437145 | 31133 | 433941                        | 31631 | 430765 | 32134 | 427615 | 32640 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 443570 | 30159 | 440312 | 30649 | 437081 | 31143 | 433878                        | 31641 | 430701 | 32144 | 427552 | 32651 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 443505 | 30169 | 440247 | 30659 | 437017 | 31153 | 433814                        | 31651 | 430638 | 32154 | 427489 | 32661 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 443440 | 30179 | 440182 | 30669 | 436952 | 31163 | 433750                        | 31661 | 430575 | 32164 | 427427 | 32671 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 443374 | 30189 | 440117 | 30679 | 436888 | 31173 | 433686                        | 31671 | 430512 | 32174 | 427364 | 32681 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 443309 | 30199 | 440052 | 30689 | 436824 | 31183 | 433623                        | 31681 | 430448 | 32184 | 427301 | 32691 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 443243 | 30208 | 439987 | 30698 | 436759 | 31193 | 433559                        | 31692 | 430385 | 32194 | 427238 | 32702 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 443178 | 30218 | 439923 | 30708 | 436695 | 31203 | 433495                        | 31702 | 430322 | 32205 | 427176 | 32712 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 443112 | 30228 | 439858 | 30718 | 436631 | 31213 | 433431                        | 31712 | 430259 | 32215 | 427113 | 32722 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 443047 | 30238 | 439793 | 30728 | 436567 | 31223 | 433368                        | 31722 | 430196 | 32225 | 427050 | 32732 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 442982 | 30247 | 439728 | 30738 | 436502 | 31233 | 433304                        | 31732 | 430133 | 32235 | 426988 | 32742 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 442916 | 30257 | 439663 | 30748 | 436438 | 31243 | 433240                        | 31742 | 430069 | 32245 | 426925 | 32753 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 442851 | 30267 | 439599 | 30758 | 436374 | 31252 | 433177                        | 31752 | 430006 | 32255 | 426863 | 32763 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 442786 | 30277 | 439534 | 30767 | 436310 | 31262 | 433113                        | 31762 | 429943 | 32265 | 426800 | 32773 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 442720 | 30286 | 439469 | 30777 | 436245 | 31272 | 433049                        | 31772 | 429880 | 32275 | 426737 | 32783 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 442655 | 30296 | 439404 | 30787 | 436181 | 31282 | 432986                        | 31782 | 429817 | 32285 | 426675 | 32793 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 442590 | 30306 | 439340 | 30797 | 436117 | 31292 | 432922                        | 31792 | 429754 | 32296 | 426612 | 32804 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 442525 | 30316 | 439275 | 30807 | 436053 | 31302 | 432858                        | 31802 | 429691 | 32306 | 426550 | 32814 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 442459 | 30326 | 439210 | 30817 | 435989 | 31312 | 432795                        | 31812 | 429628 | 32316 | 426487 | 32824 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 442394 | 30335 | 439145 | 30827 | 435925 | 31322 | 432731                        | 31822 | 429565 | 32326 | 426425 | 32834 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 158°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |

22°

| ↓   | 0'     |       | 10'    |       | 20'    |       | 30'    |       | 40'    |       | 50'    |       |     |
|-----|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|-----|
|     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     |     |
| 0   | 426425 | 32834 | 423311 | 33347 | 420223 | 33864 | 417160 | 34385 | 414123 | 34910 | 411110 | 35440 | 10  |
| 0.2 | 426362 | 32844 | 423249 | 33357 | 420161 | 33874 | 417099 | 34395 | 414062 | 34921 | 411050 | 35450 | 9.8 |
| 0.4 | 426300 | 32855 | 423187 | 33367 | 420100 | 33884 | 417038 | 34406 | 414002 | 34931 | 410990 | 35461 | 9.6 |
| 0.6 | 426237 | 32865 | 423125 | 33378 | 420038 | 33895 | 416977 | 34416 | 413941 | 34942 | 410930 | 35472 | 9.4 |
| 0.8 | 426175 | 32875 | 423063 | 33388 | 419977 | 33905 | 416916 | 34427 | 413881 | 34952 | 410870 | 35482 | 9.2 |
| 1   | 426112 | 32885 | 423001 | 33398 | 419915 | 33915 | 416855 | 34437 | 413821 | 34963 | 410810 | 35493 | 9   |
| 1.2 | 426050 | 32895 | 422939 | 33408 | 419854 | 33926 | 416795 | 34447 | 413760 | 34973 | 410750 | 35504 | 8.8 |
| 1.4 | 425987 | 32906 | 422877 | 33419 | 419793 | 33936 | 416734 | 34458 | 413700 | 34984 | 410690 | 35514 | 8.6 |
| 1.6 | 425925 | 32916 | 422815 | 33429 | 419731 | 33947 | 416673 | 34468 | 413639 | 34995 | 410631 | 35525 | 8.4 |
| 1.8 | 425862 | 32926 | 422753 | 33439 | 419670 | 33957 | 416612 | 34479 | 413579 | 35005 | 410571 | 35536 | 8.2 |
| 2   | 425800 | 32936 | 422691 | 33450 | 419608 | 33967 | 416551 | 34489 | 413518 | 35016 | 410511 | 35546 | 8   |
| 2.2 | 425737 | 32947 | 422629 | 33460 | 419547 | 33978 | 416490 | 34500 | 413458 | 35026 | 410451 | 35557 | 7.8 |
| 2.4 | 425675 | 32957 | 422567 | 33470 | 419486 | 33988 | 416429 | 34510 | 413398 | 35037 | 410391 | 35568 | 7.6 |
| 2.6 | 425612 | 32967 | 422505 | 33481 | 419424 | 33999 | 416368 | 34521 | 413337 | 35047 | 410331 | 35578 | 7.4 |
| 2.8 | 425550 | 32977 | 422444 | 33491 | 419363 | 34009 | 416307 | 34531 | 413277 | 35058 | 410271 | 35589 | 7.2 |
| 3   | 425488 | 32987 | 422382 | 33501 | 419301 | 34019 | 416246 | 34542 | 413217 | 35069 | 410211 | 35600 | 7   |
| 3.2 | 425425 | 32998 | 422320 | 33512 | 419240 | 34030 | 416186 | 34552 | 413156 | 35079 | 410151 | 35610 | 6.8 |
| 3.4 | 425363 | 33008 | 422258 | 33522 | 419179 | 34040 | 416125 | 34563 | 413096 | 35090 | 410092 | 35621 | 6.6 |
| 3.6 | 425301 | 33018 | 422196 | 33532 | 419117 | 34051 | 416064 | 34573 | 413036 | 35100 | 410032 | 35632 | 6.4 |
| 3.8 | 425238 | 33028 | 422134 | 33543 | 419056 | 34061 | 416003 | 34584 | 412975 | 35111 | 409972 | 35642 | 6.2 |
| 4   | 425176 | 33039 | 422073 | 33553 | 418995 | 34071 | 415942 | 34594 | 412915 | 35121 | 409912 | 35653 | 6   |
| 4.2 | 425114 | 33049 | 422011 | 33563 | 418934 | 34082 | 415882 | 34605 | 412855 | 35132 | 409852 | 35664 | 5.8 |
| 4.4 | 425051 | 33059 | 421949 | 33574 | 418872 | 34092 | 415821 | 34615 | 412794 | 35143 | 409792 | 35674 | 5.6 |
| 4.6 | 424989 | 33069 | 421887 | 33584 | 418811 | 34103 | 415760 | 34626 | 412734 | 35153 | 409733 | 35685 | 5.4 |
| 4.8 | 424927 | 33080 | 421825 | 33594 | 418750 | 34113 | 415699 | 34636 | 412674 | 35164 | 409673 | 35696 | 5.2 |
| 5   | 424864 | 33090 | 421764 | 33605 | 418688 | 34124 | 415639 | 34647 | 412614 | 35174 | 409613 | 35706 | 5   |
| 5.2 | 424802 | 33100 | 421702 | 33615 | 418627 | 34134 | 415578 | 34657 | 412553 | 35185 | 409553 | 35717 | 4.8 |
| 5.4 | 424740 | 33110 | 421640 | 33625 | 418566 | 34144 | 415517 | 34668 | 412493 | 35196 | 409494 | 35728 | 4.6 |
| 5.6 | 424678 | 33121 | 421578 | 33636 | 418505 | 34155 | 415456 | 34678 | 412433 | 35206 | 409434 | 35738 | 4.4 |
| 5.8 | 424615 | 33131 | 421517 | 33646 | 418444 | 34165 | 415396 | 34689 | 412373 | 35217 | 409374 | 35749 | 4.2 |
| 6   | 424553 | 33141 | 421455 | 33656 | 418382 | 34176 | 415335 | 34699 | 412312 | 35227 | 409314 | 35760 | 4   |
| 6.2 | 424491 | 33151 | 421393 | 33667 | 418321 | 34186 | 415274 | 34710 | 412252 | 35238 | 409255 | 35770 | 3.8 |
| 6.4 | 424429 | 33162 | 421332 | 33677 | 418260 | 34197 | 415214 | 34720 | 412192 | 35249 | 409195 | 35781 | 3.6 |
| 6.6 | 424367 | 33172 | 421270 | 33687 | 418199 | 34207 | 415153 | 34731 | 412132 | 35259 | 409135 | 35792 | 3.4 |
| 6.8 | 424304 | 33182 | 421208 | 33698 | 418138 | 34217 | 415092 | 34741 | 412072 | 35270 | 409076 | 35803 | 3.2 |
| 7   | 424242 | 33192 | 421147 | 33708 | 418076 | 34228 | 415032 | 34752 | 412011 | 35280 | 409016 | 35813 | 3   |
| 7.2 | 424180 | 33203 | 421085 | 33718 | 418015 | 34238 | 414971 | 34763 | 411951 | 35291 | 408956 | 35824 | 2.8 |
| 7.4 | 424118 | 33213 | 421023 | 33729 | 417954 | 34249 | 414910 | 34773 | 411891 | 35302 | 408897 | 35835 | 2.6 |
| 7.6 | 424056 | 33223 | 420962 | 33739 | 417893 | 34259 | 414850 | 34784 | 411831 | 35312 | 408837 | 35845 | 2.4 |
| 7.8 | 423994 | 33234 | 420900 | 33749 | 417832 | 34270 | 414789 | 34794 | 411771 | 35323 | 408777 | 35856 | 2.2 |
| 8   | 423931 | 33244 | 420838 | 33760 | 417771 | 34280 | 414728 | 34805 | 411711 | 35334 | 408718 | 35867 | 2   |
| 8.2 | 423869 | 33254 | 420777 | 33770 | 417710 | 34291 | 414668 | 34815 | 411651 | 35344 | 408658 | 35877 | 1.8 |
| 8.4 | 423807 | 33264 | 420715 | 33781 | 417649 | 34301 | 414607 | 34826 | 411591 | 35355 | 408598 | 35888 | 1.6 |
| 8.6 | 423745 | 33275 | 420654 | 33791 | 417588 | 34311 | 414547 | 34836 | 411531 | 35365 | 408539 | 35899 | 1.4 |
| 8.8 | 423683 | 33285 | 420592 | 33801 | 417527 | 34322 | 414486 | 34847 | 411470 | 35376 | 408479 | 35910 | 1.2 |
| 9   | 423621 | 33295 | 420530 | 33812 | 417465 | 34332 | 414426 | 34857 | 411410 | 35387 | 408420 | 35920 | 1   |
| 9.2 | 423559 | 33306 | 420469 | 33822 | 417404 | 34343 | 414365 | 34868 | 411350 | 35397 | 408360 | 35931 | 0.8 |
| 9.4 | 423497 | 33316 | 420407 | 33832 | 417343 | 34353 | 414304 | 34878 | 411290 | 35408 | 408301 | 35942 | 0.6 |
| 9.6 | 423435 | 33326 | 420346 | 33843 | 417282 | 34364 | 414244 | 34889 | 411230 | 35419 | 408241 | 35952 | 0.4 |
| 9.8 | 423373 | 33336 | 420284 | 33853 | 417221 | 34374 | 414183 | 34900 | 411170 | 35429 | 408182 | 35963 | 0.2 |
| 10  | 423311 | 33347 | 420223 | 33864 | 417160 | 34385 | 414123 | 34910 | 411110 | 35440 | 408122 | 35974 | 0   |
|     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | A      | B     | ↑   |
|     | 50'    |       | 40'    |       | 30'    |       | 20'    |       | 10'    |       | 0'     |       |     |

157°

When meridian angle, t, is greater than 90°, take K from bottom of table.

Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table.

A(α) = 10^6 \* log (1 / sin α)

B(α) = 10^6 \* log (1 / cos α)



| 24°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 390687 | 39270 | 387860 | 39835 | 385056 | 40404 | 382273                        | 40977 | 379512 | 41555 | 376771 | 42137 | 10  |
| 0.2                                                                                                                               | 390630 | 39281 | 387804 | 39846 | 385000 | 40415 | 382218                        | 40989 | 379457 | 41567 | 376717 | 42149 | 9.8 |
| 0.4                                                                                                                               | 390573 | 39292 | 387748 | 39857 | 384944 | 40426 | 382162                        | 41000 | 379402 | 41578 | 376662 | 42161 | 9.6 |
| 0.6                                                                                                                               | 390516 | 39304 | 387691 | 39869 | 384888 | 40438 | 382107                        | 41012 | 379347 | 41590 | 376607 | 42173 | 9.4 |
| 0.8                                                                                                                               | 390460 | 39315 | 387635 | 39880 | 384832 | 40449 | 382051                        | 41023 | 379292 | 41601 | 376553 | 42184 | 9.2 |
| 1                                                                                                                                 | 390403 | 39326 | 387579 | 39891 | 384777 | 40461 | 381996                        | 41035 | 379237 | 41613 | 376498 | 42196 | 9   |
| 1.2                                                                                                                               | 390346 | 39337 | 387523 | 39903 | 384721 | 40472 | 381941                        | 41046 | 379182 | 41625 | 376444 | 42208 | 8.8 |
| 1.4                                                                                                                               | 390290 | 39349 | 387466 | 39914 | 384665 | 40484 | 381885                        | 41058 | 379127 | 41636 | 376389 | 42219 | 8.6 |
| 1.6                                                                                                                               | 390233 | 39360 | 387410 | 39925 | 384609 | 40495 | 381830                        | 41069 | 379072 | 41648 | 376335 | 42231 | 8.4 |
| 1.8                                                                                                                               | 390176 | 39371 | 387354 | 39937 | 384553 | 40506 | 381774                        | 41081 | 379017 | 41660 | 376280 | 42243 | 8.2 |
| 2                                                                                                                                 | 390120 | 39382 | 387298 | 39948 | 384498 | 40518 | 381719                        | 41092 | 378962 | 41671 | 376226 | 42254 | 8   |
| 2.2                                                                                                                               | 390063 | 39394 | 387241 | 39959 | 384442 | 40529 | 381664                        | 41104 | 378907 | 41683 | 376171 | 42266 | 7.8 |
| 2.4                                                                                                                               | 390006 | 39405 | 387185 | 39971 | 384386 | 40541 | 381608                        | 41115 | 378852 | 41694 | 376117 | 42278 | 7.6 |
| 2.6                                                                                                                               | 389950 | 39416 | 387129 | 39982 | 384330 | 40552 | 381553                        | 41127 | 378797 | 41706 | 376062 | 42290 | 7.4 |
| 2.8                                                                                                                               | 389893 | 39427 | 387073 | 39993 | 384274 | 40564 | 381498                        | 41138 | 378742 | 41718 | 376008 | 42301 | 7.2 |
| 3                                                                                                                                 | 389836 | 39439 | 387017 | 40005 | 384219 | 40575 | 381442                        | 41150 | 378687 | 41729 | 375953 | 42313 | 7   |
| 3.2                                                                                                                               | 389780 | 39450 | 386961 | 40016 | 384163 | 40587 | 381387                        | 41162 | 378632 | 41741 | 375899 | 42325 | 6.8 |
| 3.4                                                                                                                               | 389723 | 39461 | 386904 | 40027 | 384107 | 40598 | 381332                        | 41173 | 378578 | 41753 | 375844 | 42336 | 6.6 |
| 3.6                                                                                                                               | 389667 | 39473 | 386848 | 40039 | 384052 | 40610 | 381276                        | 41185 | 378523 | 41764 | 375790 | 42348 | 6.4 |
| 3.8                                                                                                                               | 389610 | 39484 | 386792 | 40050 | 383996 | 40621 | 381221                        | 41196 | 378468 | 41776 | 375735 | 42360 | 6.2 |
| 4                                                                                                                                 | 389553 | 39495 | 386736 | 40062 | 383940 | 40632 | 381166                        | 41208 | 378413 | 41787 | 375681 | 42372 | 6   |
| 4.2                                                                                                                               | 389497 | 39506 | 386680 | 40073 | 383884 | 40644 | 381111                        | 41219 | 378358 | 41799 | 375627 | 42383 | 5.8 |
| 4.4                                                                                                                               | 389440 | 39518 | 386624 | 40084 | 383829 | 40655 | 381055                        | 41231 | 378303 | 41811 | 375572 | 42395 | 5.6 |
| 4.6                                                                                                                               | 389384 | 39529 | 386568 | 40096 | 383773 | 40667 | 381000                        | 41242 | 378248 | 41822 | 375518 | 42407 | 5.4 |
| 4.8                                                                                                                               | 389327 | 39540 | 386511 | 40107 | 383717 | 40678 | 380945                        | 41254 | 378194 | 41834 | 375463 | 42419 | 5.2 |
| 5                                                                                                                                 | 389271 | 39552 | 386455 | 40118 | 383662 | 40690 | 380890                        | 41266 | 378139 | 41846 | 375409 | 42430 | 5   |
| 5.2                                                                                                                               | 389214 | 39563 | 386399 | 40130 | 383606 | 40701 | 380834                        | 41277 | 378084 | 41857 | 375355 | 42442 | 4.8 |
| 5.4                                                                                                                               | 389158 | 39574 | 386343 | 40141 | 383550 | 40713 | 380779                        | 41289 | 378029 | 41869 | 375300 | 42454 | 4.6 |
| 5.6                                                                                                                               | 389101 | 39586 | 386287 | 40153 | 383495 | 40724 | 380724                        | 41300 | 377974 | 41881 | 375246 | 42466 | 4.4 |
| 5.8                                                                                                                               | 389045 | 39597 | 386231 | 40164 | 383439 | 40736 | 380669                        | 41312 | 377920 | 41892 | 375191 | 42477 | 4.2 |
| 6                                                                                                                                 | 388988 | 39608 | 386175 | 40175 | 383384 | 40747 | 380614                        | 41323 | 377865 | 41904 | 375137 | 42489 | 4   |
| 6.2                                                                                                                               | 388932 | 39619 | 386119 | 40187 | 383328 | 40759 | 380558                        | 41335 | 377810 | 41916 | 375083 | 42501 | 3.8 |
| 6.4                                                                                                                               | 388875 | 39631 | 386063 | 40198 | 383272 | 40770 | 380503                        | 41346 | 377755 | 41927 | 375028 | 42513 | 3.6 |
| 6.6                                                                                                                               | 388819 | 39642 | 386007 | 40210 | 383217 | 40782 | 380448                        | 41358 | 377701 | 41939 | 374974 | 42524 | 3.4 |
| 6.8                                                                                                                               | 388762 | 39653 | 385951 | 40221 | 383161 | 40793 | 380393                        | 41370 | 377646 | 41951 | 374920 | 42536 | 3.2 |
| 7                                                                                                                                 | 388706 | 39665 | 385895 | 40232 | 383106 | 40805 | 380338                        | 41381 | 377591 | 41962 | 374865 | 42548 | 3   |
| 7.2                                                                                                                               | 388649 | 39676 | 385839 | 40244 | 383050 | 40816 | 380283                        | 41393 | 377536 | 41974 | 374811 | 42560 | 2.8 |
| 7.4                                                                                                                               | 388593 | 39687 | 385783 | 40255 | 382995 | 40828 | 380228                        | 41404 | 377482 | 41986 | 374757 | 42571 | 2.6 |
| 7.6                                                                                                                               | 388537 | 39699 | 385727 | 40267 | 382939 | 40839 | 380172                        | 41416 | 377427 | 41997 | 374703 | 42583 | 2.4 |
| 7.8                                                                                                                               | 388480 | 39710 | 385671 | 40278 | 382883 | 40851 | 380117                        | 41428 | 377372 | 42009 | 374648 | 42595 | 2.2 |
| 8                                                                                                                                 | 388424 | 39721 | 385615 | 40289 | 382828 | 40862 | 380062                        | 41439 | 377318 | 42021 | 374594 | 42607 | 2   |
| 8.2                                                                                                                               | 388367 | 39733 | 385559 | 40301 | 382772 | 40874 | 380007                        | 41451 | 377263 | 42032 | 374540 | 42618 | 1.8 |
| 8.4                                                                                                                               | 388311 | 39744 | 385503 | 40312 | 382717 | 40885 | 379952                        | 41462 | 377208 | 42044 | 374485 | 42630 | 1.6 |
| 8.6                                                                                                                               | 388255 | 39755 | 385447 | 40324 | 382661 | 40897 | 379897                        | 41474 | 377154 | 42056 | 374431 | 42642 | 1.4 |
| 8.8                                                                                                                               | 388198 | 39767 | 385391 | 40335 | 382606 | 40908 | 379842                        | 41485 | 377099 | 42067 | 374377 | 42654 | 1.2 |
| 9                                                                                                                                 | 388142 | 39778 | 385335 | 40346 | 382550 | 40920 | 379787                        | 41497 | 377044 | 42079 | 374323 | 42665 | 1   |
| 9.2                                                                                                                               | 388086 | 39789 | 385279 | 40358 | 382495 | 40931 | 379732                        | 41509 | 376990 | 42091 | 374269 | 42677 | 0.8 |
| 9.4                                                                                                                               | 388029 | 39800 | 385224 | 40369 | 382439 | 40943 | 379677                        | 41520 | 376935 | 42102 | 374214 | 42689 | 0.6 |
| 9.6                                                                                                                               | 387973 | 39812 | 385168 | 40381 | 382384 | 40954 | 379622                        | 41532 | 376880 | 42114 | 374160 | 42701 | 0.4 |
| 9.8                                                                                                                               | 387917 | 39823 | 385112 | 40392 | 382328 | 40966 | 379567                        | 41543 | 376826 | 42126 | 374106 | 42713 | 0.2 |
| 10                                                                                                                                | 387860 | 39835 | 385056 | 40404 | 382273 | 40977 | 379512                        | 41555 | 376771 | 42137 | 374052 | 42724 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 155°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 25°                                                                                                                               |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|------------------------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                                            |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                              | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 374052 | 42724 | 371353 | 43316 | 368674 | 43911 | 366016                                         | 44512 | 363377 | 45117 | 360758 | 45726 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 373998 | 42736 | 371299 | 43327 | 368621 | 43923 | 365963                                         | 44524 | 363324 | 45129 | 360706 | 45738 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 373943 | 42748 | 371245 | 43339 | 368567 | 43935 | 365910                                         | 44536 | 363272 | 45141 | 360653 | 45750 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 373889 | 42760 | 371192 | 43351 | 368514 | 43947 | 365857                                         | 44548 | 363219 | 45153 | 360601 | 45763 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 373835 | 42771 | 371138 | 43363 | 368461 | 43959 | 365804                                         | 44560 | 363167 | 45165 | 360549 | 45775 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 373781 | 42783 | 371084 | 43375 | 368407 | 43971 | 365751                                         | 44572 | 363114 | 45177 | 360497 | 45787 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 373727 | 42795 | 371030 | 43387 | 368354 | 43983 | 365698                                         | 44584 | 363062 | 45189 | 360445 | 45799 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 373673 | 42807 | 370977 | 43399 | 368301 | 43995 | 365645                                         | 44596 | 363009 | 45202 | 360393 | 45812 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 373619 | 42819 | 370923 | 43411 | 368247 | 44007 | 365592                                         | 44608 | 362957 | 45214 | 360341 | 45824 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 373564 | 42830 | 370869 | 43423 | 368194 | 44019 | 365539                                         | 44620 | 362904 | 45226 | 360288 | 45836 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 373510 | 42842 | 370815 | 43434 | 368141 | 44031 | 365486                                         | 44632 | 362852 | 45238 | 360236 | 45848 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 373456 | 42854 | 370762 | 43446 | 368088 | 44043 | 365433                                         | 44644 | 362799 | 45250 | 360184 | 45861 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 373402 | 42866 | 370708 | 43458 | 368034 | 44055 | 365381                                         | 44656 | 362747 | 45262 | 360132 | 45873 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 373348 | 42878 | 370654 | 43470 | 367981 | 44067 | 365328                                         | 44669 | 362694 | 45275 | 360080 | 45885 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 373294 | 42889 | 370601 | 43482 | 367928 | 44079 | 365275                                         | 44681 | 362642 | 45287 | 360028 | 45897 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 373240 | 42901 | 370547 | 43494 | 367875 | 44091 | 365222                                         | 44693 | 362589 | 45299 | 359976 | 45910 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 373186 | 42913 | 370493 | 43506 | 367821 | 44103 | 365169                                         | 44705 | 362537 | 45311 | 359924 | 45922 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 373132 | 42925 | 370440 | 43518 | 367768 | 44115 | 365116                                         | 44717 | 362484 | 45323 | 359872 | 45934 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 373078 | 42937 | 370386 | 43530 | 367715 | 44127 | 365063                                         | 44729 | 362432 | 45335 | 359820 | 45946 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 373024 | 42948 | 370333 | 43542 | 367662 | 44139 | 365011                                         | 44741 | 362379 | 45348 | 359768 | 45959 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 372970 | 42960 | 370279 | 43553 | 367608 | 44151 | 364958                                         | 44753 | 362327 | 45360 | 359716 | 45971 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 372916 | 42972 | 370225 | 43565 | 367555 | 44163 | 364905                                         | 44765 | 362275 | 45372 | 359664 | 45983 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 372862 | 42984 | 370172 | 43577 | 367502 | 44175 | 364852                                         | 44777 | 362222 | 45384 | 359612 | 45995 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 372808 | 42996 | 370118 | 43589 | 367449 | 44187 | 364799                                         | 44789 | 362170 | 45396 | 359560 | 46008 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 372754 | 43008 | 370065 | 43601 | 367396 | 44199 | 364747                                         | 44802 | 362117 | 45409 | 359508 | 46020 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 372700 | 43019 | 370011 | 43613 | 367342 | 44211 | 364694                                         | 44814 | 362065 | 45421 | 359456 | 46032 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 372646 | 43031 | 369957 | 43625 | 367289 | 44223 | 364641                                         | 44826 | 362013 | 45433 | 359404 | 46045 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 372592 | 43043 | 369904 | 43637 | 367236 | 44235 | 364588                                         | 44838 | 361960 | 45445 | 359352 | 46057 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 372538 | 43055 | 369850 | 43649 | 367183 | 44247 | 364536                                         | 44850 | 361908 | 45457 | 359300 | 46069 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 372484 | 43067 | 369797 | 43661 | 367130 | 44259 | 364483                                         | 44862 | 361855 | 45469 | 359248 | 46081 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 372430 | 43079 | 369743 | 43673 | 367077 | 44271 | 364430                                         | 44874 | 361803 | 45482 | 359196 | 46094 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 372376 | 43090 | 369690 | 43684 | 367024 | 44283 | 364377                                         | 44886 | 361751 | 45494 | 359144 | 46106 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 372322 | 43102 | 369636 | 43696 | 366970 | 44295 | 364325                                         | 44898 | 361698 | 45506 | 359092 | 46118 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 372268 | 43114 | 369583 | 43708 | 366917 | 44307 | 364272                                         | 44910 | 361646 | 45518 | 359040 | 46131 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 372214 | 43126 | 369529 | 43720 | 366864 | 44319 | 364219                                         | 44923 | 361594 | 45530 | 358988 | 46143 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 372160 | 43138 | 369476 | 43732 | 366811 | 44331 | 364166                                         | 44935 | 361542 | 45543 | 358936 | 46155 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 372106 | 43150 | 369422 | 43744 | 366758 | 44343 | 364114                                         | 44947 | 361489 | 45555 | 358884 | 46167 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 372053 | 43161 | 369369 | 43756 | 366705 | 44355 | 364061                                         | 44959 | 361437 | 45567 | 358832 | 46180 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 371999 | 43173 | 369315 | 43768 | 366652 | 44367 | 364008                                         | 44971 | 361385 | 45579 | 358780 | 46192 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 371945 | 43185 | 369262 | 43780 | 366599 | 44379 | 363956                                         | 44983 | 361332 | 45591 | 358728 | 46204 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 371891 | 43197 | 369208 | 43792 | 366546 | 44391 | 363903                                         | 44995 | 361280 | 45604 | 358676 | 46217 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 371837 | 43209 | 369155 | 43804 | 366493 | 44403 | 363850                                         | 45007 | 361228 | 45616 | 358625 | 46229 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 371783 | 43221 | 369101 | 43816 | 366440 | 44415 | 363798                                         | 45020 | 361176 | 45628 | 358573 | 46241 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 371729 | 43233 | 369048 | 43828 | 366387 | 44427 | 363745                                         | 45032 | 361123 | 45640 | 358521 | 46254 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 371676 | 43244 | 368995 | 43840 | 366334 | 44439 | 363693                                         | 45044 | 361071 | 45653 | 358469 | 46266 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 371622 | 43256 | 368941 | 43852 | 366281 | 44452 | 363640                                         | 45056 | 361019 | 45665 | 358417 | 46278 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 371568 | 43268 | 368888 | 43864 | 366228 | 44464 | 363587                                         | 45068 | 360967 | 45677 | 358365 | 46291 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 371514 | 43280 | 368834 | 43876 | 366175 | 44476 | 363535                                         | 45080 | 360914 | 45689 | 358313 | 46303 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 371460 | 43292 | 368781 | 43888 | 366122 | 44488 | 363482                                         | 45092 | 360862 | 45701 | 358262 | 46315 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 371407 | 43304 | 368728 | 43899 | 366069 | 44500 | 363430                                         | 45104 | 360810 | 45714 | 358210 | 46327 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 371353 | 43316 | 368674 | 43911 | 366016 | 44512 | 363377                                         | 45117 | 360758 | 45726 | 358158 | 46340 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                              | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                                            |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 154°                                                                                                                              |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 \cdot \log(1 / \sin \alpha)$                                                                                    |        |       |        |       |        |       | $B(\alpha) = 10^6 \cdot \log(1 / \cos \alpha)$ |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

| 26°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ↓<br>↑                                                                                                                            | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 358158 | 46340 | 355577 | 46958 | 353016 | 47581 | 350473                        | 48209 | 347948 | 48841 | 345442 | 49478 | 10  |
| 0.2                                                                                                                               | 358106 | 46352 | 355526 | 46971 | 352965 | 47594 | 350422                        | 48221 | 347898 | 48854 | 345392 | 49491 | 9.8 |
| 0.4                                                                                                                               | 358054 | 46364 | 355475 | 46983 | 352914 | 47606 | 350371                        | 48234 | 347847 | 48866 | 345342 | 49503 | 9.6 |
| 0.6                                                                                                                               | 358003 | 46377 | 355423 | 46995 | 352863 | 47619 | 350321                        | 48247 | 347797 | 48879 | 345292 | 49516 | 9.4 |
| 0.8                                                                                                                               | 357951 | 46389 | 355372 | 47008 | 352812 | 47631 | 350270                        | 48259 | 347747 | 48892 | 345242 | 49529 | 9.2 |
| 1                                                                                                                                 | 357899 | 46401 | 355320 | 47020 | 352760 | 47644 | 350219                        | 48272 | 347696 | 48904 | 345192 | 49542 | 9   |
| 1.2                                                                                                                               | 357847 | 46414 | 355269 | 47033 | 352709 | 47656 | 350169                        | 48284 | 347646 | 48917 | 345142 | 49554 | 8.8 |
| 1.4                                                                                                                               | 357796 | 46426 | 355218 | 47045 | 352658 | 47669 | 350118                        | 48297 | 347596 | 48930 | 345092 | 49567 | 8.6 |
| 1.6                                                                                                                               | 357744 | 46438 | 355166 | 47058 | 352607 | 47681 | 350067                        | 48310 | 347546 | 48943 | 345042 | 49580 | 8.4 |
| 1.8                                                                                                                               | 357692 | 46451 | 355115 | 47070 | 352557 | 47694 | 350017                        | 48322 | 347495 | 48955 | 344992 | 49593 | 8.2 |
| 2                                                                                                                                 | 357640 | 46463 | 355064 | 47082 | 352506 | 47706 | 349966                        | 48335 | 347445 | 48968 | 344942 | 49606 | 8   |
| 2.2                                                                                                                               | 357589 | 46475 | 355012 | 47095 | 352455 | 47719 | 349916                        | 48347 | 347395 | 48981 | 344893 | 49618 | 7.8 |
| 2.4                                                                                                                               | 357537 | 46488 | 354961 | 47107 | 352404 | 47731 | 349865                        | 48360 | 347345 | 48993 | 344843 | 49631 | 7.6 |
| 2.6                                                                                                                               | 357485 | 46500 | 354910 | 47120 | 352353 | 47744 | 349814                        | 48373 | 347295 | 49006 | 344793 | 49644 | 7.4 |
| 2.8                                                                                                                               | 357434 | 46513 | 354858 | 47132 | 352302 | 47757 | 349764                        | 48385 | 347244 | 49019 | 344743 | 49657 | 7.2 |
| 3                                                                                                                                 | 357382 | 46525 | 354807 | 47145 | 352251 | 47769 | 349713                        | 48398 | 347194 | 49032 | 344693 | 49670 | 7   |
| 3.2                                                                                                                               | 357330 | 46537 | 354756 | 47157 | 352200 | 47782 | 349663                        | 48411 | 347144 | 49044 | 344643 | 49682 | 6.8 |
| 3.4                                                                                                                               | 357278 | 46550 | 354704 | 47170 | 352149 | 47794 | 349612                        | 48423 | 347094 | 49057 | 344594 | 49695 | 6.6 |
| 3.6                                                                                                                               | 357227 | 46562 | 354653 | 47182 | 352098 | 47807 | 349562                        | 48436 | 347044 | 49070 | 344544 | 49708 | 6.4 |
| 3.8                                                                                                                               | 357175 | 46574 | 354602 | 47194 | 352047 | 47819 | 349511                        | 48448 | 346993 | 49082 | 344494 | 49721 | 6.2 |
| 4                                                                                                                                 | 357123 | 46587 | 354550 | 47207 | 351996 | 47832 | 349461                        | 48461 | 346943 | 49095 | 344444 | 49734 | 6   |
| 4.2                                                                                                                               | 357072 | 46599 | 354499 | 47219 | 351945 | 47844 | 349410                        | 48474 | 346893 | 49108 | 344394 | 49747 | 5.8 |
| 4.4                                                                                                                               | 357020 | 46611 | 354448 | 47232 | 351894 | 47857 | 349359                        | 48486 | 346843 | 49121 | 344344 | 49759 | 5.6 |
| 4.6                                                                                                                               | 356969 | 46624 | 354397 | 47244 | 351844 | 47869 | 349309                        | 48499 | 346793 | 49133 | 344295 | 49772 | 5.4 |
| 4.8                                                                                                                               | 356917 | 46636 | 354345 | 47257 | 351793 | 47882 | 349258                        | 48512 | 346743 | 49146 | 344245 | 49785 | 5.2 |
| 5                                                                                                                                 | 356865 | 46648 | 354294 | 47269 | 351742 | 47894 | 349208                        | 48524 | 346692 | 49159 | 344195 | 49798 | 5   |
| 5.2                                                                                                                               | 356814 | 46661 | 354243 | 47282 | 351691 | 47907 | 349157                        | 48537 | 346642 | 49172 | 344145 | 49811 | 4.8 |
| 5.4                                                                                                                               | 356762 | 46673 | 354192 | 47294 | 351640 | 47920 | 349107                        | 48550 | 346592 | 49184 | 344096 | 49824 | 4.6 |
| 5.6                                                                                                                               | 356711 | 46686 | 354140 | 47307 | 351589 | 47932 | 349057                        | 48562 | 346542 | 49197 | 344046 | 49836 | 4.4 |
| 5.8                                                                                                                               | 356659 | 46698 | 354089 | 47319 | 351538 | 47945 | 349006                        | 48575 | 346492 | 49210 | 343996 | 49849 | 4.2 |
| 6                                                                                                                                 | 356607 | 46710 | 354038 | 47331 | 351488 | 47957 | 348956                        | 48588 | 346442 | 49222 | 343946 | 49862 | 4   |
| 6.2                                                                                                                               | 356556 | 46723 | 353987 | 47344 | 351437 | 47970 | 348905                        | 48600 | 346392 | 49235 | 343897 | 49875 | 3.8 |
| 6.4                                                                                                                               | 356504 | 46735 | 353936 | 47356 | 351386 | 47982 | 348855                        | 48613 | 346342 | 49248 | 343847 | 49888 | 3.6 |
| 6.6                                                                                                                               | 356453 | 46747 | 353885 | 47369 | 351335 | 47995 | 348804                        | 48626 | 346292 | 49261 | 343797 | 49901 | 3.4 |
| 6.8                                                                                                                               | 356401 | 46760 | 353833 | 47381 | 351284 | 48007 | 348754                        | 48638 | 346242 | 49273 | 343748 | 49913 | 3.2 |
| 7                                                                                                                                 | 356350 | 46772 | 353782 | 47394 | 351234 | 48020 | 348703                        | 48651 | 346192 | 49286 | 343698 | 49926 | 3   |
| 7.2                                                                                                                               | 356298 | 46785 | 353731 | 47406 | 351183 | 48033 | 348653                        | 48664 | 346142 | 49299 | 343648 | 49939 | 2.8 |
| 7.4                                                                                                                               | 356247 | 46797 | 353680 | 47419 | 351132 | 48045 | 348603                        | 48676 | 346091 | 49312 | 343598 | 49952 | 2.6 |
| 7.6                                                                                                                               | 356195 | 46809 | 353629 | 47431 | 351081 | 48058 | 348552                        | 48689 | 346041 | 49324 | 343549 | 49965 | 2.4 |
| 7.8                                                                                                                               | 356144 | 46822 | 353578 | 47444 | 351030 | 48070 | 348502                        | 48702 | 345991 | 49337 | 343499 | 49978 | 2.2 |
| 8                                                                                                                                 | 356092 | 46834 | 353526 | 47456 | 350980 | 48083 | 348451                        | 48714 | 345941 | 49350 | 343449 | 49990 | 2   |
| 8.2                                                                                                                               | 356041 | 46847 | 353475 | 47469 | 350929 | 48096 | 348401                        | 48727 | 345891 | 49363 | 343400 | 50003 | 1.8 |
| 8.4                                                                                                                               | 355989 | 46859 | 353424 | 47481 | 350878 | 48108 | 348351                        | 48740 | 345841 | 49376 | 343350 | 50016 | 1.6 |
| 8.6                                                                                                                               | 355938 | 46871 | 353373 | 47494 | 350827 | 48121 | 348300                        | 48752 | 345791 | 49388 | 343301 | 50029 | 1.4 |
| 8.8                                                                                                                               | 355886 | 46884 | 353322 | 47506 | 350777 | 48133 | 348250                        | 48765 | 345741 | 49401 | 343251 | 50042 | 1.2 |
| 9                                                                                                                                 | 355835 | 46896 | 353271 | 47519 | 350726 | 48146 | 348200                        | 48778 | 345691 | 49414 | 343201 | 50055 | 1   |
| 9.2                                                                                                                               | 355783 | 46909 | 353220 | 47531 | 350675 | 48158 | 348149                        | 48790 | 345641 | 49427 | 343152 | 50068 | 0.8 |
| 9.4                                                                                                                               | 355732 | 46921 | 353169 | 47544 | 350625 | 48171 | 348099                        | 48803 | 345591 | 49439 | 343102 | 50081 | 0.6 |
| 9.6                                                                                                                               | 355680 | 46933 | 353118 | 47556 | 350574 | 48184 | 348049                        | 48816 | 345541 | 49452 | 343052 | 50093 | 0.4 |
| 9.8                                                                                                                               | 355629 | 46946 | 353067 | 47569 | 350523 | 48196 | 347998                        | 48828 | 345492 | 49465 | 343003 | 50106 | 0.2 |
| 10                                                                                                                                | 355577 | 46958 | 353016 | 47581 | 350473 | 48209 | 347948                        | 48841 | 345442 | 49478 | 342953 | 50119 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 153°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 27°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 342953 | 50119 | 340483 | 50765 | 338030 | 51416 | 335594                        | 52071 | 333176 | 52731 | 330775 | 53396 | 10  |
| 0.2                                                                                                                               | 342904 | 50132 | 340433 | 50778 | 337981 | 51429 | 335546                        | 52084 | 333128 | 52744 | 330727 | 53409 | 9.8 |
| 0.4                                                                                                                               | 342854 | 50145 | 340384 | 50791 | 337932 | 51442 | 335497                        | 52097 | 333080 | 52758 | 330679 | 53422 | 9.6 |
| 0.6                                                                                                                               | 342805 | 50158 | 340335 | 50804 | 337883 | 51455 | 335449                        | 52111 | 333032 | 52771 | 330631 | 53436 | 9.4 |
| 0.8                                                                                                                               | 342755 | 50171 | 340286 | 50817 | 337834 | 51468 | 335400                        | 52124 | 332983 | 52784 | 330584 | 53449 | 9.2 |
| 1                                                                                                                                 | 342705 | 50184 | 340237 | 50830 | 337786 | 51481 | 335352                        | 52137 | 332935 | 52797 | 330536 | 53462 | 9   |
| 1.2                                                                                                                               | 342656 | 50196 | 340187 | 50843 | 337737 | 51494 | 335303                        | 52150 | 332887 | 52811 | 330488 | 53476 | 8.8 |
| 1.4                                                                                                                               | 342606 | 50209 | 340138 | 50856 | 337688 | 51507 | 335255                        | 52163 | 332839 | 52824 | 330440 | 53489 | 8.6 |
| 1.6                                                                                                                               | 342557 | 50222 | 340089 | 50869 | 337639 | 51520 | 335206                        | 52176 | 332791 | 52837 | 330392 | 53502 | 8.4 |
| 1.8                                                                                                                               | 342507 | 50235 | 340040 | 50882 | 337590 | 51533 | 335158                        | 52190 | 332743 | 52850 | 330345 | 53516 | 8.2 |
| 2                                                                                                                                 | 342458 | 50248 | 339991 | 50895 | 337541 | 51546 | 335109                        | 52203 | 332695 | 52864 | 330297 | 53529 | 8   |
| 2.2                                                                                                                               | 342408 | 50261 | 339942 | 50908 | 337493 | 51560 | 335061                        | 52216 | 332646 | 52877 | 330249 | 53543 | 7.8 |
| 2.4                                                                                                                               | 342359 | 50274 | 339892 | 50921 | 337444 | 51573 | 335012                        | 52229 | 332598 | 52890 | 330201 | 53556 | 7.6 |
| 2.6                                                                                                                               | 342309 | 50287 | 339843 | 50934 | 337395 | 51586 | 334964                        | 52242 | 332550 | 52903 | 330153 | 53569 | 7.4 |
| 2.8                                                                                                                               | 342260 | 50300 | 339794 | 50947 | 337346 | 51599 | 334916                        | 52255 | 332502 | 52917 | 330106 | 53583 | 7.2 |
| 3                                                                                                                                 | 342210 | 50312 | 339745 | 50960 | 337297 | 51612 | 334867                        | 52269 | 332454 | 52930 | 330058 | 53596 | 7   |
| 3.2                                                                                                                               | 342161 | 50325 | 339696 | 50973 | 337249 | 51625 | 334819                        | 52282 | 332406 | 52943 | 330010 | 53609 | 6.8 |
| 3.4                                                                                                                               | 342111 | 50338 | 339647 | 50986 | 337200 | 51638 | 334770                        | 52295 | 332358 | 52957 | 329962 | 53623 | 6.6 |
| 3.6                                                                                                                               | 342062 | 50351 | 339598 | 50999 | 337151 | 51651 | 334722                        | 52308 | 332310 | 52970 | 329915 | 53636 | 6.4 |
| 3.8                                                                                                                               | 342012 | 50364 | 339549 | 51012 | 337102 | 51664 | 334673                        | 52321 | 332262 | 52983 | 329867 | 53650 | 6.2 |
| 4                                                                                                                                 | 341963 | 50377 | 339499 | 51025 | 337054 | 51677 | 334625                        | 52335 | 332214 | 52996 | 329819 | 53663 | 6   |
| 4.2                                                                                                                               | 341913 | 50390 | 339450 | 51038 | 337005 | 51690 | 334577                        | 52348 | 332166 | 53010 | 329772 | 53676 | 5.8 |
| 4.4                                                                                                                               | 341864 | 50403 | 339401 | 51051 | 336956 | 51704 | 334528                        | 52361 | 332118 | 53023 | 329724 | 53690 | 5.6 |
| 4.6                                                                                                                               | 341815 | 50416 | 339352 | 51064 | 336907 | 51717 | 334480                        | 52374 | 332070 | 53036 | 329676 | 53703 | 5.4 |
| 4.8                                                                                                                               | 341765 | 50429 | 339303 | 51077 | 336859 | 51730 | 334432                        | 52387 | 332022 | 53050 | 329628 | 53716 | 5.2 |
| 5                                                                                                                                 | 341716 | 50442 | 339254 | 51090 | 336810 | 51743 | 334383                        | 52400 | 331973 | 53063 | 329581 | 53730 | 5   |
| 5.2                                                                                                                               | 341666 | 50454 | 339205 | 51103 | 336761 | 51756 | 334335                        | 52414 | 331925 | 53076 | 329533 | 53743 | 4.8 |
| 5.4                                                                                                                               | 341617 | 50467 | 339156 | 51116 | 336713 | 51769 | 334286                        | 52427 | 331877 | 53089 | 329485 | 53757 | 4.6 |
| 5.6                                                                                                                               | 341568 | 50480 | 339107 | 51129 | 336664 | 51782 | 334238                        | 52440 | 331829 | 53103 | 329438 | 53770 | 4.4 |
| 5.8                                                                                                                               | 341518 | 50493 | 339058 | 51142 | 336615 | 51795 | 334190                        | 52453 | 331781 | 53116 | 329390 | 53783 | 4.2 |
| 6                                                                                                                                 | 341469 | 50506 | 339009 | 51155 | 336567 | 51808 | 334141                        | 52467 | 331733 | 53129 | 329342 | 53797 | 4   |
| 6.2                                                                                                                               | 341419 | 50519 | 338960 | 51168 | 336518 | 51822 | 334093                        | 52480 | 331685 | 53143 | 329295 | 53810 | 3.8 |
| 6.4                                                                                                                               | 341370 | 50532 | 338911 | 51181 | 336469 | 51835 | 334045                        | 52493 | 331637 | 53156 | 329247 | 53824 | 3.6 |
| 6.6                                                                                                                               | 341321 | 50545 | 338862 | 51194 | 336421 | 51848 | 333996                        | 52506 | 331590 | 53169 | 329199 | 53837 | 3.4 |
| 6.8                                                                                                                               | 341271 | 50558 | 338813 | 51207 | 336372 | 51861 | 333948                        | 52519 | 331542 | 53183 | 329152 | 53850 | 3.2 |
| 7                                                                                                                                 | 341222 | 50571 | 338764 | 51220 | 336323 | 51874 | 333900                        | 52533 | 331494 | 53196 | 329104 | 53864 | 3   |
| 7.2                                                                                                                               | 341173 | 50584 | 338715 | 51233 | 336275 | 51887 | 333852                        | 52546 | 331446 | 53209 | 329057 | 53877 | 2.8 |
| 7.4                                                                                                                               | 341123 | 50597 | 338666 | 51246 | 336226 | 51900 | 333803                        | 52559 | 331398 | 53222 | 329009 | 53891 | 2.6 |
| 7.6                                                                                                                               | 341074 | 50610 | 338617 | 51259 | 336177 | 51913 | 333755                        | 52572 | 331350 | 53236 | 328961 | 53904 | 2.4 |
| 7.8                                                                                                                               | 341025 | 50623 | 338568 | 51272 | 336129 | 51927 | 333707                        | 52585 | 331302 | 53249 | 328914 | 53917 | 2.2 |
| 8                                                                                                                                 | 340975 | 50636 | 338519 | 51285 | 336080 | 51940 | 333658                        | 52599 | 331254 | 53262 | 328866 | 53931 | 2   |
| 8.2                                                                                                                               | 340926 | 50648 | 338470 | 51298 | 336032 | 51953 | 333610                        | 52612 | 331206 | 53276 | 328819 | 53944 | 1.8 |
| 8.4                                                                                                                               | 340877 | 50661 | 338421 | 51311 | 335983 | 51966 | 333562                        | 52625 | 331158 | 53289 | 328771 | 53958 | 1.6 |
| 8.6                                                                                                                               | 340828 | 50674 | 338372 | 51324 | 335934 | 51979 | 333514                        | 52638 | 331110 | 53302 | 328724 | 53971 | 1.4 |
| 8.8                                                                                                                               | 340778 | 50687 | 338323 | 51337 | 335886 | 51992 | 333465                        | 52652 | 331062 | 53316 | 328676 | 53985 | 1.2 |
| 9                                                                                                                                 | 340729 | 50700 | 338274 | 51350 | 335837 | 52005 | 333417                        | 52665 | 331014 | 53329 | 328628 | 53998 | 1   |
| 9.2                                                                                                                               | 340680 | 50713 | 338225 | 51364 | 335789 | 52018 | 333369                        | 52678 | 330966 | 53342 | 328581 | 54011 | 0.8 |
| 9.4                                                                                                                               | 340630 | 50726 | 338177 | 51377 | 335740 | 52032 | 333321                        | 52691 | 330919 | 53356 | 328533 | 54025 | 0.6 |
| 9.6                                                                                                                               | 340581 | 50739 | 338128 | 51390 | 335691 | 52045 | 333273                        | 52705 | 330871 | 53369 | 328486 | 54038 | 0.4 |
| 9.8                                                                                                                               | 340532 | 50752 | 338079 | 51403 | 335643 | 52058 | 333224                        | 52718 | 330823 | 53382 | 328438 | 54052 | 0.2 |
| 10                                                                                                                                | 340483 | 50765 | 338030 | 51416 | 335594 | 52071 | 333176                        | 52731 | 330775 | 53396 | 328391 | 54065 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 152°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 28°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 328391 | 54065 | 326023 | 54739 | 323672 | 55418 | 321337                        | 56101 | 319018 | 56790 | 316716 | 57483 | 10  |
| 0.2                                                                                                                               | 328343 | 54079 | 325976 | 54753 | 323625 | 55432 | 321291                        | 56115 | 318972 | 56804 | 316670 | 57497 | 9.8 |
| 0.4                                                                                                                               | 328296 | 54092 | 325929 | 54766 | 323578 | 55445 | 321244                        | 56129 | 318926 | 56817 | 316624 | 57511 | 9.6 |
| 0.6                                                                                                                               | 328248 | 54105 | 325882 | 54780 | 323531 | 55459 | 321198                        | 56143 | 318880 | 56831 | 316578 | 57525 | 9.4 |
| 0.8                                                                                                                               | 328201 | 54119 | 325834 | 54793 | 323485 | 55472 | 321151                        | 56156 | 318834 | 56845 | 316532 | 57539 | 9.2 |
| 1                                                                                                                                 | 328153 | 54132 | 325787 | 54807 | 323438 | 55486 | 321105                        | 56170 | 318787 | 56859 | 316486 | 57552 | 9   |
| 1.2                                                                                                                               | 328106 | 54146 | 325740 | 54820 | 323391 | 55500 | 321058                        | 56184 | 318741 | 56873 | 316440 | 57566 | 8.8 |
| 1.4                                                                                                                               | 328058 | 54159 | 325693 | 54834 | 323344 | 55513 | 321012                        | 56198 | 318695 | 56887 | 316395 | 57580 | 8.6 |
| 1.6                                                                                                                               | 328011 | 54173 | 325646 | 54847 | 323297 | 55527 | 320965                        | 56211 | 318649 | 56900 | 316349 | 57594 | 8.4 |
| 1.8                                                                                                                               | 327963 | 54186 | 325599 | 54861 | 323250 | 55541 | 320919                        | 56225 | 318603 | 56914 | 316303 | 57608 | 8.2 |
| 2                                                                                                                                 | 327916 | 54200 | 325552 | 54875 | 323204 | 55554 | 320872                        | 56239 | 318557 | 56928 | 316257 | 57622 | 8   |
| 2.2                                                                                                                               | 327868 | 54213 | 325504 | 54888 | 323157 | 55568 | 320826                        | 56253 | 318510 | 56942 | 316211 | 57636 | 7.8 |
| 2.4                                                                                                                               | 327821 | 54226 | 325457 | 54902 | 323110 | 55582 | 320779                        | 56266 | 318464 | 56956 | 316165 | 57650 | 7.6 |
| 2.6                                                                                                                               | 327774 | 54240 | 325410 | 54915 | 323063 | 55595 | 320733                        | 56280 | 318418 | 56970 | 316120 | 57664 | 7.4 |
| 2.8                                                                                                                               | 327726 | 54253 | 325363 | 54929 | 323017 | 55609 | 320686                        | 56294 | 318372 | 56983 | 316074 | 57678 | 7.2 |
| 3                                                                                                                                 | 327679 | 54267 | 325316 | 54942 | 322970 | 55623 | 320640                        | 56307 | 318326 | 56997 | 316028 | 57692 | 7   |
| 3.2                                                                                                                               | 327631 | 54280 | 325269 | 54956 | 322923 | 55636 | 320593                        | 56321 | 318280 | 57011 | 315982 | 57706 | 6.8 |
| 3.4                                                                                                                               | 327584 | 54294 | 325222 | 54969 | 322876 | 55650 | 320547                        | 56335 | 318234 | 57025 | 315936 | 57720 | 6.6 |
| 3.6                                                                                                                               | 327536 | 54307 | 325175 | 54983 | 322830 | 55663 | 320501                        | 56349 | 318188 | 57039 | 315891 | 57734 | 6.4 |
| 3.8                                                                                                                               | 327489 | 54321 | 325128 | 54997 | 322783 | 55677 | 320454                        | 56362 | 318142 | 57053 | 315845 | 57747 | 6.2 |
| 4                                                                                                                                 | 327442 | 54334 | 325081 | 55010 | 322736 | 55691 | 320408                        | 56376 | 318095 | 57066 | 315799 | 57761 | 6   |
| 4.2                                                                                                                               | 327394 | 54348 | 325034 | 55024 | 322689 | 55704 | 320361                        | 56390 | 318049 | 57080 | 315753 | 57775 | 5.8 |
| 4.4                                                                                                                               | 327347 | 54361 | 324987 | 55037 | 322643 | 55718 | 320315                        | 56404 | 318003 | 57094 | 315708 | 57789 | 5.6 |
| 4.6                                                                                                                               | 327300 | 54375 | 324940 | 55051 | 322596 | 55732 | 320269                        | 56418 | 317957 | 57108 | 315662 | 57803 | 5.4 |
| 4.8                                                                                                                               | 327252 | 54388 | 324892 | 55064 | 322549 | 55745 | 320222                        | 56431 | 317911 | 57122 | 315616 | 57817 | 5.2 |
| 5                                                                                                                                 | 327205 | 54402 | 324845 | 55078 | 322502 | 55759 | 320176                        | 56445 | 317865 | 57136 | 315570 | 57831 | 5   |
| 5.2                                                                                                                               | 327157 | 54415 | 324798 | 55092 | 322456 | 55773 | 320129                        | 56459 | 317819 | 57150 | 315525 | 57845 | 4.8 |
| 5.4                                                                                                                               | 327110 | 54428 | 324751 | 55105 | 322409 | 55786 | 320083                        | 56473 | 317773 | 57163 | 315479 | 57859 | 4.6 |
| 5.6                                                                                                                               | 327063 | 54442 | 324704 | 55119 | 322362 | 55800 | 320037                        | 56486 | 317727 | 57177 | 315433 | 57873 | 4.4 |
| 5.8                                                                                                                               | 327015 | 54455 | 324657 | 55132 | 322316 | 55814 | 319990                        | 56500 | 317681 | 57191 | 315387 | 57887 | 4.2 |
| 6                                                                                                                                 | 326968 | 54469 | 324610 | 55146 | 322269 | 55828 | 319944                        | 56514 | 317635 | 57205 | 315342 | 57901 | 4   |
| 6.2                                                                                                                               | 326921 | 54482 | 324563 | 55159 | 322222 | 55841 | 319898                        | 56528 | 317589 | 57219 | 315296 | 57915 | 3.8 |
| 6.4                                                                                                                               | 326874 | 54496 | 324516 | 55173 | 322176 | 55855 | 319851                        | 56541 | 317543 | 57233 | 315250 | 57929 | 3.6 |
| 6.6                                                                                                                               | 326826 | 54509 | 324469 | 55187 | 322129 | 55869 | 319805                        | 56555 | 317497 | 57247 | 315205 | 57943 | 3.4 |
| 6.8                                                                                                                               | 326779 | 54523 | 324423 | 55200 | 322082 | 55882 | 319759                        | 56569 | 317451 | 57261 | 315159 | 57957 | 3.2 |
| 7                                                                                                                                 | 326732 | 54536 | 324376 | 55214 | 322036 | 55896 | 319712                        | 56583 | 317405 | 57274 | 315113 | 57971 | 3   |
| 7.2                                                                                                                               | 326684 | 54550 | 324329 | 55227 | 321989 | 55910 | 319666                        | 56597 | 317359 | 57288 | 315068 | 57985 | 2.8 |
| 7.4                                                                                                                               | 326637 | 54563 | 324282 | 55241 | 321943 | 55923 | 319620                        | 56610 | 317313 | 57302 | 315022 | 57999 | 2.6 |
| 7.6                                                                                                                               | 326590 | 54577 | 324235 | 55255 | 321896 | 55937 | 319573                        | 56624 | 317267 | 57316 | 314976 | 58013 | 2.4 |
| 7.8                                                                                                                               | 326543 | 54590 | 324188 | 55268 | 321849 | 55951 | 319527                        | 56638 | 317221 | 57330 | 314931 | 58027 | 2.2 |
| 8                                                                                                                                 | 326495 | 54604 | 324141 | 55282 | 321803 | 55964 | 319481                        | 56652 | 317175 | 57344 | 314885 | 58041 | 2   |
| 8.2                                                                                                                               | 326448 | 54617 | 324094 | 55295 | 321756 | 55978 | 319435                        | 56666 | 317129 | 57358 | 314839 | 58055 | 1.8 |
| 8.4                                                                                                                               | 326401 | 54631 | 324047 | 55309 | 321710 | 55992 | 319388                        | 56679 | 317083 | 57372 | 314794 | 58069 | 1.6 |
| 8.6                                                                                                                               | 326354 | 54644 | 324000 | 55323 | 321663 | 56006 | 319342                        | 56693 | 317037 | 57386 | 314748 | 58083 | 1.4 |
| 8.8                                                                                                                               | 326306 | 54658 | 323953 | 55336 | 321616 | 56019 | 319296                        | 56707 | 316991 | 57399 | 314702 | 58097 | 1.2 |
| 9                                                                                                                                 | 326259 | 54672 | 323906 | 55350 | 321570 | 56033 | 319250                        | 56721 | 316945 | 57413 | 314657 | 58111 | 1   |
| 9.2                                                                                                                               | 326212 | 54685 | 323859 | 55363 | 321523 | 56047 | 319203                        | 56735 | 316899 | 57427 | 314611 | 58125 | 0.8 |
| 9.4                                                                                                                               | 326165 | 54699 | 323813 | 55377 | 321477 | 56060 | 319157                        | 56748 | 316853 | 57441 | 314566 | 58139 | 0.6 |
| 9.6                                                                                                                               | 326117 | 54712 | 323766 | 55391 | 321430 | 56074 | 319111                        | 56762 | 316807 | 57455 | 314520 | 58153 | 0.4 |
| 9.8                                                                                                                               | 326070 | 54726 | 323719 | 55404 | 321384 | 56088 | 319065                        | 56776 | 316762 | 57469 | 314474 | 58167 | 0.2 |
| 10                                                                                                                                | 326023 | 54739 | 323672 | 55418 | 321337 | 56101 | 319018                        | 56790 | 316716 | 57483 | 314429 | 58181 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 151°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 29°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ' ↓                                                                                                                               | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 314429 | 58181 | 312157 | 58883 | 309902 | 59591 | 307661                        | 60303 | 305436 | 61020 | 303225 | 61742 | 10  |
| 0.2                                                                                                                               | 314383 | 58195 | 312112 | 58898 | 309857 | 59605 | 307617                        | 60318 | 305391 | 61035 | 303181 | 61757 | 9.8 |
| 0.4                                                                                                                               | 314338 | 58209 | 312067 | 58912 | 309812 | 59619 | 307572                        | 60332 | 305347 | 61049 | 303137 | 61771 | 9.6 |
| 0.6                                                                                                                               | 314292 | 58223 | 312022 | 58926 | 309767 | 59634 | 307527                        | 60346 | 305303 | 61064 | 303093 | 61786 | 9.4 |
| 0.8                                                                                                                               | 314246 | 58237 | 311976 | 58940 | 309722 | 59648 | 307483                        | 60360 | 305258 | 61078 | 303049 | 61800 | 9.2 |
| 1                                                                                                                                 | 314201 | 58251 | 311931 | 58954 | 309677 | 59662 | 307438                        | 60375 | 305214 | 61092 | 303005 | 61815 | 9   |
| 1.2                                                                                                                               | 314155 | 58265 | 311886 | 58968 | 309632 | 59676 | 307393                        | 60389 | 305170 | 61107 | 302961 | 61829 | 8.8 |
| 1.4                                                                                                                               | 314110 | 58279 | 311841 | 58982 | 309587 | 59690 | 307349                        | 60403 | 305125 | 61121 | 302917 | 61844 | 8.6 |
| 1.6                                                                                                                               | 314064 | 58293 | 311796 | 58996 | 309542 | 59705 | 307304                        | 60418 | 305081 | 61136 | 302873 | 61858 | 8.4 |
| 1.8                                                                                                                               | 314019 | 58307 | 311750 | 59010 | 309497 | 59719 | 307260                        | 60432 | 305037 | 61150 | 302829 | 61873 | 8.2 |
| 2                                                                                                                                 | 313973 | 58321 | 311705 | 59025 | 309452 | 59733 | 307215                        | 60446 | 304993 | 61164 | 302785 | 61887 | 8   |
| 2.2                                                                                                                               | 313928 | 58335 | 311660 | 59039 | 309407 | 59747 | 307170                        | 60461 | 304948 | 61179 | 302741 | 61902 | 7.8 |
| 2.4                                                                                                                               | 313882 | 58349 | 311615 | 59053 | 309363 | 59761 | 307126                        | 60475 | 304904 | 61193 | 302697 | 61916 | 7.6 |
| 2.6                                                                                                                               | 313837 | 58363 | 311569 | 59067 | 309318 | 59776 | 307081                        | 60489 | 304860 | 61208 | 302653 | 61931 | 7.4 |
| 2.8                                                                                                                               | 313791 | 58377 | 311524 | 59081 | 309273 | 59790 | 307037                        | 60504 | 304815 | 61222 | 302609 | 61945 | 7.2 |
| 3                                                                                                                                 | 313746 | 58391 | 311479 | 59095 | 309228 | 59804 | 306992                        | 60518 | 304771 | 61237 | 302565 | 61960 | 7   |
| 3.2                                                                                                                               | 313700 | 58405 | 311434 | 59109 | 309183 | 59818 | 306947                        | 60532 | 304727 | 61251 | 302521 | 61975 | 6.8 |
| 3.4                                                                                                                               | 313655 | 58419 | 311389 | 59123 | 309138 | 59833 | 306903                        | 60547 | 304683 | 61265 | 302477 | 61989 | 6.6 |
| 3.6                                                                                                                               | 313609 | 58433 | 311344 | 59138 | 309093 | 59847 | 306858                        | 60561 | 304638 | 61280 | 302433 | 62004 | 6.4 |
| 3.8                                                                                                                               | 313564 | 58447 | 311298 | 59152 | 309048 | 59861 | 306814                        | 60575 | 304594 | 61294 | 302389 | 62018 | 6.2 |
| 4                                                                                                                                 | 313518 | 58461 | 311253 | 59166 | 309004 | 59875 | 306769                        | 60590 | 304550 | 61309 | 302346 | 62033 | 6   |
| 4.2                                                                                                                               | 313473 | 58475 | 311208 | 59180 | 308959 | 59889 | 306725                        | 60604 | 304506 | 61323 | 302302 | 62047 | 5.8 |
| 4.4                                                                                                                               | 313427 | 58489 | 311163 | 59194 | 308914 | 59904 | 306680                        | 60618 | 304461 | 61337 | 302258 | 62062 | 5.6 |
| 4.6                                                                                                                               | 313382 | 58503 | 311118 | 59208 | 308869 | 59918 | 306636                        | 60633 | 304417 | 61352 | 302214 | 62076 | 5.4 |
| 4.8                                                                                                                               | 313337 | 58517 | 311073 | 59222 | 308824 | 59932 | 306591                        | 60647 | 304373 | 61366 | 302170 | 62091 | 5.2 |
| 5                                                                                                                                 | 313291 | 58531 | 311028 | 59237 | 308780 | 59946 | 306547                        | 60661 | 304329 | 61381 | 302126 | 62105 | 5   |
| 5.2                                                                                                                               | 313246 | 58546 | 310983 | 59251 | 308735 | 59961 | 306502                        | 60676 | 304285 | 61395 | 302082 | 62120 | 4.8 |
| 5.4                                                                                                                               | 313200 | 58560 | 310937 | 59265 | 308690 | 59975 | 306458                        | 60690 | 304240 | 61410 | 302038 | 62134 | 4.6 |
| 5.6                                                                                                                               | 313155 | 58574 | 310892 | 59279 | 308645 | 59989 | 306413                        | 60704 | 304196 | 61424 | 301994 | 62149 | 4.4 |
| 5.8                                                                                                                               | 313110 | 58588 | 310847 | 59293 | 308600 | 60003 | 306369                        | 60719 | 304152 | 61439 | 301950 | 62163 | 4.2 |
| 6                                                                                                                                 | 313064 | 58602 | 310802 | 59307 | 308556 | 60018 | 306324                        | 60733 | 304108 | 61453 | 301906 | 62178 | 4   |
| 6.2                                                                                                                               | 313019 | 58616 | 310757 | 59321 | 308511 | 60032 | 306280                        | 60747 | 304064 | 61467 | 301863 | 62193 | 3.8 |
| 6.4                                                                                                                               | 312973 | 58630 | 310712 | 59336 | 308466 | 60046 | 306235                        | 60762 | 304019 | 61482 | 301819 | 62207 | 3.6 |
| 6.6                                                                                                                               | 312928 | 58644 | 310667 | 59350 | 308421 | 60060 | 306191                        | 60776 | 303975 | 61496 | 301775 | 62222 | 3.4 |
| 6.8                                                                                                                               | 312883 | 58658 | 310622 | 59364 | 308376 | 60075 | 306146                        | 60790 | 303931 | 61511 | 301731 | 62236 | 3.2 |
| 7                                                                                                                                 | 312837 | 58672 | 310577 | 59378 | 308332 | 60089 | 306102                        | 60805 | 303887 | 61525 | 301687 | 62251 | 3   |
| 7.2                                                                                                                               | 312792 | 58686 | 310532 | 59392 | 308287 | 60103 | 306057                        | 60819 | 303843 | 61540 | 301643 | 62265 | 2.8 |
| 7.4                                                                                                                               | 312747 | 58700 | 310487 | 59406 | 308242 | 60118 | 306013                        | 60833 | 303799 | 61554 | 301599 | 62280 | 2.6 |
| 7.6                                                                                                                               | 312701 | 58714 | 310442 | 59421 | 308198 | 60132 | 305969                        | 60848 | 303755 | 61569 | 301556 | 62294 | 2.4 |
| 7.8                                                                                                                               | 312656 | 58728 | 310397 | 59435 | 308153 | 60146 | 305924                        | 60862 | 303710 | 61583 | 301512 | 62309 | 2.2 |
| 8                                                                                                                                 | 312611 | 58742 | 310352 | 59449 | 308108 | 60160 | 305880                        | 60877 | 303666 | 61598 | 301468 | 62324 | 2   |
| 8.2                                                                                                                               | 312565 | 58757 | 310307 | 59463 | 308063 | 60175 | 305835                        | 60891 | 303622 | 61612 | 301424 | 62338 | 1.8 |
| 8.4                                                                                                                               | 312520 | 58771 | 310262 | 59477 | 308019 | 60189 | 305791                        | 60905 | 303578 | 61627 | 301380 | 62353 | 1.6 |
| 8.6                                                                                                                               | 312475 | 58785 | 310217 | 59492 | 307974 | 60203 | 305746                        | 60920 | 303534 | 61641 | 301336 | 62367 | 1.4 |
| 8.8                                                                                                                               | 312429 | 58799 | 310172 | 59506 | 307929 | 60217 | 305702                        | 60934 | 303490 | 61656 | 301293 | 62382 | 1.2 |
| 9                                                                                                                                 | 312384 | 58813 | 310127 | 59520 | 307885 | 60232 | 305658                        | 60948 | 303446 | 61670 | 301249 | 62396 | 1   |
| 9.2                                                                                                                               | 312339 | 58827 | 310082 | 59534 | 307840 | 60246 | 305613                        | 60963 | 303402 | 61684 | 301205 | 62411 | 0.8 |
| 9.4                                                                                                                               | 312293 | 58841 | 310037 | 59548 | 307795 | 60260 | 305569                        | 60977 | 303358 | 61699 | 301161 | 62426 | 0.6 |
| 9.6                                                                                                                               | 312248 | 58855 | 309992 | 59563 | 307751 | 60275 | 305525                        | 60992 | 303314 | 61713 | 301118 | 62440 | 0.4 |
| 9.8                                                                                                                               | 312203 | 58869 | 309947 | 59577 | 307706 | 60289 | 305480                        | 61006 | 303270 | 61728 | 301074 | 62455 | 0.2 |
| 10                                                                                                                                | 312157 | 58883 | 309902 | 59591 | 307661 | 60303 | 305436                        | 61020 | 303225 | 61742 | 301030 | 62469 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ' ↑ |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 150°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 30°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 301030 | 62469 | 298849 | 63201 | 296683 | 63938 | 294531                        | 64680 | 292394 | 65426 | 290270 | 66178 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 300986 | 62484 | 298806 | 63216 | 296640 | 63953 | 294488                        | 64694 | 292351 | 65441 | 290228 | 66193 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 300942 | 62499 | 298762 | 63231 | 296597 | 63968 | 294445                        | 64709 | 292308 | 65456 | 290185 | 66208 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 300899 | 62513 | 298719 | 63245 | 296553 | 63982 | 294402                        | 64724 | 292266 | 65471 | 290143 | 66223 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 300855 | 62528 | 298675 | 63260 | 296510 | 63997 | 294360                        | 64739 | 292223 | 65486 | 290101 | 66238 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 300811 | 62542 | 298632 | 63275 | 296467 | 64012 | 294317                        | 64754 | 292181 | 65501 | 290059 | 66253 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 300768 | 62557 | 298588 | 63289 | 296424 | 64027 | 294274                        | 64769 | 292138 | 65516 | 290016 | 66268 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 300724 | 62572 | 298545 | 63304 | 296381 | 64041 | 294231                        | 64784 | 292095 | 65531 | 289974 | 66283 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 300680 | 62586 | 298502 | 63319 | 296338 | 64056 | 294188                        | 64799 | 292053 | 65546 | 289932 | 66299 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 300636 | 62601 | 298458 | 63333 | 296295 | 64071 | 294145                        | 64814 | 292010 | 65561 | 289889 | 66314 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 300593 | 62615 | 298415 | 63348 | 296251 | 64086 | 294102                        | 64829 | 291968 | 65576 | 289847 | 66329 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 300549 | 62630 | 298371 | 63363 | 296208 | 64101 | 294060                        | 64843 | 291925 | 65591 | 289805 | 66344 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 300505 | 62645 | 298328 | 63378 | 296165 | 64115 | 294017                        | 64858 | 291883 | 65606 | 289763 | 66359 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 300462 | 62659 | 298285 | 63392 | 296122 | 64130 | 293974                        | 64873 | 291840 | 65621 | 289720 | 66374 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 300418 | 62674 | 298241 | 63407 | 296079 | 64145 | 293931                        | 64888 | 291798 | 65636 | 289678 | 66389 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 300374 | 62688 | 298198 | 63422 | 296036 | 64160 | 293888                        | 64903 | 291755 | 65651 | 289636 | 66404 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 300331 | 62703 | 298154 | 63436 | 295993 | 64175 | 293846                        | 64918 | 291713 | 65666 | 289594 | 66419 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 300287 | 62718 | 298111 | 63451 | 295950 | 64190 | 293803                        | 64933 | 291670 | 65681 | 289551 | 66435 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 300243 | 62732 | 298068 | 63466 | 295907 | 64204 | 293760                        | 64948 | 291627 | 65696 | 289509 | 66450 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 300200 | 62747 | 298024 | 63481 | 295864 | 64219 | 293717                        | 64963 | 291585 | 65711 | 289467 | 66465 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 300156 | 62762 | 297981 | 63495 | 295821 | 64234 | 293674                        | 64978 | 291542 | 65726 | 289425 | 66480 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 300112 | 62776 | 297938 | 63510 | 295777 | 64249 | 293632                        | 64993 | 291500 | 65741 | 289382 | 66495 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 300069 | 62791 | 297894 | 63525 | 295734 | 64264 | 293589                        | 65008 | 291458 | 65756 | 289340 | 66510 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 300025 | 62805 | 297851 | 63539 | 295691 | 64278 | 293546                        | 65022 | 291415 | 65771 | 289298 | 66525 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 299981 | 62820 | 297808 | 63554 | 295648 | 64293 | 293503                        | 65037 | 291373 | 65786 | 289256 | 66540 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 299938 | 62835 | 297764 | 63569 | 295605 | 64308 | 293461                        | 65052 | 291330 | 65801 | 289214 | 66555 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 299894 | 62849 | 297721 | 63584 | 295562 | 64323 | 293418                        | 65067 | 291288 | 65816 | 289171 | 66571 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 299851 | 62864 | 297678 | 63598 | 295519 | 64338 | 293375                        | 65082 | 291245 | 65831 | 289129 | 66586 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 299807 | 62879 | 297634 | 63613 | 295476 | 64353 | 293332                        | 65097 | 291203 | 65847 | 289087 | 66601 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 299763 | 62893 | 297591 | 63628 | 295433 | 64368 | 293290                        | 65112 | 291160 | 65862 | 289045 | 66616 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 299720 | 62908 | 297548 | 63643 | 295390 | 64382 | 293247                        | 65127 | 291118 | 65877 | 289003 | 66631 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 299676 | 62923 | 297504 | 63657 | 295347 | 64397 | 293204                        | 65142 | 291075 | 65892 | 288961 | 66646 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 299633 | 62937 | 297461 | 63672 | 295304 | 64412 | 293161                        | 65157 | 291033 | 65907 | 288918 | 66661 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 299589 | 62952 | 297418 | 63687 | 295261 | 64427 | 293119                        | 65172 | 290991 | 65922 | 288876 | 66677 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 299545 | 62966 | 297375 | 63702 | 295218 | 64442 | 293076                        | 65187 | 290948 | 65937 | 288834 | 66692 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 299502 | 62981 | 297331 | 63716 | 295175 | 64457 | 293033                        | 65202 | 290906 | 65952 | 288792 | 66707 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 299458 | 62996 | 297288 | 63731 | 295132 | 64471 | 292991                        | 65217 | 290863 | 65967 | 288750 | 66722 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 299415 | 63010 | 297245 | 63746 | 295089 | 64486 | 292948                        | 65232 | 290821 | 65982 | 288708 | 66737 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 299371 | 63025 | 297202 | 63761 | 295046 | 64501 | 292905                        | 65247 | 290778 | 65997 | 288666 | 66752 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 299328 | 63040 | 297158 | 63775 | 295003 | 64516 | 292863                        | 65262 | 290736 | 66012 | 288624 | 66768 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 299284 | 63054 | 297115 | 63790 | 294960 | 64531 | 292820                        | 65277 | 290694 | 66027 | 288581 | 66783 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 299241 | 63069 | 297072 | 63805 | 294917 | 64546 | 292777                        | 65291 | 290651 | 66042 | 288539 | 66798 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 299197 | 63084 | 297029 | 63820 | 294874 | 64561 | 292735                        | 65306 | 290609 | 66057 | 288497 | 66813 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 299154 | 63098 | 296985 | 63834 | 294832 | 64575 | 292692                        | 65321 | 290567 | 66072 | 288455 | 66828 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 299110 | 63113 | 296942 | 63849 | 294789 | 64590 | 292649                        | 65336 | 290524 | 66087 | 288413 | 66843 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 299067 | 63128 | 296899 | 63864 | 294746 | 64605 | 292607                        | 65351 | 290482 | 66102 | 288371 | 66859 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 299023 | 63142 | 296856 | 63879 | 294703 | 64620 | 292564                        | 65366 | 290439 | 66118 | 288329 | 66874 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 298980 | 63157 | 296813 | 63894 | 294660 | 64635 | 292521                        | 65381 | 290397 | 66133 | 288287 | 66889 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 298936 | 63172 | 296769 | 63908 | 294617 | 64650 | 292479                        | 65396 | 290355 | 66148 | 288245 | 66904 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 298893 | 63187 | 296726 | 63923 | 294574 | 64665 | 292436                        | 65411 | 290312 | 66163 | 288203 | 66919 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 298849 | 63201 | 296683 | 63938 | 294531 | 64680 | 292394                        | 65426 | 290270 | 66178 | 288161 | 66934 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 149°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |

