

**MAP ACCURACY REPORT**  
**Countywide Imagery & DEM**  
**Blue Earth County**

<b>Data Contact Person:</b>	Charles Berg	<b>Department:</b>	IT Office
<b>Type of Mapping:</b>	DEM (LiDAR) & Ortho	<b>Contractor:</b>	Optimal Geomatics, Inc.
<b>Independent Testing:</b>	Mn/DOT Photo Unit	<b>Contract Delivery date:</b>	7 Dec. 2005

The purpose of this report is to independently test orthophotos and LiDAR derived digital elevation model data that was contracted for by Blue Earth County. This project consisted of flights flown on 13 & 14 April 2005 for aerial acquisition and on 13, 14, 15, 23 & 24 April 2005 using Light Detection and Ranging (LiDAR) and GPS/IMU technologies. The photographic flights were controlled using ground targets and by the GPS/IMU equipment onboard the aircraft. The specific equipment used for the aerial imagery collection was a Cessna 208B Grand Caravan plane, a Leica RC30 camera, serial number 5296, calibration date 27 March 2003. For the aerial-triangulation, ISAT software was used and for the measurement and production a Z/I ImageStation softcopy stereoplotter. The specific equipment used for the DEM acquisition was the same plane with an Optech 3100 ALTM 70 kHz. laser system and Realm Terrascan (Terrasolid), Geocue (NIIRS10) Survey processing software. The preflight mission was scheduled so that photography and LiDAR were collected on the same mission and flown at 1836 meters AGL. The flights were controlled using Trimble GPS receivers on the ground and by LN200 GPS/IMU equipment in the aircraft. Optimal Geomatics, Inc., formally known as MD Atlantic Technologies, Inc. before delivery, eliminated that portion of the data set that did not come in contact with the ground surface. There was no additional file manipulation or filtering done by Blue Earth County or Mn/Dot.

The vertical Datum used was the North American Vertical Datum of 1988 (NAVD 88) and the Horizontal Datum used was the North American Datum of 1983 (NAD 83). The products were delivered in the Blue Earth County Coordinate System, NAD 83 (1996 adj.) The Geoid model used was the GEOID 03. This LiDAR portion of the project was approximately 506,695 acres in area.

**ORTHOPHOTO**

EAST BOUNDING COORDINATE: 93° 45' 46.80799" W. Long.  
WEST BOUNDING COORDINATE: 94° 22' 24.79958" W. Long.  
NORTH BOUNDING COORDINATE: 44° 16' 13.56407" N. Lat.  
SOUTH BOUNDING COORDINATE: 43° 50' 39.16066" N. Lat.

**DEM**

EAST BOUNDING COORDINATE: 93° 45' 51.92557" W. Long.  
WEST BOUNDING COORDINATE: 94° 22' 24.78657" W. Long.  
NORTH BOUNDING COORDINATE: 44° 16' 07.11676" N. Lat.  
SOUTH BOUNDING COORDINATE: 43° 50' 42.96403" N. Lat.

Geodetic monumentation used to control this project was published by Mn/DOT and can be found in the geodetic database online at [www.olmweb.dot.state.mn.us](http://www.olmweb.dot.state.mn.us). Optimal Geomatics, Inc., its consultant, Bolton & Menk and Mn/DOT's District 7 Surveys report using the monumentation that is labeled as the Blue Earth County Ground Control Point List and is part of this report. In addition 2 CORS stations *MKTO* & *LESU* were used.

Optimal Geomatics, Inc. delivered the LiDAR and ortho-photos on a portable hard drive in MicroStation V8 format and the transmittal. The tiling scheme maps for both products are included as part of electronic file package.

The overall project area encompasses the entire county with flight strips extended to include the City of North Mankato. This additional data had not been processed and was not part of what Mn/DOT was asked to test.

The vertical accuracy test done for the DEM portion of this project were a direct comparison of the field surveyed elevations and the elevations derived from Geopak TIN model created from the LiDAR data at the surveyed X,Y coordinates. The contract called for 3.6' or 1.10m pre-process spacing as a deliverable product.

The horizontal accuracy test done on the orthophotos were a direct comparison of field surveyed features on the ground, such as sidewalk intersections, to the closest pixel location that an experienced technician could find. There is a certain amount of personal bias involved in this type of testing, knowing this, when the operator selected a pixel that was outside of the norm, a second technician was asked to see if they could replicate the results. The contract called for a 1" = 200 feet, 6" pixel size orthophoto to National Map Accuracy Standard (NMAS). The NMAS was and often is still used as the standard for testing hard copy or paper maps, where as digital data is tested against the current National Standard for Spatial Data Accuracy (NSSDA). The NSSDA for the horizontal (R) component or the combined X and Y coordinate for this project are:

<u>Photo Identifiable Points</u>	<u>RMSE<sub>r</sub></u>	<u>NSSDA (Horizontal)</u>
Urban Areas Only	0.61'	1.06' with 43 points

The test data was obtained by District 7 Survey personnel throughout the project area encompassing different ground cover types per the American Society for Photogrammetry and Remote Sensing (ASPRS) Guidelines for Vertical Accuracy Reporting for LiDAR Data, May 2004. The test data itself was collected by RTK methods and each test point was collected twice to ensure that the independent test source was at least 3 times as accurate. The MultShot program was utilized for comparing the two independent test points and is a part of this report. When applying the test data to the elevation model produced the accuracy test results indicated below. In addition, Mn/DOT had several projects that were scheduled for surveys within Blue Earth County at the time of photography or shortly after and these projects were for US 14 between Mankato and Eagle Lake, TH 30 in Mapleton and the Mn/DOT Truck Station at the southeast edge of Mapleton. Survey information from two of these projects were collected by consultants and although Mn/DOT contract specifications require the same survey collection procedures, the documentation is in the form of proprietary survey files and are attached to this report. Although the test points were not as widely distributed as the horizontal test points they do give the user two specific examples of the performance of the DEM in rural and urban areas, these two cover types along with hydraulic features were the main concerns by county employees.

The National Standard for Spatial Data Accuracy (NSSDA) for the vertical (Z) component of the DEM by ground cover/type for this project is:

<u>Ground Cover/Type</u>	<u>NSSDA (Vertical)</u>	<u>Chi Square Test Pass / Fail</u>
Open Terrain – L1O	0.78' with 203 points.	Pass
Tall Weeds & Crops – L2T	0.82' with 41 points.	Pass
Brush Lands & Low Trees – L3B	0.55' with 13 points.	Pass
Forested Areas with Canopy – L4F	Not Tested	N/A
Urban Areas with Structures – L5U	0.64' with 93 points.	Pass
All Ground Cover	0.79' with 350 points.	Pass

The horizontal accuracy of the DEM was not tested as part of this project due to the fact that the model does not contain distinct or well-defined topographical features but the expected horizontal accuracy as stated by the laser manufacturer is 1/2000<sup>th</sup> of the flying height which calculates to 3.0 feet. The outcome of the vertical testing results suggests that the horizontal accuracy is better than that claimed by the manufacturer.

The tabulated test results, correspondence, related notes and hard copies are attached to this report.

Peter Jenkins, LS  
 Minnesota Department of Transportation  
 395 John Ireland Boulevard, MS 640  
 St. Paul, MN 55155

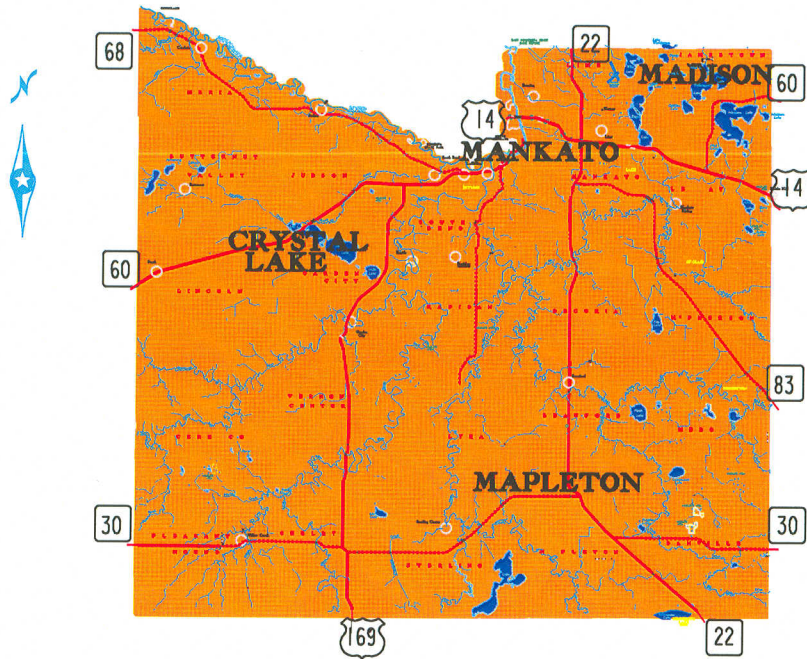
Phone: (651) 296-1079  
 e-mail: [peter.jenkins@dot.state.mn.us](mailto:peter.jenkins@dot.state.mn.us)

I HEREBY CERTIFY THAT THIS SURVEY, PLAN OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MINNESOTA.

