

CENTER FOR PHOTOGRAMMETRIC TRAINING FERRIS STATE UNIVERSITY

**SURE 340 – Photogrammetry
Homework #7**

Spring 2008/09

- Using the National Map Accuracy Standards as a basis, what is the accuracy threshold at the ground level for the following map scales (in feet and meters):

| | |
|-----------|----------|
| 1:500,000 | 1:12,000 |
| 1:100,000 | 1:4,800 |
| 1:62,500 | 1:2,400 |
| 1:24,000 | 1:1,200 |

- For those large-scale maps (larger than 1:20,000) how do your calculations compare to the ASPRS Large-Scale Map Accuracy Standards?
- Given the following horizontal data, compute the NSSDA:

| Point number | x Survey (m) | x Map (m) | y Survey (m) | y Map(m) |
|--------------|--------------|-----------|--------------|----------|
| 1 | 178247.28 | 178247.36 | 48326.08 | 48326.14 |
| 2 | 178249.23 | 178249.16 | 48287.23 | 48287.17 |
| 3 | 178456.79 | 178456.72 | 48337.41 | 48337.28 |
| 4 | 178715.82 | 178715.87 | 48542.51 | 48542.54 |
| 5 | 179047.54 | 179047.64 | 48657.39 | 48657.44 |
| 6 | 179227.78 | 179227.79 | 48336.18 | 48336.15 |
| 7 | 179238.56 | 179238.68 | 48671.46 | 48671.48 |
| 8 | 180257.36 | 180257.38 | 48337.97 | 48337.97 |
| 9 | 180426.36 | 180426.35 | 48445.00 | 48444.92 |
| 10 | 180568.35 | 180568.47 | 48523.69 | 48523.70 |
| 11 | 180680.73 | 180680.77 | 48275.08 | 48274.98 |
| 12 | 180676.31 | 180676.37 | 48413.09 | 48413.16 |
| 13 | 180654.46 | 180654.46 | 47955.06 | 47954.99 |
| 14 | 180843.48 | 180843.55 | 48505.39 | 48505.55 |
| 15 | 181338.97 | 181339.10 | 48313.10 | 48313.25 |
| 16 | 181283.20 | 181283.24 | 48174.06 | 48174.06 |
| 17 | 181075.07 | 181075.08 | 48171.74 | 48171.64 |
| 18 | 181495.79 | 181495.84 | 48043.41 | 48043.50 |
| 19 | 181679.58 | 181679.58 | 48242.78 | 48242.75 |
| 20 | 181673.86 | 181673.81 | 48579.53 | 48579.69 |

4. Given the following vertical data, compute the NSSDA:

| Point number | Z Survey (ft.) | Z Map (ft.) |
|--------------|----------------|-------------|
| 101 | 1194.50 | 1194.70 |
| 102 | 970.60 | 970.93 |
| 103 | 1193.50 | 1193.95 |
| 104 | 1012.30 | 1011.81 |
| 105 | 1198.30 | 1198.33 |
| 106 | 1161.80 | 1161.99 |
| 107 | 1167.80 | 1168.46 |
| 108 | 1103.20 | 1102.97 |
| 109 | 994.40 | 994.47 |
| 110 | 923.70 | 923.77 |
| 111 | 981.30 | 981.56 |
| 112 | 1576.30 | 1576.72 |
| 113 | 975.20 | 975.85 |
| 114 | 1071.10 | 1071.08 |
| 115 | 1169.90 | 1169.96 |
| 116 | 1243.70 | 1244.04 |
| 117 | 967.30 | 967.89 |
| 118 | 854.00 | 855.26 |
| 119 | 1151.00 | 1151.09 |
| 120 | 1196.59 | 1196.76 |

5. Using the data in question #4 and the Engineering Map Accuracy Standards by ASCE, compute the
- Limiting Standard Error
 - Limiting Mean Absolute Error (Mean Deviation)