| 31°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 288161 | 66934 | 286065 | 67696 | 283983 | 68463 | 281915                        | 69234 | 279860 | 70011 | 277819 | 70793 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 288119 | 66950 | 286023 | 67711 | 283942 | 68478 | 281874                        | 69250 | 279819 | 70026 | 277778 | 70808 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 288077 | 66965 | 285982 | 67727 | 283900 | 68493 | 281832                        | 69265 | 279778 | 70042 | 277737 | 70824 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 288035 | 66980 | 285940 | 67742 | 283859 | 68509 | 281791                        | 69281 | 279737 | 70058 | 277697 | 70840 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 287993 | 66995 | 285898 | 67757 | 283817 | 68524 | 281750                        | 69296 | 279696 | 70073 | 277656 | 70855 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 287950 | 67010 | 285856 | 67772 | 283776 | 68540 | 281709                        | 69312 | 279655 | 70089 | 277615 | 70871 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 287908 | 67026 | 285815 | 67788 | 283734 | 68555 | 281668                        | 69327 | 279614 | 70104 | 277574 | 70887 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 287866 | 67041 | 285773 | 67803 | 283693 | 68570 | 281626                        | 69343 | 279573 | 70120 | 277534 | 70903 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 287824 | 67056 | 285731 | 67818 | 283651 | 68586 | 281585                        | 69358 | 279533 | 70136 | 277493 | 70918 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 287782 | 67071 | 285689 | 67834 | 283610 | 68601 | 281544                        | 69374 | 279492 | 70151 | 277453 | 70934 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 287740 | 67086 | 285648 | 67849 | 283568 | 68617 | 281503                        | 69389 | 279451 | 70167 | 277412 | 70950 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 287698 | 67102 | 285606 | 67864 | 283527 | 68632 | 281462                        | 69405 | 279410 | 70182 | 277371 | 70965 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 287656 | 67117 | 285564 | 67880 | 283486 | 68647 | 281421                        | 69420 | 279369 | 70198 | 277331 | 70981 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 287614 | 67132 | 285522 | 67895 | 283444 | 68663 | 281379                        | 69436 | 279328 | 70214 | 277290 | 70997 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 287573 | 67147 | 285481 | 67910 | 283403 | 68678 | 281338                        | 69451 | 279287 | 70229 | 277249 | 71012 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 287531 | 67162 | 285439 | 67925 | 283361 | 68694 | 281297                        | 69467 | 279246 | 70245 | 277209 | 71028 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 287489 | 67178 | 285397 | 67941 | 283320 | 68709 | 281256                        | 69482 | 279205 | 70261 | 277168 | 71044 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 287447 | 67193 | 285356 | 67956 | 283278 | 68724 | 281215                        | 69498 | 279164 | 70276 | 277127 | 71060 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 287405 | 67208 | 285314 | 67971 | 283237 | 68740 | 281174                        | 69513 | 279124 | 70292 | 277087 | 71075 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 287363 | 67223 | 285272 | 67987 | 283196 | 68755 | 281132                        | 69529 | 279083 | 70307 | 277046 | 71091 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 287321 | 67238 | 285231 | 68002 | 283154 | 68771 | 281091                        | 69544 | 279042 | 70323 | 277006 | 71107 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 287279 | 67254 | 285189 | 68017 | 283113 | 68786 | 281050                        | 69560 | 279001 | 70339 | 276965 | 71123 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 287237 | 67269 | 285147 | 68033 | 283071 | 68801 | 281009                        | 69575 | 278960 | 70354 | 276925 | 71138 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 287195 | 67284 | 285106 | 68048 | 283030 | 68817 | 280968                        | 69591 | 278919 | 70370 | 276884 | 71154 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 287153 | 67299 | 285064 | 68063 | 282989 | 68832 | 280927                        | 69606 | 278878 | 70386 | 276843 | 71170 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 287111 | 67315 | 285022 | 68079 | 282947 | 68848 | 280886                        | 69622 | 278838 | 70401 | 276803 | 71185 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 287069 | 67330 | 284981 | 68094 | 282906 | 68863 | 280845                        | 69637 | 278797 | 70417 | 276762 | 71201 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 287027 | 67345 | 284939 | 68109 | 282865 | 68879 | 280804                        | 69653 | 278756 | 70432 | 276722 | 71217 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 286985 | 67360 | 284898 | 68125 | 282823 | 68894 | 280763                        | 69669 | 278715 | 70448 | 276681 | 71233 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 286944 | 67376 | 284856 | 68140 | 282782 | 68910 | 280721                        | 69684 | 278674 | 70464 | 276641 | 71248 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 286902 | 67391 | 284814 | 68155 | 282741 | 68925 | 280680                        | 69700 | 278634 | 70479 | 276600 | 71264 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 286860 | 67406 | 284773 | 68171 | 282699 | 68940 | 280639                        | 69715 | 278593 | 70495 | 276559 | 71280 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 286818 | 67421 | 284731 | 68186 | 282658 | 68956 | 280598                        | 69731 | 278552 | 70511 | 276519 | 71296 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 286776 | 67436 | 284689 | 68201 | 282617 | 68971 | 280557                        | 69746 | 278511 | 70526 | 276478 | 71311 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 286734 | 67452 | 284648 | 68217 | 282575 | 68987 | 280516                        | 69762 | 278470 | 70542 | 276438 | 71327 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 286692 | 67467 | 284606 | 68232 | 282534 | 69002 | 280475                        | 69777 | 278430 | 70558 | 276397 | 71343 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 286650 | 67482 | 284565 | 68247 | 282493 | 69018 | 280434                        | 69793 | 278389 | 70573 | 276357 | 71359 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 286609 | 67497 | 284523 | 68263 | 282451 | 69033 | 280393                        | 69808 | 278348 | 70589 | 276316 | 71374 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 286567 | 67513 | 284482 | 68278 | 282410 | 69049 | 280352                        | 69824 | 278307 | 70605 | 276276 | 71390 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 286525 | 67528 | 284440 | 68293 | 282369 | 69064 | 280311                        | 69840 | 278267 | 70620 | 276235 | 71406 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 286483 | 67543 | 284398 | 68309 | 282327 | 69079 | 280270                        | 69855 | 278226 | 70636 | 276195 | 71422 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 286441 | 67559 | 284357 | 68324 | 282286 | 69095 | 280229                        | 69871 | 278185 | 70652 | 276154 | 71438 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 286399 | 67574 | 284315 | 68340 | 282245 | 69110 | 280188                        | 69886 | 278144 | 70667 | 276114 | 71453 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 286358 | 67589 | 284274 | 68355 | 282204 | 69126 | 280147                        | 69902 | 278104 | 70683 | 276073 | 71469 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 286316 | 67604 | 284232 | 68370 | 282162 | 69141 | 280106                        | 69917 | 278063 | 70699 | 276033 | 71485 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 286274 | 67620 | 284191 | 68386 | 282121 | 69157 | 280065                        | 69933 | 278022 | 70714 | 275993 | 71501 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 286232 | 67635 | 284149 | 68401 | 282080 | 69172 | 280024                        | 69949 | 277981 | 70730 | 275952 | 71516 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 286190 | 67650 | 284108 | 68416 | 282039 | 69188 | 279983                        | 69964 | 277941 | 70746 | 275912 | 71532 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 286149 | 67665 | 284066 | 68432 | 281997 | 69203 | 279942                        | 69980 | 277900 | 70761 | 275871 | 71548 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 286107 | 67681 | 284025 | 68447 | 281956 | 69219 | 279901                        | 69995 | 277859 | 70777 | 275831 | 71564 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 286065 | 67696 | 283983 | 68463 | 281915 | 69234 | 279860                        | 70011 | 277819 | 70793 | 275790 | 71580 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 148°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

| 32°                                                                                                                               |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|------------------------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                                            |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                              | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 275790 | 71580 | 273775 | 72371 | 271773 | 73169 | 269783                                         | 73971 | 267807 | 74778 | 265843 | 75591 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 275750 | 71595 | 273735 | 72387 | 271733 | 73185 | 269744                                         | 73987 | 267767 | 74794 | 265804 | 75607 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 275709 | 71611 | 273695 | 72403 | 271693 | 73201 | 269704                                         | 74003 | 267728 | 74811 | 265764 | 75623 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 275669 | 71627 | 273655 | 72419 | 271653 | 73217 | 269665                                         | 74019 | 267689 | 74827 | 265725 | 75640 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 275629 | 71643 | 273614 | 72435 | 271613 | 73233 | 269625                                         | 74035 | 267649 | 74843 | 265686 | 75656 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 275588 | 71658 | 273574 | 72451 | 271573 | 73249 | 269585                                         | 74051 | 267610 | 74859 | 265647 | 75672 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 275548 | 71674 | 273534 | 72467 | 271533 | 73265 | 269546                                         | 74067 | 267570 | 74875 | 265608 | 75689 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 275507 | 71690 | 273494 | 72483 | 271494 | 73281 | 269506                                         | 74084 | 267531 | 74892 | 265569 | 75705 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 275467 | 71706 | 273454 | 72499 | 271454 | 73297 | 269466                                         | 74100 | 267492 | 74908 | 265530 | 75721 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 275427 | 71722 | 273414 | 72515 | 271414 | 73313 | 269427                                         | 74116 | 267452 | 74924 | 265491 | 75738 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 275386 | 71737 | 273374 | 72530 | 271374 | 73329 | 269387                                         | 74132 | 267413 | 74940 | 265451 | 75754 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 275346 | 71753 | 273333 | 72546 | 271334 | 73345 | 269348                                         | 74148 | 267374 | 74957 | 265412 | 75770 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 275305 | 71769 | 273293 | 72562 | 271294 | 73361 | 269308                                         | 74164 | 267334 | 74973 | 265373 | 75787 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 275265 | 71785 | 273253 | 72578 | 271254 | 73377 | 269268                                         | 74180 | 267295 | 74989 | 265334 | 75803 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 275225 | 71801 | 273213 | 72594 | 271215 | 73393 | 269229                                         | 74196 | 267256 | 75005 | 265295 | 75819 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 275184 | 71817 | 273173 | 72610 | 271175 | 73409 | 269189                                         | 74212 | 267216 | 75021 | 265256 | 75836 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 275144 | 71832 | 273133 | 72626 | 271135 | 73425 | 269150                                         | 74229 | 267177 | 75038 | 265217 | 75852 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 275104 | 71848 | 273093 | 72642 | 271095 | 73441 | 269110                                         | 74245 | 267138 | 75054 | 265178 | 75868 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 275063 | 71864 | 273053 | 72658 | 271055 | 73457 | 269070                                         | 74261 | 267098 | 75070 | 265139 | 75885 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 275023 | 71880 | 273013 | 72674 | 271015 | 73473 | 269031                                         | 74277 | 267059 | 75086 | 265100 | 75901 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 274983 | 71896 | 272973 | 72690 | 270976 | 73489 | 268991                                         | 74293 | 267020 | 75103 | 265061 | 75917 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 274942 | 71912 | 272933 | 72706 | 270936 | 73505 | 268952                                         | 74309 | 266980 | 75119 | 265022 | 75934 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 274902 | 71927 | 272893 | 72722 | 270896 | 73521 | 268912                                         | 74325 | 266941 | 75135 | 264983 | 75950 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 274862 | 71943 | 272852 | 72738 | 270856 | 73537 | 268873                                         | 74342 | 266902 | 75151 | 264944 | 75966 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 274821 | 71959 | 272812 | 72753 | 270816 | 73553 | 268833                                         | 74358 | 266863 | 75168 | 264904 | 75983 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 274781 | 71975 | 272772 | 72769 | 270777 | 73569 | 268794                                         | 74374 | 266823 | 75184 | 264865 | 75999 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 274741 | 71991 | 272732 | 72785 | 270737 | 73585 | 268754                                         | 74390 | 266784 | 75200 | 264826 | 76015 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 274700 | 72007 | 272692 | 72801 | 270697 | 73601 | 268715                                         | 74406 | 266745 | 75216 | 264787 | 76032 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 274660 | 72022 | 272652 | 72817 | 270657 | 73617 | 268675                                         | 74422 | 266705 | 75233 | 264748 | 76048 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 274620 | 72038 | 272612 | 72833 | 270617 | 73633 | 268635                                         | 74438 | 266666 | 75249 | 264709 | 76064 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 274580 | 72054 | 272572 | 72849 | 270578 | 73649 | 268596                                         | 74455 | 266627 | 75265 | 264670 | 76081 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 274539 | 72070 | 272532 | 72865 | 270538 | 73665 | 268556                                         | 74471 | 266588 | 75281 | 264631 | 76097 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 274499 | 72086 | 272492 | 72881 | 270498 | 73681 | 268517                                         | 74487 | 266548 | 75298 | 264592 | 76114 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 274459 | 72102 | 272452 | 72897 | 270458 | 73697 | 268477                                         | 74503 | 266509 | 75314 | 264553 | 76130 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 274419 | 72117 | 272412 | 72913 | 270419 | 73714 | 268438                                         | 74519 | 266470 | 75330 | 264514 | 76146 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 274378 | 72133 | 272372 | 72929 | 270379 | 73730 | 268398                                         | 74535 | 266431 | 75346 | 264475 | 76163 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 274338 | 72149 | 272332 | 72945 | 270339 | 73746 | 268359                                         | 74552 | 266391 | 75363 | 264436 | 76179 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 274298 | 72165 | 272292 | 72961 | 270299 | 73762 | 268320                                         | 74568 | 266352 | 75379 | 264397 | 76195 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 274258 | 72181 | 272252 | 72977 | 270260 | 73778 | 268280                                         | 74584 | 266313 | 75395 | 264358 | 76212 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 274217 | 72197 | 272212 | 72993 | 270220 | 73794 | 268241                                         | 74600 | 266274 | 75412 | 264320 | 76228 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 274177 | 72213 | 272172 | 73009 | 270180 | 73810 | 268201                                         | 74616 | 266235 | 75428 | 264281 | 76245 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 274137 | 72229 | 272132 | 73025 | 270141 | 73826 | 268162                                         | 74632 | 266195 | 75444 | 264242 | 76261 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 274097 | 72244 | 272092 | 73041 | 270101 | 73842 | 268122                                         | 74649 | 266156 | 75460 | 264203 | 76277 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 274056 | 72260 | 272052 | 73057 | 270061 | 73858 | 268083                                         | 74665 | 266117 | 75477 | 264164 | 76294 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 274016 | 72276 | 272012 | 73073 | 270022 | 73874 | 268043                                         | 74681 | 266078 | 75493 | 264125 | 76310 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 273976 | 72292 | 271973 | 73089 | 269982 | 73890 | 268004                                         | 74697 | 266039 | 75509 | 264086 | 76327 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 273936 | 72308 | 271933 | 73105 | 269942 | 73906 | 267964                                         | 74713 | 265999 | 75526 | 264047 | 76343 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 273896 | 72324 | 271893 | 73121 | 269902 | 73923 | 267925                                         | 74730 | 265960 | 75542 | 264008 | 76359 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 273855 | 72340 | 271853 | 73137 | 269863 | 73939 | 267886                                         | 74746 | 265921 | 75558 | 263969 | 76376 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 273815 | 72356 | 271813 | 73153 | 269823 | 73955 | 267846                                         | 74762 | 265882 | 75574 | 263930 | 76392 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 273775 | 72371 | 271773 | 73169 | 269783 | 73971 | 267807                                         | 74778 | 265843 | 75591 | 263891 | 76409 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                                              | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                                            |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |  |  |
| 147°                                                                                                                              |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                                                |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 \cdot \log(1 / \sin \alpha)$                                                                                    |        |       |        |       |        |       | $B(\alpha) = 10^6 \cdot \log(1 / \cos \alpha)$ |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |  |  |

| 33°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 263891 | 76409 | 261952 | 77232 | 260025 | 78060 | 258111                        | 78893 | 256208 | 79732 | 254317 | 80576 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 263852 | 76425 | 261913 | 77248 | 259987 | 78077 | 258072                        | 78910 | 256170 | 79749 | 254279 | 80593 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 263813 | 76441 | 261875 | 77265 | 259948 | 78093 | 258034                        | 78927 | 256132 | 79766 | 254242 | 80610 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 263775 | 76458 | 261836 | 77281 | 259910 | 78110 | 257996                        | 78944 | 256094 | 79783 | 254204 | 80627 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 263736 | 76474 | 261797 | 77298 | 259872 | 78126 | 257958                        | 78960 | 256056 | 79800 | 254166 | 80644 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 263697 | 76491 | 261759 | 77314 | 259833 | 78143 | 257920                        | 78977 | 256018 | 79816 | 254129 | 80661 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 263658 | 76507 | 261720 | 77331 | 259795 | 78160 | 257882                        | 78994 | 255980 | 79833 | 254091 | 80678 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 263619 | 76524 | 261682 | 77347 | 259756 | 78176 | 257843                        | 79011 | 255942 | 79850 | 254053 | 80695 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 263580 | 76540 | 261643 | 77364 | 259718 | 78193 | 257805                        | 79027 | 255905 | 79867 | 254016 | 80712 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 263541 | 76556 | 261604 | 77380 | 259680 | 78210 | 257767                        | 79044 | 255867 | 79884 | 253978 | 80729 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 263502 | 76573 | 261566 | 77397 | 259641 | 78226 | 257729                        | 79061 | 255829 | 79901 | 253940 | 80746 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 263464 | 76589 | 261527 | 77413 | 259603 | 78243 | 257691                        | 79077 | 255791 | 79917 | 253903 | 80763 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 263425 | 76606 | 261489 | 77430 | 259565 | 78259 | 257653                        | 79094 | 255753 | 79934 | 253865 | 80780 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 263386 | 76622 | 261450 | 77446 | 259526 | 78276 | 257615                        | 79111 | 255715 | 79951 | 253828 | 80797 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 263347 | 76639 | 261411 | 77463 | 259488 | 78293 | 257577                        | 79128 | 255677 | 79968 | 253790 | 80814 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 263308 | 76655 | 261373 | 77480 | 259450 | 78309 | 257538                        | 79144 | 255639 | 79985 | 253752 | 80831 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 263269 | 76671 | 261334 | 77496 | 259411 | 78326 | 257500                        | 79161 | 255602 | 80002 | 253715 | 80848 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 263231 | 76688 | 261296 | 77513 | 259373 | 78343 | 257462                        | 79178 | 255564 | 80019 | 253677 | 80865 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 263192 | 76704 | 261257 | 77529 | 259335 | 78359 | 257424                        | 79195 | 255526 | 80035 | 253639 | 80882 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 263153 | 76721 | 261218 | 77546 | 259296 | 78376 | 257386                        | 79212 | 255488 | 80052 | 253602 | 80899 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 263114 | 76737 | 261180 | 77562 | 259258 | 78393 | 257348                        | 79228 | 255450 | 80069 | 253564 | 80915 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 263075 | 76754 | 261141 | 77579 | 259220 | 78409 | 257310                        | 79245 | 255412 | 80086 | 253527 | 80932 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 263036 | 76770 | 261103 | 77595 | 259181 | 78426 | 257272                        | 79262 | 255374 | 80103 | 253489 | 80949 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 262998 | 76787 | 261064 | 77612 | 259143 | 78443 | 257234                        | 79279 | 255337 | 80120 | 253451 | 80966 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 262959 | 76803 | 261026 | 77629 | 259105 | 78459 | 257196                        | 79295 | 255299 | 80137 | 253414 | 80983 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 262920 | 76819 | 260987 | 77645 | 259066 | 78476 | 257158                        | 79312 | 255261 | 80154 | 253376 | 81000 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 262881 | 76836 | 260949 | 77662 | 259028 | 78493 | 257120                        | 79329 | 255223 | 80171 | 253339 | 81017 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 262843 | 76852 | 260910 | 77678 | 258990 | 78509 | 257082                        | 79346 | 255185 | 80187 | 253301 | 81034 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 262804 | 76869 | 260872 | 77695 | 258951 | 78526 | 257044                        | 79362 | 255148 | 80204 | 253264 | 81051 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 262765 | 76885 | 260833 | 77711 | 258913 | 78543 | 257006                        | 79379 | 255110 | 80221 | 253226 | 81068 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 262726 | 76902 | 260794 | 77728 | 258875 | 78559 | 256967                        | 79396 | 255072 | 80238 | 253188 | 81085 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 262688 | 76918 | 260756 | 77745 | 258837 | 78576 | 256929                        | 79413 | 255034 | 80255 | 253151 | 81102 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 262649 | 76935 | 260717 | 77761 | 258798 | 78593 | 256891                        | 79430 | 254996 | 80272 | 253113 | 81119 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 262610 | 76951 | 260679 | 77778 | 258760 | 78609 | 256853                        | 79446 | 254959 | 80289 | 253076 | 81136 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 262571 | 76968 | 260640 | 77794 | 258722 | 78626 | 256815                        | 79463 | 254921 | 80306 | 253038 | 81153 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 262533 | 76984 | 260602 | 77811 | 258684 | 78643 | 256777                        | 79480 | 254883 | 80323 | 253001 | 81170 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 262494 | 77001 | 260564 | 77827 | 258645 | 78659 | 256739                        | 79497 | 254845 | 80339 | 252963 | 81187 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 262455 | 77017 | 260525 | 77844 | 258607 | 78676 | 256701                        | 79514 | 254808 | 80356 | 252926 | 81204 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 262416 | 77034 | 260487 | 77861 | 258569 | 78693 | 256663                        | 79530 | 254770 | 80373 | 252888 | 81221 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 262378 | 77050 | 260448 | 77877 | 258531 | 78710 | 256625                        | 79547 | 254732 | 80390 | 252851 | 81238 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 262339 | 77067 | 260410 | 77894 | 258492 | 78726 | 256587                        | 79564 | 254694 | 80407 | 252813 | 81255 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 262300 | 77083 | 260371 | 77910 | 258454 | 78743 | 256549                        | 79581 | 254657 | 80424 | 252776 | 81272 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 262262 | 77100 | 260333 | 77927 | 258416 | 78760 | 256511                        | 79598 | 254619 | 80441 | 252738 | 81290 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 262223 | 77116 | 260294 | 77944 | 258378 | 78776 | 256474                        | 79614 | 254581 | 80458 | 252701 | 81307 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 262184 | 77133 | 260256 | 77960 | 258340 | 78793 | 256436                        | 79631 | 254543 | 80475 | 252663 | 81324 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 262145 | 77149 | 260217 | 77977 | 258301 | 78810 | 256398                        | 79648 | 254506 | 80492 | 252626 | 81341 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 262107 | 77166 | 260179 | 77993 | 258263 | 78827 | 256360                        | 79665 | 254468 | 80509 | 252588 | 81358 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 262068 | 77182 | 260140 | 78010 | 258225 | 78843 | 256322                        | 79682 | 254430 | 80526 | 252551 | 81375 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 262029 | 77199 | 260102 | 78027 | 258187 | 78860 | 256284                        | 79699 | 254393 | 80542 | 252513 | 81392 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 261991 | 77215 | 260064 | 78043 | 258149 | 78877 | 256246                        | 79715 | 254355 | 80559 | 252476 | 81409 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 261952 | 77232 | 260025 | 78060 | 258111 | 78893 | 256208                        | 79732 | 254317 | 80576 | 252438 | 81426 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 146°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

| 34°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ' ↓                                                                                                                               | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 252438 | 81426 | 250571 | 82281 | 248716 | 83141 | 246872                        | 84006 | 245040 | 84877 | 243218 | 85754 | 10  |
| 0.2                                                                                                                               | 252401 | 81443 | 250534 | 82298 | 248679 | 83158 | 246835                        | 84024 | 245003 | 84895 | 243182 | 85771 | 9.8 |
| 0.4                                                                                                                               | 252363 | 81460 | 250497 | 82315 | 248642 | 83175 | 246798                        | 84041 | 244966 | 84912 | 243146 | 85789 | 9.6 |
| 0.6                                                                                                                               | 252326 | 81477 | 250460 | 82332 | 248605 | 83193 | 246762                        | 84058 | 244930 | 84930 | 243110 | 85806 | 9.4 |
| 0.8                                                                                                                               | 252289 | 81494 | 250422 | 82349 | 248568 | 83210 | 246725                        | 84076 | 244893 | 84947 | 243073 | 85824 | 9.2 |
| 1                                                                                                                                 | 252251 | 81511 | 250385 | 82366 | 248531 | 83227 | 246688                        | 84093 | 244857 | 84965 | 243037 | 85842 | 9   |
| 1.2                                                                                                                               | 252214 | 81528 | 250348 | 82384 | 248494 | 83244 | 246651                        | 84111 | 244820 | 84982 | 243001 | 85859 | 8.8 |
| 1.4                                                                                                                               | 252176 | 81545 | 250311 | 82401 | 248457 | 83262 | 246615                        | 84128 | 244784 | 85000 | 242964 | 85877 | 8.6 |
| 1.6                                                                                                                               | 252139 | 81562 | 250274 | 82418 | 248420 | 83279 | 246578                        | 84145 | 244747 | 85017 | 242928 | 85894 | 8.4 |
| 1.8                                                                                                                               | 252101 | 81579 | 250236 | 82435 | 248383 | 83296 | 246541                        | 84163 | 244711 | 85035 | 242892 | 85912 | 8.2 |
| 2                                                                                                                                 | 252064 | 81596 | 250199 | 82452 | 248346 | 83313 | 246505                        | 84180 | 244674 | 85052 | 242856 | 85930 | 8   |
| 2.2                                                                                                                               | 252027 | 81613 | 250162 | 82469 | 248309 | 83331 | 246468                        | 84197 | 244638 | 85070 | 242819 | 85947 | 7.8 |
| 2.4                                                                                                                               | 251989 | 81630 | 250125 | 82487 | 248272 | 83348 | 246431                        | 84215 | 244601 | 85087 | 242783 | 85965 | 7.6 |
| 2.6                                                                                                                               | 251952 | 81648 | 250088 | 82504 | 248235 | 83365 | 246394                        | 84232 | 244565 | 85105 | 242747 | 85982 | 7.4 |
| 2.8                                                                                                                               | 251914 | 81665 | 250051 | 82521 | 248198 | 83383 | 246358                        | 84250 | 244529 | 85122 | 242711 | 86000 | 7.2 |
| 3                                                                                                                                 | 251877 | 81682 | 250013 | 82538 | 248161 | 83400 | 246321                        | 84267 | 244492 | 85140 | 242674 | 86018 | 7   |
| 3.2                                                                                                                               | 251840 | 81699 | 249976 | 82555 | 248125 | 83417 | 246284                        | 84284 | 244456 | 85157 | 242638 | 86035 | 6.8 |
| 3.4                                                                                                                               | 251802 | 81716 | 249939 | 82572 | 248088 | 83434 | 246248                        | 84302 | 244419 | 85175 | 242602 | 86053 | 6.6 |
| 3.6                                                                                                                               | 251765 | 81733 | 249902 | 82590 | 248051 | 83452 | 246211                        | 84319 | 244383 | 85192 | 242566 | 86070 | 6.4 |
| 3.8                                                                                                                               | 251727 | 81750 | 249865 | 82607 | 248014 | 83469 | 246174                        | 84337 | 244346 | 85210 | 242529 | 86088 | 6.2 |
| 4                                                                                                                                 | 251690 | 81767 | 249828 | 82624 | 247977 | 83486 | 246138                        | 84354 | 244310 | 85227 | 242493 | 86106 | 6   |
| 4.2                                                                                                                               | 251653 | 81784 | 249791 | 82641 | 247940 | 83504 | 246101                        | 84371 | 244273 | 85245 | 242457 | 86123 | 5.8 |
| 4.4                                                                                                                               | 251615 | 81801 | 249753 | 82658 | 247903 | 83521 | 246064                        | 84389 | 244237 | 85262 | 242421 | 86141 | 5.6 |
| 4.6                                                                                                                               | 251578 | 81818 | 249716 | 82676 | 247866 | 83538 | 246028                        | 84406 | 244200 | 85280 | 242385 | 86159 | 5.4 |
| 4.8                                                                                                                               | 251541 | 81835 | 249679 | 82693 | 247829 | 83556 | 245991                        | 84424 | 244164 | 85297 | 242348 | 86176 | 5.2 |
| 5                                                                                                                                 | 251503 | 81853 | 249642 | 82710 | 247792 | 83573 | 245954                        | 84441 | 244128 | 85315 | 242312 | 86194 | 5   |
| 5.2                                                                                                                               | 251466 | 81870 | 249605 | 82727 | 247756 | 83590 | 245918                        | 84459 | 244091 | 85332 | 242276 | 86212 | 4.8 |
| 5.4                                                                                                                               | 251429 | 81887 | 249568 | 82744 | 247719 | 83607 | 245881                        | 84476 | 244055 | 85350 | 242240 | 86229 | 4.6 |
| 5.6                                                                                                                               | 251391 | 81904 | 249531 | 82762 | 247682 | 83625 | 245844                        | 84493 | 244018 | 85367 | 242204 | 86247 | 4.4 |
| 5.8                                                                                                                               | 251354 | 81921 | 249494 | 82779 | 247645 | 83642 | 245808                        | 84511 | 243982 | 85385 | 242167 | 86264 | 4.2 |
| 6                                                                                                                                 | 251317 | 81938 | 249457 | 82796 | 247608 | 83659 | 245771                        | 84528 | 243946 | 85402 | 242131 | 86282 | 4   |
| 6.2                                                                                                                               | 251279 | 81955 | 249420 | 82813 | 247571 | 83677 | 245735                        | 84546 | 243909 | 85420 | 242095 | 86300 | 3.8 |
| 6.4                                                                                                                               | 251242 | 81972 | 249382 | 82830 | 247534 | 83694 | 245698                        | 84563 | 243873 | 85438 | 242059 | 86317 | 3.6 |
| 6.6                                                                                                                               | 251205 | 81989 | 249345 | 82848 | 247498 | 83711 | 245661                        | 84581 | 243836 | 85455 | 242023 | 86335 | 3.4 |
| 6.8                                                                                                                               | 251167 | 82006 | 249308 | 82865 | 247461 | 83729 | 245625                        | 84598 | 243800 | 85473 | 241987 | 86353 | 3.2 |
| 7                                                                                                                                 | 251130 | 82024 | 249271 | 82882 | 247424 | 83746 | 245588                        | 84615 | 243764 | 85490 | 241950 | 86370 | 3   |
| 7.2                                                                                                                               | 251093 | 82041 | 249234 | 82899 | 247387 | 83763 | 245551                        | 84633 | 243727 | 85508 | 241914 | 86388 | 2.8 |
| 7.4                                                                                                                               | 251056 | 82058 | 249197 | 82917 | 247350 | 83781 | 245515                        | 84650 | 243691 | 85525 | 241878 | 86406 | 2.6 |
| 7.6                                                                                                                               | 251018 | 82075 | 249160 | 82934 | 247313 | 83798 | 245478                        | 84668 | 243655 | 85543 | 241842 | 86423 | 2.4 |
| 7.8                                                                                                                               | 250981 | 82092 | 249123 | 82951 | 247277 | 83815 | 245442                        | 84685 | 243618 | 85560 | 241806 | 86441 | 2.2 |
| 8                                                                                                                                 | 250944 | 82109 | 249086 | 82968 | 247240 | 83833 | 245405                        | 84703 | 243582 | 85578 | 241770 | 86459 | 2   |
| 8.2                                                                                                                               | 250906 | 82126 | 249049 | 82986 | 247203 | 83850 | 245369                        | 84720 | 243545 | 85595 | 241734 | 86476 | 1.8 |
| 8.4                                                                                                                               | 250869 | 82143 | 249012 | 83003 | 247166 | 83867 | 245332                        | 84738 | 243509 | 85613 | 241698 | 86494 | 1.6 |
| 8.6                                                                                                                               | 250832 | 82161 | 248975 | 83020 | 247129 | 83885 | 245295                        | 84755 | 243473 | 85631 | 241661 | 86512 | 1.4 |
| 8.8                                                                                                                               | 250795 | 82178 | 248938 | 83037 | 247093 | 83902 | 245259                        | 84772 | 243436 | 85648 | 241625 | 86529 | 1.2 |
| 9                                                                                                                                 | 250757 | 82195 | 248901 | 83054 | 247056 | 83919 | 245222                        | 84790 | 243400 | 85666 | 241589 | 86547 | 1   |
| 9.2                                                                                                                               | 250720 | 82212 | 248864 | 83072 | 247019 | 83937 | 245186                        | 84807 | 243364 | 85683 | 241553 | 86565 | 0.8 |
| 9.4                                                                                                                               | 250683 | 82229 | 248827 | 83089 | 246982 | 83954 | 245149                        | 84825 | 243327 | 85701 | 241517 | 86582 | 0.6 |
| 9.6                                                                                                                               | 250646 | 82246 | 248790 | 83106 | 246946 | 83972 | 245113                        | 84842 | 243291 | 85718 | 241481 | 86600 | 0.4 |
| 9.8                                                                                                                               | 250608 | 82263 | 248753 | 83123 | 246909 | 83989 | 245076                        | 84860 | 243255 | 85736 | 241445 | 86618 | 0.2 |
| 10                                                                                                                                | 250571 | 82281 | 248716 | 83141 | 246872 | 84006 | 245040                        | 84877 | 243218 | 85754 | 241409 | 86635 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ' ↑ |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 145°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 35°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 241409 | 86635 | 239610 | 87523 | 237823 | 88416 | 236046                        | 89314 | 234280 | 90218 | 232525 | 91127 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 241373 | 86653 | 239574 | 87541 | 237787 | 88434 | 236011                        | 89332 | 234245 | 90236 | 232490 | 91146 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 241337 | 86671 | 239538 | 87558 | 237751 | 88451 | 235975                        | 89350 | 234210 | 90254 | 232455 | 91164 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 241300 | 86689 | 239503 | 87576 | 237716 | 88469 | 235940                        | 89368 | 234175 | 90272 | 232420 | 91182 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 241264 | 86706 | 239467 | 87594 | 237680 | 88487 | 235904                        | 89386 | 234140 | 90290 | 232386 | 91200 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 241228 | 86724 | 239431 | 87612 | 237644 | 88505 | 235869                        | 89404 | 234104 | 90309 | 232351 | 91219 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 241192 | 86742 | 239395 | 87630 | 237609 | 88523 | 235834                        | 89422 | 234069 | 90327 | 232316 | 91237 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 241156 | 86759 | 239359 | 87647 | 237573 | 88541 | 235798                        | 89440 | 234034 | 90345 | 232281 | 91255 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 241120 | 86777 | 239323 | 87665 | 237538 | 88559 | 235763                        | 89458 | 233999 | 90363 | 232246 | 91273 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 241084 | 86795 | 239287 | 87683 | 237502 | 88577 | 235727                        | 89476 | 233964 | 90381 | 232211 | 91292 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 241048 | 86813 | 239252 | 87701 | 237466 | 88595 | 235692                        | 89494 | 233928 | 90399 | 232176 | 91310 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 241012 | 86830 | 239216 | 87719 | 237431 | 88613 | 235657                        | 89512 | 233893 | 90417 | 232141 | 91328 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 240976 | 86848 | 239180 | 87737 | 237395 | 88631 | 235621                        | 89530 | 233858 | 90436 | 232106 | 91346 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 240940 | 86866 | 239144 | 87754 | 237360 | 88649 | 235586                        | 89548 | 233823 | 90454 | 232071 | 91365 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 240904 | 86883 | 239108 | 87772 | 237324 | 88667 | 235550                        | 89566 | 233788 | 90472 | 232036 | 91383 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 240868 | 86901 | 239073 | 87790 | 237288 | 88685 | 235515                        | 89585 | 233753 | 90490 | 232001 | 91401 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 240832 | 86919 | 239037 | 87808 | 237253 | 88702 | 235480                        | 89603 | 233718 | 90508 | 231966 | 91420 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 240796 | 86937 | 239001 | 87826 | 237217 | 88720 | 235444                        | 89621 | 233682 | 90526 | 231931 | 91438 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 240760 | 86954 | 238965 | 87844 | 237182 | 88738 | 235409                        | 89639 | 233647 | 90545 | 231896 | 91456 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 240724 | 86972 | 238930 | 87861 | 237146 | 88756 | 235374                        | 89657 | 233612 | 90563 | 231861 | 91474 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 240688 | 86990 | 238894 | 87879 | 237111 | 88774 | 235338                        | 89675 | 233577 | 90581 | 231827 | 91493 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 240652 | 87007 | 238858 | 87897 | 237075 | 88792 | 235303                        | 89693 | 233542 | 90599 | 231792 | 91511 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 240616 | 87025 | 238822 | 87915 | 237039 | 88810 | 235268                        | 89711 | 233507 | 90617 | 231757 | 91529 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 240580 | 87043 | 238786 | 87933 | 237004 | 88828 | 235232                        | 89729 | 233472 | 90636 | 231722 | 91548 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 240544 | 87061 | 238751 | 87951 | 236968 | 88846 | 235197                        | 89747 | 233437 | 90654 | 231687 | 91566 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 240508 | 87078 | 238715 | 87969 | 236933 | 88864 | 235162                        | 89765 | 233402 | 90672 | 231652 | 91584 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 240472 | 87096 | 238679 | 87986 | 236897 | 88882 | 235126                        | 89783 | 233366 | 90690 | 231617 | 91602 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 240436 | 87114 | 238643 | 88004 | 236862 | 88900 | 235091                        | 89801 | 233331 | 90708 | 231582 | 91621 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 240400 | 87132 | 238608 | 88022 | 236826 | 88918 | 235056                        | 89819 | 233296 | 90726 | 231547 | 91639 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 240364 | 87149 | 238572 | 88040 | 236791 | 88936 | 235021                        | 89838 | 233261 | 90745 | 231513 | 91657 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 240328 | 87167 | 238536 | 88058 | 236755 | 88954 | 234985                        | 89856 | 233226 | 90763 | 231478 | 91676 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 240292 | 87185 | 238500 | 88076 | 236720 | 88972 | 234950                        | 89874 | 233191 | 90781 | 231443 | 91694 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 240256 | 87203 | 238465 | 88094 | 236684 | 88990 | 234915                        | 89892 | 233156 | 90799 | 231408 | 91712 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 240220 | 87220 | 238429 | 88111 | 236649 | 89008 | 234879                        | 89910 | 233121 | 90817 | 231373 | 91731 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 240184 | 87238 | 238393 | 88129 | 236613 | 89026 | 234844                        | 89928 | 233086 | 90836 | 231338 | 91749 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 240148 | 87256 | 238358 | 88147 | 236578 | 89044 | 234809                        | 89946 | 233051 | 90854 | 231303 | 91767 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 240113 | 87274 | 238322 | 88165 | 236542 | 89062 | 234774                        | 89964 | 233016 | 90872 | 231269 | 91786 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 240077 | 87292 | 238286 | 88183 | 236507 | 89080 | 234738                        | 89982 | 232981 | 90890 | 231234 | 91804 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 240041 | 87309 | 238251 | 88201 | 236471 | 89098 | 234703                        | 90000 | 232946 | 90909 | 231199 | 91822 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 240005 | 87327 | 238215 | 88219 | 236436 | 89116 | 234668                        | 90019 | 232911 | 90927 | 231164 | 91841 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 239969 | 87345 | 238179 | 88237 | 236400 | 89134 | 234633                        | 90037 | 232876 | 90945 | 231129 | 91859 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 239933 | 87363 | 238143 | 88255 | 236365 | 89152 | 234597                        | 90055 | 232841 | 90963 | 231094 | 91877 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 239897 | 87380 | 238108 | 88272 | 236329 | 89170 | 234562                        | 90073 | 232806 | 90981 | 231060 | 91896 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 239861 | 87398 | 238072 | 88290 | 236294 | 89188 | 234527                        | 90091 | 232770 | 91000 | 231025 | 91914 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 239825 | 87416 | 238036 | 88308 | 236259 | 89206 | 234492                        | 90109 | 232735 | 91018 | 230990 | 91932 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 239789 | 87434 | 238001 | 88326 | 236223 | 89224 | 234456                        | 90127 | 232700 | 91036 | 230955 | 91951 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 239754 | 87452 | 237965 | 88344 | 236188 | 89242 | 234421                        | 90145 | 232665 | 91054 | 230920 | 91969 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 239718 | 87469 | 237929 | 88362 | 236152 | 89260 | 234386                        | 90163 | 232630 | 91073 | 230886 | 91987 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 239682 | 87487 | 237894 | 88380 | 236117 | 89278 | 234351                        | 90182 | 232595 | 91091 | 230851 | 92006 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 239646 | 87505 | 237858 | 88398 | 236081 | 89296 | 234316                        | 90200 | 232560 | 91109 | 230816 | 92024 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 239610 | 87523 | 237823 | 88416 | 236046 | 89314 | 234280                        | 90218 | 232525 | 91127 | 230781 | 92042 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |  |  |  |  |  |  |  |  |  |
| 144°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |  |  |  |  |  |  |  |  |  |

| 36°                                                                                                                               |        |       |        |       |        |       |                               |       |        |       |        |       |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|-------|-------------------------------|-------|--------|-------|--------|-------|-----|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |       | 30'                           |       | 40'    |       | 50'    |       |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     |     |
| 0                                                                                                                                 | 230781 | 92042 | 229048 | 92963 | 227325 | 93889 | 225612                        | 94821 | 223910 | 95759 | 222219 | 96702 | 10  |
| 0.2                                                                                                                               | 230747 | 92061 | 229013 | 92981 | 227291 | 93908 | 225578                        | 94840 | 223876 | 95778 | 222185 | 96721 | 9.8 |
| 0.4                                                                                                                               | 230712 | 92079 | 228979 | 93000 | 227256 | 93926 | 225544                        | 94859 | 223842 | 95797 | 222151 | 96740 | 9.6 |
| 0.6                                                                                                                               | 230677 | 92097 | 228944 | 93018 | 227222 | 93945 | 225510                        | 94877 | 223809 | 95815 | 222117 | 96759 | 9.4 |
| 0.8                                                                                                                               | 230642 | 92116 | 228910 | 93037 | 227187 | 93964 | 225476                        | 94896 | 223775 | 95834 | 222084 | 96778 | 9.2 |
| 1                                                                                                                                 | 230607 | 92134 | 228875 | 93055 | 227153 | 93982 | 225442                        | 94915 | 223741 | 95853 | 222050 | 96797 | 9   |
| 1.2                                                                                                                               | 230573 | 92153 | 228841 | 93074 | 227119 | 94001 | 225408                        | 94933 | 223707 | 95872 | 222016 | 96816 | 8.8 |
| 1.4                                                                                                                               | 230538 | 92171 | 228806 | 93092 | 227085 | 94019 | 225373                        | 94952 | 223673 | 95891 | 221983 | 96835 | 8.6 |
| 1.6                                                                                                                               | 230503 | 92189 | 228771 | 93111 | 227050 | 94038 | 225339                        | 94971 | 223639 | 95909 | 221949 | 96854 | 8.4 |
| 1.8                                                                                                                               | 230469 | 92208 | 228737 | 93129 | 227016 | 94057 | 225305                        | 94990 | 223605 | 95928 | 221915 | 96873 | 8.2 |
| 2                                                                                                                                 | 230434 | 92226 | 228702 | 93148 | 226982 | 94075 | 225271                        | 95008 | 223571 | 95947 | 221881 | 96892 | 8   |
| 2.2                                                                                                                               | 230399 | 92244 | 228668 | 93166 | 226947 | 94094 | 225237                        | 95027 | 223537 | 95966 | 221848 | 96911 | 7.8 |
| 2.4                                                                                                                               | 230364 | 92263 | 228633 | 93185 | 226913 | 94112 | 225203                        | 95046 | 223503 | 95985 | 221814 | 96930 | 7.6 |
| 2.6                                                                                                                               | 230330 | 92281 | 228599 | 93203 | 226879 | 94131 | 225169                        | 95065 | 223469 | 96004 | 221780 | 96948 | 7.4 |
| 2.8                                                                                                                               | 230295 | 92300 | 228564 | 93222 | 226844 | 94150 | 225135                        | 95083 | 223436 | 96022 | 221747 | 96967 | 7.2 |
| 3                                                                                                                                 | 230260 | 92318 | 228530 | 93240 | 226810 | 94168 | 225101                        | 95102 | 223402 | 96041 | 221713 | 96986 | 7   |
| 3.2                                                                                                                               | 230225 | 92336 | 228495 | 93259 | 226776 | 94187 | 225067                        | 95121 | 223368 | 96060 | 221679 | 97005 | 6.8 |
| 3.4                                                                                                                               | 230191 | 92355 | 228461 | 93277 | 226741 | 94206 | 225033                        | 95139 | 223334 | 96079 | 221646 | 97024 | 6.6 |
| 3.6                                                                                                                               | 230156 | 92373 | 228426 | 93296 | 226707 | 94224 | 224998                        | 95158 | 223300 | 96098 | 221612 | 97043 | 6.4 |
| 3.8                                                                                                                               | 230121 | 92392 | 228392 | 93314 | 226673 | 94243 | 224964                        | 95177 | 223266 | 96117 | 221578 | 97062 | 6.2 |
| 4                                                                                                                                 | 230087 | 92410 | 228357 | 93333 | 226639 | 94261 | 224930                        | 95196 | 223232 | 96136 | 221545 | 97081 | 6   |
| 4.2                                                                                                                               | 230052 | 92428 | 228323 | 93351 | 226604 | 94280 | 224896                        | 95214 | 223199 | 96154 | 221511 | 97100 | 5.8 |
| 4.4                                                                                                                               | 230017 | 92447 | 228288 | 93370 | 226570 | 94299 | 224862                        | 95233 | 223165 | 96173 | 221477 | 97119 | 5.6 |
| 4.6                                                                                                                               | 229983 | 92465 | 228254 | 93388 | 226536 | 94317 | 224828                        | 95252 | 223131 | 96192 | 221444 | 97138 | 5.4 |
| 4.8                                                                                                                               | 229948 | 92484 | 228219 | 93407 | 226502 | 94336 | 224794                        | 95271 | 223097 | 96211 | 221410 | 97157 | 5.2 |
| 5                                                                                                                                 | 229913 | 92502 | 228185 | 93425 | 226467 | 94355 | 224760                        | 95289 | 223063 | 96230 | 221376 | 97176 | 5   |
| 5.2                                                                                                                               | 229879 | 92520 | 228151 | 93444 | 226433 | 94373 | 224726                        | 95308 | 223029 | 96249 | 221343 | 97195 | 4.8 |
| 5.4                                                                                                                               | 229844 | 92539 | 228116 | 93463 | 226399 | 94392 | 224692                        | 95327 | 222995 | 96268 | 221309 | 97214 | 4.6 |
| 5.6                                                                                                                               | 229809 | 92557 | 228082 | 93481 | 226365 | 94411 | 224658                        | 95346 | 222962 | 96287 | 221276 | 97233 | 4.4 |
| 5.8                                                                                                                               | 229775 | 92576 | 228047 | 93500 | 226330 | 94429 | 224624                        | 95364 | 222928 | 96305 | 221242 | 97252 | 4.2 |
| 6                                                                                                                                 | 229740 | 92594 | 228013 | 93518 | 226296 | 94448 | 224590                        | 95383 | 222894 | 96324 | 221208 | 97271 | 4   |
| 6.2                                                                                                                               | 229705 | 92613 | 227978 | 93537 | 226262 | 94466 | 224556                        | 95402 | 222860 | 96343 | 221175 | 97290 | 3.8 |
| 6.4                                                                                                                               | 229671 | 92631 | 227944 | 93555 | 226228 | 94485 | 224522                        | 95421 | 222826 | 96362 | 221141 | 97309 | 3.6 |
| 6.6                                                                                                                               | 229636 | 92649 | 227909 | 93574 | 226193 | 94504 | 224488                        | 95439 | 222793 | 96381 | 221108 | 97328 | 3.4 |
| 6.8                                                                                                                               | 229601 | 92668 | 227875 | 93592 | 226159 | 94522 | 224454                        | 95458 | 222759 | 96400 | 221074 | 97347 | 3.2 |
| 7                                                                                                                                 | 229567 | 92686 | 227841 | 93611 | 226125 | 94541 | 224420                        | 95477 | 222725 | 96419 | 221040 | 97366 | 3   |
| 7.2                                                                                                                               | 229532 | 92705 | 227806 | 93629 | 226091 | 94560 | 224386                        | 95496 | 222691 | 96438 | 221007 | 97385 | 2.8 |
| 7.4                                                                                                                               | 229498 | 92723 | 227772 | 93648 | 226057 | 94578 | 224352                        | 95515 | 222657 | 96456 | 220973 | 97404 | 2.6 |
| 7.6                                                                                                                               | 229463 | 92742 | 227737 | 93666 | 226022 | 94597 | 224318                        | 95533 | 222624 | 96475 | 220940 | 97423 | 2.4 |
| 7.8                                                                                                                               | 229428 | 92760 | 227703 | 93685 | 225988 | 94616 | 224284                        | 95552 | 222590 | 96494 | 220906 | 97442 | 2.2 |
| 8                                                                                                                                 | 229394 | 92778 | 227669 | 93704 | 225954 | 94634 | 224250                        | 95571 | 222556 | 96513 | 220872 | 97461 | 2   |
| 8.2                                                                                                                               | 229359 | 92797 | 227634 | 93722 | 225920 | 94653 | 224216                        | 95590 | 222522 | 96532 | 220839 | 97480 | 1.8 |
| 8.4                                                                                                                               | 229324 | 92815 | 227600 | 93741 | 225886 | 94672 | 224182                        | 95609 | 222489 | 96551 | 220805 | 97499 | 1.6 |
| 8.6                                                                                                                               | 229290 | 92834 | 227565 | 93759 | 225852 | 94690 | 224148                        | 95627 | 222455 | 96570 | 220772 | 97518 | 1.4 |
| 8.8                                                                                                                               | 229255 | 92852 | 227531 | 93778 | 225817 | 94709 | 224114                        | 95646 | 222421 | 96589 | 220738 | 97537 | 1.2 |
| 9                                                                                                                                 | 229221 | 92871 | 227497 | 93796 | 225783 | 94728 | 224080                        | 95665 | 222387 | 96608 | 220705 | 97556 | 1   |
| 9.2                                                                                                                               | 229186 | 92889 | 227462 | 93815 | 225749 | 94747 | 224046                        | 95684 | 222353 | 96627 | 220671 | 97575 | 0.8 |
| 9.4                                                                                                                               | 229152 | 92908 | 227428 | 93834 | 225715 | 94765 | 224012                        | 95703 | 222320 | 96646 | 220638 | 97594 | 0.6 |
| 9.6                                                                                                                               | 229117 | 92926 | 227394 | 93852 | 225681 | 94784 | 223978                        | 95721 | 222286 | 96664 | 220604 | 97613 | 0.4 |
| 9.8                                                                                                                               | 229082 | 92945 | 227359 | 93871 | 225647 | 94803 | 223944                        | 95740 | 222252 | 96683 | 220571 | 97632 | 0.2 |
| 10                                                                                                                                | 229048 | 92963 | 227325 | 93889 | 225612 | 94821 | 223910                        | 95759 | 222219 | 96702 | 220537 | 97651 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B     | A                             | B     | A      | B     | A      | B     | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |       | 20'                           |       | 10'    |       | 0'     |       |     |
| 143°                                                                                                                              |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |       |                               |       |        |       |        |       |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |       | B(α) = 10^6 * log (1 / cos α) |       |        |       |        |       |     |

| 37°                                                                                                                               |        |       |        |       |        |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------|--------|-------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'     |       | 10'    |       | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A      | B     | A      | B     | A      | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 220537 | 97651 | 218866 | 98606 | 217204 | 99567  | 215553                        | 100533 | 213911 | 101506 | 212280 | 102484 | 10  |
| 0.2                                                                                                                               | 220503 | 97670 | 218832 | 98625 | 217171 | 99586  | 215520                        | 100553 | 213879 | 101525 | 212247 | 102503 | 9.8 |
| 0.4                                                                                                                               | 220470 | 97689 | 218799 | 98645 | 217138 | 99605  | 215487                        | 100572 | 213846 | 101545 | 212215 | 102523 | 9.6 |
| 0.6                                                                                                                               | 220436 | 97709 | 218766 | 98664 | 217105 | 99625  | 215454                        | 100592 | 213813 | 101564 | 212182 | 102543 | 9.4 |
| 0.8                                                                                                                               | 220403 | 97728 | 218732 | 98683 | 217072 | 99644  | 215421                        | 100611 | 213781 | 101584 | 212150 | 102562 | 9.2 |
| 1                                                                                                                                 | 220369 | 97747 | 218699 | 98702 | 217039 | 99663  | 215388                        | 100630 | 213748 | 101603 | 212117 | 102582 | 9   |
| 1.2                                                                                                                               | 220336 | 97766 | 218666 | 98721 | 217006 | 99683  | 215355                        | 100650 | 213715 | 101623 | 212085 | 102602 | 8.8 |
| 1.4                                                                                                                               | 220302 | 97785 | 218632 | 98740 | 216972 | 99702  | 215322                        | 100669 | 213682 | 101642 | 212052 | 102621 | 8.6 |
| 1.6                                                                                                                               | 220269 | 97804 | 218599 | 98760 | 216939 | 99721  | 215290                        | 100689 | 213650 | 101662 | 212020 | 102641 | 8.4 |
| 1.8                                                                                                                               | 220235 | 97823 | 218566 | 98779 | 216906 | 99740  | 215257                        | 100708 | 213617 | 101681 | 211987 | 102660 | 8.2 |
| 2                                                                                                                                 | 220202 | 97842 | 218532 | 98798 | 216873 | 99760  | 215224                        | 100727 | 213584 | 101701 | 211955 | 102680 | 8   |
| 2.2                                                                                                                               | 220168 | 97861 | 218499 | 98817 | 216840 | 99779  | 215191                        | 100747 | 213552 | 101720 | 211922 | 102700 | 7.8 |
| 2.4                                                                                                                               | 220135 | 97880 | 218466 | 98836 | 216807 | 99798  | 215158                        | 100766 | 213519 | 101740 | 211890 | 102719 | 7.6 |
| 2.6                                                                                                                               | 220101 | 97899 | 218433 | 98855 | 216774 | 99818  | 215125                        | 100786 | 213486 | 101759 | 211857 | 102739 | 7.4 |
| 2.8                                                                                                                               | 220068 | 97918 | 218399 | 98875 | 216741 | 99837  | 215092                        | 100805 | 213454 | 101779 | 211825 | 102759 | 7.2 |
| 3                                                                                                                                 | 220034 | 97937 | 218366 | 98894 | 216708 | 99856  | 215059                        | 100824 | 213421 | 101798 | 211792 | 102778 | 7   |
| 3.2                                                                                                                               | 220001 | 97956 | 218333 | 98913 | 216675 | 99876  | 215027                        | 100844 | 213388 | 101818 | 211760 | 102798 | 6.8 |
| 3.4                                                                                                                               | 219968 | 97975 | 218300 | 98932 | 216642 | 99895  | 214994                        | 100863 | 213356 | 101838 | 211727 | 102818 | 6.6 |
| 3.6                                                                                                                               | 219934 | 97994 | 218266 | 98951 | 216609 | 99914  | 214961                        | 100883 | 213323 | 101857 | 211695 | 102837 | 6.4 |
| 3.8                                                                                                                               | 219901 | 98014 | 218233 | 98971 | 216576 | 99933  | 214928                        | 100902 | 213290 | 101877 | 211662 | 102857 | 6.2 |
| 4                                                                                                                                 | 219867 | 98033 | 218200 | 98990 | 216542 | 99953  | 214895                        | 100922 | 213258 | 101896 | 211630 | 102877 | 6   |
| 4.2                                                                                                                               | 219834 | 98052 | 218167 | 99009 | 216509 | 99972  | 214862                        | 100941 | 213225 | 101916 | 211597 | 102896 | 5.8 |
| 4.4                                                                                                                               | 219800 | 98071 | 218133 | 99028 | 216476 | 99991  | 214829                        | 100960 | 213192 | 101935 | 211565 | 102916 | 5.6 |
| 4.6                                                                                                                               | 219767 | 98090 | 218100 | 99047 | 216443 | 100011 | 214797                        | 100980 | 213160 | 101955 | 211533 | 102936 | 5.4 |
| 4.8                                                                                                                               | 219733 | 98109 | 218067 | 99067 | 216410 | 100030 | 214764                        | 100999 | 213127 | 101974 | 211500 | 102955 | 5.2 |
| 5                                                                                                                                 | 219700 | 98128 | 218034 | 99086 | 216377 | 100049 | 214731                        | 101019 | 213094 | 101994 | 211468 | 102975 | 5   |
| 5.2                                                                                                                               | 219667 | 98147 | 218000 | 99105 | 216344 | 100069 | 214698                        | 101038 | 213062 | 102014 | 211435 | 102995 | 4.8 |
| 5.4                                                                                                                               | 219633 | 98166 | 217967 | 99124 | 216311 | 100088 | 214665                        | 101058 | 213029 | 102033 | 211403 | 103014 | 4.6 |
| 5.6                                                                                                                               | 219600 | 98185 | 217934 | 99143 | 216278 | 100107 | 214632                        | 101077 | 212997 | 102053 | 211370 | 103034 | 4.4 |
| 5.8                                                                                                                               | 219566 | 98204 | 217901 | 99163 | 216245 | 100127 | 214600                        | 101097 | 212964 | 102072 | 211338 | 103054 | 4.2 |
| 6                                                                                                                                 | 219533 | 98224 | 217868 | 99182 | 216212 | 100146 | 214567                        | 101116 | 212931 | 102092 | 211306 | 103074 | 4   |
| 6.2                                                                                                                               | 219500 | 98243 | 217834 | 99201 | 216179 | 100165 | 214534                        | 101135 | 212899 | 102111 | 211273 | 103093 | 3.8 |
| 6.4                                                                                                                               | 219466 | 98262 | 217801 | 99220 | 216146 | 100185 | 214501                        | 101155 | 212866 | 102131 | 211241 | 103113 | 3.6 |
| 6.6                                                                                                                               | 219433 | 98281 | 217768 | 99240 | 216113 | 100204 | 214468                        | 101174 | 212833 | 102151 | 211208 | 103133 | 3.4 |
| 6.8                                                                                                                               | 219399 | 98300 | 217735 | 99259 | 216080 | 100223 | 214436                        | 101194 | 212801 | 102170 | 211176 | 103152 | 3.2 |
| 7                                                                                                                                 | 219366 | 98319 | 217702 | 99278 | 216047 | 100243 | 214403                        | 101213 | 212768 | 102190 | 211144 | 103172 | 3   |
| 7.2                                                                                                                               | 219333 | 98338 | 217668 | 99297 | 216014 | 100262 | 214370                        | 101233 | 212736 | 102209 | 211111 | 103192 | 2.8 |
| 7.4                                                                                                                               | 219299 | 98357 | 217635 | 99317 | 215981 | 100282 | 214337                        | 101252 | 212703 | 102229 | 211079 | 103211 | 2.6 |
| 7.6                                                                                                                               | 219266 | 98377 | 217602 | 99336 | 215948 | 100301 | 214304                        | 101272 | 212671 | 102249 | 211046 | 103231 | 2.4 |
| 7.8                                                                                                                               | 219232 | 98396 | 217569 | 99355 | 215915 | 100320 | 214272                        | 101291 | 212638 | 102268 | 211014 | 103251 | 2.2 |
| 8                                                                                                                                 | 219199 | 98415 | 217536 | 99374 | 215882 | 100340 | 214239                        | 101311 | 212605 | 102288 | 210982 | 103271 | 2   |
| 8.2                                                                                                                               | 219166 | 98434 | 217503 | 99394 | 215849 | 100359 | 214206                        | 101330 | 212573 | 102307 | 210949 | 103290 | 1.8 |
| 8.4                                                                                                                               | 219132 | 98453 | 217469 | 99413 | 215816 | 100378 | 214173                        | 101350 | 212540 | 102327 | 210917 | 103310 | 1.6 |
| 8.6                                                                                                                               | 219099 | 98472 | 217436 | 99432 | 215783 | 100398 | 214141                        | 101369 | 212508 | 102347 | 210884 | 103330 | 1.4 |
| 8.8                                                                                                                               | 219066 | 98491 | 217403 | 99451 | 215751 | 100417 | 214108                        | 101389 | 212475 | 102366 | 210852 | 103349 | 1.2 |
| 9                                                                                                                                 | 219032 | 98510 | 217370 | 99471 | 215718 | 100436 | 214075                        | 101408 | 212443 | 102386 | 210820 | 103369 | 1   |
| 9.2                                                                                                                               | 218999 | 98530 | 217337 | 99490 | 215685 | 100456 | 214042                        | 101428 | 212410 | 102405 | 210787 | 103389 | 0.8 |
| 9.4                                                                                                                               | 218966 | 98549 | 217304 | 99509 | 215652 | 100475 | 214010                        | 101447 | 212377 | 102425 | 210755 | 103409 | 0.6 |
| 9.6                                                                                                                               | 218932 | 98568 | 217270 | 99528 | 215619 | 100495 | 213977                        | 101467 | 212345 | 102445 | 210723 | 103428 | 0.4 |
| 9.8                                                                                                                               | 218899 | 98587 | 217237 | 99548 | 215586 | 100514 | 213944                        | 101486 | 212312 | 102464 | 210690 | 103448 | 0.2 |
| 10                                                                                                                                | 218866 | 98606 | 217204 | 99567 | 215553 | 100533 | 213911                        | 101506 | 212280 | 102484 | 210658 | 103468 | 0   |
|                                                                                                                                   | A      | B     | A      | B     | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |
|                                                                                                                                   | 50'    |       | 40'    |       | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |
| 142°                                                                                                                              |        |       |        |       |        |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |       |        |       |        |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |       |        |       |        |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |       |        |       |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 38°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 210658 | 103468 | 209046 | 104458 | 207443 | 105454 | 205850                        | 106456 | 204267 | 107464 | 202693 | 108477 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 210626 | 103488 | 209014 | 104478 | 207411 | 105474 | 205819                        | 106476 | 204235 | 107484 | 202662 | 108498 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 210593 | 103507 | 208982 | 104498 | 207379 | 105494 | 205787                        | 106496 | 204204 | 107504 | 202630 | 108518 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 210561 | 103527 | 208949 | 104517 | 207348 | 105514 | 205755                        | 106516 | 204172 | 107524 | 202599 | 108538 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 210529 | 103547 | 208917 | 104537 | 207316 | 105534 | 205723                        | 106536 | 204141 | 107544 | 202567 | 108559 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 210496 | 103567 | 208885 | 104557 | 207284 | 105554 | 205692                        | 106556 | 204109 | 107565 | 202536 | 108579 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 210464 | 103586 | 208853 | 104577 | 207252 | 105574 | 205660                        | 106576 | 204078 | 107585 | 202505 | 108600 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 210432 | 103606 | 208821 | 104597 | 207220 | 105594 | 205628                        | 106596 | 204046 | 107605 | 202473 | 108620 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 210399 | 103626 | 208789 | 104617 | 207188 | 105614 | 205596                        | 106616 | 204014 | 107625 | 202442 | 108640 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 210367 | 103646 | 208757 | 104637 | 207156 | 105634 | 205565                        | 106637 | 203983 | 107646 | 202411 | 108661 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 210335 | 103665 | 208725 | 104657 | 207124 | 105654 | 205533                        | 106657 | 203951 | 107666 | 202379 | 108681 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 210303 | 103685 | 208693 | 104676 | 207092 | 105674 | 205501                        | 106677 | 203920 | 107686 | 202348 | 108701 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 210270 | 103705 | 208660 | 104696 | 207060 | 105694 | 205470                        | 106697 | 203888 | 107706 | 202317 | 108722 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 210238 | 103725 | 208628 | 104716 | 207028 | 105714 | 205438                        | 106717 | 203857 | 107727 | 202285 | 108742 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 210206 | 103744 | 208596 | 104736 | 206996 | 105734 | 205406                        | 106737 | 203825 | 107747 | 202254 | 108762 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 210173 | 103764 | 208564 | 104756 | 206965 | 105754 | 205374                        | 106757 | 203794 | 107767 | 202223 | 108783 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 210141 | 103784 | 208532 | 104776 | 206933 | 105774 | 205343                        | 106777 | 203762 | 107787 | 202191 | 108803 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 210109 | 103804 | 208500 | 104796 | 206901 | 105794 | 205311                        | 106798 | 203731 | 107808 | 202160 | 108824 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 210077 | 103824 | 208468 | 104816 | 206869 | 105814 | 205279                        | 106818 | 203699 | 107828 | 202129 | 108844 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 210044 | 103843 | 208436 | 104836 | 206837 | 105834 | 205248                        | 106838 | 203668 | 107848 | 202097 | 108864 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 210012 | 103863 | 208404 | 104855 | 206805 | 105854 | 205216                        | 106858 | 203636 | 107868 | 202066 | 108885 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 209980 | 103883 | 208372 | 104875 | 206773 | 105874 | 205184                        | 106878 | 203605 | 107889 | 202035 | 108905 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 209947 | 103903 | 208340 | 104895 | 206741 | 105894 | 205153                        | 106898 | 203573 | 107909 | 202003 | 108925 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 209915 | 103923 | 208308 | 104915 | 206709 | 105914 | 205121                        | 106919 | 203542 | 107929 | 201972 | 108946 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 209883 | 103942 | 208275 | 104935 | 206678 | 105934 | 205089                        | 106939 | 203510 | 107949 | 201941 | 108966 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 209851 | 103962 | 208243 | 104955 | 206646 | 105954 | 205058                        | 106959 | 203479 | 107970 | 201909 | 108987 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 209819 | 103982 | 208211 | 104975 | 206614 | 105974 | 205026                        | 106979 | 203447 | 107990 | 201878 | 109007 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 209786 | 104002 | 208179 | 104995 | 206582 | 105994 | 204994                        | 106999 | 203416 | 108010 | 201847 | 109027 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 209754 | 104022 | 208147 | 105015 | 206550 | 106014 | 204963                        | 107019 | 203384 | 108031 | 201816 | 109048 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 209722 | 104041 | 208115 | 105035 | 206518 | 106034 | 204931                        | 107039 | 203353 | 108051 | 201784 | 109068 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 209690 | 104061 | 208083 | 105055 | 206486 | 106054 | 204899                        | 107060 | 203321 | 108071 | 201753 | 109089 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 209657 | 104081 | 208051 | 105075 | 206455 | 106074 | 204868                        | 107080 | 203290 | 108091 | 201722 | 109109 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 209625 | 104101 | 208019 | 105095 | 206423 | 106094 | 204836                        | 107100 | 203258 | 108112 | 201690 | 109130 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 209593 | 104121 | 207987 | 105114 | 206391 | 106114 | 204804                        | 107120 | 203227 | 108132 | 201659 | 109150 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 209561 | 104140 | 207955 | 105134 | 206359 | 106134 | 204773                        | 107140 | 203196 | 108152 | 201628 | 109170 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 209529 | 104160 | 207923 | 105154 | 206327 | 106154 | 204741                        | 107161 | 203164 | 108173 | 201597 | 109191 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 209496 | 104180 | 207891 | 105174 | 206296 | 106174 | 204709                        | 107181 | 203133 | 108193 | 201565 | 109211 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 209464 | 104200 | 207859 | 105194 | 206264 | 106195 | 204678                        | 107201 | 203101 | 108213 | 201534 | 109232 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 209432 | 104220 | 207827 | 105214 | 206232 | 106215 | 204646                        | 107221 | 203070 | 108234 | 201503 | 109252 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 209400 | 104240 | 207795 | 105234 | 206200 | 106235 | 204615                        | 107241 | 203038 | 108254 | 201472 | 109272 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 209368 | 104259 | 207763 | 105254 | 206168 | 106255 | 204583                        | 107261 | 203007 | 108274 | 201440 | 109293 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 209335 | 104279 | 207731 | 105274 | 206136 | 106275 | 204551                        | 107282 | 202976 | 108294 | 201409 | 109313 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 209303 | 104299 | 207699 | 105294 | 206105 | 106295 | 204520                        | 107302 | 202944 | 108315 | 201378 | 109334 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 209271 | 104319 | 207667 | 105314 | 206073 | 106315 | 204488                        | 107322 | 202913 | 108335 | 201347 | 109354 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 209239 | 104339 | 207635 | 105334 | 206041 | 106335 | 204456                        | 107342 | 202881 | 108355 | 201315 | 109375 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 209207 | 104359 | 207603 | 105354 | 206009 | 106355 | 204425                        | 107362 | 202850 | 108376 | 201284 | 109395 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 209175 | 104378 | 207571 | 105374 | 205978 | 106375 | 204393                        | 107383 | 202818 | 108396 | 201253 | 109416 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 209142 | 104398 | 207539 | 105394 | 205946 | 106395 | 204362                        | 107403 | 202787 | 108416 | 201222 | 109436 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 209110 | 104418 | 207507 | 105414 | 205914 | 106415 | 204330                        | 107423 | 202756 | 108437 | 201191 | 109456 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 209078 | 104438 | 207475 | 105434 | 205882 | 106436 | 204299                        | 107443 | 202724 | 108457 | 201159 | 109477 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 209046 | 104458 | 207443 | 105454 | 205850 | 106456 | 204267                        | 107464 | 202693 | 108477 | 201128 | 109497 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |
| 141°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |

| 39°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 201128 | 109497 | 199573 | 110523 | 198027 | 111556 | 196489                        | 112594 | 194961 | 113638 | 193443 | 114689 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 201097 | 109518 | 199542 | 110544 | 197996 | 111576 | 196459                        | 112615 | 194931 | 113659 | 193412 | 114710 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 201066 | 109538 | 199511 | 110565 | 197965 | 111597 | 196428                        | 112636 | 194901 | 113680 | 193382 | 114731 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 201035 | 109559 | 199480 | 110585 | 197934 | 111618 | 196398                        | 112656 | 194870 | 113701 | 193352 | 114752 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 201003 | 109579 | 199449 | 110606 | 197903 | 111638 | 196367                        | 112677 | 194840 | 113722 | 193321 | 114773 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 200972 | 109600 | 199418 | 110626 | 197872 | 111659 | 196336                        | 112698 | 194809 | 113743 | 193291 | 114795 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 200941 | 109620 | 199387 | 110647 | 197842 | 111680 | 196306                        | 112719 | 194779 | 113764 | 193261 | 114816 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 200910 | 109641 | 199356 | 110668 | 197811 | 111701 | 196275                        | 112740 | 194748 | 113785 | 193231 | 114837 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 200879 | 109661 | 199325 | 110688 | 197780 | 111721 | 196244                        | 112761 | 194718 | 113806 | 193200 | 114858 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 200848 | 109682 | 199294 | 110709 | 197749 | 111742 | 196214                        | 112781 | 194687 | 113827 | 193170 | 114879 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 200816 | 109702 | 199263 | 110729 | 197718 | 111763 | 196183                        | 112802 | 194657 | 113848 | 193140 | 114900 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 200785 | 109723 | 199232 | 110750 | 197688 | 111784 | 196153                        | 112823 | 194627 | 113869 | 193110 | 114921 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 200754 | 109743 | 199201 | 110771 | 197657 | 111804 | 196122                        | 112844 | 194596 | 113890 | 193079 | 114942 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 200723 | 109764 | 199170 | 110791 | 197626 | 111825 | 196091                        | 112865 | 194566 | 113911 | 193049 | 114963 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 200692 | 109784 | 199139 | 110812 | 197595 | 111846 | 196061                        | 112886 | 194535 | 113932 | 193019 | 114984 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 200661 | 109805 | 199108 | 110832 | 197564 | 111866 | 196030                        | 112907 | 194505 | 113953 | 192989 | 115006 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 200629 | 109825 | 199077 | 110853 | 197534 | 111887 | 196000                        | 112928 | 194474 | 113974 | 192958 | 115027 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 200598 | 109846 | 199046 | 110874 | 197503 | 111908 | 195969                        | 112948 | 194444 | 113995 | 192928 | 115048 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 200567 | 109866 | 199015 | 110894 | 197472 | 111929 | 195938                        | 112969 | 194414 | 114016 | 192898 | 115069 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 200536 | 109887 | 198984 | 110915 | 197441 | 111949 | 195908                        | 112990 | 194383 | 114037 | 192868 | 115090 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 200505 | 109907 | 198953 | 110936 | 197411 | 111970 | 195877                        | 113011 | 194353 | 114058 | 192837 | 115111 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 200474 | 109928 | 198922 | 110956 | 197380 | 111991 | 195847                        | 113032 | 194322 | 114079 | 192807 | 115132 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 200443 | 109948 | 198891 | 110977 | 197349 | 112012 | 195816                        | 113053 | 194292 | 114100 | 192777 | 115153 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 200412 | 109969 | 198860 | 110997 | 197318 | 112032 | 195785                        | 113074 | 194262 | 114121 | 192747 | 115175 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 200380 | 109989 | 198829 | 111018 | 197288 | 112053 | 195755                        | 113095 | 194231 | 114142 | 192717 | 115196 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 200349 | 110010 | 198799 | 111039 | 197257 | 112074 | 195724                        | 113115 | 194201 | 114163 | 192686 | 115217 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 200318 | 110030 | 198768 | 111059 | 197226 | 112095 | 195694                        | 113136 | 194171 | 114184 | 192656 | 115238 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 200287 | 110051 | 198737 | 111080 | 197195 | 112116 | 195663                        | 113157 | 194140 | 114205 | 192626 | 115259 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 200256 | 110071 | 198706 | 111101 | 197165 | 112136 | 195633                        | 113178 | 194110 | 114226 | 192596 | 115280 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 200225 | 110092 | 198675 | 111121 | 197134 | 112157 | 195602                        | 113199 | 194079 | 114247 | 192566 | 115301 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 200194 | 110112 | 198644 | 111142 | 197103 | 112178 | 195572                        | 113220 | 194049 | 114268 | 192535 | 115323 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 200163 | 110133 | 198613 | 111163 | 197072 | 112199 | 195541                        | 113241 | 194019 | 114289 | 192505 | 115344 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 200132 | 110153 | 198582 | 111183 | 197042 | 112219 | 195511                        | 113262 | 193988 | 114310 | 192475 | 115365 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 200101 | 110174 | 198551 | 111204 | 197011 | 112240 | 195480                        | 113283 | 193958 | 114331 | 192445 | 115386 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 200069 | 110194 | 198520 | 111225 | 196980 | 112261 | 195449                        | 113304 | 193928 | 114352 | 192415 | 115407 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 200038 | 110215 | 198489 | 111245 | 196950 | 112282 | 195419                        | 113324 | 193897 | 114373 | 192385 | 115428 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 200007 | 110236 | 198459 | 111266 | 196919 | 112303 | 195388                        | 113345 | 193867 | 114394 | 192354 | 115449 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 199976 | 110256 | 198428 | 111287 | 196888 | 112323 | 195358                        | 113366 | 193837 | 114415 | 192324 | 115471 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 199945 | 110277 | 198397 | 111307 | 196858 | 112344 | 195327                        | 113387 | 193806 | 114436 | 192294 | 115492 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 199914 | 110297 | 198366 | 111328 | 196827 | 112365 | 195297                        | 113408 | 193776 | 114457 | 192264 | 115513 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 199883 | 110318 | 198335 | 111349 | 196796 | 112386 | 195266                        | 113429 | 193746 | 114478 | 192234 | 115534 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 199852 | 110338 | 198304 | 111369 | 196765 | 112407 | 195236                        | 113450 | 193715 | 114500 | 192204 | 115555 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 199821 | 110359 | 198273 | 111390 | 196735 | 112427 | 195205                        | 113471 | 193685 | 114521 | 192174 | 115577 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 199790 | 110379 | 198242 | 111411 | 196704 | 112448 | 195175                        | 113492 | 193655 | 114542 | 192143 | 115598 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 199759 | 110400 | 198212 | 111431 | 196673 | 112469 | 195144                        | 113513 | 193624 | 114563 | 192113 | 115619 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 199728 | 110421 | 198181 | 111452 | 196643 | 112490 | 195114                        | 113534 | 193594 | 114584 | 192083 | 115640 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 199697 | 110441 | 198150 | 111473 | 196612 | 112511 | 195083                        | 113555 | 193564 | 114605 | 192053 | 115661 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 199666 | 110462 | 198119 | 111494 | 196581 | 112531 | 195053                        | 113576 | 193533 | 114626 | 192023 | 115682 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 199635 | 110482 | 198088 | 111514 | 196551 | 112552 | 195022                        | 113597 | 193503 | 114647 | 191993 | 115704 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 199604 | 110503 | 198057 | 111535 | 196520 | 112573 | 194992                        | 113617 | 193473 | 114668 | 191963 | 115725 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 199573 | 110523 | 198027 | 111556 | 196489 | 112594 | 194961                        | 113638 | 193443 | 114689 | 191933 | 115746 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | '↑  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 140°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 40°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 191933 | 115746 | 190431 | 116809 | 188939 | 117879 | 187456                        | 118954 | 185981 | 120037 | 184515 | 121125 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 191902 | 115767 | 190401 | 116831 | 188909 | 117900 | 187426                        | 118976 | 185951 | 120058 | 184485 | 121147 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 191872 | 115788 | 190372 | 116852 | 188880 | 117922 | 187396                        | 118998 | 185922 | 120080 | 184456 | 121169 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 191842 | 115810 | 190342 | 116873 | 188850 | 117943 | 187367                        | 119019 | 185893 | 120102 | 184427 | 121191 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 191812 | 115831 | 190312 | 116895 | 188820 | 117965 | 187337                        | 119041 | 185863 | 120123 | 184398 | 121213 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 191782 | 115852 | 190282 | 116916 | 188790 | 117986 | 187308                        | 119062 | 185834 | 120145 | 184368 | 121234 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 191752 | 115873 | 190252 | 116937 | 188761 | 118007 | 187278                        | 119084 | 185804 | 120167 | 184339 | 121256 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 191722 | 115895 | 190222 | 116959 | 188731 | 118029 | 187249                        | 119106 | 185775 | 120189 | 184310 | 121278 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 191692 | 115916 | 190192 | 116980 | 188701 | 118050 | 187219                        | 119127 | 185746 | 120210 | 184281 | 121300 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 191662 | 115937 | 190162 | 117001 | 188671 | 118072 | 187189                        | 119149 | 185716 | 120232 | 184252 | 121322 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 191632 | 115958 | 190132 | 117023 | 188642 | 118093 | 187160                        | 119170 | 185687 | 120254 | 184222 | 121344 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 191601 | 115979 | 190102 | 117044 | 188612 | 118115 | 187130                        | 119192 | 185657 | 120276 | 184193 | 121366 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 191571 | 116001 | 190072 | 117065 | 188582 | 118136 | 187101                        | 119214 | 185628 | 120297 | 184164 | 121387 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 191541 | 116022 | 190043 | 117087 | 188553 | 118158 | 187071                        | 119235 | 185599 | 120319 | 184135 | 121409 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 191511 | 116043 | 190013 | 117108 | 188523 | 118179 | 187042                        | 119257 | 185569 | 120341 | 184106 | 121431 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 191481 | 116064 | 189983 | 117129 | 188493 | 118201 | 187012                        | 119278 | 185540 | 120363 | 184076 | 121453 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 191451 | 116086 | 189953 | 117151 | 188463 | 118222 | 186983                        | 119300 | 185511 | 120384 | 184047 | 121475 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 191421 | 116107 | 189923 | 117172 | 188434 | 118244 | 186953                        | 119322 | 185481 | 120406 | 184018 | 121497 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 191391 | 116128 | 189893 | 117193 | 188404 | 118265 | 186924                        | 119343 | 185452 | 120428 | 183989 | 121519 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 191361 | 116149 | 189863 | 117215 | 188374 | 118287 | 186894                        | 119365 | 185423 | 120450 | 183960 | 121541 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 191331 | 116171 | 189833 | 117236 | 188345 | 118308 | 186865                        | 119387 | 185393 | 120471 | 183931 | 121562 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 191301 | 116192 | 189804 | 117258 | 188315 | 118330 | 186835                        | 119408 | 185364 | 120493 | 183901 | 121584 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 191271 | 116213 | 189774 | 117279 | 188285 | 118351 | 186806                        | 119430 | 185335 | 120515 | 183872 | 121606 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 191241 | 116234 | 189744 | 117300 | 188256 | 118373 | 186776                        | 119451 | 185305 | 120537 | 183843 | 121628 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 191211 | 116256 | 189714 | 117322 | 188226 | 118394 | 186747                        | 119473 | 185276 | 120558 | 183814 | 121650 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 191181 | 116277 | 189684 | 117343 | 188196 | 118416 | 186717                        | 119495 | 185247 | 120580 | 183785 | 121672 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 191151 | 116298 | 189654 | 117365 | 188167 | 118437 | 186688                        | 119516 | 185217 | 120602 | 183756 | 121694 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 191121 | 116319 | 189624 | 117386 | 188137 | 118459 | 186658                        | 119538 | 185188 | 120624 | 183726 | 121716 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 191091 | 116341 | 189595 | 117407 | 188107 | 118480 | 186629                        | 119560 | 185159 | 120645 | 183697 | 121738 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 191061 | 116362 | 189565 | 117429 | 188078 | 118502 | 186599                        | 119581 | 185129 | 120667 | 183668 | 121759 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 191031 | 116383 | 189535 | 117450 | 188048 | 118523 | 186570                        | 119603 | 185100 | 120689 | 183639 | 121781 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 191001 | 116404 | 189505 | 117472 | 188018 | 118545 | 186540                        | 119625 | 185071 | 120711 | 183610 | 121803 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 190971 | 116426 | 189475 | 117493 | 187989 | 118566 | 186511                        | 119646 | 185041 | 120733 | 183581 | 121825 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 190941 | 116447 | 189445 | 117514 | 187959 | 118588 | 186481                        | 119668 | 185012 | 120754 | 183552 | 121847 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 190911 | 116468 | 189416 | 117536 | 187929 | 118610 | 186452                        | 119690 | 184983 | 120776 | 183523 | 121869 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 190881 | 116490 | 189386 | 117557 | 187900 | 118631 | 186422                        | 119711 | 184954 | 120798 | 183493 | 121891 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 190851 | 116511 | 189356 | 117579 | 187870 | 118653 | 186393                        | 119733 | 184924 | 120820 | 183464 | 121913 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 190821 | 116532 | 189326 | 117600 | 187840 | 118674 | 186363                        | 119755 | 184895 | 120842 | 183435 | 121935 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 190791 | 116553 | 189296 | 117621 | 187811 | 118696 | 186334                        | 119776 | 184866 | 120863 | 183406 | 121957 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 190761 | 116575 | 189267 | 117643 | 187781 | 118717 | 186304                        | 119798 | 184836 | 120885 | 183377 | 121979 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 190731 | 116596 | 189237 | 117664 | 187752 | 118739 | 186275                        | 119820 | 184807 | 120907 | 183348 | 122001 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 190701 | 116617 | 189207 | 117686 | 187722 | 118760 | 186246                        | 119841 | 184778 | 120929 | 183319 | 122023 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 190671 | 116639 | 189177 | 117707 | 187692 | 118782 | 186216                        | 119863 | 184749 | 120951 | 183290 | 122045 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 190641 | 116660 | 189147 | 117729 | 187663 | 118803 | 186187                        | 119885 | 184719 | 120972 | 183261 | 122066 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 190611 | 116681 | 189118 | 117750 | 187633 | 118825 | 186157                        | 119906 | 184690 | 120994 | 183232 | 122088 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 190581 | 116703 | 189088 | 117771 | 187604 | 118847 | 186128                        | 119928 | 184661 | 121016 | 183202 | 122110 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 190551 | 116724 | 189058 | 117793 | 187574 | 118868 | 186098                        | 119950 | 184632 | 121038 | 183173 | 122132 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 190521 | 116745 | 189028 | 117814 | 187544 | 118890 | 186069                        | 119972 | 184602 | 121060 | 183144 | 122154 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 190491 | 116767 | 188999 | 117836 | 187515 | 118911 | 186040                        | 119993 | 184573 | 121082 | 183115 | 122176 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 190461 | 116788 | 188969 | 117857 | 187485 | 118933 | 186010                        | 120015 | 184544 | 121103 | 183086 | 122198 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 190431 | 116809 | 188939 | 117879 | 187456 | 118954 | 185981                        | 120037 | 184515 | 121125 | 183057 | 122220 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |
| 139°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |

| 41°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 183057 | 122220 | 181608 | 123322 | 180168 | 124429 | 178735                        | 125544 | 177312 | 126665 | 175896 | 127792 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 183028 | 122242 | 181579 | 123344 | 180139 | 124452 | 178707                        | 125566 | 177283 | 126687 | 175868 | 127815 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 182999 | 122264 | 181550 | 123366 | 180110 | 124474 | 178678                        | 125589 | 177255 | 126710 | 175840 | 127838 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 182970 | 122286 | 181521 | 123388 | 180081 | 124496 | 178650                        | 125611 | 177227 | 126732 | 175812 | 127860 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 182941 | 122308 | 181493 | 123410 | 180053 | 124518 | 178621                        | 125633 | 177198 | 126755 | 175783 | 127883 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 182912 | 122330 | 181464 | 123432 | 180024 | 124541 | 178593                        | 125656 | 177170 | 126777 | 175755 | 127905 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 182883 | 122352 | 181435 | 123454 | 179995 | 124563 | 178564                        | 125678 | 177141 | 126800 | 175727 | 127928 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 182854 | 122374 | 181406 | 123476 | 179967 | 124585 | 178536                        | 125700 | 177113 | 126822 | 175699 | 127951 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 182825 | 122396 | 181377 | 123498 | 179938 | 124607 | 178507                        | 125723 | 177085 | 126845 | 175671 | 127973 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 182796 | 122418 | 181348 | 123520 | 179909 | 124630 | 178479                        | 125745 | 177056 | 126867 | 175642 | 127996 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 182767 | 122440 | 181319 | 123543 | 179880 | 124652 | 178450                        | 125768 | 177028 | 126890 | 175614 | 128019 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 182738 | 122462 | 181290 | 123565 | 179852 | 124674 | 178421                        | 125790 | 177000 | 126912 | 175586 | 128041 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 182709 | 122484 | 181262 | 123587 | 179823 | 124696 | 178393                        | 125812 | 176971 | 126935 | 175558 | 128064 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 182680 | 122506 | 181233 | 123609 | 179794 | 124719 | 178364                        | 125835 | 176943 | 126957 | 175530 | 128087 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 182651 | 122528 | 181204 | 123631 | 179766 | 124741 | 178336                        | 125857 | 176915 | 126980 | 175501 | 128109 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 182621 | 122550 | 181175 | 123653 | 179737 | 124763 | 178307                        | 125879 | 176886 | 127002 | 175473 | 128132 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 182592 | 122572 | 181146 | 123675 | 179708 | 124785 | 178279                        | 125902 | 176858 | 127025 | 175445 | 128155 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 182563 | 122594 | 181117 | 123698 | 179680 | 124808 | 178250                        | 125924 | 176830 | 127047 | 175417 | 128177 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 182534 | 122616 | 181089 | 123720 | 179651 | 124830 | 178222                        | 125947 | 176801 | 127070 | 175389 | 128200 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 182505 | 122638 | 181060 | 123742 | 179622 | 124852 | 178193                        | 125969 | 176773 | 127093 | 175361 | 128223 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 182476 | 122660 | 181031 | 123764 | 179594 | 124874 | 178165                        | 125991 | 176745 | 127115 | 175332 | 128245 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 182447 | 122682 | 181002 | 123786 | 179565 | 124897 | 178136                        | 126014 | 176716 | 127138 | 175304 | 128268 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 182418 | 122704 | 180973 | 123808 | 179536 | 124919 | 178108                        | 126036 | 176688 | 127160 | 175276 | 128291 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 182389 | 122726 | 180944 | 123830 | 179508 | 124941 | 178079                        | 126059 | 176660 | 127183 | 175248 | 128313 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 182360 | 122748 | 180916 | 123853 | 179479 | 124964 | 178051                        | 126081 | 176631 | 127205 | 175220 | 128336 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 182332 | 122770 | 180887 | 123875 | 179450 | 124986 | 178023                        | 126104 | 176603 | 127228 | 175192 | 128359 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 182303 | 122792 | 180858 | 123897 | 179422 | 125008 | 177994                        | 126126 | 176575 | 127250 | 175164 | 128381 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 182274 | 122814 | 180829 | 123919 | 179393 | 125030 | 177966                        | 126148 | 176546 | 127273 | 175135 | 128404 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 182245 | 122836 | 180800 | 123941 | 179365 | 125053 | 177937                        | 126171 | 176518 | 127295 | 175107 | 128427 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 182216 | 122858 | 180772 | 123963 | 179336 | 125075 | 177909                        | 126193 | 176490 | 127318 | 175079 | 128449 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 182187 | 122880 | 180743 | 123986 | 179307 | 125097 | 177880                        | 126216 | 176461 | 127341 | 175051 | 128472 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 182158 | 122902 | 180714 | 124008 | 179279 | 125120 | 177852                        | 126238 | 176433 | 127363 | 175023 | 128495 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 182129 | 122924 | 180685 | 124030 | 179250 | 125142 | 177823                        | 126261 | 176405 | 127386 | 174995 | 128517 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 182100 | 122946 | 180656 | 124052 | 179221 | 125164 | 177795                        | 126283 | 176377 | 127408 | 174967 | 128540 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 182071 | 122968 | 180628 | 124074 | 179193 | 125187 | 177766                        | 126305 | 176348 | 127431 | 174939 | 128563 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 182042 | 122990 | 180599 | 124096 | 179164 | 125209 | 177738                        | 126328 | 176320 | 127453 | 174910 | 128586 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 182013 | 123013 | 180570 | 124119 | 179136 | 125231 | 177709                        | 126350 | 176292 | 127476 | 174882 | 128608 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 181984 | 123035 | 180541 | 124141 | 179107 | 125253 | 177681                        | 126373 | 176263 | 127499 | 174854 | 128631 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 181955 | 123057 | 180512 | 124163 | 179078 | 125276 | 177653                        | 126395 | 176235 | 127521 | 174826 | 128654 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 181926 | 123079 | 180484 | 124185 | 179050 | 125298 | 177624                        | 126418 | 176207 | 127544 | 174798 | 128676 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 181897 | 123101 | 180455 | 124207 | 179021 | 125320 | 177596                        | 126440 | 176179 | 127566 | 174770 | 128699 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 181868 | 123123 | 180426 | 124230 | 178993 | 125343 | 177567                        | 126463 | 176150 | 127589 | 174742 | 128722 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 181839 | 123145 | 180397 | 124252 | 178964 | 125365 | 177539                        | 126485 | 176122 | 127612 | 174714 | 128745 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 181810 | 123167 | 180369 | 124274 | 178935 | 125387 | 177511                        | 126507 | 176094 | 127634 | 174686 | 128767 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 181782 | 123189 | 180340 | 124296 | 178907 | 125410 | 177482                        | 126530 | 176066 | 127657 | 174658 | 128790 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 181753 | 123211 | 180311 | 124318 | 178878 | 125432 | 177454                        | 126552 | 176037 | 127679 | 174629 | 128813 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 181724 | 123233 | 180282 | 124341 | 178850 | 125454 | 177425                        | 126575 | 176009 | 127702 | 174601 | 128836 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 181695 | 123255 | 180254 | 124363 | 178821 | 125477 | 177397                        | 126597 | 175981 | 127725 | 174573 | 128858 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 181666 | 123277 | 180225 | 124385 | 178793 | 125499 | 177368                        | 126620 | 175953 | 127747 | 174545 | 128881 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 181637 | 123299 | 180196 | 124407 | 178764 | 125522 | 177340                        | 126642 | 175924 | 127770 | 174517 | 128904 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 181608 | 123322 | 180168 | 124429 | 178735 | 125544 | 177312                        | 126665 | 175896 | 127792 | 174489 | 128927 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | '↑  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 138°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 42°                                                                                                                               |        |        |        |        |        |        |                                             |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|---------------------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                                         |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                                           | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 174489 | 128927 | 173090 | 130067 | 171699 | 131215 | 170317                                      | 132369 | 168942 | 133530 | 167575 | 134698 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 174461 | 128949 | 173062 | 130090 | 171672 | 131238 | 170289                                      | 132392 | 168915 | 133553 | 167548 | 134721 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 174433 | 128972 | 173034 | 130113 | 171644 | 131261 | 170262                                      | 132415 | 168887 | 133577 | 167521 | 134745 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 174405 | 128995 | 173006 | 130136 | 171616 | 131284 | 170234                                      | 132439 | 168860 | 133600 | 167494 | 134768 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 174377 | 129018 | 172979 | 130159 | 171588 | 131307 | 170206                                      | 132462 | 168832 | 133623 | 167466 | 134792 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 174349 | 129040 | 172951 | 130182 | 171561 | 131330 | 170179                                      | 132485 | 168805 | 133647 | 167439 | 134815 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 174321 | 129063 | 172923 | 130205 | 171533 | 131353 | 170151                                      | 132508 | 168778 | 133670 | 167412 | 134839 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 174293 | 129086 | 172895 | 130228 | 171505 | 131376 | 170124                                      | 132531 | 168750 | 133693 | 167385 | 134862 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 174265 | 129109 | 172867 | 130251 | 171478 | 131399 | 170096                                      | 132554 | 168723 | 133717 | 167357 | 134885 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 174237 | 129131 | 172839 | 130273 | 171450 | 131422 | 170069                                      | 132578 | 168695 | 133740 | 167330 | 134909 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 174209 | 129154 | 172811 | 130296 | 171422 | 131445 | 170041                                      | 132601 | 168668 | 133763 | 167303 | 134932 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 174181 | 129177 | 172783 | 130319 | 171394 | 131468 | 170014                                      | 132624 | 168641 | 133786 | 167276 | 134956 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 174153 | 129200 | 172756 | 130342 | 171367 | 131491 | 169986                                      | 132647 | 168613 | 133810 | 167249 | 134979 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 174125 | 129223 | 172728 | 130365 | 171339 | 131514 | 169958                                      | 132670 | 168586 | 133833 | 167221 | 135003 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 174097 | 129245 | 172700 | 130388 | 171311 | 131537 | 169931                                      | 132694 | 168559 | 133856 | 167194 | 135026 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 174069 | 129268 | 172672 | 130411 | 171284 | 131560 | 169903                                      | 132717 | 168531 | 133880 | 167167 | 135050 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 174041 | 129291 | 172644 | 130434 | 171256 | 131584 | 169876                                      | 132740 | 168504 | 133903 | 167140 | 135073 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 174013 | 129314 | 172616 | 130457 | 171228 | 131607 | 169848                                      | 132763 | 168476 | 133926 | 167113 | 135097 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 173985 | 129336 | 172589 | 130480 | 171201 | 131630 | 169821                                      | 132786 | 168449 | 133950 | 167085 | 135120 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 173957 | 129359 | 172561 | 130503 | 171173 | 131653 | 169793                                      | 132809 | 168422 | 133973 | 167058 | 135143 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 173929 | 129382 | 172533 | 130526 | 171145 | 131676 | 169766                                      | 132833 | 168394 | 133996 | 167031 | 135167 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 173901 | 129405 | 172505 | 130549 | 171118 | 131699 | 169738                                      | 132856 | 168367 | 134020 | 167004 | 135190 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 173873 | 129428 | 172477 | 130571 | 171090 | 131722 | 169711                                      | 132879 | 168340 | 134043 | 166977 | 135214 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 173845 | 129450 | 172449 | 130594 | 171062 | 131745 | 169683                                      | 132902 | 168312 | 134066 | 166949 | 135237 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 173817 | 129473 | 172422 | 130617 | 171035 | 131768 | 169656                                      | 132926 | 168285 | 134090 | 166922 | 135261 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 173789 | 129496 | 172394 | 130640 | 171007 | 131791 | 169628                                      | 132949 | 168258 | 134113 | 166895 | 135284 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 173761 | 129519 | 172366 | 130663 | 170979 | 131814 | 169601                                      | 132972 | 168230 | 134137 | 166868 | 135308 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 173733 | 129542 | 172338 | 130686 | 170952 | 131837 | 169573                                      | 132995 | 168203 | 134160 | 166841 | 135331 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 173705 | 129565 | 172310 | 130709 | 170924 | 131860 | 169546                                      | 133018 | 168176 | 134183 | 166814 | 135355 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 173677 | 129587 | 172282 | 130732 | 170896 | 131884 | 169518                                      | 133042 | 168148 | 134207 | 166786 | 135378 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 173649 | 129610 | 172255 | 130755 | 170869 | 131907 | 169491                                      | 133065 | 168121 | 134230 | 166759 | 135402 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 173621 | 129633 | 172227 | 130778 | 170841 | 131930 | 169463                                      | 133088 | 168094 | 134253 | 166732 | 135425 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 173593 | 129656 | 172199 | 130801 | 170813 | 131953 | 169436                                      | 133111 | 168066 | 134277 | 166705 | 135449 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 173565 | 129679 | 172171 | 130824 | 170786 | 131976 | 169408                                      | 133135 | 168039 | 134300 | 166678 | 135472 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 173537 | 129702 | 172144 | 130847 | 170758 | 131999 | 169381                                      | 133158 | 168012 | 134323 | 166651 | 135496 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 173509 | 129724 | 172116 | 130870 | 170731 | 132022 | 169354                                      | 133181 | 167985 | 134347 | 166623 | 135519 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 173481 | 129747 | 172088 | 130893 | 170703 | 132045 | 169326                                      | 133204 | 167957 | 134370 | 166596 | 135543 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 173453 | 129770 | 172060 | 130916 | 170675 | 132068 | 169299                                      | 133228 | 167930 | 134394 | 166569 | 135566 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 173425 | 129793 | 172032 | 130939 | 170648 | 132091 | 169271                                      | 133251 | 167903 | 134417 | 166542 | 135590 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 173397 | 129816 | 172005 | 130962 | 170620 | 132115 | 169244                                      | 133274 | 167875 | 134440 | 166515 | 135614 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 173369 | 129839 | 171977 | 130985 | 170593 | 132138 | 169216                                      | 133297 | 167848 | 134464 | 166488 | 135637 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 173341 | 129862 | 171949 | 131008 | 170565 | 132161 | 169189                                      | 133321 | 167821 | 134487 | 166461 | 135661 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 173313 | 129884 | 171921 | 131031 | 170537 | 132184 | 169161                                      | 133344 | 167793 | 134511 | 166434 | 135684 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 173286 | 129907 | 171894 | 131054 | 170510 | 132207 | 169134                                      | 133367 | 167766 | 134534 | 166406 | 135708 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 173258 | 129930 | 171866 | 131077 | 170482 | 132230 | 169107                                      | 133390 | 167739 | 134557 | 166379 | 135731 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 173230 | 129953 | 171838 | 131100 | 170455 | 132253 | 169079                                      | 133414 | 167712 | 134581 | 166352 | 135755 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 173202 | 129976 | 171810 | 131123 | 170427 | 132277 | 169052                                      | 133437 | 167684 | 134604 | 166325 | 135778 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 173174 | 129999 | 171783 | 131146 | 170399 | 132300 | 169024                                      | 133460 | 167657 | 134628 | 166298 | 135802 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 173146 | 130022 | 171755 | 131169 | 170372 | 132323 | 168997                                      | 133484 | 167630 | 134651 | 166271 | 135825 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 173118 | 130044 | 171727 | 131192 | 170344 | 132346 | 168969                                      | 133507 | 167603 | 134674 | 166244 | 135849 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 173090 | 130067 | 171699 | 131215 | 170317 | 132369 | 168942                                      | 133530 | 167575 | 134698 | 166217 | 135873 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                                           | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                                         |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 137°                                                                                                                              |        |        |        |        |        |        |                                             |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                                             |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                                             |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 * \log (1 / \sin \alpha)$                                                                                       |        |        |        |        |        |        | $B(\alpha) = 10^6 * \log (1 / \cos \alpha)$ |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 43°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 166217 | 135873 | 164866 | 137054 | 163523 | 138242 | 162188                        | 139438 | 160860 | 140640 | 159541 | 141849 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 166190 | 135896 | 164839 | 137078 | 163496 | 138266 | 162161                        | 139462 | 160834 | 140664 | 159514 | 141874 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 166162 | 135920 | 164812 | 137101 | 163469 | 138290 | 162135                        | 139486 | 160807 | 140688 | 159488 | 141898 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 166135 | 135943 | 164785 | 137125 | 163443 | 138314 | 162108                        | 139510 | 160781 | 140712 | 159462 | 141922 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 166108 | 135967 | 164758 | 137149 | 163416 | 138338 | 162081                        | 139534 | 160755 | 140737 | 159435 | 141947 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 166081 | 135990 | 164731 | 137173 | 163389 | 138362 | 162055                        | 139558 | 160728 | 140761 | 159409 | 141971 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 166054 | 136014 | 164704 | 137196 | 163362 | 138386 | 162028                        | 139582 | 160702 | 140785 | 159383 | 141995 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 166027 | 136038 | 164677 | 137220 | 163336 | 138409 | 162001                        | 139606 | 160675 | 140809 | 159357 | 142019 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 166000 | 136061 | 164650 | 137244 | 163309 | 138433 | 161975                        | 139630 | 160649 | 140833 | 159330 | 142044 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 165973 | 136085 | 164624 | 137267 | 163282 | 138457 | 161948                        | 139654 | 160622 | 140857 | 159304 | 142068 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 165946 | 136108 | 164597 | 137291 | 163255 | 138481 | 161922                        | 139678 | 160596 | 140881 | 159278 | 142092 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 165919 | 136132 | 164570 | 137315 | 163229 | 138505 | 161895                        | 139702 | 160569 | 140906 | 159251 | 142116 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 165892 | 136155 | 164543 | 137339 | 163202 | 138529 | 161869                        | 139726 | 160543 | 140930 | 159225 | 142141 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 165865 | 136179 | 164516 | 137362 | 163175 | 138553 | 161842                        | 139750 | 160517 | 140954 | 159199 | 142165 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 165838 | 136203 | 164489 | 137386 | 163148 | 138576 | 161815                        | 139774 | 160490 | 140978 | 159173 | 142189 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 165811 | 136226 | 164462 | 137410 | 163122 | 138600 | 161789                        | 139798 | 160464 | 141002 | 159146 | 142214 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 165784 | 136250 | 164435 | 137434 | 163095 | 138624 | 161762                        | 139822 | 160437 | 141026 | 159120 | 142238 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 165757 | 136273 | 164408 | 137457 | 163068 | 138648 | 161736                        | 139846 | 160411 | 141051 | 159094 | 142262 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 165729 | 136297 | 164382 | 137481 | 163041 | 138672 | 161709                        | 139870 | 160384 | 141075 | 159068 | 142287 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 165702 | 136321 | 164355 | 137505 | 163015 | 138696 | 161682                        | 139894 | 160358 | 141099 | 159041 | 142311 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 165675 | 136344 | 164328 | 137529 | 162988 | 138720 | 161656                        | 139918 | 160332 | 141123 | 159015 | 142335 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 165648 | 136368 | 164301 | 137552 | 162961 | 138744 | 161629                        | 139942 | 160305 | 141147 | 158989 | 142360 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 165621 | 136392 | 164274 | 137576 | 162935 | 138768 | 161603                        | 139966 | 160279 | 141171 | 158963 | 142384 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 165594 | 136415 | 164247 | 137600 | 162908 | 138791 | 161576                        | 139990 | 160252 | 141196 | 158936 | 142408 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 165567 | 136439 | 164220 | 137624 | 162881 | 138815 | 161550                        | 140014 | 160226 | 141220 | 158910 | 142432 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 165540 | 136462 | 164193 | 137647 | 162854 | 138839 | 161523                        | 140038 | 160200 | 141244 | 158884 | 142457 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 165513 | 136486 | 164167 | 137671 | 162828 | 138863 | 161497                        | 140062 | 160173 | 141268 | 158858 | 142481 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 165486 | 136510 | 164140 | 137695 | 162801 | 138887 | 161470                        | 140086 | 160147 | 141292 | 158831 | 142505 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 165459 | 136533 | 164113 | 137719 | 162774 | 138911 | 161444                        | 140110 | 160120 | 141317 | 158805 | 142530 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 165432 | 136557 | 164086 | 137742 | 162748 | 138935 | 161417                        | 140134 | 160094 | 141341 | 158779 | 142554 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 165405 | 136581 | 164059 | 137766 | 162721 | 138959 | 161390                        | 140158 | 160068 | 141365 | 158753 | 142578 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 165378 | 136604 | 164032 | 137790 | 162694 | 138983 | 161364                        | 140182 | 160041 | 141389 | 158726 | 142603 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 165351 | 136628 | 164005 | 137814 | 162668 | 139007 | 161337                        | 140206 | 160015 | 141413 | 158700 | 142627 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 165324 | 136652 | 163979 | 137838 | 162641 | 139031 | 161311                        | 140231 | 159989 | 141438 | 158674 | 142652 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 165297 | 136675 | 163952 | 137861 | 162614 | 139055 | 161284                        | 140255 | 159962 | 141462 | 158648 | 142676 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 165270 | 136699 | 163925 | 137885 | 162588 | 139078 | 161258                        | 140279 | 159936 | 141486 | 158622 | 142700 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 165243 | 136723 | 163898 | 137909 | 162561 | 139102 | 161231                        | 140303 | 159909 | 141510 | 158595 | 142725 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 165216 | 136746 | 163871 | 137933 | 162534 | 139126 | 161205                        | 140327 | 159883 | 141534 | 158569 | 142749 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 165189 | 136770 | 163845 | 137957 | 162508 | 139150 | 161178                        | 140351 | 159857 | 141559 | 158543 | 142773 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 165162 | 136794 | 163818 | 137980 | 162481 | 139174 | 161152                        | 140375 | 159830 | 141583 | 158517 | 142798 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 165135 | 136817 | 163791 | 138004 | 162454 | 139198 | 161125                        | 140399 | 159804 | 141607 | 158491 | 142822 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 165108 | 136841 | 163764 | 138028 | 162428 | 139222 | 161099                        | 140423 | 159778 | 141631 | 158464 | 142846 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 165081 | 136865 | 163737 | 138052 | 162401 | 139246 | 161072                        | 140447 | 159751 | 141656 | 158438 | 142871 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 165055 | 136888 | 163710 | 138076 | 162374 | 139270 | 161046                        | 140471 | 159725 | 141680 | 158412 | 142895 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 165028 | 136912 | 163684 | 138099 | 162348 | 139294 | 161019                        | 140495 | 159699 | 141704 | 158386 | 142920 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 165001 | 136936 | 163657 | 138123 | 162321 | 139318 | 160993                        | 140520 | 159672 | 141728 | 158360 | 142944 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 164974 | 136959 | 163630 | 138147 | 162294 | 139342 | 160966                        | 140544 | 159646 | 141752 | 158333 | 142968 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 164947 | 136983 | 163603 | 138171 | 162268 | 139366 | 160940                        | 140568 | 159620 | 141777 | 158307 | 142993 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 164920 | 137007 | 163577 | 138195 | 162241 | 139390 | 160913                        | 140592 | 159593 | 141801 | 158281 | 143017 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 164893 | 137030 | 163550 | 138219 | 162214 | 139414 | 160887                        | 140616 | 159567 | 141825 | 158255 | 143042 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 164866 | 137054 | 163523 | 138242 | 162188 | 139438 | 160860                        | 140640 | 159541 | 141849 | 158229 | 143066 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 136°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 44°                                                                                                                               |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|------------------------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                                            |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                                              | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 158229 | 143066 | 156924 | 144289 | 155628 | 145520 | 154338                                         | 146758 | 153056 | 148003 | 151782 | 149255 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 158203 | 143090 | 156898 | 144314 | 155602 | 145545 | 154312                                         | 146783 | 153031 | 148028 | 151757 | 149280 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 158176 | 143115 | 156872 | 144339 | 155576 | 145569 | 154287                                         | 146808 | 153005 | 148053 | 151731 | 149306 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 158150 | 143139 | 156846 | 144363 | 155550 | 145594 | 154261                                         | 146832 | 152980 | 148078 | 151706 | 149331 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 158124 | 143164 | 156820 | 144388 | 155524 | 145619 | 154235                                         | 146857 | 152954 | 148103 | 151680 | 149356 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 158098 | 143188 | 156794 | 144412 | 155498 | 145644 | 154210                                         | 146882 | 152929 | 148128 | 151655 | 149381 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 158072 | 143212 | 156768 | 144437 | 155472 | 145668 | 154184                                         | 146907 | 152903 | 148153 | 151630 | 149406 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 158046 | 143237 | 156742 | 144461 | 155447 | 145693 | 154158                                         | 146932 | 152878 | 148178 | 151604 | 149431 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 158020 | 143261 | 156716 | 144486 | 155421 | 145718 | 154133                                         | 146957 | 152852 | 148203 | 151579 | 149456 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 157993 | 143286 | 156690 | 144510 | 155395 | 145742 | 154107                                         | 146982 | 152826 | 148228 | 151553 | 149482 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 157967 | 143310 | 156664 | 144535 | 155369 | 145767 | 154081                                         | 147006 | 152801 | 148253 | 151528 | 149507 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 157941 | 143334 | 156638 | 144560 | 155343 | 145792 | 154056                                         | 147031 | 152775 | 148278 | 151503 | 149532 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 157915 | 143359 | 156612 | 144584 | 155317 | 145817 | 154030                                         | 147056 | 152750 | 148303 | 151477 | 149557 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 157889 | 143383 | 156586 | 144609 | 155292 | 145841 | 154004                                         | 147081 | 152724 | 148328 | 151452 | 149582 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 157863 | 143408 | 156560 | 144633 | 155266 | 145866 | 153979                                         | 147106 | 152699 | 148353 | 151426 | 149607 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 157837 | 143432 | 156534 | 144658 | 155240 | 145891 | 153953                                         | 147131 | 152673 | 148378 | 151401 | 149632 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 157810 | 143457 | 156509 | 144682 | 155214 | 145915 | 153927                                         | 147156 | 152648 | 148403 | 151376 | 149658 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 157784 | 143481 | 156483 | 144707 | 155188 | 145940 | 153902                                         | 147180 | 152622 | 148428 | 151350 | 149683 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 157758 | 143506 | 156457 | 144732 | 155162 | 145965 | 153876                                         | 147205 | 152597 | 148453 | 151325 | 149708 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 157732 | 143530 | 156431 | 144756 | 155137 | 145990 | 153850                                         | 147230 | 152571 | 148478 | 151300 | 149733 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 157706 | 143554 | 156405 | 144781 | 155111 | 146014 | 153825                                         | 147255 | 152546 | 148503 | 151274 | 149758 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 157680 | 143579 | 156379 | 144805 | 155085 | 146039 | 153799                                         | 147280 | 152520 | 148528 | 151249 | 149784 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 157654 | 143603 | 156353 | 144830 | 155059 | 146064 | 153773                                         | 147305 | 152495 | 148553 | 151224 | 149809 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 157628 | 143628 | 156327 | 144855 | 155033 | 146089 | 153748                                         | 147330 | 152469 | 148578 | 151198 | 149834 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 157602 | 143652 | 156301 | 144879 | 155008 | 146113 | 153722                                         | 147355 | 152444 | 148603 | 151173 | 149859 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 157576 | 143677 | 156275 | 144904 | 154982 | 146138 | 153696                                         | 147380 | 152418 | 148628 | 151148 | 149884 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 157549 | 143701 | 156249 | 144928 | 154956 | 146163 | 153671                                         | 147404 | 152393 | 148653 | 151122 | 149909 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 157523 | 143726 | 156223 | 144953 | 154930 | 146188 | 153645                                         | 147429 | 152367 | 148678 | 151097 | 149935 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 157497 | 143750 | 156197 | 144978 | 154905 | 146212 | 153619                                         | 147454 | 152342 | 148703 | 151072 | 149960 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 157471 | 143775 | 156171 | 145002 | 154879 | 146237 | 153594                                         | 147479 | 152316 | 148728 | 151046 | 149985 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 157445 | 143799 | 156145 | 145027 | 154853 | 146262 | 153568                                         | 147504 | 152291 | 148754 | 151021 | 150010 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 157419 | 143824 | 156119 | 145052 | 154827 | 146287 | 153543                                         | 147529 | 152265 | 148779 | 150996 | 150035 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 157393 | 143848 | 156093 | 145076 | 154801 | 146311 | 153517                                         | 147554 | 152240 | 148804 | 150970 | 150061 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 157367 | 143873 | 156068 | 145101 | 154776 | 146336 | 153491                                         | 147579 | 152214 | 148829 | 150945 | 150086 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 157341 | 143897 | 156042 | 145126 | 154750 | 146361 | 153466                                         | 147604 | 152189 | 148854 | 150920 | 150111 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 157315 | 143922 | 156016 | 145150 | 154724 | 146386 | 153440                                         | 147629 | 152164 | 148879 | 150894 | 150136 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 157289 | 143946 | 155990 | 145175 | 154698 | 146411 | 153415                                         | 147654 | 152138 | 148904 | 150869 | 150162 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 157263 | 143971 | 155964 | 145199 | 154673 | 146435 | 153389                                         | 147679 | 152113 | 148929 | 150844 | 150187 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 157237 | 143995 | 155938 | 145224 | 154647 | 146460 | 153363                                         | 147704 | 152087 | 148954 | 150818 | 150212 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 157211 | 144020 | 155912 | 145249 | 154621 | 146485 | 153338                                         | 147728 | 152062 | 148979 | 150793 | 150237 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 157185 | 144044 | 155886 | 145273 | 154595 | 146510 | 153312                                         | 147753 | 152036 | 149004 | 150768 | 150262 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 157159 | 144069 | 155860 | 145298 | 154570 | 146535 | 153287                                         | 147778 | 152011 | 149029 | 150743 | 150288 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 157133 | 144093 | 155834 | 145323 | 154544 | 146559 | 153261                                         | 147803 | 151985 | 149054 | 150717 | 150313 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 157106 | 144118 | 155809 | 145347 | 154518 | 146584 | 153235                                         | 147828 | 151960 | 149080 | 150692 | 150338 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 157080 | 144142 | 155783 | 145372 | 154493 | 146609 | 153210                                         | 147853 | 151935 | 149105 | 150667 | 150363 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 157054 | 144167 | 155757 | 145397 | 154467 | 146634 | 153184                                         | 147878 | 151909 | 149130 | 150641 | 150389 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 157028 | 144191 | 155731 | 145421 | 154441 | 146659 | 153159                                         | 147903 | 151884 | 149155 | 150616 | 150414 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 157002 | 144216 | 155705 | 145446 | 154415 | 146683 | 153133                                         | 147928 | 151858 | 149180 | 150591 | 150439 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 156976 | 144240 | 155679 | 145471 | 154390 | 146708 | 153108                                         | 147953 | 151833 | 149205 | 150566 | 150464 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 156950 | 144265 | 155653 | 145495 | 154364 | 146733 | 153082                                         | 147978 | 151807 | 149230 | 150540 | 150490 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 156924 | 144289 | 155628 | 145520 | 154338 | 146758 | 153056                                         | 148003 | 151782 | 149255 | 150515 | 150515 | 0   |  |  |  |  |  |  |  |  |  |  |  |
| ↑                                                                                                                                 | A      | B      | A      | B      | A      | B      | A                                              | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                                            |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 135°                                                                                                                              |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 \cdot \log(1 / \sin \alpha)$                                                                                    |        |        |        |        |        |        | $B(\alpha) = 10^6 \cdot \log(1 / \cos \alpha)$ |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 45°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 150515 | 150515 | 149255 | 151782 | 148003 | 153056 | 146758                        | 154338 | 145520 | 155628 | 144289 | 156924 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 150490 | 150540 | 149230 | 151807 | 147978 | 153082 | 146733                        | 154364 | 145495 | 155653 | 144265 | 156950 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 150464 | 150566 | 149205 | 151833 | 147953 | 153108 | 146708                        | 154390 | 145471 | 155679 | 144240 | 156976 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 150439 | 150591 | 149180 | 151858 | 147928 | 153133 | 146683                        | 154415 | 145446 | 155705 | 144216 | 157002 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 150414 | 150616 | 149155 | 151884 | 147903 | 153159 | 146659                        | 154441 | 145421 | 155731 | 144191 | 157028 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 150389 | 150641 | 149130 | 151909 | 147878 | 153184 | 146634                        | 154467 | 145397 | 155757 | 144167 | 157054 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 150363 | 150667 | 149105 | 151935 | 147853 | 153210 | 146609                        | 154493 | 145372 | 155783 | 144142 | 157080 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 150338 | 150692 | 149080 | 151960 | 147828 | 153235 | 146584                        | 154518 | 145347 | 155809 | 144118 | 157106 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 150313 | 150717 | 149054 | 151985 | 147803 | 153261 | 146559                        | 154544 | 145323 | 155834 | 144093 | 157133 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 150288 | 150743 | 149029 | 152011 | 147778 | 153287 | 146535                        | 154570 | 145298 | 155860 | 144069 | 157159 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 150262 | 150768 | 149004 | 152036 | 147753 | 153312 | 146510                        | 154595 | 145273 | 155886 | 144044 | 157185 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 150237 | 150793 | 148979 | 152062 | 147728 | 153338 | 146485                        | 154621 | 145249 | 155912 | 144020 | 157211 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 150212 | 150818 | 148954 | 152087 | 147704 | 153363 | 146460                        | 154647 | 145224 | 155938 | 143995 | 157237 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 150187 | 150844 | 148929 | 152113 | 147679 | 153389 | 146435                        | 154673 | 145199 | 155964 | 143971 | 157263 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 150162 | 150869 | 148904 | 152138 | 147654 | 153415 | 146411                        | 154698 | 145175 | 155990 | 143946 | 157289 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 150136 | 150894 | 148879 | 152164 | 147629 | 153440 | 146386                        | 154724 | 145150 | 156016 | 143922 | 157315 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 150111 | 150920 | 148854 | 152189 | 147604 | 153466 | 146361                        | 154750 | 145126 | 156042 | 143897 | 157341 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 150086 | 150945 | 148829 | 152214 | 147579 | 153491 | 146336                        | 154776 | 145101 | 156068 | 143873 | 157367 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 150061 | 150970 | 148804 | 152240 | 147554 | 153517 | 146311                        | 154801 | 145076 | 156093 | 143848 | 157393 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 150035 | 150996 | 148779 | 152265 | 147529 | 153543 | 146287                        | 154827 | 145052 | 156119 | 143824 | 157419 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 150010 | 151021 | 148754 | 152291 | 147504 | 153568 | 146262                        | 154853 | 145027 | 156145 | 143799 | 157445 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 149985 | 151046 | 148728 | 152316 | 147479 | 153594 | 146237                        | 154879 | 145002 | 156171 | 143775 | 157471 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 149960 | 151072 | 148703 | 152342 | 147454 | 153619 | 146212                        | 154905 | 144978 | 156197 | 143750 | 157497 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 149935 | 151097 | 148678 | 152367 | 147429 | 153645 | 146188                        | 154930 | 144953 | 156223 | 143726 | 157523 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 149909 | 151122 | 148653 | 152393 | 147404 | 153671 | 146163                        | 154956 | 144928 | 156249 | 143701 | 157549 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 149884 | 151148 | 148628 | 152418 | 147380 | 153696 | 146138                        | 154982 | 144904 | 156275 | 143677 | 157576 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 149859 | 151173 | 148603 | 152444 | 147355 | 153722 | 146113                        | 155008 | 144879 | 156301 | 143652 | 157602 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 149834 | 151198 | 148578 | 152469 | 147330 | 153748 | 146089                        | 155033 | 144855 | 156327 | 143628 | 157628 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 149809 | 151224 | 148553 | 152495 | 147305 | 153773 | 146064                        | 155059 | 144830 | 156353 | 143603 | 157654 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 149784 | 151249 | 148528 | 152520 | 147280 | 153799 | 146039                        | 155085 | 144805 | 156379 | 143579 | 157680 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 149758 | 151274 | 148503 | 152546 | 147255 | 153825 | 146014                        | 155111 | 144781 | 156405 | 143554 | 157706 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 149733 | 151300 | 148478 | 152571 | 147230 | 153850 | 145990                        | 155137 | 144756 | 156431 | 143530 | 157732 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 149708 | 151325 | 148453 | 152597 | 147205 | 153876 | 145965                        | 155162 | 144732 | 156457 | 143506 | 157758 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 149683 | 151350 | 148428 | 152622 | 147180 | 153902 | 145940                        | 155188 | 144707 | 156483 | 143481 | 157784 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 149658 | 151376 | 148403 | 152648 | 147156 | 153927 | 145915                        | 155214 | 144682 | 156509 | 143457 | 157810 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 149632 | 151401 | 148378 | 152673 | 147131 | 153953 | 145891                        | 155240 | 144658 | 156534 | 143432 | 157837 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 149607 | 151426 | 148353 | 152699 | 147106 | 153979 | 145866                        | 155266 | 144633 | 156560 | 143408 | 157863 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 149582 | 151452 | 148328 | 152724 | 147081 | 154004 | 145841                        | 155292 | 144609 | 156586 | 143383 | 157889 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 149557 | 151477 | 148303 | 152750 | 147056 | 154030 | 145817                        | 155317 | 144584 | 156612 | 143359 | 157915 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 149532 | 151503 | 148278 | 152775 | 147031 | 154056 | 145792                        | 155343 | 144560 | 156638 | 143334 | 157941 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 149507 | 151528 | 148253 | 152801 | 147006 | 154081 | 145767                        | 155369 | 144535 | 156664 | 143310 | 157967 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 149482 | 151553 | 148228 | 152826 | 146982 | 154107 | 145742                        | 155395 | 144510 | 156690 | 143286 | 157993 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 149456 | 151579 | 148203 | 152852 | 146957 | 154133 | 145718                        | 155421 | 144486 | 156716 | 143261 | 158020 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 149431 | 151604 | 148178 | 152878 | 146932 | 154158 | 145693                        | 155447 | 144461 | 156742 | 143237 | 158046 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 149406 | 151630 | 148153 | 152903 | 146907 | 154184 | 145668                        | 155472 | 144437 | 156768 | 143212 | 158072 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 149381 | 151655 | 148128 | 152929 | 146882 | 154210 | 145644                        | 155498 | 144412 | 156794 | 143188 | 158098 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 149356 | 151680 | 148103 | 152954 | 146857 | 154235 | 145619                        | 155524 | 144388 | 156820 | 143164 | 158124 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 149331 | 151706 | 148078 | 152980 | 146832 | 154261 | 145594                        | 155550 | 144363 | 156846 | 143139 | 158150 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 149306 | 151731 | 148053 | 153005 | 146808 | 154287 | 145569                        | 155576 | 144339 | 156872 | 143115 | 158176 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 149280 | 151757 | 148028 | 153031 | 146783 | 154312 | 145545                        | 155602 | 144314 | 156898 | 143090 | 158203 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 149255 | 151782 | 148003 | 153056 | 146758 | 154338 | 145520                        | 155628 | 144289 | 156924 | 143066 | 158229 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |
| 134°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |

| 46°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 143066 | 158229 | 141849 | 159541 | 140640 | 160860 | 139438                        | 162188 | 138242 | 163523 | 137054 | 164866 | 10  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 143042 | 158255 | 141825 | 159567 | 140616 | 160887 | 139414                        | 162214 | 138219 | 163550 | 137030 | 164893 | 9.8 |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 143017 | 158281 | 141801 | 159593 | 140592 | 160913 | 139390                        | 162241 | 138195 | 163577 | 137007 | 164920 | 9.6 |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 142993 | 158307 | 141777 | 159620 | 140568 | 160940 | 139366                        | 162268 | 138171 | 163603 | 136983 | 164947 | 9.4 |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 142968 | 158333 | 141752 | 159646 | 140544 | 160966 | 139342                        | 162294 | 138147 | 163630 | 136959 | 164974 | 9.2 |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 142944 | 158360 | 141728 | 159672 | 140520 | 160993 | 139318                        | 162321 | 138123 | 163657 | 136936 | 165001 | 9   |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 142920 | 158386 | 141704 | 159699 | 140495 | 161019 | 139294                        | 162348 | 138099 | 163684 | 136912 | 165028 | 8.8 |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 142895 | 158412 | 141680 | 159725 | 140471 | 161046 | 139270                        | 162374 | 138076 | 163710 | 136888 | 165055 | 8.6 |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 142871 | 158438 | 141656 | 159751 | 140447 | 161072 | 139246                        | 162401 | 138052 | 163737 | 136865 | 165081 | 8.4 |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 142846 | 158464 | 141631 | 159778 | 140423 | 161099 | 139222                        | 162428 | 138028 | 163764 | 136841 | 165108 | 8.2 |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 142822 | 158491 | 141607 | 159804 | 140399 | 161125 | 139198                        | 162454 | 138004 | 163791 | 136817 | 165135 | 8   |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 142798 | 158517 | 141583 | 159830 | 140375 | 161152 | 139174                        | 162481 | 137980 | 163818 | 136794 | 165162 | 7.8 |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 142773 | 158543 | 141559 | 159857 | 140351 | 161178 | 139150                        | 162508 | 137957 | 163845 | 136770 | 165189 | 7.6 |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 142749 | 158569 | 141534 | 159883 | 140327 | 161205 | 139126                        | 162534 | 137933 | 163871 | 136746 | 165216 | 7.4 |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 142725 | 158595 | 141510 | 159909 | 140303 | 161231 | 139102                        | 162561 | 137909 | 163898 | 136723 | 165243 | 7.2 |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 142700 | 158622 | 141486 | 159936 | 140279 | 161258 | 139078                        | 162588 | 137885 | 163925 | 136699 | 165270 | 7   |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 142676 | 158648 | 141462 | 159962 | 140255 | 161284 | 139055                        | 162614 | 137861 | 163952 | 136675 | 165297 | 6.8 |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 142652 | 158674 | 141438 | 159989 | 140231 | 161311 | 139031                        | 162641 | 137838 | 163979 | 136652 | 165324 | 6.6 |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 142627 | 158700 | 141413 | 160015 | 140206 | 161337 | 139007                        | 162668 | 137814 | 164005 | 136628 | 165351 | 6.4 |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 142603 | 158726 | 141389 | 160041 | 140182 | 161364 | 138983                        | 162694 | 137790 | 164032 | 136604 | 165378 | 6.2 |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 142578 | 158753 | 141365 | 160068 | 140158 | 161390 | 138959                        | 162721 | 137766 | 164059 | 136581 | 165405 | 6   |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 142554 | 158779 | 141341 | 160094 | 140134 | 161417 | 138935                        | 162748 | 137742 | 164086 | 136557 | 165432 | 5.8 |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 142530 | 158805 | 141317 | 160120 | 140110 | 161444 | 138911                        | 162774 | 137719 | 164113 | 136533 | 165459 | 5.6 |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 142505 | 158831 | 141292 | 160147 | 140086 | 161470 | 138887                        | 162801 | 137695 | 164140 | 136510 | 165486 | 5.4 |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 142481 | 158858 | 141268 | 160173 | 140062 | 161497 | 138863                        | 162828 | 137671 | 164167 | 136486 | 165513 | 5.2 |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 142457 | 158884 | 141244 | 160200 | 140038 | 161523 | 138839                        | 162854 | 137647 | 164193 | 136462 | 165540 | 5   |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 142432 | 158910 | 141220 | 160226 | 140014 | 161550 | 138815                        | 162881 | 137624 | 164220 | 136439 | 165567 | 4.8 |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 142408 | 158936 | 141196 | 160252 | 139990 | 161576 | 138791                        | 162908 | 137600 | 164247 | 136415 | 165594 | 4.6 |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 142384 | 158963 | 141171 | 160279 | 139966 | 161603 | 138768                        | 162935 | 137576 | 164274 | 136392 | 165621 | 4.4 |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 142360 | 158989 | 141147 | 160305 | 139942 | 161629 | 138744                        | 162961 | 137552 | 164301 | 136368 | 165648 | 4.2 |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 142335 | 159015 | 141123 | 160332 | 139918 | 161656 | 138720                        | 162988 | 137529 | 164328 | 136344 | 165675 | 4   |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 142311 | 159041 | 141099 | 160358 | 139894 | 161682 | 138696                        | 163015 | 137505 | 164355 | 136321 | 165702 | 3.8 |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 142287 | 159068 | 141075 | 160384 | 139870 | 161709 | 138672                        | 163041 | 137481 | 164382 | 136297 | 165729 | 3.6 |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 142262 | 159094 | 141051 | 160411 | 139846 | 161736 | 138648                        | 163068 | 137457 | 164408 | 136273 | 165757 | 3.4 |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 142238 | 159120 | 141026 | 160437 | 139822 | 161762 | 138624                        | 163095 | 137434 | 164435 | 136250 | 165784 | 3.2 |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 142214 | 159146 | 141002 | 160464 | 139798 | 161789 | 138600                        | 163122 | 137410 | 164462 | 136226 | 165811 | 3   |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 142189 | 159173 | 140978 | 160490 | 139774 | 161815 | 138576                        | 163148 | 137386 | 164489 | 136203 | 165838 | 2.8 |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 142165 | 159199 | 140954 | 160517 | 139750 | 161842 | 138553                        | 163175 | 137362 | 164516 | 136179 | 165865 | 2.6 |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 142141 | 159225 | 140930 | 160543 | 139726 | 161869 | 138529                        | 163202 | 137339 | 164543 | 136155 | 165892 | 2.4 |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 142116 | 159251 | 140906 | 160569 | 139702 | 161895 | 138505                        | 163229 | 137315 | 164570 | 136132 | 165919 | 2.2 |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 142092 | 159278 | 140881 | 160596 | 139678 | 161922 | 138481                        | 163255 | 137291 | 164597 | 136108 | 165946 | 2   |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 142068 | 159304 | 140857 | 160622 | 139654 | 161948 | 138457                        | 163282 | 137267 | 164624 | 136085 | 165973 | 1.8 |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 142044 | 159330 | 140833 | 160649 | 139630 | 161975 | 138433                        | 163309 | 137244 | 164650 | 136061 | 166000 | 1.6 |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 142019 | 159357 | 140809 | 160675 | 139606 | 162001 | 138409                        | 163336 | 137220 | 164677 | 136038 | 166027 | 1.4 |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 141995 | 159383 | 140785 | 160702 | 139582 | 162028 | 138386                        | 163362 | 137196 | 164704 | 136014 | 166054 | 1.2 |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 141971 | 159409 | 140761 | 160728 | 139558 | 162055 | 138362                        | 163389 | 137173 | 164731 | 135990 | 166081 | 1   |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 141947 | 159435 | 140737 | 160755 | 139534 | 162081 | 138338                        | 163416 | 137149 | 164758 | 135967 | 166108 | 0.8 |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 141922 | 159462 | 140712 | 160781 | 139510 | 162108 | 138314                        | 163443 | 137125 | 164785 | 135943 | 166135 | 0.6 |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 141898 | 159488 | 140688 | 160807 | 139486 | 162135 | 138290                        | 163469 | 137101 | 164812 | 135920 | 166162 | 0.4 |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 141874 | 159514 | 140664 | 160834 | 139462 | 162161 | 138266                        | 163496 | 137078 | 164839 | 135896 | 166190 | 0.2 |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 141849 | 159541 | 140640 | 160860 | 139438 | 162188 | 138242                        | 163523 | 137054 | 164866 | 135873 | 166217 | 0   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |
| 133°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |

| 47°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 135873 | 166217 | 134698 | 167575 | 133530 | 168942 | 132369                        | 170317 | 131215 | 171699 | 130067 | 173090 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 135849 | 166244 | 134674 | 167603 | 133507 | 168969 | 132346                        | 170344 | 131192 | 171727 | 130044 | 173118 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 135825 | 166271 | 134651 | 167630 | 133484 | 168997 | 132323                        | 170372 | 131169 | 171755 | 130022 | 173146 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 135802 | 166298 | 134628 | 167657 | 133460 | 169024 | 132300                        | 170399 | 131146 | 171783 | 129999 | 173174 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 135778 | 166325 | 134604 | 167684 | 133437 | 169052 | 132277                        | 170427 | 131123 | 171810 | 129976 | 173202 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 135755 | 166352 | 134581 | 167712 | 133414 | 169079 | 132253                        | 170455 | 131100 | 171838 | 129953 | 173230 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 135731 | 166379 | 134557 | 167739 | 133390 | 169107 | 132230                        | 170482 | 131077 | 171866 | 129930 | 173258 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 135708 | 166406 | 134534 | 167766 | 133367 | 169134 | 132207                        | 170510 | 131054 | 171894 | 129907 | 173286 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 135684 | 166434 | 134511 | 167793 | 133344 | 169161 | 132184                        | 170537 | 131031 | 171921 | 129884 | 173313 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 135661 | 166461 | 134487 | 167821 | 133321 | 169189 | 132161                        | 170565 | 131008 | 171949 | 129862 | 173341 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 135637 | 166488 | 134464 | 167848 | 133297 | 169216 | 132138                        | 170593 | 130985 | 171977 | 129839 | 173369 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 135614 | 166515 | 134440 | 167875 | 133274 | 169244 | 132115                        | 170620 | 130962 | 172005 | 129816 | 173397 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 135590 | 166542 | 134417 | 167903 | 133251 | 169271 | 132091                        | 170648 | 130939 | 172032 | 129793 | 173425 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 135566 | 166569 | 134394 | 167930 | 133228 | 169299 | 132068                        | 170675 | 130916 | 172060 | 129770 | 173453 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 135543 | 166596 | 134370 | 167957 | 133204 | 169326 | 132045                        | 170703 | 130893 | 172088 | 129747 | 173481 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 135519 | 166623 | 134347 | 167985 | 133181 | 169354 | 132022                        | 170731 | 130870 | 172116 | 129724 | 173509 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 135496 | 166651 | 134323 | 168012 | 133158 | 169381 | 131999                        | 170758 | 130847 | 172144 | 129702 | 173537 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 135472 | 166678 | 134300 | 168039 | 133135 | 169408 | 131976                        | 170786 | 130824 | 172171 | 129679 | 173565 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 135449 | 166705 | 134277 | 168066 | 133111 | 169436 | 131953                        | 170813 | 130801 | 172199 | 129656 | 173593 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 135425 | 166732 | 134253 | 168094 | 133088 | 169463 | 131930                        | 170841 | 130778 | 172227 | 129633 | 173621 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 135402 | 166759 | 134230 | 168121 | 133065 | 169491 | 131907                        | 170869 | 130755 | 172255 | 129610 | 173649 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 135378 | 166786 | 134207 | 168148 | 133042 | 169518 | 131884                        | 170896 | 130732 | 172282 | 129587 | 173677 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 135355 | 166814 | 134183 | 168176 | 133018 | 169546 | 131860                        | 170924 | 130709 | 172310 | 129565 | 173705 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 135331 | 166841 | 134160 | 168203 | 132995 | 169573 | 131837                        | 170952 | 130686 | 172338 | 129542 | 173733 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 135308 | 166868 | 134137 | 168230 | 132972 | 169601 | 131814                        | 170979 | 130663 | 172366 | 129519 | 173761 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 135284 | 166895 | 134113 | 168258 | 132949 | 169628 | 131791                        | 171007 | 130640 | 172394 | 129496 | 173789 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 135261 | 166922 | 134090 | 168285 | 132926 | 169656 | 131768                        | 171035 | 130617 | 172422 | 129473 | 173817 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 135237 | 166949 | 134066 | 168312 | 132902 | 169683 | 131745                        | 171062 | 130594 | 172449 | 129450 | 173845 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 135214 | 166977 | 134043 | 168340 | 132879 | 169711 | 131722                        | 171090 | 130571 | 172477 | 129428 | 173873 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 135190 | 167004 | 134020 | 168367 | 132856 | 169738 | 131699                        | 171118 | 130549 | 172505 | 129405 | 173901 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 135167 | 167031 | 133996 | 168394 | 132833 | 169766 | 131676                        | 171145 | 130526 | 172533 | 129382 | 173929 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 135143 | 167058 | 133973 | 168422 | 132809 | 169793 | 131653                        | 171173 | 130503 | 172561 | 129359 | 173957 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 135120 | 167085 | 133950 | 168449 | 132786 | 169821 | 131630                        | 171201 | 130480 | 172589 | 129336 | 173985 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 135097 | 167113 | 133926 | 168476 | 132763 | 169848 | 131607                        | 171228 | 130457 | 172616 | 129314 | 174013 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 135073 | 167140 | 133903 | 168504 | 132740 | 169876 | 131584                        | 171256 | 130434 | 172644 | 129291 | 174041 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 135050 | 167167 | 133880 | 168531 | 132717 | 169903 | 131560                        | 171284 | 130411 | 172672 | 129268 | 174069 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 135026 | 167194 | 133856 | 168559 | 132694 | 169931 | 131537                        | 171311 | 130388 | 172700 | 129245 | 174097 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 135003 | 167221 | 133833 | 168586 | 132670 | 169958 | 131514                        | 171339 | 130365 | 172728 | 129223 | 174125 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 134979 | 167249 | 133810 | 168613 | 132647 | 169986 | 131491                        | 171367 | 130342 | 172756 | 129200 | 174153 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 134956 | 167276 | 133786 | 168641 | 132624 | 170014 | 131468                        | 171394 | 130319 | 172783 | 129177 | 174181 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 134932 | 167303 | 133763 | 168668 | 132601 | 170041 | 131445                        | 171422 | 130296 | 172811 | 129154 | 174209 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 134909 | 167330 | 133740 | 168695 | 132578 | 170069 | 131422                        | 171450 | 130273 | 172839 | 129131 | 174237 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 134885 | 167357 | 133717 | 168723 | 132554 | 170096 | 131399                        | 171478 | 130251 | 172867 | 129109 | 174265 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 134862 | 167385 | 133693 | 168750 | 132531 | 170124 | 131376                        | 171505 | 130228 | 172895 | 129086 | 174293 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 134839 | 167412 | 133670 | 168778 | 132508 | 170151 | 131353                        | 171533 | 130205 | 172923 | 129063 | 174321 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 134815 | 167439 | 133647 | 168805 | 132485 | 170179 | 131330                        | 171561 | 130182 | 172951 | 129040 | 174349 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 134792 | 167466 | 133623 | 168832 | 132462 | 170206 | 131307                        | 171588 | 130159 | 172979 | 129018 | 174377 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 134768 | 167494 | 133600 | 168860 | 132439 | 170234 | 131284                        | 171616 | 130136 | 173006 | 128995 | 174405 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 134745 | 167521 | 133577 | 168887 | 132415 | 170262 | 131261                        | 171644 | 130113 | 173034 | 128972 | 174433 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 134721 | 167548 | 133553 | 168915 | 132392 | 170289 | 131238                        | 171672 | 130090 | 173062 | 128949 | 174461 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 134698 | 167575 | 133530 | 168942 | 132369 | 170317 | 131215                        | 171699 | 130067 | 173090 | 128927 | 174489 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 132°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 48°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 128927 | 174489 | 127792 | 175896 | 126665 | 177312 | 125544                        | 178735 | 124429 | 180168 | 123322 | 181608 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 128904 | 174517 | 127770 | 175924 | 126642 | 177340 | 125522                        | 178764 | 124407 | 180196 | 123299 | 181637 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 128881 | 174545 | 127747 | 175953 | 126620 | 177368 | 125499                        | 178793 | 124385 | 180225 | 123277 | 181666 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 128858 | 174573 | 127725 | 175981 | 126597 | 177397 | 125477                        | 178821 | 124363 | 180254 | 123255 | 181695 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 128836 | 174601 | 127702 | 176009 | 126575 | 177425 | 125454                        | 178850 | 124341 | 180282 | 123233 | 181724 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 128813 | 174629 | 127679 | 176037 | 126552 | 177454 | 125432                        | 178878 | 124318 | 180311 | 123211 | 181753 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 128790 | 174658 | 127657 | 176066 | 126530 | 177482 | 125410                        | 178907 | 124296 | 180340 | 123189 | 181782 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 128767 | 174686 | 127634 | 176094 | 126507 | 177511 | 125387                        | 178935 | 124274 | 180369 | 123167 | 181810 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 128745 | 174714 | 127612 | 176122 | 126485 | 177539 | 125365                        | 178964 | 124252 | 180397 | 123145 | 181839 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 128722 | 174742 | 127589 | 176150 | 126463 | 177567 | 125343                        | 178993 | 124230 | 180426 | 123123 | 181868 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 128699 | 174770 | 127566 | 176179 | 126440 | 177596 | 125320                        | 179021 | 124207 | 180455 | 123101 | 181897 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 128676 | 174798 | 127544 | 176207 | 126418 | 177624 | 125298                        | 179050 | 124185 | 180484 | 123079 | 181926 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 128654 | 174826 | 127521 | 176235 | 126395 | 177653 | 125276                        | 179078 | 124163 | 180512 | 123057 | 181955 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 128631 | 174854 | 127499 | 176263 | 126373 | 177681 | 125253                        | 179107 | 124141 | 180541 | 123035 | 181984 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 128608 | 174882 | 127476 | 176292 | 126350 | 177709 | 125231                        | 179136 | 124119 | 180570 | 123013 | 182013 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 128586 | 174910 | 127453 | 176320 | 126328 | 177738 | 125209                        | 179164 | 124096 | 180599 | 122990 | 182042 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 128563 | 174939 | 127431 | 176348 | 126305 | 177766 | 125187                        | 179193 | 124074 | 180628 | 122968 | 182071 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 128540 | 174967 | 127408 | 176377 | 126283 | 177795 | 125164                        | 179221 | 124052 | 180656 | 122946 | 182100 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 128517 | 174995 | 127386 | 176405 | 126261 | 177823 | 125142                        | 179250 | 124030 | 180685 | 122924 | 182129 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 128495 | 175023 | 127363 | 176433 | 126238 | 177852 | 125120                        | 179279 | 124008 | 180714 | 122902 | 182158 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 128472 | 175051 | 127341 | 176461 | 126216 | 177880 | 125097                        | 179307 | 123986 | 180743 | 122880 | 182187 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 128449 | 175079 | 127318 | 176490 | 126193 | 177909 | 125075                        | 179336 | 123963 | 180772 | 122858 | 182216 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 128427 | 175107 | 127295 | 176518 | 126171 | 177937 | 125053                        | 179365 | 123941 | 180800 | 122836 | 182245 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 128404 | 175135 | 127273 | 176546 | 126148 | 177966 | 125030                        | 179393 | 123919 | 180829 | 122814 | 182274 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 128381 | 175164 | 127250 | 176575 | 126126 | 177994 | 125008                        | 179422 | 123897 | 180858 | 122792 | 182303 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 128359 | 175192 | 127228 | 176603 | 126104 | 178023 | 124986                        | 179450 | 123875 | 180887 | 122770 | 182332 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 128336 | 175220 | 127205 | 176631 | 126081 | 178051 | 124964                        | 179479 | 123853 | 180916 | 122748 | 182360 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 128313 | 175248 | 127183 | 176660 | 126059 | 178079 | 124941                        | 179508 | 123830 | 180944 | 122726 | 182389 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 128291 | 175276 | 127160 | 176688 | 126036 | 178108 | 124919                        | 179536 | 123808 | 180973 | 122704 | 182418 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 128268 | 175304 | 127138 | 176716 | 126014 | 178136 | 124897                        | 179565 | 123786 | 181002 | 122682 | 182447 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 128245 | 175332 | 127115 | 176745 | 125991 | 178165 | 124874                        | 179594 | 123764 | 181031 | 122660 | 182476 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 128223 | 175361 | 127093 | 176773 | 125969 | 178193 | 124852                        | 179622 | 123742 | 181060 | 122638 | 182505 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 128200 | 175389 | 127070 | 176801 | 125947 | 178222 | 124830                        | 179651 | 123720 | 181089 | 122616 | 182534 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 128177 | 175417 | 127047 | 176830 | 125924 | 178250 | 124808                        | 179680 | 123698 | 181117 | 122594 | 182563 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 128155 | 175445 | 127025 | 176858 | 125902 | 178279 | 124785                        | 179708 | 123675 | 181146 | 122572 | 182592 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 128132 | 175473 | 127002 | 176886 | 125879 | 178307 | 124763                        | 179737 | 123653 | 181175 | 122550 | 182621 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 128109 | 175501 | 126980 | 176915 | 125857 | 178336 | 124741                        | 179766 | 123631 | 181204 | 122528 | 182651 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 128087 | 175530 | 126957 | 176943 | 125835 | 178364 | 124719                        | 179794 | 123609 | 181233 | 122506 | 182680 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 128064 | 175558 | 126935 | 176971 | 125812 | 178393 | 124696                        | 179823 | 123587 | 181262 | 122484 | 182709 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 128041 | 175586 | 126912 | 177000 | 125790 | 178421 | 124674                        | 179852 | 123565 | 181290 | 122462 | 182738 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 128019 | 175614 | 126890 | 177028 | 125768 | 178450 | 124652                        | 179880 | 123543 | 181319 | 122440 | 182767 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 127996 | 175642 | 126867 | 177056 | 125745 | 178479 | 124630                        | 179909 | 123520 | 181348 | 122418 | 182796 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 127973 | 175671 | 126845 | 177085 | 125723 | 178507 | 124607                        | 179938 | 123498 | 181377 | 122396 | 182825 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 127951 | 175699 | 126822 | 177113 | 125700 | 178536 | 124585                        | 179967 | 123476 | 181406 | 122374 | 182854 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 127928 | 175727 | 126800 | 177141 | 125678 | 178564 | 124563                        | 179995 | 123454 | 181435 | 122352 | 182883 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 127905 | 175755 | 126777 | 177170 | 125656 | 178593 | 124541                        | 180024 | 123432 | 181464 | 122330 | 182912 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 127883 | 175783 | 126755 | 177198 | 125633 | 178621 | 124518                        | 180053 | 123410 | 181493 | 122308 | 182941 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 127860 | 175812 | 126732 | 177227 | 125611 | 178650 | 124496                        | 180081 | 123388 | 181521 | 122286 | 182970 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 127838 | 175840 | 126710 | 177255 | 125589 | 178678 | 124474                        | 180110 | 123366 | 181550 | 122264 | 182999 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 127815 | 175868 | 126687 | 177283 | 125566 | 178707 | 124452                        | 180139 | 123344 | 181579 | 122242 | 183028 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 127792 | 175896 | 126665 | 177312 | 125544 | 178735 | 124429                        | 180168 | 123322 | 181608 | 122220 | 183057 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ' ↑ |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 131°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 49°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 122220 | 183057 | 121125 | 184515 | 120037 | 185981 | 118954                        | 187456 | 117879 | 188939 | 116809 | 190431 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 122198 | 183086 | 121103 | 184544 | 120015 | 186010 | 118933                        | 187485 | 117857 | 188969 | 116788 | 190461 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 122176 | 183115 | 121082 | 184573 | 119993 | 186040 | 118911                        | 187515 | 117836 | 188999 | 116767 | 190491 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 122154 | 183144 | 121060 | 184602 | 119972 | 186069 | 118890                        | 187544 | 117814 | 189028 | 116745 | 190521 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 122132 | 183173 | 121038 | 184632 | 119950 | 186098 | 118868                        | 187574 | 117793 | 189058 | 116724 | 190551 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 122110 | 183202 | 121016 | 184661 | 119928 | 186128 | 118847                        | 187604 | 117771 | 189088 | 116703 | 190581 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 122088 | 183232 | 120994 | 184690 | 119906 | 186157 | 118825                        | 187633 | 117750 | 189118 | 116681 | 190611 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 122066 | 183261 | 120972 | 184719 | 119885 | 186187 | 118803                        | 187663 | 117729 | 189147 | 116660 | 190641 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 122045 | 183290 | 120951 | 184749 | 119863 | 186216 | 118782                        | 187692 | 117707 | 189177 | 116639 | 190671 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 122023 | 183319 | 120929 | 184778 | 119841 | 186246 | 118760                        | 187722 | 117686 | 189207 | 116617 | 190701 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 122001 | 183348 | 120907 | 184807 | 119820 | 186275 | 118739                        | 187752 | 117664 | 189237 | 116596 | 190731 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 121979 | 183377 | 120885 | 184836 | 119798 | 186304 | 118717                        | 187781 | 117643 | 189267 | 116575 | 190761 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 121957 | 183406 | 120863 | 184866 | 119776 | 186334 | 118696                        | 187811 | 117621 | 189296 | 116553 | 190791 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 121935 | 183435 | 120842 | 184895 | 119755 | 186363 | 118674                        | 187840 | 117600 | 189326 | 116532 | 190821 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 121913 | 183464 | 120820 | 184924 | 119733 | 186393 | 118653                        | 187870 | 117579 | 189356 | 116511 | 190851 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 121891 | 183493 | 120798 | 184954 | 119711 | 186422 | 118631                        | 187900 | 117557 | 189386 | 116490 | 190881 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 121869 | 183523 | 120776 | 184983 | 119690 | 186452 | 118610                        | 187929 | 117536 | 189416 | 116468 | 190911 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 121847 | 183552 | 120754 | 185012 | 119668 | 186481 | 118588                        | 187959 | 117514 | 189445 | 116447 | 190941 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 121825 | 183581 | 120733 | 185041 | 119646 | 186511 | 118566                        | 187989 | 117493 | 189475 | 116426 | 190971 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 121803 | 183610 | 120711 | 185071 | 119625 | 186540 | 118545                        | 188018 | 117472 | 189505 | 116404 | 191001 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 121781 | 183639 | 120689 | 185100 | 119603 | 186570 | 118523                        | 188048 | 117450 | 189535 | 116383 | 191031 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 121759 | 183668 | 120667 | 185129 | 119581 | 186599 | 118502                        | 188078 | 117429 | 189565 | 116362 | 191061 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 121738 | 183697 | 120645 | 185159 | 119560 | 186629 | 118480                        | 188107 | 117407 | 189595 | 116341 | 191091 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 121716 | 183726 | 120624 | 185188 | 119538 | 186658 | 118459                        | 188137 | 117386 | 189624 | 116319 | 191121 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 121694 | 183756 | 120602 | 185217 | 119516 | 186688 | 118437                        | 188167 | 117365 | 189654 | 116298 | 191151 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 121672 | 183785 | 120580 | 185247 | 119495 | 186717 | 118416                        | 188196 | 117343 | 189684 | 116277 | 191181 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 121650 | 183814 | 120558 | 185276 | 119473 | 186747 | 118394                        | 188226 | 117322 | 189714 | 116256 | 191211 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 121628 | 183843 | 120537 | 185305 | 119451 | 186776 | 118373                        | 188256 | 117300 | 189744 | 116234 | 191241 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 121606 | 183872 | 120515 | 185335 | 119430 | 186806 | 118351                        | 188285 | 117279 | 189774 | 116213 | 191271 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 121584 | 183901 | 120493 | 185364 | 119408 | 186835 | 118330                        | 188315 | 117258 | 189804 | 116192 | 191301 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 121562 | 183931 | 120471 | 185393 | 119387 | 186865 | 118308                        | 188345 | 117236 | 189833 | 116171 | 191331 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 121541 | 183960 | 120450 | 185423 | 119365 | 186894 | 118287                        | 188374 | 117215 | 189863 | 116149 | 191361 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 121519 | 183989 | 120428 | 185452 | 119343 | 186924 | 118265                        | 188404 | 117193 | 189893 | 116128 | 191391 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 121497 | 184018 | 120406 | 185481 | 119322 | 186953 | 118244                        | 188434 | 117172 | 189923 | 116107 | 191421 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 121475 | 184047 | 120384 | 185511 | 119300 | 186983 | 118222                        | 188463 | 117151 | 189953 | 116086 | 191451 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 121453 | 184076 | 120363 | 185540 | 119278 | 187012 | 118201                        | 188493 | 117129 | 189983 | 116064 | 191481 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 121431 | 184106 | 120341 | 185569 | 119257 | 187042 | 118179                        | 188523 | 117108 | 190013 | 116043 | 191511 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 121409 | 184135 | 120319 | 185599 | 119235 | 187071 | 118158                        | 188553 | 117087 | 190043 | 116022 | 191541 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 121387 | 184164 | 120297 | 185628 | 119214 | 187101 | 118136                        | 188582 | 117065 | 190072 | 116001 | 191571 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 121366 | 184193 | 120276 | 185657 | 119192 | 187130 | 118115                        | 188612 | 117044 | 190102 | 115979 | 191601 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 121344 | 184222 | 120254 | 185687 | 119170 | 187160 | 118093                        | 188642 | 117023 | 190132 | 115958 | 191632 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 121322 | 184252 | 120232 | 185716 | 119149 | 187189 | 118072                        | 188671 | 117001 | 190162 | 115937 | 191662 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 121300 | 184281 | 120210 | 185746 | 119127 | 187219 | 118050                        | 188701 | 116980 | 190192 | 115916 | 191692 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 121278 | 184310 | 120189 | 185775 | 119106 | 187249 | 118029                        | 188731 | 116959 | 190222 | 115895 | 191722 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 121256 | 184339 | 120167 | 185804 | 119084 | 187278 | 118007                        | 188761 | 116937 | 190252 | 115873 | 191752 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 121234 | 184368 | 120145 | 185834 | 119062 | 187308 | 117986                        | 188790 | 116916 | 190282 | 115852 | 191782 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 121213 | 184398 | 120123 | 185863 | 119041 | 187337 | 117965                        | 188820 | 116895 | 190312 | 115831 | 191812 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 121191 | 184427 | 120102 | 185893 | 119019 | 187367 | 117943                        | 188850 | 116873 | 190342 | 115810 | 191842 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 121169 | 184456 | 120080 | 185922 | 118998 | 187396 | 117922                        | 188880 | 116852 | 190372 | 115788 | 191872 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 121147 | 184485 | 120058 | 185951 | 118976 | 187426 | 117900                        | 188909 | 116831 | 190401 | 115767 | 191902 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 121125 | 184515 | 120037 | 185981 | 118954 | 187456 | 117879                        | 188939 | 116809 | 190431 | 115746 | 191933 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 130°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 50°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 115746 | 191933 | 114689 | 193443 | 113638 | 194961 | 112594                        | 196489 | 111556 | 198027 | 110523 | 199573 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 115725 | 191963 | 114668 | 193473 | 113617 | 194992 | 112573                        | 196520 | 111535 | 198057 | 110503 | 199604 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 115704 | 191993 | 114647 | 193503 | 113597 | 195022 | 112552                        | 196551 | 111514 | 198088 | 110482 | 199635 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 115682 | 192023 | 114626 | 193533 | 113576 | 195053 | 112531                        | 196581 | 111494 | 198119 | 110462 | 199666 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 115661 | 192053 | 114605 | 193564 | 113555 | 195083 | 112511                        | 196612 | 111473 | 198150 | 110441 | 199697 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 115640 | 192083 | 114584 | 193594 | 113534 | 195114 | 112490                        | 196643 | 111452 | 198181 | 110421 | 199728 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 115619 | 192113 | 114563 | 193624 | 113513 | 195144 | 112469                        | 196673 | 111431 | 198212 | 110400 | 199759 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 115598 | 192143 | 114542 | 193655 | 113492 | 195175 | 112448                        | 196704 | 111411 | 198242 | 110379 | 199790 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 115577 | 192174 | 114521 | 193685 | 113471 | 195205 | 112427                        | 196735 | 111390 | 198273 | 110359 | 199821 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 115555 | 192204 | 114500 | 193715 | 113450 | 195236 | 112407                        | 196765 | 111369 | 198304 | 110338 | 199852 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 115534 | 192234 | 114478 | 193746 | 113429 | 195266 | 112386                        | 196796 | 111349 | 198335 | 110318 | 199883 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 115513 | 192264 | 114457 | 193776 | 113408 | 195297 | 112365                        | 196827 | 111328 | 198366 | 110297 | 199914 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 115492 | 192294 | 114436 | 193806 | 113387 | 195327 | 112344                        | 196858 | 111307 | 198397 | 110277 | 199945 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 115471 | 192324 | 114415 | 193837 | 113366 | 195358 | 112323                        | 196888 | 111287 | 198428 | 110256 | 199976 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 115449 | 192354 | 114394 | 193867 | 113345 | 195388 | 112303                        | 196919 | 111266 | 198459 | 110236 | 200007 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 115428 | 192385 | 114373 | 193897 | 113324 | 195419 | 112282                        | 196950 | 111245 | 198489 | 110215 | 200038 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 115407 | 192415 | 114352 | 193928 | 113304 | 195449 | 112261                        | 196980 | 111225 | 198520 | 110194 | 200069 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 115386 | 192445 | 114331 | 193958 | 113283 | 195480 | 112240                        | 197011 | 111204 | 198551 | 110174 | 200101 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 115365 | 192475 | 114310 | 193988 | 113262 | 195511 | 112219                        | 197042 | 111183 | 198582 | 110153 | 200132 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 115344 | 192505 | 114289 | 194019 | 113241 | 195541 | 112199                        | 197072 | 111163 | 198613 | 110133 | 200163 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 115323 | 192535 | 114268 | 194049 | 113220 | 195572 | 112178                        | 197103 | 111142 | 198644 | 110112 | 200194 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 115301 | 192566 | 114247 | 194079 | 113199 | 195602 | 112157                        | 197134 | 111121 | 198675 | 110092 | 200225 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 115280 | 192596 | 114226 | 194110 | 113178 | 195633 | 112136                        | 197165 | 111101 | 198706 | 110071 | 200256 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 115259 | 192626 | 114205 | 194140 | 113157 | 195663 | 112116                        | 197195 | 111080 | 198737 | 110051 | 200287 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 115238 | 192656 | 114184 | 194171 | 113136 | 195694 | 112095                        | 197226 | 111059 | 198768 | 110030 | 200318 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 115217 | 192686 | 114163 | 194201 | 113115 | 195724 | 112074                        | 197257 | 111039 | 198799 | 110010 | 200349 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 115196 | 192717 | 114142 | 194231 | 113095 | 195755 | 112053                        | 197288 | 111018 | 198829 | 109989 | 200380 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 115175 | 192747 | 114121 | 194262 | 113074 | 195785 | 112032                        | 197318 | 110997 | 198860 | 109969 | 200412 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 115153 | 192777 | 114100 | 194292 | 113053 | 195816 | 112012                        | 197349 | 110977 | 198891 | 109948 | 200443 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 115132 | 192807 | 114079 | 194322 | 113032 | 195847 | 111991                        | 197380 | 110956 | 198922 | 109928 | 200474 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 115111 | 192837 | 114058 | 194353 | 113011 | 195877 | 111970                        | 197411 | 110936 | 198953 | 109907 | 200505 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 115090 | 192868 | 114037 | 194383 | 112990 | 195908 | 111949                        | 197441 | 110915 | 198984 | 109887 | 200536 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 115069 | 192898 | 114016 | 194414 | 112969 | 195938 | 111929                        | 197472 | 110894 | 199015 | 109866 | 200567 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 115048 | 192928 | 113995 | 194444 | 112948 | 195969 | 111908                        | 197503 | 110874 | 199046 | 109846 | 200598 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 115027 | 192958 | 113974 | 194474 | 112928 | 196000 | 111887                        | 197534 | 110853 | 199077 | 109825 | 200629 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 115006 | 192989 | 113953 | 194505 | 112907 | 196030 | 111866                        | 197564 | 110832 | 199108 | 109805 | 200661 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 114984 | 193019 | 113932 | 194535 | 112886 | 196061 | 111846                        | 197595 | 110812 | 199139 | 109784 | 200692 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 114963 | 193049 | 113911 | 194566 | 112865 | 196091 | 111825                        | 197626 | 110791 | 199170 | 109764 | 200723 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 114942 | 193079 | 113890 | 194596 | 112844 | 196122 | 111804                        | 197657 | 110771 | 199201 | 109743 | 200754 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 114921 | 193110 | 113869 | 194627 | 112823 | 196153 | 111784                        | 197688 | 110750 | 199232 | 109723 | 200785 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 114900 | 193140 | 113848 | 194657 | 112802 | 196183 | 111763                        | 197718 | 110729 | 199263 | 109702 | 200816 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 114879 | 193170 | 113827 | 194687 | 112781 | 196214 | 111742                        | 197749 | 110709 | 199294 | 109682 | 200848 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 114858 | 193200 | 113806 | 194718 | 112761 | 196244 | 111721                        | 197780 | 110688 | 199325 | 109661 | 200879 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 114837 | 193231 | 113785 | 194748 | 112740 | 196275 | 111701                        | 197811 | 110668 | 199356 | 109641 | 200910 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 114816 | 193261 | 113764 | 194779 | 112719 | 196306 | 111680                        | 197842 | 110647 | 199387 | 109620 | 200941 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 114795 | 193291 | 113743 | 194809 | 112698 | 196336 | 111659                        | 197872 | 110626 | 199418 | 109600 | 200972 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 114773 | 193321 | 113722 | 194840 | 112677 | 196367 | 111638                        | 197903 | 110606 | 199449 | 109579 | 201003 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 114752 | 193352 | 113701 | 194870 | 112656 | 196398 | 111618                        | 197934 | 110585 | 199480 | 109559 | 201035 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 114731 | 193382 | 113680 | 194901 | 112636 | 196428 | 111597                        | 197965 | 110565 | 199511 | 109538 | 201066 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 114710 | 193412 | 113659 | 194931 | 112615 | 196459 | 111576                        | 197996 | 110544 | 199542 | 109518 | 201097 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 114689 | 193443 | 113638 | 194961 | 112594 | 196489 | 111556                        | 198027 | 110523 | 199573 | 109497 | 201128 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 129°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 51°                                                                                                                               |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|------------------------------------------------|--------|--------|--------|--------|--------|-----|--|--|--|--|--|--|--|--|--|--|--|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                                            |        | 40'    |        | 50'    |        |     |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                                              | B      | A      | B      | A      | B      |     |  |  |  |  |  |  |  |  |  |  |  |
| 0                                                                                                                                 | 109497 | 201128 | 108477 | 202693 | 107464 | 204267 | 106456                                         | 205850 | 105454 | 207443 | 104458 | 209046 | 10  |  |  |  |  |  |  |  |  |  |  |  |
| 0.2                                                                                                                               | 109477 | 201159 | 108457 | 202724 | 107443 | 204299 | 106436                                         | 205882 | 105434 | 207475 | 104438 | 209078 | 9.8 |  |  |  |  |  |  |  |  |  |  |  |
| 0.4                                                                                                                               | 109456 | 201191 | 108437 | 202756 | 107423 | 204330 | 106415                                         | 205914 | 105414 | 207507 | 104418 | 209110 | 9.6 |  |  |  |  |  |  |  |  |  |  |  |
| 0.6                                                                                                                               | 109436 | 201222 | 108416 | 202787 | 107403 | 204362 | 106395                                         | 205946 | 105394 | 207539 | 104398 | 209142 | 9.4 |  |  |  |  |  |  |  |  |  |  |  |
| 0.8                                                                                                                               | 109416 | 201253 | 108396 | 202818 | 107383 | 204393 | 106375                                         | 205978 | 105374 | 207571 | 104378 | 209175 | 9.2 |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                 | 109395 | 201284 | 108376 | 202850 | 107362 | 204425 | 106355                                         | 206009 | 105354 | 207603 | 104359 | 209207 | 9   |  |  |  |  |  |  |  |  |  |  |  |
| 1.2                                                                                                                               | 109375 | 201315 | 108355 | 202881 | 107342 | 204456 | 106335                                         | 206041 | 105334 | 207635 | 104339 | 209239 | 8.8 |  |  |  |  |  |  |  |  |  |  |  |
| 1.4                                                                                                                               | 109354 | 201347 | 108335 | 202913 | 107322 | 204488 | 106315                                         | 206073 | 105314 | 207667 | 104319 | 209271 | 8.6 |  |  |  |  |  |  |  |  |  |  |  |
| 1.6                                                                                                                               | 109334 | 201378 | 108315 | 202944 | 107302 | 204520 | 106295                                         | 206105 | 105294 | 207699 | 104299 | 209303 | 8.4 |  |  |  |  |  |  |  |  |  |  |  |
| 1.8                                                                                                                               | 109313 | 201409 | 108294 | 202976 | 107282 | 204551 | 106275                                         | 206136 | 105274 | 207731 | 104279 | 209335 | 8.2 |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                 | 109293 | 201440 | 108274 | 203007 | 107261 | 204583 | 106255                                         | 206168 | 105254 | 207763 | 104259 | 209368 | 8   |  |  |  |  |  |  |  |  |  |  |  |
| 2.2                                                                                                                               | 109272 | 201472 | 108254 | 203038 | 107241 | 204615 | 106235                                         | 206200 | 105234 | 207795 | 104240 | 209400 | 7.8 |  |  |  |  |  |  |  |  |  |  |  |
| 2.4                                                                                                                               | 109252 | 201503 | 108234 | 203070 | 107221 | 204646 | 106215                                         | 206232 | 105214 | 207827 | 104220 | 209432 | 7.6 |  |  |  |  |  |  |  |  |  |  |  |
| 2.6                                                                                                                               | 109232 | 201534 | 108213 | 203101 | 107201 | 204678 | 106195                                         | 206264 | 105194 | 207859 | 104200 | 209464 | 7.4 |  |  |  |  |  |  |  |  |  |  |  |
| 2.8                                                                                                                               | 109211 | 201565 | 108193 | 203133 | 107181 | 204709 | 106174                                         | 206296 | 105174 | 207891 | 104180 | 209496 | 7.2 |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                 | 109191 | 201597 | 108173 | 203164 | 107161 | 204741 | 106154                                         | 206327 | 105154 | 207923 | 104160 | 209529 | 7   |  |  |  |  |  |  |  |  |  |  |  |
| 3.2                                                                                                                               | 109170 | 201628 | 108152 | 203196 | 107140 | 204773 | 106134                                         | 206359 | 105134 | 207955 | 104140 | 209561 | 6.8 |  |  |  |  |  |  |  |  |  |  |  |
| 3.4                                                                                                                               | 109150 | 201659 | 108132 | 203227 | 107120 | 204804 | 106114                                         | 206391 | 105114 | 207987 | 104121 | 209593 | 6.6 |  |  |  |  |  |  |  |  |  |  |  |
| 3.6                                                                                                                               | 109130 | 201690 | 108112 | 203258 | 107100 | 204836 | 106094                                         | 206423 | 105095 | 208019 | 104101 | 209625 | 6.4 |  |  |  |  |  |  |  |  |  |  |  |
| 3.8                                                                                                                               | 109109 | 201722 | 108091 | 203290 | 107080 | 204868 | 106074                                         | 206455 | 105075 | 208051 | 104081 | 209657 | 6.2 |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                 | 109089 | 201753 | 108071 | 203321 | 107060 | 204899 | 106054                                         | 206486 | 105055 | 208083 | 104061 | 209690 | 6   |  |  |  |  |  |  |  |  |  |  |  |
| 4.2                                                                                                                               | 109068 | 201784 | 108051 | 203353 | 107039 | 204931 | 106034                                         | 206518 | 105035 | 208115 | 104041 | 209722 | 5.8 |  |  |  |  |  |  |  |  |  |  |  |
| 4.4                                                                                                                               | 109048 | 201816 | 108031 | 203384 | 107019 | 204963 | 106014                                         | 206550 | 105015 | 208147 | 104022 | 209754 | 5.6 |  |  |  |  |  |  |  |  |  |  |  |
| 4.6                                                                                                                               | 109027 | 201847 | 108010 | 203416 | 106999 | 204994 | 105994                                         | 206582 | 104995 | 208179 | 104002 | 209786 | 5.4 |  |  |  |  |  |  |  |  |  |  |  |
| 4.8                                                                                                                               | 109007 | 201878 | 107990 | 203447 | 106979 | 205026 | 105974                                         | 206614 | 104975 | 208211 | 103982 | 209819 | 5.2 |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                 | 108987 | 201909 | 107970 | 203479 | 106959 | 205058 | 105954                                         | 206646 | 104955 | 208243 | 103962 | 209851 | 5   |  |  |  |  |  |  |  |  |  |  |  |
| 5.2                                                                                                                               | 108966 | 201941 | 107949 | 203510 | 106939 | 205089 | 105934                                         | 206678 | 104935 | 208275 | 103942 | 209883 | 4.8 |  |  |  |  |  |  |  |  |  |  |  |
| 5.4                                                                                                                               | 108946 | 201972 | 107929 | 203542 | 106919 | 205121 | 105914                                         | 206709 | 104915 | 208308 | 103923 | 209915 | 4.6 |  |  |  |  |  |  |  |  |  |  |  |
| 5.6                                                                                                                               | 108925 | 202003 | 107909 | 203573 | 106898 | 205153 | 105894                                         | 206741 | 104895 | 208340 | 103903 | 209947 | 4.4 |  |  |  |  |  |  |  |  |  |  |  |
| 5.8                                                                                                                               | 108905 | 202035 | 107889 | 203605 | 106878 | 205184 | 105874                                         | 206773 | 104875 | 208372 | 103883 | 209980 | 4.2 |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                 | 108885 | 202066 | 107868 | 203636 | 106858 | 205216 | 105854                                         | 206805 | 104855 | 208404 | 103863 | 210012 | 4   |  |  |  |  |  |  |  |  |  |  |  |
| 6.2                                                                                                                               | 108864 | 202097 | 107848 | 203668 | 106838 | 205248 | 105834                                         | 206837 | 104836 | 208436 | 103843 | 210044 | 3.8 |  |  |  |  |  |  |  |  |  |  |  |
| 6.4                                                                                                                               | 108844 | 202129 | 107828 | 203699 | 106818 | 205279 | 105814                                         | 206869 | 104816 | 208468 | 103824 | 210077 | 3.6 |  |  |  |  |  |  |  |  |  |  |  |
| 6.6                                                                                                                               | 108824 | 202160 | 107808 | 203731 | 106798 | 205311 | 105794                                         | 206901 | 104796 | 208500 | 103804 | 210109 | 3.4 |  |  |  |  |  |  |  |  |  |  |  |
| 6.8                                                                                                                               | 108803 | 202191 | 107787 | 203762 | 106777 | 205343 | 105774                                         | 206933 | 104776 | 208532 | 103784 | 210141 | 3.2 |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                 | 108783 | 202223 | 107767 | 203794 | 106757 | 205374 | 105754                                         | 206965 | 104756 | 208564 | 103764 | 210173 | 3   |  |  |  |  |  |  |  |  |  |  |  |
| 7.2                                                                                                                               | 108762 | 202254 | 107747 | 203825 | 106737 | 205406 | 105734                                         | 206996 | 104736 | 208596 | 103744 | 210206 | 2.8 |  |  |  |  |  |  |  |  |  |  |  |
| 7.4                                                                                                                               | 108742 | 202285 | 107727 | 203857 | 106717 | 205438 | 105714                                         | 207028 | 104716 | 208628 | 103725 | 210238 | 2.6 |  |  |  |  |  |  |  |  |  |  |  |
| 7.6                                                                                                                               | 108722 | 202317 | 107706 | 203888 | 106697 | 205470 | 105694                                         | 207060 | 104696 | 208660 | 103705 | 210270 | 2.4 |  |  |  |  |  |  |  |  |  |  |  |
| 7.8                                                                                                                               | 108701 | 202348 | 107686 | 203920 | 106677 | 205501 | 105674                                         | 207092 | 104676 | 208693 | 103685 | 210303 | 2.2 |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                 | 108681 | 202379 | 107666 | 203951 | 106657 | 205533 | 105654                                         | 207124 | 104657 | 208725 | 103665 | 210335 | 2   |  |  |  |  |  |  |  |  |  |  |  |
| 8.2                                                                                                                               | 108661 | 202411 | 107646 | 203983 | 106637 | 205565 | 105634                                         | 207156 | 104637 | 208757 | 103646 | 210367 | 1.8 |  |  |  |  |  |  |  |  |  |  |  |
| 8.4                                                                                                                               | 108640 | 202442 | 107625 | 204014 | 106616 | 205596 | 105614                                         | 207188 | 104617 | 208789 | 103626 | 210399 | 1.6 |  |  |  |  |  |  |  |  |  |  |  |
| 8.6                                                                                                                               | 108620 | 202473 | 107605 | 204046 | 106596 | 205628 | 105594                                         | 207220 | 104597 | 208821 | 103606 | 210432 | 1.4 |  |  |  |  |  |  |  |  |  |  |  |
| 8.8                                                                                                                               | 108600 | 202505 | 107585 | 204078 | 106576 | 205660 | 105574                                         | 207252 | 104577 | 208853 | 103586 | 210464 | 1.2 |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                 | 108579 | 202536 | 107565 | 204109 | 106556 | 205692 | 105554                                         | 207284 | 104557 | 208885 | 103567 | 210496 | 1   |  |  |  |  |  |  |  |  |  |  |  |
| 9.2                                                                                                                               | 108559 | 202567 | 107544 | 204141 | 106536 | 205723 | 105534                                         | 207316 | 104537 | 208917 | 103547 | 210529 | 0.8 |  |  |  |  |  |  |  |  |  |  |  |
| 9.4                                                                                                                               | 108538 | 202599 | 107524 | 204172 | 106516 | 205755 | 105514                                         | 207348 | 104517 | 208949 | 103527 | 210561 | 0.6 |  |  |  |  |  |  |  |  |  |  |  |
| 9.6                                                                                                                               | 108518 | 202630 | 107504 | 204204 | 106496 | 205787 | 105494                                         | 207379 | 104498 | 208982 | 103507 | 210593 | 0.4 |  |  |  |  |  |  |  |  |  |  |  |
| 9.8                                                                                                                               | 108498 | 202662 | 107484 | 204235 | 106476 | 205819 | 105474                                         | 207411 | 104478 | 209014 | 103488 | 210626 | 0.2 |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                | 108477 | 202693 | 107464 | 204267 | 106456 | 205850 | 105454                                         | 207443 | 104458 | 209046 | 103468 | 210658 | 0   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                                              | B      | A      | B      | A      | B      | ↑   |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                                            |        | 10'    |        | 0'     |        |     |  |  |  |  |  |  |  |  |  |  |  |
| 128°                                                                                                                              |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                                                |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |
| $A(\alpha) = 10^6 \cdot \log(1 / \sin \alpha)$                                                                                    |        |        |        |        |        |        | $B(\alpha) = 10^6 \cdot \log(1 / \cos \alpha)$ |        |        |        |        |        |     |  |  |  |  |  |  |  |  |  |  |  |