*Peter W. Jenkins*

PETER W. JENKINS

DATE 11 AUG 06 REG. NO. 22683



MAP DATUM

The vertical datum of the TIN file associated with this map is based on the North American Vertical Datum of 1988 (NAVD 88).

The horizontal datum of this map is based on Blue Earth county coordinate system which is related to the Minnesota state plane coordinate system NAD 1983 (HARN 1996) adjustment south zone.

MAP ACCURACY

The vertical accuracy of the TIN file associated with this map has been tested using NSSDA (June 1998) methods and computes to 0.79 FT. based on 350 test elevations.

The horizontal accuracy of the Orthophoto has been tested using NSSDA (June 1998) methods and computes to 1.06 FT. based on 43 test points.

S. P. : BLUE EARTH LIDAR  
 T.H. : 169  
 COLLECTION DATE : 13-24 April 2005  
 LOCATION : BLUE EARTH COUNTY LIDAR  
 MAPPING : LIDAR  
 CONSULTANT MAPPING : YES  
 MAPPING COMPLETED : 7 December 2005  
 ARCHIVE INFO : (651) 296-1081  
 ARCHIVE TAPE : J:\ARC\LIDAR\ 2005F\ BLUE EARTH LIDAR

MEMORANDUM OF UNDERSTANDING  
between  
MINNESOTA DEPARTMENT OF TRANSPORTATION  
and  
BLUE EARTH COUNTY

WHEREAS, the Minnesota Department of Transportation (Mn/DOT) and Blue Earth County wish to enter into agreement to exchange services with respect to County wide digital orthophotography and LiDAR derived digital elevation model (DEM) in Blue Earth County.

NOW, THEREFORE, Mn/DOT and Blue Earth County state the following:

1. This Memorandum of Understanding (MOU) is not a binding agreement, and any binding obligation will be made with written, properly executed and approved agreements.
2. Blue Earth County will provide Mn/DOT with a copy of the digital data that the county acquired in the spring of 2005 by Optimal Geomatics, Inc.
3. A meeting will be scheduled that include representative from Mn/DOT's Photogrammetric Unit, District Seven and Blue Earth County to decide the number and location of survey shots that are necessary to adequately test the orthophotography. (approximately 40 to 80 shots will be needed)
4. Mn/DOT will do the surveying and processing of these test shots and will be collected using the ASPRS Vertical Accuracy Reporting Guidelines.
5. A sample of Mn/DOT's Map Accuracy Report will be shown to Blue Earth County for their approval.
6. Mn/DOT will do the accuracy testing and write a report detailing the outcome of the test shots. A copy of the report will be provided to Blue Earth County in any format requested.
7. The digital data provided by the County was developed pursuant to Minnesota Statutes §375.85. Mn/DOT is a licensee of such data only, and will have no ownership interest in the data. Pursuant to Minnesota Statutes §§375.86 and 13.37 (subd. 2), such data is classified as non-public "trade secret data". Mn/DOT will not disclose such data unless otherwise required by law or court order.

BLUE EARTH COUNTY

By: Dennis Mulby  
County Administrator

Date: 3-30-06

MINNESOTA DEPARTMENT OF  
TRANSPORTATION

By: Peter Jenkins

Peter Jenkins  
Photogrammetric Engineer

Date: 6 APR 06

Point Number	Point Description	X From Survey	Y From Survey	X From Map	Difference in X	X-Difference Squared	Y From Map	Difference in Y	Y-Difference Squared	X-Diff. Sq. + Y-Diff. Sq.
8001		488420.00	241896.89	488419.73	0.27	0.07	241896.64	0.25	0.06	0.14
8003		510583.45	191520.48	510583.48	-0.03	0.00	191520.72	-0.24	0.06	0.06
8007		525256.88	142117.98	525257.06	-0.18	0.03	142117.25	0.73	0.54	0.57
8008		526115.18	141077.80	526114.29	0.89	0.80	141077.58	0.22	0.05	0.84
8009		526809.62	142146.25	526808.33	1.29	1.66	142146.41	-0.16	0.03	1.69
8010		525618.15	142288.05	525618.69	-0.54	0.29	142288.07	-0.02	0.00	0.29
8012		527958.59	114515.27	527958.98	-0.39	0.15	114515.84	-0.57	0.32	0.47
8014		580453.16	128187.06	580453.27	-0.11	0.01	128186.77	0.29	0.08	0.10
8015		627112.53	158641.28	627112.27	0.26	0.07	158640.82	0.46	0.21	0.28
8016		626773.62	159256.07	626773.20	0.42	0.17	159256.26	-0.19	0.03	0.21
8017		581149.64	158484.26	581150.25	-0.61	0.38	158484.16	0.10	0.01	0.39
8018		552657.72	157303.00	552657.04	0.68	0.46	157303.73	-0.73	0.54	1.00
8019		551419.05	157604.43	551418.35	0.70	0.48	157604.82	-0.39	0.15	0.64
8020		540576.66	188799.30	540576.65	0.01	0.00	188799.83	-0.53	0.29	0.29
8021		551896.35	191568.56	551895.38	0.97	0.94	191569.03	-0.46	0.22	1.16
8022		608457.95	184094.85	608458.50	-0.55	0.31	184094.62	0.23	0.05	0.36
8024		630858.64	205744.39	630858.49	0.15	0.02	205744.53	-0.14	0.02	0.04
8027		600670.43	217276.42	600669.67	0.76	0.58	217276.50	-0.08	0.01	0.58
8028		600415.72	212477.10	600416.40	-0.68	0.46	212476.87	0.23	0.05	0.52
8030		590249.29	236523.88	590248.26	1.03	1.06	236523.72	0.16	0.02	1.08
8031		581172.63	224049.30	581173.13	-0.50	0.25	224048.97	0.33	0.11	0.36
8032		545084.75	209380.63	545085.12	-0.37	0.14	209380.89	-0.26	0.07	0.21
8033		552023.92	212003.73	552024.09	-0.16	0.03	212004.11	-0.38	0.15	0.17
8034		560303.87	212926.34	560303.26	0.61	0.37	212926.80	-0.46	0.21	0.58
8037		567912.05	195147.01	567911.91	0.14	0.02	195146.73	0.28	0.08	0.10
8039		568883.71	226026.42	568884.51	-0.80	0.64	226026.15	0.27	0.07	0.71
8040		574386.54	222834.67	574385.72	0.83	0.68	222834.91	-0.24	0.06	0.74
8041		576685.83	218272.49	576686.01	-0.18	0.03	218271.99	0.50	0.25	0.28
8042		577887.43	213745.23	577887.53	-0.10	0.01	213745.34	-0.11	0.01	0.02
8044		580156.50	212447.94	580156.55	-0.05	0.00	212448.31	-0.36	0.13	0.14
8045		581806.65	219111.32	581806.30	0.35	0.12	219111.81	-0.49	0.24	0.36
8111		499512.67	117115.41	499512.57	0.10	0.01	117115.37	0.04	0.00	0.01
8135		561528.17	207162.10	561528.18	-0.01	0.00	207162.08	0.02	0.00	0.00
8136		565008.29	202966.17	565008.04	0.25	0.06	202966.34	-0.16	0.03	0.09
8143		574649.04	208750.26	574648.62	0.42	0.18	208750.68	-0.42	0.17	0.35