| 52°                                                                                                                               |        |        |        |        |        |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 103468 | 210658 | 102484 | 212280 | 101506 | 213911 | 100533                        | 215553 | 99567 | 217204 | 98606 | 218866 | 10  |
| 0.2                                                                                                                               | 103448 | 210690 | 102464 | 212312 | 101486 | 213944 | 100514                        | 215586 | 99548 | 217237 | 98587 | 218899 | 9.8 |
| 0.4                                                                                                                               | 103428 | 210723 | 102445 | 212345 | 101467 | 213977 | 100495                        | 215619 | 99528 | 217270 | 98568 | 218932 | 9.6 |
| 0.6                                                                                                                               | 103409 | 210755 | 102425 | 212377 | 101447 | 214010 | 100475                        | 215652 | 99509 | 217304 | 98549 | 218966 | 9.4 |
| 0.8                                                                                                                               | 103389 | 210787 | 102405 | 212410 | 101428 | 214042 | 100456                        | 215685 | 99490 | 217337 | 98530 | 218999 | 9.2 |
| 1                                                                                                                                 | 103369 | 210820 | 102386 | 212443 | 101408 | 214075 | 100436                        | 215718 | 99471 | 217370 | 98510 | 219032 | 9   |
| 1.2                                                                                                                               | 103349 | 210852 | 102366 | 212475 | 101389 | 214108 | 100417                        | 215751 | 99451 | 217403 | 98491 | 219066 | 8.8 |
| 1.4                                                                                                                               | 103330 | 210884 | 102347 | 212508 | 101369 | 214141 | 100398                        | 215783 | 99432 | 217436 | 98472 | 219099 | 8.6 |
| 1.6                                                                                                                               | 103310 | 210917 | 102327 | 212540 | 101350 | 214173 | 100378                        | 215816 | 99413 | 217469 | 98453 | 219132 | 8.4 |
| 1.8                                                                                                                               | 103290 | 210949 | 102307 | 212573 | 101330 | 214206 | 100359                        | 215849 | 99394 | 217503 | 98434 | 219166 | 8.2 |
| 2                                                                                                                                 | 103271 | 210982 | 102288 | 212605 | 101311 | 214239 | 100340                        | 215882 | 99374 | 217536 | 98415 | 219199 | 8   |
| 2.2                                                                                                                               | 103251 | 211014 | 102268 | 212638 | 101291 | 214272 | 100320                        | 215915 | 99355 | 217569 | 98396 | 219232 | 7.8 |
| 2.4                                                                                                                               | 103231 | 211046 | 102249 | 212671 | 101272 | 214304 | 100301                        | 215948 | 99336 | 217602 | 98377 | 219266 | 7.6 |
| 2.6                                                                                                                               | 103211 | 211079 | 102229 | 212703 | 101252 | 214337 | 100282                        | 215981 | 99317 | 217635 | 98357 | 219299 | 7.4 |
| 2.8                                                                                                                               | 103192 | 211111 | 102209 | 212736 | 101233 | 214370 | 100262                        | 216014 | 99297 | 217668 | 98338 | 219333 | 7.2 |
| 3                                                                                                                                 | 103172 | 211144 | 102190 | 212768 | 101213 | 214403 | 100243                        | 216047 | 99278 | 217702 | 98319 | 219366 | 7   |
| 3.2                                                                                                                               | 103152 | 211176 | 102170 | 212801 | 101194 | 214436 | 100223                        | 216080 | 99259 | 217735 | 98300 | 219399 | 6.8 |
| 3.4                                                                                                                               | 103133 | 211208 | 102151 | 212833 | 101174 | 214468 | 100204                        | 216113 | 99240 | 217768 | 98281 | 219433 | 6.6 |
| 3.6                                                                                                                               | 103113 | 211241 | 102131 | 212866 | 101155 | 214501 | 100185                        | 216146 | 99220 | 217801 | 98262 | 219466 | 6.4 |
| 3.8                                                                                                                               | 103093 | 211273 | 102111 | 212899 | 101135 | 214534 | 100165                        | 216179 | 99201 | 217834 | 98243 | 219500 | 6.2 |
| 4                                                                                                                                 | 103074 | 211306 | 102092 | 212931 | 101116 | 214567 | 100146                        | 216212 | 99182 | 217868 | 98224 | 219533 | 6   |
| 4.2                                                                                                                               | 103054 | 211338 | 102072 | 212964 | 101097 | 214600 | 100127                        | 216245 | 99163 | 217901 | 98204 | 219566 | 5.8 |
| 4.4                                                                                                                               | 103034 | 211370 | 102053 | 212997 | 101077 | 214632 | 100107                        | 216278 | 99143 | 217934 | 98185 | 219600 | 5.6 |
| 4.6                                                                                                                               | 103014 | 211403 | 102033 | 213029 | 101058 | 214665 | 100088                        | 216311 | 99124 | 217967 | 98166 | 219633 | 5.4 |
| 4.8                                                                                                                               | 102995 | 211435 | 102014 | 213062 | 101038 | 214698 | 100069                        | 216344 | 99105 | 218000 | 98147 | 219667 | 5.2 |
| 5                                                                                                                                 | 102975 | 211468 | 101994 | 213094 | 101019 | 214731 | 100049                        | 216377 | 99086 | 218034 | 98128 | 219700 | 5   |
| 5.2                                                                                                                               | 102955 | 211500 | 101974 | 213127 | 100999 | 214764 | 100030                        | 216410 | 99067 | 218067 | 98109 | 219733 | 4.8 |
| 5.4                                                                                                                               | 102936 | 211533 | 101955 | 213160 | 100980 | 214797 | 100011                        | 216443 | 99047 | 218100 | 98090 | 219767 | 4.6 |
| 5.6                                                                                                                               | 102916 | 211565 | 101935 | 213192 | 100960 | 214829 | 99991                         | 216476 | 99028 | 218133 | 98071 | 219800 | 4.4 |
| 5.8                                                                                                                               | 102896 | 211597 | 101916 | 213225 | 100941 | 214862 | 99972                         | 216509 | 99009 | 218167 | 98052 | 219834 | 4.2 |
| 6                                                                                                                                 | 102877 | 211630 | 101896 | 213258 | 100922 | 214895 | 99953                         | 216542 | 98990 | 218200 | 98033 | 219867 | 4   |
| 6.2                                                                                                                               | 102857 | 211662 | 101877 | 213290 | 100902 | 214928 | 99933                         | 216576 | 98971 | 218233 | 98014 | 219901 | 3.8 |
| 6.4                                                                                                                               | 102837 | 211695 | 101857 | 213323 | 100883 | 214961 | 99914                         | 216609 | 98951 | 218266 | 97994 | 219934 | 3.6 |
| 6.6                                                                                                                               | 102818 | 211727 | 101838 | 213356 | 100863 | 214994 | 99895                         | 216642 | 98932 | 218300 | 97975 | 219968 | 3.4 |
| 6.8                                                                                                                               | 102798 | 211760 | 101818 | 213388 | 100844 | 215027 | 99876                         | 216675 | 98913 | 218333 | 97956 | 220001 | 3.2 |
| 7                                                                                                                                 | 102778 | 211792 | 101798 | 213421 | 100824 | 215059 | 99856                         | 216708 | 98894 | 218366 | 97937 | 220034 | 3   |
| 7.2                                                                                                                               | 102759 | 211825 | 101779 | 213454 | 100805 | 215092 | 99837                         | 216741 | 98875 | 218399 | 97918 | 220068 | 2.8 |
| 7.4                                                                                                                               | 102739 | 211857 | 101759 | 213486 | 100786 | 215125 | 99818                         | 216774 | 98855 | 218433 | 97899 | 220101 | 2.6 |
| 7.6                                                                                                                               | 102719 | 211890 | 101740 | 213519 | 100766 | 215158 | 99798                         | 216807 | 98836 | 218466 | 97880 | 220135 | 2.4 |
| 7.8                                                                                                                               | 102700 | 211922 | 101720 | 213552 | 100747 | 215191 | 99779                         | 216840 | 98817 | 218499 | 97861 | 220168 | 2.2 |
| 8                                                                                                                                 | 102680 | 211955 | 101701 | 213584 | 100727 | 215224 | 99760                         | 216873 | 98798 | 218532 | 97842 | 220202 | 2   |
| 8.2                                                                                                                               | 102660 | 211987 | 101681 | 213617 | 100708 | 215257 | 99740                         | 216906 | 98779 | 218566 | 97823 | 220235 | 1.8 |
| 8.4                                                                                                                               | 102641 | 212020 | 101662 | 213650 | 100689 | 215290 | 99721                         | 216939 | 98760 | 218599 | 97804 | 220269 | 1.6 |
| 8.6                                                                                                                               | 102621 | 212052 | 101642 | 213682 | 100669 | 215322 | 99702                         | 216972 | 98740 | 218632 | 97785 | 220302 | 1.4 |
| 8.8                                                                                                                               | 102602 | 212085 | 101623 | 213715 | 100650 | 215355 | 99683                         | 217006 | 98721 | 218666 | 97766 | 220336 | 1.2 |
| 9                                                                                                                                 | 102582 | 212117 | 101603 | 213748 | 100630 | 215388 | 99663                         | 217039 | 98702 | 218699 | 97747 | 220369 | 1   |
| 9.2                                                                                                                               | 102562 | 212150 | 101584 | 213781 | 100611 | 215421 | 99644                         | 217072 | 98683 | 218732 | 97728 | 220403 | 0.8 |
| 9.4                                                                                                                               | 102543 | 212182 | 101564 | 213813 | 100592 | 215454 | 99625                         | 217105 | 98664 | 218766 | 97709 | 220436 | 0.6 |
| 9.6                                                                                                                               | 102523 | 212215 | 101545 | 213846 | 100572 | 215487 | 99605                         | 217138 | 98645 | 218799 | 97689 | 220470 | 0.4 |
| 9.8                                                                                                                               | 102503 | 212247 | 101525 | 213879 | 100553 | 215520 | 99586                         | 217171 | 98625 | 218832 | 97670 | 220503 | 0.2 |
| 10                                                                                                                                | 102484 | 212280 | 101506 | 213911 | 100533 | 215553 | 99567                         | 217204 | 98606 | 218866 | 97651 | 220537 | 0   |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 127°                                                                                                                              |        |        |        |        |        |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

53°

| ↓   | 0'    |        | 10'   |        | 20'   |        | 30'   |        | 40'   |        | 50'   |        |     |
|-----|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-----|
|     | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      |     |
| 0   | 97651 | 220537 | 96702 | 222219 | 95759 | 223910 | 94821 | 225612 | 93889 | 227325 | 92963 | 229048 | 10  |
| 0.2 | 97632 | 220571 | 96683 | 222252 | 95740 | 223944 | 94803 | 225647 | 93871 | 227359 | 92945 | 229082 | 9.8 |
| 0.4 | 97613 | 220604 | 96664 | 222286 | 95721 | 223978 | 94784 | 225681 | 93852 | 227394 | 92926 | 229117 | 9.6 |
| 0.6 | 97594 | 220638 | 96646 | 222320 | 95703 | 224012 | 94765 | 225715 | 93834 | 227428 | 92908 | 229152 | 9.4 |
| 0.8 | 97575 | 220671 | 96627 | 222353 | 95684 | 224046 | 94747 | 225749 | 93815 | 227462 | 92889 | 229186 | 9.2 |
| 1   | 97556 | 220705 | 96608 | 222387 | 95665 | 224080 | 94728 | 225783 | 93796 | 227497 | 92871 | 229221 | 9   |
| 1.2 | 97537 | 220738 | 96589 | 222421 | 95646 | 224114 | 94709 | 225817 | 93778 | 227531 | 92852 | 229255 | 8.8 |
| 1.4 | 97518 | 220772 | 96570 | 222455 | 95627 | 224148 | 94690 | 225852 | 93759 | 227565 | 92834 | 229290 | 8.6 |
| 1.6 | 97499 | 220805 | 96551 | 222489 | 95609 | 224182 | 94672 | 225886 | 93741 | 227600 | 92815 | 229324 | 8.4 |
| 1.8 | 97480 | 220839 | 96532 | 222522 | 95590 | 224216 | 94653 | 225920 | 93722 | 227634 | 92797 | 229359 | 8.2 |
| 2   | 97461 | 220872 | 96513 | 222556 | 95571 | 224250 | 94634 | 225954 | 93704 | 227669 | 92778 | 229394 | 8   |
| 2.2 | 97442 | 220906 | 96494 | 222590 | 95552 | 224284 | 94616 | 225988 | 93685 | 227703 | 92760 | 229428 | 7.8 |
| 2.4 | 97423 | 220940 | 96475 | 222624 | 95533 | 224318 | 94597 | 226022 | 93666 | 227737 | 92742 | 229463 | 7.6 |
| 2.6 | 97404 | 220973 | 96456 | 222657 | 95515 | 224352 | 94578 | 226057 | 93648 | 227772 | 92723 | 229498 | 7.4 |
| 2.8 | 97385 | 221007 | 96438 | 222691 | 95496 | 224386 | 94560 | 226091 | 93629 | 227806 | 92705 | 229532 | 7.2 |
| 3   | 97366 | 221040 | 96419 | 222725 | 95477 | 224420 | 94541 | 226125 | 93611 | 227841 | 92686 | 229567 | 7   |
| 3.2 | 97347 | 221074 | 96400 | 222759 | 95458 | 224454 | 94522 | 226159 | 93592 | 227875 | 92668 | 229601 | 6.8 |
| 3.4 | 97328 | 221108 | 96381 | 222793 | 95439 | 224488 | 94504 | 226193 | 93574 | 227909 | 92649 | 229636 | 6.6 |
| 3.6 | 97309 | 221141 | 96362 | 222826 | 95421 | 224522 | 94485 | 226228 | 93555 | 227944 | 92631 | 229671 | 6.4 |
| 3.8 | 97290 | 221175 | 96343 | 222860 | 95402 | 224556 | 94466 | 226262 | 93537 | 227978 | 92613 | 229705 | 6.2 |
| 4   | 97271 | 221208 | 96324 | 222894 | 95383 | 224590 | 94448 | 226296 | 93518 | 228013 | 92594 | 229740 | 6   |
| 4.2 | 97252 | 221242 | 96305 | 222928 | 95364 | 224624 | 94429 | 226330 | 93500 | 228047 | 92576 | 229775 | 5.8 |
| 4.4 | 97233 | 221276 | 96287 | 222962 | 95346 | 224658 | 94411 | 226365 | 93481 | 228082 | 92557 | 229809 | 5.6 |
| 4.6 | 97214 | 221309 | 96268 | 222995 | 95327 | 224692 | 94392 | 226399 | 93463 | 228116 | 92539 | 229844 | 5.4 |
| 4.8 | 97195 | 221343 | 96249 | 223029 | 95308 | 224726 | 94373 | 226433 | 93444 | 228151 | 92520 | 229879 | 5.2 |
| 5   | 97176 | 221376 | 96230 | 223063 | 95289 | 224760 | 94355 | 226467 | 93425 | 228185 | 92502 | 229913 | 5   |
| 5.2 | 97157 | 221410 | 96211 | 223097 | 95271 | 224794 | 94336 | 226502 | 93407 | 228219 | 92484 | 229948 | 4.8 |
| 5.4 | 97138 | 221444 | 96192 | 223131 | 95252 | 224828 | 94317 | 226536 | 93388 | 228254 | 92465 | 229983 | 4.6 |
| 5.6 | 97119 | 221477 | 96173 | 223165 | 95233 | 224862 | 94299 | 226570 | 93370 | 228288 | 92447 | 230017 | 4.4 |
| 5.8 | 97100 | 221511 | 96154 | 223199 | 95214 | 224896 | 94280 | 226604 | 93351 | 228323 | 92428 | 230052 | 4.2 |
| 6   | 97081 | 221545 | 96136 | 223232 | 95196 | 224930 | 94261 | 226639 | 93333 | 228357 | 92410 | 230087 | 4   |
| 6.2 | 97062 | 221578 | 96117 | 223266 | 95177 | 224964 | 94243 | 226673 | 93314 | 228392 | 92392 | 230121 | 3.8 |
| 6.4 | 97043 | 221612 | 96098 | 223300 | 95158 | 224998 | 94224 | 226707 | 93296 | 228426 | 92373 | 230156 | 3.6 |
| 6.6 | 97024 | 221646 | 96079 | 223334 | 95139 | 225033 | 94206 | 226741 | 93277 | 228461 | 92355 | 230191 | 3.4 |
| 6.8 | 97005 | 221679 | 96060 | 223368 | 95121 | 225067 | 94187 | 226776 | 93259 | 228495 | 92336 | 230225 | 3.2 |
| 7   | 96986 | 221713 | 96041 | 223402 | 95102 | 225101 | 94168 | 226810 | 93240 | 228530 | 92318 | 230260 | 3   |
| 7.2 | 96967 | 221747 | 96022 | 223436 | 95083 | 225135 | 94150 | 226844 | 93222 | 228564 | 92300 | 230295 | 2.8 |
| 7.4 | 96948 | 221780 | 96004 | 223469 | 95065 | 225169 | 94131 | 226879 | 93203 | 228599 | 92281 | 230330 | 2.6 |
| 7.6 | 96930 | 221814 | 95985 | 223503 | 95046 | 225203 | 94112 | 226913 | 93185 | 228633 | 92263 | 230364 | 2.4 |
| 7.8 | 96911 | 221848 | 95966 | 223537 | 95027 | 225237 | 94094 | 226947 | 93166 | 228668 | 92244 | 230399 | 2.2 |
| 8   | 96892 | 221881 | 95947 | 223571 | 95008 | 225271 | 94075 | 226982 | 93148 | 228702 | 92226 | 230434 | 2   |
| 8.2 | 96873 | 221915 | 95928 | 223605 | 94990 | 225305 | 94057 | 227016 | 93129 | 228737 | 92208 | 230469 | 1.8 |
| 8.4 | 96854 | 221949 | 95909 | 223639 | 94971 | 225339 | 94038 | 227050 | 93111 | 228771 | 92189 | 230503 | 1.6 |
| 8.6 | 96835 | 221983 | 95891 | 223673 | 94952 | 225373 | 94019 | 227085 | 93092 | 228806 | 92171 | 230538 | 1.4 |
| 8.8 | 96816 | 222016 | 95872 | 223707 | 94933 | 225408 | 94001 | 227119 | 93074 | 228841 | 92153 | 230573 | 1.2 |
| 9   | 96797 | 222050 | 95853 | 223741 | 94915 | 225442 | 93982 | 227153 | 93055 | 228875 | 92134 | 230607 | 1   |
| 9.2 | 96778 | 222084 | 95834 | 223775 | 94896 | 225476 | 93964 | 227187 | 93037 | 228910 | 92116 | 230642 | 0.8 |
| 9.4 | 96759 | 222117 | 95815 | 223809 | 94877 | 225510 | 93945 | 227222 | 93018 | 228944 | 92097 | 230677 | 0.6 |
| 9.6 | 96740 | 222151 | 95797 | 223842 | 94859 | 225544 | 93926 | 227256 | 93000 | 228979 | 92079 | 230712 | 0.4 |
| 9.8 | 96721 | 222185 | 95778 | 223876 | 94840 | 225578 | 93908 | 227291 | 92981 | 229013 | 92061 | 230747 | 0.2 |
| 10  | 96702 | 222219 | 95759 | 223910 | 94821 | 225612 | 93889 | 227325 | 92963 | 229048 | 92042 | 230781 | 0   |
|     | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | ↑   |
|     | 50'   |        | 40'   |        | 30'   |        | 20'   |        | 10'   |        | 0'    |        |     |

126°

When meridian angle, t, is greater than 90°, take K from bottom of table.

Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table.

A(α) = 10^6 \* log (1 / sin α)

B(α) = 10^6 \* log (1 / cos α)

| 54°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 92042 | 230781 | 91127 | 232525 | 90218 | 234280 | 89314                         | 236046 | 88416 | 237823 | 87523 | 239610 | 10  |
| 0.2                                                                                                                               | 92024 | 230816 | 91109 | 232560 | 90200 | 234316 | 89296                         | 236081 | 88398 | 237858 | 87505 | 239646 | 9.8 |
| 0.4                                                                                                                               | 92006 | 230851 | 91091 | 232595 | 90182 | 234351 | 89278                         | 236117 | 88380 | 237894 | 87487 | 239682 | 9.6 |
| 0.6                                                                                                                               | 91987 | 230886 | 91073 | 232630 | 90163 | 234386 | 89260                         | 236152 | 88362 | 237929 | 87469 | 239718 | 9.4 |
| 0.8                                                                                                                               | 91969 | 230920 | 91054 | 232665 | 90145 | 234421 | 89242                         | 236188 | 88344 | 237965 | 87452 | 239754 | 9.2 |
| 1                                                                                                                                 | 91951 | 230955 | 91036 | 232700 | 90127 | 234456 | 89224                         | 236223 | 88326 | 238001 | 87434 | 239789 | 9   |
| 1.2                                                                                                                               | 91932 | 230990 | 91018 | 232735 | 90109 | 234492 | 89206                         | 236259 | 88308 | 238036 | 87416 | 239825 | 8.8 |
| 1.4                                                                                                                               | 91914 | 231025 | 91000 | 232770 | 90091 | 234527 | 89188                         | 236294 | 88290 | 238072 | 87398 | 239861 | 8.6 |
| 1.6                                                                                                                               | 91896 | 231060 | 90981 | 232806 | 90073 | 234562 | 89170                         | 236329 | 88272 | 238108 | 87380 | 239897 | 8.4 |
| 1.8                                                                                                                               | 91877 | 231094 | 90963 | 232841 | 90055 | 234597 | 89152                         | 236365 | 88255 | 238143 | 87363 | 239933 | 8.2 |
| 2                                                                                                                                 | 91859 | 231129 | 90945 | 232876 | 90037 | 234633 | 89134                         | 236400 | 88237 | 238179 | 87345 | 239969 | 8   |
| 2.2                                                                                                                               | 91841 | 231164 | 90927 | 232911 | 90019 | 234668 | 89116                         | 236436 | 88219 | 238215 | 87327 | 240005 | 7.8 |
| 2.4                                                                                                                               | 91822 | 231199 | 90909 | 232946 | 90000 | 234703 | 89098                         | 236471 | 88201 | 238251 | 87309 | 240041 | 7.6 |
| 2.6                                                                                                                               | 91804 | 231234 | 90890 | 232981 | 89982 | 234738 | 89080                         | 236507 | 88183 | 238286 | 87292 | 240077 | 7.4 |
| 2.8                                                                                                                               | 91786 | 231269 | 90872 | 233016 | 89964 | 234774 | 89062                         | 236542 | 88165 | 238322 | 87274 | 240113 | 7.2 |
| 3                                                                                                                                 | 91767 | 231303 | 90854 | 233051 | 89946 | 234809 | 89044                         | 236578 | 88147 | 238358 | 87256 | 240148 | 7   |
| 3.2                                                                                                                               | 91749 | 231338 | 90836 | 233086 | 89928 | 234844 | 89026                         | 236613 | 88129 | 238393 | 87238 | 240184 | 6.8 |
| 3.4                                                                                                                               | 91731 | 231373 | 90817 | 233121 | 89910 | 234879 | 89008                         | 236649 | 88111 | 238429 | 87220 | 240220 | 6.6 |
| 3.6                                                                                                                               | 91712 | 231408 | 90799 | 233156 | 89892 | 234915 | 88990                         | 236684 | 88094 | 238465 | 87203 | 240256 | 6.4 |
| 3.8                                                                                                                               | 91694 | 231443 | 90781 | 233191 | 89874 | 234950 | 88972                         | 236720 | 88076 | 238500 | 87185 | 240292 | 6.2 |
| 4                                                                                                                                 | 91676 | 231478 | 90763 | 233226 | 89856 | 234985 | 88954                         | 236755 | 88058 | 238536 | 87167 | 240328 | 6   |
| 4.2                                                                                                                               | 91657 | 231513 | 90745 | 233261 | 89838 | 235021 | 88936                         | 236791 | 88040 | 238572 | 87149 | 240364 | 5.8 |
| 4.4                                                                                                                               | 91639 | 231547 | 90726 | 233296 | 89819 | 235056 | 88918                         | 236826 | 88022 | 238608 | 87132 | 240400 | 5.6 |
| 4.6                                                                                                                               | 91621 | 231582 | 90708 | 233331 | 89801 | 235091 | 88900                         | 236862 | 88004 | 238643 | 87114 | 240436 | 5.4 |
| 4.8                                                                                                                               | 91602 | 231617 | 90690 | 233366 | 89783 | 235126 | 88882                         | 236897 | 87986 | 238679 | 87096 | 240472 | 5.2 |
| 5                                                                                                                                 | 91584 | 231652 | 90672 | 233402 | 89765 | 235162 | 88864                         | 236933 | 87969 | 238715 | 87078 | 240508 | 5   |
| 5.2                                                                                                                               | 91566 | 231687 | 90654 | 233437 | 89747 | 235197 | 88846                         | 236968 | 87951 | 238751 | 87061 | 240544 | 4.8 |
| 5.4                                                                                                                               | 91548 | 231722 | 90636 | 233472 | 89729 | 235232 | 88828                         | 237004 | 87933 | 238786 | 87043 | 240580 | 4.6 |
| 5.6                                                                                                                               | 91529 | 231757 | 90617 | 233507 | 89711 | 235268 | 88810                         | 237039 | 87915 | 238822 | 87025 | 240616 | 4.4 |
| 5.8                                                                                                                               | 91511 | 231792 | 90599 | 233542 | 89693 | 235303 | 88792                         | 237075 | 87897 | 238858 | 87007 | 240652 | 4.2 |
| 6                                                                                                                                 | 91493 | 231827 | 90581 | 233577 | 89675 | 235338 | 88774                         | 237111 | 87879 | 238894 | 86990 | 240688 | 4   |
| 6.2                                                                                                                               | 91474 | 231861 | 90563 | 233612 | 89657 | 235374 | 88756                         | 237146 | 87861 | 238930 | 86972 | 240724 | 3.8 |
| 6.4                                                                                                                               | 91456 | 231896 | 90545 | 233647 | 89639 | 235409 | 88738                         | 237182 | 87844 | 238965 | 86954 | 240760 | 3.6 |
| 6.6                                                                                                                               | 91438 | 231931 | 90526 | 233682 | 89621 | 235444 | 88720                         | 237217 | 87826 | 239001 | 86937 | 240796 | 3.4 |
| 6.8                                                                                                                               | 91420 | 231966 | 90508 | 233718 | 89603 | 235480 | 88702                         | 237253 | 87808 | 239037 | 86919 | 240832 | 3.2 |
| 7                                                                                                                                 | 91401 | 232001 | 90490 | 233753 | 89585 | 235515 | 88685                         | 237288 | 87790 | 239073 | 86901 | 240868 | 3   |
| 7.2                                                                                                                               | 91383 | 232036 | 90472 | 233788 | 89566 | 235550 | 88667                         | 237324 | 87772 | 239108 | 86883 | 240904 | 2.8 |
| 7.4                                                                                                                               | 91365 | 232071 | 90454 | 233823 | 89548 | 235586 | 88649                         | 237360 | 87754 | 239144 | 86866 | 240940 | 2.6 |
| 7.6                                                                                                                               | 91346 | 232106 | 90436 | 233858 | 89530 | 235621 | 88631                         | 237395 | 87737 | 239180 | 86848 | 240976 | 2.4 |
| 7.8                                                                                                                               | 91328 | 232141 | 90417 | 233893 | 89512 | 235657 | 88613                         | 237431 | 87719 | 239216 | 86830 | 241012 | 2.2 |
| 8                                                                                                                                 | 91310 | 232176 | 90399 | 233928 | 89494 | 235692 | 88595                         | 237466 | 87701 | 239252 | 86813 | 241048 | 2   |
| 8.2                                                                                                                               | 91292 | 232211 | 90381 | 233964 | 89476 | 235727 | 88577                         | 237502 | 87683 | 239287 | 86795 | 241084 | 1.8 |
| 8.4                                                                                                                               | 91273 | 232246 | 90363 | 233999 | 89458 | 235763 | 88559                         | 237538 | 87665 | 239323 | 86777 | 241120 | 1.6 |
| 8.6                                                                                                                               | 91255 | 232281 | 90345 | 234034 | 89440 | 235798 | 88541                         | 237573 | 87647 | 239359 | 86759 | 241156 | 1.4 |
| 8.8                                                                                                                               | 91237 | 232316 | 90327 | 234069 | 89422 | 235834 | 88523                         | 237609 | 87630 | 239395 | 86742 | 241192 | 1.2 |
| 9                                                                                                                                 | 91219 | 232351 | 90309 | 234104 | 89404 | 235869 | 88505                         | 237644 | 87612 | 239431 | 86724 | 241228 | 1   |
| 9.2                                                                                                                               | 91200 | 232386 | 90290 | 234140 | 89386 | 235904 | 88487                         | 237680 | 87594 | 239467 | 86706 | 241264 | 0.8 |
| 9.4                                                                                                                               | 91182 | 232420 | 90272 | 234175 | 89368 | 235940 | 88469                         | 237716 | 87576 | 239503 | 86689 | 241300 | 0.6 |
| 9.6                                                                                                                               | 91164 | 232455 | 90254 | 234210 | 89350 | 235975 | 88451                         | 237751 | 87558 | 239538 | 86671 | 241337 | 0.4 |
| 9.8                                                                                                                               | 91146 | 232490 | 90236 | 234245 | 89332 | 236011 | 88434                         | 237787 | 87541 | 239574 | 86653 | 241373 | 0.2 |
| 10                                                                                                                                | 91127 | 232525 | 90218 | 234280 | 89314 | 236046 | 88416                         | 237823 | 87523 | 239610 | 86635 | 241409 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 125°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 55°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 86635 | 241409 | 85754 | 243218 | 84877 | 245040 | 84006                         | 246872 | 83141 | 248716 | 82281 | 250571 | 10  |
| 0.2                                                                                                                               | 86618 | 241445 | 85736 | 243255 | 84860 | 245076 | 83989                         | 246909 | 83123 | 248753 | 82263 | 250608 | 9.8 |
| 0.4                                                                                                                               | 86600 | 241481 | 85718 | 243291 | 84842 | 245113 | 83972                         | 246946 | 83106 | 248790 | 82246 | 250646 | 9.6 |
| 0.6                                                                                                                               | 86582 | 241517 | 85701 | 243327 | 84825 | 245149 | 83954                         | 246982 | 83089 | 248827 | 82229 | 250683 | 9.4 |
| 0.8                                                                                                                               | 86565 | 241553 | 85683 | 243364 | 84807 | 245186 | 83937                         | 247019 | 83072 | 248864 | 82212 | 250720 | 9.2 |
| 1                                                                                                                                 | 86547 | 241589 | 85666 | 243400 | 84790 | 245222 | 83919                         | 247056 | 83054 | 248901 | 82195 | 250757 | 9   |
| 1.2                                                                                                                               | 86529 | 241625 | 85648 | 243436 | 84772 | 245259 | 83902                         | 247093 | 83037 | 248938 | 82178 | 250795 | 8.8 |
| 1.4                                                                                                                               | 86512 | 241661 | 85631 | 243473 | 84755 | 245295 | 83885                         | 247129 | 83020 | 248975 | 82161 | 250832 | 8.6 |
| 1.6                                                                                                                               | 86494 | 241698 | 85613 | 243509 | 84738 | 245332 | 83867                         | 247166 | 83003 | 249012 | 82143 | 250869 | 8.4 |
| 1.8                                                                                                                               | 86476 | 241734 | 85595 | 243545 | 84720 | 245369 | 83850                         | 247203 | 82986 | 249049 | 82126 | 250906 | 8.2 |
| 2                                                                                                                                 | 86459 | 241770 | 85578 | 243582 | 84703 | 245405 | 83833                         | 247240 | 82968 | 249086 | 82109 | 250944 | 8   |
| 2.2                                                                                                                               | 86441 | 241806 | 85560 | 243618 | 84685 | 245442 | 83815                         | 247277 | 82951 | 249123 | 82092 | 250981 | 7.8 |
| 2.4                                                                                                                               | 86423 | 241842 | 85543 | 243655 | 84668 | 245478 | 83798                         | 247313 | 82934 | 249160 | 82075 | 251018 | 7.6 |
| 2.6                                                                                                                               | 86406 | 241878 | 85525 | 243691 | 84650 | 245515 | 83781                         | 247350 | 82917 | 249197 | 82058 | 251056 | 7.4 |
| 2.8                                                                                                                               | 86388 | 241914 | 85508 | 243727 | 84633 | 245551 | 83763                         | 247387 | 82899 | 249234 | 82041 | 251093 | 7.2 |
| 3                                                                                                                                 | 86370 | 241950 | 85490 | 243764 | 84615 | 245588 | 83746                         | 247424 | 82882 | 249271 | 82024 | 251130 | 7   |
| 3.2                                                                                                                               | 86353 | 241987 | 85473 | 243800 | 84598 | 245625 | 83729                         | 247461 | 82865 | 249308 | 82006 | 251167 | 6.8 |
| 3.4                                                                                                                               | 86335 | 242023 | 85455 | 243836 | 84581 | 245661 | 83711                         | 247498 | 82848 | 249345 | 81989 | 251205 | 6.6 |
| 3.6                                                                                                                               | 86317 | 242059 | 85438 | 243873 | 84563 | 245698 | 83694                         | 247534 | 82830 | 249382 | 81972 | 251242 | 6.4 |
| 3.8                                                                                                                               | 86300 | 242095 | 85420 | 243909 | 84546 | 245735 | 83677                         | 247571 | 82813 | 249420 | 81955 | 251279 | 6.2 |
| 4                                                                                                                                 | 86282 | 242131 | 85402 | 243946 | 84528 | 245771 | 83659                         | 247608 | 82796 | 249457 | 81938 | 251317 | 6   |
| 4.2                                                                                                                               | 86264 | 242167 | 85385 | 243982 | 84511 | 245808 | 83642                         | 247645 | 82779 | 249494 | 81921 | 251354 | 5.8 |
| 4.4                                                                                                                               | 86247 | 242204 | 85367 | 244018 | 84493 | 245844 | 83625                         | 247682 | 82762 | 249531 | 81904 | 251391 | 5.6 |
| 4.6                                                                                                                               | 86229 | 242240 | 85350 | 244055 | 84476 | 245881 | 83607                         | 247719 | 82744 | 249568 | 81887 | 251429 | 5.4 |
| 4.8                                                                                                                               | 86212 | 242276 | 85332 | 244091 | 84459 | 245918 | 83590                         | 247756 | 82727 | 249605 | 81870 | 251466 | 5.2 |
| 5                                                                                                                                 | 86194 | 242312 | 85315 | 244128 | 84441 | 245954 | 83573                         | 247792 | 82710 | 249642 | 81853 | 251503 | 5   |
| 5.2                                                                                                                               | 86176 | 242348 | 85297 | 244164 | 84424 | 245991 | 83556                         | 247829 | 82693 | 249679 | 81835 | 251541 | 4.8 |
| 5.4                                                                                                                               | 86159 | 242385 | 85280 | 244200 | 84406 | 246028 | 83538                         | 247866 | 82676 | 249716 | 81818 | 251578 | 4.6 |
| 5.6                                                                                                                               | 86141 | 242421 | 85262 | 244237 | 84389 | 246064 | 83521                         | 247903 | 82658 | 249753 | 81801 | 251615 | 4.4 |
| 5.8                                                                                                                               | 86123 | 242457 | 85245 | 244273 | 84371 | 246101 | 83504                         | 247940 | 82641 | 249791 | 81784 | 251653 | 4.2 |
| 6                                                                                                                                 | 86106 | 242493 | 85227 | 244310 | 84354 | 246138 | 83486                         | 247977 | 82624 | 249828 | 81767 | 251690 | 4   |
| 6.2                                                                                                                               | 86088 | 242529 | 85210 | 244346 | 84337 | 246174 | 83469                         | 248014 | 82607 | 249865 | 81750 | 251727 | 3.8 |
| 6.4                                                                                                                               | 86070 | 242566 | 85192 | 244383 | 84319 | 246211 | 83452                         | 248051 | 82590 | 249902 | 81733 | 251765 | 3.6 |
| 6.6                                                                                                                               | 86053 | 242602 | 85175 | 244419 | 84302 | 246248 | 83434                         | 248088 | 82572 | 249939 | 81716 | 251802 | 3.4 |
| 6.8                                                                                                                               | 86035 | 242638 | 85157 | 244456 | 84284 | 246284 | 83417                         | 248125 | 82555 | 249976 | 81699 | 251840 | 3.2 |
| 7                                                                                                                                 | 86018 | 242674 | 85140 | 244492 | 84267 | 246321 | 83400                         | 248161 | 82538 | 250013 | 81682 | 251877 | 3   |
| 7.2                                                                                                                               | 86000 | 242711 | 85122 | 244529 | 84250 | 246358 | 83383                         | 248198 | 82521 | 250051 | 81665 | 251914 | 2.8 |
| 7.4                                                                                                                               | 85982 | 242747 | 85105 | 244565 | 84232 | 246394 | 83365                         | 248235 | 82504 | 250088 | 81648 | 251952 | 2.6 |
| 7.6                                                                                                                               | 85965 | 242783 | 85087 | 244601 | 84215 | 246431 | 83348                         | 248272 | 82487 | 250125 | 81630 | 251989 | 2.4 |
| 7.8                                                                                                                               | 85947 | 242819 | 85070 | 244638 | 84197 | 246468 | 83331                         | 248309 | 82469 | 250162 | 81613 | 252027 | 2.2 |
| 8                                                                                                                                 | 85930 | 242856 | 85052 | 244674 | 84180 | 246505 | 83313                         | 248346 | 82452 | 250199 | 81596 | 252064 | 2   |
| 8.2                                                                                                                               | 85912 | 242892 | 85035 | 244711 | 84163 | 246541 | 83296                         | 248383 | 82435 | 250236 | 81579 | 252101 | 1.8 |
| 8.4                                                                                                                               | 85894 | 242928 | 85017 | 244747 | 84145 | 246578 | 83279                         | 248420 | 82418 | 250274 | 81562 | 252139 | 1.6 |
| 8.6                                                                                                                               | 85877 | 242964 | 85000 | 244784 | 84128 | 246615 | 83262                         | 248457 | 82401 | 250311 | 81545 | 252176 | 1.4 |
| 8.8                                                                                                                               | 85859 | 243001 | 84982 | 244820 | 84111 | 246651 | 83244                         | 248494 | 82384 | 250348 | 81528 | 252214 | 1.2 |
| 9                                                                                                                                 | 85842 | 243037 | 84965 | 244857 | 84093 | 246688 | 83227                         | 248531 | 82366 | 250385 | 81511 | 252251 | 1   |
| 9.2                                                                                                                               | 85824 | 243073 | 84947 | 244893 | 84076 | 246725 | 83210                         | 248568 | 82349 | 250422 | 81494 | 252289 | 0.8 |
| 9.4                                                                                                                               | 85806 | 243110 | 84930 | 244930 | 84058 | 246762 | 83193                         | 248605 | 82332 | 250460 | 81477 | 252326 | 0.6 |
| 9.6                                                                                                                               | 85789 | 243146 | 84912 | 244966 | 84041 | 246798 | 83175                         | 248642 | 82315 | 250497 | 81460 | 252363 | 0.4 |
| 9.8                                                                                                                               | 85771 | 243182 | 84895 | 245003 | 84024 | 246835 | 83158                         | 248679 | 82298 | 250534 | 81443 | 252401 | 0.2 |
| 10                                                                                                                                | 85754 | 243218 | 84877 | 245040 | 84006 | 246872 | 83141                         | 248716 | 82281 | 250571 | 81426 | 252438 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 124°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 56°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 81426 | 252438 | 80576 | 254317 | 79732 | 256208 | 78893                         | 258111 | 78060 | 260025 | 77232 | 261952 | 10  |
| 0.2                                                                                                                               | 81409 | 252476 | 80559 | 254355 | 79715 | 256246 | 78877                         | 258149 | 78043 | 260064 | 77215 | 261991 | 9.8 |
| 0.4                                                                                                                               | 81392 | 252513 | 80542 | 254393 | 79699 | 256284 | 78860                         | 258187 | 78027 | 260102 | 77199 | 262029 | 9.6 |
| 0.6                                                                                                                               | 81375 | 252551 | 80526 | 254430 | 79682 | 256322 | 78843                         | 258225 | 78010 | 260140 | 77182 | 262068 | 9.4 |
| 0.8                                                                                                                               | 81358 | 252588 | 80509 | 254468 | 79665 | 256360 | 78827                         | 258263 | 77993 | 260179 | 77166 | 262107 | 9.2 |
| 1                                                                                                                                 | 81341 | 252626 | 80492 | 254506 | 79648 | 256398 | 78810                         | 258301 | 77977 | 260217 | 77149 | 262145 | 9   |
| 1.2                                                                                                                               | 81324 | 252663 | 80475 | 254543 | 79631 | 256436 | 78793                         | 258340 | 77960 | 260256 | 77133 | 262184 | 8.8 |
| 1.4                                                                                                                               | 81307 | 252701 | 80458 | 254581 | 79614 | 256474 | 78776                         | 258378 | 77944 | 260294 | 77116 | 262223 | 8.6 |
| 1.6                                                                                                                               | 81290 | 252738 | 80441 | 254619 | 79598 | 256511 | 78760                         | 258416 | 77927 | 260333 | 77100 | 262262 | 8.4 |
| 1.8                                                                                                                               | 81272 | 252776 | 80424 | 254657 | 79581 | 256549 | 78743                         | 258454 | 77910 | 260371 | 77083 | 262300 | 8.2 |
| 2                                                                                                                                 | 81255 | 252813 | 80407 | 254694 | 79564 | 256587 | 78726                         | 258492 | 77894 | 260410 | 77067 | 262339 | 8   |
| 2.2                                                                                                                               | 81238 | 252851 | 80390 | 254732 | 79547 | 256625 | 78710                         | 258531 | 77877 | 260448 | 77050 | 262378 | 7.8 |
| 2.4                                                                                                                               | 81221 | 252888 | 80373 | 254770 | 79530 | 256663 | 78693                         | 258569 | 77861 | 260487 | 77034 | 262416 | 7.6 |
| 2.6                                                                                                                               | 81204 | 252926 | 80356 | 254808 | 79514 | 256701 | 78676                         | 258607 | 77844 | 260525 | 77017 | 262455 | 7.4 |
| 2.8                                                                                                                               | 81187 | 252963 | 80339 | 254845 | 79497 | 256739 | 78659                         | 258645 | 77827 | 260564 | 77001 | 262494 | 7.2 |
| 3                                                                                                                                 | 81170 | 253001 | 80323 | 254883 | 79480 | 256777 | 78643                         | 258684 | 77811 | 260602 | 76984 | 262533 | 7   |
| 3.2                                                                                                                               | 81153 | 253038 | 80306 | 254921 | 79463 | 256815 | 78626                         | 258722 | 77794 | 260640 | 76968 | 262571 | 6.8 |
| 3.4                                                                                                                               | 81136 | 253076 | 80289 | 254959 | 79446 | 256853 | 78609                         | 258760 | 77778 | 260679 | 76951 | 262610 | 6.6 |
| 3.6                                                                                                                               | 81119 | 253113 | 80272 | 254996 | 79430 | 256891 | 78593                         | 258798 | 77761 | 260717 | 76935 | 262649 | 6.4 |
| 3.8                                                                                                                               | 81102 | 253151 | 80255 | 255034 | 79413 | 256929 | 78576                         | 258837 | 77745 | 260756 | 76918 | 262688 | 6.2 |
| 4                                                                                                                                 | 81085 | 253188 | 80238 | 255072 | 79396 | 256967 | 78559                         | 258875 | 77728 | 260794 | 76902 | 262726 | 6   |
| 4.2                                                                                                                               | 81068 | 253226 | 80221 | 255110 | 79379 | 257006 | 78543                         | 258913 | 77711 | 260833 | 76885 | 262765 | 5.8 |
| 4.4                                                                                                                               | 81051 | 253264 | 80204 | 255148 | 79362 | 257044 | 78526                         | 258951 | 77695 | 260872 | 76869 | 262804 | 5.6 |
| 4.6                                                                                                                               | 81034 | 253301 | 80187 | 255185 | 79346 | 257082 | 78509                         | 258990 | 77678 | 260910 | 76852 | 262843 | 5.4 |
| 4.8                                                                                                                               | 81017 | 253339 | 80171 | 255223 | 79329 | 257120 | 78493                         | 259028 | 77662 | 260949 | 76836 | 262881 | 5.2 |
| 5                                                                                                                                 | 81000 | 253376 | 80154 | 255261 | 79312 | 257158 | 78476                         | 259066 | 77645 | 260987 | 76819 | 262920 | 5   |
| 5.2                                                                                                                               | 80983 | 253414 | 80137 | 255299 | 79295 | 257196 | 78459                         | 259105 | 77629 | 261026 | 76803 | 262959 | 4.8 |
| 5.4                                                                                                                               | 80966 | 253451 | 80120 | 255337 | 79279 | 257234 | 78443                         | 259143 | 77612 | 261064 | 76787 | 262998 | 4.6 |
| 5.6                                                                                                                               | 80949 | 253489 | 80103 | 255374 | 79262 | 257272 | 78426                         | 259181 | 77595 | 261103 | 76770 | 263036 | 4.4 |
| 5.8                                                                                                                               | 80932 | 253527 | 80086 | 255412 | 79245 | 257310 | 78409                         | 259220 | 77579 | 261141 | 76754 | 263075 | 4.2 |
| 6                                                                                                                                 | 80915 | 253564 | 80069 | 255450 | 79228 | 257348 | 78393                         | 259258 | 77562 | 261180 | 76737 | 263114 | 4   |
| 6.2                                                                                                                               | 80899 | 253602 | 80052 | 255488 | 79212 | 257386 | 78376                         | 259296 | 77546 | 261218 | 76721 | 263153 | 3.8 |
| 6.4                                                                                                                               | 80882 | 253639 | 80035 | 255526 | 79195 | 257424 | 78359                         | 259335 | 77529 | 261257 | 76704 | 263192 | 3.6 |
| 6.6                                                                                                                               | 80865 | 253677 | 80019 | 255564 | 79178 | 257462 | 78343                         | 259373 | 77513 | 261296 | 76688 | 263231 | 3.4 |
| 6.8                                                                                                                               | 80848 | 253715 | 80002 | 255602 | 79161 | 257500 | 78326                         | 259411 | 77496 | 261334 | 76671 | 263269 | 3.2 |
| 7                                                                                                                                 | 80831 | 253752 | 79985 | 255639 | 79144 | 257538 | 78309                         | 259450 | 77480 | 261373 | 76655 | 263308 | 3   |
| 7.2                                                                                                                               | 80814 | 253790 | 79968 | 255677 | 79128 | 257577 | 78293                         | 259488 | 77463 | 261411 | 76639 | 263347 | 2.8 |
| 7.4                                                                                                                               | 80797 | 253828 | 79951 | 255715 | 79111 | 257615 | 78276                         | 259526 | 77446 | 261450 | 76622 | 263386 | 2.6 |
| 7.6                                                                                                                               | 80780 | 253865 | 79934 | 255753 | 79094 | 257653 | 78259                         | 259565 | 77430 | 261489 | 76606 | 263425 | 2.4 |
| 7.8                                                                                                                               | 80763 | 253903 | 79917 | 255791 | 79077 | 257691 | 78243                         | 259603 | 77413 | 261527 | 76589 | 263464 | 2.2 |
| 8                                                                                                                                 | 80746 | 253940 | 79901 | 255829 | 79061 | 257729 | 78226                         | 259641 | 77397 | 261566 | 76573 | 263502 | 2   |
| 8.2                                                                                                                               | 80729 | 253978 | 79884 | 255867 | 79044 | 257767 | 78210                         | 259680 | 77380 | 261604 | 76556 | 263541 | 1.8 |
| 8.4                                                                                                                               | 80712 | 254016 | 79867 | 255905 | 79027 | 257805 | 78193                         | 259718 | 77364 | 261643 | 76540 | 263580 | 1.6 |
| 8.6                                                                                                                               | 80695 | 254053 | 79850 | 255942 | 79011 | 257843 | 78176                         | 259756 | 77347 | 261682 | 76524 | 263619 | 1.4 |
| 8.8                                                                                                                               | 80678 | 254091 | 79833 | 255980 | 78994 | 257882 | 78160                         | 259795 | 77331 | 261720 | 76507 | 263658 | 1.2 |
| 9                                                                                                                                 | 80661 | 254129 | 79816 | 256018 | 78977 | 257920 | 78143                         | 259833 | 77314 | 261759 | 76491 | 263697 | 1   |
| 9.2                                                                                                                               | 80644 | 254166 | 79800 | 256056 | 78960 | 257958 | 78126                         | 259872 | 77298 | 261797 | 76474 | 263736 | 0.8 |
| 9.4                                                                                                                               | 80627 | 254204 | 79783 | 256094 | 78944 | 257996 | 78110                         | 259910 | 77281 | 261836 | 76458 | 263775 | 0.6 |
| 9.6                                                                                                                               | 80610 | 254242 | 79766 | 256132 | 78927 | 258034 | 78093                         | 259948 | 77265 | 261875 | 76441 | 263813 | 0.4 |
| 9.8                                                                                                                               | 80593 | 254279 | 79749 | 256170 | 78910 | 258072 | 78077                         | 259987 | 77248 | 261913 | 76425 | 263852 | 0.2 |
| 10                                                                                                                                | 80576 | 254317 | 79732 | 256208 | 78893 | 258111 | 78060                         | 260025 | 77232 | 261952 | 76409 | 263891 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 123°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 57°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 76409 | 263891 | 75591 | 265843 | 74778 | 267807 | 73971                         | 269783 | 73169 | 271773 | 72371 | 273775 | 10  |
| 0.2                                                                                                                               | 76392 | 263930 | 75574 | 265882 | 74762 | 267846 | 73955                         | 269823 | 73153 | 271813 | 72356 | 273815 | 9.8 |
| 0.4                                                                                                                               | 76376 | 263969 | 75558 | 265921 | 74746 | 267886 | 73939                         | 269863 | 73137 | 271853 | 72340 | 273855 | 9.6 |
| 0.6                                                                                                                               | 76359 | 264008 | 75542 | 265960 | 74730 | 267925 | 73923                         | 269902 | 73121 | 271893 | 72324 | 273896 | 9.4 |
| 0.8                                                                                                                               | 76343 | 264047 | 75526 | 265999 | 74713 | 267964 | 73906                         | 269942 | 73105 | 271933 | 72308 | 273936 | 9.2 |
| 1                                                                                                                                 | 76327 | 264086 | 75509 | 266039 | 74697 | 268004 | 73890                         | 269982 | 73089 | 271973 | 72292 | 273976 | 9   |
| 1.2                                                                                                                               | 76310 | 264125 | 75493 | 266078 | 74681 | 268043 | 73874                         | 270022 | 73073 | 272012 | 72276 | 274016 | 8.8 |
| 1.4                                                                                                                               | 76294 | 264164 | 75477 | 266117 | 74665 | 268083 | 73858                         | 270061 | 73057 | 272052 | 72260 | 274056 | 8.6 |
| 1.6                                                                                                                               | 76277 | 264203 | 75460 | 266156 | 74649 | 268122 | 73842                         | 270101 | 73041 | 272092 | 72244 | 274097 | 8.4 |
| 1.8                                                                                                                               | 76261 | 264242 | 75444 | 266195 | 74632 | 268162 | 73826                         | 270141 | 73025 | 272132 | 72229 | 274137 | 8.2 |
| 2                                                                                                                                 | 76245 | 264281 | 75428 | 266235 | 74616 | 268201 | 73810                         | 270180 | 73009 | 272172 | 72213 | 274177 | 8   |
| 2.2                                                                                                                               | 76228 | 264320 | 75412 | 266274 | 74600 | 268241 | 73794                         | 270220 | 72993 | 272212 | 72197 | 274217 | 7.8 |
| 2.4                                                                                                                               | 76212 | 264358 | 75395 | 266313 | 74584 | 268280 | 73778                         | 270260 | 72977 | 272252 | 72181 | 274258 | 7.6 |
| 2.6                                                                                                                               | 76195 | 264397 | 75379 | 266352 | 74568 | 268320 | 73762                         | 270299 | 72961 | 272292 | 72165 | 274298 | 7.4 |
| 2.8                                                                                                                               | 76179 | 264436 | 75363 | 266391 | 74552 | 268359 | 73746                         | 270339 | 72945 | 272332 | 72149 | 274338 | 7.2 |
| 3                                                                                                                                 | 76163 | 264475 | 75346 | 266431 | 74535 | 268398 | 73730                         | 270379 | 72929 | 272372 | 72133 | 274378 | 7   |
| 3.2                                                                                                                               | 76146 | 264514 | 75330 | 266470 | 74519 | 268438 | 73714                         | 270419 | 72913 | 272412 | 72117 | 274419 | 6.8 |
| 3.4                                                                                                                               | 76130 | 264553 | 75314 | 266509 | 74503 | 268477 | 73697                         | 270458 | 72897 | 272452 | 72102 | 274459 | 6.6 |
| 3.6                                                                                                                               | 76114 | 264592 | 75298 | 266548 | 74487 | 268517 | 73681                         | 270498 | 72881 | 272492 | 72086 | 274499 | 6.4 |
| 3.8                                                                                                                               | 76097 | 264631 | 75281 | 266588 | 74471 | 268556 | 73665                         | 270538 | 72865 | 272532 | 72070 | 274539 | 6.2 |
| 4                                                                                                                                 | 76081 | 264670 | 75265 | 266627 | 74455 | 268596 | 73649                         | 270578 | 72849 | 272572 | 72054 | 274580 | 6   |
| 4.2                                                                                                                               | 76064 | 264709 | 75249 | 266666 | 74438 | 268635 | 73633                         | 270617 | 72833 | 272612 | 72038 | 274620 | 5.8 |
| 4.4                                                                                                                               | 76048 | 264748 | 75233 | 266705 | 74422 | 268675 | 73617                         | 270657 | 72817 | 272652 | 72022 | 274660 | 5.6 |
| 4.6                                                                                                                               | 76032 | 264787 | 75216 | 266745 | 74406 | 268715 | 73601                         | 270697 | 72801 | 272692 | 72007 | 274700 | 5.4 |
| 4.8                                                                                                                               | 76015 | 264826 | 75200 | 266784 | 74390 | 268754 | 73585                         | 270737 | 72785 | 272732 | 71991 | 274741 | 5.2 |
| 5                                                                                                                                 | 75999 | 264865 | 75184 | 266823 | 74374 | 268794 | 73569                         | 270777 | 72769 | 272772 | 71975 | 274781 | 5   |
| 5.2                                                                                                                               | 75983 | 264904 | 75168 | 266863 | 74358 | 268833 | 73553                         | 270816 | 72753 | 272812 | 71959 | 274821 | 4.8 |
| 5.4                                                                                                                               | 75966 | 264944 | 75151 | 266902 | 74342 | 268873 | 73537                         | 270856 | 72738 | 272852 | 71943 | 274862 | 4.6 |
| 5.6                                                                                                                               | 75950 | 264983 | 75135 | 266941 | 74325 | 268912 | 73521                         | 270896 | 72722 | 272893 | 71927 | 274902 | 4.4 |
| 5.8                                                                                                                               | 75934 | 265022 | 75119 | 266980 | 74309 | 268952 | 73505                         | 270936 | 72706 | 272933 | 71912 | 274942 | 4.2 |
| 6                                                                                                                                 | 75917 | 265061 | 75103 | 267020 | 74293 | 268991 | 73489                         | 270976 | 72690 | 272973 | 71896 | 274983 | 4   |
| 6.2                                                                                                                               | 75901 | 265100 | 75086 | 267059 | 74277 | 269031 | 73473                         | 271015 | 72674 | 273013 | 71880 | 275023 | 3.8 |
| 6.4                                                                                                                               | 75885 | 265139 | 75070 | 267098 | 74261 | 269070 | 73457                         | 271055 | 72658 | 273053 | 71864 | 275063 | 3.6 |
| 6.6                                                                                                                               | 75868 | 265178 | 75054 | 267138 | 74245 | 269110 | 73441                         | 271095 | 72642 | 273093 | 71848 | 275104 | 3.4 |
| 6.8                                                                                                                               | 75852 | 265217 | 75038 | 267177 | 74229 | 269150 | 73425                         | 271135 | 72626 | 273133 | 71832 | 275144 | 3.2 |
| 7                                                                                                                                 | 75836 | 265256 | 75021 | 267216 | 74212 | 269189 | 73409                         | 271175 | 72610 | 273173 | 71817 | 275184 | 3   |
| 7.2                                                                                                                               | 75819 | 265295 | 75005 | 267256 | 74196 | 269229 | 73393                         | 271215 | 72594 | 273213 | 71801 | 275225 | 2.8 |
| 7.4                                                                                                                               | 75803 | 265334 | 74989 | 267295 | 74180 | 269268 | 73377                         | 271254 | 72578 | 273253 | 71785 | 275265 | 2.6 |
| 7.6                                                                                                                               | 75787 | 265373 | 74973 | 267334 | 74164 | 269308 | 73361                         | 271294 | 72562 | 273293 | 71769 | 275305 | 2.4 |
| 7.8                                                                                                                               | 75770 | 265412 | 74957 | 267374 | 74148 | 269348 | 73345                         | 271334 | 72546 | 273333 | 71753 | 275346 | 2.2 |
| 8                                                                                                                                 | 75754 | 265451 | 74940 | 267413 | 74132 | 269387 | 73329                         | 271374 | 72530 | 273374 | 71737 | 275386 | 2   |
| 8.2                                                                                                                               | 75738 | 265491 | 74924 | 267452 | 74116 | 269427 | 73313                         | 271414 | 72515 | 273414 | 71722 | 275427 | 1.8 |
| 8.4                                                                                                                               | 75721 | 265530 | 74908 | 267492 | 74100 | 269466 | 73297                         | 271454 | 72499 | 273454 | 71706 | 275467 | 1.6 |
| 8.6                                                                                                                               | 75705 | 265569 | 74892 | 267531 | 74084 | 269506 | 73281                         | 271494 | 72483 | 273494 | 71690 | 275507 | 1.4 |
| 8.8                                                                                                                               | 75689 | 265608 | 74875 | 267570 | 74067 | 269546 | 73265                         | 271533 | 72467 | 273534 | 71674 | 275548 | 1.2 |
| 9                                                                                                                                 | 75672 | 265647 | 74859 | 267610 | 74051 | 269585 | 73249                         | 271573 | 72451 | 273574 | 71658 | 275588 | 1   |
| 9.2                                                                                                                               | 75656 | 265686 | 74843 | 267649 | 74035 | 269625 | 73233                         | 271613 | 72435 | 273614 | 71643 | 275629 | 0.8 |
| 9.4                                                                                                                               | 75640 | 265725 | 74827 | 267689 | 74019 | 269665 | 73217                         | 271653 | 72419 | 273655 | 71627 | 275669 | 0.6 |
| 9.6                                                                                                                               | 75623 | 265764 | 74811 | 267728 | 74003 | 269704 | 73201                         | 271693 | 72403 | 273695 | 71611 | 275709 | 0.4 |
| 9.8                                                                                                                               | 75607 | 265804 | 74794 | 267767 | 73987 | 269744 | 73185                         | 271733 | 72387 | 273735 | 71595 | 275750 | 0.2 |
| 10                                                                                                                                | 75591 | 265843 | 74778 | 267807 | 73971 | 269783 | 73169                         | 271773 | 72371 | 273775 | 71580 | 275790 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 122°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 58°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 71580 | 275790 | 70793 | 277819 | 70011 | 279860 | 69234                         | 281915 | 68463 | 283983 | 67696 | 286065 | 10  |
| 0.2                                                                                                                               | 71564 | 275831 | 70777 | 277859 | 69995 | 279901 | 69219                         | 281956 | 68447 | 284025 | 67681 | 286107 | 9.8 |
| 0.4                                                                                                                               | 71548 | 275871 | 70761 | 277900 | 69980 | 279942 | 69203                         | 281997 | 68432 | 284066 | 67665 | 286149 | 9.6 |
| 0.6                                                                                                                               | 71532 | 275912 | 70746 | 277941 | 69964 | 279983 | 69188                         | 282039 | 68416 | 284108 | 67650 | 286190 | 9.4 |
| 0.8                                                                                                                               | 71516 | 275952 | 70730 | 277981 | 69949 | 280024 | 69172                         | 282080 | 68401 | 284149 | 67635 | 286232 | 9.2 |
| 1                                                                                                                                 | 71501 | 275993 | 70714 | 278022 | 69933 | 280065 | 69157                         | 282121 | 68386 | 284191 | 67620 | 286274 | 9   |
| 1.2                                                                                                                               | 71485 | 276033 | 70699 | 278063 | 69917 | 280106 | 69141                         | 282162 | 68370 | 284232 | 67604 | 286316 | 8.8 |
| 1.4                                                                                                                               | 71469 | 276073 | 70683 | 278104 | 69902 | 280147 | 69126                         | 282204 | 68355 | 284274 | 67589 | 286358 | 8.6 |
| 1.6                                                                                                                               | 71453 | 276114 | 70667 | 278144 | 69886 | 280188 | 69110                         | 282245 | 68340 | 284315 | 67574 | 286399 | 8.4 |
| 1.8                                                                                                                               | 71438 | 276154 | 70652 | 278185 | 69871 | 280229 | 69095                         | 282286 | 68324 | 284357 | 67559 | 286441 | 8.2 |
| 2                                                                                                                                 | 71422 | 276195 | 70636 | 278226 | 69855 | 280270 | 69079                         | 282327 | 68309 | 284398 | 67543 | 286483 | 8   |
| 2.2                                                                                                                               | 71406 | 276235 | 70620 | 278267 | 69840 | 280311 | 69064                         | 282369 | 68293 | 284440 | 67528 | 286525 | 7.8 |
| 2.4                                                                                                                               | 71390 | 276276 | 70605 | 278307 | 69824 | 280352 | 69049                         | 282410 | 68278 | 284482 | 67513 | 286567 | 7.6 |
| 2.6                                                                                                                               | 71374 | 276316 | 70589 | 278348 | 69808 | 280393 | 69033                         | 282451 | 68263 | 284523 | 67497 | 286609 | 7.4 |
| 2.8                                                                                                                               | 71359 | 276357 | 70573 | 278389 | 69793 | 280434 | 69018                         | 282493 | 68247 | 284565 | 67482 | 286650 | 7.2 |
| 3                                                                                                                                 | 71343 | 276397 | 70558 | 278430 | 69777 | 280475 | 69002                         | 282534 | 68232 | 284606 | 67467 | 286692 | 7   |
| 3.2                                                                                                                               | 71327 | 276438 | 70542 | 278470 | 69762 | 280516 | 68987                         | 282575 | 68217 | 284648 | 67452 | 286734 | 6.8 |
| 3.4                                                                                                                               | 71311 | 276478 | 70526 | 278511 | 69746 | 280557 | 68971                         | 282617 | 68201 | 284689 | 67436 | 286776 | 6.6 |
| 3.6                                                                                                                               | 71296 | 276519 | 70511 | 278552 | 69731 | 280598 | 68956                         | 282658 | 68186 | 284731 | 67421 | 286818 | 6.4 |
| 3.8                                                                                                                               | 71280 | 276559 | 70495 | 278593 | 69715 | 280639 | 68940                         | 282699 | 68171 | 284773 | 67406 | 286860 | 6.2 |
| 4                                                                                                                                 | 71264 | 276600 | 70479 | 278634 | 69700 | 280680 | 68925                         | 282741 | 68155 | 284814 | 67391 | 286902 | 6   |
| 4.2                                                                                                                               | 71248 | 276641 | 70464 | 278674 | 69684 | 280721 | 68910                         | 282782 | 68140 | 284856 | 67376 | 286944 | 5.8 |
| 4.4                                                                                                                               | 71233 | 276681 | 70448 | 278715 | 69669 | 280763 | 68894                         | 282823 | 68125 | 284898 | 67360 | 286985 | 5.6 |
| 4.6                                                                                                                               | 71217 | 276722 | 70432 | 278756 | 69653 | 280804 | 68879                         | 282865 | 68109 | 284939 | 67345 | 287027 | 5.4 |
| 4.8                                                                                                                               | 71201 | 276762 | 70417 | 278797 | 69637 | 280845 | 68863                         | 282906 | 68094 | 284981 | 67330 | 287069 | 5.2 |
| 5                                                                                                                                 | 71185 | 276803 | 70401 | 278838 | 69622 | 280886 | 68848                         | 282947 | 68079 | 285022 | 67315 | 287111 | 5   |
| 5.2                                                                                                                               | 71170 | 276843 | 70386 | 278878 | 69606 | 280927 | 68832                         | 282989 | 68063 | 285064 | 67299 | 287153 | 4.8 |
| 5.4                                                                                                                               | 71154 | 276884 | 70370 | 278919 | 69591 | 280968 | 68817                         | 283030 | 68048 | 285106 | 67284 | 287195 | 4.6 |
| 5.6                                                                                                                               | 71138 | 276925 | 70354 | 278960 | 69575 | 281009 | 68801                         | 283071 | 68033 | 285147 | 67269 | 287237 | 4.4 |
| 5.8                                                                                                                               | 71123 | 276965 | 70339 | 279001 | 69560 | 281050 | 68786                         | 283113 | 68017 | 285189 | 67254 | 287279 | 4.2 |
| 6                                                                                                                                 | 71107 | 277006 | 70323 | 279042 | 69544 | 281091 | 68771                         | 283154 | 68002 | 285231 | 67238 | 287321 | 4   |
| 6.2                                                                                                                               | 71091 | 277046 | 70307 | 279083 | 69529 | 281132 | 68755                         | 283196 | 67987 | 285272 | 67223 | 287363 | 3.8 |
| 6.4                                                                                                                               | 71075 | 277087 | 70292 | 279124 | 69513 | 281174 | 68740                         | 283237 | 67971 | 285314 | 67208 | 287405 | 3.6 |
| 6.6                                                                                                                               | 71060 | 277127 | 70276 | 279164 | 69498 | 281215 | 68724                         | 283278 | 67956 | 285356 | 67193 | 287447 | 3.4 |
| 6.8                                                                                                                               | 71044 | 277168 | 70261 | 279205 | 69482 | 281256 | 68709                         | 283320 | 67941 | 285397 | 67178 | 287489 | 3.2 |
| 7                                                                                                                                 | 71028 | 277209 | 70245 | 279246 | 69467 | 281297 | 68694                         | 283361 | 67925 | 285439 | 67162 | 287531 | 3   |
| 7.2                                                                                                                               | 71012 | 277249 | 70229 | 279287 | 69451 | 281338 | 68678                         | 283403 | 67910 | 285481 | 67147 | 287573 | 2.8 |
| 7.4                                                                                                                               | 70997 | 277290 | 70214 | 279328 | 69436 | 281379 | 68663                         | 283444 | 67895 | 285522 | 67132 | 287614 | 2.6 |
| 7.6                                                                                                                               | 70981 | 277331 | 70198 | 279369 | 69420 | 281421 | 68647                         | 283486 | 67880 | 285564 | 67117 | 287656 | 2.4 |
| 7.8                                                                                                                               | 70965 | 277371 | 70182 | 279410 | 69405 | 281462 | 68632                         | 283527 | 67864 | 285606 | 67102 | 287698 | 2.2 |
| 8                                                                                                                                 | 70950 | 277412 | 70167 | 279451 | 69389 | 281503 | 68617                         | 283568 | 67849 | 285648 | 67086 | 287740 | 2   |
| 8.2                                                                                                                               | 70934 | 277453 | 70151 | 279492 | 69374 | 281544 | 68601                         | 283610 | 67834 | 285689 | 67071 | 287782 | 1.8 |
| 8.4                                                                                                                               | 70918 | 277493 | 70136 | 279533 | 69358 | 281585 | 68586                         | 283651 | 67818 | 285731 | 67056 | 287824 | 1.6 |
| 8.6                                                                                                                               | 70903 | 277534 | 70120 | 279573 | 69343 | 281626 | 68570                         | 283693 | 67803 | 285773 | 67041 | 287866 | 1.4 |
| 8.8                                                                                                                               | 70887 | 277574 | 70104 | 279614 | 69327 | 281668 | 68555                         | 283734 | 67788 | 285815 | 67026 | 287908 | 1.2 |
| 9                                                                                                                                 | 70871 | 277615 | 70089 | 279655 | 69312 | 281709 | 68540                         | 283776 | 67772 | 285856 | 67010 | 287950 | 1   |
| 9.2                                                                                                                               | 70855 | 277656 | 70073 | 279696 | 69296 | 281750 | 68524                         | 283817 | 67757 | 285898 | 66995 | 287993 | 0.8 |
| 9.4                                                                                                                               | 70840 | 277697 | 70058 | 279737 | 69281 | 281791 | 68509                         | 283859 | 67742 | 285940 | 66980 | 288035 | 0.6 |
| 9.6                                                                                                                               | 70824 | 277737 | 70042 | 279778 | 69265 | 281832 | 68493                         | 283900 | 67727 | 285982 | 66965 | 288077 | 0.4 |
| 9.8                                                                                                                               | 70808 | 277778 | 70026 | 279819 | 69250 | 281874 | 68478                         | 283942 | 67711 | 286023 | 66950 | 288119 | 0.2 |
| 10                                                                                                                                | 70793 | 277819 | 70011 | 279860 | 69234 | 281915 | 68463                         | 283983 | 67696 | 286065 | 66934 | 288161 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
| 121°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 59°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 66934 | 288161 | 66178 | 290270 | 65426 | 292394 | 64680                         | 294531 | 63938 | 296683 | 63201 | 298849 | 10  |
| 0.2                                                                                                                               | 66919 | 288203 | 66163 | 290312 | 65411 | 292436 | 64665                         | 294574 | 63923 | 296726 | 63187 | 298893 | 9.8 |
| 0.4                                                                                                                               | 66904 | 288245 | 66148 | 290355 | 65396 | 292479 | 64650                         | 294617 | 63908 | 296769 | 63172 | 298936 | 9.6 |
| 0.6                                                                                                                               | 66889 | 288287 | 66133 | 290397 | 65381 | 292521 | 64635                         | 294660 | 63894 | 296813 | 63157 | 298980 | 9.4 |
| 0.8                                                                                                                               | 66874 | 288329 | 66118 | 290439 | 65366 | 292564 | 64620                         | 294703 | 63879 | 296856 | 63142 | 299023 | 9.2 |
| 1                                                                                                                                 | 66859 | 288371 | 66102 | 290482 | 65351 | 292607 | 64605                         | 294746 | 63864 | 296899 | 63128 | 299067 | 9   |
| 1.2                                                                                                                               | 66843 | 288413 | 66087 | 290524 | 65336 | 292649 | 64590                         | 294789 | 63849 | 296942 | 63113 | 299110 | 8.8 |
| 1.4                                                                                                                               | 66828 | 288455 | 66072 | 290567 | 65321 | 292692 | 64575                         | 294832 | 63834 | 296985 | 63098 | 299154 | 8.6 |
| 1.6                                                                                                                               | 66813 | 288497 | 66057 | 290609 | 65306 | 292735 | 64561                         | 294874 | 63820 | 297029 | 63084 | 299197 | 8.4 |
| 1.8                                                                                                                               | 66798 | 288539 | 66042 | 290651 | 65291 | 292777 | 64546                         | 294917 | 63805 | 297072 | 63069 | 299241 | 8.2 |
| 2                                                                                                                                 | 66783 | 288581 | 66027 | 290694 | 65277 | 292820 | 64531                         | 294960 | 63790 | 297115 | 63054 | 299284 | 8   |
| 2.2                                                                                                                               | 66768 | 288624 | 66012 | 290736 | 65262 | 292863 | 64516                         | 295003 | 63775 | 297158 | 63040 | 299328 | 7.8 |
| 2.4                                                                                                                               | 66752 | 288666 | 65997 | 290778 | 65247 | 292905 | 64501                         | 295046 | 63761 | 297202 | 63025 | 299371 | 7.6 |
| 2.6                                                                                                                               | 66737 | 288708 | 65982 | 290821 | 65232 | 292948 | 64486                         | 295089 | 63746 | 297245 | 63010 | 299415 | 7.4 |
| 2.8                                                                                                                               | 66722 | 288750 | 65967 | 290863 | 65217 | 292991 | 64471                         | 295132 | 63731 | 297288 | 62996 | 299458 | 7.2 |
| 3                                                                                                                                 | 66707 | 288792 | 65952 | 290906 | 65202 | 293033 | 64457                         | 295175 | 63716 | 297331 | 62981 | 299502 | 7   |
| 3.2                                                                                                                               | 66692 | 288834 | 65937 | 290948 | 65187 | 293076 | 64442                         | 295218 | 63702 | 297375 | 62966 | 299545 | 6.8 |
| 3.4                                                                                                                               | 66677 | 288876 | 65922 | 290991 | 65172 | 293119 | 64427                         | 295261 | 63687 | 297418 | 62952 | 299589 | 6.6 |
| 3.6                                                                                                                               | 66661 | 288918 | 65907 | 291033 | 65157 | 293161 | 64412                         | 295304 | 63672 | 297461 | 62937 | 299633 | 6.4 |
| 3.8                                                                                                                               | 66646 | 288961 | 65892 | 291075 | 65142 | 293204 | 64397                         | 295347 | 63657 | 297504 | 62923 | 299676 | 6.2 |
| 4                                                                                                                                 | 66631 | 289003 | 65877 | 291118 | 65127 | 293247 | 64382                         | 295390 | 63643 | 297548 | 62908 | 299720 | 6   |
| 4.2                                                                                                                               | 66616 | 289045 | 65862 | 291160 | 65112 | 293290 | 64368                         | 295433 | 63628 | 297591 | 62893 | 299763 | 5.8 |
| 4.4                                                                                                                               | 66601 | 289087 | 65847 | 291203 | 65097 | 293332 | 64353                         | 295476 | 63613 | 297634 | 62879 | 299807 | 5.6 |
| 4.6                                                                                                                               | 66586 | 289129 | 65831 | 291245 | 65082 | 293375 | 64338                         | 295519 | 63598 | 297678 | 62864 | 299851 | 5.4 |
| 4.8                                                                                                                               | 66571 | 289171 | 65816 | 291288 | 65067 | 293418 | 64323                         | 295562 | 63584 | 297721 | 62849 | 299894 | 5.2 |
| 5                                                                                                                                 | 66555 | 289214 | 65801 | 291330 | 65052 | 293461 | 64308                         | 295605 | 63569 | 297764 | 62835 | 299938 | 5   |
| 5.2                                                                                                                               | 66540 | 289256 | 65786 | 291373 | 65037 | 293503 | 64293                         | 295648 | 63554 | 297808 | 62820 | 299981 | 4.8 |
| 5.4                                                                                                                               | 66525 | 289298 | 65771 | 291415 | 65022 | 293546 | 64278                         | 295691 | 63539 | 297851 | 62805 | 300025 | 4.6 |
| 5.6                                                                                                                               | 66510 | 289340 | 65756 | 291458 | 65008 | 293589 | 64264                         | 295734 | 63525 | 297894 | 62791 | 300069 | 4.4 |
| 5.8                                                                                                                               | 66495 | 289382 | 65741 | 291500 | 64993 | 293632 | 64249                         | 295777 | 63510 | 297938 | 62776 | 300112 | 4.2 |
| 6                                                                                                                                 | 66480 | 289425 | 65726 | 291542 | 64978 | 293674 | 64234                         | 295821 | 63495 | 297981 | 62762 | 300156 | 4   |
| 6.2                                                                                                                               | 66465 | 289467 | 65711 | 291585 | 64963 | 293717 | 64219                         | 295864 | 63481 | 298024 | 62747 | 300200 | 3.8 |
| 6.4                                                                                                                               | 66450 | 289509 | 65696 | 291627 | 64948 | 293760 | 64204                         | 295907 | 63466 | 298068 | 62732 | 300243 | 3.6 |
| 6.6                                                                                                                               | 66435 | 289551 | 65681 | 291670 | 64933 | 293803 | 64190                         | 295950 | 63451 | 298111 | 62718 | 300287 | 3.4 |
| 6.8                                                                                                                               | 66419 | 289594 | 65666 | 291713 | 64918 | 293846 | 64175                         | 295993 | 63436 | 298154 | 62703 | 300331 | 3.2 |
| 7                                                                                                                                 | 66404 | 289636 | 65651 | 291755 | 64903 | 293888 | 64160                         | 296036 | 63422 | 298198 | 62688 | 300374 | 3   |
| 7.2                                                                                                                               | 66389 | 289678 | 65636 | 291798 | 64888 | 293931 | 64145                         | 296079 | 63407 | 298241 | 62674 | 300418 | 2.8 |
| 7.4                                                                                                                               | 66374 | 289720 | 65621 | 291840 | 64873 | 293974 | 64130                         | 296122 | 63392 | 298285 | 62659 | 300462 | 2.6 |
| 7.6                                                                                                                               | 66359 | 289763 | 65606 | 291883 | 64858 | 294017 | 64115                         | 296165 | 63378 | 298328 | 62645 | 300505 | 2.4 |
| 7.8                                                                                                                               | 66344 | 289805 | 65591 | 291925 | 64843 | 294060 | 64101                         | 296208 | 63363 | 298371 | 62630 | 300549 | 2.2 |
| 8                                                                                                                                 | 66329 | 289847 | 65576 | 291968 | 64829 | 294102 | 64086                         | 296251 | 63348 | 298415 | 62615 | 300593 | 2   |
| 8.2                                                                                                                               | 66314 | 289889 | 65561 | 292010 | 64814 | 294145 | 64071                         | 296295 | 63333 | 298458 | 62601 | 300636 | 1.8 |
| 8.4                                                                                                                               | 66299 | 289932 | 65546 | 292053 | 64799 | 294188 | 64056                         | 296338 | 63319 | 298502 | 62586 | 300680 | 1.6 |
| 8.6                                                                                                                               | 66283 | 289974 | 65531 | 292095 | 64784 | 294231 | 64041                         | 296381 | 63304 | 298545 | 62572 | 300724 | 1.4 |
| 8.8                                                                                                                               | 66268 | 290016 | 65516 | 292138 | 64769 | 294274 | 64027                         | 296424 | 63289 | 298588 | 62557 | 300768 | 1.2 |
| 9                                                                                                                                 | 66253 | 290059 | 65501 | 292181 | 64754 | 294317 | 64012                         | 296467 | 63275 | 298632 | 62542 | 300811 | 1   |
| 9.2                                                                                                                               | 66238 | 290101 | 65486 | 292223 | 64739 | 294360 | 63997                         | 296510 | 63260 | 298675 | 62528 | 300855 | 0.8 |
| 9.4                                                                                                                               | 66223 | 290143 | 65471 | 292266 | 64724 | 294402 | 63982                         | 296553 | 63245 | 298719 | 62513 | 300899 | 0.6 |
| 9.6                                                                                                                               | 66208 | 290185 | 65456 | 292308 | 64709 | 294445 | 63968                         | 296597 | 63231 | 298762 | 62499 | 300942 | 0.4 |
| 9.8                                                                                                                               | 66193 | 290228 | 65441 | 292351 | 64694 | 294488 | 63953                         | 296640 | 63216 | 298806 | 62484 | 300986 | 0.2 |
| 10                                                                                                                                | 66178 | 290270 | 65426 | 292394 | 64680 | 294531 | 63938                         | 296683 | 63201 | 298849 | 62469 | 301030 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 120°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 60°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 62469 | 301030 | 61742 | 303225 | 61020 | 305436 | 60303                         | 307661 | 59591 | 309902 | 58883 | 312157 | 10  |
| 0.2                                                                                                                               | 62455 | 301074 | 61728 | 303270 | 61006 | 305480 | 60289                         | 307706 | 59577 | 309947 | 58869 | 312203 | 9.8 |
| 0.4                                                                                                                               | 62440 | 301118 | 61713 | 303314 | 60992 | 305525 | 60275                         | 307751 | 59563 | 309992 | 58855 | 312248 | 9.6 |
| 0.6                                                                                                                               | 62426 | 301161 | 61699 | 303358 | 60977 | 305569 | 60260                         | 307795 | 59548 | 310037 | 58841 | 312293 | 9.4 |
| 0.8                                                                                                                               | 62411 | 301205 | 61684 | 303402 | 60963 | 305613 | 60246                         | 307840 | 59534 | 310082 | 58827 | 312339 | 9.2 |
| 1                                                                                                                                 | 62396 | 301249 | 61670 | 303446 | 60948 | 305658 | 60232                         | 307885 | 59520 | 310127 | 58813 | 312384 | 9   |
| 1.2                                                                                                                               | 62382 | 301293 | 61656 | 303490 | 60934 | 305702 | 60217                         | 307929 | 59506 | 310172 | 58799 | 312429 | 8.8 |
| 1.4                                                                                                                               | 62367 | 301336 | 61641 | 303534 | 60920 | 305746 | 60203                         | 307974 | 59492 | 310217 | 58785 | 312475 | 8.6 |
| 1.6                                                                                                                               | 62353 | 301380 | 61627 | 303578 | 60905 | 305791 | 60189                         | 308019 | 59477 | 310262 | 58771 | 312520 | 8.4 |
| 1.8                                                                                                                               | 62338 | 301424 | 61612 | 303622 | 60891 | 305835 | 60175                         | 308063 | 59463 | 310307 | 58757 | 312565 | 8.2 |
| 2                                                                                                                                 | 62324 | 301468 | 61598 | 303666 | 60877 | 305880 | 60160                         | 308108 | 59449 | 310352 | 58742 | 312611 | 8   |
| 2.2                                                                                                                               | 62309 | 301512 | 61583 | 303710 | 60862 | 305924 | 60146                         | 308153 | 59435 | 310397 | 58728 | 312656 | 7.8 |
| 2.4                                                                                                                               | 62294 | 301556 | 61569 | 303755 | 60848 | 305969 | 60132                         | 308198 | 59421 | 310442 | 58714 | 312701 | 7.6 |
| 2.6                                                                                                                               | 62280 | 301599 | 61554 | 303799 | 60833 | 306013 | 60118                         | 308242 | 59406 | 310487 | 58700 | 312747 | 7.4 |
| 2.8                                                                                                                               | 62265 | 301643 | 61540 | 303843 | 60819 | 306057 | 60103                         | 308287 | 59392 | 310532 | 58686 | 312792 | 7.2 |
| 3                                                                                                                                 | 62251 | 301687 | 61525 | 303887 | 60805 | 306102 | 60089                         | 308332 | 59378 | 310577 | 58672 | 312837 | 7   |
| 3.2                                                                                                                               | 62236 | 301731 | 61511 | 303931 | 60790 | 306146 | 60075                         | 308376 | 59364 | 310622 | 58658 | 312883 | 6.8 |
| 3.4                                                                                                                               | 62222 | 301775 | 61496 | 303975 | 60776 | 306191 | 60060                         | 308421 | 59350 | 310667 | 58644 | 312928 | 6.6 |
| 3.6                                                                                                                               | 62207 | 301819 | 61482 | 304019 | 60762 | 306235 | 60046                         | 308466 | 59336 | 310712 | 58630 | 312973 | 6.4 |
| 3.8                                                                                                                               | 62193 | 301863 | 61467 | 304064 | 60747 | 306280 | 60032                         | 308511 | 59321 | 310757 | 58616 | 313019 | 6.2 |
| 4                                                                                                                                 | 62178 | 301906 | 61453 | 304108 | 60733 | 306324 | 60018                         | 308556 | 59307 | 310802 | 58602 | 313064 | 6   |
| 4.2                                                                                                                               | 62163 | 301950 | 61439 | 304152 | 60719 | 306369 | 60003                         | 308600 | 59293 | 310847 | 58588 | 313110 | 5.8 |
| 4.4                                                                                                                               | 62149 | 301994 | 61424 | 304196 | 60704 | 306413 | 59989                         | 308645 | 59279 | 310892 | 58574 | 313155 | 5.6 |
| 4.6                                                                                                                               | 62134 | 302038 | 61410 | 304240 | 60690 | 306458 | 59975                         | 308690 | 59265 | 310937 | 58560 | 313200 | 5.4 |
| 4.8                                                                                                                               | 62120 | 302082 | 61395 | 304285 | 60676 | 306502 | 59961                         | 308735 | 59251 | 310983 | 58546 | 313246 | 5.2 |
| 5                                                                                                                                 | 62105 | 302126 | 61381 | 304329 | 60661 | 306547 | 59946                         | 308780 | 59237 | 311028 | 58531 | 313291 | 5   |
| 5.2                                                                                                                               | 62091 | 302170 | 61366 | 304373 | 60647 | 306591 | 59932                         | 308824 | 59222 | 311073 | 58517 | 313337 | 4.8 |
| 5.4                                                                                                                               | 62076 | 302214 | 61352 | 304417 | 60633 | 306636 | 59918                         | 308869 | 59208 | 311118 | 58503 | 313382 | 4.6 |
| 5.6                                                                                                                               | 62062 | 302258 | 61337 | 304461 | 60618 | 306680 | 59904                         | 308914 | 59194 | 311163 | 58489 | 313427 | 4.4 |
| 5.8                                                                                                                               | 62047 | 302302 | 61323 | 304506 | 60604 | 306725 | 59889                         | 308959 | 59180 | 311208 | 58475 | 313473 | 4.2 |
| 6                                                                                                                                 | 62033 | 302346 | 61309 | 304550 | 60590 | 306769 | 59875                         | 309004 | 59166 | 311253 | 58461 | 313518 | 4   |
| 6.2                                                                                                                               | 62018 | 302389 | 61294 | 304594 | 60575 | 306814 | 59861                         | 309048 | 59152 | 311298 | 58447 | 313564 | 3.8 |
| 6.4                                                                                                                               | 62004 | 302433 | 61280 | 304638 | 60561 | 306858 | 59847                         | 309093 | 59138 | 311344 | 58433 | 313609 | 3.6 |
| 6.6                                                                                                                               | 61989 | 302477 | 61265 | 304683 | 60547 | 306903 | 59833                         | 309138 | 59123 | 311389 | 58419 | 313655 | 3.4 |
| 6.8                                                                                                                               | 61975 | 302521 | 61251 | 304727 | 60532 | 306947 | 59818                         | 309183 | 59109 | 311434 | 58405 | 313700 | 3.2 |
| 7                                                                                                                                 | 61960 | 302565 | 61237 | 304771 | 60518 | 306992 | 59804                         | 309228 | 59095 | 311479 | 58391 | 313746 | 3   |
| 7.2                                                                                                                               | 61945 | 302609 | 61222 | 304815 | 60504 | 307037 | 59790                         | 309273 | 59081 | 311524 | 58377 | 313791 | 2.8 |
| 7.4                                                                                                                               | 61931 | 302653 | 61208 | 304860 | 60489 | 307081 | 59776                         | 309318 | 59067 | 311569 | 58363 | 313837 | 2.6 |
| 7.6                                                                                                                               | 61916 | 302697 | 61193 | 304904 | 60475 | 307126 | 59761                         | 309363 | 59053 | 311615 | 58349 | 313882 | 2.4 |
| 7.8                                                                                                                               | 61902 | 302741 | 61179 | 304948 | 60461 | 307170 | 59747                         | 309407 | 59039 | 311660 | 58335 | 313928 | 2.2 |
| 8                                                                                                                                 | 61887 | 302785 | 61164 | 304993 | 60446 | 307215 | 59733                         | 309452 | 59025 | 311705 | 58321 | 313973 | 2   |
| 8.2                                                                                                                               | 61873 | 302829 | 61150 | 305037 | 60432 | 307260 | 59719                         | 309497 | 59010 | 311750 | 58307 | 314019 | 1.8 |
| 8.4                                                                                                                               | 61858 | 302873 | 61136 | 305081 | 60418 | 307304 | 59705                         | 309542 | 58996 | 311796 | 58293 | 314064 | 1.6 |
| 8.6                                                                                                                               | 61844 | 302917 | 61121 | 305125 | 60403 | 307349 | 59690                         | 309587 | 58982 | 311841 | 58279 | 314110 | 1.4 |
| 8.8                                                                                                                               | 61829 | 302961 | 61107 | 305170 | 60389 | 307393 | 59676                         | 309632 | 58968 | 311886 | 58265 | 314155 | 1.2 |
| 9                                                                                                                                 | 61815 | 303005 | 61092 | 305214 | 60375 | 307438 | 59662                         | 309677 | 58954 | 311931 | 58251 | 314201 | 1   |
| 9.2                                                                                                                               | 61800 | 303049 | 61078 | 305258 | 60360 | 307483 | 59648                         | 309722 | 58940 | 311976 | 58237 | 314246 | 0.8 |
| 9.4                                                                                                                               | 61786 | 303093 | 61064 | 305303 | 60346 | 307527 | 59634                         | 309767 | 58926 | 312022 | 58223 | 314292 | 0.6 |
| 9.6                                                                                                                               | 61771 | 303137 | 61049 | 305347 | 60332 | 307572 | 59619                         | 309812 | 58912 | 312067 | 58209 | 314338 | 0.4 |
| 9.8                                                                                                                               | 61757 | 303181 | 61035 | 305391 | 60318 | 307617 | 59605                         | 309857 | 58898 | 312112 | 58195 | 314383 | 0.2 |
| 10                                                                                                                                | 61742 | 303225 | 61020 | 305436 | 60303 | 307661 | 59591                         | 309902 | 58883 | 312157 | 58181 | 314429 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 119°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 61°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 58181 | 314429 | 57483 | 316716 | 56790 | 319018 | 56101                         | 321337 | 55418 | 323672 | 54739 | 326023 | 10  |
| 0.2                                                                                                                               | 58167 | 314474 | 57469 | 316762 | 56776 | 319065 | 56088                         | 321384 | 55404 | 323719 | 54726 | 326070 | 9.8 |
| 0.4                                                                                                                               | 58153 | 314520 | 57455 | 316807 | 56762 | 319111 | 56074                         | 321430 | 55391 | 323766 | 54712 | 326117 | 9.6 |
| 0.6                                                                                                                               | 58139 | 314566 | 57441 | 316853 | 56748 | 319157 | 56060                         | 321477 | 55377 | 323813 | 54699 | 326165 | 9.4 |
| 0.8                                                                                                                               | 58125 | 314611 | 57427 | 316899 | 56735 | 319203 | 56047                         | 321523 | 55363 | 323859 | 54685 | 326212 | 9.2 |
| 1                                                                                                                                 | 58111 | 314657 | 57413 | 316945 | 56721 | 319250 | 56033                         | 321570 | 55350 | 323906 | 54672 | 326259 | 9   |
| 1.2                                                                                                                               | 58097 | 314702 | 57399 | 316991 | 56707 | 319296 | 56019                         | 321616 | 55336 | 323953 | 54658 | 326306 | 8.8 |
| 1.4                                                                                                                               | 58083 | 314748 | 57386 | 317037 | 56693 | 319342 | 56006                         | 321663 | 55323 | 324000 | 54644 | 326354 | 8.6 |
| 1.6                                                                                                                               | 58069 | 314794 | 57372 | 317083 | 56679 | 319388 | 55992                         | 321710 | 55309 | 324047 | 54631 | 326401 | 8.4 |
| 1.8                                                                                                                               | 58055 | 314839 | 57358 | 317129 | 56666 | 319435 | 55978                         | 321756 | 55295 | 324094 | 54617 | 326448 | 8.2 |
| 2                                                                                                                                 | 58041 | 314885 | 57344 | 317175 | 56652 | 319481 | 55964                         | 321803 | 55282 | 324141 | 54604 | 326495 | 8   |
| 2.2                                                                                                                               | 58027 | 314931 | 57330 | 317221 | 56638 | 319527 | 55951                         | 321849 | 55268 | 324188 | 54590 | 326543 | 7.8 |
| 2.4                                                                                                                               | 58013 | 314976 | 57316 | 317267 | 56624 | 319573 | 55937                         | 321896 | 55255 | 324235 | 54577 | 326590 | 7.6 |
| 2.6                                                                                                                               | 57999 | 315022 | 57302 | 317313 | 56610 | 319620 | 55923                         | 321943 | 55241 | 324282 | 54563 | 326637 | 7.4 |
| 2.8                                                                                                                               | 57985 | 315068 | 57288 | 317359 | 56597 | 319666 | 55910                         | 321989 | 55227 | 324329 | 54550 | 326684 | 7.2 |
| 3                                                                                                                                 | 57971 | 315113 | 57274 | 317405 | 56583 | 319712 | 55896                         | 322036 | 55214 | 324376 | 54536 | 326732 | 7   |
| 3.2                                                                                                                               | 57957 | 315159 | 57261 | 317451 | 56569 | 319759 | 55882                         | 322082 | 55200 | 324423 | 54523 | 326779 | 6.8 |
| 3.4                                                                                                                               | 57943 | 315205 | 57247 | 317497 | 56555 | 319805 | 55869                         | 322129 | 55187 | 324469 | 54509 | 326826 | 6.6 |
| 3.6                                                                                                                               | 57929 | 315250 | 57233 | 317543 | 56541 | 319851 | 55855                         | 322176 | 55173 | 324516 | 54496 | 326874 | 6.4 |
| 3.8                                                                                                                               | 57915 | 315296 | 57219 | 317589 | 56528 | 319898 | 55841                         | 322222 | 55159 | 324563 | 54482 | 326921 | 6.2 |
| 4                                                                                                                                 | 57901 | 315342 | 57205 | 317635 | 56514 | 319944 | 55828                         | 322269 | 55146 | 324610 | 54469 | 326968 | 6   |
| 4.2                                                                                                                               | 57887 | 315387 | 57191 | 317681 | 56500 | 319990 | 55814                         | 322316 | 55132 | 324657 | 54455 | 327015 | 5.8 |
| 4.4                                                                                                                               | 57873 | 315433 | 57177 | 317727 | 56486 | 320037 | 55800                         | 322362 | 55119 | 324704 | 54442 | 327063 | 5.6 |
| 4.6                                                                                                                               | 57859 | 315479 | 57163 | 317773 | 56473 | 320083 | 55786                         | 322409 | 55105 | 324751 | 54428 | 327110 | 5.4 |
| 4.8                                                                                                                               | 57845 | 315525 | 57150 | 317819 | 56459 | 320129 | 55773                         | 322456 | 55092 | 324798 | 54415 | 327157 | 5.2 |
| 5                                                                                                                                 | 57831 | 315570 | 57136 | 317865 | 56445 | 320176 | 55759                         | 322502 | 55078 | 324845 | 54402 | 327205 | 5   |
| 5.2                                                                                                                               | 57817 | 315616 | 57122 | 317911 | 56431 | 320222 | 55745                         | 322549 | 55064 | 324892 | 54388 | 327252 | 4.8 |
| 5.4                                                                                                                               | 57803 | 315662 | 57108 | 317957 | 56418 | 320269 | 55732                         | 322596 | 55051 | 324940 | 54375 | 327300 | 4.6 |
| 5.6                                                                                                                               | 57789 | 315708 | 57094 | 318003 | 56404 | 320315 | 55718                         | 322643 | 55037 | 324987 | 54361 | 327347 | 4.4 |
| 5.8                                                                                                                               | 57775 | 315753 | 57080 | 318049 | 56390 | 320361 | 55704                         | 322689 | 55024 | 325034 | 54348 | 327394 | 4.2 |
| 6                                                                                                                                 | 57761 | 315799 | 57066 | 318095 | 56376 | 320408 | 55691                         | 322736 | 55010 | 325081 | 54334 | 327442 | 4   |
| 6.2                                                                                                                               | 57747 | 315845 | 57053 | 318142 | 56362 | 320454 | 55677                         | 322783 | 54997 | 325128 | 54321 | 327489 | 3.8 |
| 6.4                                                                                                                               | 57734 | 315891 | 57039 | 318188 | 56349 | 320501 | 55663                         | 322830 | 54983 | 325175 | 54307 | 327536 | 3.6 |
| 6.6                                                                                                                               | 57720 | 315936 | 57025 | 318234 | 56335 | 320547 | 55650                         | 322876 | 54969 | 325222 | 54294 | 327584 | 3.4 |
| 6.8                                                                                                                               | 57706 | 315982 | 57011 | 318280 | 56321 | 320593 | 55636                         | 322923 | 54956 | 325269 | 54280 | 327631 | 3.2 |
| 7                                                                                                                                 | 57692 | 316028 | 56997 | 318326 | 56307 | 320640 | 55623                         | 322970 | 54942 | 325316 | 54267 | 327679 | 3   |
| 7.2                                                                                                                               | 57678 | 316074 | 56983 | 318372 | 56294 | 320686 | 55609                         | 323017 | 54929 | 325363 | 54253 | 327726 | 2.8 |
| 7.4                                                                                                                               | 57664 | 316120 | 56970 | 318418 | 56280 | 320733 | 55595                         | 323063 | 54915 | 325410 | 54240 | 327774 | 2.6 |
| 7.6                                                                                                                               | 57650 | 316165 | 56956 | 318464 | 56266 | 320779 | 55582                         | 323110 | 54902 | 325457 | 54226 | 327821 | 2.4 |
| 7.8                                                                                                                               | 57636 | 316211 | 56942 | 318510 | 56253 | 320826 | 55568                         | 323157 | 54888 | 325504 | 54213 | 327868 | 2.2 |
| 8                                                                                                                                 | 57622 | 316257 | 56928 | 318557 | 56239 | 320872 | 55554                         | 323204 | 54875 | 325552 | 54200 | 327916 | 2   |
| 8.2                                                                                                                               | 57608 | 316303 | 56914 | 318603 | 56225 | 320919 | 55541                         | 323250 | 54861 | 325599 | 54186 | 327963 | 1.8 |
| 8.4                                                                                                                               | 57594 | 316349 | 56900 | 318649 | 56211 | 320965 | 55527                         | 323297 | 54847 | 325646 | 54173 | 328011 | 1.6 |
| 8.6                                                                                                                               | 57580 | 316395 | 56887 | 318695 | 56198 | 321012 | 55513                         | 323344 | 54834 | 325693 | 54159 | 328058 | 1.4 |
| 8.8                                                                                                                               | 57566 | 316440 | 56873 | 318741 | 56184 | 321058 | 55500                         | 323391 | 54820 | 325740 | 54146 | 328106 | 1.2 |
| 9                                                                                                                                 | 57552 | 316486 | 56859 | 318787 | 56170 | 321105 | 55486                         | 323438 | 54807 | 325787 | 54132 | 328153 | 1   |
| 9.2                                                                                                                               | 57539 | 316532 | 56845 | 318834 | 56156 | 321151 | 55472                         | 323485 | 54793 | 325834 | 54119 | 328201 | 0.8 |
| 9.4                                                                                                                               | 57525 | 316578 | 56831 | 318880 | 56143 | 321198 | 55459                         | 323531 | 54780 | 325882 | 54105 | 328248 | 0.6 |
| 9.6                                                                                                                               | 57511 | 316624 | 56817 | 318926 | 56129 | 321244 | 55445                         | 323578 | 54766 | 325929 | 54092 | 328296 | 0.4 |
| 9.8                                                                                                                               | 57497 | 316670 | 56804 | 318972 | 56115 | 321291 | 55432                         | 323625 | 54753 | 325976 | 54079 | 328343 | 0.2 |
| 10                                                                                                                                | 57483 | 316716 | 56790 | 319018 | 56101 | 321337 | 55418                         | 323672 | 54739 | 326023 | 54065 | 328391 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 118°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 62°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 54065 | 328391 | 53396 | 330775 | 52731 | 333176 | 52071                         | 335594 | 51416 | 338030 | 50765 | 340483 | 10  |
| 0.2                                                                                                                               | 54052 | 328438 | 53382 | 330823 | 52718 | 333224 | 52058                         | 335643 | 51403 | 338079 | 50752 | 340532 | 9.8 |
| 0.4                                                                                                                               | 54038 | 328486 | 53369 | 330871 | 52705 | 333273 | 52045                         | 335691 | 51390 | 338128 | 50739 | 340581 | 9.6 |
| 0.6                                                                                                                               | 54025 | 328533 | 53356 | 330919 | 52691 | 333321 | 52032                         | 335740 | 51377 | 338177 | 50726 | 340630 | 9.4 |
| 0.8                                                                                                                               | 54011 | 328581 | 53342 | 330966 | 52678 | 333369 | 52018                         | 335789 | 51364 | 338225 | 50713 | 340680 | 9.2 |
| 1                                                                                                                                 | 53998 | 328628 | 53329 | 331014 | 52665 | 333417 | 52005                         | 335837 | 51350 | 338274 | 50700 | 340729 | 9   |
| 1.2                                                                                                                               | 53985 | 328676 | 53316 | 331062 | 52652 | 333465 | 51992                         | 335886 | 51337 | 338323 | 50687 | 340778 | 8.8 |
| 1.4                                                                                                                               | 53971 | 328724 | 53302 | 331110 | 52638 | 333514 | 51979                         | 335934 | 51324 | 338372 | 50674 | 340828 | 8.6 |
| 1.6                                                                                                                               | 53958 | 328771 | 53289 | 331158 | 52625 | 333562 | 51966                         | 335983 | 51311 | 338421 | 50661 | 340877 | 8.4 |
| 1.8                                                                                                                               | 53944 | 328819 | 53276 | 331206 | 52612 | 333610 | 51953                         | 336032 | 51298 | 338470 | 50648 | 340926 | 8.2 |
| 2                                                                                                                                 | 53931 | 328866 | 53262 | 331254 | 52599 | 333658 | 51940                         | 336080 | 51285 | 338519 | 50636 | 340975 | 8   |
| 2.2                                                                                                                               | 53917 | 328914 | 53249 | 331302 | 52585 | 333707 | 51927                         | 336129 | 51272 | 338568 | 50623 | 341025 | 7.8 |
| 2.4                                                                                                                               | 53904 | 328961 | 53236 | 331350 | 52572 | 333755 | 51913                         | 336177 | 51259 | 338617 | 50610 | 341074 | 7.6 |
| 2.6                                                                                                                               | 53891 | 329009 | 53222 | 331398 | 52559 | 333803 | 51900                         | 336226 | 51246 | 338666 | 50597 | 341123 | 7.4 |
| 2.8                                                                                                                               | 53877 | 329057 | 53209 | 331446 | 52546 | 333852 | 51887                         | 336275 | 51233 | 338715 | 50584 | 341173 | 7.2 |
| 3                                                                                                                                 | 53864 | 329104 | 53196 | 331494 | 52533 | 333900 | 51874                         | 336323 | 51220 | 338764 | 50571 | 341222 | 7   |
| 3.2                                                                                                                               | 53850 | 329152 | 53183 | 331542 | 52519 | 333948 | 51861                         | 336372 | 51207 | 338813 | 50558 | 341271 | 6.8 |
| 3.4                                                                                                                               | 53837 | 329199 | 53169 | 331590 | 52506 | 333996 | 51848                         | 336421 | 51194 | 338862 | 50545 | 341321 | 6.6 |
| 3.6                                                                                                                               | 53824 | 329247 | 53156 | 331637 | 52493 | 334045 | 51835                         | 336469 | 51181 | 338911 | 50532 | 341370 | 6.4 |
| 3.8                                                                                                                               | 53810 | 329295 | 53143 | 331685 | 52480 | 334093 | 51822                         | 336518 | 51168 | 338960 | 50519 | 341419 | 6.2 |
| 4                                                                                                                                 | 53797 | 329342 | 53129 | 331733 | 52467 | 334141 | 51808                         | 336567 | 51155 | 339009 | 50506 | 341469 | 6   |
| 4.2                                                                                                                               | 53783 | 329390 | 53116 | 331781 | 52453 | 334190 | 51795                         | 336615 | 51142 | 339058 | 50493 | 341518 | 5.8 |
| 4.4                                                                                                                               | 53770 | 329438 | 53103 | 331829 | 52440 | 334238 | 51782                         | 336664 | 51129 | 339107 | 50480 | 341568 | 5.6 |
| 4.6                                                                                                                               | 53757 | 329485 | 53089 | 331877 | 52427 | 334286 | 51769                         | 336713 | 51116 | 339156 | 50467 | 341617 | 5.4 |
| 4.8                                                                                                                               | 53743 | 329533 | 53076 | 331925 | 52414 | 334335 | 51756                         | 336761 | 51103 | 339205 | 50454 | 341666 | 5.2 |
| 5                                                                                                                                 | 53730 | 329581 | 53063 | 331973 | 52400 | 334383 | 51743                         | 336810 | 51090 | 339254 | 50442 | 341716 | 5   |
| 5.2                                                                                                                               | 53716 | 329628 | 53050 | 332022 | 52387 | 334432 | 51730                         | 336859 | 51077 | 339303 | 50429 | 341765 | 4.8 |
| 5.4                                                                                                                               | 53703 | 329676 | 53036 | 332070 | 52374 | 334480 | 51717                         | 336907 | 51064 | 339352 | 50416 | 341815 | 4.6 |
| 5.6                                                                                                                               | 53690 | 329724 | 53023 | 332118 | 52361 | 334528 | 51704                         | 336956 | 51051 | 339401 | 50403 | 341864 | 4.4 |
| 5.8                                                                                                                               | 53676 | 329772 | 53010 | 332166 | 52348 | 334577 | 51690                         | 337005 | 51038 | 339450 | 50390 | 341913 | 4.2 |
| 6                                                                                                                                 | 53663 | 329819 | 52996 | 332214 | 52335 | 334625 | 51677                         | 337054 | 51025 | 339499 | 50377 | 341963 | 4   |
| 6.2                                                                                                                               | 53650 | 329867 | 52983 | 332262 | 52321 | 334673 | 51664                         | 337102 | 51012 | 339549 | 50364 | 342012 | 3.8 |
| 6.4                                                                                                                               | 53636 | 329915 | 52970 | 332310 | 52308 | 334722 | 51651                         | 337151 | 50999 | 339598 | 50351 | 342062 | 3.6 |
| 6.6                                                                                                                               | 53623 | 329962 | 52957 | 332358 | 52295 | 334770 | 51638                         | 337200 | 50986 | 339647 | 50338 | 342111 | 3.4 |
| 6.8                                                                                                                               | 53609 | 330010 | 52943 | 332406 | 52282 | 334819 | 51625                         | 337249 | 50973 | 339696 | 50325 | 342161 | 3.2 |
| 7                                                                                                                                 | 53596 | 330058 | 52930 | 332454 | 52269 | 334867 | 51612                         | 337297 | 50960 | 339745 | 50312 | 342210 | 3   |
| 7.2                                                                                                                               | 53583 | 330106 | 52917 | 332502 | 52255 | 334916 | 51599                         | 337346 | 50947 | 339794 | 50300 | 342260 | 2.8 |
| 7.4                                                                                                                               | 53569 | 330153 | 52903 | 332550 | 52242 | 334964 | 51586                         | 337395 | 50934 | 339843 | 50287 | 342309 | 2.6 |
| 7.6                                                                                                                               | 53556 | 330201 | 52890 | 332598 | 52229 | 335012 | 51573                         | 337444 | 50921 | 339892 | 50274 | 342359 | 2.4 |
| 7.8                                                                                                                               | 53543 | 330249 | 52877 | 332646 | 52216 | 335061 | 51560                         | 337493 | 50908 | 339942 | 50261 | 342408 | 2.2 |
| 8                                                                                                                                 | 53529 | 330297 | 52864 | 332695 | 52203 | 335109 | 51546                         | 337541 | 50895 | 339991 | 50248 | 342458 | 2   |
| 8.2                                                                                                                               | 53516 | 330345 | 52850 | 332743 | 52190 | 335158 | 51533                         | 337590 | 50882 | 340040 | 50235 | 342507 | 1.8 |
| 8.4                                                                                                                               | 53502 | 330392 | 52837 | 332791 | 52176 | 335206 | 51520                         | 337639 | 50869 | 340089 | 50222 | 342557 | 1.6 |
| 8.6                                                                                                                               | 53489 | 330440 | 52824 | 332839 | 52163 | 335255 | 51507                         | 337688 | 50856 | 340138 | 50209 | 342606 | 1.4 |
| 8.8                                                                                                                               | 53476 | 330488 | 52811 | 332887 | 52150 | 335303 | 51494                         | 337737 | 50843 | 340187 | 50196 | 342656 | 1.2 |
| 9                                                                                                                                 | 53462 | 330536 | 52797 | 332935 | 52137 | 335352 | 51481                         | 337786 | 50830 | 340237 | 50184 | 342705 | 1   |
| 9.2                                                                                                                               | 53449 | 330584 | 52784 | 332983 | 52124 | 335400 | 51468                         | 337834 | 50817 | 340286 | 50171 | 342755 | 0.8 |
| 9.4                                                                                                                               | 53436 | 330631 | 52771 | 333032 | 52111 | 335449 | 51455                         | 337883 | 50804 | 340335 | 50158 | 342805 | 0.6 |
| 9.6                                                                                                                               | 53422 | 330679 | 52758 | 333080 | 52097 | 335497 | 51442                         | 337932 | 50791 | 340384 | 50145 | 342854 | 0.4 |
| 9.8                                                                                                                               | 53409 | 330727 | 52744 | 333128 | 52084 | 335546 | 51429                         | 337981 | 50778 | 340433 | 50132 | 342904 | 0.2 |
| 10                                                                                                                                | 53396 | 330775 | 52731 | 333176 | 52071 | 335594 | 51416                         | 338030 | 50765 | 340483 | 50119 | 342953 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 117°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