Point Number	Point Description	X From Survey	Y From Survey	X From Map	Difference in X	X-Difference Squared	Y From Map	Difference in Y	Y-Difference Squared	X-Diff. Sq. + Y-Diff. Sq.
8201		564843.48	203213.50	564843.52	-0.04	0.00	203213.21	0.29	0.08	0.09
8203		561334.70	207005.63	561335.16	-0.46	0.21	207005.32	0.31	0.10	0.30
8205		572919.46	215793.94	572919.77	-0.31	0.10	215793.72	0.22	0.05	0.15
8206		573120.52	215811.43	573120.51	0.01	0.00	215811.82	-0.39	0.15	0.15
8207		574649.04	208723.38	574648.62	0.42	0.18	208723.07	0.31	0.10	0.28
8209		499423.06	117191.13	499423.21	-0.15	0.02	117191.09	0.04	0.00	0.02
8210		613307.86	101061.49	613307.91	-0.05	0.00	101061.49	0.00	0.00	0.00
8211		613616.35	100782.30	613616.53	-0.18	0.03	100781.78	0.52	0.27	0.30

Sum	16.10
Average	0.37
RMSEr	0.61
NSSDA	1.06

43 Total Number of Points

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
82	L2T	995.09	995.51	-0.42	0.18
90	L1O	996.10	996.40	-0.31	0.09
73	L1O	1015.22	1015.17	0.05	0.00
74	L1O	1016.27	1016.67	-0.40	0.16
76	L1O	1012.72	1012.89	-0.16	0.03
80	L1O	1013.99	1013.96	0.03	0.00
81	L1O	1009.08	1008.86	0.22	0.05
111	L1O	1013.09	1013.27	-0.19	0.03
139	L3B	1013.02	1012.93	0.09	0.01
77	L1O	1007.17	1007.35	-0.18	0.03
78	L1O	1010.83	1010.78	0.06	0.00
79	L1O	1012.74	1012.65	0.09	0.01
89	L1O	1011.90	1012.13	-0.24	0.06
94	L1O	1009.56	1009.68	-0.12	0.01
95	L2T	1011.33	1011.33	-0.01	0.00
96	L1O	1007.39	1007.53	-0.14	0.02
141	L1O	1006.19	1006.35	-0.16	0.03
86	L1O	1005.91	1006.02	-0.11	0.01
87	L1O	1003.91	1004.24	-0.34	0.11
88	L1O	1008.06	1008.41	-0.35	0.12
91	L2T	1000.18	1000.48	-0.30	0.09
92	L3B	1002.02	1002.10	-0.08	0.01
93	L3B	1005.03	1005.36	-0.33	0.11
83	L1O	995.63	995.91	-0.28	0.08
84	L1O	1004.23	1004.21	0.02	0.00
85	L1O	1003.52	1003.72	-0.20	0.04
50	L3B	1010.42	1010.36	0.06	0.00
51	L1O	1006.16	1006.33	-0.16	0.03
52	L3B	1007.08	1007.05	0.03	0.00
53	L1O	1010.19	1010.26	-0.08	0.01
68	L1O	1017.58	1017.67	-0.09	0.01
69	L1O	1019.40	1019.69	-0.29	0.09
70	L1O	1015.50	1015.76	-0.26	0.07
110	L1O	1017.85	1018.27	-0.42	0.17
71	L1O	1006.82	1007.18	-0.36	0.13
72	L1O	1009.47	1009.76	-0.29	0.08
75	L1O	1014.33	1014.07	0.25	0.06
138	L2T	1008.71	1009.10	-0.39	0.15
140	L1O	1009.67	1009.89	-0.22	0.05
107	L2T	1009.72	1010.11	-0.39	0.15
108	L2T	1002.32	1002.19	0.13	0.02
109	L2T	1009.23	1009.33	-0.09	0.01
97	L1O	1008.90	1009.02	-0.13	0.02
102	L3B	1004.72	1004.86	-0.14	0.02
103	L2T	1011.16	1011.42	-0.25	0.06
112	L1O	1014.01	1014.17	-0.16	0.03
104	L2T	996.30	996.39	-0.09	0.01
105	L1O	1001.10	1000.84	0.25	0.06
133	L2T	994.86	995.01	-0.15	0.02
99	L2T	1010.38	1010.68	-0.30	0.09

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
100	L2T	998.54	998.78	-0.24	0.06
101	L1O	998.21	998.46	-0.25	0.06
142	L1O	996.97	997.24	-0.28	0.08
132	L1O	1004.18	1004.58	-0.40	0.16
98	L1O	989.07	989.48	-0.41	0.16
41	L1O	996.03	995.99	0.04	0.00
42	L1O	1002.03	1002.26	-0.23	0.05
47	L1O	994.57	994.53	0.05	0.00
46	L1O	1010.54	1010.61	-0.07	0.00
48	L1O	1002.80	1002.71	0.09	0.01
49	L3B	1012.85	1013.08	-0.22	0.05
45	L3B	1005.59	1005.48	0.11	0.01
56	L2T	981.90	981.86	0.04	0.00
66	L1O	992.76	992.97	-0.21	0.04
114	L2T	1011.71	1011.88	-0.17	0.03
115	L1O	1010.34	1010.23	0.11	0.01
54	L1O	1009.42	1009.79	-0.38	0.14
55	L1O	1009.69	1010.32	-0.62	0.39
65	L1O	1011.82	1011.91	-0.09	0.01
67	L1O	1012.21	1012.47	-0.26	0.07
113	L2T	1008.50	1008.85	-0.35	0.12
119	L1O	1010.06	1010.14	-0.07	0.01
120	L2T	1007.35	1007.48	-0.12	0.02
118	L1O	1007.63	1008.11	-0.48	0.23
121	L1O	993.96	993.97	-0.01	0.00
130	L1O	1004.01	1004.19	-0.18	0.03
131	L1O	1012.31	1012.70	-0.39	0.16
136	L2T	991.81	992.89	-1.08	1.18
137	L2T	1014.12	1014.27	-0.14	0.02
122	L1O	1007.02	1007.29	-0.27	0.07
123	L2T	999.60	999.60	0.00	0.00
127	L1O	1002.74	1002.78	-0.04	0.00
128	L1O	1007.79	1008.07	-0.28	0.08
129	L1O	999.21	999.73	-0.52	0.27
135	L2T	992.55	992.95	-0.41	0.17
126	L1O	997.39	997.89	-0.49	0.24
134	L2T	990.84	991.55	-0.71	0.50
30	L1O	969.30	969.26	0.04	0.00
31	L1O	1009.14	1009.13	0.02	0.00
32	L5U	1012.04	1011.94	0.10	0.01
35	L2T	965.74	965.77	-0.03	0.00
36	L1O	999.02	998.94	0.08	0.01
37	L2T	962.12	962.48	-0.37	0.13
39	L5U	1003.43	1003.92	-0.49	0.24
38	L5U	991.72	991.87	-0.15	0.02
40	L1O	1011.43	1011.55	-0.12	0.01
22	L3B	1004.27	1004.65	-0.38	0.14
33	L5U	1013.10	1013.00	0.09	0.01
43	L5U	1003.79	1003.68	0.12	0.01
59	L5U	1012.80	1012.92	-0.11	0.01
61	L2T	1004.73	1004.56	0.17	0.03



Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
64	L5U	1001.31	1001.33	-0.02	0.00
44	L5U	980.89	980.31	0.57	0.33
57	L3B	1014.99	1014.25	0.73	0.54
58	L5U	998.53	998.59	-0.06	0.00
62	L1O	1011.54	1011.52	0.02	0.00
63	L1O	1006.33	1006.52	-0.19	0.04
116	L1O	1002.01	1002.27	-0.26	0.07
117	L1O	1008.09	1007.95	0.13	0.02
14	L1O	987.43	987.44	-0.01	0.00
26	L2T	1015.78	1015.84	-0.06	0.00
27	L2T	1003.78	1004.29	-0.52	0.27
28	L1O	973.73	973.49	0.24	0.06
29	L1O	1016.16	1016.36	-0.20	0.04
9	L1O	1026.43	1026.47	-0.04	0.00
16	L1O	1024.01	1023.82	0.19	0.04
17	L1O	1025.62	1025.80	-0.18	0.03
18	L1O	1028.43	1028.28	0.15	0.02
23	L2T	996.82	996.79	0.03	0.00
19	L1O	1002.73	1002.84	-0.11	0.01
20	L1O	1019.54	1019.82	-0.29	0.08
21	L1O	994.87	994.78	0.09	0.01
24	L1O	994.26	994.67	-0.41	0.16
25	L1O	996.56	996.73	-0.17	0.03
34	L2T	989.44	989.44	0.00	0.00
60	L3B	994.12	994.03	0.09	0.01
1	L1O	1017.02	1017.17	-0.16	0.02
2	L1O	1006.52	1006.57	-0.05	0.00
3	L1O	1015.09	1015.05	0.03	0.00
13	L2T	993.25	993.26	-0.01	0.00
15	L2T	1025.83	1025.31	0.52	0.27
4	L1O	1008.30	1008.23	0.07	0.00
5	L2T	1003.72	1003.84	-0.12	0.01
6	L1O	1009.31	1009.51	-0.20	0.04
7	L1O	1033.86	1034.36	-0.50	0.25
8	L1O	1032.03	1032.00	0.03	0.00
10	L1O	1015.02	1015.09	-0.07	0.00
11	L1O	1029.07	1029.25	-0.18	0.03
12	L1O	1023.13	1023.22	-0.09	0.01
1004	L1O	1018.13	1018.76	-0.64	0.41
1002	L1O	1022.70	1023.13	-0.43	0.18
1003	L1O	1019.49	1019.99	-0.50	0.25
1005	L1O	1022.31	1022.73	-0.42	0.18
2008	L1O	1018.99	1019.53	-0.54	0.29
2009	L1O	1017.21	1017.47	-0.26	0.07
2010	L1O	1016.01	1016.58	-0.56	0.32
2011	L1O	1015.74	1016.14	-0.39	0.15
2012	L1O	1016.10	1016.61	-0.51	0.26
2013	L1O	1016.95	1017.57	-0.63	0.39
2014	L1O	1017.09	1017.62	-0.53	0.28
2015	L1O	1016.02	1016.48	-0.46	0.21
2016	L1O	1014.81	1015.51	-0.70	0.50
2017	L1O	1012.84	1013.39	-0.55	0.30

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
2018	L1O	1010.69	1011.22	-0.53	0.28
2019	L1O	1008.66	1009.20	-0.54	0.29
5004	L2T	1017.04	1017.47	-0.43	0.19
5005	L1O	1013.66	1014.22	-0.56	0.32
5006	L1O	1008.55	1009.47	-0.92	0.85
5008	L2T	1002.69	1003.53	-0.84	0.71
1001	L1O	1020.34	1020.87	-0.53	0.28
2000	L1O	1028.49	1028.85	-0.36	0.13
2001	L1O	1028.11	1028.44	-0.32	0.10
2002	L1O	1027.61	1028.03	-0.43	0.18
2003	L1O	1026.90	1027.34	-0.43	0.19
2004	L1O	1026.21	1026.46	-0.26	0.07
2005	L1O	1025.20	1025.64	-0.44	0.19
2006	L1O	1023.07	1023.56	-0.49	0.24
2007	L1O	1020.94	1021.52	-0.59	0.35
5002	L1O	1024.14	1024.46	-0.32	0.10
5003	L1O	1024.52	1025.55	-1.04	1.07
1009	L5U	1021.63	1022.11	-0.48	0.23
1012	L1O	1036.77	1037.05	-0.28	0.08
5001	L1O	1030.44	1030.44	0.00	0.00
5013	L5U	1033.53	1034.44	-0.92	0.84
1007	L2T	1019.66	1020.13	-0.47	0.22
5009	L2T	1001.62	1002.36	-0.74	0.55
1010	L1O	1003.62	1004.22	-0.60	0.36
1011	L1O	1037.49	1037.86	-0.38	0.14
2033	L1O	1019.17	1020.09	-0.93	0.86
2034	L1O	1020.23	1020.96	-0.73	0.53
2035	L1O	1021.51	1022.03	-0.52	0.27
2036	L1O	1025.37	1025.77	-0.40	0.16
2037	L1O	1032.85	1033.26	-0.41	0.17
2038	L1O	1034.92	1035.34	-0.42	0.18
2040	L1O	1035.34	1035.83	-0.49	0.24
2041	L1O	1036.05	1036.60	-0.55	0.30
2042	L1O	1036.87	1037.45	-0.58	0.34
2043	L1O	1037.76	1038.26	-0.50	0.25
2044	L1O	1038.49	1038.87	-0.38	0.15
2045	L1O	1039.21	1039.55	-0.35	0.12
5011	L1O	1013.38	1013.95	-0.57	0.32
5012	L5U	1019.98	1020.37	-0.39	0.16
8509	L1O	1038.93	1039.36	-0.43	0.19
8510	L5U	1037.96	1038.34	-0.38	0.14
8511	L5U	1036.92	1037.27	-0.35	0.12
8512	L5U	1036.67	1037.21	-0.54	0.29
8513	L5U	1035.84	1036.19	-0.35	0.13
8514	L5U	1034.60	1035.13	-0.52	0.27
8515	L5U	1033.84	1034.35	-0.51	0.26
8516	L5U	1033.68	1034.22	-0.54	0.29
8517	L5U	1026.25	1026.32	-0.07	0.01
8518	L1O	1023.61	1023.92	-0.31	0.10
8519	L1O	1020.09	1020.64	-0.55	0.30
8520	L5U	1020.59	1021.10	-0.52	0.27
8521	L1O	1020.53	1021.14	-0.60	0.36

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
1006	L1O	1005.35	1005.94	-0.59	0.35
1008	L2T	1003.06	1003.63	-0.57	0.33
2020	L1O	1006.87	1007.34	-0.47	0.22
2021	L1O	1005.72	1006.00	-0.28	0.08
2022	L1O	1005.71	1006.15	-0.44	0.20
2023	L1O	1005.46	1006.18	-0.72	0.52
2024	L1O	1004.40	1004.87	-0.47	0.22
2025	L1O	1004.65	1005.22	-0.57	0.33
2026	L1O	1004.55	1005.05	-0.50	0.25
2027	L1O	1004.95	1005.55	-0.60	0.36
2028	L1O	1006.01	1006.78	-0.77	0.59
2029	L1O	1008.16	1008.60	-0.44	0.19
2030	L1O	1011.18	1011.79	-0.61	0.38
2031	L1O	1014.74	1015.48	-0.73	0.54
2032	L1O	1016.92	1017.21	-0.29	0.08
5010	L1O	1008.84	1009.18	-0.34	0.11
8522	L1O	1011.97	1012.47	-0.50	0.25
8523	L2T	1016.31	1016.60	-0.29	0.08
8525	L2T	1018.08	1018.39	-0.31	0.10
1017	L1O	1025.07	1025.36	-0.29	0.09
5021	L1O	1023.71	1024.40	-0.69	0.47
1013	L1O	1032.60	1035.07	-2.47	6.11
5018	L1O	1034.83	1035.07	-0.23	0.05
1015	L1O	1029.91	1030.35	-0.44	0.19
1016	L2T	1021.82	1022.47	-0.64	0.41
2059	L1O	1033.40	1033.89	-0.49	0.24
2060	L1O	1032.95	1033.39	-0.44	0.19
2061	L1O	1031.18	1031.52	-0.35	0.12
2062	L1O	1028.24	1028.63	-0.40	0.16
2063	L1O	1026.09	1026.57	-0.48	0.23
2064	L1O	1025.73	1026.26	-0.53	0.28
2065	L1O	1026.03	1026.57	-0.54	0.29
2066	L1O	1026.42	1027.16	-0.75	0.56
2067	L1O	1025.94	1026.61	-0.67	0.45
2068	L1O	1026.30	1026.85	-0.54	0.30
2069	L1O	1028.33	1028.76	-0.43	0.18
2070	L1O	1029.82	1030.35	-0.53	0.28
5019	L2T	1022.46	1023.21	-0.75	0.56
5020	L1O	1022.14	1022.82	-0.67	0.45
5022	L2T	1020.68	1021.37	-0.69	0.48
1014	L1O	1026.24	1026.60	-0.36	0.13
2046	L1O	1037.97	1038.33	-0.36	0.13
2047	L1O	1036.79	1037.42	-0.64	0.41
2048	L1O	1037.29	1037.63	-0.34	0.11
2049	L1O	1039.07	1039.56	-0.49	0.24
2050	L1O	1036.86	1037.35	-0.49	0.24
2051	L1O	1036.34	1036.74	-0.41	0.17
2052	L1O	1036.15	1036.65	-0.51	0.26
2053	L1O	1034.86	1035.13	-0.27	0.08
2054	L1O	1031.62	1031.93	-0.31	0.09
2055	L1O	1030.75	1031.19	-0.45	0.20
2056	L1O	1031.12	1031.48	-0.36	0.13

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
2057	L1O	1033.23	1033.94	-0.72	0.51
2058	L1O	1032.90	1033.50	-0.60	0.36
5016	L5U	1036.20	1036.58	-0.38	0.14
5017	L1O	1031.54	1031.83	-0.29	0.09
8501	L5U	1033.92	1034.28	-0.36	0.13
8502	L5U	1030.66	1031.10	-0.44	0.20
8503	L5U	1030.99	1031.41	-0.41	0.17
8504	L5U	1032.06	1032.37	-0.31	0.10
8505	L5U	1035.62	1036.01	-0.39	0.15
8506	L1O	1036.33	1036.88	-0.55	0.30
8507	L5U	1039.29	1039.77	-0.48	0.23
8508	L5U	1036.07	1036.62	-0.56	0.31
8135	L5U	987.32	987.41	-0.09	0.01
8136	L5U	965.81	966.03	-0.22	0.05
8143	L5U	999.36	999.41	-0.05	0.00
8201	L5U	956.83	956.57	0.25	0.06
8202	L5U	983.76	984.41	-0.65	0.42
8203	L5U	989.05	989.33	-0.27	0.07
8204	L5U	998.37	998.30	0.07	0.00
8205	L5U	998.40	998.30	0.10	0.01
8206	L5U	997.92	998.14	-0.22	0.05
8207	L5U	999.33	999.25	0.08	0.01
8208	L5U	998.40	998.39	0.01	0.00
8209	L1O	1025.71	1025.39	0.33	0.11
8210	L5U	1050.12	1050.00	0.12	0.01
8211	L5U	1052.47	1052.07	0.40	0.16
8001	L5U	807.18	807.17	0.01	0.00
8002	L5U	804.81	804.74	0.06	0.00
8003	L5U	997.88	997.89	0.00	0.00
8004	L5U	986.11	985.93	0.17	0.03
8005	L5U	924.60	924.17	0.42	0.18
8006	L5U	914.82	914.52	0.29	0.09
8007	L5U	1033.42	1034.04	-0.62	0.38
8008	L5U	1023.04	1023.63	-0.59	0.35
8009	L5U	1026.05	1026.27	-0.21	0.04
8010	L5U	1031.65	1032.00	-0.35	0.12
8011	L5U	1025.93	1025.59	0.34	0.11
8012	L5U	1043.15	1042.73	0.43	0.18
8013	L5U	1002.93	1003.04	-0.11	0.01
8014	L5U	1027.19	1027.41	-0.22	0.05
8016	L5U	1044.50	1044.34	0.16	0.03
8017	L5U	1010.59	1010.39	0.20	0.04
8018	L5U	992.61	992.30	0.31	0.10
8019	L5U	1005.98	1005.83	0.14	0.02
8020	L5U	912.71	912.56	0.15	0.02
8021	L5U	989.79	989.65	0.14	0.02
8022	L5U	1007.55	1007.28	0.27	0.07
8023	L5U	979.45	979.44	0.01	0.00
8024	L5U	1063.17	1063.39	-0.22	0.05
8026	L5U	1043.91	1043.74	0.17	0.03
8027	L5U	994.50	994.35	0.15	0.02

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
8029	L5U	1053.78	1053.84	-0.06	0.00
8030	L5U	1010.03	1010.10	-0.06	0.00
8031	L5U	1001.05	1001.28	-0.23	0.05
8032	L5U	887.07	886.68	0.39	0.16
8033	L5U	853.60	853.39	0.20	0.04
8034	L5U	773.29	772.74	0.55	0.31
8035	L5U	987.98	988.02	-0.05	0.00
8036	L5U	968.11	967.84	0.27	0.07
8037	L5U	1006.70	1006.80	-0.10	0.01
8038	L5U	794.33	794.58	-0.25	0.06
8039	L5U	834.91	834.95	-0.04	0.00
8040	L5U	848.75	848.71	0.04	0.00
8041	L5U	1004.78	1004.79	-0.02	0.00
8042	L5U	1000.09	1000.45	-0.36	0.13
8044	L5U	1000.86	1000.71	0.16	0.02
8045	L5U	1003.57	1003.83	-0.27	0.07
6001	L5U	1034.09	1033.76	0.34	0.11
6002	L5U	1032.81	1032.51	0.30	0.09
6003	L5U	1030.76	1030.82	-0.05	0.00
6004	L5U	1037.03	1037.50	-0.47	0.22
6005	L5U	1032.57	1033.05	-0.48	0.23
6100	L1O	1014.64	1015.00	-0.36	0.13
6101	L1O	1015.89	1016.39	-0.50	0.25
6102	L1O	1036.97	1037.38	-0.41	0.17
6103	L5U	1036.74	1037.30	-0.56	0.31
6104	L1O	1030.71	1030.85	-0.14	0.02
6105	L1O	1030.65	1030.39	0.26	0.07
6106	L1O	1032.01	1032.25	-0.24	0.06
6107	L1O	1031.70	1031.75	-0.05	0.00
6108	L1O	1031.12	1031.07	0.05	0.00
6109	L1O	1031.01	1030.90	0.11	0.01
6110	L3B	1029.76	1029.52	0.24	0.06
6111	L1O	1030.81	1030.82	-0.01	0.00
6112	L1O	1030.47	1030.43	0.05	0.00
6113	L3B	1030.30	1030.07	0.23	0.05
6114	L5U	1031.57	1031.53	0.04	0.00
6115	L5U	1031.19	1031.17	0.01	0.00
6116	L5U	1031.87	1031.93	-0.06	0.00
6117	L5U	1032.34	1032.26	0.08	0.01
6118	L1O	1032.09	1032.26	-0.17	0.03
6119	L1O	1032.07	1032.15	-0.08	0.01
6120	L1O	1031.85	1031.81	0.04	0.00

Total Number of Points =  
User-Defined Tolerance =  
Chi Square Test :

350
1.19

Sum	56.46
Average	0.16
RMSEr	0.40
NSSDA	0.79

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
90	L1O	996.10	996.40	-0.31	0.09
73	L1O	1015.22	1015.17	0.05	0.00
74	L1O	1016.27	1016.67	-0.40	0.16
76	L1O	1012.72	1012.89	-0.16	0.03
80	L1O	1013.99	1013.96	0.03	0.00
81	L1O	1009.08	1008.86	0.22	0.05
111	L1O	1013.09	1013.27	-0.19	0.03
77	L1O	1007.17	1007.35	-0.18	0.03
78	L1O	1010.83	1010.78	0.06	0.00
79	L1O	1012.74	1012.65	0.09	0.01
89	L1O	1011.90	1012.13	-0.24	0.06
94	L1O	1009.56	1009.68	-0.12	0.01
96	L1O	1007.39	1007.53	-0.14	0.02
141	L1O	1006.19	1006.35	-0.16	0.03
86	L1O	1005.91	1006.02	-0.11	0.01
87	L1O	1003.91	1004.24	-0.34	0.11
88	L1O	1008.06	1008.41	-0.35	0.12
83	L1O	995.63	995.91	-0.28	0.08
84	L1O	1004.23	1004.21	0.02	0.00
85	L1O	1003.52	1003.72	-0.20	0.04
51	L1O	1006.16	1006.33	-0.16	0.03
53	L1O	1010.19	1010.26	-0.08	0.01
68	L1O	1017.58	1017.67	-0.09	0.01
69	L1O	1019.40	1019.69	-0.29	0.09
70	L1O	1015.50	1015.76	-0.26	0.07
110	L1O	1017.85	1018.27	-0.42	0.17
71	L1O	1006.82	1007.18	-0.36	0.13
72	L1O	1009.47	1009.76	-0.29	0.08
75	L1O	1014.33	1014.07	0.25	0.06
140	L1O	1009.67	1009.89	-0.22	0.05
97	L1O	1008.90	1009.02	-0.13	0.02
112	L1O	1014.01	1014.17	-0.16	0.03
105	L1O	1001.10	1000.84	0.25	0.06
101	L1O	998.21	998.46	-0.25	0.06
142	L1O	996.97	997.24	-0.28	0.08
132	L1O	1004.18	1004.58	-0.40	0.16
98	L1O	989.07	989.48	-0.41	0.16
41	L1O	996.03	995.99	0.04	0.00
42	L1O	1002.03	1002.26	-0.23	0.05
47	L1O	994.57	994.53	0.05	0.00
46	L1O	1010.54	1010.61	-0.07	0.00
48	L1O	1002.80	1002.71	0.09	0.01
66	L1O	992.76	992.97	-0.21	0.04
115	L1O	1010.34	1010.23	0.11	0.01
54	L1O	1009.42	1009.79	-0.38	0.14
55	L1O	1009.69	1010.32	-0.62	0.39
65	L1O	1011.82	1011.91	-0.09	0.01
67	L1O	1012.21	1012.47	-0.26	0.07
119	L1O	1010.06	1010.14	-0.07	0.01
118	L1O	1007.63	1008.11	-0.48	0.23