63°

| ↓   | 0'    |        | 10'   |        | 20'   |        | 30'   |        | 40'   |        | 50'   |        |     |
|-----|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-----|
|     | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      |     |
| 0   | 50119 | 342953 | 49478 | 345442 | 48841 | 347948 | 48209 | 350473 | 47581 | 353016 | 46958 | 355577 | 10  |
| 0.2 | 50106 | 343003 | 49465 | 345492 | 48828 | 347998 | 48196 | 350523 | 47569 | 353067 | 46946 | 355629 | 9.8 |
| 0.4 | 50093 | 343052 | 49452 | 345541 | 48816 | 348049 | 48184 | 350574 | 47556 | 353118 | 46933 | 355680 | 9.6 |
| 0.6 | 50081 | 343102 | 49439 | 345591 | 48803 | 348099 | 48171 | 350625 | 47544 | 353169 | 46921 | 355732 | 9.4 |
| 0.8 | 50068 | 343152 | 49427 | 345641 | 48790 | 348149 | 48158 | 350675 | 47531 | 353220 | 46909 | 355783 | 9.2 |
| 1   | 50055 | 343201 | 49414 | 345691 | 48778 | 348200 | 48146 | 350726 | 47519 | 353271 | 46896 | 355835 | 9   |
| 1.2 | 50042 | 343251 | 49401 | 345741 | 48765 | 348250 | 48133 | 350777 | 47506 | 353322 | 46884 | 355886 | 8.8 |
| 1.4 | 50029 | 343301 | 49388 | 345791 | 48752 | 348300 | 48121 | 350827 | 47494 | 353373 | 46871 | 355938 | 8.6 |
| 1.6 | 50016 | 343350 | 49376 | 345841 | 48740 | 348351 | 48108 | 350878 | 47481 | 353424 | 46859 | 355989 | 8.4 |
| 1.8 | 50003 | 343400 | 49363 | 345891 | 48727 | 348401 | 48096 | 350929 | 47469 | 353475 | 46847 | 356041 | 8.2 |
| 2   | 49990 | 343449 | 49350 | 345941 | 48714 | 348451 | 48083 | 350980 | 47456 | 353526 | 46834 | 356092 | 8   |
| 2.2 | 49978 | 343499 | 49337 | 345991 | 48702 | 348502 | 48070 | 351030 | 47444 | 353578 | 46822 | 356144 | 7.8 |
| 2.4 | 49965 | 343549 | 49324 | 346041 | 48689 | 348552 | 48058 | 351081 | 47431 | 353629 | 46809 | 356195 | 7.6 |
| 2.6 | 49952 | 343598 | 49312 | 346091 | 48676 | 348603 | 48045 | 351132 | 47419 | 353680 | 46797 | 356247 | 7.4 |
| 2.8 | 49939 | 343648 | 49299 | 346142 | 48664 | 348653 | 48033 | 351183 | 47406 | 353731 | 46785 | 356298 | 7.2 |
| 3   | 49926 | 343698 | 49286 | 346192 | 48651 | 348703 | 48020 | 351234 | 47394 | 353782 | 46772 | 356350 | 7   |
| 3.2 | 49913 | 343748 | 49273 | 346242 | 48638 | 348754 | 48007 | 351284 | 47381 | 353833 | 46760 | 356401 | 6.8 |
| 3.4 | 49901 | 343797 | 49261 | 346292 | 48626 | 348804 | 47995 | 351335 | 47369 | 353885 | 46747 | 356453 | 6.6 |
| 3.6 | 49888 | 343847 | 49248 | 346342 | 48613 | 348855 | 47982 | 351386 | 47356 | 353936 | 46735 | 356504 | 6.4 |
| 3.8 | 49875 | 343897 | 49235 | 346392 | 48600 | 348905 | 47970 | 351437 | 47344 | 353987 | 46723 | 356556 | 6.2 |
| 4   | 49862 | 343946 | 49222 | 346442 | 48588 | 348956 | 47957 | 351488 | 47331 | 354038 | 46710 | 356607 | 6   |
| 4.2 | 49849 | 343996 | 49210 | 346492 | 48575 | 349006 | 47945 | 351538 | 47319 | 354089 | 46698 | 356659 | 5.8 |
| 4.4 | 49836 | 344046 | 49197 | 346542 | 48562 | 349057 | 47932 | 351589 | 47307 | 354140 | 46686 | 356711 | 5.6 |
| 4.6 | 49824 | 344096 | 49184 | 346592 | 48550 | 349107 | 47920 | 351640 | 47294 | 354192 | 46673 | 356762 | 5.4 |
| 4.8 | 49811 | 344145 | 49172 | 346642 | 48537 | 349157 | 47907 | 351691 | 47282 | 354243 | 46661 | 356814 | 5.2 |
| 5   | 49798 | 344195 | 49159 | 346692 | 48524 | 349208 | 47894 | 351742 | 47269 | 354294 | 46648 | 356865 | 5   |
| 5.2 | 49785 | 344245 | 49146 | 346743 | 48512 | 349258 | 47882 | 351793 | 47257 | 354345 | 46636 | 356917 | 4.8 |
| 5.4 | 49772 | 344295 | 49133 | 346793 | 48499 | 349309 | 47869 | 351844 | 47244 | 354397 | 46624 | 356969 | 4.6 |
| 5.6 | 49759 | 344344 | 49121 | 346843 | 48486 | 349359 | 47857 | 351894 | 47232 | 354448 | 46611 | 357020 | 4.4 |
| 5.8 | 49747 | 344394 | 49108 | 346893 | 48474 | 349410 | 47844 | 351945 | 47219 | 354499 | 46599 | 357072 | 4.2 |
| 6   | 49734 | 344444 | 49095 | 346943 | 48461 | 349461 | 47832 | 351996 | 47207 | 354550 | 46587 | 357123 | 4   |
| 6.2 | 49721 | 344494 | 49082 | 346993 | 48448 | 349511 | 47819 | 352047 | 47194 | 354602 | 46574 | 357175 | 3.8 |
| 6.4 | 49708 | 344544 | 49070 | 347044 | 48436 | 349562 | 47807 | 352098 | 47182 | 354653 | 46562 | 357227 | 3.6 |
| 6.6 | 49695 | 344594 | 49057 | 347094 | 48423 | 349612 | 47794 | 352149 | 47170 | 354704 | 46550 | 357278 | 3.4 |
| 6.8 | 49682 | 344643 | 49044 | 347144 | 48411 | 349663 | 47782 | 352200 | 47157 | 354756 | 46537 | 357330 | 3.2 |
| 7   | 49670 | 344693 | 49032 | 347194 | 48398 | 349713 | 47769 | 352251 | 47145 | 354807 | 46525 | 357382 | 3   |
| 7.2 | 49657 | 344743 | 49019 | 347244 | 48385 | 349764 | 47757 | 352302 | 47132 | 354858 | 46513 | 357434 | 2.8 |
| 7.4 | 49644 | 344793 | 49006 | 347295 | 48373 | 349814 | 47744 | 352353 | 47120 | 354910 | 46500 | 357485 | 2.6 |
| 7.6 | 49631 | 344843 | 48993 | 347345 | 48360 | 349865 | 47731 | 352404 | 47107 | 354961 | 46488 | 357537 | 2.4 |
| 7.8 | 49618 | 344893 | 48981 | 347395 | 48347 | 349916 | 47719 | 352455 | 47095 | 355012 | 46475 | 357589 | 2.2 |
| 8   | 49606 | 344942 | 48968 | 347445 | 48335 | 349966 | 47706 | 352506 | 47082 | 355064 | 46463 | 357640 | 2   |
| 8.2 | 49593 | 344992 | 48955 | 347495 | 48322 | 350017 | 47694 | 352557 | 47070 | 355115 | 46451 | 357692 | 1.8 |
| 8.4 | 49580 | 345042 | 48943 | 347546 | 48310 | 350067 | 47681 | 352607 | 47058 | 355166 | 46438 | 357744 | 1.6 |
| 8.6 | 49567 | 345092 | 48930 | 347596 | 48297 | 350118 | 47669 | 352658 | 47045 | 355218 | 46426 | 357796 | 1.4 |
| 8.8 | 49554 | 345142 | 48917 | 347646 | 48284 | 350169 | 47656 | 352709 | 47033 | 355269 | 46414 | 357847 | 1.2 |
| 9   | 49542 | 345192 | 48904 | 347696 | 48272 | 350219 | 47644 | 352760 | 47020 | 355320 | 46401 | 357899 | 1   |
| 9.2 | 49529 | 345242 | 48892 | 347747 | 48259 | 350270 | 47631 | 352812 | 47008 | 355372 | 46389 | 357951 | 0.8 |
| 9.4 | 49516 | 345292 | 48879 | 347797 | 48247 | 350321 | 47619 | 352863 | 46995 | 355423 | 46377 | 358003 | 0.6 |
| 9.6 | 49503 | 345342 | 48866 | 347847 | 48234 | 350371 | 47606 | 352914 | 46983 | 355475 | 46364 | 358054 | 0.4 |
| 9.8 | 49491 | 345392 | 48854 | 347898 | 48221 | 350422 | 47594 | 352965 | 46971 | 355526 | 46352 | 358106 | 0.2 |
| 10  | 49478 | 345442 | 48841 | 347948 | 48209 | 350473 | 47581 | 353016 | 46958 | 355577 | 46340 | 358158 | 0   |
|     | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | ↑   |
|     | 50'   |        | 40'   |        | 30'   |        | 20'   |        | 10'   |        | 0'    |        |     |

| 64°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 46340 | 358158 | 45726 | 360758 | 45117 | 363377 | 44512                         | 366016 | 43911 | 368674 | 43316 | 371353 | 10  |
| 0.2                                                                                                                               | 46327 | 358210 | 45714 | 360810 | 45104 | 363430 | 44500                         | 366069 | 43899 | 368728 | 43304 | 371407 | 9.8 |
| 0.4                                                                                                                               | 46315 | 358262 | 45701 | 360862 | 45092 | 363482 | 44488                         | 366122 | 43888 | 368781 | 43292 | 371460 | 9.6 |
| 0.6                                                                                                                               | 46303 | 358313 | 45689 | 360914 | 45080 | 363535 | 44476                         | 366175 | 43876 | 368834 | 43280 | 371514 | 9.4 |
| 0.8                                                                                                                               | 46291 | 358365 | 45677 | 360967 | 45068 | 363587 | 44464                         | 366228 | 43864 | 368888 | 43268 | 371568 | 9.2 |
| 1                                                                                                                                 | 46278 | 358417 | 45665 | 361019 | 45056 | 363640 | 44452                         | 366281 | 43852 | 368941 | 43256 | 371622 | 9   |
| 1.2                                                                                                                               | 46266 | 358469 | 45653 | 361071 | 45044 | 363693 | 44439                         | 366334 | 43840 | 368995 | 43244 | 371676 | 8.8 |
| 1.4                                                                                                                               | 46254 | 358521 | 45640 | 361123 | 45032 | 363745 | 44427                         | 366387 | 43828 | 369048 | 43233 | 371729 | 8.6 |
| 1.6                                                                                                                               | 46241 | 358573 | 45628 | 361176 | 45020 | 363798 | 44415                         | 366440 | 43816 | 369101 | 43221 | 371783 | 8.4 |
| 1.8                                                                                                                               | 46229 | 358625 | 45616 | 361228 | 45007 | 363850 | 44403                         | 366493 | 43804 | 369155 | 43209 | 371837 | 8.2 |
| 2                                                                                                                                 | 46217 | 358676 | 45604 | 361280 | 44995 | 363903 | 44391                         | 366546 | 43792 | 369208 | 43197 | 371891 | 8   |
| 2.2                                                                                                                               | 46204 | 358728 | 45591 | 361332 | 44983 | 363956 | 44379                         | 366599 | 43780 | 369262 | 43185 | 371945 | 7.8 |
| 2.4                                                                                                                               | 46192 | 358780 | 45579 | 361385 | 44971 | 364008 | 44367                         | 366652 | 43768 | 369315 | 43173 | 371999 | 7.6 |
| 2.6                                                                                                                               | 46180 | 358832 | 45567 | 361437 | 44959 | 364061 | 44355                         | 366705 | 43756 | 369369 | 43161 | 372053 | 7.4 |
| 2.8                                                                                                                               | 46167 | 358884 | 45555 | 361489 | 44947 | 364114 | 44343                         | 366758 | 43744 | 369422 | 43150 | 372106 | 7.2 |
| 3                                                                                                                                 | 46155 | 358936 | 45543 | 361542 | 44935 | 364166 | 44331                         | 366811 | 43732 | 369476 | 43138 | 372160 | 7   |
| 3.2                                                                                                                               | 46143 | 358988 | 45530 | 361594 | 44923 | 364219 | 44319                         | 366864 | 43720 | 369529 | 43126 | 372214 | 6.8 |
| 3.4                                                                                                                               | 46131 | 359040 | 45518 | 361646 | 44910 | 364272 | 44307                         | 366917 | 43708 | 369583 | 43114 | 372268 | 6.6 |
| 3.6                                                                                                                               | 46118 | 359092 | 45506 | 361698 | 44898 | 364325 | 44295                         | 366970 | 43696 | 369636 | 43102 | 372322 | 6.4 |
| 3.8                                                                                                                               | 46106 | 359144 | 45494 | 361751 | 44886 | 364377 | 44283                         | 367024 | 43684 | 369690 | 43090 | 372376 | 6.2 |
| 4                                                                                                                                 | 46094 | 359196 | 45482 | 361803 | 44874 | 364430 | 44271                         | 367077 | 43673 | 369743 | 43079 | 372430 | 6   |
| 4.2                                                                                                                               | 46081 | 359248 | 45469 | 361855 | 44862 | 364483 | 44259                         | 367130 | 43661 | 369797 | 43067 | 372484 | 5.8 |
| 4.4                                                                                                                               | 46069 | 359300 | 45457 | 361908 | 44850 | 364536 | 44247                         | 367183 | 43649 | 369850 | 43055 | 372538 | 5.6 |
| 4.6                                                                                                                               | 46057 | 359352 | 45445 | 361960 | 44838 | 364588 | 44235                         | 367236 | 43637 | 369904 | 43043 | 372592 | 5.4 |
| 4.8                                                                                                                               | 46045 | 359404 | 45433 | 362013 | 44826 | 364641 | 44223                         | 367289 | 43625 | 369957 | 43031 | 372646 | 5.2 |
| 5                                                                                                                                 | 46032 | 359456 | 45421 | 362065 | 44814 | 364694 | 44211                         | 367342 | 43613 | 370011 | 43019 | 372700 | 5   |
| 5.2                                                                                                                               | 46020 | 359508 | 45409 | 362117 | 44802 | 364747 | 44199                         | 367396 | 43601 | 370065 | 43008 | 372754 | 4.8 |
| 5.4                                                                                                                               | 46008 | 359560 | 45396 | 362170 | 44789 | 364799 | 44187                         | 367449 | 43589 | 370118 | 42996 | 372808 | 4.6 |
| 5.6                                                                                                                               | 45995 | 359612 | 45384 | 362222 | 44777 | 364852 | 44175                         | 367502 | 43577 | 370172 | 42984 | 372862 | 4.4 |
| 5.8                                                                                                                               | 45983 | 359664 | 45372 | 362275 | 44765 | 364905 | 44163                         | 367555 | 43565 | 370225 | 42972 | 372916 | 4.2 |
| 6                                                                                                                                 | 45971 | 359716 | 45360 | 362327 | 44753 | 364958 | 44151                         | 367608 | 43553 | 370279 | 42960 | 372970 | 4   |
| 6.2                                                                                                                               | 45959 | 359768 | 45348 | 362379 | 44741 | 365011 | 44139                         | 367662 | 43542 | 370333 | 42948 | 373024 | 3.8 |
| 6.4                                                                                                                               | 45946 | 359820 | 45335 | 362432 | 44729 | 365063 | 44127                         | 367715 | 43530 | 370386 | 42937 | 373078 | 3.6 |
| 6.6                                                                                                                               | 45934 | 359872 | 45323 | 362484 | 44717 | 365116 | 44115                         | 367768 | 43518 | 370440 | 42925 | 373132 | 3.4 |
| 6.8                                                                                                                               | 45922 | 359924 | 45311 | 362537 | 44705 | 365169 | 44103                         | 367821 | 43506 | 370493 | 42913 | 373186 | 3.2 |
| 7                                                                                                                                 | 45910 | 359976 | 45299 | 362589 | 44693 | 365222 | 44091                         | 367875 | 43494 | 370547 | 42901 | 373240 | 3   |
| 7.2                                                                                                                               | 45897 | 360028 | 45287 | 362642 | 44681 | 365275 | 44079                         | 367928 | 43482 | 370601 | 42889 | 373294 | 2.8 |
| 7.4                                                                                                                               | 45885 | 360080 | 45275 | 362694 | 44669 | 365328 | 44067                         | 367981 | 43470 | 370654 | 42878 | 373348 | 2.6 |
| 7.6                                                                                                                               | 45873 | 360132 | 45262 | 362747 | 44656 | 365381 | 44055                         | 368034 | 43458 | 370708 | 42866 | 373402 | 2.4 |
| 7.8                                                                                                                               | 45861 | 360184 | 45250 | 362799 | 44644 | 365433 | 44043                         | 368088 | 43446 | 370762 | 42854 | 373456 | 2.2 |
| 8                                                                                                                                 | 45848 | 360236 | 45238 | 362852 | 44632 | 365486 | 44031                         | 368141 | 43434 | 370815 | 42842 | 373510 | 2   |
| 8.2                                                                                                                               | 45836 | 360288 | 45226 | 362904 | 44620 | 365539 | 44019                         | 368194 | 43423 | 370869 | 42830 | 373564 | 1.8 |
| 8.4                                                                                                                               | 45824 | 360341 | 45214 | 362957 | 44608 | 365592 | 44007                         | 368247 | 43411 | 370923 | 42819 | 373619 | 1.6 |
| 8.6                                                                                                                               | 45812 | 360393 | 45202 | 363009 | 44596 | 365645 | 43995                         | 368301 | 43399 | 370977 | 42807 | 373673 | 1.4 |
| 8.8                                                                                                                               | 45799 | 360445 | 45189 | 363062 | 44584 | 365698 | 43983                         | 368354 | 43387 | 371030 | 42795 | 373727 | 1.2 |
| 9                                                                                                                                 | 45787 | 360497 | 45177 | 363114 | 44572 | 365751 | 43971                         | 368407 | 43375 | 371084 | 42783 | 373781 | 1   |
| 9.2                                                                                                                               | 45775 | 360549 | 45165 | 363167 | 44560 | 365804 | 43959                         | 368461 | 43363 | 371138 | 42771 | 373835 | 0.8 |
| 9.4                                                                                                                               | 45763 | 360601 | 45153 | 363219 | 44548 | 365857 | 43947                         | 368514 | 43351 | 371192 | 42760 | 373889 | 0.6 |
| 9.6                                                                                                                               | 45750 | 360653 | 45141 | 363272 | 44536 | 365910 | 43935                         | 368567 | 43339 | 371245 | 42748 | 373943 | 0.4 |
| 9.8                                                                                                                               | 45738 | 360706 | 45129 | 363324 | 44524 | 365963 | 43923                         | 368621 | 43327 | 371299 | 42736 | 373998 | 0.2 |
| 10                                                                                                                                | 45726 | 360758 | 45117 | 363377 | 44512 | 366016 | 43911                         | 368674 | 43316 | 371353 | 42724 | 374052 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 115°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 65°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 42724 | 374052 | 42137 | 376771 | 41555 | 379512 | 40977                         | 382273 | 40404 | 385056 | 39835 | 387860 | 10  |
| 0.2                                                                                                                               | 42713 | 374106 | 42126 | 376826 | 41543 | 379567 | 40966                         | 382328 | 40392 | 385112 | 39823 | 387917 | 9.8 |
| 0.4                                                                                                                               | 42701 | 374160 | 42114 | 376880 | 41532 | 379622 | 40954                         | 382384 | 40381 | 385168 | 39812 | 387973 | 9.6 |
| 0.6                                                                                                                               | 42689 | 374214 | 42102 | 376935 | 41520 | 379677 | 40943                         | 382439 | 40369 | 385224 | 39800 | 388029 | 9.4 |
| 0.8                                                                                                                               | 42677 | 374269 | 42091 | 376990 | 41509 | 379732 | 40931                         | 382495 | 40358 | 385279 | 39789 | 388086 | 9.2 |
| 1                                                                                                                                 | 42665 | 374323 | 42079 | 377044 | 41497 | 379787 | 40920                         | 382550 | 40346 | 385335 | 39778 | 388142 | 9   |
| 1.2                                                                                                                               | 42654 | 374377 | 42067 | 377099 | 41485 | 379842 | 40908                         | 382606 | 40335 | 385391 | 39767 | 388198 | 8.8 |
| 1.4                                                                                                                               | 42642 | 374431 | 42056 | 377154 | 41474 | 379897 | 40897                         | 382661 | 40324 | 385447 | 39755 | 388255 | 8.6 |
| 1.6                                                                                                                               | 42630 | 374485 | 42044 | 377208 | 41462 | 379952 | 40885                         | 382717 | 40312 | 385503 | 39744 | 388311 | 8.4 |
| 1.8                                                                                                                               | 42618 | 374540 | 42032 | 377263 | 41451 | 380007 | 40874                         | 382772 | 40301 | 385559 | 39733 | 388367 | 8.2 |
| 2                                                                                                                                 | 42607 | 374594 | 42021 | 377318 | 41439 | 380062 | 40862                         | 382828 | 40289 | 385615 | 39721 | 388424 | 8   |
| 2.2                                                                                                                               | 42595 | 374648 | 42009 | 377372 | 41428 | 380117 | 40851                         | 382883 | 40278 | 385671 | 39710 | 388480 | 7.8 |
| 2.4                                                                                                                               | 42583 | 374703 | 41997 | 377427 | 41416 | 380172 | 40839                         | 382939 | 40267 | 385727 | 39699 | 388537 | 7.6 |
| 2.6                                                                                                                               | 42571 | 374757 | 41986 | 377482 | 41404 | 380228 | 40828                         | 382995 | 40255 | 385783 | 39687 | 388593 | 7.4 |
| 2.8                                                                                                                               | 42560 | 374811 | 41974 | 377536 | 41393 | 380283 | 40816                         | 383050 | 40244 | 385839 | 39676 | 388649 | 7.2 |
| 3                                                                                                                                 | 42548 | 374865 | 41962 | 377591 | 41381 | 380338 | 40805                         | 383106 | 40232 | 385895 | 39665 | 388706 | 7   |
| 3.2                                                                                                                               | 42536 | 374920 | 41951 | 377646 | 41370 | 380393 | 40793                         | 383161 | 40221 | 385951 | 39653 | 388762 | 6.8 |
| 3.4                                                                                                                               | 42524 | 374974 | 41939 | 377701 | 41358 | 380448 | 40782                         | 383217 | 40210 | 386007 | 39642 | 388819 | 6.6 |
| 3.6                                                                                                                               | 42513 | 375028 | 41927 | 377755 | 41346 | 380503 | 40770                         | 383272 | 40198 | 386063 | 39631 | 388875 | 6.4 |
| 3.8                                                                                                                               | 42501 | 375083 | 41916 | 377810 | 41335 | 380558 | 40759                         | 383328 | 40187 | 386119 | 39619 | 388932 | 6.2 |
| 4                                                                                                                                 | 42489 | 375137 | 41904 | 377865 | 41323 | 380614 | 40747                         | 383384 | 40175 | 386175 | 39608 | 388988 | 6   |
| 4.2                                                                                                                               | 42477 | 375191 | 41892 | 377920 | 41312 | 380669 | 40736                         | 383439 | 40164 | 386231 | 39597 | 389045 | 5.8 |
| 4.4                                                                                                                               | 42466 | 375246 | 41881 | 377974 | 41300 | 380724 | 40724                         | 383495 | 40153 | 386287 | 39586 | 389101 | 5.6 |
| 4.6                                                                                                                               | 42454 | 375300 | 41869 | 378029 | 41289 | 380779 | 40713                         | 383550 | 40141 | 386343 | 39574 | 389158 | 5.4 |
| 4.8                                                                                                                               | 42442 | 375355 | 41857 | 378084 | 41277 | 380834 | 40701                         | 383606 | 40130 | 386399 | 39563 | 389214 | 5.2 |
| 5                                                                                                                                 | 42430 | 375409 | 41846 | 378139 | 41266 | 380890 | 40690                         | 383662 | 40118 | 386455 | 39552 | 389271 | 5   |
| 5.2                                                                                                                               | 42419 | 375463 | 41834 | 378194 | 41254 | 380945 | 40678                         | 383717 | 40107 | 386511 | 39540 | 389327 | 4.8 |
| 5.4                                                                                                                               | 42407 | 375518 | 41822 | 378248 | 41242 | 381000 | 40667                         | 383773 | 40096 | 386568 | 39529 | 389384 | 4.6 |
| 5.6                                                                                                                               | 42395 | 375572 | 41811 | 378303 | 41231 | 381055 | 40655                         | 383829 | 40084 | 386624 | 39518 | 389440 | 4.4 |
| 5.8                                                                                                                               | 42383 | 375627 | 41799 | 378358 | 41219 | 381111 | 40644                         | 383884 | 40073 | 386680 | 39506 | 389497 | 4.2 |
| 6                                                                                                                                 | 42372 | 375681 | 41787 | 378413 | 41208 | 381166 | 40632                         | 383940 | 40062 | 386736 | 39495 | 389553 | 4   |
| 6.2                                                                                                                               | 42360 | 375735 | 41776 | 378468 | 41196 | 381221 | 40621                         | 383996 | 40050 | 386792 | 39484 | 389610 | 3.8 |
| 6.4                                                                                                                               | 42348 | 375790 | 41764 | 378523 | 41185 | 381276 | 40610                         | 384052 | 40039 | 386848 | 39473 | 389667 | 3.6 |
| 6.6                                                                                                                               | 42336 | 375844 | 41753 | 378578 | 41173 | 381332 | 40598                         | 384107 | 40027 | 386904 | 39461 | 389723 | 3.4 |
| 6.8                                                                                                                               | 42325 | 375899 | 41741 | 378632 | 41162 | 381387 | 40587                         | 384163 | 40016 | 386961 | 39450 | 389780 | 3.2 |
| 7                                                                                                                                 | 42313 | 375953 | 41729 | 378687 | 41150 | 381442 | 40575                         | 384219 | 40005 | 387017 | 39439 | 389836 | 3   |
| 7.2                                                                                                                               | 42301 | 376008 | 41718 | 378742 | 41138 | 381498 | 40564                         | 384274 | 39993 | 387073 | 39427 | 389893 | 2.8 |
| 7.4                                                                                                                               | 42290 | 376062 | 41706 | 378797 | 41127 | 381553 | 40552                         | 384330 | 39982 | 387129 | 39416 | 389950 | 2.6 |
| 7.6                                                                                                                               | 42278 | 376117 | 41694 | 378852 | 41115 | 381608 | 40541                         | 384386 | 39971 | 387185 | 39405 | 390006 | 2.4 |
| 7.8                                                                                                                               | 42266 | 376171 | 41683 | 378907 | 41104 | 381664 | 40529                         | 384442 | 39959 | 387241 | 39394 | 390063 | 2.2 |
| 8                                                                                                                                 | 42254 | 376226 | 41671 | 378962 | 41092 | 381719 | 40518                         | 384498 | 39948 | 387298 | 39382 | 390120 | 2   |
| 8.2                                                                                                                               | 42243 | 376280 | 41660 | 379017 | 41081 | 381774 | 40506                         | 384553 | 39937 | 387354 | 39371 | 390176 | 1.8 |
| 8.4                                                                                                                               | 42231 | 376335 | 41648 | 379072 | 41069 | 381830 | 40495                         | 384609 | 39925 | 387410 | 39360 | 390233 | 1.6 |
| 8.6                                                                                                                               | 42219 | 376389 | 41636 | 379127 | 41058 | 381885 | 40484                         | 384665 | 39914 | 387466 | 39349 | 390290 | 1.4 |
| 8.8                                                                                                                               | 42208 | 376444 | 41625 | 379182 | 41046 | 381941 | 40472                         | 384721 | 39903 | 387523 | 39337 | 390346 | 1.2 |
| 9                                                                                                                                 | 42196 | 376498 | 41613 | 379237 | 41035 | 381996 | 40461                         | 384777 | 39891 | 387579 | 39326 | 390403 | 1   |
| 9.2                                                                                                                               | 42184 | 376553 | 41601 | 379292 | 41023 | 382051 | 40449                         | 384832 | 39880 | 387635 | 39315 | 390460 | 0.8 |
| 9.4                                                                                                                               | 42173 | 376607 | 41590 | 379347 | 41012 | 382107 | 40438                         | 384888 | 39869 | 387691 | 39304 | 390516 | 0.6 |
| 9.6                                                                                                                               | 42161 | 376662 | 41578 | 379402 | 41000 | 382162 | 40426                         | 384944 | 39857 | 387748 | 39292 | 390573 | 0.4 |
| 9.8                                                                                                                               | 42149 | 376717 | 41567 | 379457 | 40989 | 382218 | 40415                         | 385000 | 39846 | 387804 | 39281 | 390630 | 0.2 |
| 10                                                                                                                                | 42137 | 376771 | 41555 | 379512 | 40977 | 382273 | 40404                         | 385056 | 39835 | 387860 | 39270 | 390687 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ' ↑ |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 114°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |



| 67°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 35974 | 408122 | 35440 | 411110 | 34910 | 414123 | 34385                         | 417160 | 33864 | 420223 | 33347 | 423311 | 10  |
| 0.2                                                                                                                               | 35963 | 408182 | 35429 | 411170 | 34900 | 414183 | 34374                         | 417221 | 33853 | 420284 | 33336 | 423373 | 9.8 |
| 0.4                                                                                                                               | 35952 | 408241 | 35419 | 411230 | 34889 | 414244 | 34364                         | 417282 | 33843 | 420346 | 33326 | 423435 | 9.6 |
| 0.6                                                                                                                               | 35942 | 408301 | 35408 | 411290 | 34878 | 414304 | 34353                         | 417343 | 33832 | 420407 | 33316 | 423497 | 9.4 |
| 0.8                                                                                                                               | 35931 | 408360 | 35397 | 411350 | 34868 | 414365 | 34343                         | 417404 | 33822 | 420469 | 33306 | 423559 | 9.2 |
| 1                                                                                                                                 | 35920 | 408420 | 35387 | 411410 | 34857 | 414426 | 34332                         | 417465 | 33812 | 420530 | 33295 | 423621 | 9   |
| 1.2                                                                                                                               | 35910 | 408479 | 35376 | 411470 | 34847 | 414486 | 34322                         | 417527 | 33801 | 420592 | 33285 | 423683 | 8.8 |
| 1.4                                                                                                                               | 35899 | 408539 | 35365 | 411531 | 34836 | 414547 | 34311                         | 417588 | 33791 | 420654 | 33275 | 423745 | 8.6 |
| 1.6                                                                                                                               | 35888 | 408598 | 35355 | 411591 | 34826 | 414607 | 34301                         | 417649 | 33781 | 420715 | 33264 | 423807 | 8.4 |
| 1.8                                                                                                                               | 35877 | 408658 | 35344 | 411651 | 34815 | 414668 | 34291                         | 417710 | 33770 | 420777 | 33254 | 423869 | 8.2 |
| 2                                                                                                                                 | 35867 | 408718 | 35334 | 411711 | 34805 | 414728 | 34280                         | 417771 | 33760 | 420838 | 33244 | 423931 | 8   |
| 2.2                                                                                                                               | 35856 | 408777 | 35323 | 411771 | 34794 | 414789 | 34270                         | 417832 | 33749 | 420900 | 33234 | 423994 | 7.8 |
| 2.4                                                                                                                               | 35845 | 408837 | 35312 | 411831 | 34784 | 414850 | 34259                         | 417893 | 33739 | 420962 | 33223 | 424056 | 7.6 |
| 2.6                                                                                                                               | 35835 | 408897 | 35302 | 411891 | 34773 | 414910 | 34249                         | 417954 | 33729 | 421023 | 33213 | 424118 | 7.4 |
| 2.8                                                                                                                               | 35824 | 408956 | 35291 | 411951 | 34763 | 414971 | 34238                         | 418015 | 33718 | 421085 | 33203 | 424180 | 7.2 |
| 3                                                                                                                                 | 35813 | 409016 | 35280 | 412011 | 34752 | 415032 | 34228                         | 418076 | 33708 | 421147 | 33192 | 424242 | 7   |
| 3.2                                                                                                                               | 35803 | 409076 | 35270 | 412072 | 34741 | 415092 | 34217                         | 418138 | 33698 | 421208 | 33182 | 424304 | 6.8 |
| 3.4                                                                                                                               | 35792 | 409135 | 35259 | 412132 | 34731 | 415153 | 34207                         | 418199 | 33687 | 421270 | 33172 | 424367 | 6.6 |
| 3.6                                                                                                                               | 35781 | 409195 | 35249 | 412192 | 34720 | 415214 | 34197                         | 418260 | 33677 | 421332 | 33162 | 424429 | 6.4 |
| 3.8                                                                                                                               | 35770 | 409255 | 35238 | 412252 | 34710 | 415274 | 34186                         | 418321 | 33667 | 421393 | 33151 | 424491 | 6.2 |
| 4                                                                                                                                 | 35760 | 409314 | 35227 | 412312 | 34699 | 415335 | 34176                         | 418382 | 33656 | 421455 | 33141 | 424553 | 6   |
| 4.2                                                                                                                               | 35749 | 409374 | 35217 | 412373 | 34689 | 415396 | 34165                         | 418444 | 33646 | 421517 | 33131 | 424615 | 5.8 |
| 4.4                                                                                                                               | 35738 | 409434 | 35206 | 412433 | 34678 | 415456 | 34155                         | 418505 | 33636 | 421578 | 33121 | 424678 | 5.6 |
| 4.6                                                                                                                               | 35728 | 409494 | 35196 | 412493 | 34668 | 415517 | 34144                         | 418566 | 33625 | 421640 | 33110 | 424740 | 5.4 |
| 4.8                                                                                                                               | 35717 | 409553 | 35185 | 412553 | 34657 | 415578 | 34134                         | 418627 | 33615 | 421702 | 33100 | 424802 | 5.2 |
| 5                                                                                                                                 | 35706 | 409613 | 35174 | 412614 | 34647 | 415639 | 34124                         | 418688 | 33605 | 421764 | 33090 | 424864 | 5   |
| 5.2                                                                                                                               | 35696 | 409673 | 35164 | 412674 | 34636 | 415699 | 34113                         | 418750 | 33594 | 421825 | 33080 | 424927 | 4.8 |
| 5.4                                                                                                                               | 35685 | 409733 | 35153 | 412734 | 34626 | 415760 | 34103                         | 418811 | 33584 | 421887 | 33069 | 424989 | 4.6 |
| 5.6                                                                                                                               | 35674 | 409792 | 35143 | 412794 | 34615 | 415821 | 34092                         | 418872 | 33574 | 421949 | 33059 | 425051 | 4.4 |
| 5.8                                                                                                                               | 35664 | 409852 | 35132 | 412855 | 34605 | 415882 | 34082                         | 418934 | 33563 | 422011 | 33049 | 425114 | 4.2 |
| 6                                                                                                                                 | 35653 | 409912 | 35121 | 412915 | 34594 | 415942 | 34071                         | 418995 | 33553 | 422073 | 33039 | 425176 | 4   |
| 6.2                                                                                                                               | 35642 | 409972 | 35111 | 412975 | 34584 | 416003 | 34061                         | 419056 | 33543 | 422134 | 33028 | 425238 | 3.8 |
| 6.4                                                                                                                               | 35632 | 410032 | 35100 | 413036 | 34573 | 416064 | 34051                         | 419117 | 33532 | 422196 | 33018 | 425301 | 3.6 |
| 6.6                                                                                                                               | 35621 | 410092 | 35090 | 413096 | 34563 | 416125 | 34040                         | 419179 | 33522 | 422258 | 33008 | 425363 | 3.4 |
| 6.8                                                                                                                               | 35610 | 410151 | 35079 | 413156 | 34552 | 416186 | 34030                         | 419240 | 33512 | 422320 | 32998 | 425425 | 3.2 |
| 7                                                                                                                                 | 35600 | 410211 | 35069 | 413217 | 34542 | 416246 | 34019                         | 419301 | 33501 | 422382 | 32987 | 425488 | 3   |
| 7.2                                                                                                                               | 35589 | 410271 | 35058 | 413277 | 34531 | 416307 | 34009                         | 419363 | 33491 | 422444 | 32977 | 425550 | 2.8 |
| 7.4                                                                                                                               | 35578 | 410331 | 35047 | 413337 | 34521 | 416368 | 33999                         | 419424 | 33481 | 422505 | 32967 | 425612 | 2.6 |
| 7.6                                                                                                                               | 35568 | 410391 | 35037 | 413398 | 34510 | 416429 | 33988                         | 419486 | 33470 | 422567 | 32957 | 425675 | 2.4 |
| 7.8                                                                                                                               | 35557 | 410451 | 35026 | 413458 | 34500 | 416490 | 33978                         | 419547 | 33460 | 422629 | 32947 | 425737 | 2.2 |
| 8                                                                                                                                 | 35546 | 410511 | 35016 | 413518 | 34489 | 416551 | 33967                         | 419608 | 33450 | 422691 | 32936 | 425800 | 2   |
| 8.2                                                                                                                               | 35536 | 410571 | 35005 | 413579 | 34479 | 416612 | 33957                         | 419670 | 33439 | 422753 | 32926 | 425862 | 1.8 |
| 8.4                                                                                                                               | 35525 | 410631 | 34995 | 413639 | 34468 | 416673 | 33947                         | 419731 | 33429 | 422815 | 32916 | 425925 | 1.6 |
| 8.6                                                                                                                               | 35514 | 410690 | 34984 | 413700 | 34458 | 416734 | 33936                         | 419793 | 33419 | 422877 | 32906 | 425987 | 1.4 |
| 8.8                                                                                                                               | 35504 | 410750 | 34973 | 413760 | 34447 | 416795 | 33926                         | 419854 | 33408 | 422939 | 32895 | 426050 | 1.2 |
| 9                                                                                                                                 | 35493 | 410810 | 34963 | 413821 | 34437 | 416855 | 33915                         | 419915 | 33398 | 423001 | 32885 | 426112 | 1   |
| 9.2                                                                                                                               | 35482 | 410870 | 34952 | 413881 | 34427 | 416916 | 33905                         | 419977 | 33388 | 423063 | 32875 | 426175 | 0.8 |
| 9.4                                                                                                                               | 35472 | 410930 | 34942 | 413941 | 34416 | 416977 | 33895                         | 420038 | 33378 | 423125 | 32865 | 426237 | 0.6 |
| 9.6                                                                                                                               | 35461 | 410990 | 34931 | 414002 | 34406 | 417038 | 33884                         | 420100 | 33367 | 423187 | 32855 | 426300 | 0.4 |
| 9.8                                                                                                                               | 35450 | 411050 | 34921 | 414062 | 34395 | 417099 | 33874                         | 420161 | 33357 | 423249 | 32844 | 426362 | 0.2 |
| 10                                                                                                                                | 35440 | 411110 | 34910 | 414123 | 34385 | 417160 | 33864                         | 420223 | 33347 | 423311 | 32834 | 426425 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 112°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 68°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 32834 | 426425 | 32326 | 429565 | 31822 | 432731 | 31322                         | 435925 | 30827 | 439145 | 30335 | 442394 | 10  |
| 0.2                                                                                                                               | 32824 | 426487 | 32316 | 429628 | 31812 | 432795 | 31312                         | 435989 | 30817 | 439210 | 30326 | 442459 | 9.8 |
| 0.4                                                                                                                               | 32814 | 426550 | 32306 | 429691 | 31802 | 432858 | 31302                         | 436053 | 30807 | 439275 | 30316 | 442525 | 9.6 |
| 0.6                                                                                                                               | 32804 | 426612 | 32296 | 429754 | 31792 | 432922 | 31292                         | 436117 | 30797 | 439340 | 30306 | 442590 | 9.4 |
| 0.8                                                                                                                               | 32793 | 426675 | 32285 | 429817 | 31782 | 432986 | 31282                         | 436181 | 30787 | 439404 | 30296 | 442655 | 9.2 |
| 1                                                                                                                                 | 32783 | 426737 | 32275 | 429880 | 31772 | 433049 | 31272                         | 436245 | 30777 | 439469 | 30286 | 442720 | 9   |
| 1.2                                                                                                                               | 32773 | 426800 | 32265 | 429943 | 31762 | 433113 | 31262                         | 436310 | 30767 | 439534 | 30277 | 442786 | 8.8 |
| 1.4                                                                                                                               | 32763 | 426863 | 32255 | 430006 | 31752 | 433177 | 31252                         | 436374 | 30758 | 439599 | 30267 | 442851 | 8.6 |
| 1.6                                                                                                                               | 32753 | 426925 | 32245 | 430069 | 31742 | 433240 | 31243                         | 436438 | 30748 | 439663 | 30257 | 442916 | 8.4 |
| 1.8                                                                                                                               | 32742 | 426988 | 32235 | 430133 | 31732 | 433304 | 31233                         | 436502 | 30738 | 439728 | 30247 | 442982 | 8.2 |
| 2                                                                                                                                 | 32732 | 427050 | 32225 | 430196 | 31722 | 433368 | 31223                         | 436567 | 30728 | 439793 | 30238 | 443047 | 8   |
| 2.2                                                                                                                               | 32722 | 427113 | 32215 | 430259 | 31712 | 433431 | 31213                         | 436631 | 30718 | 439858 | 30228 | 443112 | 7.8 |
| 2.4                                                                                                                               | 32712 | 427176 | 32205 | 430322 | 31702 | 433495 | 31203                         | 436695 | 30708 | 439923 | 30218 | 443178 | 7.6 |
| 2.6                                                                                                                               | 32702 | 427238 | 32194 | 430385 | 31692 | 433559 | 31193                         | 436759 | 30698 | 439987 | 30208 | 443243 | 7.4 |
| 2.8                                                                                                                               | 32691 | 427301 | 32184 | 430448 | 31681 | 433623 | 31183                         | 436824 | 30689 | 440052 | 30199 | 443309 | 7.2 |
| 3                                                                                                                                 | 32681 | 427364 | 32174 | 430512 | 31671 | 433686 | 31173                         | 436888 | 30679 | 440117 | 30189 | 443374 | 7   |
| 3.2                                                                                                                               | 32671 | 427427 | 32164 | 430575 | 31661 | 433750 | 31163                         | 436952 | 30669 | 440182 | 30179 | 443440 | 6.8 |
| 3.4                                                                                                                               | 32661 | 427489 | 32154 | 430638 | 31651 | 433814 | 31153                         | 437017 | 30659 | 440247 | 30169 | 443505 | 6.6 |
| 3.6                                                                                                                               | 32651 | 427552 | 32144 | 430701 | 31641 | 433878 | 31143                         | 437081 | 30649 | 440312 | 30159 | 443570 | 6.4 |
| 3.8                                                                                                                               | 32640 | 427615 | 32134 | 430765 | 31631 | 433941 | 31133                         | 437145 | 30639 | 440377 | 30150 | 443636 | 6.2 |
| 4                                                                                                                                 | 32630 | 427677 | 32124 | 430828 | 31621 | 434005 | 31123                         | 437210 | 30630 | 440442 | 30140 | 443701 | 6   |
| 4.2                                                                                                                               | 32620 | 427740 | 32114 | 430891 | 31611 | 434069 | 31113                         | 437274 | 30620 | 440506 | 30130 | 443767 | 5.8 |
| 4.4                                                                                                                               | 32610 | 427803 | 32104 | 430955 | 31601 | 434133 | 31104                         | 437338 | 30610 | 440571 | 30120 | 443832 | 5.6 |
| 4.6                                                                                                                               | 32600 | 427866 | 32093 | 431018 | 31591 | 434197 | 31094                         | 437403 | 30600 | 440636 | 30111 | 443898 | 5.4 |
| 4.8                                                                                                                               | 32590 | 427928 | 32083 | 431081 | 31581 | 434261 | 31084                         | 437467 | 30590 | 440701 | 30101 | 443963 | 5.2 |
| 5                                                                                                                                 | 32579 | 427991 | 32073 | 431144 | 31571 | 434324 | 31074                         | 437532 | 30580 | 440766 | 30091 | 444029 | 5   |
| 5.2                                                                                                                               | 32569 | 428054 | 32063 | 431208 | 31561 | 434388 | 31064                         | 437596 | 30571 | 440831 | 30082 | 444094 | 4.8 |
| 5.4                                                                                                                               | 32559 | 428117 | 32053 | 431271 | 31551 | 434452 | 31054                         | 437660 | 30561 | 440896 | 30072 | 444160 | 4.6 |
| 5.6                                                                                                                               | 32549 | 428180 | 32043 | 431335 | 31541 | 434516 | 31044                         | 437725 | 30551 | 440961 | 30062 | 444226 | 4.4 |
| 5.8                                                                                                                               | 32539 | 428243 | 32033 | 431398 | 31531 | 434580 | 31034                         | 437789 | 30541 | 441026 | 30052 | 444291 | 4.2 |
| 6                                                                                                                                 | 32529 | 428305 | 32023 | 431461 | 31521 | 434644 | 31024                         | 437854 | 30531 | 441091 | 30043 | 444357 | 4   |
| 6.2                                                                                                                               | 32519 | 428368 | 32013 | 431525 | 31512 | 434708 | 31014                         | 437918 | 30521 | 441156 | 30033 | 444422 | 3.8 |
| 6.4                                                                                                                               | 32508 | 428431 | 32003 | 431588 | 31502 | 434772 | 31004                         | 437983 | 30512 | 441221 | 30023 | 444488 | 3.6 |
| 6.6                                                                                                                               | 32498 | 428494 | 31993 | 431651 | 31492 | 434836 | 30995                         | 438047 | 30502 | 441286 | 30013 | 444554 | 3.4 |
| 6.8                                                                                                                               | 32488 | 428557 | 31983 | 431715 | 31482 | 434900 | 30985                         | 438112 | 30492 | 441351 | 30004 | 444619 | 3.2 |
| 7                                                                                                                                 | 32478 | 428620 | 31973 | 431778 | 31472 | 434964 | 30975                         | 438176 | 30482 | 441417 | 29994 | 444685 | 3   |
| 7.2                                                                                                                               | 32468 | 428683 | 31963 | 431842 | 31462 | 435028 | 30965                         | 438241 | 30472 | 441482 | 29984 | 444750 | 2.8 |
| 7.4                                                                                                                               | 32458 | 428746 | 31952 | 431905 | 31452 | 435092 | 30955                         | 438305 | 30463 | 441547 | 29974 | 444816 | 2.6 |
| 7.6                                                                                                                               | 32447 | 428809 | 31942 | 431969 | 31442 | 435156 | 30945                         | 438370 | 30453 | 441612 | 29965 | 444882 | 2.4 |
| 7.8                                                                                                                               | 32437 | 428871 | 31932 | 432032 | 31432 | 435220 | 30935                         | 438434 | 30443 | 441677 | 29955 | 444948 | 2.2 |
| 8                                                                                                                                 | 32427 | 428934 | 31922 | 432096 | 31422 | 435284 | 30925                         | 438499 | 30433 | 441742 | 29945 | 445013 | 2   |
| 8.2                                                                                                                               | 32417 | 428997 | 31912 | 432159 | 31412 | 435348 | 30915                         | 438564 | 30423 | 441807 | 29936 | 445079 | 1.8 |
| 8.4                                                                                                                               | 32407 | 429060 | 31902 | 432223 | 31402 | 435412 | 30906                         | 438628 | 30414 | 441872 | 29926 | 445145 | 1.6 |
| 8.6                                                                                                                               | 32397 | 429123 | 31892 | 432286 | 31392 | 435476 | 30896                         | 438693 | 30404 | 441938 | 29916 | 445210 | 1.4 |
| 8.8                                                                                                                               | 32387 | 429186 | 31882 | 432350 | 31382 | 435540 | 30886                         | 438757 | 30394 | 442003 | 29906 | 445276 | 1.2 |
| 9                                                                                                                                 | 32376 | 429249 | 31872 | 432413 | 31372 | 435604 | 30876                         | 438822 | 30384 | 442068 | 29897 | 445342 | 1   |
| 9.2                                                                                                                               | 32366 | 429312 | 31862 | 432477 | 31362 | 435668 | 30866                         | 438887 | 30374 | 442133 | 29887 | 445408 | 0.8 |
| 9.4                                                                                                                               | 32356 | 429375 | 31852 | 432540 | 31352 | 435732 | 30856                         | 438951 | 30365 | 442198 | 29877 | 445473 | 0.6 |
| 9.6                                                                                                                               | 32346 | 429438 | 31842 | 432604 | 31342 | 435796 | 30846                         | 439016 | 30355 | 442264 | 29868 | 445539 | 0.4 |
| 9.8                                                                                                                               | 32336 | 429501 | 31832 | 432667 | 31332 | 435860 | 30836                         | 439081 | 30345 | 442329 | 29858 | 445605 | 0.2 |
| 10                                                                                                                                | 32326 | 429565 | 31822 | 432731 | 31322 | 435925 | 30827                         | 439145 | 30335 | 442394 | 29848 | 445671 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 111°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 69°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 29848 | 445671 | 29365 | 448976 | 28887 | 452311 | 28412                         | 455675 | 27942 | 459069 | 27476 | 462493 | 10  |
| 0.2                                                                                                                               | 29839 | 445737 | 29356 | 449043 | 28877 | 452378 | 28403                         | 455742 | 27933 | 459137 | 27467 | 462562 | 9.8 |
| 0.4                                                                                                                               | 29829 | 445803 | 29346 | 449109 | 28868 | 452445 | 28393                         | 455810 | 27923 | 459205 | 27458 | 462631 | 9.6 |
| 0.6                                                                                                                               | 29819 | 445868 | 29337 | 449176 | 28858 | 452512 | 28384                         | 455877 | 27914 | 459273 | 27448 | 462699 | 9.4 |
| 0.8                                                                                                                               | 29809 | 445934 | 29327 | 449242 | 28849 | 452579 | 28375                         | 455945 | 27905 | 459341 | 27439 | 462768 | 9.2 |
| 1                                                                                                                                 | 29800 | 446000 | 29317 | 449308 | 28839 | 452646 | 28365                         | 456013 | 27895 | 459410 | 27430 | 462837 | 9   |
| 1.2                                                                                                                               | 29790 | 446066 | 29308 | 449375 | 28830 | 452713 | 28356                         | 456080 | 27886 | 459478 | 27420 | 462906 | 8.8 |
| 1.4                                                                                                                               | 29780 | 446132 | 29298 | 449441 | 28820 | 452780 | 28346                         | 456148 | 27877 | 459546 | 27411 | 462975 | 8.6 |
| 1.6                                                                                                                               | 29771 | 446198 | 29289 | 449508 | 28811 | 452847 | 28337                         | 456216 | 27867 | 459614 | 27402 | 463044 | 8.4 |
| 1.8                                                                                                                               | 29761 | 446264 | 29279 | 449574 | 28801 | 452914 | 28327                         | 456283 | 27858 | 459683 | 27393 | 463113 | 8.2 |
| 2                                                                                                                                 | 29751 | 446330 | 29269 | 449641 | 28792 | 452981 | 28318                         | 456351 | 27849 | 459751 | 27383 | 463182 | 8   |
| 2.2                                                                                                                               | 29742 | 446396 | 29260 | 449707 | 28782 | 453048 | 28309                         | 456419 | 27839 | 459819 | 27374 | 463251 | 7.8 |
| 2.4                                                                                                                               | 29732 | 446462 | 29250 | 449774 | 28773 | 453115 | 28299                         | 456486 | 27830 | 459888 | 27365 | 463319 | 7.6 |
| 2.6                                                                                                                               | 29722 | 446527 | 29241 | 449840 | 28763 | 453183 | 28290                         | 456554 | 27821 | 459956 | 27356 | 463388 | 7.4 |
| 2.8                                                                                                                               | 29713 | 446593 | 29231 | 449907 | 28754 | 453250 | 28280                         | 456622 | 27811 | 460024 | 27346 | 463457 | 7.2 |
| 3                                                                                                                                 | 29703 | 446659 | 29221 | 449974 | 28744 | 453317 | 28271                         | 456690 | 27802 | 460093 | 27337 | 463526 | 7   |
| 3.2                                                                                                                               | 29693 | 446725 | 29212 | 450040 | 28735 | 453384 | 28261                         | 456757 | 27793 | 460161 | 27328 | 463595 | 6.8 |
| 3.4                                                                                                                               | 29684 | 446791 | 29202 | 450107 | 28725 | 453451 | 28252                         | 456825 | 27783 | 460229 | 27319 | 463664 | 6.6 |
| 3.6                                                                                                                               | 29674 | 446857 | 29193 | 450173 | 28716 | 453518 | 28243                         | 456893 | 27774 | 460298 | 27309 | 463733 | 6.4 |
| 3.8                                                                                                                               | 29664 | 446924 | 29183 | 450240 | 28706 | 453586 | 28233                         | 456961 | 27765 | 460366 | 27300 | 463802 | 6.2 |
| 4                                                                                                                                 | 29655 | 446990 | 29173 | 450307 | 28697 | 453653 | 28224                         | 457029 | 27755 | 460435 | 27291 | 463871 | 6   |
| 4.2                                                                                                                               | 29645 | 447056 | 29164 | 450373 | 28687 | 453720 | 28214                         | 457096 | 27746 | 460503 | 27282 | 463940 | 5.8 |
| 4.4                                                                                                                               | 29635 | 447122 | 29154 | 450440 | 28678 | 453787 | 28205                         | 457164 | 27737 | 460572 | 27272 | 464010 | 5.6 |
| 4.6                                                                                                                               | 29626 | 447188 | 29145 | 450506 | 28668 | 453854 | 28196                         | 457232 | 27727 | 460640 | 27263 | 464079 | 5.4 |
| 4.8                                                                                                                               | 29616 | 447254 | 29135 | 450573 | 28659 | 453922 | 28186                         | 457300 | 27718 | 460709 | 27254 | 464148 | 5.2 |
| 5                                                                                                                                 | 29606 | 447320 | 29126 | 450640 | 28649 | 453989 | 28177                         | 457368 | 27709 | 460777 | 27245 | 464217 | 5   |
| 5.2                                                                                                                               | 29597 | 447386 | 29116 | 450707 | 28640 | 454056 | 28167                         | 457436 | 27699 | 460845 | 27235 | 464286 | 4.8 |
| 5.4                                                                                                                               | 29587 | 447452 | 29106 | 450773 | 28630 | 454124 | 28158                         | 457504 | 27690 | 460914 | 27226 | 464355 | 4.6 |
| 5.6                                                                                                                               | 29577 | 447518 | 29097 | 450840 | 28621 | 454191 | 28149                         | 457572 | 27681 | 460983 | 27217 | 464424 | 4.4 |
| 5.8                                                                                                                               | 29568 | 447584 | 29087 | 450907 | 28611 | 454258 | 28139                         | 457640 | 27671 | 461051 | 27208 | 464493 | 4.2 |
| 6                                                                                                                                 | 29558 | 447651 | 29078 | 450973 | 28602 | 454326 | 28130                         | 457707 | 27662 | 461120 | 27198 | 464562 | 4   |
| 6.2                                                                                                                               | 29548 | 447717 | 29068 | 451040 | 28592 | 454393 | 28120                         | 457775 | 27653 | 461188 | 27189 | 464632 | 3.8 |
| 6.4                                                                                                                               | 29539 | 447783 | 29059 | 451107 | 28583 | 454460 | 28111                         | 457843 | 27643 | 461257 | 27180 | 464701 | 3.6 |
| 6.6                                                                                                                               | 29529 | 447849 | 29049 | 451174 | 28573 | 454528 | 28102                         | 457911 | 27634 | 461325 | 27171 | 464770 | 3.4 |
| 6.8                                                                                                                               | 29519 | 447915 | 29040 | 451241 | 28564 | 454595 | 28092                         | 457979 | 27625 | 461394 | 27162 | 464839 | 3.2 |
| 7                                                                                                                                 | 29510 | 447982 | 29030 | 451307 | 28554 | 454662 | 28083                         | 458047 | 27615 | 461462 | 27152 | 464908 | 3   |
| 7.2                                                                                                                               | 29500 | 448048 | 29020 | 451374 | 28545 | 454730 | 28073                         | 458115 | 27606 | 461531 | 27143 | 464978 | 2.8 |
| 7.4                                                                                                                               | 29491 | 448114 | 29011 | 451441 | 28535 | 454797 | 28064                         | 458183 | 27597 | 461600 | 27134 | 465047 | 2.6 |
| 7.6                                                                                                                               | 29481 | 448180 | 29001 | 451508 | 28526 | 454865 | 28055                         | 458251 | 27588 | 461668 | 27125 | 465116 | 2.4 |
| 7.8                                                                                                                               | 29471 | 448247 | 28992 | 451575 | 28516 | 454932 | 28045                         | 458319 | 27578 | 461737 | 27115 | 465185 | 2.2 |
| 8                                                                                                                                 | 29462 | 448313 | 28982 | 451641 | 28507 | 455000 | 28036                         | 458387 | 27569 | 461806 | 27106 | 465255 | 2   |
| 8.2                                                                                                                               | 29452 | 448379 | 28973 | 451708 | 28497 | 455067 | 28026                         | 458456 | 27560 | 461874 | 27097 | 465324 | 1.8 |
| 8.4                                                                                                                               | 29442 | 448445 | 28963 | 451775 | 28488 | 455134 | 28017                         | 458524 | 27550 | 461943 | 27088 | 465393 | 1.6 |
| 8.6                                                                                                                               | 29433 | 448512 | 28954 | 451842 | 28479 | 455202 | 28008                         | 458592 | 27541 | 462012 | 27079 | 465463 | 1.4 |
| 8.8                                                                                                                               | 29423 | 448578 | 28944 | 451909 | 28469 | 455269 | 27998                         | 458660 | 27532 | 462080 | 27069 | 465532 | 1.2 |
| 9                                                                                                                                 | 29414 | 448644 | 28934 | 451976 | 28460 | 455337 | 27989                         | 458728 | 27522 | 462149 | 27060 | 465601 | 1   |
| 9.2                                                                                                                               | 29404 | 448711 | 28925 | 452043 | 28450 | 455404 | 27980                         | 458796 | 27513 | 462218 | 27051 | 465671 | 0.8 |
| 9.4                                                                                                                               | 29394 | 448777 | 28915 | 452110 | 28441 | 455472 | 27970                         | 458864 | 27504 | 462287 | 27042 | 465740 | 0.6 |
| 9.6                                                                                                                               | 29385 | 448843 | 28906 | 452177 | 28431 | 455540 | 27961                         | 458932 | 27495 | 462355 | 27033 | 465810 | 0.4 |
| 9.8                                                                                                                               | 29375 | 448910 | 28896 | 452244 | 28422 | 455607 | 27951                         | 459000 | 27485 | 462424 | 27023 | 465879 | 0.2 |
| 10                                                                                                                                | 29365 | 448976 | 28887 | 452311 | 28412 | 455675 | 27942                         | 459069 | 27476 | 462493 | 27014 | 465948 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 110°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 70°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 27014 | 465948 | 26556 | 469435 | 26103 | 472954 | 25653                         | 476505 | 25208 | 480089 | 24767 | 483706 | 10  |
| 0.2                                                                                                                               | 27005 | 466018 | 26547 | 469505 | 26094 | 473024 | 25645                         | 476576 | 25199 | 480161 | 24758 | 483779 | 9.8 |
| 0.4                                                                                                                               | 26996 | 466087 | 26538 | 469575 | 26085 | 473095 | 25636                         | 476647 | 25190 | 480233 | 24749 | 483852 | 9.6 |
| 0.6                                                                                                                               | 26987 | 466157 | 26529 | 469645 | 26076 | 473166 | 25627                         | 476719 | 25182 | 480305 | 24741 | 483925 | 9.4 |
| 0.8                                                                                                                               | 26977 | 466226 | 26520 | 469715 | 26067 | 473237 | 25618                         | 476790 | 25173 | 480377 | 24732 | 483997 | 9.2 |
| 1                                                                                                                                 | 26968 | 466296 | 26511 | 469785 | 26058 | 473307 | 25609                         | 476862 | 25164 | 480449 | 24723 | 484070 | 9   |
| 1.2                                                                                                                               | 26959 | 466365 | 26502 | 469856 | 26049 | 473378 | 25600                         | 476933 | 25155 | 480521 | 24714 | 484143 | 8.8 |
| 1.4                                                                                                                               | 26950 | 466435 | 26493 | 469926 | 26040 | 473449 | 25591                         | 477005 | 25146 | 480593 | 24706 | 484216 | 8.6 |
| 1.6                                                                                                                               | 26941 | 466504 | 26484 | 469996 | 26031 | 473520 | 25582                         | 477076 | 25137 | 480665 | 24697 | 484288 | 8.4 |
| 1.8                                                                                                                               | 26931 | 466574 | 26475 | 470066 | 26022 | 473590 | 25573                         | 477147 | 25128 | 480737 | 24688 | 484361 | 8.2 |
| 2                                                                                                                                 | 26922 | 466643 | 26465 | 470136 | 26013 | 473661 | 25564                         | 477219 | 25120 | 480810 | 24679 | 484434 | 8   |
| 2.2                                                                                                                               | 26913 | 466713 | 26456 | 470206 | 26004 | 473732 | 25555                         | 477290 | 25111 | 480882 | 24670 | 484507 | 7.8 |
| 2.4                                                                                                                               | 26904 | 466782 | 26447 | 470277 | 25995 | 473803 | 25546                         | 477362 | 25102 | 480954 | 24662 | 484580 | 7.6 |
| 2.6                                                                                                                               | 26895 | 466852 | 26438 | 470347 | 25986 | 473874 | 25537                         | 477433 | 25093 | 481026 | 24653 | 484653 | 7.4 |
| 2.8                                                                                                                               | 26886 | 466921 | 26429 | 470417 | 25977 | 473945 | 25528                         | 477505 | 25084 | 481098 | 24644 | 484725 | 7.2 |
| 3                                                                                                                                 | 26876 | 466991 | 26420 | 470487 | 25968 | 474016 | 25519                         | 477576 | 25075 | 481171 | 24635 | 484798 | 7   |
| 3.2                                                                                                                               | 26867 | 467061 | 26411 | 470557 | 25959 | 474086 | 25511                         | 477648 | 25067 | 481243 | 24627 | 484871 | 6.8 |
| 3.4                                                                                                                               | 26858 | 467130 | 26402 | 470628 | 25950 | 474157 | 25502                         | 477720 | 25058 | 481315 | 24618 | 484944 | 6.6 |
| 3.6                                                                                                                               | 26849 | 467200 | 26393 | 470698 | 25941 | 474228 | 25493                         | 477791 | 25049 | 481387 | 24609 | 485017 | 6.4 |
| 3.8                                                                                                                               | 26840 | 467270 | 26384 | 470768 | 25932 | 474299 | 25484                         | 477863 | 25040 | 481460 | 24600 | 485090 | 6.2 |
| 4                                                                                                                                 | 26831 | 467339 | 26375 | 470839 | 25923 | 474370 | 25475                         | 477934 | 25031 | 481532 | 24592 | 485163 | 6   |
| 4.2                                                                                                                               | 26821 | 467409 | 26365 | 470909 | 25914 | 474441 | 25466                         | 478006 | 25022 | 481604 | 24583 | 485236 | 5.8 |
| 4.4                                                                                                                               | 26812 | 467479 | 26356 | 470979 | 25905 | 474512 | 25457                         | 478078 | 25014 | 481676 | 24574 | 485309 | 5.6 |
| 4.6                                                                                                                               | 26803 | 467548 | 26347 | 471050 | 25896 | 474583 | 25448                         | 478149 | 25005 | 481749 | 24565 | 485382 | 5.4 |
| 4.8                                                                                                                               | 26794 | 467618 | 26338 | 471120 | 25887 | 474654 | 25439                         | 478221 | 24996 | 481821 | 24557 | 485455 | 5.2 |
| 5                                                                                                                                 | 26785 | 467688 | 26329 | 471190 | 25878 | 474725 | 25430                         | 478293 | 24987 | 481893 | 24548 | 485528 | 5   |
| 5.2                                                                                                                               | 26776 | 467757 | 26320 | 471261 | 25869 | 474796 | 25421                         | 478364 | 24978 | 481966 | 24539 | 485601 | 4.8 |
| 5.4                                                                                                                               | 26766 | 467827 | 26311 | 471331 | 25860 | 474867 | 25412                         | 478436 | 24969 | 482038 | 24530 | 485674 | 4.6 |
| 5.6                                                                                                                               | 26757 | 467897 | 26302 | 471401 | 25851 | 474938 | 25404                         | 478508 | 24961 | 482110 | 24522 | 485747 | 4.4 |
| 5.8                                                                                                                               | 26748 | 467967 | 26293 | 471472 | 25842 | 475009 | 25395                         | 478579 | 24952 | 482183 | 24513 | 485820 | 4.2 |
| 6                                                                                                                                 | 26739 | 468037 | 26284 | 471542 | 25833 | 475080 | 25386                         | 478651 | 24943 | 482255 | 24504 | 485893 | 4   |
| 6.2                                                                                                                               | 26730 | 468106 | 26275 | 471613 | 25824 | 475151 | 25377                         | 478723 | 24934 | 482328 | 24496 | 485966 | 3.8 |
| 6.4                                                                                                                               | 26721 | 468176 | 26266 | 471683 | 25815 | 475223 | 25368                         | 478795 | 24925 | 482400 | 24487 | 486040 | 3.6 |
| 6.6                                                                                                                               | 26712 | 468246 | 26257 | 471754 | 25806 | 475294 | 25359                         | 478866 | 24917 | 482473 | 24478 | 486113 | 3.4 |
| 6.8                                                                                                                               | 26702 | 468316 | 26248 | 471824 | 25797 | 475365 | 25350                         | 478938 | 24908 | 482545 | 24469 | 486186 | 3.2 |
| 7                                                                                                                                 | 26693 | 468386 | 26239 | 471895 | 25788 | 475436 | 25341                         | 479010 | 24899 | 482618 | 24461 | 486259 | 3   |
| 7.2                                                                                                                               | 26684 | 468456 | 26229 | 471965 | 25779 | 475507 | 25332                         | 479082 | 24890 | 482690 | 24452 | 486332 | 2.8 |
| 7.4                                                                                                                               | 26675 | 468525 | 26220 | 472036 | 25770 | 475578 | 25324                         | 479154 | 24881 | 482763 | 24443 | 486405 | 2.6 |
| 7.6                                                                                                                               | 26666 | 468595 | 26211 | 472106 | 25761 | 475649 | 25315                         | 479226 | 24872 | 482835 | 24434 | 486479 | 2.4 |
| 7.8                                                                                                                               | 26657 | 468665 | 26202 | 472177 | 25752 | 475721 | 25306                         | 479297 | 24864 | 482908 | 24426 | 486552 | 2.2 |
| 8                                                                                                                                 | 26648 | 468735 | 26193 | 472247 | 25743 | 475792 | 25297                         | 479369 | 24855 | 482980 | 24417 | 486625 | 2   |
| 8.2                                                                                                                               | 26639 | 468805 | 26184 | 472318 | 25734 | 475863 | 25288                         | 479441 | 24846 | 483053 | 24408 | 486698 | 1.8 |
| 8.4                                                                                                                               | 26629 | 468875 | 26175 | 472389 | 25725 | 475934 | 25279                         | 479513 | 24837 | 483125 | 24400 | 486771 | 1.6 |
| 8.6                                                                                                                               | 26620 | 468945 | 26166 | 472459 | 25716 | 476006 | 25270                         | 479585 | 24828 | 483198 | 24391 | 486845 | 1.4 |
| 8.8                                                                                                                               | 26611 | 469015 | 26157 | 472530 | 25707 | 476077 | 25261                         | 479657 | 24820 | 483270 | 24382 | 486918 | 1.2 |
| 9                                                                                                                                 | 26602 | 469085 | 26148 | 472600 | 25698 | 476148 | 25252                         | 479729 | 24811 | 483343 | 24373 | 486991 | 1   |
| 9.2                                                                                                                               | 26593 | 469155 | 26139 | 472671 | 25689 | 476219 | 25244                         | 479801 | 24802 | 483416 | 24365 | 487065 | 0.8 |
| 9.4                                                                                                                               | 26584 | 469225 | 26130 | 472742 | 25680 | 476291 | 25235                         | 479873 | 24793 | 483488 | 24356 | 487138 | 0.6 |
| 9.6                                                                                                                               | 26575 | 469295 | 26121 | 472812 | 25671 | 476362 | 25226                         | 479945 | 24785 | 483561 | 24347 | 487211 | 0.4 |
| 9.8                                                                                                                               | 26566 | 469365 | 26112 | 472883 | 25662 | 476433 | 25217                         | 480017 | 24776 | 483634 | 24339 | 487285 | 0.2 |
| 10                                                                                                                                | 26556 | 469435 | 26103 | 472954 | 25653 | 476505 | 25208                         | 480089 | 24767 | 483706 | 24330 | 487358 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ' ↑ |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 109°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 71°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 24330 | 487358 | 23897 | 491044 | 23468 | 494766 | 23043                         | 498524 | 22623 | 502318 | 22206 | 506149 | 10  |
| 0.2                                                                                                                               | 24321 | 487431 | 23888 | 491119 | 23460 | 494841 | 23035                         | 498599 | 22614 | 502394 | 22198 | 506226 | 9.8 |
| 0.4                                                                                                                               | 24313 | 487505 | 23880 | 491193 | 23451 | 494916 | 23027                         | 498675 | 22606 | 502470 | 22190 | 506303 | 9.6 |
| 0.6                                                                                                                               | 24304 | 487578 | 23871 | 491267 | 23443 | 494990 | 23018                         | 498750 | 22598 | 502546 | 22181 | 506380 | 9.4 |
| 0.8                                                                                                                               | 24295 | 487652 | 23863 | 491341 | 23434 | 495065 | 23010                         | 498826 | 22589 | 502623 | 22173 | 506457 | 9.2 |
| 1                                                                                                                                 | 24286 | 487725 | 23854 | 491415 | 23426 | 495140 | 23001                         | 498901 | 22581 | 502699 | 22165 | 506534 | 9   |
| 1.2                                                                                                                               | 24278 | 487799 | 23845 | 491489 | 23417 | 495215 | 22993                         | 498977 | 22573 | 502775 | 22156 | 506611 | 8.8 |
| 1.4                                                                                                                               | 24269 | 487872 | 23837 | 491563 | 23408 | 495290 | 22984                         | 499053 | 22564 | 502852 | 22148 | 506688 | 8.6 |
| 1.6                                                                                                                               | 24260 | 487946 | 23828 | 491638 | 23400 | 495365 | 22976                         | 499128 | 22556 | 502928 | 22140 | 506765 | 8.4 |
| 1.8                                                                                                                               | 24252 | 488019 | 23820 | 491712 | 23391 | 495440 | 22967                         | 499204 | 22547 | 503004 | 22132 | 506842 | 8.2 |
| 2                                                                                                                                 | 24243 | 488093 | 23811 | 491786 | 23383 | 495515 | 22959                         | 499279 | 22539 | 503081 | 22123 | 506919 | 8   |
| 2.2                                                                                                                               | 24234 | 488166 | 23802 | 491860 | 23374 | 495590 | 22951                         | 499355 | 22531 | 503157 | 22115 | 506997 | 7.8 |
| 2.4                                                                                                                               | 24226 | 488240 | 23794 | 491934 | 23366 | 495665 | 22942                         | 499431 | 22522 | 503234 | 22107 | 507074 | 7.6 |
| 2.6                                                                                                                               | 24217 | 488313 | 23785 | 492009 | 23357 | 495740 | 22934                         | 499506 | 22514 | 503310 | 22099 | 507151 | 7.4 |
| 2.8                                                                                                                               | 24208 | 488387 | 23777 | 492083 | 23349 | 495815 | 22925                         | 499582 | 22506 | 503386 | 22090 | 507228 | 7.2 |
| 3                                                                                                                                 | 24200 | 488460 | 23768 | 492157 | 23340 | 495890 | 22917                         | 499658 | 22497 | 503463 | 22082 | 507305 | 7   |
| 3.2                                                                                                                               | 24191 | 488534 | 23759 | 492231 | 23332 | 495965 | 22908                         | 499734 | 22489 | 503539 | 22074 | 507383 | 6.8 |
| 3.4                                                                                                                               | 24182 | 488608 | 23751 | 492306 | 23323 | 496040 | 22900                         | 499809 | 22481 | 503616 | 22065 | 507460 | 6.6 |
| 3.6                                                                                                                               | 24174 | 488681 | 23742 | 492380 | 23315 | 496115 | 22892                         | 499885 | 22472 | 503692 | 22057 | 507537 | 6.4 |
| 3.8                                                                                                                               | 24165 | 488755 | 23734 | 492454 | 23306 | 496190 | 22883                         | 499961 | 22464 | 503769 | 22049 | 507614 | 6.2 |
| 4                                                                                                                                 | 24156 | 488828 | 23725 | 492529 | 23298 | 496265 | 22875                         | 500037 | 22456 | 503846 | 22041 | 507692 | 6   |
| 4.2                                                                                                                               | 24148 | 488902 | 23716 | 492603 | 23289 | 496340 | 22866                         | 500113 | 22447 | 503922 | 22032 | 507769 | 5.8 |
| 4.4                                                                                                                               | 24139 | 488976 | 23708 | 492678 | 23281 | 496415 | 22858                         | 500188 | 22439 | 503999 | 22024 | 507846 | 5.6 |
| 4.6                                                                                                                               | 24130 | 489049 | 23699 | 492752 | 23272 | 496490 | 22849                         | 500264 | 22431 | 504075 | 22016 | 507924 | 5.4 |
| 4.8                                                                                                                               | 24122 | 489123 | 23691 | 492826 | 23264 | 496565 | 22841                         | 500340 | 22422 | 504152 | 22008 | 508001 | 5.2 |
| 5                                                                                                                                 | 24113 | 489197 | 23682 | 492901 | 23255 | 496640 | 22833                         | 500416 | 22414 | 504228 | 21999 | 508078 | 5   |
| 5.2                                                                                                                               | 24104 | 489271 | 23673 | 492975 | 23247 | 496715 | 22824                         | 500492 | 22406 | 504305 | 21991 | 508156 | 4.8 |
| 5.4                                                                                                                               | 24096 | 489344 | 23665 | 493050 | 23238 | 496791 | 22816                         | 500568 | 22397 | 504382 | 21983 | 508233 | 4.6 |
| 5.6                                                                                                                               | 24087 | 489418 | 23656 | 493124 | 23230 | 496866 | 22807                         | 500644 | 22389 | 504458 | 21975 | 508311 | 4.4 |
| 5.8                                                                                                                               | 24078 | 489492 | 23648 | 493199 | 23221 | 496941 | 22799                         | 500720 | 22381 | 504535 | 21966 | 508388 | 4.2 |
| 6                                                                                                                                 | 24070 | 489566 | 23639 | 493273 | 23213 | 497016 | 22791                         | 500796 | 22372 | 504612 | 21958 | 508465 | 4   |
| 6.2                                                                                                                               | 24061 | 489640 | 23631 | 493348 | 23204 | 497091 | 22782                         | 500871 | 22364 | 504688 | 21950 | 508543 | 3.8 |
| 6.4                                                                                                                               | 24052 | 489713 | 23622 | 493422 | 23196 | 497167 | 22774                         | 500947 | 22356 | 504765 | 21942 | 508620 | 3.6 |
| 6.6                                                                                                                               | 24044 | 489787 | 23614 | 493497 | 23187 | 497242 | 22765                         | 501023 | 22347 | 504842 | 21933 | 508698 | 3.4 |
| 6.8                                                                                                                               | 24035 | 489861 | 23605 | 493571 | 23179 | 497317 | 22757                         | 501099 | 22339 | 504919 | 21925 | 508775 | 3.2 |
| 7                                                                                                                                 | 24026 | 489935 | 23596 | 493646 | 23170 | 497393 | 22749                         | 501175 | 22331 | 504995 | 21917 | 508853 | 3   |
| 7.2                                                                                                                               | 24018 | 490009 | 23588 | 493720 | 23162 | 497468 | 22740                         | 501252 | 22322 | 505072 | 21909 | 508930 | 2.8 |
| 7.4                                                                                                                               | 24009 | 490083 | 23579 | 493795 | 23153 | 497543 | 22732                         | 501328 | 22314 | 505149 | 21901 | 509008 | 2.6 |
| 7.6                                                                                                                               | 24001 | 490157 | 23571 | 493870 | 23145 | 497618 | 22723                         | 501404 | 22306 | 505226 | 21892 | 509086 | 2.4 |
| 7.8                                                                                                                               | 23992 | 490230 | 23562 | 493944 | 23137 | 497694 | 22715                         | 501480 | 22297 | 505303 | 21884 | 509163 | 2.2 |
| 8                                                                                                                                 | 23983 | 490304 | 23554 | 494019 | 23128 | 497769 | 22707                         | 501556 | 22289 | 505379 | 21876 | 509241 | 2   |
| 8.2                                                                                                                               | 23975 | 490378 | 23545 | 494094 | 23120 | 497845 | 22698                         | 501632 | 22281 | 505456 | 21868 | 509318 | 1.8 |
| 8.4                                                                                                                               | 23966 | 490452 | 23536 | 494168 | 23111 | 497920 | 22690                         | 501708 | 22273 | 505533 | 21859 | 509396 | 1.6 |
| 8.6                                                                                                                               | 23957 | 490526 | 23528 | 494243 | 23103 | 497995 | 22681                         | 501784 | 22264 | 505610 | 21851 | 509474 | 1.4 |
| 8.8                                                                                                                               | 23949 | 490600 | 23519 | 494318 | 23094 | 498071 | 22673                         | 501860 | 22256 | 505687 | 21843 | 509551 | 1.2 |
| 9                                                                                                                                 | 23940 | 490674 | 23511 | 494392 | 23086 | 498146 | 22665                         | 501936 | 22248 | 505764 | 21835 | 509629 | 1   |
| 9.2                                                                                                                               | 23931 | 490748 | 23502 | 494467 | 23077 | 498222 | 22656                         | 502013 | 22239 | 505841 | 21827 | 509707 | 0.8 |
| 9.4                                                                                                                               | 23923 | 490822 | 23494 | 494542 | 23069 | 498297 | 22648                         | 502089 | 22231 | 505918 | 21818 | 509784 | 0.6 |
| 9.6                                                                                                                               | 23914 | 490896 | 23485 | 494617 | 23060 | 498373 | 22640                         | 502165 | 22223 | 505995 | 21810 | 509862 | 0.4 |
| 9.8                                                                                                                               | 23906 | 490970 | 23477 | 494691 | 23052 | 498448 | 22631                         | 502241 | 22214 | 506072 | 21802 | 509940 | 0.2 |
| 10                                                                                                                                | 23897 | 491044 | 23468 | 494766 | 23043 | 498524 | 22623                         | 502318 | 22206 | 506149 | 21794 | 510018 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 108°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

72°

| ' ↓ | 0'    |        | 10'   |        | 20'   |        | 30'   |        | 40'   |        | 50'   |        |     |
|-----|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-------|--------|-----|
|     | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      |     |
| 0   | 21794 | 510018 | 21385 | 513925 | 20981 | 517872 | 20580 | 521858 | 20184 | 525885 | 19792 | 529954 | 10  |
| 0.2 | 21785 | 510095 | 21377 | 514004 | 20973 | 517951 | 20573 | 521938 | 20176 | 525966 | 19784 | 530036 | 9.8 |
| 0.4 | 21777 | 510173 | 21369 | 514082 | 20965 | 518030 | 20565 | 522018 | 20168 | 526047 | 19776 | 530118 | 9.6 |
| 0.6 | 21769 | 510251 | 21361 | 514161 | 20957 | 518110 | 20557 | 522099 | 20161 | 526128 | 19769 | 530199 | 9.4 |
| 0.8 | 21761 | 510329 | 21353 | 514239 | 20949 | 518189 | 20549 | 522179 | 20153 | 526209 | 19761 | 530281 | 9.2 |
| 1   | 21753 | 510407 | 21345 | 514318 | 20941 | 518269 | 20541 | 522259 | 20145 | 526290 | 19753 | 530363 | 9   |
| 1.2 | 21744 | 510484 | 21336 | 514397 | 20933 | 518348 | 20533 | 522339 | 20137 | 526371 | 19745 | 530445 | 8.8 |
| 1.4 | 21736 | 510562 | 21328 | 514475 | 20925 | 518427 | 20525 | 522420 | 20129 | 526452 | 19737 | 530527 | 8.6 |
| 1.6 | 21728 | 510640 | 21320 | 514554 | 20917 | 518507 | 20517 | 522500 | 20121 | 526534 | 19730 | 530609 | 8.4 |
| 1.8 | 21720 | 510718 | 21312 | 514633 | 20908 | 518586 | 20509 | 522580 | 20113 | 526615 | 19722 | 530691 | 8.2 |
| 2   | 21712 | 510796 | 21304 | 514711 | 20900 | 518666 | 20501 | 522660 | 20105 | 526696 | 19714 | 530773 | 8   |
| 2.2 | 21703 | 510874 | 21296 | 514790 | 20892 | 518745 | 20493 | 522741 | 20098 | 526777 | 19706 | 530855 | 7.8 |
| 2.4 | 21695 | 510952 | 21288 | 514869 | 20884 | 518825 | 20485 | 522821 | 20090 | 526858 | 19698 | 530937 | 7.6 |
| 2.6 | 21687 | 511030 | 21280 | 514947 | 20876 | 518904 | 20477 | 522901 | 20082 | 526939 | 19691 | 531019 | 7.4 |
| 2.8 | 21679 | 511108 | 21272 | 515026 | 20868 | 518984 | 20469 | 522982 | 20074 | 527020 | 19683 | 531101 | 7.2 |
| 3   | 21671 | 511186 | 21263 | 515105 | 20860 | 519063 | 20461 | 523062 | 20066 | 527102 | 19675 | 531183 | 7   |
| 3.2 | 21663 | 511264 | 21255 | 515184 | 20852 | 519143 | 20453 | 523142 | 20058 | 527183 | 19667 | 531265 | 6.8 |
| 3.4 | 21654 | 511342 | 21247 | 515262 | 20844 | 519223 | 20445 | 523223 | 20050 | 527264 | 19659 | 531347 | 6.6 |
| 3.6 | 21646 | 511420 | 21239 | 515341 | 20836 | 519302 | 20437 | 523303 | 20043 | 527345 | 19652 | 531429 | 6.4 |
| 3.8 | 21638 | 511498 | 21231 | 515420 | 20828 | 519382 | 20429 | 523384 | 20035 | 527426 | 19644 | 531511 | 6.2 |
| 4   | 21630 | 511576 | 21223 | 515499 | 20820 | 519461 | 20421 | 523464 | 20027 | 527508 | 19636 | 531593 | 6   |
| 4.2 | 21622 | 511654 | 21215 | 515578 | 20812 | 519541 | 20414 | 523545 | 20019 | 527589 | 19628 | 531675 | 5.8 |
| 4.4 | 21613 | 511732 | 21207 | 515657 | 20804 | 519621 | 20406 | 523625 | 20011 | 527670 | 19621 | 531757 | 5.6 |
| 4.6 | 21605 | 511810 | 21199 | 515736 | 20796 | 519700 | 20398 | 523706 | 20003 | 527752 | 19613 | 531840 | 5.4 |
| 4.8 | 21597 | 511888 | 21191 | 515815 | 20788 | 519780 | 20390 | 523786 | 19995 | 527833 | 19605 | 531922 | 5.2 |
| 5   | 21589 | 511966 | 21183 | 515893 | 20780 | 519860 | 20382 | 523867 | 19988 | 527914 | 19597 | 532004 | 5   |
| 5.2 | 21581 | 512045 | 21174 | 515972 | 20772 | 519940 | 20374 | 523947 | 19980 | 527996 | 19590 | 532086 | 4.8 |
| 5.4 | 21573 | 512123 | 21166 | 516051 | 20764 | 520019 | 20366 | 524028 | 19972 | 528077 | 19582 | 532168 | 4.6 |
| 5.6 | 21564 | 512201 | 21158 | 516130 | 20756 | 520099 | 20358 | 524108 | 19964 | 528159 | 19574 | 532251 | 4.4 |
| 5.8 | 21556 | 512279 | 21150 | 516209 | 20748 | 520179 | 20350 | 524189 | 19956 | 528240 | 19566 | 532333 | 4.2 |
| 6   | 21548 | 512357 | 21142 | 516288 | 20740 | 520259 | 20342 | 524270 | 19948 | 528321 | 19558 | 532415 | 4   |
| 6.2 | 21540 | 512436 | 21134 | 516367 | 20732 | 520339 | 20334 | 524350 | 19941 | 528403 | 19551 | 532498 | 3.8 |
| 6.4 | 21532 | 512514 | 21126 | 516446 | 20724 | 520418 | 20326 | 524431 | 19933 | 528484 | 19543 | 532580 | 3.6 |
| 6.6 | 21524 | 512592 | 21118 | 516525 | 20716 | 520498 | 20318 | 524512 | 19925 | 528566 | 19535 | 532662 | 3.4 |
| 6.8 | 21515 | 512670 | 21110 | 516604 | 20708 | 520578 | 20311 | 524592 | 19917 | 528647 | 19527 | 532745 | 3.2 |
| 7   | 21507 | 512749 | 21102 | 516684 | 20700 | 520658 | 20303 | 524673 | 19909 | 528729 | 19520 | 532827 | 3   |
| 7.2 | 21499 | 512827 | 21094 | 516763 | 20692 | 520738 | 20295 | 524754 | 19901 | 528810 | 19512 | 532909 | 2.8 |
| 7.4 | 21491 | 512905 | 21086 | 516842 | 20684 | 520818 | 20287 | 524834 | 19894 | 528892 | 19504 | 532992 | 2.6 |
| 7.6 | 21483 | 512984 | 21078 | 516921 | 20676 | 520898 | 20279 | 524915 | 19886 | 528974 | 19496 | 533074 | 2.4 |
| 7.8 | 21475 | 513062 | 21069 | 517000 | 20668 | 520978 | 20271 | 524996 | 19878 | 529055 | 19489 | 533157 | 2.2 |
| 8   | 21467 | 513140 | 21061 | 517079 | 20660 | 521058 | 20263 | 525077 | 19870 | 529137 | 19481 | 533239 | 2   |
| 8.2 | 21458 | 513219 | 21053 | 517158 | 20652 | 521138 | 20255 | 525157 | 19862 | 529218 | 19473 | 533322 | 1.8 |
| 8.4 | 21450 | 513297 | 21045 | 517238 | 20644 | 521218 | 20247 | 525238 | 19854 | 529300 | 19466 | 533404 | 1.6 |
| 8.6 | 21442 | 513376 | 21037 | 517317 | 20636 | 521298 | 20239 | 525319 | 19847 | 529382 | 19458 | 533487 | 1.4 |
| 8.8 | 21434 | 513454 | 21029 | 517396 | 20628 | 521378 | 20232 | 525400 | 19839 | 529463 | 19450 | 533569 | 1.2 |
| 9   | 21426 | 513533 | 21021 | 517475 | 20620 | 521458 | 20224 | 525481 | 19831 | 529545 | 19442 | 533652 | 1   |
| 9.2 | 21418 | 513611 | 21013 | 517554 | 20612 | 521538 | 20216 | 525562 | 19823 | 529627 | 19435 | 533734 | 0.8 |
| 9.4 | 21410 | 513690 | 21005 | 517634 | 20604 | 521618 | 20208 | 525643 | 19815 | 529709 | 19427 | 533817 | 0.6 |
| 9.6 | 21401 | 513768 | 20997 | 517713 | 20596 | 521698 | 20200 | 525723 | 19808 | 529790 | 19419 | 533899 | 0.4 |
| 9.8 | 21393 | 513847 | 20989 | 517792 | 20588 | 521778 | 20192 | 525804 | 19800 | 529872 | 19411 | 533982 | 0.2 |
| 10  | 21385 | 513925 | 20981 | 517872 | 20580 | 521858 | 20184 | 525885 | 19792 | 529954 | 19404 | 534065 | 0   |
|     | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | A     | B      | ' ↑ |
|     | 50'   |        | 40'   |        | 30'   |        | 20'   |        | 10'   |        | 0'    |        |     |

107°

When meridian angle, t, is greater than 90°, take K from bottom of table.

Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table.

A(α) = 10^6 \* log (1 / sin α)

B(α) = 10^6 \* log (1 / cos α)

| 73°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 19404 | 534065 | 19019 | 538218 | 18639 | 542416 | 18263                         | 546658 | 17891 | 550946 | 17523 | 555280 | 10  |
| 0.2                                                                                                                               | 19396 | 534147 | 19012 | 538302 | 18632 | 542500 | 18256                         | 546744 | 17883 | 551032 | 17515 | 555367 | 9.8 |
| 0.4                                                                                                                               | 19388 | 534230 | 19004 | 538385 | 18624 | 542585 | 18248                         | 546829 | 17876 | 551118 | 17508 | 555455 | 9.6 |
| 0.6                                                                                                                               | 19381 | 534313 | 18997 | 538469 | 18617 | 542669 | 18241                         | 546914 | 17869 | 551205 | 17501 | 555542 | 9.4 |
| 0.8                                                                                                                               | 19373 | 534395 | 18989 | 538553 | 18609 | 542754 | 18233                         | 547000 | 17861 | 551291 | 17493 | 555629 | 9.2 |
| 1                                                                                                                                 | 19365 | 534478 | 18981 | 538636 | 18601 | 542838 | 18226                         | 547085 | 17854 | 551377 | 17486 | 555716 | 9   |
| 1.2                                                                                                                               | 19357 | 534561 | 18974 | 538720 | 18594 | 542923 | 18218                         | 547170 | 17846 | 551464 | 17479 | 555804 | 8.8 |
| 1.4                                                                                                                               | 19350 | 534644 | 18966 | 538803 | 18586 | 543007 | 18211                         | 547256 | 17839 | 551550 | 17471 | 555891 | 8.6 |
| 1.6                                                                                                                               | 19342 | 534726 | 18958 | 538887 | 18579 | 543092 | 18203                         | 547341 | 17832 | 551636 | 17464 | 555978 | 8.4 |
| 1.8                                                                                                                               | 19334 | 534809 | 18951 | 538971 | 18571 | 543176 | 18196                         | 547427 | 17824 | 551723 | 17457 | 556065 | 8.2 |
| 2                                                                                                                                 | 19327 | 534892 | 18943 | 539054 | 18564 | 543261 | 18188                         | 547512 | 17817 | 551809 | 17449 | 556153 | 8   |
| 2.2                                                                                                                               | 19319 | 534975 | 18935 | 539138 | 18556 | 543345 | 18181                         | 547598 | 17809 | 551896 | 17442 | 556240 | 7.8 |
| 2.4                                                                                                                               | 19311 | 535058 | 18928 | 539222 | 18549 | 543430 | 18173                         | 547683 | 17802 | 551982 | 17435 | 556327 | 7.6 |
| 2.6                                                                                                                               | 19303 | 535140 | 18920 | 539306 | 18541 | 543515 | 18166                         | 547769 | 17795 | 552068 | 17428 | 556415 | 7.4 |
| 2.8                                                                                                                               | 19296 | 535223 | 18913 | 539389 | 18534 | 543599 | 18158                         | 547854 | 17787 | 552155 | 17420 | 556502 | 7.2 |
| 3                                                                                                                                 | 19288 | 535306 | 18905 | 539473 | 18526 | 543684 | 18151                         | 547940 | 17780 | 552241 | 17413 | 556590 | 7   |
| 3.2                                                                                                                               | 19280 | 535389 | 18897 | 539557 | 18518 | 543769 | 18143                         | 548025 | 17773 | 552328 | 17406 | 556677 | 6.8 |
| 3.4                                                                                                                               | 19273 | 535472 | 18890 | 539641 | 18511 | 543853 | 18136                         | 548111 | 17765 | 552414 | 17398 | 556765 | 6.6 |
| 3.6                                                                                                                               | 19265 | 535555 | 18882 | 539724 | 18503 | 543938 | 18129                         | 548197 | 17758 | 552501 | 17391 | 556852 | 6.4 |
| 3.8                                                                                                                               | 19257 | 535638 | 18875 | 539808 | 18496 | 544023 | 18121                         | 548282 | 17750 | 552587 | 17384 | 556940 | 6.2 |
| 4                                                                                                                                 | 19250 | 535721 | 18867 | 539892 | 18488 | 544107 | 18114                         | 548368 | 17743 | 552674 | 17376 | 557027 | 6   |
| 4.2                                                                                                                               | 19242 | 535804 | 18859 | 539976 | 18481 | 544192 | 18106                         | 548453 | 17736 | 552761 | 17369 | 557115 | 5.8 |
| 4.4                                                                                                                               | 19234 | 535887 | 18852 | 540060 | 18473 | 544277 | 18099                         | 548539 | 17728 | 552847 | 17362 | 557202 | 5.6 |
| 4.6                                                                                                                               | 19226 | 535970 | 18844 | 540144 | 18466 | 544362 | 18091                         | 548625 | 17721 | 552934 | 17355 | 557290 | 5.4 |
| 4.8                                                                                                                               | 19219 | 536053 | 18836 | 540228 | 18458 | 544447 | 18084                         | 548711 | 17714 | 553021 | 17347 | 557377 | 5.2 |
| 5                                                                                                                                 | 19211 | 536136 | 18829 | 540312 | 18451 | 544531 | 18076                         | 548796 | 17706 | 553107 | 17340 | 557465 | 5   |
| 5.2                                                                                                                               | 19203 | 536219 | 18821 | 540396 | 18443 | 544616 | 18069                         | 548882 | 17699 | 553194 | 17333 | 557553 | 4.8 |
| 5.4                                                                                                                               | 19196 | 536302 | 18814 | 540480 | 18436 | 544701 | 18062                         | 548968 | 17691 | 553281 | 17325 | 557640 | 4.6 |
| 5.6                                                                                                                               | 19188 | 536385 | 18806 | 540564 | 18428 | 544786 | 18054                         | 549054 | 17684 | 553367 | 17318 | 557728 | 4.4 |
| 5.8                                                                                                                               | 19180 | 536469 | 18798 | 540648 | 18421 | 544871 | 18047                         | 549140 | 17677 | 553454 | 17311 | 557816 | 4.2 |
| 6                                                                                                                                 | 19173 | 536552 | 18791 | 540732 | 18413 | 544956 | 18039                         | 549225 | 17669 | 553541 | 17304 | 557904 | 4   |
| 6.2                                                                                                                               | 19165 | 536635 | 18783 | 540816 | 18406 | 545041 | 18032                         | 549311 | 17662 | 553628 | 17296 | 557991 | 3.8 |
| 6.4                                                                                                                               | 19157 | 536718 | 18776 | 540900 | 18398 | 545126 | 18024                         | 549397 | 17655 | 553715 | 17289 | 558079 | 3.6 |
| 6.6                                                                                                                               | 19150 | 536801 | 18768 | 540984 | 18390 | 545211 | 18017                         | 549483 | 17647 | 553801 | 17282 | 558167 | 3.4 |
| 6.8                                                                                                                               | 19142 | 536884 | 18760 | 541068 | 18383 | 545296 | 18009                         | 549569 | 17640 | 553888 | 17274 | 558255 | 3.2 |
| 7                                                                                                                                 | 19134 | 536968 | 18753 | 541152 | 18375 | 545381 | 18002                         | 549655 | 17633 | 553975 | 17267 | 558342 | 3   |
| 7.2                                                                                                                               | 19127 | 537051 | 18745 | 541236 | 18368 | 545466 | 17995                         | 549741 | 17625 | 554062 | 17260 | 558430 | 2.8 |
| 7.4                                                                                                                               | 19119 | 537134 | 18738 | 541320 | 18360 | 545551 | 17987                         | 549827 | 17618 | 554149 | 17253 | 558518 | 2.6 |
| 7.6                                                                                                                               | 19111 | 537218 | 18730 | 541405 | 18353 | 545636 | 17980                         | 549913 | 17611 | 554236 | 17245 | 558606 | 2.4 |
| 7.8                                                                                                                               | 19104 | 537301 | 18723 | 541489 | 18345 | 545721 | 17972                         | 549999 | 17603 | 554323 | 17238 | 558694 | 2.2 |
| 8                                                                                                                                 | 19096 | 537384 | 18715 | 541573 | 18338 | 545806 | 17965                         | 550085 | 17596 | 554410 | 17231 | 558782 | 2   |
| 8.2                                                                                                                               | 19088 | 537468 | 18707 | 541657 | 18330 | 545891 | 17958                         | 550171 | 17589 | 554497 | 17224 | 558870 | 1.8 |
| 8.4                                                                                                                               | 19081 | 537551 | 18700 | 541741 | 18323 | 545976 | 17950                         | 550257 | 17581 | 554584 | 17216 | 558958 | 1.6 |
| 8.6                                                                                                                               | 19073 | 537634 | 18692 | 541826 | 18315 | 546062 | 17943                         | 550343 | 17574 | 554671 | 17209 | 559046 | 1.4 |
| 8.8                                                                                                                               | 19065 | 537718 | 18685 | 541910 | 18308 | 546147 | 17935                         | 550429 | 17567 | 554758 | 17202 | 559134 | 1.2 |
| 9                                                                                                                                 | 19058 | 537801 | 18677 | 541994 | 18300 | 546232 | 17928                         | 550515 | 17559 | 554845 | 17195 | 559222 | 1   |
| 9.2                                                                                                                               | 19050 | 537884 | 18670 | 542079 | 18293 | 546317 | 17920                         | 550601 | 17552 | 554932 | 17187 | 559310 | 0.8 |
| 9.4                                                                                                                               | 19042 | 537968 | 18662 | 542163 | 18285 | 546402 | 17913                         | 550687 | 17545 | 555019 | 17180 | 559398 | 0.6 |
| 9.6                                                                                                                               | 19035 | 538051 | 18654 | 542247 | 18278 | 546488 | 17906                         | 550774 | 17537 | 555106 | 17173 | 559486 | 0.4 |
| 9.8                                                                                                                               | 19027 | 538135 | 18647 | 542332 | 18271 | 546573 | 17898                         | 550860 | 17530 | 555193 | 17166 | 559574 | 0.2 |
| 10                                                                                                                                | 19019 | 538218 | 18639 | 542416 | 18263 | 546658 | 17891                         | 550946 | 17523 | 555280 | 17158 | 559662 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 106°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 74°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 17158 | 559662 | 16798 | 564092 | 16442 | 568571 | 16089                         | 573101 | 15741 | 577682 | 15397 | 582316 | 10  |
| 0.2                                                                                                                               | 17151 | 559750 | 16791 | 564181 | 16435 | 568661 | 16082                         | 573192 | 15734 | 577775 | 15390 | 582409 | 9.8 |
| 0.4                                                                                                                               | 17144 | 559838 | 16784 | 564270 | 16428 | 568752 | 16075                         | 573283 | 15727 | 577867 | 15383 | 582503 | 9.6 |
| 0.6                                                                                                                               | 17137 | 559926 | 16777 | 564359 | 16421 | 568842 | 16068                         | 573375 | 15720 | 577959 | 15376 | 582596 | 9.4 |
| 0.8                                                                                                                               | 17129 | 560015 | 16769 | 564448 | 16413 | 568932 | 16061                         | 573466 | 15713 | 578051 | 15369 | 582689 | 9.2 |
| 1                                                                                                                                 | 17122 | 560103 | 16762 | 564538 | 16406 | 569022 | 16054                         | 573557 | 15706 | 578143 | 15362 | 582783 | 9   |
| 1.2                                                                                                                               | 17115 | 560191 | 16755 | 564627 | 16399 | 569112 | 16047                         | 573648 | 15700 | 578236 | 15356 | 582876 | 8.8 |
| 1.4                                                                                                                               | 17108 | 560279 | 16748 | 564716 | 16392 | 569202 | 16040                         | 573739 | 15693 | 578328 | 15349 | 582969 | 8.6 |
| 1.6                                                                                                                               | 17100 | 560367 | 16741 | 564805 | 16385 | 569293 | 16033                         | 573831 | 15686 | 578420 | 15342 | 583063 | 8.4 |
| 1.8                                                                                                                               | 17093 | 560456 | 16734 | 564895 | 16378 | 569383 | 16026                         | 573922 | 15679 | 578513 | 15335 | 583156 | 8.2 |
| 2                                                                                                                                 | 17086 | 560544 | 16727 | 564984 | 16371 | 569473 | 16019                         | 574013 | 15672 | 578605 | 15328 | 583249 | 8   |
| 2.2                                                                                                                               | 17079 | 560632 | 16719 | 565073 | 16364 | 569564 | 16013                         | 574105 | 15665 | 578697 | 15321 | 583343 | 7.8 |
| 2.4                                                                                                                               | 17072 | 560721 | 16712 | 565162 | 16357 | 569654 | 16006                         | 574196 | 15658 | 578790 | 15315 | 583436 | 7.6 |
| 2.6                                                                                                                               | 17064 | 560809 | 16705 | 565252 | 16350 | 569744 | 15999                         | 574287 | 15651 | 578882 | 15308 | 583530 | 7.4 |
| 2.8                                                                                                                               | 17057 | 560897 | 16698 | 565341 | 16343 | 569835 | 15992                         | 574379 | 15644 | 578975 | 15301 | 583623 | 7.2 |
| 3                                                                                                                                 | 17050 | 560986 | 16691 | 565431 | 16336 | 569925 | 15985                         | 574470 | 15637 | 579067 | 15294 | 583717 | 7   |
| 3.2                                                                                                                               | 17043 | 561074 | 16684 | 565520 | 16329 | 570015 | 15978                         | 574562 | 15630 | 579159 | 15287 | 583810 | 6.8 |
| 3.4                                                                                                                               | 17035 | 561163 | 16677 | 565609 | 16322 | 570106 | 15971                         | 574653 | 15624 | 579252 | 15280 | 583904 | 6.6 |
| 3.6                                                                                                                               | 17028 | 561251 | 16669 | 565699 | 16315 | 570196 | 15964                         | 574744 | 15617 | 579345 | 15274 | 583998 | 6.4 |
| 3.8                                                                                                                               | 17021 | 561340 | 16662 | 565788 | 16307 | 570287 | 15957                         | 574836 | 15610 | 579437 | 15267 | 584091 | 6.2 |
| 4                                                                                                                                 | 17014 | 561428 | 16655 | 565878 | 16300 | 570377 | 15950                         | 574927 | 15603 | 579530 | 15260 | 584185 | 6   |
| 4.2                                                                                                                               | 17007 | 561517 | 16648 | 565967 | 16293 | 570468 | 15943                         | 575019 | 15596 | 579622 | 15253 | 584278 | 5.8 |
| 4.4                                                                                                                               | 16999 | 561605 | 16641 | 566057 | 16286 | 570558 | 15936                         | 575111 | 15589 | 579715 | 15246 | 584372 | 5.6 |
| 4.6                                                                                                                               | 16992 | 561694 | 16634 | 566146 | 16279 | 570649 | 15929                         | 575202 | 15582 | 579807 | 15240 | 584466 | 5.4 |
| 4.8                                                                                                                               | 16985 | 561782 | 16627 | 566236 | 16272 | 570739 | 15922                         | 575294 | 15575 | 579900 | 15233 | 584559 | 5.2 |
| 5                                                                                                                                 | 16978 | 561871 | 16619 | 566325 | 16265 | 570830 | 15915                         | 575385 | 15568 | 579993 | 15226 | 584653 | 5   |
| 5.2                                                                                                                               | 16971 | 561959 | 16612 | 566415 | 16258 | 570921 | 15908                         | 575477 | 15562 | 580085 | 15219 | 584747 | 4.8 |
| 5.4                                                                                                                               | 16963 | 562048 | 16605 | 566505 | 16251 | 571011 | 15901                         | 575569 | 15555 | 580178 | 15212 | 584841 | 4.6 |
| 5.6                                                                                                                               | 16956 | 562137 | 16598 | 566594 | 16244 | 571102 | 15894                         | 575660 | 15548 | 580271 | 15206 | 584935 | 4.4 |
| 5.8                                                                                                                               | 16949 | 562225 | 16591 | 566684 | 16237 | 571192 | 15887                         | 575752 | 15541 | 580364 | 15199 | 585028 | 4.2 |
| 6                                                                                                                                 | 16942 | 562314 | 16584 | 566774 | 16230 | 571283 | 15880                         | 575844 | 15534 | 580456 | 15192 | 585122 | 4   |
| 6.2                                                                                                                               | 16935 | 562403 | 16577 | 566863 | 16223 | 571374 | 15873                         | 575935 | 15527 | 580549 | 15185 | 585216 | 3.8 |
| 6.4                                                                                                                               | 16927 | 562492 | 16570 | 566953 | 16216 | 571465 | 15866                         | 576027 | 15520 | 580642 | 15178 | 585310 | 3.6 |
| 6.6                                                                                                                               | 16920 | 562580 | 16563 | 567043 | 16209 | 571555 | 15859                         | 576119 | 15513 | 580735 | 15172 | 585404 | 3.4 |
| 6.8                                                                                                                               | 16913 | 562669 | 16555 | 567133 | 16202 | 571646 | 15852                         | 576211 | 15506 | 580828 | 15165 | 585498 | 3.2 |
| 7                                                                                                                                 | 16906 | 562758 | 16548 | 567222 | 16195 | 571737 | 15845                         | 576303 | 15500 | 580921 | 15158 | 585592 | 3   |
| 7.2                                                                                                                               | 16899 | 562847 | 16541 | 567312 | 16188 | 571828 | 15838                         | 576394 | 15493 | 581013 | 15151 | 585686 | 2.8 |
| 7.4                                                                                                                               | 16891 | 562935 | 16534 | 567402 | 16181 | 571919 | 15831                         | 576486 | 15486 | 581106 | 15144 | 585780 | 2.6 |
| 7.6                                                                                                                               | 16884 | 563024 | 16527 | 567492 | 16174 | 572009 | 15824                         | 576578 | 15479 | 581199 | 15138 | 585874 | 2.4 |
| 7.8                                                                                                                               | 16877 | 563113 | 16520 | 567582 | 16167 | 572100 | 15817                         | 576670 | 15472 | 581292 | 15131 | 585968 | 2.2 |
| 8                                                                                                                                 | 16870 | 563202 | 16513 | 567671 | 16160 | 572191 | 15810                         | 576762 | 15465 | 581385 | 15124 | 586062 | 2   |
| 8.2                                                                                                                               | 16863 | 563291 | 16506 | 567761 | 16153 | 572282 | 15804                         | 576854 | 15458 | 581478 | 15117 | 586156 | 1.8 |
| 8.4                                                                                                                               | 16855 | 563380 | 16499 | 567851 | 16146 | 572373 | 15797                         | 576946 | 15452 | 581571 | 15110 | 586250 | 1.6 |
| 8.6                                                                                                                               | 16848 | 563469 | 16491 | 567941 | 16139 | 572464 | 15790                         | 577038 | 15445 | 581664 | 15104 | 586344 | 1.4 |
| 8.8                                                                                                                               | 16841 | 563558 | 16484 | 568031 | 16132 | 572555 | 15783                         | 577130 | 15438 | 581757 | 15097 | 586438 | 1.2 |
| 9                                                                                                                                 | 16834 | 563647 | 16477 | 568121 | 16125 | 572646 | 15776                         | 577222 | 15431 | 581850 | 15090 | 586533 | 1   |
| 9.2                                                                                                                               | 16827 | 563736 | 16470 | 568211 | 16118 | 572737 | 15769                         | 577314 | 15424 | 581944 | 15083 | 586627 | 0.8 |
| 9.4                                                                                                                               | 16820 | 563825 | 16463 | 568301 | 16111 | 572828 | 15762                         | 577406 | 15417 | 582037 | 15077 | 586721 | 0.6 |
| 9.6                                                                                                                               | 16812 | 563914 | 16456 | 568391 | 16104 | 572919 | 15755                         | 577498 | 15410 | 582130 | 15070 | 586815 | 0.4 |
| 9.8                                                                                                                               | 16805 | 564003 | 16449 | 568481 | 16096 | 573010 | 15748                         | 577590 | 15404 | 582223 | 15063 | 586909 | 0.2 |
| 10                                                                                                                                | 16798 | 564092 | 16442 | 568571 | 16089 | 573101 | 15741                         | 577682 | 15397 | 582316 | 15056 | 587004 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 105°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 75°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 15056 | 587004 | 14720 | 591746 | 14387 | 596545 | 14058                         | 601400 | 13734 | 606315 | 13413 | 611289 | 10  |
| 0.2                                                                                                                               | 15049 | 587098 | 14713 | 591842 | 14380 | 596641 | 14052                         | 601498 | 13727 | 606414 | 13406 | 611389 | 9.8 |
| 0.4                                                                                                                               | 15043 | 587192 | 14706 | 591937 | 14374 | 596738 | 14045                         | 601596 | 13721 | 606513 | 13400 | 611489 | 9.6 |
| 0.6                                                                                                                               | 15036 | 587287 | 14700 | 592032 | 14367 | 596834 | 14039                         | 601694 | 13714 | 606612 | 13394 | 611590 | 9.4 |
| 0.8                                                                                                                               | 15029 | 587381 | 14693 | 592128 | 14361 | 596931 | 14032                         | 601791 | 13708 | 606710 | 13387 | 611690 | 9.2 |
| 1                                                                                                                                 | 15022 | 587476 | 14686 | 592223 | 14354 | 597028 | 14026                         | 601889 | 13701 | 606809 | 13381 | 611790 | 9   |
| 1.2                                                                                                                               | 15016 | 587570 | 14680 | 592319 | 14347 | 597124 | 14019                         | 601987 | 13695 | 606908 | 13375 | 611890 | 8.8 |
| 1.4                                                                                                                               | 15009 | 587664 | 14673 | 592415 | 14341 | 597221 | 14013                         | 602085 | 13689 | 607008 | 13368 | 611990 | 8.6 |
| 1.6                                                                                                                               | 15002 | 587759 | 14666 | 592510 | 14334 | 597318 | 14006                         | 602183 | 13682 | 607107 | 13362 | 612091 | 8.4 |
| 1.8                                                                                                                               | 14995 | 587853 | 14660 | 592606 | 14328 | 597414 | 14000                         | 602281 | 13676 | 607206 | 13355 | 612191 | 8.2 |
| 2                                                                                                                                 | 14989 | 587948 | 14653 | 592701 | 14321 | 597511 | 13993                         | 602379 | 13669 | 607305 | 13349 | 612291 | 8   |
| 2.2                                                                                                                               | 14982 | 588042 | 14646 | 592797 | 14314 | 597608 | 13987                         | 602476 | 13663 | 607404 | 13343 | 612392 | 7.8 |
| 2.4                                                                                                                               | 14975 | 588137 | 14640 | 592893 | 14308 | 597705 | 13980                         | 602574 | 13656 | 607503 | 13336 | 612492 | 7.6 |
| 2.6                                                                                                                               | 14968 | 588231 | 14633 | 592988 | 14301 | 597802 | 13974                         | 602672 | 13650 | 607602 | 13330 | 612592 | 7.4 |
| 2.8                                                                                                                               | 14962 | 588326 | 14626 | 593084 | 14295 | 597898 | 13967                         | 602770 | 13643 | 607701 | 13324 | 612693 | 7.2 |
| 3                                                                                                                                 | 14955 | 588421 | 14619 | 593180 | 14288 | 597995 | 13961                         | 602868 | 13637 | 607801 | 13317 | 612793 | 7   |
| 3.2                                                                                                                               | 14948 | 588515 | 14613 | 593275 | 14281 | 598092 | 13954                         | 602967 | 13631 | 607900 | 13311 | 612894 | 6.8 |
| 3.4                                                                                                                               | 14941 | 588610 | 14606 | 593371 | 14275 | 598189 | 13948                         | 603065 | 13624 | 607999 | 13305 | 612994 | 6.6 |
| 3.6                                                                                                                               | 14935 | 588705 | 14599 | 593467 | 14268 | 598286 | 13941                         | 603163 | 13618 | 608099 | 13298 | 613095 | 6.4 |
| 3.8                                                                                                                               | 14928 | 588799 | 14593 | 593563 | 14262 | 598383 | 13935                         | 603261 | 13611 | 608198 | 13292 | 613195 | 6.2 |
| 4                                                                                                                                 | 14921 | 588894 | 14586 | 593659 | 14255 | 598480 | 13928                         | 603359 | 13605 | 608297 | 13286 | 613296 | 6   |
| 4.2                                                                                                                               | 14914 | 588989 | 14580 | 593755 | 14249 | 598577 | 13922                         | 603457 | 13598 | 608397 | 13279 | 613397 | 5.8 |
| 4.4                                                                                                                               | 14908 | 589084 | 14573 | 593850 | 14242 | 598674 | 13915                         | 603555 | 13592 | 608496 | 13273 | 613497 | 5.6 |
| 4.6                                                                                                                               | 14901 | 589178 | 14566 | 593946 | 14235 | 598771 | 13909                         | 603654 | 13586 | 608595 | 13267 | 613598 | 5.4 |
| 4.8                                                                                                                               | 14894 | 589273 | 14560 | 594042 | 14229 | 598868 | 13902                         | 603752 | 13579 | 608695 | 13260 | 613699 | 5.2 |
| 5                                                                                                                                 | 14887 | 589368 | 14553 | 594138 | 14222 | 598965 | 13896                         | 603850 | 13573 | 608794 | 13254 | 613799 | 5   |
| 5.2                                                                                                                               | 14881 | 589463 | 14546 | 594234 | 14216 | 599062 | 13889                         | 603948 | 13566 | 608894 | 13248 | 613900 | 4.8 |
| 5.4                                                                                                                               | 14874 | 589558 | 14540 | 594330 | 14209 | 599160 | 13883                         | 604047 | 13560 | 608993 | 13241 | 614001 | 4.6 |
| 5.6                                                                                                                               | 14867 | 589653 | 14533 | 594426 | 14203 | 599257 | 13876                         | 604145 | 13554 | 609093 | 13235 | 614101 | 4.4 |
| 5.8                                                                                                                               | 14861 | 589748 | 14526 | 594522 | 14196 | 599354 | 13870                         | 604243 | 13547 | 609192 | 13229 | 614202 | 4.2 |
| 6                                                                                                                                 | 14854 | 589843 | 14520 | 594618 | 14189 | 599451 | 13863                         | 604342 | 13541 | 609292 | 13222 | 614303 | 4   |
| 6.2                                                                                                                               | 14847 | 589938 | 14513 | 594714 | 14183 | 599548 | 13857                         | 604440 | 13534 | 609392 | 13216 | 614404 | 3.8 |
| 6.4                                                                                                                               | 14840 | 590032 | 14506 | 594811 | 14176 | 599646 | 13850                         | 604539 | 13528 | 609491 | 13210 | 614505 | 3.6 |
| 6.6                                                                                                                               | 14834 | 590128 | 14500 | 594907 | 14170 | 599743 | 13844                         | 604637 | 13521 | 609591 | 13203 | 614606 | 3.4 |
| 6.8                                                                                                                               | 14827 | 590223 | 14493 | 595003 | 14163 | 599840 | 13837                         | 604736 | 13515 | 609691 | 13197 | 614707 | 3.2 |
| 7                                                                                                                                 | 14820 | 590318 | 14486 | 595099 | 14157 | 599938 | 13831                         | 604834 | 13509 | 609790 | 13191 | 614808 | 3   |
| 7.2                                                                                                                               | 14814 | 590413 | 14480 | 595195 | 14150 | 600035 | 13824                         | 604933 | 13502 | 609890 | 13184 | 614909 | 2.8 |
| 7.4                                                                                                                               | 14807 | 590508 | 14473 | 595292 | 14143 | 600132 | 13818                         | 605031 | 13496 | 609990 | 13178 | 615010 | 2.6 |
| 7.6                                                                                                                               | 14800 | 590603 | 14467 | 595388 | 14137 | 600230 | 13811                         | 605130 | 13489 | 610090 | 13172 | 615111 | 2.4 |
| 7.8                                                                                                                               | 14793 | 590698 | 14460 | 595484 | 14130 | 600327 | 13805                         | 605228 | 13483 | 610190 | 13165 | 615212 | 2.2 |
| 8                                                                                                                                 | 14787 | 590793 | 14453 | 595580 | 14124 | 600425 | 13798                         | 605327 | 13477 | 610289 | 13159 | 615313 | 2   |
| 8.2                                                                                                                               | 14780 | 590888 | 14447 | 595677 | 14117 | 600522 | 13792                         | 605426 | 13470 | 610389 | 13153 | 615414 | 1.8 |
| 8.4                                                                                                                               | 14773 | 590984 | 14440 | 595773 | 14111 | 600620 | 13785                         | 605524 | 13464 | 610489 | 13146 | 615515 | 1.6 |
| 8.6                                                                                                                               | 14767 | 591079 | 14433 | 595869 | 14104 | 600717 | 13779                         | 605623 | 13457 | 610589 | 13140 | 615616 | 1.4 |
| 8.8                                                                                                                               | 14760 | 591174 | 14427 | 595966 | 14098 | 600815 | 13772                         | 605722 | 13451 | 610689 | 13134 | 615717 | 1.2 |
| 9                                                                                                                                 | 14753 | 591269 | 14420 | 596062 | 14091 | 600912 | 13766                         | 605821 | 13445 | 610789 | 13127 | 615818 | 1   |
| 9.2                                                                                                                               | 14746 | 591365 | 14414 | 596159 | 14085 | 601010 | 13759                         | 605919 | 13438 | 610889 | 13121 | 615920 | 0.8 |
| 9.4                                                                                                                               | 14740 | 591460 | 14407 | 596255 | 14078 | 601107 | 13753                         | 606018 | 13432 | 610989 | 13115 | 616021 | 0.6 |
| 9.6                                                                                                                               | 14733 | 591555 | 14400 | 596352 | 14071 | 601205 | 13747                         | 606117 | 13426 | 611089 | 13108 | 616122 | 0.4 |
| 9.8                                                                                                                               | 14726 | 591651 | 14394 | 596448 | 14065 | 601303 | 13740                         | 606216 | 13419 | 611189 | 13102 | 616223 | 0.2 |
| 10                                                                                                                                | 14720 | 591746 | 14387 | 596545 | 14058 | 601400 | 13734                         | 606315 | 13413 | 611289 | 13096 | 616325 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
| 104°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 76°                                                                                                                               |       |        |       |        |       |        |                               |        |       |        |       |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|-------|--------|-------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'   |        | 50'   |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      |     |
| 0                                                                                                                                 | 13096 | 616325 | 12783 | 621423 | 12474 | 626586 | 12168                         | 631815 | 11867 | 637111 | 11570 | 642476 | 10  |
| 0.2                                                                                                                               | 13090 | 616426 | 12777 | 621526 | 12468 | 626690 | 12162                         | 631920 | 11861 | 637217 | 11564 | 642584 | 9.8 |
| 0.4                                                                                                                               | 13083 | 616528 | 12770 | 621629 | 12461 | 626794 | 12156                         | 632025 | 11855 | 637324 | 11558 | 642692 | 9.6 |
| 0.6                                                                                                                               | 13077 | 616629 | 12764 | 621731 | 12455 | 626898 | 12150                         | 632131 | 11849 | 637431 | 11552 | 642800 | 9.4 |
| 0.8                                                                                                                               | 13071 | 616730 | 12758 | 621834 | 12449 | 627002 | 12144                         | 632236 | 11843 | 637537 | 11546 | 642908 | 9.2 |
| 1                                                                                                                                 | 13064 | 616832 | 12752 | 621937 | 12443 | 627106 | 12138                         | 632341 | 11837 | 637644 | 11540 | 643016 | 9   |
| 1.2                                                                                                                               | 13058 | 616933 | 12746 | 622039 | 12437 | 627210 | 12132                         | 632447 | 11831 | 637751 | 11534 | 643125 | 8.8 |
| 1.4                                                                                                                               | 13052 | 617035 | 12739 | 622142 | 12431 | 627314 | 12126                         | 632552 | 11825 | 637858 | 11528 | 643233 | 8.6 |
| 1.6                                                                                                                               | 13046 | 617136 | 12733 | 622245 | 12425 | 627418 | 12120                         | 632658 | 11819 | 637965 | 11522 | 643341 | 8.4 |
| 1.8                                                                                                                               | 13039 | 617238 | 12727 | 622348 | 12418 | 627522 | 12114                         | 632763 | 11813 | 638071 | 11517 | 643449 | 8.2 |
| 2                                                                                                                                 | 13033 | 617339 | 12721 | 622451 | 12412 | 627627 | 12108                         | 632869 | 11807 | 638178 | 11511 | 643557 | 8   |
| 2.2                                                                                                                               | 13027 | 617441 | 12715 | 622554 | 12406 | 627731 | 12102                         | 632974 | 11801 | 638285 | 11505 | 643666 | 7.8 |
| 2.4                                                                                                                               | 13020 | 617543 | 12708 | 622656 | 12400 | 627835 | 12096                         | 633080 | 11795 | 638392 | 11499 | 643774 | 7.6 |
| 2.6                                                                                                                               | 13014 | 617644 | 12702 | 622759 | 12394 | 627939 | 12090                         | 633185 | 11789 | 638499 | 11493 | 643882 | 7.4 |
| 2.8                                                                                                                               | 13008 | 617746 | 12696 | 622862 | 12388 | 628043 | 12084                         | 633291 | 11783 | 638606 | 11487 | 643991 | 7.2 |
| 3                                                                                                                                 | 13002 | 617848 | 12690 | 622965 | 12382 | 628148 | 12078                         | 633396 | 11777 | 638713 | 11481 | 644099 | 7   |
| 3.2                                                                                                                               | 12995 | 617949 | 12684 | 623068 | 12376 | 628252 | 12072                         | 633502 | 11772 | 638820 | 11475 | 644208 | 6.8 |
| 3.4                                                                                                                               | 12989 | 618051 | 12677 | 623171 | 12370 | 628356 | 12066                         | 633608 | 11766 | 638927 | 11469 | 644316 | 6.6 |
| 3.6                                                                                                                               | 12983 | 618153 | 12671 | 623274 | 12363 | 628461 | 12060                         | 633713 | 11760 | 639034 | 11464 | 644425 | 6.4 |
| 3.8                                                                                                                               | 12976 | 618255 | 12665 | 623378 | 12357 | 628565 | 12054                         | 633819 | 11754 | 639141 | 11458 | 644533 | 6.2 |
| 4                                                                                                                                 | 12970 | 618357 | 12659 | 623481 | 12351 | 628670 | 12047                         | 633925 | 11748 | 639248 | 11452 | 644642 | 6   |
| 4.2                                                                                                                               | 12964 | 618458 | 12653 | 623584 | 12345 | 628774 | 12041                         | 634031 | 11742 | 639356 | 11446 | 644750 | 5.8 |
| 4.4                                                                                                                               | 12958 | 618560 | 12646 | 623687 | 12339 | 628879 | 12035                         | 634137 | 11736 | 639463 | 11440 | 644859 | 5.6 |
| 4.6                                                                                                                               | 12951 | 618662 | 12640 | 623790 | 12333 | 628983 | 12029                         | 634242 | 11730 | 639570 | 11434 | 644968 | 5.4 |
| 4.8                                                                                                                               | 12945 | 618764 | 12634 | 623893 | 12327 | 629088 | 12023                         | 634348 | 11724 | 639677 | 11428 | 645076 | 5.2 |
| 5                                                                                                                                 | 12939 | 618866 | 12628 | 623997 | 12321 | 629192 | 12017                         | 634454 | 11718 | 639785 | 11422 | 645185 | 5   |
| 5.2                                                                                                                               | 12933 | 618968 | 12622 | 624100 | 12315 | 629297 | 12011                         | 634560 | 11712 | 639892 | 11417 | 645294 | 4.8 |
| 5.4                                                                                                                               | 12926 | 619070 | 12615 | 624203 | 12308 | 629401 | 12005                         | 634666 | 11706 | 639999 | 11411 | 645402 | 4.6 |
| 5.6                                                                                                                               | 12920 | 619172 | 12609 | 624306 | 12302 | 629506 | 11999                         | 634772 | 11700 | 640107 | 11405 | 645511 | 4.4 |
| 5.8                                                                                                                               | 12914 | 619274 | 12603 | 624410 | 12296 | 629611 | 11993                         | 634878 | 11694 | 640214 | 11399 | 645620 | 4.2 |
| 6                                                                                                                                 | 12908 | 619376 | 12597 | 624513 | 12290 | 629715 | 11987                         | 634984 | 11688 | 640322 | 11393 | 645729 | 4   |
| 6.2                                                                                                                               | 12901 | 619478 | 12591 | 624617 | 12284 | 629820 | 11981                         | 635090 | 11682 | 640429 | 11387 | 645838 | 3.8 |
| 6.4                                                                                                                               | 12895 | 619581 | 12585 | 624720 | 12278 | 629925 | 11975                         | 635196 | 11676 | 640536 | 11381 | 645947 | 3.6 |
| 6.6                                                                                                                               | 12889 | 619683 | 12578 | 624823 | 12272 | 630030 | 11969                         | 635302 | 11670 | 640644 | 11375 | 646056 | 3.4 |
| 6.8                                                                                                                               | 12883 | 619785 | 12572 | 624927 | 12266 | 630134 | 11963                         | 635409 | 11664 | 640751 | 11370 | 646165 | 3.2 |
| 7                                                                                                                                 | 12876 | 619887 | 12566 | 625030 | 12260 | 630239 | 11957                         | 635515 | 11658 | 640859 | 11364 | 646274 | 3   |
| 7.2                                                                                                                               | 12870 | 619989 | 12560 | 625134 | 12254 | 630344 | 11951                         | 635621 | 11653 | 640967 | 11358 | 646383 | 2.8 |
| 7.4                                                                                                                               | 12864 | 620092 | 12554 | 625238 | 12247 | 630449 | 11945                         | 635727 | 11647 | 641074 | 11352 | 646492 | 2.6 |
| 7.6                                                                                                                               | 12858 | 620194 | 12548 | 625341 | 12241 | 630554 | 11939                         | 635834 | 11641 | 641182 | 11346 | 646601 | 2.4 |
| 7.8                                                                                                                               | 12851 | 620296 | 12541 | 625445 | 12235 | 630659 | 11933                         | 635940 | 11635 | 641290 | 11340 | 646710 | 2.2 |
| 8                                                                                                                                 | 12845 | 620399 | 12535 | 625548 | 12229 | 630764 | 11927                         | 636046 | 11629 | 641397 | 11334 | 646819 | 2   |
| 8.2                                                                                                                               | 12839 | 620501 | 12529 | 625652 | 12223 | 630869 | 11921                         | 636152 | 11623 | 641505 | 11329 | 646928 | 1.8 |
| 8.4                                                                                                                               | 12833 | 620603 | 12523 | 625756 | 12217 | 630974 | 11915                         | 636259 | 11617 | 641613 | 11323 | 647037 | 1.6 |
| 8.6                                                                                                                               | 12826 | 620706 | 12517 | 625859 | 12211 | 631079 | 11909                         | 636365 | 11611 | 641721 | 11317 | 647147 | 1.4 |
| 8.8                                                                                                                               | 12820 | 620808 | 12511 | 625963 | 12205 | 631184 | 11903                         | 636472 | 11605 | 641828 | 11311 | 647256 | 1.2 |
| 9                                                                                                                                 | 12814 | 620911 | 12504 | 626067 | 12199 | 631289 | 11897                         | 636578 | 11599 | 641936 | 11305 | 647365 | 1   |
| 9.2                                                                                                                               | 12808 | 621013 | 12498 | 626171 | 12193 | 631394 | 11891                         | 636685 | 11593 | 642044 | 11299 | 647474 | 0.8 |
| 9.4                                                                                                                               | 12802 | 621116 | 12492 | 626275 | 12187 | 631499 | 11885                         | 636791 | 11587 | 642152 | 11294 | 647584 | 0.6 |
| 9.6                                                                                                                               | 12795 | 621218 | 12486 | 626378 | 12181 | 631604 | 11879                         | 636898 | 11581 | 642260 | 11288 | 647693 | 0.4 |
| 9.8                                                                                                                               | 12789 | 621321 | 12480 | 626482 | 12175 | 631710 | 11873                         | 637004 | 11576 | 642368 | 11282 | 647803 | 0.2 |
| 10                                                                                                                                | 12783 | 621423 | 12474 | 626586 | 12168 | 631815 | 11867                         | 637111 | 11570 | 642476 | 11276 | 647912 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A     | B      | A     | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'   |        | 0'    |        |     |
| 103°                                                                                                                              |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |       |        |       |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |       |        |       |        |     |