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
121	L1O	993.96	993.97	-0.01	0.00
130	L1O	1004.01	1004.19	-0.18	0.03
131	L1O	1012.31	1012.70	-0.39	0.16
122	L1O	1007.02	1007.29	-0.27	0.07
127	L1O	1002.74	1002.78	-0.04	0.00
128	L1O	1007.79	1008.07	-0.28	0.08
129	L1O	999.21	999.73	-0.52	0.27
126	L1O	997.39	997.89	-0.49	0.24
30	L1O	969.30	969.26	0.04	0.00
31	L1O	1009.14	1009.13	0.02	0.00
36	L1O	999.02	998.94	0.08	0.01
40	L1O	1011.43	1011.55	-0.12	0.01
62	L1O	1011.54	1011.52	0.02	0.00
63	L1O	1006.33	1006.52	-0.19	0.04
116	L1O	1002.01	1002.27	-0.26	0.07
117	L1O	1008.09	1007.95	0.13	0.02
14	L1O	987.43	987.44	-0.01	0.00
28	L1O	973.73	973.49	0.24	0.06
29	L1O	1016.16	1016.36	-0.20	0.04
9	L1O	1026.43	1026.47	-0.04	0.00
16	L1O	1024.01	1023.82	0.19	0.04
17	L1O	1025.62	1025.80	-0.18	0.03
18	L1O	1028.43	1028.28	0.15	0.02
19	L1O	1002.73	1002.84	-0.11	0.01
20	L1O	1019.54	1019.82	-0.29	0.08
21	L1O	994.87	994.78	0.09	0.01
24	L1O	994.26	994.67	-0.41	0.16
25	L1O	996.56	996.73	-0.17	0.03
1	L1O	1017.02	1017.17	-0.16	0.02
2	L1O	1006.52	1006.57	-0.05	0.00
3	L1O	1015.09	1015.05	0.03	0.00
4	L1O	1008.30	1008.23	0.07	0.00
6	L1O	1009.31	1009.51	-0.20	0.04
7	L1O	1033.86	1034.36	-0.50	0.25
8	L1O	1032.03	1032.00	0.03	0.00
10	L1O	1015.02	1015.09	-0.07	0.00
11	L1O	1029.07	1029.25	-0.18	0.03
12	L1O	1023.13	1023.22	-0.09	0.01
1004	L1O	1018.13	1018.76	-0.64	0.41
1002	L1O	1022.70	1023.13	-0.43	0.18
1003	L1O	1019.49	1019.99	-0.50	0.25
1005	L1O	1022.31	1022.73	-0.42	0.18
2008	L1O	1018.99	1019.53	-0.54	0.29
2009	L1O	1017.21	1017.47	-0.26	0.07
2010	L1O	1016.01	1016.58	-0.56	0.32
2011	L1O	1015.74	1016.14	-0.39	0.15
2012	L1O	1016.10	1016.61	-0.51	0.26
2013	L1O	1016.95	1017.57	-0.63	0.39
2014	L1O	1017.09	1017.62	-0.53	0.28
2015	L1O	1016.02	1016.48	-0.46	0.21
2016	L1O	1014.81	1015.51	-0.70	0.50
2017	L1O	1012.84	1013.39	-0.55	0.30

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
2018	L1O	1010.69	1011.22	-0.53	0.28
2019	L1O	1008.66	1009.20	-0.54	0.29
5005	L1O	1013.66	1014.22	-0.56	0.32
5006	L1O	1008.55	1009.47	-0.92	0.85
1001	L1O	1020.34	1020.87	-0.53	0.28
2000	L1O	1028.49	1028.85	-0.36	0.13
2001	L1O	1028.11	1028.44	-0.32	0.10
2002	L1O	1027.61	1028.03	-0.43	0.18
2003	L1O	1026.90	1027.34	-0.43	0.19
2004	L1O	1026.21	1026.46	-0.26	0.07
2005	L1O	1025.20	1025.64	-0.44	0.19
2006	L1O	1023.07	1023.56	-0.49	0.24
2007	L1O	1020.94	1021.52	-0.59	0.35
5002	L1O	1024.14	1024.46	-0.32	0.10
5003	L1O	1024.52	1025.55	-1.04	1.07
1012	L1O	1036.77	1037.05	-0.28	0.08
5001	L1O	1030.44	1030.44	0.00	0.00
1010	L1O	1003.62	1004.22	-0.60	0.36
1011	L1O	1037.49	1037.86	-0.38	0.14
2033	L1O	1019.17	1020.09	-0.93	0.86
2034	L1O	1020.23	1020.96	-0.73	0.53
2035	L1O	1021.51	1022.03	-0.52	0.27
2036	L1O	1025.37	1025.77	-0.40	0.16
2037	L1O	1032.85	1033.26	-0.41	0.17
2038	L1O	1034.92	1035.34	-0.42	0.18
2040	L1O	1035.34	1035.83	-0.49	0.24
2041	L1O	1036.05	1036.60	-0.55	0.30
2042	L1O	1036.87	1037.45	-0.58	0.34
2043	L1O	1037.76	1038.26	-0.50	0.25
2044	L1O	1038.49	1038.87	-0.38	0.15
2045	L1O	1039.21	1039.55	-0.35	0.12
5011	L1O	1013.38	1013.95	-0.57	0.32
8509	L1O	1038.93	1039.36	-0.43	0.19
8518	L1O	1023.61	1023.92	-0.31	0.10
8519	L1O	1020.09	1020.64	-0.55	0.30
8521	L1O	1020.53	1021.14	-0.60	0.36
1006	L1O	1005.35	1005.94	-0.59	0.35
2020	L1O	1006.87	1007.34	-0.47	0.22
2021	L1O	1005.72	1006.00	-0.28	0.08
2022	L1O	1005.71	1006.15	-0.44	0.20
2023	L1O	1005.46	1006.18	-0.72	0.52
2024	L1O	1004.40	1004.87	-0.47	0.22
2025	L1O	1004.65	1005.22	-0.57	0.33
2026	L1O	1004.55	1005.05	-0.50	0.25
2027	L1O	1004.95	1005.55	-0.60	0.36
2028	L1O	1006.01	1006.78	-0.77	0.59
2029	L1O	1008.16	1008.60	-0.44	0.19
2030	L1O	1011.18	1011.79	-0.61	0.38
2031	L1O	1014.74	1015.48	-0.73	0.54
2032	L1O	1016.92	1017.21	-0.29	0.08
5010	L1O	1008.84	1009.18	-0.34	0.11
8522	L1O	1011.97	1012.47	-0.50	0.25



Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
1017	L1O	1025.07	1025.36	-0.29	0.09
5021	L1O	1023.71	1024.40	-0.69	0.47
1013	L1O	1032.60	1032.90	-0.30	0.09
5018	L1O	1034.83	1035.07	-0.23	0.05
1015	L1O	1029.91	1030.35	-0.44	0.19
2059	L1O	1033.40	1033.89	-0.49	0.24
2060	L1O	1032.95	1033.39	-0.44	0.19
2061	L1O	1031.18	1031.52	-0.35	0.12
2062	L1O	1028.24	1028.63	-0.40	0.16
2063	L1O	1026.09	1026.57	-0.48	0.23
2064	L1O	1025.73	1026.26	-0.53	0.28
2065	L1O	1026.03	1026.57	-0.54	0.29
2066	L1O	1026.42	1027.16	-0.75	0.56
2067	L1O	1025.94	1026.61	-0.67	0.45
2068	L1O	1026.30	1026.85	-0.54	0.30
2069	L1O	1028.33	1028.76	-0.43	0.18
2070	L1O	1029.82	1030.35	-0.53	0.28
5020	L1O	1022.14	1022.82	-0.67	0.45
1014	L1O	1026.24	1026.60	-0.36	0.13
2046	L1O	1037.97	1038.33	-0.36	0.13
2047	L1O	1036.79	1037.42	-0.64	0.41
2048	L1O	1037.29	1037.63	-0.34	0.11
2049	L1O	1039.07	1039.56	-0.49	0.24
2050	L1O	1036.86	1037.35	-0.49	0.24
2051	L1O	1036.34	1036.74	-0.41	0.17
2052	L1O	1036.15	1036.65	-0.51	0.26
2053	L1O	1034.86	1035.13	-0.27	0.08
2054	L1O	1031.62	1031.93	-0.31	0.09
2055	L1O	1030.75	1031.19	-0.45	0.20
2056	L1O	1031.12	1031.48	-0.36	0.13
2057	L1O	1033.23	1033.94	-0.72	0.51
2058	L1O	1032.90	1033.50	-0.60	0.36
5017	L1O	1031.54	1031.83	-0.29	0.09
8506	L1O	1036.33	1036.88	-0.55	0.30
8209	L1O	1025.71	1025.39	0.33	0.11
6100	L1O	1014.64	1015.00	-0.36	0.13
6101	L1O	1015.89	1016.39	-0.50	0.25
6102	L1O	1036.97	1037.38	-0.41	0.17
6104	L1O	1030.71	1030.85	-0.14	0.02
6105	L1O	1030.65	1030.39	0.26	0.07
6106	L1O	1032.01	1032.25	-0.24	0.06
6107	L1O	1031.70	1031.75	-0.05	0.00
6108	L1O	1031.12	1031.07	0.05	0.00
6109	L1O	1031.01	1030.90	0.11	0.01
6111	L1O	1030.81	1030.82	-0.01	0.00
6112	L1O	1030.47	1030.43	0.05	0.00
6118	L1O	1032.09	1032.26	-0.17	0.03
6119	L1O	1032.07	1032.15	-0.08	0.01
6120	L1O	1031.85	1031.81	0.04	0.00

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
				Sum	32.42
				Average	0.16
				RMSEr	0.40
				NSSDA	0.78

Total Number of Points =

User-Defined Tolerance =

Chi Square Test :

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
82	L2T	995.09	995.51	-0.42	0.18
95	L2T	1011.33	1011.33	-0.01	0.00
91	L2T	1000.18	1000.48	-0.30	0.09
138	L2T	1008.71	1009.10	-0.39	0.15
107	L2T	1009.72	1010.11	-0.39	0.15
108	L2T	1002.32	1002.19	0.13	0.02
109	L2T	1009.23	1009.33	-0.09	0.01
103	L2T	1011.16	1011.42	-0.25	0.06
104	L2T	996.30	996.39	-0.09	0.01
133	L2T	994.86	995.01	-0.15	0.02
99	L2T	1010.38	1010.68	-0.30	0.09
100	L2T	998.54	998.78	-0.24	0.06
56	L2T	981.90	981.86	0.04	0.00
114	L2T	1011.71	1011.88	-0.17	0.03
113	L2T	1008.50	1008.85	-0.35	0.12
120	L2T	1007.35	1007.48	-0.12	0.02
136	L2T	991.81	992.89	-1.08	1.18
137	L2T	1014.12	1014.27	-0.14	0.02
123	L2T	999.60	999.60	0.00	0.00
135	L2T	992.55	992.95	-0.41	0.17
134	L2T	990.84	991.55	-0.71	0.50
35	L2T	965.74	965.77	-0.03	0.00
37	L2T	962.12	962.48	-0.37	0.13
61	L2T	1004.73	1004.56	0.17	0.03
26	L2T	1015.78	1015.84	-0.06	0.00
27	L2T	1003.78	1004.29	-0.52	0.27
23	L2T	996.82	996.79	0.03	0.00
34	L2T	989.44	989.44	0.00	0.00
13	L2T	993.25	993.26	-0.01	0.00
15	L2T	1025.83	1025.31	0.52	0.27
5	L2T	1003.72	1003.84	-0.12	0.01
5004	L2T	1017.04	1017.47	-0.43	0.19
5008	L2T	1002.69	1003.53	-0.84	0.71
1007	L2T	1019.66	1020.13	-0.47	0.22
5009	L2T	1001.62	1002.36	-0.74	0.55
1008	L2T	1003.06	1003.63	-0.57	0.33
8523	L2T	1016.31	1016.60	-0.29	0.08
8525	L2T	1018.08	1018.39	-0.31	0.10
1016	L2T	1021.82	1022.47	-0.64	0.41
5019	L2T	1022.46	1023.21	-0.75	0.56
5022	L2T	1020.68	1021.37	-0.69	0.48

Total Number of Points =  
User-Defined Tolerance =  
Chi Square Test :

41
1.19

Sum	7.21
Average	0.18
RMSEr	0.42
NSSDA	0.82

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
139	L3B	1013.02	1012.93	0.09	0.01
92	L3B	1002.02	1002.10	-0.08	0.01
93	L3B	1005.03	1005.36	-0.33	0.11
50	L3B	1010.42	1010.36	0.06	0.00
52	L3B	1007.08	1007.05	0.03	0.00
102	L3B	1004.72	1004.86	-0.14	0.02
49	L3B	1012.85	1013.08	-0.22	0.05
45	L3B	1005.59	1005.48	0.11	0.01
22	L3B	1004.27	1004.65	-0.38	0.14
57	L3B	1014.99	1014.25	0.73	0.54
60	L3B	994.12	994.03	0.09	0.01
6110	L3B	1029.76	1029.52	0.24	0.06
6113	L3B	1030.30	1030.07	0.23	0.05

Total Number of Points =  
 User-Defined Tolerance =  
 Chi Square Test :

13
1.19

Sum	1.01
Average	0.08
RMSEr	0.28
NSSDA	0.55

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
32	L5U	1012.04	1011.94	0.10	0.01
39	L5U	1003.43	1003.92	-0.49	0.24
38	L5U	991.72	991.87	-0.15	0.02
33	L5U	1013.10	1013.00	0.09	0.01
43	L5U	1003.79	1003.68	0.12	0.01
59	L5U	1012.80	1012.92	-0.11	0.01
64	L5U	1001.31	1001.33	-0.02	0.00
44	L5U	980.89	980.31	0.57	0.33
58	L5U	998.53	998.59	-0.06	0.00
1009	L5U	1021.63	1022.11	-0.48	0.23
5013	L5U	1033.53	1034.44	-0.92	0.84
5012	L5U	1019.98	1020.37	-0.39	0.16
8510	L5U	1037.96	1038.34	-0.38	0.14
8511	L5U	1036.92	1037.27	-0.35	0.12
8512	L5U	1036.67	1037.21	-0.54	0.29
8513	L5U	1035.84	1036.19	-0.35	0.13
8514	L5U	1034.60	1035.13	-0.52	0.27
8515	L5U	1033.84	1034.35	-0.51	0.26
8516	L5U	1033.68	1034.22	-0.54	0.29
8517	L5U	1026.25	1026.32	-0.07	0.01
8520	L5U	1020.59	1021.10	-0.52	0.27
5016	L5U	1036.20	1036.58	-0.38	0.14
8501	L5U	1033.92	1034.28	-0.36	0.13
8502	L5U	1030.66	1031.10	-0.44	0.20
8503	L5U	1030.99	1031.41	-0.41	0.17
8504	L5U	1032.06	1032.37	-0.31	0.10
8505	L5U	1035.62	1036.01	-0.39	0.15
8507	L5U	1039.29	1039.77	-0.48	0.23
8508	L5U	1036.07	1036.62	-0.56	0.31
8135	L5U	987.32	987.41	-0.09	0.01
8136	L5U	965.81	966.03	-0.22	0.05
8143	L5U	999.36	999.41	-0.05	0.00
8201	L5U	956.83	956.57	0.25	0.06
8202	L5U	983.76	984.41	-0.65	0.42
8203	L5U	989.05	989.33	-0.27	0.07
8204	L5U	998.37	998.30	0.07	0.00
8205	L5U	998.40	998.30	0.10	0.01
8206	L5U	997.92	998.14	-0.22	0.05
8207	L5U	999.33	999.25	0.08	0.01
8208	L5U	998.40	998.39	0.01	0.00
8210	L5U	1050.12	1050.00	0.12	0.01
8211	L5U	1052.47	1052.07	0.40	0.16
8001	L5U	807.18	807.17	0.01	0.00
8002	L5U	804.81	804.74	0.06	0.00
8003	L5U	997.88	997.89	0.00	0.00
8004	L5U	986.11	985.93	0.17	0.03
8005	L5U	924.60	924.17	0.42	0.18
8006	L5U	914.82	914.52	0.29	0.09
8007	L5U	1033.42	1034.04	-0.62	0.38
8008	L5U	1023.04	1023.63	-0.59	0.35
8009	L5U	1026.05	1026.27	-0.21	0.04