| 77°                                                                                                                               |       |        |       |        |       |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|--------|-------|--------|-------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'    |        | 10'   |        | 20'   |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 11276 | 647912 | 10986 | 653421 | 10700 | 659004 | 10418                         | 664663 | 10140  | 670401 | 9866.1 | 676220 | 10  |
| 0.2                                                                                                                               | 11270 | 648021 | 10981 | 653532 | 10695 | 659116 | 10413                         | 664777 | 10135  | 670517 | 9860.6 | 676337 | 9.8 |
| 0.4                                                                                                                               | 11264 | 648131 | 10975 | 653642 | 10689 | 659229 | 10407                         | 664891 | 10129  | 670632 | 9855.2 | 676454 | 9.6 |
| 0.6                                                                                                                               | 11259 | 648240 | 10969 | 653753 | 10683 | 659341 | 10402                         | 665005 | 10124  | 670748 | 9849.7 | 676572 | 9.4 |
| 0.8                                                                                                                               | 11253 | 648350 | 10963 | 653864 | 10678 | 659454 | 10396                         | 665119 | 10118  | 670864 | 9844.3 | 676689 | 9.2 |
| 1                                                                                                                                 | 11247 | 648460 | 10958 | 653976 | 10672 | 659566 | 10390                         | 665233 | 10113  | 670979 | 9838.8 | 676806 | 9   |
| 1.2                                                                                                                               | 11241 | 648569 | 10952 | 654087 | 10666 | 659679 | 10385                         | 665348 | 10107  | 671095 | 9833.4 | 676924 | 8.8 |
| 1.4                                                                                                                               | 11235 | 648679 | 10946 | 654198 | 10661 | 659791 | 10379                         | 665462 | 10102  | 671211 | 9828.0 | 677041 | 8.6 |
| 1.6                                                                                                                               | 11229 | 648788 | 10940 | 654309 | 10655 | 659904 | 10374                         | 665576 | 10096  | 671327 | 9822.5 | 677158 | 8.4 |
| 1.8                                                                                                                               | 11224 | 648898 | 10935 | 654420 | 10649 | 660017 | 10368                         | 665690 | 10091  | 671443 | 9817.1 | 677276 | 8.2 |
| 2                                                                                                                                 | 11218 | 649008 | 10929 | 654531 | 10644 | 660129 | 10363                         | 665805 | 10085  | 671558 | 9811.7 | 677393 | 8   |
| 2.2                                                                                                                               | 11212 | 649118 | 10923 | 654642 | 10638 | 660242 | 10357                         | 665919 | 10080  | 671674 | 9806.2 | 677511 | 7.8 |
| 2.4                                                                                                                               | 11206 | 649227 | 10917 | 654754 | 10632 | 660355 | 10351                         | 666033 | 10074  | 671790 | 9800.8 | 677628 | 7.6 |
| 2.6                                                                                                                               | 11200 | 649337 | 10912 | 654865 | 10627 | 660468 | 10346                         | 666147 | 10069  | 671906 | 9795.4 | 677746 | 7.4 |
| 2.8                                                                                                                               | 11195 | 649447 | 10906 | 654976 | 10621 | 660581 | 10340                         | 666262 | 10063  | 672022 | 9789.9 | 677864 | 7.2 |
| 3                                                                                                                                 | 11189 | 649557 | 10900 | 655088 | 10615 | 660693 | 10335                         | 666376 | 10058  | 672138 | 9784.5 | 677981 | 7   |
| 3.2                                                                                                                               | 11183 | 649667 | 10894 | 655199 | 10610 | 660806 | 10329                         | 666491 | 10052  | 672254 | 9779.1 | 678099 | 6.8 |
| 3.4                                                                                                                               | 11177 | 649777 | 10889 | 655310 | 10604 | 660919 | 10323                         | 666605 | 10047  | 672370 | 9773.7 | 678217 | 6.6 |
| 3.6                                                                                                                               | 11171 | 649887 | 10883 | 655422 | 10599 | 661032 | 10318                         | 666720 | 10041  | 672487 | 9768.2 | 678335 | 6.4 |
| 3.8                                                                                                                               | 11166 | 649997 | 10877 | 655533 | 10593 | 661145 | 10312                         | 666834 | 10036  | 672603 | 9762.8 | 678452 | 6.2 |
| 4                                                                                                                                 | 11160 | 650107 | 10872 | 655645 | 10587 | 661258 | 10307                         | 666949 | 10030  | 672719 | 9757.4 | 678570 | 6   |
| 4.2                                                                                                                               | 11154 | 650217 | 10866 | 655756 | 10582 | 661371 | 10301                         | 667064 | 10025  | 672835 | 9752.0 | 678688 | 5.8 |
| 4.4                                                                                                                               | 11148 | 650327 | 10860 | 655868 | 10576 | 661484 | 10296                         | 667178 | 10019  | 672951 | 9746.6 | 678806 | 5.6 |
| 4.6                                                                                                                               | 11142 | 650437 | 10854 | 655979 | 10570 | 661597 | 10290                         | 667293 | 10014  | 673068 | 9741.2 | 678924 | 5.4 |
| 4.8                                                                                                                               | 11137 | 650547 | 10849 | 656091 | 10565 | 661711 | 10284                         | 667408 | 10008  | 673184 | 9735.8 | 679042 | 5.2 |
| 5                                                                                                                                 | 11131 | 650657 | 10843 | 656203 | 10559 | 661824 | 10279                         | 667522 | 10003  | 673300 | 9730.3 | 679160 | 5   |
| 5.2                                                                                                                               | 11125 | 650767 | 10837 | 656314 | 10553 | 661937 | 10273                         | 667637 | 9997.2 | 673417 | 9724.9 | 679278 | 4.8 |
| 5.4                                                                                                                               | 11119 | 650877 | 10831 | 656426 | 10548 | 662050 | 10268                         | 667752 | 9991.7 | 673533 | 9719.5 | 679396 | 4.6 |
| 5.6                                                                                                                               | 11113 | 650988 | 10826 | 656538 | 10542 | 662164 | 10262                         | 667867 | 9986.3 | 673650 | 9714.1 | 679514 | 4.4 |
| 5.8                                                                                                                               | 11108 | 651098 | 10820 | 656650 | 10536 | 662277 | 10257                         | 667982 | 9980.8 | 673766 | 9708.7 | 679632 | 4.2 |
| 6                                                                                                                                 | 11102 | 651208 | 10814 | 656761 | 10531 | 662390 | 10251                         | 668097 | 9975.3 | 673883 | 9703.3 | 679751 | 4   |
| 6.2                                                                                                                               | 11096 | 651319 | 10809 | 656873 | 10525 | 662503 | 10246                         | 668211 | 9969.8 | 673999 | 9697.9 | 679869 | 3.8 |
| 6.4                                                                                                                               | 11090 | 651429 | 10803 | 656985 | 10520 | 662617 | 10240                         | 668326 | 9964.4 | 674116 | 9692.5 | 679987 | 3.6 |
| 6.6                                                                                                                               | 11084 | 651539 | 10797 | 657097 | 10514 | 662730 | 10234                         | 668441 | 9958.9 | 674232 | 9687.1 | 680105 | 3.4 |
| 6.8                                                                                                                               | 11079 | 651650 | 10792 | 657209 | 10508 | 662844 | 10229                         | 668556 | 9953.4 | 674349 | 9681.7 | 680224 | 3.2 |
| 7                                                                                                                                 | 11073 | 651760 | 10786 | 657321 | 10503 | 662957 | 10223                         | 668671 | 9947.9 | 674466 | 9676.3 | 680342 | 3   |
| 7.2                                                                                                                               | 11067 | 651871 | 10780 | 657433 | 10497 | 663071 | 10218                         | 668787 | 9942.5 | 674582 | 9670.9 | 680460 | 2.8 |
| 7.4                                                                                                                               | 11061 | 651981 | 10774 | 657545 | 10491 | 663184 | 10212                         | 668902 | 9937.0 | 674699 | 9665.6 | 680579 | 2.6 |
| 7.6                                                                                                                               | 11056 | 652092 | 10769 | 657657 | 10486 | 663298 | 10207                         | 669017 | 9931.5 | 674816 | 9660.2 | 680697 | 2.4 |
| 7.8                                                                                                                               | 11050 | 652202 | 10763 | 657769 | 10480 | 663411 | 10201                         | 669132 | 9926.1 | 674933 | 9654.8 | 680816 | 2.2 |
| 8                                                                                                                                 | 11044 | 652313 | 10757 | 657881 | 10475 | 663525 | 10196                         | 669247 | 9920.6 | 675050 | 9649.4 | 680934 | 2   |
| 8.2                                                                                                                               | 11038 | 652424 | 10752 | 657993 | 10469 | 663639 | 10190                         | 669363 | 9915.1 | 675166 | 9644.0 | 681053 | 1.8 |
| 8.4                                                                                                                               | 11032 | 652534 | 10746 | 658105 | 10463 | 663753 | 10185                         | 669478 | 9909.7 | 675283 | 9638.6 | 681171 | 1.6 |
| 8.6                                                                                                                               | 11027 | 652645 | 10740 | 658218 | 10458 | 663866 | 10179                         | 669593 | 9904.2 | 675400 | 9633.2 | 681290 | 1.4 |
| 8.8                                                                                                                               | 11021 | 652756 | 10735 | 658330 | 10452 | 663980 | 10174                         | 669708 | 9898.8 | 675517 | 9627.9 | 681408 | 1.2 |
| 9                                                                                                                                 | 11015 | 652866 | 10729 | 658442 | 10447 | 664094 | 10168                         | 669824 | 9893.3 | 675634 | 9622.5 | 681527 | 1   |
| 9.2                                                                                                                               | 11009 | 652977 | 10723 | 658554 | 10441 | 664208 | 10162                         | 669939 | 9887.9 | 675751 | 9617.1 | 681646 | 0.8 |
| 9.4                                                                                                                               | 11004 | 653088 | 10718 | 658667 | 10435 | 664321 | 10157                         | 670055 | 9882.4 | 675868 | 9611.7 | 681765 | 0.6 |
| 9.6                                                                                                                               | 10998 | 653199 | 10712 | 658779 | 10430 | 664435 | 10151                         | 670170 | 9877.0 | 675985 | 9606.4 | 681883 | 0.4 |
| 9.8                                                                                                                               | 10992 | 653310 | 10706 | 658891 | 10424 | 664549 | 10146                         | 670286 | 9871.5 | 676103 | 9601.0 | 682002 | 0.2 |
| 10                                                                                                                                | 10986 | 653421 | 10700 | 659004 | 10418 | 664663 | 10140                         | 670401 | 9866.1 | 676220 | 9595.6 | 682121 | 0   |
|                                                                                                                                   | A     | B      | A     | B      | A     | B      | A                             | B      | A      | B      | A      | B      | ↑   |
|                                                                                                                                   | 50'   |        | 40'   |        | 30'   |        | 20'                           |        | 10'    |        | 0'     |        |     |
| 102°                                                                                                                              |       |        |       |        |       |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |        |       |        |       |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |        |       |        |       |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |        |       |        |       |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 78°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 9595.6 | 682121 | 9329.0 | 688107 | 9066.2 | 694181 | 8807.3                        | 700345 | 8552.2 | 706601 | 8300.9 | 712952 | 10  |
| 0.2                                                                                                                               | 9590.2 | 682240 | 9323.7 | 688228 | 9061.0 | 694303 | 8802.2                        | 700469 | 8547.1 | 706727 | 8295.9 | 713080 | 9.8 |
| 0.4                                                                                                                               | 9584.9 | 682359 | 9318.4 | 688349 | 9055.8 | 694426 | 8797.0                        | 700593 | 8542.1 | 706853 | 8290.9 | 713208 | 9.6 |
| 0.6                                                                                                                               | 9579.5 | 682478 | 9313.1 | 688469 | 9050.6 | 694548 | 8791.9                        | 700717 | 8537.0 | 706979 | 8285.9 | 713336 | 9.4 |
| 0.8                                                                                                                               | 9574.1 | 682597 | 9307.8 | 688590 | 9045.4 | 694671 | 8786.7                        | 700842 | 8531.9 | 707105 | 8281.0 | 713464 | 9.2 |
| 1                                                                                                                                 | 9568.8 | 682716 | 9302.6 | 688711 | 9040.2 | 694793 | 8781.6                        | 700966 | 8526.9 | 707232 | 8276.0 | 713592 | 9   |
| 1.2                                                                                                                               | 9563.4 | 682835 | 9297.3 | 688832 | 9035.0 | 694916 | 8776.5                        | 701090 | 8521.8 | 707358 | 8271.0 | 713721 | 8.8 |
| 1.4                                                                                                                               | 9558.1 | 682954 | 9292.0 | 688952 | 9029.7 | 695039 | 8771.3                        | 701215 | 8516.8 | 707484 | 8266.0 | 713849 | 8.6 |
| 1.6                                                                                                                               | 9552.7 | 683073 | 9286.7 | 689073 | 9024.5 | 695161 | 8766.2                        | 701339 | 8511.7 | 707610 | 8261.0 | 713977 | 8.4 |
| 1.8                                                                                                                               | 9547.3 | 683192 | 9281.4 | 689194 | 9019.3 | 695284 | 8761.1                        | 701464 | 8506.7 | 707737 | 8256.1 | 714105 | 8.2 |
| 2                                                                                                                                 | 9542.0 | 683311 | 9276.1 | 689315 | 9014.1 | 695407 | 8756.0                        | 701588 | 8501.6 | 707863 | 8251.1 | 714234 | 8   |
| 2.2                                                                                                                               | 9536.6 | 683431 | 9270.9 | 689436 | 9008.9 | 695529 | 8750.8                        | 701713 | 8496.6 | 707990 | 8246.1 | 714362 | 7.8 |
| 2.4                                                                                                                               | 9531.3 | 683550 | 9265.6 | 689557 | 9003.7 | 695652 | 8745.7                        | 701838 | 8491.5 | 708116 | 8241.2 | 714491 | 7.6 |
| 2.6                                                                                                                               | 9525.9 | 683669 | 9260.3 | 689678 | 8998.5 | 695775 | 8740.6                        | 701962 | 8486.5 | 708243 | 8236.2 | 714619 | 7.4 |
| 2.8                                                                                                                               | 9520.6 | 683789 | 9255.0 | 689799 | 8993.3 | 695898 | 8735.5                        | 702087 | 8481.4 | 708369 | 8231.2 | 714748 | 7.2 |
| 3                                                                                                                                 | 9515.2 | 683908 | 9249.8 | 689920 | 8988.1 | 696021 | 8730.4                        | 702212 | 8476.4 | 708496 | 8226.3 | 714876 | 7   |
| 3.2                                                                                                                               | 9509.9 | 684027 | 9244.5 | 690041 | 8983.0 | 696144 | 8725.2                        | 702336 | 8471.4 | 708623 | 8221.3 | 715005 | 6.8 |
| 3.4                                                                                                                               | 9504.5 | 684147 | 9239.2 | 690163 | 8977.8 | 696267 | 8720.1                        | 702461 | 8466.3 | 708749 | 8216.3 | 715134 | 6.6 |
| 3.6                                                                                                                               | 9499.2 | 684266 | 9234.0 | 690284 | 8972.6 | 696390 | 8715.0                        | 702586 | 8461.3 | 708876 | 8211.4 | 715262 | 6.4 |
| 3.8                                                                                                                               | 9493.8 | 684386 | 9228.7 | 690405 | 8967.4 | 696513 | 8709.9                        | 702711 | 8456.2 | 709003 | 8206.4 | 715391 | 6.2 |
| 4                                                                                                                                 | 9488.5 | 684505 | 9223.4 | 690526 | 8962.2 | 696636 | 8704.8                        | 702836 | 8451.2 | 709130 | 8201.4 | 715520 | 6   |
| 4.2                                                                                                                               | 9483.2 | 684625 | 9218.2 | 690648 | 8957.0 | 696759 | 8699.7                        | 702961 | 8446.2 | 709256 | 8196.5 | 715649 | 5.8 |
| 4.4                                                                                                                               | 9477.8 | 684744 | 9212.9 | 690769 | 8951.8 | 696882 | 8694.6                        | 703086 | 8441.1 | 709383 | 8191.5 | 715777 | 5.6 |
| 4.6                                                                                                                               | 9472.5 | 684864 | 9207.7 | 690890 | 8946.6 | 697005 | 8689.5                        | 703211 | 8436.1 | 709510 | 8186.6 | 715906 | 5.4 |
| 4.8                                                                                                                               | 9467.2 | 684984 | 9202.4 | 691012 | 8941.5 | 697128 | 8684.4                        | 703336 | 8431.1 | 709637 | 8181.6 | 716035 | 5.2 |
| 5                                                                                                                                 | 9461.8 | 685103 | 9197.1 | 691133 | 8936.3 | 697252 | 8679.3                        | 703461 | 8426.1 | 709764 | 8176.7 | 716164 | 5   |
| 5.2                                                                                                                               | 9456.5 | 685223 | 9191.9 | 691255 | 8931.1 | 697375 | 8674.2                        | 703586 | 8421.0 | 709891 | 8171.7 | 716293 | 4.8 |
| 5.4                                                                                                                               | 9451.2 | 685343 | 9186.6 | 691376 | 8925.9 | 697498 | 8669.1                        | 703711 | 8416.0 | 710018 | 8166.8 | 716422 | 4.6 |
| 5.6                                                                                                                               | 9445.8 | 685463 | 9181.4 | 691498 | 8920.8 | 697621 | 8664.0                        | 703837 | 8411.0 | 710146 | 8161.8 | 716551 | 4.4 |
| 5.8                                                                                                                               | 9440.5 | 685583 | 9176.1 | 691619 | 8915.6 | 697745 | 8658.9                        | 703962 | 8406.0 | 710273 | 8156.9 | 716680 | 4.2 |
| 6                                                                                                                                 | 9435.2 | 685703 | 9170.9 | 691741 | 8910.4 | 697868 | 8653.8                        | 704087 | 8401.0 | 710400 | 8152.0 | 716810 | 4   |
| 6.2                                                                                                                               | 9429.9 | 685822 | 9165.6 | 691863 | 8905.2 | 697992 | 8648.7                        | 704212 | 8395.9 | 710527 | 8147.0 | 716939 | 3.8 |
| 6.4                                                                                                                               | 9424.5 | 685942 | 9160.4 | 691984 | 8900.1 | 698115 | 8643.6                        | 704338 | 8390.9 | 710654 | 8142.1 | 717068 | 3.6 |
| 6.6                                                                                                                               | 9419.2 | 686062 | 9155.1 | 692106 | 8894.9 | 698239 | 8638.5                        | 704463 | 8385.9 | 710782 | 8137.1 | 717197 | 3.4 |
| 6.8                                                                                                                               | 9413.9 | 686182 | 9149.9 | 692228 | 8889.7 | 698362 | 8633.4                        | 704589 | 8380.9 | 710909 | 8132.2 | 717327 | 3.2 |
| 7                                                                                                                                 | 9408.6 | 686302 | 9144.7 | 692350 | 8884.6 | 698486 | 8628.3                        | 704714 | 8375.9 | 711036 | 8127.3 | 717456 | 3   |
| 7.2                                                                                                                               | 9403.3 | 686423 | 9139.4 | 692472 | 8879.4 | 698610 | 8623.2                        | 704840 | 8370.9 | 711164 | 8122.3 | 717585 | 2.8 |
| 7.4                                                                                                                               | 9397.9 | 686543 | 9134.2 | 692593 | 8874.2 | 698733 | 8618.1                        | 704965 | 8365.9 | 711291 | 8117.4 | 717715 | 2.6 |
| 7.6                                                                                                                               | 9392.6 | 686663 | 9128.9 | 692715 | 8869.1 | 698857 | 8613.1                        | 705091 | 8360.9 | 711419 | 8112.5 | 717844 | 2.4 |
| 7.8                                                                                                                               | 9387.3 | 686783 | 9123.7 | 692837 | 8863.9 | 698981 | 8608.0                        | 705216 | 8355.8 | 711546 | 8107.5 | 717974 | 2.2 |
| 8                                                                                                                                 | 9382.0 | 686903 | 9118.5 | 692959 | 8858.8 | 699105 | 8602.9                        | 705342 | 8350.8 | 711674 | 8102.6 | 718103 | 2   |
| 8.2                                                                                                                               | 9376.7 | 687023 | 9113.2 | 693081 | 8853.6 | 699228 | 8597.8                        | 705468 | 8345.8 | 711802 | 8097.7 | 718233 | 1.8 |
| 8.4                                                                                                                               | 9371.4 | 687144 | 9108.0 | 693203 | 8848.5 | 699352 | 8592.7                        | 705593 | 8340.8 | 711929 | 8092.8 | 718363 | 1.6 |
| 8.6                                                                                                                               | 9366.1 | 687264 | 9102.8 | 693325 | 8843.3 | 699476 | 8587.7                        | 705719 | 8335.8 | 712057 | 8087.8 | 718492 | 1.4 |
| 8.8                                                                                                                               | 9360.8 | 687384 | 9097.6 | 693448 | 8838.2 | 699600 | 8582.6                        | 705845 | 8330.8 | 712185 | 8082.9 | 718622 | 1.2 |
| 9                                                                                                                                 | 9355.5 | 687505 | 9092.3 | 693570 | 8833.0 | 699724 | 8577.5                        | 705971 | 8325.9 | 712312 | 8078.0 | 718752 | 1   |
| 9.2                                                                                                                               | 9350.2 | 687625 | 9087.1 | 693692 | 8827.9 | 699848 | 8572.5                        | 706097 | 8320.9 | 712440 | 8073.1 | 718882 | 0.8 |
| 9.4                                                                                                                               | 9344.9 | 687746 | 9081.9 | 693814 | 8822.7 | 699972 | 8567.4                        | 706223 | 8315.9 | 712568 | 8068.2 | 719011 | 0.6 |
| 9.6                                                                                                                               | 9339.6 | 687866 | 9076.7 | 693936 | 8817.6 | 700096 | 8562.3                        | 706349 | 8310.9 | 712696 | 8063.2 | 719141 | 0.4 |
| 9.8                                                                                                                               | 9334.3 | 687987 | 9071.4 | 694059 | 8812.4 | 700221 | 8557.2                        | 706475 | 8305.9 | 712824 | 8058.3 | 719271 | 0.2 |
| 10                                                                                                                                | 9329.0 | 688107 | 9066.2 | 694181 | 8807.3 | 700345 | 8552.2                        | 706601 | 8300.9 | 712952 | 8053.4 | 719401 | 0   |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |
| 50' 40' 30' 20' 10' 0'                                                                                                            |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| 101°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 79°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 8053.4 | 719401 | 7809.8 | 725951 | 7569.9 | 732605 | 7333.9                        | 739367 | 7101.6 | 746239 | 6873.2 | 753225 | 10  |
| 0.2                                                                                                                               | 8048.5 | 719531 | 7804.9 | 726083 | 7565.2 | 732740 | 7329.2                        | 739503 | 7097.0 | 746378 | 6868.7 | 753366 | 9.8 |
| 0.4                                                                                                                               | 8043.6 | 719661 | 7800.1 | 726215 | 7560.4 | 732874 | 7324.5                        | 739640 | 7092.4 | 746516 | 6864.1 | 753507 | 9.6 |
| 0.6                                                                                                                               | 8038.7 | 719791 | 7795.3 | 726348 | 7555.6 | 733008 | 7319.8                        | 739776 | 7087.8 | 746655 | 6859.6 | 753648 | 9.4 |
| 0.8                                                                                                                               | 8033.8 | 719921 | 7790.4 | 726480 | 7550.9 | 733142 | 7315.2                        | 739913 | 7083.2 | 746794 | 6855.1 | 753789 | 9.2 |
| 1                                                                                                                                 | 8028.9 | 720052 | 7785.6 | 726612 | 7546.1 | 733277 | 7310.5                        | 740049 | 7078.6 | 746933 | 6850.6 | 753931 | 9   |
| 1.2                                                                                                                               | 8024.0 | 720182 | 7780.8 | 726744 | 7541.4 | 733411 | 7305.8                        | 740186 | 7074.0 | 747071 | 6846.0 | 754072 | 8.8 |
| 1.4                                                                                                                               | 8019.1 | 720312 | 7776.0 | 726877 | 7536.6 | 733546 | 7301.1                        | 740322 | 7069.4 | 747210 | 6841.5 | 754213 | 8.6 |
| 1.6                                                                                                                               | 8014.2 | 720442 | 7771.1 | 727009 | 7531.9 | 733680 | 7296.5                        | 740459 | 7064.8 | 747349 | 6837.0 | 754354 | 8.4 |
| 1.8                                                                                                                               | 8009.3 | 720573 | 7766.3 | 727141 | 7527.2 | 733815 | 7291.8                        | 740596 | 7060.2 | 747488 | 6832.5 | 754495 | 8.2 |
| 2                                                                                                                                 | 8004.4 | 720703 | 7761.5 | 727274 | 7522.4 | 733949 | 7287.1                        | 740732 | 7055.6 | 747627 | 6828.0 | 754637 | 8   |
| 2.2                                                                                                                               | 7999.5 | 720833 | 7756.7 | 727406 | 7517.7 | 734084 | 7282.5                        | 740869 | 7051.1 | 747766 | 6823.4 | 754778 | 7.8 |
| 2.4                                                                                                                               | 7994.6 | 720964 | 7751.9 | 727539 | 7512.9 | 734218 | 7277.8                        | 741006 | 7046.5 | 747905 | 6818.9 | 754920 | 7.6 |
| 2.6                                                                                                                               | 7989.7 | 721094 | 7747.0 | 727671 | 7508.2 | 734353 | 7273.1                        | 741143 | 7041.9 | 748044 | 6814.4 | 755061 | 7.4 |
| 2.8                                                                                                                               | 7984.8 | 721225 | 7742.2 | 727804 | 7503.4 | 734488 | 7268.5                        | 741280 | 7037.3 | 748184 | 6809.9 | 755203 | 7.2 |
| 3                                                                                                                                 | 7979.9 | 721355 | 7737.4 | 727936 | 7498.7 | 734623 | 7263.8                        | 741417 | 7032.7 | 748323 | 6805.4 | 755344 | 7   |
| 3.2                                                                                                                               | 7975.0 | 721486 | 7732.6 | 728069 | 7494.0 | 734757 | 7259.1                        | 741554 | 7028.1 | 748462 | 6800.9 | 755486 | 6.8 |
| 3.4                                                                                                                               | 7970.2 | 721617 | 7727.8 | 728202 | 7489.2 | 734892 | 7254.5                        | 741691 | 7023.5 | 748601 | 6796.4 | 755627 | 6.6 |
| 3.6                                                                                                                               | 7965.3 | 721747 | 7723.0 | 728335 | 7484.5 | 735027 | 7249.8                        | 741828 | 7019.0 | 748741 | 6791.9 | 755769 | 6.4 |
| 3.8                                                                                                                               | 7960.4 | 721878 | 7718.2 | 728467 | 7479.8 | 735162 | 7245.2                        | 741965 | 7014.4 | 748880 | 6787.4 | 755911 | 6.2 |
| 4                                                                                                                                 | 7955.5 | 722009 | 7713.4 | 728600 | 7475.0 | 735297 | 7240.5                        | 742102 | 7009.8 | 749020 | 6782.9 | 756053 | 6   |
| 4.2                                                                                                                               | 7950.6 | 722140 | 7708.6 | 728733 | 7470.3 | 735432 | 7235.9                        | 742240 | 7005.2 | 749159 | 6778.4 | 756195 | 5.8 |
| 4.4                                                                                                                               | 7945.7 | 722271 | 7703.8 | 728866 | 7465.6 | 735567 | 7231.2                        | 742377 | 7000.7 | 749299 | 6773.9 | 756337 | 5.6 |
| 4.6                                                                                                                               | 7940.9 | 722402 | 7699.0 | 728999 | 7460.9 | 735702 | 7226.6                        | 742514 | 6996.1 | 749438 | 6769.4 | 756479 | 5.4 |
| 4.8                                                                                                                               | 7936.0 | 722532 | 7694.2 | 729132 | 7456.1 | 735837 | 7221.9                        | 742652 | 6991.5 | 749578 | 6764.9 | 756621 | 5.2 |
| 5                                                                                                                                 | 7931.1 | 722663 | 7689.4 | 729265 | 7451.4 | 735973 | 7217.3                        | 742789 | 6986.9 | 749718 | 6760.4 | 756763 | 5   |
| 5.2                                                                                                                               | 7926.2 | 722794 | 7684.6 | 729398 | 7446.7 | 736108 | 7212.6                        | 742926 | 6982.4 | 749858 | 6755.9 | 756905 | 4.8 |
| 5.4                                                                                                                               | 7921.4 | 722926 | 7679.8 | 729531 | 7442.0 | 736243 | 7208.0                        | 743064 | 6977.8 | 749997 | 6751.4 | 757047 | 4.6 |
| 5.6                                                                                                                               | 7916.5 | 723057 | 7675.0 | 729665 | 7437.3 | 736378 | 7203.4                        | 743201 | 6973.2 | 750137 | 6746.9 | 757189 | 4.4 |
| 5.8                                                                                                                               | 7911.6 | 723188 | 7670.2 | 729798 | 7432.6 | 736514 | 7198.7                        | 743339 | 6968.7 | 750277 | 6742.4 | 757331 | 4.2 |
| 6                                                                                                                                 | 7906.8 | 723319 | 7665.4 | 729931 | 7427.8 | 736649 | 7194.1                        | 743477 | 6964.1 | 750417 | 6737.9 | 757474 | 4   |
| 6.2                                                                                                                               | 7901.9 | 723450 | 7660.6 | 730064 | 7423.1 | 736785 | 7189.4                        | 743614 | 6959.6 | 750557 | 6733.5 | 757616 | 3.8 |
| 6.4                                                                                                                               | 7897.0 | 723581 | 7655.8 | 730198 | 7418.4 | 736920 | 7184.8                        | 743752 | 6955.0 | 750697 | 6729.0 | 757758 | 3.6 |
| 6.6                                                                                                                               | 7892.2 | 723713 | 7651.0 | 730331 | 7413.7 | 737056 | 7180.2                        | 743890 | 6950.4 | 750837 | 6724.5 | 757901 | 3.4 |
| 6.8                                                                                                                               | 7887.3 | 723844 | 7646.3 | 730465 | 7409.0 | 737191 | 7175.5                        | 744028 | 6945.9 | 750977 | 6720.0 | 758043 | 3.2 |
| 7                                                                                                                                 | 7882.5 | 723975 | 7641.5 | 730598 | 7404.3 | 737327 | 7170.9                        | 744166 | 6941.3 | 751117 | 6715.5 | 758186 | 3   |
| 7.2                                                                                                                               | 7877.6 | 724107 | 7636.7 | 730732 | 7399.6 | 737463 | 7166.3                        | 744304 | 6936.8 | 751258 | 6711.1 | 758328 | 2.8 |
| 7.4                                                                                                                               | 7872.8 | 724238 | 7631.9 | 730865 | 7394.9 | 737598 | 7161.7                        | 744441 | 6932.2 | 751398 | 6706.6 | 758471 | 2.6 |
| 7.6                                                                                                                               | 7867.9 | 724370 | 7627.1 | 730999 | 7390.2 | 737734 | 7157.0                        | 744579 | 6927.7 | 751538 | 6702.1 | 758614 | 2.4 |
| 7.8                                                                                                                               | 7863.0 | 724501 | 7622.4 | 731132 | 7385.5 | 737870 | 7152.4                        | 744718 | 6923.1 | 751678 | 6697.6 | 758757 | 2.2 |
| 8                                                                                                                                 | 7858.2 | 724633 | 7617.6 | 731266 | 7380.8 | 738006 | 7147.8                        | 744856 | 6918.6 | 751819 | 6693.2 | 758899 | 2   |
| 8.2                                                                                                                               | 7853.3 | 724765 | 7612.8 | 731400 | 7376.1 | 738142 | 7143.2                        | 744994 | 6914.0 | 751959 | 6688.7 | 759042 | 1.8 |
| 8.4                                                                                                                               | 7848.5 | 724896 | 7608.0 | 731534 | 7371.4 | 738278 | 7138.5                        | 745132 | 6909.5 | 752100 | 6684.2 | 759185 | 1.6 |
| 8.6                                                                                                                               | 7843.6 | 725028 | 7603.3 | 731668 | 7366.7 | 738414 | 7133.9                        | 745270 | 6904.9 | 752240 | 6679.8 | 759328 | 1.4 |
| 8.8                                                                                                                               | 7838.8 | 725160 | 7598.5 | 731801 | 7362.0 | 738550 | 7129.3                        | 745408 | 6900.4 | 752381 | 6675.3 | 759471 | 1.2 |
| 9                                                                                                                                 | 7834.0 | 725292 | 7593.7 | 731935 | 7357.3 | 738686 | 7124.7                        | 745547 | 6895.9 | 752522 | 6670.8 | 759614 | 1   |
| 9.2                                                                                                                               | 7829.1 | 725424 | 7589.0 | 732069 | 7352.6 | 738822 | 7120.1                        | 745685 | 6891.3 | 752662 | 6666.4 | 759757 | 0.8 |
| 9.4                                                                                                                               | 7824.3 | 725555 | 7584.2 | 732203 | 7347.9 | 738958 | 7115.5                        | 745824 | 6886.8 | 752803 | 6661.9 | 759900 | 0.6 |
| 9.6                                                                                                                               | 7819.4 | 725687 | 7579.4 | 732337 | 7343.2 | 739094 | 7110.9                        | 745962 | 6882.3 | 752944 | 6657.5 | 760043 | 0.4 |
| 9.8                                                                                                                               | 7814.6 | 725819 | 7574.7 | 732471 | 7338.6 | 739231 | 7106.2                        | 746101 | 6877.7 | 753085 | 6653.0 | 760187 | 0.2 |
| 10                                                                                                                                | 7809.8 | 725951 | 7569.9 | 732605 | 7333.9 | 739367 | 7101.6                        | 746239 | 6873.2 | 753225 | 6648.5 | 760330 | 0   |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |
|                                                                                                                                   | 50'    |        | 40'    |        | 30'    |        | 20'                           |        | 10'    |        | 0'     |        |     |
| 100°                                                                                                                              |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 80°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 6648.5 | 760330 | 6427.7 | 767556 | 6210.6 | 774908 | 5997.3                        | 782391 | 5787.8 | 790008 | 5582.0 | 797766 | 10  |
| 0.2                                                                                                                               | 6644.1 | 760473 | 6423.3 | 767702 | 6206.3 | 775057 | 5993.1                        | 782542 | 5783.6 | 790162 | 5578.0 | 797922 | 9.8 |
| 0.4                                                                                                                               | 6639.6 | 760616 | 6418.9 | 767848 | 6202.0 | 775205 | 5988.9                        | 782693 | 5779.5 | 790316 | 5573.9 | 798079 | 9.6 |
| 0.6                                                                                                                               | 6635.2 | 760760 | 6414.5 | 767994 | 6197.7 | 775353 | 5984.6                        | 782844 | 5775.3 | 790470 | 5569.8 | 798235 | 9.4 |
| 0.8                                                                                                                               | 6630.7 | 760903 | 6410.2 | 768139 | 6193.4 | 775502 | 5980.4                        | 782995 | 5771.2 | 790624 | 5565.7 | 798392 | 9.2 |
| 1                                                                                                                                 | 6626.3 | 761047 | 6405.8 | 768285 | 6189.1 | 775651 | 5976.2                        | 783146 | 5767.0 | 790778 | 5561.7 | 798549 | 9   |
| 1.2                                                                                                                               | 6621.8 | 761190 | 6401.4 | 768432 | 6184.8 | 775799 | 5972.0                        | 783298 | 5762.9 | 790932 | 5557.6 | 798706 | 8.8 |
| 1.4                                                                                                                               | 6617.4 | 761334 | 6397.1 | 768578 | 6180.5 | 775948 | 5967.7                        | 783449 | 5758.8 | 791086 | 5553.5 | 798863 | 8.6 |
| 1.6                                                                                                                               | 6612.9 | 761478 | 6392.7 | 768724 | 6176.2 | 776097 | 5963.5                        | 783600 | 5754.6 | 791240 | 5549.5 | 799020 | 8.4 |
| 1.8                                                                                                                               | 6608.5 | 761621 | 6388.3 | 768870 | 6171.9 | 776245 | 5959.3                        | 783752 | 5750.5 | 791394 | 5545.4 | 799177 | 8.2 |
| 2                                                                                                                                 | 6604.1 | 761765 | 6384.0 | 769016 | 6167.6 | 776394 | 5955.1                        | 783903 | 5746.3 | 791548 | 5541.3 | 799334 | 8   |
| 2.2                                                                                                                               | 6599.6 | 761909 | 6379.6 | 769163 | 6163.4 | 776543 | 5950.9                        | 784055 | 5742.2 | 791703 | 5537.3 | 799491 | 7.8 |
| 2.4                                                                                                                               | 6595.2 | 762053 | 6375.2 | 769309 | 6159.1 | 776692 | 5946.7                        | 784206 | 5738.1 | 791857 | 5533.2 | 799649 | 7.6 |
| 2.6                                                                                                                               | 6590.8 | 762197 | 6370.9 | 769455 | 6154.8 | 776841 | 5942.5                        | 784358 | 5733.9 | 792012 | 5529.2 | 799806 | 7.4 |
| 2.8                                                                                                                               | 6586.3 | 762341 | 6366.5 | 769602 | 6150.5 | 776990 | 5938.3                        | 784510 | 5729.8 | 792166 | 5525.1 | 799963 | 7.2 |
| 3                                                                                                                                 | 6581.9 | 762485 | 6362.2 | 769748 | 6146.2 | 777139 | 5934.1                        | 784662 | 5725.7 | 792321 | 5521.1 | 800121 | 7   |
| 3.2                                                                                                                               | 6577.5 | 762629 | 6357.8 | 769895 | 6141.9 | 777288 | 5929.9                        | 784813 | 5721.5 | 792475 | 5517.0 | 800278 | 6.8 |
| 3.4                                                                                                                               | 6573.0 | 762773 | 6353.4 | 770041 | 6137.7 | 777437 | 5925.6                        | 784965 | 5717.4 | 792630 | 5513.0 | 800436 | 6.6 |
| 3.6                                                                                                                               | 6568.6 | 762917 | 6349.1 | 770188 | 6133.4 | 777587 | 5921.4                        | 785117 | 5713.3 | 792785 | 5508.9 | 800593 | 6.4 |
| 3.8                                                                                                                               | 6564.2 | 763061 | 6344.7 | 770335 | 6129.1 | 777736 | 5917.2                        | 785269 | 5709.2 | 792939 | 5504.9 | 800751 | 6.2 |
| 4                                                                                                                                 | 6559.7 | 763205 | 6340.4 | 770482 | 6124.8 | 777885 | 5913.0                        | 785421 | 5705.0 | 793094 | 5500.8 | 800909 | 6   |
| 4.2                                                                                                                               | 6555.3 | 763350 | 6336.0 | 770628 | 6120.6 | 778035 | 5908.8                        | 785573 | 5700.9 | 793249 | 5496.8 | 801066 | 5.8 |
| 4.4                                                                                                                               | 6550.9 | 763494 | 6331.7 | 770775 | 6116.3 | 778184 | 5904.7                        | 785726 | 5696.8 | 793404 | 5492.7 | 801224 | 5.6 |
| 4.6                                                                                                                               | 6546.5 | 763638 | 6327.4 | 770922 | 6112.0 | 778334 | 5900.5                        | 785878 | 5692.7 | 793559 | 5488.7 | 801382 | 5.4 |
| 4.8                                                                                                                               | 6542.1 | 763783 | 6323.0 | 771069 | 6107.7 | 778483 | 5896.3                        | 786030 | 5688.6 | 793714 | 5484.6 | 801540 | 5.2 |
| 5                                                                                                                                 | 6537.6 | 763927 | 6318.7 | 771216 | 6103.5 | 778633 | 5892.1                        | 786182 | 5684.4 | 793869 | 5480.6 | 801698 | 5   |
| 5.2                                                                                                                               | 6533.2 | 764072 | 6314.3 | 771363 | 6099.2 | 778783 | 5887.9                        | 786335 | 5680.3 | 794024 | 5476.5 | 801856 | 4.8 |
| 5.4                                                                                                                               | 6528.8 | 764217 | 6310.0 | 771510 | 6095.0 | 778932 | 5883.7                        | 786487 | 5676.2 | 794179 | 5472.5 | 802014 | 4.6 |
| 5.6                                                                                                                               | 6524.4 | 764361 | 6305.6 | 771657 | 6090.7 | 779082 | 5879.5                        | 786640 | 5672.1 | 794335 | 5468.5 | 802172 | 4.4 |
| 5.8                                                                                                                               | 6520.0 | 764506 | 6301.3 | 771805 | 6086.4 | 779232 | 5875.3                        | 786792 | 5668.0 | 794490 | 5464.4 | 802331 | 4.2 |
| 6                                                                                                                                 | 6515.6 | 764651 | 6297.0 | 771952 | 6082.2 | 779382 | 5871.1                        | 786945 | 5663.9 | 794646 | 5460.4 | 802489 | 4   |
| 6.2                                                                                                                               | 6511.2 | 764795 | 6292.6 | 772099 | 6077.9 | 779532 | 5867.0                        | 787097 | 5659.8 | 794801 | 5456.4 | 802647 | 3.8 |
| 6.4                                                                                                                               | 6506.8 | 764940 | 6288.3 | 772247 | 6073.7 | 779682 | 5862.8                        | 787250 | 5655.7 | 794956 | 5452.3 | 802806 | 3.6 |
| 6.6                                                                                                                               | 6502.3 | 765085 | 6284.0 | 772394 | 6069.4 | 779832 | 5858.6                        | 787403 | 5651.6 | 795112 | 5448.3 | 802964 | 3.4 |
| 6.8                                                                                                                               | 6497.9 | 765230 | 6279.7 | 772542 | 6065.2 | 779982 | 5854.4                        | 787556 | 5647.5 | 795268 | 5444.3 | 803123 | 3.2 |
| 7                                                                                                                                 | 6493.5 | 765375 | 6275.3 | 772689 | 6060.9 | 780132 | 5850.2                        | 787709 | 5643.4 | 795423 | 5440.3 | 803281 | 3   |
| 7.2                                                                                                                               | 6489.1 | 765520 | 6271.0 | 772837 | 6056.6 | 780282 | 5846.1                        | 787861 | 5639.3 | 795579 | 5436.2 | 803440 | 2.8 |
| 7.4                                                                                                                               | 6484.7 | 765665 | 6266.7 | 772984 | 6052.4 | 780433 | 5841.9                        | 788014 | 5635.2 | 795735 | 5432.2 | 803599 | 2.6 |
| 7.6                                                                                                                               | 6480.3 | 765810 | 6262.4 | 773132 | 6048.2 | 780583 | 5837.7                        | 788168 | 5631.1 | 795891 | 5428.2 | 803758 | 2.4 |
| 7.8                                                                                                                               | 6475.9 | 765956 | 6258.0 | 773280 | 6043.9 | 780733 | 5833.6                        | 788321 | 5627.0 | 796047 | 5424.2 | 803916 | 2.2 |
| 8                                                                                                                                 | 6471.5 | 766101 | 6253.7 | 773427 | 6039.7 | 780884 | 5829.4                        | 788474 | 5622.9 | 796203 | 5420.2 | 804075 | 2   |
| 8.2                                                                                                                               | 6467.2 | 766246 | 6249.4 | 773575 | 6035.4 | 781034 | 5825.2                        | 788627 | 5618.8 | 796359 | 5416.1 | 804234 | 1.8 |
| 8.4                                                                                                                               | 6462.8 | 766391 | 6245.1 | 773723 | 6031.2 | 781185 | 5821.1                        | 788780 | 5614.7 | 796515 | 5412.1 | 804393 | 1.6 |
| 8.6                                                                                                                               | 6458.4 | 766537 | 6240.8 | 773871 | 6026.9 | 781335 | 5816.9                        | 788934 | 5610.6 | 796671 | 5408.1 | 804552 | 1.4 |
| 8.8                                                                                                                               | 6454.0 | 766682 | 6236.5 | 774019 | 6022.7 | 781486 | 5812.7                        | 789087 | 5606.5 | 796827 | 5404.1 | 804711 | 1.2 |
| 9                                                                                                                                 | 6449.6 | 766828 | 6232.1 | 774167 | 6018.5 | 781637 | 5808.6                        | 789240 | 5602.5 | 796983 | 5400.1 | 804871 | 1   |
| 9.2                                                                                                                               | 6445.2 | 766973 | 6227.8 | 774315 | 6014.2 | 781787 | 5804.4                        | 789394 | 5598.4 | 797140 | 5396.1 | 805030 | 0.8 |
| 9.4                                                                                                                               | 6440.8 | 767119 | 6223.5 | 774463 | 6010.0 | 781938 | 5800.3                        | 789547 | 5594.3 | 797296 | 5392.1 | 805189 | 0.6 |
| 9.6                                                                                                                               | 6436.4 | 767265 | 6219.2 | 774612 | 6005.8 | 782089 | 5796.1                        | 789701 | 5590.2 | 797452 | 5388.1 | 805349 | 0.4 |
| 9.8                                                                                                                               | 6432.1 | 767410 | 6214.9 | 774760 | 6001.5 | 782240 | 5791.9                        | 789855 | 5586.1 | 797609 | 5384.1 | 805508 | 0.2 |
| 10                                                                                                                                | 6427.7 | 767556 | 6210.6 | 774908 | 5997.3 | 782391 | 5787.8                        | 790008 | 5582.0 | 797766 | 5380.1 | 805668 | 0   |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |
| 50' 40' 30' 20' 10' 0'                                                                                                            |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| 99°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 81°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 5380.1 | 805668 | 5181.9 | 813720 | 4987.4 | 821928 | 4796.7                        | 830298 | 4609.8 | 838836 | 4426.6 | 847549 | 10  |
| 0.2                                                                                                                               | 5376.1 | 805827 | 5177.9 | 813882 | 4983.6 | 822094 | 4793.0                        | 830467 | 4606.1 | 839009 | 4423.0 | 847725 | 9.8 |
| 0.4                                                                                                                               | 5372.1 | 805987 | 5174.0 | 814045 | 4979.7 | 822260 | 4789.2                        | 830636 | 4602.4 | 839181 | 4419.4 | 847902 | 9.6 |
| 0.6                                                                                                                               | 5368.1 | 806146 | 5170.1 | 814208 | 4975.9 | 822425 | 4785.4                        | 830805 | 4598.7 | 839354 | 4415.8 | 848078 | 9.4 |
| 0.8                                                                                                                               | 5364.1 | 806306 | 5166.2 | 814371 | 4972.0 | 822591 | 4781.7                        | 830975 | 4595.0 | 839527 | 4412.2 | 848254 | 9.2 |
| 1                                                                                                                                 | 5360.1 | 806466 | 5162.3 | 814534 | 4968.2 | 822758 | 4777.9                        | 831144 | 4591.3 | 839699 | 4408.5 | 848431 | 9   |
| 1.2                                                                                                                               | 5356.1 | 806626 | 5158.3 | 814696 | 4964.3 | 822924 | 4774.1                        | 831313 | 4587.6 | 839872 | 4404.9 | 848607 | 8.8 |
| 1.4                                                                                                                               | 5352.1 | 806786 | 5154.4 | 814859 | 4960.5 | 823090 | 4770.3                        | 831483 | 4583.9 | 840045 | 4401.3 | 848784 | 8.6 |
| 1.6                                                                                                                               | 5348.1 | 806946 | 5150.5 | 815022 | 4956.7 | 823256 | 4766.6                        | 831653 | 4580.3 | 840218 | 4397.7 | 848960 | 8.4 |
| 1.8                                                                                                                               | 5344.1 | 807106 | 5146.6 | 815186 | 4952.8 | 823422 | 4762.8                        | 831822 | 4576.6 | 840391 | 4394.1 | 849137 | 8.2 |
| 2                                                                                                                                 | 5340.1 | 807266 | 5142.7 | 815349 | 4949.0 | 823589 | 4759.1                        | 831992 | 4572.9 | 840565 | 4390.5 | 849314 | 8   |
| 2.2                                                                                                                               | 5336.1 | 807426 | 5138.8 | 815512 | 4945.2 | 823755 | 4755.3                        | 832162 | 4569.2 | 840738 | 4386.9 | 849490 | 7.8 |
| 2.4                                                                                                                               | 5332.2 | 807586 | 5134.9 | 815675 | 4941.3 | 823922 | 4751.5                        | 832331 | 4565.5 | 840911 | 4383.2 | 849667 | 7.6 |
| 2.6                                                                                                                               | 5328.2 | 807746 | 5131.0 | 815839 | 4937.5 | 824088 | 4747.8                        | 832501 | 4561.8 | 841084 | 4379.6 | 849844 | 7.4 |
| 2.8                                                                                                                               | 5324.2 | 807907 | 5127.0 | 816002 | 4933.7 | 824255 | 4744.0                        | 832671 | 4558.2 | 841258 | 4376.0 | 850021 | 7.2 |
| 3                                                                                                                                 | 5320.2 | 808067 | 5123.1 | 816166 | 4929.8 | 824422 | 4740.3                        | 832841 | 4554.5 | 841431 | 4372.4 | 850198 | 7   |
| 3.2                                                                                                                               | 5316.2 | 808228 | 5119.2 | 816329 | 4926.0 | 824588 | 4736.5                        | 833012 | 4550.8 | 841605 | 4368.8 | 850376 | 6.8 |
| 3.4                                                                                                                               | 5312.3 | 808388 | 5115.3 | 816493 | 4922.2 | 824755 | 4732.8                        | 833182 | 4547.1 | 841779 | 4365.2 | 850553 | 6.6 |
| 3.6                                                                                                                               | 5308.3 | 808549 | 5111.4 | 816656 | 4918.3 | 824922 | 4729.0                        | 833352 | 4543.4 | 841952 | 4361.6 | 850730 | 6.4 |
| 3.8                                                                                                                               | 5304.3 | 808709 | 5107.5 | 816820 | 4914.5 | 825089 | 4725.3                        | 833522 | 4539.8 | 842126 | 4358.0 | 850908 | 6.2 |
| 4                                                                                                                                 | 5300.3 | 808870 | 5103.6 | 816984 | 4910.7 | 825256 | 4721.5                        | 833693 | 4536.1 | 842300 | 4354.4 | 851085 | 6   |
| 4.2                                                                                                                               | 5296.4 | 809031 | 5099.7 | 817148 | 4906.9 | 825423 | 4717.8                        | 833863 | 4532.4 | 842474 | 4350.8 | 851263 | 5.8 |
| 4.4                                                                                                                               | 5292.4 | 809192 | 5095.8 | 817312 | 4903.1 | 825590 | 4714.0                        | 834034 | 4528.8 | 842648 | 4347.2 | 851440 | 5.6 |
| 4.6                                                                                                                               | 5288.4 | 809353 | 5092.0 | 817476 | 4899.2 | 825758 | 4710.3                        | 834204 | 4525.1 | 842822 | 4343.6 | 851618 | 5.4 |
| 4.8                                                                                                                               | 5284.5 | 809514 | 5088.1 | 817640 | 4895.4 | 825925 | 4706.5                        | 834375 | 4521.4 | 842996 | 4340.1 | 851796 | 5.2 |
| 5                                                                                                                                 | 5280.5 | 809675 | 5084.2 | 817804 | 4891.6 | 826092 | 4702.8                        | 834546 | 4517.8 | 843170 | 4336.5 | 851974 | 5   |
| 5.2                                                                                                                               | 5276.5 | 809836 | 5080.3 | 817968 | 4887.8 | 826260 | 4699.1                        | 834716 | 4514.1 | 843345 | 4332.9 | 852152 | 4.8 |
| 5.4                                                                                                                               | 5272.6 | 809997 | 5076.4 | 818132 | 4884.0 | 826427 | 4695.3                        | 834887 | 4510.4 | 843519 | 4329.3 | 852330 | 4.6 |
| 5.6                                                                                                                               | 5268.6 | 810158 | 5072.5 | 818297 | 4880.2 | 826595 | 4691.6                        | 835058 | 4506.8 | 843694 | 4325.7 | 852508 | 4.4 |
| 5.8                                                                                                                               | 5264.7 | 810319 | 5068.6 | 818461 | 4876.4 | 826762 | 4687.9                        | 835229 | 4503.1 | 843868 | 4322.1 | 852686 | 4.2 |
| 6                                                                                                                                 | 5260.7 | 810481 | 5064.8 | 818626 | 4872.6 | 826930 | 4684.1                        | 835400 | 4499.5 | 844043 | 4318.5 | 852864 | 4   |
| 6.2                                                                                                                               | 5256.7 | 810642 | 5060.9 | 818790 | 4868.8 | 827098 | 4680.4                        | 835571 | 4495.8 | 844217 | 4315.0 | 853043 | 3.8 |
| 6.4                                                                                                                               | 5252.8 | 810803 | 5057.0 | 818955 | 4865.0 | 827266 | 4676.7                        | 835743 | 4492.2 | 844392 | 4311.4 | 853221 | 3.6 |
| 6.6                                                                                                                               | 5248.8 | 810965 | 5053.1 | 819119 | 4861.2 | 827434 | 4673.0                        | 835914 | 4488.5 | 844567 | 4307.8 | 853399 | 3.4 |
| 6.8                                                                                                                               | 5244.9 | 811126 | 5049.2 | 819284 | 4857.4 | 827602 | 4669.2                        | 836085 | 4484.9 | 844742 | 4304.2 | 853578 | 3.2 |
| 7                                                                                                                                 | 5240.9 | 811288 | 5045.4 | 819449 | 4853.6 | 827770 | 4665.5                        | 836257 | 4481.2 | 844917 | 4300.7 | 853757 | 3   |
| 7.2                                                                                                                               | 5237.0 | 811450 | 5041.5 | 819614 | 4849.8 | 827938 | 4661.8                        | 836428 | 4477.6 | 845092 | 4297.1 | 853935 | 2.8 |
| 7.4                                                                                                                               | 5233.0 | 811611 | 5037.6 | 819778 | 4846.0 | 828106 | 4658.1                        | 836600 | 4473.9 | 845267 | 4293.5 | 854114 | 2.6 |
| 7.6                                                                                                                               | 5229.1 | 811773 | 5033.7 | 819943 | 4842.2 | 828274 | 4654.3                        | 836771 | 4470.3 | 845442 | 4289.9 | 854293 | 2.4 |
| 7.8                                                                                                                               | 5225.1 | 811935 | 5029.9 | 820108 | 4838.4 | 828442 | 4650.6                        | 836943 | 4466.6 | 845617 | 4286.4 | 854472 | 2.2 |
| 8                                                                                                                                 | 5221.2 | 812097 | 5026.0 | 820274 | 4834.6 | 828611 | 4646.9                        | 837115 | 4463.0 | 845792 | 4282.8 | 854651 | 2   |
| 8.2                                                                                                                               | 5217.3 | 812259 | 5022.1 | 820439 | 4830.8 | 828779 | 4643.2                        | 837287 | 4459.3 | 845968 | 4279.2 | 854830 | 1.8 |
| 8.4                                                                                                                               | 5213.3 | 812421 | 5018.3 | 820604 | 4827.0 | 828948 | 4639.5                        | 837458 | 4455.7 | 846143 | 4275.7 | 855009 | 1.6 |
| 8.6                                                                                                                               | 5209.4 | 812583 | 5014.4 | 820769 | 4823.2 | 829116 | 4635.8                        | 837630 | 4452.1 | 846319 | 4272.1 | 855188 | 1.4 |
| 8.8                                                                                                                               | 5205.5 | 812745 | 5010.6 | 820935 | 4819.4 | 829285 | 4632.0                        | 837802 | 4448.4 | 846494 | 4268.6 | 855367 | 1.2 |
| 9                                                                                                                                 | 5201.5 | 812908 | 5006.7 | 821100 | 4815.6 | 829453 | 4628.3                        | 837975 | 4444.8 | 846670 | 4265.0 | 855547 | 1   |
| 9.2                                                                                                                               | 5197.6 | 813070 | 5002.8 | 821265 | 4811.9 | 829622 | 4624.6                        | 838147 | 4441.2 | 846846 | 4261.4 | 855726 | 0.8 |
| 9.4                                                                                                                               | 5193.7 | 813232 | 4999.0 | 821431 | 4808.1 | 829791 | 4620.9                        | 838319 | 4437.5 | 847021 | 4257.9 | 855906 | 0.6 |
| 9.6                                                                                                                               | 5189.7 | 813395 | 4995.1 | 821597 | 4804.3 | 829960 | 4617.2                        | 838491 | 4433.9 | 847197 | 4254.3 | 856085 | 0.4 |
| 9.8                                                                                                                               | 5185.8 | 813557 | 4991.3 | 821762 | 4800.5 | 830129 | 4613.5                        | 838664 | 4430.3 | 847373 | 4250.8 | 856265 | 0.2 |
| 10                                                                                                                                | 5181.9 | 813720 | 4987.4 | 821928 | 4796.7 | 830298 | 4609.8                        | 838836 | 4426.6 | 847549 | 4247.2 | 856445 | 0   |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |
| 50'40'30'20'10'0'                                                                                                                 |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| 98°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 82°                                                                                                                               |      |        |      |        |      |        |                               |        |      |        |      |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|------|--------|------|--------|------|--------|-------------------------------|--------|------|--------|------|--------|-----|
| ' ↓                                                                                                                               | 0'   |        | 10'  |        | 20'  |        | 30'                           |        | 40'  |        | 50'  |        |     |
|                                                                                                                                   | A    | B      | A    | B      | A    | B      | A                             | B      | A    | B      | A    | B      |     |
| 0                                                                                                                                 | 4247 | 856445 | 4072 | 865530 | 3900 | 874813 | 3731                          | 884302 | 3567 | 894008 | 3406 | 903938 | 10  |
| 0.2                                                                                                                               | 4244 | 856625 | 4068 | 865714 | 3896 | 875001 | 3728                          | 884494 | 3564 | 894204 | 3403 | 904139 | 9.8 |
| 0.4                                                                                                                               | 4240 | 856804 | 4065 | 865897 | 3893 | 875188 | 3725                          | 884686 | 3560 | 894400 | 3400 | 904341 | 9.6 |
| 0.6                                                                                                                               | 4237 | 856984 | 4061 | 866081 | 3889 | 875376 | 3721                          | 884878 | 3557 | 894597 | 3397 | 904542 | 9.4 |
| 0.8                                                                                                                               | 4233 | 857164 | 4058 | 866265 | 3886 | 875564 | 3718                          | 885071 | 3554 | 894794 | 3394 | 904743 | 9.2 |
| 1                                                                                                                                 | 4229 | 857345 | 4054 | 866449 | 3883 | 875752 | 3715                          | 885263 | 3551 | 894990 | 3390 | 904944 | 9   |
| 1.2                                                                                                                               | 4226 | 857525 | 4051 | 866633 | 3879 | 875940 | 3712                          | 885455 | 3548 | 895187 | 3387 | 905146 | 8.8 |
| 1.4                                                                                                                               | 4222 | 857705 | 4047 | 866817 | 3876 | 876129 | 3708                          | 885648 | 3544 | 895384 | 3384 | 905347 | 8.6 |
| 1.6                                                                                                                               | 4219 | 857885 | 4044 | 867002 | 3872 | 876317 | 3705                          | 885840 | 3541 | 895581 | 3381 | 905549 | 8.4 |
| 1.8                                                                                                                               | 4215 | 858066 | 4040 | 867186 | 3869 | 876505 | 3702                          | 886033 | 3538 | 895778 | 3378 | 905751 | 8.2 |
| 2                                                                                                                                 | 4212 | 858246 | 4037 | 867370 | 3866 | 876694 | 3698                          | 886226 | 3535 | 895975 | 3375 | 905953 | 8   |
| 2.2                                                                                                                               | 4208 | 858427 | 4033 | 867555 | 3862 | 876882 | 3695                          | 886419 | 3531 | 896173 | 3371 | 906155 | 7.8 |
| 2.4                                                                                                                               | 4205 | 858608 | 4030 | 867739 | 3859 | 877071 | 3692                          | 886612 | 3528 | 896370 | 3368 | 906357 | 7.6 |
| 2.6                                                                                                                               | 4201 | 858788 | 4026 | 867924 | 3856 | 877260 | 3688                          | 886805 | 3525 | 896568 | 3365 | 906559 | 7.4 |
| 2.8                                                                                                                               | 4198 | 858969 | 4023 | 868109 | 3852 | 877449 | 3685                          | 886998 | 3522 | 896765 | 3362 | 906761 | 7.2 |
| 3                                                                                                                                 | 4194 | 859150 | 4020 | 868294 | 3849 | 877638 | 3682                          | 887191 | 3518 | 896963 | 3359 | 906963 | 7   |
| 3.2                                                                                                                               | 4191 | 859331 | 4016 | 868478 | 3845 | 877827 | 3678                          | 887384 | 3515 | 897160 | 3356 | 907166 | 6.8 |
| 3.4                                                                                                                               | 4187 | 859512 | 4013 | 868663 | 3842 | 878016 | 3675                          | 887577 | 3512 | 897358 | 3352 | 907368 | 6.6 |
| 3.6                                                                                                                               | 4184 | 859693 | 4009 | 868848 | 3839 | 878205 | 3672                          | 887771 | 3509 | 897556 | 3349 | 907571 | 6.4 |
| 3.8                                                                                                                               | 4180 | 859874 | 4006 | 869034 | 3835 | 878394 | 3669                          | 887964 | 3505 | 897754 | 3346 | 907774 | 6.2 |
| 4                                                                                                                                 | 4177 | 860056 | 4002 | 869219 | 3832 | 878583 | 3665                          | 888158 | 3502 | 897952 | 3343 | 907976 | 6   |
| 4.2                                                                                                                               | 4173 | 860237 | 3999 | 869404 | 3829 | 878773 | 3662                          | 888352 | 3499 | 898150 | 3340 | 908179 | 5.8 |
| 4.4                                                                                                                               | 4169 | 860418 | 3995 | 869589 | 3825 | 878962 | 3659                          | 888546 | 3496 | 898349 | 3337 | 908382 | 5.6 |
| 4.6                                                                                                                               | 4166 | 860600 | 3992 | 869775 | 3822 | 879152 | 3655                          | 888739 | 3493 | 898547 | 3334 | 908585 | 5.4 |
| 4.8                                                                                                                               | 4162 | 860781 | 3989 | 869960 | 3818 | 879341 | 3652                          | 888933 | 3489 | 898746 | 3330 | 908789 | 5.2 |
| 5                                                                                                                                 | 4159 | 860963 | 3985 | 870146 | 3815 | 879531 | 3649                          | 889127 | 3486 | 898944 | 3327 | 908992 | 5   |
| 5.2                                                                                                                               | 4155 | 861145 | 3982 | 870332 | 3812 | 879721 | 3645                          | 889322 | 3483 | 899143 | 3324 | 909195 | 4.8 |
| 5.4                                                                                                                               | 4152 | 861327 | 3978 | 870518 | 3808 | 879911 | 3642                          | 889516 | 3480 | 899342 | 3321 | 909399 | 4.6 |
| 5.6                                                                                                                               | 4148 | 861508 | 3975 | 870703 | 3805 | 880101 | 3639                          | 889710 | 3477 | 899540 | 3318 | 909602 | 4.4 |
| 5.8                                                                                                                               | 4145 | 861690 | 3971 | 870889 | 3802 | 880291 | 3636                          | 889904 | 3473 | 899739 | 3315 | 909806 | 4.2 |
| 6                                                                                                                                 | 4141 | 861872 | 3968 | 871075 | 3798 | 880481 | 3632                          | 890099 | 3470 | 899938 | 3312 | 910010 | 4   |
| 6.2                                                                                                                               | 4138 | 862055 | 3965 | 871261 | 3795 | 880671 | 3629                          | 890294 | 3467 | 900138 | 3309 | 910214 | 3.8 |
| 6.4                                                                                                                               | 4134 | 862237 | 3961 | 871448 | 3792 | 880862 | 3626                          | 890488 | 3464 | 900337 | 3305 | 910417 | 3.6 |
| 6.6                                                                                                                               | 4131 | 862419 | 3958 | 871634 | 3788 | 881052 | 3622                          | 890683 | 3460 | 900536 | 3302 | 910622 | 3.4 |
| 6.8                                                                                                                               | 4127 | 862601 | 3954 | 871820 | 3785 | 881243 | 3619                          | 890878 | 3457 | 900735 | 3299 | 910826 | 3.2 |
| 7                                                                                                                                 | 4124 | 862784 | 3951 | 872007 | 3781 | 881433 | 3616                          | 891073 | 3454 | 900935 | 3296 | 911030 | 3   |
| 7.2                                                                                                                               | 4120 | 862966 | 3947 | 872193 | 3778 | 881624 | 3613                          | 891268 | 3451 | 901134 | 3293 | 911234 | 2.8 |
| 7.4                                                                                                                               | 4117 | 863149 | 3944 | 872380 | 3775 | 881815 | 3609                          | 891463 | 3448 | 901334 | 3290 | 911439 | 2.6 |
| 7.6                                                                                                                               | 4113 | 863332 | 3941 | 872566 | 3771 | 882006 | 3606                          | 891658 | 3445 | 901534 | 3287 | 911643 | 2.4 |
| 7.8                                                                                                                               | 4110 | 863514 | 3937 | 872753 | 3768 | 882196 | 3603                          | 891853 | 3441 | 901734 | 3284 | 911848 | 2.2 |
| 8                                                                                                                                 | 4106 | 863697 | 3934 | 872940 | 3765 | 882387 | 3600                          | 892049 | 3438 | 901934 | 3280 | 912053 | 2   |
| 8.2                                                                                                                               | 4103 | 863880 | 3930 | 873127 | 3761 | 882579 | 3596                          | 892244 | 3435 | 902134 | 3277 | 912258 | 1.8 |
| 8.4                                                                                                                               | 4099 | 864063 | 3927 | 873314 | 3758 | 882770 | 3593                          | 892440 | 3432 | 902334 | 3274 | 912462 | 1.6 |
| 8.6                                                                                                                               | 4096 | 864246 | 3923 | 873501 | 3755 | 882961 | 3590                          | 892636 | 3429 | 902534 | 3271 | 912668 | 1.4 |
| 8.8                                                                                                                               | 4092 | 864429 | 3920 | 873688 | 3751 | 883152 | 3587                          | 892831 | 3425 | 902735 | 3268 | 912873 | 1.2 |
| 9                                                                                                                                 | 4089 | 864613 | 3917 | 873875 | 3748 | 883344 | 3583                          | 893027 | 3422 | 902935 | 3265 | 913078 | 1   |
| 9.2                                                                                                                               | 4085 | 864796 | 3913 | 874063 | 3745 | 883535 | 3580                          | 893223 | 3419 | 903135 | 3262 | 913283 | 0.8 |
| 9.4                                                                                                                               | 4082 | 864979 | 3910 | 874250 | 3741 | 883727 | 3577                          | 893419 | 3416 | 903336 | 3259 | 913489 | 0.6 |
| 9.6                                                                                                                               | 4079 | 865163 | 3906 | 874438 | 3738 | 883919 | 3573                          | 893615 | 3413 | 903537 | 3255 | 913694 | 0.4 |
| 9.8                                                                                                                               | 4075 | 865346 | 3903 | 874625 | 3735 | 884110 | 3570                          | 893811 | 3409 | 903738 | 3252 | 913900 | 0.2 |
| 10                                                                                                                                | 4072 | 865530 | 3900 | 874813 | 3731 | 884302 | 3567                          | 894008 | 3406 | 903938 | 3249 | 914106 | 0   |
|                                                                                                                                   | A    | B      | A    | B      | A    | B      | A                             | B      | A    | B      | A    | B      | ' ↑ |
|                                                                                                                                   | 50'  |        | 40'  |        | 30'  |        | 20'                           |        | 10'  |        | 0'   |        |     |
| 97°                                                                                                                               |      |        |      |        |      |        |                               |        |      |        |      |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |      |        |      |        |      |        |                               |        |      |        |      |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |      |        |      |        |      |        |                               |        |      |        |      |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |      |        |      |        |      |        | B(α) = 10^6 * log (1 / cos α) |        |      |        |      |        |     |

| 83°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|-------------------------------|--------|--------|--------|--------|--------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |        | 20'    |        | 30'                           |        | 40'    |        | 50'    |        |     |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      |     |
| 0                                                                                                                                 | 3249.3 | 914106 | 3096.0 | 924520 | 2946.5 | 935194 | 2800.7                        | 946141 | 2658.6 | 957375 | 2520.3 | 968911 | 10  |
| 0.2                                                                                                                               | 3246.2 | 914311 | 3093.0 | 924731 | 2943.6 | 935411 | 2797.8                        | 946363 | 2655.8 | 957603 | 2517.6 | 969145 | 9.8 |
| 0.4                                                                                                                               | 3243.1 | 914517 | 3090.0 | 924942 | 2940.6 | 935627 | 2795.0                        | 946585 | 2653.0 | 957831 | 2514.8 | 969379 | 9.6 |
| 0.6                                                                                                                               | 3240.0 | 914723 | 3087.0 | 925153 | 2937.7 | 935843 | 2792.1                        | 946807 | 2650.2 | 958059 | 2512.1 | 969613 | 9.4 |
| 0.8                                                                                                                               | 3236.9 | 914929 | 3083.9 | 925364 | 2934.7 | 936060 | 2789.2                        | 947029 | 2647.4 | 958287 | 2509.4 | 969847 | 9.2 |
| 1                                                                                                                                 | 3233.8 | 915136 | 3080.9 | 925576 | 2931.8 | 936276 | 2786.3                        | 947251 | 2644.6 | 958515 | 2506.7 | 970082 | 9   |
| 1.2                                                                                                                               | 3230.7 | 915342 | 3077.9 | 925787 | 2928.8 | 936493 | 2783.5                        | 947474 | 2641.8 | 958743 | 2503.9 | 970316 | 8.8 |
| 1.4                                                                                                                               | 3227.6 | 915548 | 3074.9 | 925999 | 2925.9 | 936710 | 2780.6                        | 947696 | 2639.1 | 958972 | 2501.2 | 970551 | 8.6 |
| 1.6                                                                                                                               | 3224.5 | 915755 | 3071.9 | 926210 | 2922.9 | 936927 | 2777.7                        | 947919 | 2636.3 | 959200 | 2498.5 | 970786 | 8.4 |
| 1.8                                                                                                                               | 3221.4 | 915962 | 3068.9 | 926422 | 2920.0 | 937144 | 2774.9                        | 948142 | 2633.5 | 959429 | 2495.8 | 971021 | 8.2 |
| 2                                                                                                                                 | 3218.3 | 916168 | 3065.8 | 926634 | 2917.1 | 937361 | 2772.0                        | 948365 | 2630.7 | 959658 | 2493.1 | 971256 | 8   |
| 2.2                                                                                                                               | 3215.3 | 916375 | 3062.8 | 926846 | 2914.1 | 937579 | 2769.1                        | 948588 | 2627.9 | 959886 | 2490.3 | 971491 | 7.8 |
| 2.4                                                                                                                               | 3212.2 | 916582 | 3059.8 | 927058 | 2911.2 | 937796 | 2766.3                        | 948811 | 2625.1 | 960116 | 2487.6 | 971726 | 7.6 |
| 2.6                                                                                                                               | 3209.1 | 916789 | 3056.8 | 927270 | 2908.3 | 938014 | 2763.4                        | 949034 | 2622.3 | 960345 | 2484.9 | 971962 | 7.4 |
| 2.8                                                                                                                               | 3206.0 | 916996 | 3053.8 | 927482 | 2905.3 | 938231 | 2760.6                        | 949257 | 2619.5 | 960574 | 2482.2 | 972197 | 7.2 |
| 3                                                                                                                                 | 3202.9 | 917203 | 3050.8 | 927694 | 2902.4 | 938449 | 2757.7                        | 949481 | 2616.7 | 960803 | 2479.5 | 972433 | 7   |
| 3.2                                                                                                                               | 3199.8 | 917411 | 3047.8 | 927907 | 2899.5 | 938667 | 2754.9                        | 949704 | 2614.0 | 961033 | 2476.8 | 972669 | 6.8 |
| 3.4                                                                                                                               | 3196.8 | 917618 | 3044.8 | 928120 | 2896.5 | 938885 | 2752.0                        | 949928 | 2611.2 | 961263 | 2474.1 | 972905 | 6.6 |
| 3.6                                                                                                                               | 3193.7 | 917826 | 3041.8 | 928332 | 2893.6 | 939103 | 2749.1                        | 950152 | 2608.4 | 961492 | 2471.4 | 973141 | 6.4 |
| 3.8                                                                                                                               | 3190.6 | 918033 | 3038.8 | 928545 | 2890.7 | 939321 | 2746.3                        | 950376 | 2605.6 | 961722 | 2468.7 | 973377 | 6.2 |
| 4                                                                                                                                 | 3187.5 | 918241 | 3035.8 | 928758 | 2887.8 | 939540 | 2743.4                        | 950600 | 2602.9 | 961952 | 2466.0 | 973614 | 6   |
| 4.2                                                                                                                               | 3184.5 | 918449 | 3032.8 | 928971 | 2884.8 | 939758 | 2740.6                        | 950824 | 2600.1 | 962182 | 2463.3 | 973850 | 5.8 |
| 4.4                                                                                                                               | 3181.4 | 918657 | 3029.8 | 929184 | 2881.9 | 939977 | 2737.7                        | 951048 | 2597.3 | 962413 | 2460.6 | 974087 | 5.6 |
| 4.6                                                                                                                               | 3178.3 | 918865 | 3026.8 | 929397 | 2879.0 | 940195 | 2734.9                        | 951272 | 2594.5 | 962643 | 2457.9 | 974323 | 5.4 |
| 4.8                                                                                                                               | 3175.3 | 919073 | 3023.8 | 929611 | 2876.1 | 940414 | 2732.1                        | 951497 | 2591.8 | 962874 | 2455.2 | 974560 | 5.2 |
| 5                                                                                                                                 | 3172.2 | 919281 | 3020.8 | 929824 | 2873.2 | 940633 | 2729.2                        | 951721 | 2589.0 | 963104 | 2452.5 | 974797 | 5   |
| 5.2                                                                                                                               | 3169.1 | 919489 | 3017.8 | 930037 | 2870.2 | 940852 | 2726.4                        | 951946 | 2586.2 | 963335 | 2449.8 | 975034 | 4.8 |
| 5.4                                                                                                                               | 3166.1 | 919698 | 3014.8 | 930251 | 2867.3 | 941071 | 2723.5                        | 952171 | 2583.5 | 963566 | 2447.1 | 975272 | 4.6 |
| 5.6                                                                                                                               | 3163.0 | 919906 | 3011.8 | 930465 | 2864.4 | 941290 | 2720.7                        | 952396 | 2580.7 | 963797 | 2444.4 | 975509 | 4.4 |
| 5.8                                                                                                                               | 3160.0 | 920115 | 3008.9 | 930679 | 2861.5 | 941509 | 2717.9                        | 952621 | 2577.9 | 964028 | 2441.7 | 975747 | 4.2 |
| 6                                                                                                                                 | 3156.9 | 920324 | 3005.9 | 930893 | 2858.6 | 941729 | 2715.0                        | 952846 | 2575.2 | 964259 | 2439.1 | 975984 | 4   |
| 6.2                                                                                                                               | 3153.8 | 920533 | 3002.9 | 931107 | 2855.7 | 941948 | 2712.2                        | 953071 | 2572.4 | 964491 | 2436.4 | 976222 | 3.8 |
| 6.4                                                                                                                               | 3150.8 | 920742 | 2999.9 | 931321 | 2852.8 | 942168 | 2709.4                        | 953297 | 2569.7 | 964722 | 2433.7 | 976460 | 3.6 |
| 6.6                                                                                                                               | 3147.7 | 920951 | 2996.9 | 931535 | 2849.9 | 942388 | 2706.5                        | 953522 | 2566.9 | 964954 | 2431.0 | 976698 | 3.4 |
| 6.8                                                                                                                               | 3144.7 | 921160 | 2994.0 | 931750 | 2847.0 | 942608 | 2703.7                        | 953748 | 2564.2 | 965186 | 2428.3 | 976936 | 3.2 |
| 7                                                                                                                                 | 3141.6 | 921369 | 2991.0 | 931964 | 2844.1 | 942828 | 2700.9                        | 953974 | 2561.4 | 965418 | 2425.7 | 977175 | 3   |
| 7.2                                                                                                                               | 3138.6 | 921578 | 2988.0 | 932179 | 2841.2 | 943048 | 2698.0                        | 954200 | 2558.7 | 965650 | 2423.0 | 977413 | 2.8 |
| 7.4                                                                                                                               | 3135.5 | 921788 | 2985.0 | 932393 | 2838.3 | 943268 | 2695.2                        | 954426 | 2555.9 | 965882 | 2420.3 | 977652 | 2.6 |
| 7.6                                                                                                                               | 3132.5 | 921997 | 2982.1 | 932608 | 2835.4 | 943488 | 2692.4                        | 954652 | 2553.2 | 966114 | 2417.6 | 977890 | 2.4 |
| 7.8                                                                                                                               | 3129.4 | 922207 | 2979.1 | 932823 | 2832.5 | 943709 | 2689.6                        | 954878 | 2550.4 | 966346 | 2415.0 | 978129 | 2.2 |
| 8                                                                                                                                 | 3126.4 | 922417 | 2976.1 | 933038 | 2829.6 | 943929 | 2686.8                        | 955105 | 2547.7 | 966579 | 2412.3 | 978368 | 2   |
| 8.2                                                                                                                               | 3123.3 | 922627 | 2973.2 | 933253 | 2826.7 | 944150 | 2683.9                        | 955331 | 2544.9 | 966811 | 2409.6 | 978607 | 1.8 |
| 8.4                                                                                                                               | 3120.3 | 922837 | 2970.2 | 933468 | 2823.8 | 944371 | 2681.1                        | 955558 | 2542.2 | 967044 | 2406.9 | 978847 | 1.6 |
| 8.6                                                                                                                               | 3117.3 | 923047 | 2967.2 | 933684 | 2820.9 | 944592 | 2678.3                        | 955784 | 2539.4 | 967277 | 2404.3 | 979086 | 1.4 |
| 8.8                                                                                                                               | 3114.2 | 923257 | 2964.3 | 933899 | 2818.0 | 944813 | 2675.5                        | 956011 | 2536.7 | 967510 | 2401.6 | 979325 | 1.2 |
| 9                                                                                                                                 | 3111.2 | 923467 | 2961.3 | 934115 | 2815.1 | 945034 | 2672.7                        | 956238 | 2534.0 | 967743 | 2398.9 | 979565 | 1   |
| 9.2                                                                                                                               | 3108.2 | 923678 | 2958.3 | 934330 | 2812.2 | 945255 | 2669.9                        | 956465 | 2531.2 | 967977 | 2396.3 | 979805 | 0.8 |
| 9.4                                                                                                                               | 3105.1 | 923888 | 2955.4 | 934546 | 2809.4 | 945476 | 2667.1                        | 956693 | 2528.5 | 968210 | 2393.6 | 980045 | 0.6 |
| 9.6                                                                                                                               | 3102.1 | 924099 | 2952.4 | 934762 | 2806.5 | 945698 | 2664.3                        | 956920 | 2525.8 | 968444 | 2391.0 | 980285 | 0.4 |
| 9.8                                                                                                                               | 3099.1 | 924309 | 2949.5 | 934978 | 2803.6 | 945920 | 2661.4                        | 957147 | 2523.0 | 968677 | 2388.3 | 980525 | 0.2 |
| 10                                                                                                                                | 3096.0 | 924520 | 2946.5 | 935194 | 2800.7 | 946141 | 2658.6                        | 957375 | 2520.3 | 968911 | 2385.7 | 980765 | 0   |
|                                                                                                                                   | A      | B      | A      | B      | A      | B      | A                             | B      | A      | B      | A      | B      | ↑   |
| 50' 40' 30' 20' 10' 0'                                                                                                            |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| 96°                                                                                                                               |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |        |        |        |                               |        |        |        |        |        |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |        |        |        | B(α) = 10^6 * log (1 / cos α) |        |        |        |        |        |     |

| 84°                                                                                                                               |        |        |        |         |        |         |                               |         |        |         |        |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|---------|--------|---------|-------------------------------|---------|--------|---------|--------|---------|-----|
| ↓                                                                                                                                 | 0'     |        | 10'    |         | 20'    |         | 30'                           |         | 40'    |         | 50'    |         |     |
|                                                                                                                                   | A      | B      | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       |     |
| 0                                                                                                                                 | 2385.7 | 980765 | 2254.7 | 992956  | 2127.5 | 1005503 | 2004.0                        | 1018427 | 1884.2 | 1031751 | 1768.2 | 1045501 | 10  |
| 0.2                                                                                                                               | 2383.0 | 981006 | 2252.1 | 993204  | 2125.0 | 1005758 | 2001.6                        | 1018690 | 1881.9 | 1032022 | 1765.9 | 1045780 | 9.8 |
| 0.4                                                                                                                               | 2380.3 | 981246 | 2249.6 | 993451  | 2122.5 | 1006013 | 1999.2                        | 1018952 | 1879.5 | 1032293 | 1763.6 | 1046060 | 9.6 |
| 0.6                                                                                                                               | 2377.7 | 981487 | 2247.0 | 993699  | 2120.0 | 1006268 | 1996.7                        | 1019215 | 1877.2 | 1032564 | 1761.3 | 1046340 | 9.4 |
| 0.8                                                                                                                               | 2375.0 | 981728 | 2244.4 | 993947  | 2117.5 | 1006523 | 1994.3                        | 1019478 | 1874.8 | 1032835 | 1759.0 | 1046620 | 9.2 |
| 1                                                                                                                                 | 2372.4 | 981969 | 2241.8 | 994195  | 2115.0 | 1006778 | 1991.9                        | 1019741 | 1872.5 | 1033107 | 1756.7 | 1046900 | 9   |
| 1.2                                                                                                                               | 2369.7 | 982210 | 2239.3 | 994443  | 2112.5 | 1007034 | 1989.5                        | 1020004 | 1870.1 | 1033378 | 1754.5 | 1047181 | 8.8 |
| 1.4                                                                                                                               | 2367.1 | 982451 | 2236.7 | 994691  | 2110.0 | 1007289 | 1987.0                        | 1020268 | 1867.8 | 1033650 | 1752.2 | 1047461 | 8.6 |
| 1.6                                                                                                                               | 2364.5 | 982693 | 2234.1 | 994939  | 2107.5 | 1007545 | 1984.6                        | 1020531 | 1865.4 | 1033922 | 1749.9 | 1047742 | 8.4 |
| 1.8                                                                                                                               | 2361.8 | 982934 | 2231.6 | 995188  | 2105.0 | 1007801 | 1982.2                        | 1020795 | 1863.1 | 1034194 | 1747.6 | 1048023 | 8.2 |
| 2                                                                                                                                 | 2359.2 | 983176 | 2229.0 | 995437  | 2102.5 | 1008057 | 1979.8                        | 1021059 | 1860.7 | 1034466 | 1745.4 | 1048304 | 8   |
| 2.2                                                                                                                               | 2356.5 | 983418 | 2226.4 | 995685  | 2100.0 | 1008313 | 1977.4                        | 1021323 | 1858.4 | 1034739 | 1743.1 | 1048586 | 7.8 |
| 2.4                                                                                                                               | 2353.9 | 983660 | 2223.9 | 995934  | 2097.5 | 1008570 | 1974.9                        | 1021588 | 1856.0 | 1035011 | 1740.8 | 1048867 | 7.6 |
| 2.6                                                                                                                               | 2351.3 | 983902 | 2221.3 | 996183  | 2095.1 | 1008826 | 1972.5                        | 1021852 | 1853.7 | 1035284 | 1738.6 | 1049149 | 7.4 |
| 2.8                                                                                                                               | 2348.6 | 984144 | 2218.7 | 996433  | 2092.6 | 1009083 | 1970.1                        | 1022116 | 1851.4 | 1035557 | 1736.3 | 1049431 | 7.2 |
| 3                                                                                                                                 | 2346.0 | 984387 | 2216.2 | 996682  | 2090.1 | 1009340 | 1967.7                        | 1022381 | 1849.0 | 1035830 | 1734.0 | 1049713 | 7   |
| 3.2                                                                                                                               | 2343.4 | 984629 | 2213.6 | 996932  | 2087.6 | 1009597 | 1965.3                        | 1022646 | 1846.7 | 1036104 | 1731.8 | 1049995 | 6.8 |
| 3.4                                                                                                                               | 2340.7 | 984872 | 2211.1 | 997181  | 2085.1 | 1009854 | 1962.9                        | 1022911 | 1844.3 | 1036377 | 1729.5 | 1050278 | 6.6 |
| 3.6                                                                                                                               | 2338.1 | 985114 | 2208.5 | 997431  | 2082.6 | 1010111 | 1960.5                        | 1023176 | 1842.0 | 1036651 | 1727.3 | 1050560 | 6.4 |
| 3.8                                                                                                                               | 2335.5 | 985357 | 2206.0 | 997681  | 2080.2 | 1010369 | 1958.1                        | 1023442 | 1839.7 | 1036925 | 1725.0 | 1050843 | 6.2 |
| 4                                                                                                                                 | 2332.8 | 985600 | 2203.4 | 997931  | 2077.7 | 1010626 | 1955.7                        | 1023707 | 1837.4 | 1037199 | 1722.8 | 1051126 | 6   |
| 4.2                                                                                                                               | 2330.2 | 985844 | 2200.8 | 998182  | 2075.2 | 1010884 | 1953.3                        | 1023973 | 1835.0 | 1037473 | 1720.5 | 1051409 | 5.8 |
| 4.4                                                                                                                               | 2327.6 | 986087 | 2198.3 | 998432  | 2072.7 | 1011142 | 1950.9                        | 1024239 | 1832.7 | 1037747 | 1718.2 | 1051693 | 5.6 |
| 4.6                                                                                                                               | 2325.0 | 986330 | 2195.8 | 998682  | 2070.3 | 1011400 | 1948.5                        | 1024505 | 1830.4 | 1038022 | 1716.0 | 1051976 | 5.4 |
| 4.8                                                                                                                               | 2322.3 | 986574 | 2193.2 | 998933  | 2067.8 | 1011658 | 1946.1                        | 1024771 | 1828.1 | 1038296 | 1713.7 | 1052260 | 5.2 |
| 5                                                                                                                                 | 2319.7 | 986818 | 2190.7 | 999184  | 2065.3 | 1011917 | 1943.7                        | 1025038 | 1825.7 | 1038571 | 1711.5 | 1052544 | 5   |
| 5.2                                                                                                                               | 2317.1 | 987062 | 2188.1 | 999435  | 2062.8 | 1012175 | 1941.3                        | 1025304 | 1823.4 | 1038846 | 1709.3 | 1052828 | 4.8 |
| 5.4                                                                                                                               | 2314.5 | 987306 | 2185.6 | 999686  | 2060.4 | 1012434 | 1938.9                        | 1025571 | 1821.1 | 1039122 | 1707.0 | 1053112 | 4.6 |
| 5.6                                                                                                                               | 2311.9 | 987550 | 2183.0 | 999937  | 2057.9 | 1012693 | 1936.5                        | 1025838 | 1818.8 | 1039397 | 1704.8 | 1053397 | 4.4 |
| 5.8                                                                                                                               | 2309.3 | 987794 | 2180.5 | 1000189 | 2055.4 | 1012952 | 1934.1                        | 1026105 | 1816.5 | 1039673 | 1702.5 | 1053682 | 4.2 |
| 6                                                                                                                                 | 2306.7 | 988038 | 2178.0 | 1000440 | 2053.0 | 1013211 | 1931.7                        | 1026372 | 1814.1 | 1039948 | 1700.3 | 1053966 | 4   |
| 6.2                                                                                                                               | 2304.0 | 988283 | 2175.4 | 1000692 | 2050.5 | 1013470 | 1929.3                        | 1026639 | 1811.8 | 1040224 | 1698.0 | 1054252 | 3.8 |
| 6.4                                                                                                                               | 2301.4 | 988528 | 2172.9 | 1000944 | 2048.1 | 1013730 | 1926.9                        | 1026907 | 1809.5 | 1040500 | 1695.8 | 1054537 | 3.6 |
| 6.6                                                                                                                               | 2298.8 | 988773 | 2170.4 | 1001196 | 2045.6 | 1013989 | 1924.5                        | 1027175 | 1807.2 | 1040777 | 1693.6 | 1054822 | 3.4 |
| 6.8                                                                                                                               | 2296.2 | 989018 | 2167.8 | 1001448 | 2043.1 | 1014249 | 1922.2                        | 1027442 | 1804.9 | 1041053 | 1691.3 | 1055108 | 3.2 |
| 7                                                                                                                                 | 2293.6 | 989263 | 2165.3 | 1001701 | 2040.7 | 1014509 | 1919.8                        | 1027711 | 1802.6 | 1041330 | 1689.1 | 1055394 | 3   |
| 7.2                                                                                                                               | 2291.0 | 989508 | 2162.8 | 1001953 | 2038.2 | 1014769 | 1917.4                        | 1027979 | 1800.3 | 1041607 | 1686.9 | 1055680 | 2.8 |
| 7.4                                                                                                                               | 2288.4 | 989753 | 2160.2 | 1002206 | 2035.8 | 1015029 | 1915.0                        | 1028247 | 1798.0 | 1041884 | 1684.6 | 1055966 | 2.6 |
| 7.6                                                                                                                               | 2285.8 | 989999 | 2157.7 | 1002458 | 2033.3 | 1015290 | 1912.6                        | 1028516 | 1795.7 | 1042161 | 1682.4 | 1056252 | 2.4 |
| 7.8                                                                                                                               | 2283.2 | 990245 | 2155.2 | 1002711 | 2030.9 | 1015550 | 1910.3                        | 1028784 | 1793.4 | 1042438 | 1680.2 | 1056539 | 2.2 |
| 8                                                                                                                                 | 2280.6 | 990490 | 2152.7 | 1002964 | 2028.4 | 1015811 | 1907.9                        | 1029053 | 1791.1 | 1042716 | 1678.0 | 1056826 | 2   |
| 8.2                                                                                                                               | 2278.0 | 990736 | 2150.1 | 1003218 | 2026.0 | 1016072 | 1905.5                        | 1029322 | 1788.8 | 1042993 | 1675.7 | 1057113 | 1.8 |
| 8.4                                                                                                                               | 2275.4 | 990982 | 2147.6 | 1003471 | 2023.5 | 1016333 | 1903.2                        | 1029591 | 1786.5 | 1043271 | 1673.5 | 1057400 | 1.6 |
| 8.6                                                                                                                               | 2272.8 | 991229 | 2145.1 | 1003724 | 2021.1 | 1016594 | 1900.8                        | 1029861 | 1784.2 | 1043549 | 1671.3 | 1057687 | 1.4 |
| 8.8                                                                                                                               | 2270.2 | 991475 | 2142.6 | 1003978 | 2018.6 | 1016856 | 1898.4                        | 1030130 | 1781.9 | 1043828 | 1669.1 | 1057975 | 1.2 |
| 9                                                                                                                                 | 2267.7 | 991722 | 2140.1 | 1004232 | 2016.2 | 1017117 | 1896.0                        | 1030400 | 1779.6 | 1044106 | 1666.8 | 1058262 | 1   |
| 9.2                                                                                                                               | 2265.1 | 991968 | 2137.6 | 1004486 | 2013.8 | 1017379 | 1893.7                        | 1030670 | 1777.3 | 1044385 | 1664.6 | 1058550 | 0.8 |
| 9.4                                                                                                                               | 2262.5 | 992215 | 2135.0 | 1004740 | 2011.3 | 1017641 | 1891.3                        | 1030940 | 1775.0 | 1044663 | 1662.4 | 1058838 | 0.6 |
| 9.6                                                                                                                               | 2259.9 | 992462 | 2132.5 | 1004994 | 2008.9 | 1017903 | 1889.0                        | 1031210 | 1772.7 | 1044942 | 1660.2 | 1059127 | 0.4 |
| 9.8                                                                                                                               | 2257.3 | 992709 | 2130.0 | 1005249 | 2006.5 | 1018165 | 1886.6                        | 1031481 | 1770.4 | 1045222 | 1658.0 | 1059415 | 0.2 |
| 10                                                                                                                                | 2254.7 | 992956 | 2127.5 | 1005503 | 2004.0 | 1018427 | 1884.2                        | 1031751 | 1768.2 | 1045501 | 1655.8 | 1059704 | 0   |
|                                                                                                                                   | A      | B      | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       | ↑   |
| 50' 40' 30' 20' 10' 0'                                                                                                            |        |        |        |         |        |         |                               |         |        |         |        |         |     |
| 95°                                                                                                                               |        |        |        |         |        |         |                               |         |        |         |        |         |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |        |        |         |        |         |                               |         |        |         |        |         |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |        |        |         |        |         |                               |         |        |         |        |         |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |        |        |         |        |         | B(α) = 10^6 * log (1 / cos α) |         |        |         |        |         |     |

| 85°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |        |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|---------|--------|---------|--------|---------|-------------------------------|---------|--------|---------|--------|---------|-----|
| ↓                                                                                                                                 | 0'     |         | 10'    |         | 20'    |         | 30'                           |         | 40'    |         | 50'    |         |     |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       |     |
| 0                                                                                                                                 | 1655.8 | 1059704 | 1547.1 | 1074391 | 1442.1 | 1089596 | 1340.9                        | 1105357 | 1243.3 | 1121715 | 1149.4 | 1138717 | 10  |
| 0.2                                                                                                                               | 1653.6 | 1059993 | 1545.0 | 1074690 | 1440.1 | 1089906 | 1338.9                        | 1105678 | 1241.4 | 1122048 | 1147.6 | 1139064 | 9.8 |
| 0.4                                                                                                                               | 1651.4 | 1060282 | 1542.8 | 1074989 | 1438.0 | 1090216 | 1336.9                        | 1105999 | 1239.5 | 1122382 | 1145.7 | 1139411 | 9.6 |
| 0.6                                                                                                                               | 1649.1 | 1060571 | 1540.7 | 1075288 | 1435.9 | 1090526 | 1334.9                        | 1106321 | 1237.5 | 1122716 | 1143.9 | 1139758 | 9.4 |
| 0.8                                                                                                                               | 1646.9 | 1060861 | 1538.6 | 1075588 | 1433.9 | 1090836 | 1332.9                        | 1106643 | 1235.6 | 1123050 | 1142.0 | 1140106 | 9.2 |
| 1                                                                                                                                 | 1644.7 | 1061150 | 1536.4 | 1075888 | 1431.8 | 1091147 | 1330.9                        | 1106965 | 1233.7 | 1123385 | 1140.2 | 1140454 | 9   |
| 1.2                                                                                                                               | 1642.5 | 1061440 | 1534.3 | 1076188 | 1429.8 | 1091457 | 1328.9                        | 1107287 | 1231.8 | 1123720 | 1138.4 | 1140803 | 8.8 |
| 1.4                                                                                                                               | 1640.3 | 1061730 | 1532.2 | 1076488 | 1427.7 | 1091768 | 1327.0                        | 1107610 | 1229.9 | 1124055 | 1136.5 | 1141151 | 8.6 |
| 1.6                                                                                                                               | 1638.1 | 1062021 | 1530.1 | 1076788 | 1425.7 | 1092079 | 1325.0                        | 1107933 | 1228.0 | 1124390 | 1134.7 | 1141500 | 8.4 |
| 1.8                                                                                                                               | 1635.9 | 1062311 | 1527.9 | 1077089 | 1423.6 | 1092391 | 1323.0                        | 1108256 | 1226.1 | 1124726 | 1132.9 | 1141849 | 8.2 |
| 2                                                                                                                                 | 1633.7 | 1062602 | 1525.8 | 1077390 | 1421.6 | 1092703 | 1321.0                        | 1108579 | 1224.2 | 1125062 | 1131.1 | 1142199 | 8   |
| 2.2                                                                                                                               | 1631.5 | 1062892 | 1523.7 | 1077691 | 1419.5 | 1093014 | 1319.1                        | 1108903 | 1222.3 | 1125398 | 1129.2 | 1142549 | 7.8 |
| 2.4                                                                                                                               | 1629.4 | 1063184 | 1521.6 | 1077992 | 1417.5 | 1093327 | 1317.1                        | 1109226 | 1220.4 | 1125735 | 1127.4 | 1142899 | 7.6 |
| 2.6                                                                                                                               | 1627.2 | 1063475 | 1519.5 | 1078293 | 1415.4 | 1093639 | 1315.1                        | 1109551 | 1218.5 | 1126071 | 1125.6 | 1143249 | 7.4 |
| 2.8                                                                                                                               | 1625.0 | 1063766 | 1517.3 | 1078595 | 1413.4 | 1093951 | 1313.2                        | 1109875 | 1216.6 | 1126408 | 1123.8 | 1143600 | 7.2 |
| 3                                                                                                                                 | 1622.8 | 1064058 | 1515.2 | 1078897 | 1411.4 | 1094264 | 1311.2                        | 1110199 | 1214.7 | 1126745 | 1122.0 | 1143951 | 7   |
| 3.2                                                                                                                               | 1620.6 | 1064350 | 1513.1 | 1079199 | 1409.3 | 1094577 | 1309.2                        | 1110524 | 1212.8 | 1127083 | 1120.1 | 1144302 | 6.8 |
| 3.4                                                                                                                               | 1618.4 | 1064642 | 1511.0 | 1079501 | 1407.3 | 1094890 | 1307.3                        | 1110849 | 1210.9 | 1127421 | 1118.3 | 1144653 | 6.6 |
| 3.6                                                                                                                               | 1616.2 | 1064934 | 1508.9 | 1079803 | 1405.2 | 1095204 | 1305.3                        | 1111174 | 1209.1 | 1127759 | 1116.5 | 1145005 | 6.4 |
| 3.8                                                                                                                               | 1614.0 | 1065226 | 1506.8 | 1080106 | 1403.2 | 1095518 | 1303.3                        | 1111500 | 1207.2 | 1128097 | 1114.7 | 1145357 | 6.2 |
| 4                                                                                                                                 | 1611.9 | 1065519 | 1504.7 | 1080409 | 1401.2 | 1095831 | 1301.4                        | 1111826 | 1205.3 | 1128435 | 1112.9 | 1145709 | 6   |
| 4.2                                                                                                                               | 1609.7 | 1065812 | 1502.6 | 1080712 | 1399.1 | 1096146 | 1299.4                        | 1112152 | 1203.4 | 1128774 | 1111.1 | 1146062 | 5.8 |
| 4.4                                                                                                                               | 1607.5 | 1066105 | 1500.5 | 1081015 | 1397.1 | 1096460 | 1297.5                        | 1112478 | 1201.5 | 1129113 | 1109.3 | 1146415 | 5.6 |
| 4.6                                                                                                                               | 1605.3 | 1066398 | 1498.4 | 1081319 | 1395.1 | 1096775 | 1295.5                        | 1112804 | 1199.6 | 1129453 | 1107.5 | 1146768 | 5.4 |
| 4.8                                                                                                                               | 1603.1 | 1066691 | 1496.3 | 1081623 | 1393.1 | 1097089 | 1293.6                        | 1113131 | 1197.8 | 1129792 | 1105.6 | 1147122 | 5.2 |
| 5                                                                                                                                 | 1601.0 | 1066985 | 1494.2 | 1081927 | 1391.0 | 1097404 | 1291.6                        | 1113458 | 1195.9 | 1130132 | 1103.8 | 1147475 | 5   |
| 5.2                                                                                                                               | 1598.8 | 1067279 | 1492.1 | 1082231 | 1389.0 | 1097720 | 1289.7                        | 1113785 | 1194.0 | 1130472 | 1102.0 | 1147830 | 4.8 |
| 5.4                                                                                                                               | 1596.6 | 1067573 | 1490.0 | 1082535 | 1387.0 | 1098035 | 1287.7                        | 1114113 | 1192.1 | 1130813 | 1100.2 | 1148184 | 4.6 |
| 5.6                                                                                                                               | 1594.5 | 1067867 | 1487.9 | 1082840 | 1385.0 | 1098351 | 1285.8                        | 1114441 | 1190.2 | 1131153 | 1098.4 | 1148539 | 4.4 |
| 5.8                                                                                                                               | 1592.3 | 1068161 | 1485.8 | 1083145 | 1382.9 | 1098667 | 1283.8                        | 1114769 | 1188.4 | 1131494 | 1096.6 | 1148894 | 4.2 |
| 6                                                                                                                                 | 1590.1 | 1068456 | 1483.7 | 1083450 | 1380.9 | 1098983 | 1281.9                        | 1115097 | 1186.5 | 1131835 | 1094.8 | 1149249 | 4   |
| 6.2                                                                                                                               | 1588.0 | 1068751 | 1481.6 | 1083755 | 1378.9 | 1099300 | 1279.9                        | 1115425 | 1184.6 | 1132177 | 1093.0 | 1149604 | 3.8 |
| 6.4                                                                                                                               | 1585.8 | 1069046 | 1479.5 | 1084060 | 1376.9 | 1099616 | 1278.0                        | 1115754 | 1182.8 | 1132519 | 1091.3 | 1149960 | 3.6 |
| 6.6                                                                                                                               | 1583.6 | 1069341 | 1477.4 | 1084366 | 1374.9 | 1099933 | 1276.0                        | 1116083 | 1180.9 | 1132861 | 1089.5 | 1150316 | 3.4 |
| 6.8                                                                                                                               | 1581.5 | 1069637 | 1475.3 | 1084672 | 1372.9 | 1100250 | 1274.1                        | 1116412 | 1179.0 | 1133203 | 1087.7 | 1150673 | 3.2 |
| 7                                                                                                                                 | 1579.3 | 1069932 | 1473.2 | 1084978 | 1370.8 | 1100568 | 1272.2                        | 1116742 | 1177.2 | 1133545 | 1085.9 | 1151029 | 3   |
| 7.2                                                                                                                               | 1577.2 | 1070228 | 1471.1 | 1085284 | 1368.8 | 1100885 | 1270.2                        | 1117072 | 1175.3 | 1133888 | 1084.1 | 1151386 | 2.8 |
| 7.4                                                                                                                               | 1575.0 | 1070524 | 1469.1 | 1085591 | 1366.8 | 1101203 | 1268.3                        | 1117402 | 1173.4 | 1134231 | 1082.3 | 1151744 | 2.6 |
| 7.6                                                                                                                               | 1572.8 | 1070820 | 1467.0 | 1085898 | 1364.8 | 1101521 | 1266.4                        | 1117732 | 1171.6 | 1134575 | 1080.5 | 1152101 | 2.4 |
| 7.8                                                                                                                               | 1570.7 | 1071117 | 1464.9 | 1086205 | 1362.8 | 1101840 | 1264.4                        | 1118062 | 1169.7 | 1134918 | 1078.7 | 1152459 | 2.2 |
| 8                                                                                                                                 | 1568.5 | 1071413 | 1462.8 | 1086512 | 1360.8 | 1102158 | 1262.5                        | 1118393 | 1167.9 | 1135262 | 1077.0 | 1152817 | 2   |
| 8.2                                                                                                                               | 1566.4 | 1071710 | 1460.7 | 1086819 | 1358.8 | 1102477 | 1260.6                        | 1118724 | 1166.0 | 1135607 | 1075.2 | 1153176 | 1.8 |
| 8.4                                                                                                                               | 1564.2 | 1072007 | 1458.7 | 1087127 | 1356.8 | 1102796 | 1258.6                        | 1119055 | 1164.2 | 1135951 | 1073.4 | 1153535 | 1.6 |
| 8.6                                                                                                                               | 1562.1 | 1072305 | 1456.6 | 1087435 | 1354.8 | 1103115 | 1256.7                        | 1119387 | 1162.3 | 1136296 | 1071.6 | 1153894 | 1.4 |
| 8.8                                                                                                                               | 1559.9 | 1072602 | 1454.5 | 1087743 | 1352.8 | 1103435 | 1254.8                        | 1119719 | 1160.5 | 1136641 | 1069.8 | 1154253 | 1.2 |
| 9                                                                                                                                 | 1557.8 | 1072900 | 1452.5 | 1088051 | 1350.8 | 1103754 | 1252.9                        | 1120051 | 1158.6 | 1136986 | 1068.1 | 1154613 | 1   |
| 9.2                                                                                                                               | 1555.7 | 1073198 | 1450.4 | 1088360 | 1348.8 | 1104074 | 1250.9                        | 1120383 | 1156.8 | 1137332 | 1066.3 | 1154973 | 0.8 |
| 9.4                                                                                                                               | 1553.5 | 1073496 | 1448.3 | 1088669 | 1346.8 | 1104395 | 1249.0                        | 1120715 | 1154.9 | 1137678 | 1064.5 | 1155333 | 0.6 |
| 9.6                                                                                                                               | 1551.4 | 1073794 | 1446.3 | 1088978 | 1344.8 | 1104715 | 1247.1                        | 1121048 | 1153.1 | 1138024 | 1062.7 | 1155693 | 0.4 |
| 9.8                                                                                                                               | 1549.2 | 1074092 | 1444.2 | 1089287 | 1342.8 | 1105036 | 1245.2                        | 1121381 | 1151.2 | 1138370 | 1061.0 | 1156054 | 0.2 |
| 10                                                                                                                                | 1547.1 | 1074391 | 1442.1 | 1089596 | 1340.9 | 1105357 | 1243.3                        | 1121715 | 1149.4 | 1138717 | 1059.2 | 1156415 | 0   |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       | ↑   |
|                                                                                                                                   | 50'    |         | 40'    |         | 30'    |         | 20'                           |         | 10'    |         | 0'     |         |     |
| 94°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |         |        |         |        |         | B(α) = 10^6 * log (1 / cos α) |         |        |         |        |         |     |

| 86°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |        |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|---------|--------|---------|--------|---------|-------------------------------|---------|--------|---------|--------|---------|-----|
| ↓                                                                                                                                 | 0'     |         | 10'    |         | 20'    |         | 30'                           |         | 40'    |         | 50'    |         |     |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       |     |
| 0                                                                                                                                 | 1059.2 | 1156415 | 972.72 | 1174870 | 889.92 | 1194148 | 810.80                        | 1214325 | 735.38 | 1235489 | 663.64 | 1257741 | 10  |
| 0.2                                                                                                                               | 1057.4 | 1156777 | 971.02 | 1175247 | 888.30 | 1194542 | 809.26                        | 1214738 | 733.91 | 1235923 | 662.25 | 1258198 | 9.8 |
| 0.4                                                                                                                               | 1055.7 | 1157139 | 969.33 | 1175625 | 886.68 | 1194937 | 807.72                        | 1215152 | 732.44 | 1236357 | 660.85 | 1258656 | 9.6 |
| 0.6                                                                                                                               | 1053.9 | 1157501 | 967.64 | 1176003 | 885.06 | 1195332 | 806.17                        | 1215566 | 730.97 | 1236792 | 659.46 | 1259114 | 9.4 |
| 0.8                                                                                                                               | 1052.2 | 1157863 | 965.96 | 1176381 | 883.45 | 1195728 | 804.63                        | 1215980 | 729.51 | 1237228 | 658.06 | 1259572 | 9.2 |
| 1                                                                                                                                 | 1050.4 | 1158226 | 964.27 | 1176760 | 881.84 | 1196124 | 803.09                        | 1216395 | 728.04 | 1237663 | 656.67 | 1260031 | 9   |
| 1.2                                                                                                                               | 1048.6 | 1158589 | 962.59 | 1177139 | 880.23 | 1196520 | 801.56                        | 1216810 | 726.58 | 1238100 | 655.28 | 1260490 | 8.8 |
| 1.4                                                                                                                               | 1046.9 | 1158952 | 960.90 | 1177518 | 878.62 | 1196916 | 800.02                        | 1217226 | 725.11 | 1238536 | 653.89 | 1260950 | 8.6 |
| 1.6                                                                                                                               | 1045.1 | 1159316 | 959.22 | 1177897 | 877.01 | 1197313 | 798.49                        | 1217642 | 723.65 | 1238973 | 652.51 | 1261410 | 8.4 |
| 1.8                                                                                                                               | 1043.4 | 1159680 | 957.54 | 1178277 | 875.40 | 1197711 | 796.95                        | 1218059 | 722.20 | 1239411 | 651.12 | 1261871 | 8.2 |
| 2                                                                                                                                 | 1041.6 | 1160044 | 955.86 | 1178657 | 873.80 | 1198108 | 795.42                        | 1218476 | 720.74 | 1239849 | 649.74 | 1262333 | 8   |
| 2.2                                                                                                                               | 1039.9 | 1160408 | 954.18 | 1179038 | 872.19 | 1198507 | 793.89                        | 1218893 | 719.28 | 1240287 | 648.36 | 1262794 | 7.8 |
| 2.4                                                                                                                               | 1038.1 | 1160773 | 952.51 | 1179419 | 870.59 | 1198905 | 792.37                        | 1219311 | 717.83 | 1240726 | 646.98 | 1263257 | 7.6 |
| 2.6                                                                                                                               | 1036.4 | 1161138 | 950.83 | 1179800 | 868.99 | 1199304 | 790.84                        | 1219729 | 716.37 | 1241165 | 645.60 | 1263719 | 7.4 |
| 2.8                                                                                                                               | 1034.6 | 1161504 | 949.16 | 1180182 | 867.39 | 1199703 | 789.31                        | 1220147 | 714.92 | 1241605 | 644.22 | 1264183 | 7.2 |
| 3                                                                                                                                 | 1032.9 | 1161870 | 947.49 | 1180564 | 865.79 | 1200103 | 787.79                        | 1220566 | 713.47 | 1242045 | 642.84 | 1264646 | 7   |
| 3.2                                                                                                                               | 1031.1 | 1162236 | 945.82 | 1180946 | 864.20 | 1200503 | 786.27                        | 1220985 | 712.02 | 1242486 | 641.47 | 1265111 | 6.8 |
| 3.4                                                                                                                               | 1029.4 | 1162602 | 944.15 | 1181329 | 862.60 | 1200903 | 784.75                        | 1221405 | 710.58 | 1242927 | 640.09 | 1265576 | 6.6 |
| 3.6                                                                                                                               | 1027.6 | 1162969 | 942.48 | 1181711 | 861.01 | 1201303 | 783.23                        | 1221825 | 709.13 | 1243369 | 638.72 | 1266041 | 6.4 |
| 3.8                                                                                                                               | 1025.9 | 1163336 | 940.82 | 1182095 | 859.42 | 1201705 | 781.71                        | 1222246 | 707.69 | 1243811 | 637.35 | 1266507 | 6.2 |
| 4                                                                                                                                 | 1024.2 | 1163703 | 939.15 | 1182478 | 857.83 | 1202106 | 780.19                        | 1222667 | 706.24 | 1244253 | 635.98 | 1266973 | 6   |
| 4.2                                                                                                                               | 1022.4 | 1164071 | 937.49 | 1182862 | 856.24 | 1202508 | 778.68                        | 1223088 | 704.80 | 1244696 | 634.61 | 1267440 | 5.8 |
| 4.4                                                                                                                               | 1020.7 | 1164439 | 935.83 | 1183247 | 854.65 | 1202910 | 777.16                        | 1223510 | 703.36 | 1245139 | 633.25 | 1267907 | 5.6 |
| 4.6                                                                                                                               | 1019.0 | 1164807 | 934.17 | 1183631 | 853.07 | 1203312 | 775.65                        | 1223932 | 701.92 | 1245583 | 631.88 | 1268375 | 5.4 |
| 4.8                                                                                                                               | 1017.2 | 1165175 | 932.51 | 1184016 | 851.48 | 1203715 | 774.14                        | 1224354 | 700.49 | 1246027 | 630.52 | 1268843 | 5.2 |
| 5                                                                                                                                 | 1015.5 | 1165544 | 930.85 | 1184401 | 849.90 | 1204119 | 772.63                        | 1224777 | 699.05 | 1246472 | 629.16 | 1269312 | 5   |
| 5.2                                                                                                                               | 1013.8 | 1165914 | 929.20 | 1184787 | 848.32 | 1204522 | 771.12                        | 1225201 | 697.62 | 1246917 | 627.80 | 1269781 | 4.8 |
| 5.4                                                                                                                               | 1012.0 | 1166283 | 927.55 | 1185173 | 846.74 | 1204926 | 769.62                        | 1225625 | 696.18 | 1247363 | 626.44 | 1270251 | 4.6 |
| 5.6                                                                                                                               | 1010.3 | 1166653 | 925.89 | 1185559 | 845.16 | 1205331 | 768.11                        | 1226049 | 694.75 | 1247809 | 625.08 | 1270721 | 4.4 |
| 5.8                                                                                                                               | 1008.6 | 1167023 | 924.24 | 1185946 | 843.58 | 1205735 | 766.61                        | 1226474 | 693.32 | 1248256 | 623.73 | 1271192 | 4.2 |
| 6                                                                                                                                 | 1006.9 | 1167393 | 922.59 | 1186333 | 842.01 | 1206141 | 765.11                        | 1226899 | 691.90 | 1248703 | 622.37 | 1271663 | 4   |
| 6.2                                                                                                                               | 1005.1 | 1167764 | 920.95 | 1186721 | 840.43 | 1206546 | 763.61                        | 1227324 | 690.47 | 1249150 | 621.02 | 1272135 | 3.8 |
| 6.4                                                                                                                               | 1003.4 | 1168135 | 919.30 | 1187108 | 838.86 | 1206952 | 762.11                        | 1227750 | 689.04 | 1249598 | 619.67 | 1272608 | 3.6 |
| 6.6                                                                                                                               | 1001.7 | 1168507 | 917.65 | 1187496 | 837.29 | 1207358 | 760.61                        | 1228176 | 687.62 | 1250047 | 618.32 | 1273081 | 3.4 |
| 6.8                                                                                                                               | 1000.0 | 1168878 | 916.01 | 1187885 | 835.72 | 1207765 | 759.11                        | 1228603 | 686.20 | 1250495 | 616.97 | 1273554 | 3.2 |
| 7                                                                                                                                 | 998.28 | 1169251 | 914.37 | 1188274 | 834.15 | 1208172 | 757.62                        | 1229030 | 684.78 | 1250945 | 615.62 | 1274028 | 3   |
| 7.2                                                                                                                               | 996.56 | 1169623 | 912.73 | 1188663 | 832.58 | 1208580 | 756.13                        | 1229458 | 683.36 | 1251395 | 614.28 | 1274502 | 2.8 |
| 7.4                                                                                                                               | 994.85 | 1169996 | 911.09 | 1189052 | 831.02 | 1208987 | 754.64                        | 1229886 | 681.94 | 1251845 | 612.93 | 1274977 | 2.6 |
| 7.6                                                                                                                               | 993.14 | 1170369 | 909.45 | 1189442 | 829.45 | 1209396 | 753.15                        | 1230314 | 680.52 | 1252296 | 611.59 | 1275453 | 2.4 |
| 7.8                                                                                                                               | 991.43 | 1170742 | 907.81 | 1189832 | 827.89 | 1209804 | 751.66                        | 1230743 | 679.11 | 1252747 | 610.25 | 1275929 | 2.2 |
| 8                                                                                                                                 | 989.72 | 1171116 | 906.18 | 1190223 | 826.33 | 1210213 | 750.17                        | 1231172 | 677.70 | 1253198 | 608.91 | 1276405 | 2   |
| 8.2                                                                                                                               | 988.01 | 1171490 | 904.55 | 1190614 | 824.77 | 1210623 | 748.68                        | 1231602 | 676.28 | 1253651 | 607.57 | 1276882 | 1.8 |
| 8.4                                                                                                                               | 986.31 | 1171864 | 902.92 | 1191005 | 823.21 | 1211032 | 747.20                        | 1232032 | 674.87 | 1254103 | 606.23 | 1277360 | 1.6 |
| 8.6                                                                                                                               | 984.60 | 1172239 | 901.29 | 1191397 | 821.66 | 1211443 | 745.72                        | 1232463 | 673.46 | 1254556 | 604.90 | 1277838 | 1.4 |
| 8.8                                                                                                                               | 982.90 | 1172613 | 899.66 | 1191788 | 820.10 | 1211853 | 744.24                        | 1232894 | 672.06 | 1255010 | 603.57 | 1278317 | 1.2 |
| 9                                                                                                                                 | 981.20 | 1172989 | 898.03 | 1192181 | 818.55 | 1212264 | 742.76                        | 1233325 | 670.65 | 1255464 | 602.23 | 1278796 | 1   |
| 9.2                                                                                                                               | 979.50 | 1173364 | 896.40 | 1192573 | 817.00 | 1212675 | 741.28                        | 1233757 | 669.25 | 1255919 | 600.90 | 1279276 | 0.8 |
| 9.4                                                                                                                               | 977.80 | 1173740 | 894.78 | 1192966 | 815.45 | 1213087 | 739.80                        | 1234189 | 667.84 | 1256374 | 599.57 | 1279756 | 0.6 |
| 9.6                                                                                                                               | 976.11 | 1174117 | 893.16 | 1193360 | 813.90 | 1213499 | 738.33                        | 1234622 | 666.44 | 1256829 | 598.24 | 1280237 | 0.4 |
| 9.8                                                                                                                               | 974.41 | 1174493 | 891.53 | 1193754 | 812.35 | 1213912 | 736.85                        | 1235055 | 665.04 | 1257285 | 596.92 | 1280718 | 0.2 |
| 10                                                                                                                                | 972.72 | 1174870 | 889.92 | 1194148 | 810.80 | 1214325 | 735.38                        | 1235489 | 663.64 | 1257741 | 595.59 | 1281200 | 0   |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       | ↑   |
|                                                                                                                                   | 50'    |         | 40'    |         | 30'    |         | 20'                           |         | 10'    |         | 0'     |         |     |
| 93°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |         |        |         |        |         | B(α) = 10^6 * log (1 / cos α) |         |        |         |        |         |     |

| 87°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |        |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|---------|--------|---------|--------|---------|-------------------------------|---------|--------|---------|--------|---------|-----|
| ↓                                                                                                                                 | 0'     |         | 10'    |         | 20'    |         | 30'                           |         | 40'    |         | 50'    |         |     |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       |     |
| 0                                                                                                                                 | 595.59 | 1281200 | 531.23 | 1306002 | 470.55 | 1332311 | 413.55                        | 1360320 | 360.23 | 1390266 | 310.60 | 1422434 | 10  |
| 0.2                                                                                                                               | 594.27 | 1281682 | 529.98 | 1306513 | 469.37 | 1332854 | 412.45                        | 1360900 | 359.20 | 1390886 | 309.64 | 1423102 | 9.8 |
| 0.4                                                                                                                               | 592.95 | 1282165 | 528.73 | 1307024 | 468.20 | 1333397 | 411.35                        | 1361479 | 358.18 | 1391508 | 308.69 | 1423772 | 9.6 |
| 0.6                                                                                                                               | 591.63 | 1282649 | 527.48 | 1307536 | 467.02 | 1333941 | 410.25                        | 1362060 | 357.15 | 1392130 | 307.74 | 1424442 | 9.4 |
| 0.8                                                                                                                               | 590.31 | 1283133 | 526.24 | 1308049 | 465.85 | 1334486 | 409.15                        | 1362641 | 356.13 | 1392753 | 306.78 | 1425114 | 9.2 |
| 1                                                                                                                                 | 588.99 | 1283617 | 524.99 | 1308562 | 464.68 | 1335032 | 408.05                        | 1363224 | 355.10 | 1393377 | 305.84 | 1425786 | 9   |
| 1.2                                                                                                                               | 587.68 | 1284102 | 523.75 | 1309076 | 463.51 | 1335578 | 406.96                        | 1363807 | 354.08 | 1394002 | 304.89 | 1426460 | 8.8 |
| 1.4                                                                                                                               | 586.36 | 1284588 | 522.51 | 1309590 | 462.35 | 1336125 | 405.86                        | 1364390 | 353.06 | 1394628 | 303.94 | 1427134 | 8.6 |
| 1.6                                                                                                                               | 585.05 | 1285074 | 521.27 | 1310105 | 461.18 | 1336672 | 404.77                        | 1364975 | 352.04 | 1395255 | 303.00 | 1427810 | 8.4 |
| 1.8                                                                                                                               | 583.74 | 1285561 | 520.03 | 1310621 | 460.02 | 1337221 | 403.68                        | 1365560 | 351.03 | 1395883 | 302.05 | 1428487 | 8.2 |
| 2                                                                                                                                 | 582.43 | 1286048 | 518.80 | 1311137 | 458.85 | 1337770 | 402.59                        | 1366146 | 350.01 | 1396511 | 301.11 | 1429164 | 8   |
| 2.2                                                                                                                               | 581.12 | 1286536 | 517.56 | 1311654 | 457.69 | 1338319 | 401.50                        | 1366733 | 349.00 | 1397141 | 300.17 | 1429843 | 7.8 |
| 2.4                                                                                                                               | 579.81 | 1287024 | 516.33 | 1312172 | 456.53 | 1338870 | 400.42                        | 1367321 | 347.98 | 1397771 | 299.23 | 1430523 | 7.6 |
| 2.6                                                                                                                               | 578.50 | 1287513 | 515.10 | 1312690 | 455.37 | 1339421 | 399.33                        | 1367909 | 346.97 | 1398403 | 298.29 | 1431204 | 7.4 |
| 2.8                                                                                                                               | 577.20 | 1288002 | 513.87 | 1313209 | 454.22 | 1339973 | 398.25                        | 1368499 | 345.96 | 1399035 | 297.36 | 1431886 | 7.2 |
| 3                                                                                                                                 | 575.90 | 1288493 | 512.64 | 1313728 | 453.06 | 1340525 | 397.17                        | 1369089 | 344.96 | 1399668 | 296.42 | 1432569 | 7   |
| 3.2                                                                                                                               | 574.60 | 1288983 | 511.41 | 1314248 | 451.91 | 1341078 | 396.09                        | 1369680 | 343.95 | 1400302 | 295.49 | 1433253 | 6.8 |
| 3.4                                                                                                                               | 573.30 | 1289474 | 510.18 | 1314769 | 450.75 | 1341632 | 395.01                        | 1370272 | 342.94 | 1400937 | 294.56 | 1433938 | 6.6 |
| 3.6                                                                                                                               | 572.00 | 1289966 | 508.96 | 1315290 | 449.60 | 1342187 | 393.93                        | 1370864 | 341.94 | 1401573 | 293.63 | 1434625 | 6.4 |
| 3.8                                                                                                                               | 570.70 | 1290458 | 507.74 | 1315812 | 448.45 | 1342742 | 392.85                        | 1371457 | 340.94 | 1402210 | 292.70 | 1435312 | 6.2 |
| 4                                                                                                                                 | 569.41 | 1290951 | 506.51 | 1316335 | 447.31 | 1343298 | 391.78                        | 1372052 | 339.94 | 1402848 | 291.77 | 1436001 | 6   |
| 4.2                                                                                                                               | 568.11 | 1291444 | 505.29 | 1316858 | 446.16 | 1343855 | 390.71                        | 1372647 | 338.94 | 1403487 | 290.85 | 1436690 | 5.8 |
| 4.4                                                                                                                               | 566.82 | 1291938 | 504.08 | 1317382 | 445.01 | 1344413 | 389.64                        | 1373242 | 337.94 | 1404127 | 289.92 | 1437381 | 5.6 |
| 4.6                                                                                                                               | 565.53 | 1292433 | 502.86 | 1317906 | 443.87 | 1344971 | 388.57                        | 1373839 | 336.94 | 1404768 | 289.00 | 1438073 | 5.4 |
| 4.8                                                                                                                               | 564.24 | 1292928 | 501.64 | 1318431 | 442.73 | 1345530 | 387.50                        | 1374436 | 335.95 | 1405409 | 288.08 | 1438766 | 5.2 |
| 5                                                                                                                                 | 562.95 | 1293423 | 500.43 | 1318957 | 441.59 | 1346089 | 386.43                        | 1375035 | 334.95 | 1406052 | 287.16 | 1439460 | 5   |
| 5.2                                                                                                                               | 561.66 | 1293920 | 499.21 | 1319483 | 440.45 | 1346650 | 385.36                        | 1375634 | 333.96 | 1406695 | 286.24 | 1440155 | 4.8 |
| 5.4                                                                                                                               | 560.38 | 1294416 | 498.00 | 1320010 | 439.31 | 1347211 | 384.30                        | 1376234 | 332.97 | 1407340 | 285.32 | 1440851 | 4.6 |
| 5.6                                                                                                                               | 559.10 | 1294914 | 496.79 | 1320538 | 438.17 | 1347773 | 383.24                        | 1376834 | 331.98 | 1407985 | 284.41 | 1441548 | 4.4 |
| 5.8                                                                                                                               | 557.81 | 1295412 | 495.58 | 1321066 | 437.04 | 1348335 | 382.18                        | 1377436 | 331.00 | 1408632 | 283.49 | 1442247 | 4.2 |
| 6                                                                                                                                 | 556.53 | 1295910 | 494.38 | 1321595 | 435.91 | 1348898 | 381.12                        | 1378038 | 330.01 | 1409279 | 282.58 | 1442946 | 4   |
| 6.2                                                                                                                               | 555.25 | 1296409 | 493.17 | 1322124 | 434.77 | 1349462 | 380.06                        | 1378642 | 329.02 | 1409927 | 281.67 | 1443647 | 3.8 |
| 6.4                                                                                                                               | 553.98 | 1296909 | 491.97 | 1322655 | 433.64 | 1350027 | 379.00                        | 1379246 | 328.04 | 1410577 | 280.76 | 1444349 | 3.6 |
| 6.6                                                                                                                               | 552.70 | 1297409 | 490.77 | 1323185 | 432.52 | 1350593 | 377.95                        | 1379851 | 327.06 | 1411227 | 279.85 | 1445052 | 3.4 |
| 6.8                                                                                                                               | 551.42 | 1297910 | 489.56 | 1323717 | 431.39 | 1351159 | 376.89                        | 1380456 | 326.08 | 1411878 | 278.95 | 1445756 | 3.2 |
| 7                                                                                                                                 | 550.15 | 1298411 | 488.37 | 1324249 | 430.26 | 1351726 | 375.84                        | 1381063 | 325.10 | 1412531 | 278.04 | 1446461 | 3   |
| 7.2                                                                                                                               | 548.88 | 1298913 | 487.17 | 1324782 | 429.14 | 1352294 | 374.79                        | 1381671 | 324.12 | 1413184 | 277.14 | 1447168 | 2.8 |
| 7.4                                                                                                                               | 547.61 | 1299416 | 485.97 | 1325315 | 428.01 | 1352862 | 373.74                        | 1382279 | 323.15 | 1413838 | 276.24 | 1447875 | 2.6 |
| 7.6                                                                                                                               | 546.34 | 1299919 | 484.77 | 1325849 | 426.89 | 1353431 | 372.69                        | 1382888 | 322.17 | 1414493 | 275.33 | 1448584 | 2.4 |
| 7.8                                                                                                                               | 545.07 | 1300422 | 483.58 | 1326384 | 425.77 | 1354001 | 371.65                        | 1383498 | 321.20 | 1415149 | 274.44 | 1449294 | 2.2 |
| 8                                                                                                                                 | 543.81 | 1300927 | 482.39 | 1326920 | 424.65 | 1354572 | 370.60                        | 1384109 | 320.23 | 1415807 | 273.54 | 1450005 | 2   |
| 8.2                                                                                                                               | 542.54 | 1301432 | 481.20 | 1327456 | 423.54 | 1355143 | 369.56                        | 1384721 | 319.26 | 1416465 | 272.64 | 1450717 | 1.8 |
| 8.4                                                                                                                               | 541.28 | 1301937 | 480.01 | 1327992 | 422.42 | 1355715 | 368.52                        | 1385333 | 318.29 | 1417124 | 271.75 | 1451431 | 1.6 |
| 8.6                                                                                                                               | 540.02 | 1302443 | 478.82 | 1328530 | 421.31 | 1356288 | 367.48                        | 1385947 | 317.32 | 1417784 | 270.85 | 1452145 | 1.4 |
| 8.8                                                                                                                               | 538.76 | 1302950 | 477.63 | 1329068 | 420.19 | 1356862 | 366.44                        | 1386561 | 316.36 | 1418445 | 269.96 | 1452861 | 1.2 |
| 9                                                                                                                                 | 537.50 | 1303457 | 476.45 | 1329607 | 419.08 | 1357437 | 365.40                        | 1387177 | 315.39 | 1419108 | 269.07 | 1453578 | 1   |
| 9.2                                                                                                                               | 536.24 | 1303965 | 475.27 | 1330146 | 417.97 | 1358012 | 364.36                        | 1387793 | 314.43 | 1419771 | 268.18 | 1454296 | 0.8 |
| 9.4                                                                                                                               | 534.99 | 1304473 | 474.08 | 1330686 | 416.87 | 1358588 | 363.33                        | 1388410 | 313.47 | 1420435 | 267.29 | 1455016 | 0.6 |
| 9.6                                                                                                                               | 533.73 | 1304982 | 472.90 | 1331227 | 415.76 | 1359165 | 362.29                        | 1389028 | 312.51 | 1421100 | 266.41 | 1455736 | 0.4 |
| 9.8                                                                                                                               | 532.48 | 1305492 | 471.72 | 1331769 | 414.65 | 1359742 | 361.26                        | 1389646 | 311.55 | 1421767 | 265.52 | 1456458 | 0.2 |
| 10                                                                                                                                | 531.23 | 1306002 | 470.55 | 1332311 | 413.55 | 1360320 | 360.23                        | 1390266 | 310.60 | 1422434 | 264.64 | 1457181 | 0   |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A      | B       | ↑   |
|                                                                                                                                   | 50'    |         | 40'    |         | 30'    |         | 20'                           |         | 10'    |         | 0'     |         |     |
| 92°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |         |        |         |        |         |                               |         |        |         |        |         |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |         |        |         |        |         | B(α) = 10^6 * log (1 / cos α) |         |        |         |        |         |     |

| 88°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |       |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------|--------|---------|--------|---------|--------|---------|-------------------------------|---------|--------|---------|-------|---------|-----|
| ↓                                                                                                                                 | 0'     |         | 10'    |         | 20'    |         | 30'                           |         | 40'    |         | 50'   |         |     |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A     | B       |     |
| 0                                                                                                                                 | 264.64 | 1457181 | 222.36 | 1494955 | 183.77 | 1536335 | 148.85                        | 1582081 | 117.60 | 1633223 | 90.04 | 1691206 | 10  |
| 0.2                                                                                                                               | 263.76 | 1457905 | 221.56 | 1495745 | 183.03 | 1537204 | 148.19                        | 1583047 | 117.02 | 1634310 | 89.53 | 1692448 | 9.8 |
| 0.4                                                                                                                               | 262.88 | 1458630 | 220.75 | 1496537 | 182.30 | 1538075 | 147.53                        | 1584015 | 116.43 | 1635400 | 89.01 | 1693694 | 9.6 |
| 0.6                                                                                                                               | 262.00 | 1459357 | 219.95 | 1497330 | 181.57 | 1538948 | 146.87                        | 1584985 | 115.85 | 1636492 | 88.50 | 1694944 | 9.4 |
| 0.8                                                                                                                               | 261.12 | 1460085 | 219.14 | 1498124 | 180.84 | 1539822 | 146.21                        | 1585958 | 115.26 | 1637587 | 87.99 | 1696197 | 9.2 |
| 1                                                                                                                                 | 260.25 | 1460814 | 218.34 | 1498920 | 180.11 | 1540699 | 145.56                        | 1586932 | 114.68 | 1638685 | 87.49 | 1697454 | 9   |
| 1.2                                                                                                                               | 259.37 | 1461544 | 217.54 | 1499717 | 179.38 | 1541577 | 144.90                        | 1587909 | 114.10 | 1639786 | 86.98 | 1698714 | 8.8 |
| 1.4                                                                                                                               | 258.50 | 1462275 | 216.74 | 1500516 | 178.66 | 1542457 | 144.25                        | 1588888 | 113.52 | 1640889 | 86.47 | 1699979 | 8.6 |
| 1.6                                                                                                                               | 257.63 | 1463008 | 215.94 | 1501317 | 177.93 | 1543338 | 143.60                        | 1589869 | 112.95 | 1641995 | 85.97 | 1701246 | 8.4 |
| 1.8                                                                                                                               | 256.76 | 1463742 | 215.15 | 1502118 | 177.21 | 1544221 | 142.95                        | 1590853 | 112.37 | 1643105 | 85.47 | 1702518 | 8.2 |
| 2                                                                                                                                 | 255.89 | 1464477 | 214.35 | 1502922 | 176.49 | 1545107 | 142.30                        | 1591839 | 111.80 | 1644217 | 84.97 | 1703793 | 8   |
| 2.2                                                                                                                               | 255.02 | 1465214 | 213.56 | 1503726 | 175.77 | 1545994 | 141.66                        | 1592827 | 111.23 | 1645331 | 84.47 | 1705072 | 7.8 |
| 2.4                                                                                                                               | 254.16 | 1465951 | 212.77 | 1504533 | 175.05 | 1546882 | 141.01                        | 1593817 | 110.65 | 1646449 | 83.97 | 1706355 | 7.6 |
| 2.6                                                                                                                               | 253.30 | 1466690 | 211.98 | 1505340 | 174.33 | 1547773 | 140.37                        | 1594809 | 110.08 | 1647570 | 83.47 | 1707642 | 7.4 |
| 2.8                                                                                                                               | 252.43 | 1467430 | 211.19 | 1506149 | 173.62 | 1548665 | 139.73                        | 1595804 | 109.52 | 1648693 | 82.98 | 1708932 | 7.2 |
| 3                                                                                                                                 | 251.57 | 1468172 | 210.40 | 1506960 | 172.91 | 1549560 | 139.09                        | 1596801 | 108.95 | 1649819 | 82.49 | 1710227 | 7   |
| 3.2                                                                                                                               | 250.71 | 1468915 | 209.61 | 1507772 | 172.19 | 1550456 | 138.45                        | 1597800 | 108.38 | 1650949 | 81.99 | 1711525 | 6.8 |
| 3.4                                                                                                                               | 249.85 | 1469659 | 208.83 | 1508586 | 171.48 | 1551354 | 137.81                        | 1598802 | 107.82 | 1652081 | 81.50 | 1712827 | 6.6 |
| 3.6                                                                                                                               | 249.00 | 1470404 | 208.05 | 1509402 | 170.77 | 1552254 | 137.18                        | 1599806 | 107.26 | 1653216 | 81.02 | 1714133 | 6.4 |
| 3.8                                                                                                                               | 248.14 | 1471150 | 207.26 | 1510218 | 170.06 | 1553155 | 136.54                        | 1600812 | 106.70 | 1654354 | 80.53 | 1715443 | 6.2 |
| 4                                                                                                                                 | 247.29 | 1471898 | 206.48 | 1511037 | 169.36 | 1554059 | 135.91                        | 1601821 | 106.14 | 1655496 | 80.04 | 1716757 | 6   |
| 4.2                                                                                                                               | 246.44 | 1472647 | 205.71 | 1511857 | 168.65 | 1554965 | 135.28                        | 1602832 | 105.58 | 1656640 | 79.56 | 1718075 | 5.8 |
| 4.4                                                                                                                               | 245.59 | 1473398 | 204.93 | 1512678 | 167.95 | 1555872 | 134.65                        | 1603845 | 105.02 | 1657787 | 79.08 | 1719396 | 5.6 |
| 4.6                                                                                                                               | 244.74 | 1474150 | 204.15 | 1513501 | 167.25 | 1556781 | 134.02                        | 1604861 | 104.47 | 1658937 | 78.59 | 1720722 | 5.4 |
| 4.8                                                                                                                               | 243.89 | 1474903 | 203.38 | 1514326 | 166.55 | 1557692 | 133.39                        | 1605879 | 103.91 | 1660091 | 78.11 | 1722052 | 5.2 |
| 5                                                                                                                                 | 243.04 | 1475657 | 202.61 | 1515152 | 165.85 | 1558606 | 132.77                        | 1606899 | 103.36 | 1661247 | 77.64 | 1723386 | 5   |
| 5.2                                                                                                                               | 242.20 | 1476413 | 201.83 | 1515980 | 165.15 | 1559521 | 132.14                        | 1607922 | 102.81 | 1662407 | 77.16 | 1724725 | 4.8 |
| 5.4                                                                                                                               | 241.35 | 1477170 | 201.07 | 1516809 | 164.45 | 1560438 | 131.52                        | 1608947 | 102.26 | 1663569 | 76.68 | 1726067 | 4.6 |
| 5.6                                                                                                                               | 240.51 | 1477928 | 200.30 | 1517640 | 163.76 | 1561356 | 130.90                        | 1609975 | 101.72 | 1664735 | 76.21 | 1727413 | 4.4 |
| 5.8                                                                                                                               | 239.67 | 1478688 | 199.53 | 1518473 | 163.07 | 1562277 | 130.28                        | 1611005 | 101.17 | 1665904 | 75.74 | 1728764 | 4.2 |
| 6                                                                                                                                 | 238.83 | 1479449 | 198.76 | 1519307 | 162.37 | 1563200 | 129.66                        | 1612038 | 100.62 | 1667076 | 75.26 | 1730119 | 4   |
| 6.2                                                                                                                               | 238.00 | 1480211 | 198.00 | 1520143 | 161.68 | 1564125 | 129.04                        | 1613073 | 100.08 | 1668251 | 74.80 | 1731478 | 3.8 |
| 6.4                                                                                                                               | 237.16 | 1480975 | 197.24 | 1520980 | 160.99 | 1565052 | 128.43                        | 1614110 | 99.54  | 1669429 | 74.33 | 1732842 | 3.6 |
| 6.6                                                                                                                               | 236.33 | 1481740 | 196.48 | 1521819 | 160.31 | 1565980 | 127.81                        | 1615150 | 99.00  | 1670611 | 73.86 | 1734209 | 3.4 |
| 6.8                                                                                                                               | 235.49 | 1482506 | 195.72 | 1522659 | 159.62 | 1566911 | 127.20                        | 1616193 | 98.46  | 1671796 | 73.39 | 1735581 | 3.2 |
| 7                                                                                                                                 | 234.66 | 1483274 | 194.96 | 1523502 | 158.94 | 1567844 | 126.59                        | 1617238 | 97.92  | 1672984 | 72.93 | 1736958 | 3   |
| 7.2                                                                                                                               | 233.83 | 1484043 | 194.20 | 1524345 | 158.25 | 1568779 | 125.98                        | 1618286 | 97.39  | 1674175 | 72.47 | 1738338 | 2.8 |
| 7.4                                                                                                                               | 233.00 | 1484813 | 193.45 | 1525191 | 157.57 | 1569715 | 125.37                        | 1619336 | 96.85  | 1675370 | 72.01 | 1739724 | 2.6 |
| 7.6                                                                                                                               | 232.18 | 1485585 | 192.70 | 1526038 | 156.89 | 1570654 | 124.77                        | 1620388 | 96.32  | 1676567 | 71.55 | 1741113 | 2.4 |
| 7.8                                                                                                                               | 231.35 | 1486358 | 191.94 | 1526887 | 156.21 | 1571595 | 124.16                        | 1621443 | 95.79  | 1677769 | 71.09 | 1742507 | 2.2 |
| 8                                                                                                                                 | 230.53 | 1487133 | 191.19 | 1527737 | 155.54 | 1572538 | 123.56                        | 1622501 | 95.26  | 1678973 | 70.63 | 1743906 | 2   |
| 8.2                                                                                                                               | 229.70 | 1487909 | 190.44 | 1528590 | 154.86 | 1573483 | 122.96                        | 1623562 | 94.73  | 1680181 | 70.18 | 1745309 | 1.8 |
| 8.4                                                                                                                               | 228.88 | 1488686 | 189.70 | 1529443 | 154.19 | 1574430 | 122.36                        | 1624625 | 94.20  | 1681392 | 69.73 | 1746716 | 1.6 |
| 8.6                                                                                                                               | 228.06 | 1489465 | 188.95 | 1530299 | 153.51 | 1575379 | 121.76                        | 1625690 | 93.68  | 1682607 | 69.27 | 1748129 | 1.4 |
| 8.8                                                                                                                               | 227.24 | 1490245 | 188.20 | 1531156 | 152.84 | 1576330 | 121.16                        | 1626758 | 93.15  | 1683825 | 68.82 | 1749545 | 1.2 |
| 9                                                                                                                                 | 226.43 | 1491026 | 187.46 | 1532015 | 152.17 | 1577283 | 120.56                        | 1627829 | 92.63  | 1685046 | 68.37 | 1750967 | 1   |
| 9.2                                                                                                                               | 225.61 | 1491809 | 186.72 | 1532876 | 151.51 | 1578239 | 119.97                        | 1628903 | 92.11  | 1686271 | 67.93 | 1752393 | 0.8 |
| 9.4                                                                                                                               | 224.80 | 1492594 | 185.98 | 1533738 | 150.84 | 1579196 | 119.38                        | 1629979 | 91.59  | 1687500 | 67.48 | 1753824 | 0.6 |
| 9.6                                                                                                                               | 223.99 | 1493379 | 185.24 | 1534602 | 150.17 | 1580156 | 118.78                        | 1631057 | 91.07  | 1688732 | 67.04 | 1755259 | 0.4 |
| 9.8                                                                                                                               | 223.17 | 1494167 | 184.50 | 1535468 | 149.51 | 1581117 | 118.19                        | 1632139 | 90.55  | 1689967 | 66.59 | 1756700 | 0.2 |
| 10                                                                                                                                | 222.36 | 1494955 | 183.77 | 1536335 | 148.85 | 1582081 | 117.60                        | 1633223 | 90.04  | 1691206 | 66.15 | 1758145 | 0   |
|                                                                                                                                   | A      | B       | A      | B       | A      | B       | A                             | B       | A      | B       | A     | B       | ↑   |
|                                                                                                                                   | 50'    |         | 40'    |         | 30'    |         | 20'                           |         | 10'    |         | 0'    |         |     |
| 91°                                                                                                                               |        |         |        |         |        |         |                               |         |        |         |       |         |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |        |         |        |         |        |         |                               |         |        |         |       |         |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |        |         |        |         |        |         |                               |         |        |         |       |         |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |        |         |        |         |        |         | B(α) = 10^6 * log (1 / cos α) |         |        |         |       |         |     |

| 89°                                                                                                                               |       |         |       |         |       |         |                               |         |      |         |      |         |     |
|-----------------------------------------------------------------------------------------------------------------------------------|-------|---------|-------|---------|-------|---------|-------------------------------|---------|------|---------|------|---------|-----|
| ↓                                                                                                                                 | 0'    |         | 10'   |         | 20'   |         | 30'                           |         | 40'  |         | 50'  |         |     |
|                                                                                                                                   | A     | B       | A     | B       | A     | B       | A                             | B       | A    | B       | A    | B       |     |
| 0                                                                                                                                 | 66.15 | 1758145 | 45.94 | 1837319 | 29.40 | 1934224 | 16.54                         | 2059158 | 7.35 | 2235246 | 1.84 | 2536274 | 10  |
| 0.2                                                                                                                               | 65.71 | 1759595 | 45.57 | 1839060 | 29.11 | 1936401 | 16.32                         | 2062063 | 7.20 | 2239611 | 1.76 | 2545048 | 9.8 |
| 0.4                                                                                                                               | 65.27 | 1761049 | 45.20 | 1840807 | 28.81 | 1938588 | 16.10                         | 2064988 | 7.06 | 2244020 | 1.69 | 2554003 | 9.6 |
| 0.6                                                                                                                               | 64.83 | 1762509 | 44.84 | 1842562 | 28.52 | 1940787 | 15.88                         | 2067932 | 6.92 | 2248474 | 1.62 | 2563147 | 9.4 |
| 0.8                                                                                                                               | 64.40 | 1763974 | 44.48 | 1844324 | 28.24 | 1942997 | 15.67                         | 2070896 | 6.77 | 2252975 | 1.56 | 2572487 | 9.2 |
| 1                                                                                                                                 | 63.96 | 1765443 | 44.12 | 1846093 | 27.95 | 1945219 | 15.45                         | 2073881 | 6.63 | 2257522 | 1.49 | 2582032 | 9   |
| 1.2                                                                                                                               | 63.53 | 1766918 | 43.76 | 1847869 | 27.66 | 1947451 | 15.24                         | 2076886 | 6.49 | 2262118 | 1.42 | 2591792 | 8.8 |
| 1.4                                                                                                                               | 63.10 | 1768397 | 43.40 | 1849652 | 27.38 | 1949696 | 15.03                         | 2079913 | 6.36 | 2266763 | 1.36 | 2601776 | 8.6 |
| 1.6                                                                                                                               | 62.67 | 1769882 | 43.04 | 1851443 | 27.09 | 1951952 | 14.82                         | 2082960 | 6.22 | 2271458 | 1.30 | 2611995 | 8.4 |
| 1.8                                                                                                                               | 62.24 | 1771372 | 42.69 | 1853241 | 26.81 | 1954219 | 14.61                         | 2086030 | 6.09 | 2276205 | 1.24 | 2622460 | 8.2 |
| 2                                                                                                                                 | 61.81 | 1772866 | 42.34 | 1855047 | 26.53 | 1956499 | 14.41                         | 2089121 | 5.95 | 2281003 | 1.18 | 2633184 | 8   |
| 2.2                                                                                                                               | 61.39 | 1774367 | 41.98 | 1856860 | 26.25 | 1958791 | 14.20                         | 2092234 | 5.82 | 2285856 | 1.12 | 2644180 | 7.8 |
| 2.4                                                                                                                               | 60.96 | 1775872 | 41.63 | 1858681 | 25.98 | 1961095 | 14.00                         | 2095369 | 5.69 | 2290763 | 1.06 | 2655461 | 7.6 |
| 2.6                                                                                                                               | 60.54 | 1777382 | 41.28 | 1860509 | 25.70 | 1963411 | 13.79                         | 2098528 | 5.56 | 2295726 | 1.01 | 2667042 | 7.4 |
| 2.8                                                                                                                               | 60.12 | 1778898 | 40.94 | 1862346 | 25.43 | 1965739 | 13.59                         | 2101710 | 5.44 | 2300747 | 0.95 | 2678942 | 7.2 |
| 3                                                                                                                                 | 59.70 | 1780419 | 40.59 | 1864190 | 25.15 | 1968081 | 13.39                         | 2104915 | 5.31 | 2305827 | 0.90 | 2691176 | 7   |
| 3.2                                                                                                                               | 59.28 | 1781945 | 40.24 | 1866041 | 24.88 | 1970434 | 13.20                         | 2108143 | 5.19 | 2310966 | 0.85 | 2703765 | 6.8 |
| 3.4                                                                                                                               | 58.87 | 1783477 | 39.90 | 1867901 | 24.61 | 1972801 | 13.00                         | 2111397 | 5.06 | 2316167 | 0.80 | 2716730 | 6.6 |
| 3.6                                                                                                                               | 58.45 | 1785014 | 39.56 | 1869769 | 24.35 | 1975181 | 12.81                         | 2114674 | 4.94 | 2321432 | 0.75 | 2730094 | 6.4 |
| 3.8                                                                                                                               | 58.04 | 1786557 | 39.22 | 1871645 | 24.08 | 1977573 | 12.61                         | 2117977 | 4.82 | 2326760 | 0.71 | 2743882 | 6.2 |
| 4                                                                                                                                 | 57.62 | 1788105 | 38.88 | 1873529 | 23.81 | 1979979 | 12.42                         | 2121305 | 4.70 | 2332155 | 0.66 | 2758123 | 6   |
| 4.2                                                                                                                               | 57.21 | 1789659 | 38.54 | 1875421 | 23.55 | 1982399 | 12.23                         | 2124658 | 4.59 | 2337618 | 0.62 | 2772846 | 5.8 |
| 4.4                                                                                                                               | 56.80 | 1791218 | 38.21 | 1877322 | 23.29 | 1984832 | 12.04                         | 2128038 | 4.47 | 2343151 | 0.58 | 2788086 | 5.6 |
| 4.6                                                                                                                               | 56.40 | 1792783 | 37.87 | 1879231 | 23.03 | 1987278 | 11.85                         | 2131444 | 4.36 | 2348755 | 0.54 | 2803880 | 5.4 |
| 4.8                                                                                                                               | 55.99 | 1794353 | 37.54 | 1881148 | 22.77 | 1989739 | 11.67                         | 2134877 | 4.25 | 2354432 | 0.50 | 2820271 | 5.2 |
| 5                                                                                                                                 | 55.58 | 1795930 | 37.21 | 1883074 | 22.51 | 1992213 | 11.48                         | 2138338 | 4.13 | 2360184 | 0.46 | 2837304 | 5   |
| 5.2                                                                                                                               | 55.18 | 1797512 | 36.88 | 1885008 | 22.25 | 1994702 | 11.30                         | 2141826 | 4.02 | 2366014 | 0.42 | 2855033 | 4.8 |
| 5.4                                                                                                                               | 54.78 | 1799099 | 36.55 | 1886951 | 22.00 | 1997205 | 11.12                         | 2145342 | 3.92 | 2371922 | 0.39 | 2873516 | 4.6 |
| 5.6                                                                                                                               | 54.38 | 1800693 | 36.22 | 1888903 | 21.74 | 1999723 | 10.94                         | 2148888 | 3.81 | 2377913 | 0.36 | 2892821 | 4.4 |
| 5.8                                                                                                                               | 53.98 | 1802293 | 35.90 | 1890864 | 21.49 | 2002255 | 10.76                         | 2152462 | 3.70 | 2383987 | 0.32 | 2913025 | 4.2 |
| 6                                                                                                                                 | 53.58 | 1803898 | 35.57 | 1892833 | 21.24 | 2004802 | 10.58                         | 2156066 | 3.60 | 2390147 | 0.29 | 2934214 | 4   |
| 6.2                                                                                                                               | 53.18 | 1805509 | 35.25 | 1894812 | 20.99 | 2007364 | 10.41                         | 2159700 | 3.50 | 2396396 | 0.27 | 2956490 | 3.8 |
| 6.4                                                                                                                               | 52.79 | 1807127 | 34.93 | 1896799 | 20.74 | 2009942 | 10.23                         | 2163365 | 3.40 | 2402736 | 0.24 | 2979971 | 3.6 |
| 6.6                                                                                                                               | 52.40 | 1808750 | 34.61 | 1898796 | 20.50 | 2012534 | 10.06                         | 2167061 | 3.30 | 2409170 | 0.21 | 3004795 | 3.4 |
| 6.8                                                                                                                               | 52.01 | 1810380 | 34.29 | 1900802 | 20.25 | 2015143 | 9.89                          | 2170789 | 3.20 | 2415701 | 0.19 | 3031124 | 3.2 |
| 7                                                                                                                                 | 51.61 | 1812015 | 33.97 | 1902817 | 20.01 | 2017767 | 9.72                          | 2174549 | 3.11 | 2422332 | 0.17 | 3059153 | 3   |
| 7.2                                                                                                                               | 51.23 | 1813657 | 33.66 | 1904841 | 19.77 | 2020407 | 9.55                          | 2178342 | 3.01 | 2429065 | 0.14 | 3089116 | 2.8 |
| 7.4                                                                                                                               | 50.84 | 1815305 | 33.35 | 1906875 | 19.53 | 2023063 | 9.38                          | 2182169 | 2.92 | 2435904 | 0.12 | 3121301 | 2.6 |
| 7.6                                                                                                                               | 50.45 | 1816959 | 33.03 | 1908919 | 19.29 | 2025735 | 9.22                          | 2186029 | 2.83 | 2442853 | 0.11 | 3156063 | 2.4 |
| 7.8                                                                                                                               | 50.07 | 1818620 | 32.72 | 1910972 | 19.05 | 2028424 | 9.06                          | 2189924 | 2.73 | 2449915 | 0.09 | 3193851 | 2.2 |
| 8                                                                                                                                 | 49.69 | 1820287 | 32.41 | 1913035 | 18.82 | 2031130 | 8.89                          | 2193854 | 2.65 | 2457094 | 0.07 | 3235244 | 2   |
| 8.2                                                                                                                               | 49.30 | 1821961 | 32.10 | 1915108 | 18.58 | 2033853 | 8.73                          | 2197820 | 2.56 | 2464393 | 0.06 | 3281001 | 1.8 |
| 8.4                                                                                                                               | 48.92 | 1823640 | 31.80 | 1917191 | 18.35 | 2036593 | 8.57                          | 2201823 | 2.47 | 2471817 | 0.05 | 3332154 | 1.6 |
| 8.6                                                                                                                               | 48.55 | 1825327 | 31.49 | 1919284 | 18.12 | 2039350 | 8.41                          | 2205863 | 2.39 | 2479370 | 0.04 | 3390146 | 1.4 |
| 8.8                                                                                                                               | 48.17 | 1827020 | 31.19 | 1921387 | 17.89 | 2042125 | 8.26                          | 2209941 | 2.30 | 2487057 | 0.03 | 3457093 | 1.2 |
| 9                                                                                                                                 | 47.79 | 1828720 | 30.89 | 1923500 | 17.66 | 2044918 | 8.10                          | 2214057 | 2.22 | 2494882 | 0.02 | 3536274 | 1   |
| 9.2                                                                                                                               | 47.42 | 1830426 | 30.59 | 1925624 | 17.43 | 2047729 | 7.95                          | 2218213 | 2.14 | 2502851 | 0.01 | 3633184 | 0.8 |
| 9.4                                                                                                                               | 47.05 | 1832139 | 30.29 | 1927758 | 17.21 | 2050558 | 7.80                          | 2222409 | 2.06 | 2510969 | 0.01 | 3758123 | 0.6 |
| 9.6                                                                                                                               | 46.67 | 1833859 | 29.99 | 1929903 | 16.98 | 2053406 | 7.65                          | 2226646 | 1.99 | 2519241 | 0.00 | 3934214 | 0.4 |
| 9.8                                                                                                                               | 46.31 | 1835586 | 29.69 | 1932058 | 16.76 | 2056273 | 7.50                          | 2230925 | 1.91 | 2527674 | 0.00 | 4235244 | 0.2 |
| 10                                                                                                                                | 45.94 | 1837319 | 29.40 | 1934224 | 16.54 | 2059158 | 7.35                          | 2235246 | 1.84 | 2536274 | 0.00 | —       | 0   |
|                                                                                                                                   | A     | B       | A     | B       | A     | B       | A                             | B       | A    | B       | A    | B       | ↑   |
|                                                                                                                                   | 50'   |         | 40'   |         | 30'   |         | 20'                           |         | 10'  |         | 0'   |         |     |
| 90°                                                                                                                               |       |         |       |         |       |         |                               |         |      |         |      |         |     |
| When meridian angle, t, is greater than 90°, take K from bottom of table.                                                         |       |         |       |         |       |         |                               |         |      |         |      |         |     |
| Always take Z from bottom of table, except when K is same name and greater than latitude, in which case take Z from top of table. |       |         |       |         |       |         |                               |         |      |         |      |         |     |
| A(α) = 10^6 * log (1 / sin α)                                                                                                     |       |         |       |         |       |         | B(α) = 10^6 * log (1 / cos α) |         |      |         |      |         |     |