Point Number	Point Description	Z (Independent)	Z (Test)	Difference in Z	Z-Difference Squared
8010	L5U	1031.65	1032.00	-0.35	0.12
8011	L5U	1025.93	1025.59	0.34	0.11
8012	L5U	1043.15	1042.73	0.43	0.18
8013	L5U	1002.93	1003.04	-0.11	0.01
8014	L5U	1027.19	1027.41	-0.22	0.05
8016	L5U	1044.50	1044.34	0.16	0.03
8017	L5U	1010.59	1010.39	0.20	0.04
8018	L5U	992.61	992.30	0.31	0.10
8019	L5U	1005.98	1005.83	0.14	0.02
8020	L5U	912.71	912.56	0.15	0.02
8021	L5U	989.79	989.65	0.14	0.02
8022	L5U	1007.55	1007.28	0.27	0.07
8023	L5U	979.45	979.44	0.01	0.00
8024	L5U	1063.17	1063.39	-0.22	0.05
8026	L5U	1043.91	1043.74	0.17	0.03
8027	L5U	994.50	994.35	0.15	0.02
8029	L5U	1053.78	1053.84	-0.06	0.00
8030	L5U	1010.03	1010.10	-0.06	0.00
8031	L5U	1001.05	1001.28	-0.23	0.05
8032	L5U	887.07	886.68	0.39	0.16
8033	L5U	853.60	853.39	0.20	0.04
8034	L5U	773.29	772.74	0.55	0.31
8035	L5U	987.98	988.02	-0.05	0.00
8036	L5U	968.11	967.84	0.27	0.07
8037	L5U	1006.70	1006.80	-0.10	0.01
8038	L5U	794.33	794.58	-0.25	0.06
8039	L5U	834.91	834.95	-0.04	0.00
8040	L5U	848.75	848.71	0.04	0.00
8041	L5U	1004.78	1004.79	-0.02	0.00
8042	L5U	1000.09	1000.45	-0.36	0.13
8044	L5U	1000.86	1000.71	0.16	0.02
8045	L5U	1003.57	1003.83	-0.27	0.07
6001	L5U	1034.09	1033.76	0.34	0.11
6002	L5U	1032.81	1032.51	0.30	0.09
6003	L5U	1030.76	1030.82	-0.05	0.00
6004	L5U	1037.03	1037.50	-0.47	0.22
6005	L5U	1032.57	1033.05	-0.48	0.23
6103	L5U	1036.74	1037.30	-0.56	0.31
6114	L5U	1031.57	1031.53	0.04	0.00
6115	L5U	1031.19	1031.17	0.01	0.00
6116	L5U	1031.87	1031.93	-0.06	0.00
6117	L5U	1032.34	1032.26	0.08	0.01

Total Number of Points =  
User-Defined Tolerance =  
Chi Square Test :

93
1.19

Sum	9.81
Average	0.11
RMSEr	0.32
NSSDA	0.64

## Blue Earth County Ground Control Point Listing

Station Name	NGS ACRN #	MNDOT Geodetic Database Sta. #	Derived Target Numbers
Pleasant Mound SW	DG5546	50301	101
Pleasant Mound CEN	DG5545	50300	101
8306 B	OP0066	33873	101
Antrim MNDT	OP0068	33918	101
Sterling CEN	DG5548	50303	102, 103, 104
0706 L	DG5519	2432	102, 103, 104
DANVIL MNDT	AC4896	2592	102, 103, 104
DANVILLE CEN	DG5526	50282	102, 103, 104
MAPLETOM CEN	DG5542	50297	102, 103, 104
MINLA MNDT	DE9646	39683	102, 103, 104
0703 L	DE9624	39690	102, 103, 104
VERNON CENTER CEN	DG5549	50305	105
LYRA SW	DG5540	50295	105
VERNON MNDT	OP1433	2759	105
LINCOLN SW	DG5538	50293	106
BAGSTAD MNDT	PQ0100	2570	106
PERTH MNDT	PQ0094	2685	106
EIKENBERRY MNDT	DG5528	50340	106
13 KED	OO0722	2541	107
MEDO CEN	DG5544	50299	107
0711 A	PP2094	2466	107
Q 131	PQ0104	2694	108, 203
BAGSTAD MNDT	PQ0100	2570	108, 203
KUMPH MNDT	PQ0112	2625	108, 203
BUTTERNUT VALLEY CEN	DG5522	50280	108, 203
LERAY MNDT	PP2073	2635	109, 202
KATO MNDT	PP2061	2622	109, 202
SOLO MNDT	DE9653	39699	109, 202
5202 Q	PQ1721	20908	110
5202 W	PQ1731	20914	110
5202 AB	PQ1739	20886	110
COTT MNDT	AI3296	2588	111
THEE MNDT	AI3301	2732	111
VETTER MNDT	AI3305	2763	111
LERAY NE	DG5535	50290	112
BENKZOEFER MNDT	AI6549	36688	112
0702 Y	PP3518	2367	112
WASHINGTON SE	DF8251	42538	112
ELYSIAN SW	DF8229	42521	112
SHELBY SW	DG5547	50302	Check point 201
LURA MNDT	OP1412	2644	Check point 201
0712 E	OP1420	2493	Check point 201
VERNON CENTER SW	DG5550	50304	Check point 201
LILY MNDT	DE9658	39429	Check point 204
HOLLOW MNDT	DE9638	39681	Check point 204
SCHOON MNDT RM 3	PQ1804	2718	Check point 204
RAPIDAN MNDT	DE9662	39433	Check point 204
NINETY MNDT	DE9659	39430	Check point 204

MnMultShot BE TPRO.txt

Multi-Shot Coordinate Tabulation (English) 10/13/2005 Page 1  
 Files:BE TPRO.txt

Point Num	Description	X (f)	Y (f)	Elev (f)
8001		488419.744	241896.636	807.119
8001		488419.716	241896.643	807.243
	Mean Coordinate	488419.730	241896.640	807.181
Max Split	(Horiz Distance = 0.029)	0.028	0.007	0.124
8002		518697.771	226835.097	804.778
8002		518697.801	226835.090	804.833
	Mean Coordinate	518697.786	226835.094	804.806
Max Split	(Horiz Distance = 0.031)	0.030	0.007	0.055
8003		510583.451	191520.488	997.903
8003		510583.443	191520.463	997.862
	Mean Coordinate	510583.447	191520.476	997.882
Max Split	(Horiz Distance = 0.026)	0.008	0.025	0.041
8004		509108.814	197142.993	986.138
8004		509108.823	197142.955	986.075
	Mean Coordinate	509108.818	197142.974	986.106
Max Split	(Horiz Distance = 0.039)	0.009	0.038	0.063
8005		527013.705	172933.366	924.612
8005		527013.706	172933.336	924.587
	Mean Coordinate	527013.706	172933.351	924.600
Max Split	(Horiz Distance = 0.030)	0.001	0.030	0.025
8006		524913.564	172637.261	914.819
8006		524913.542	172637.217	914.812
	Mean Coordinate	524913.553	172637.239	914.816
Max Split	(Horiz Distance = 0.049)	0.022	0.044	0.007
8007		525257.041	142117.253	1033.404
8007		525257.076	142117.243	1033.444
	Mean Coordinate	525257.058	142117.248	1033.424
Max Split	(Horiz Distance = 0.036)	0.035	0.010	0.040
8008		526114.265	141077.564	1023.048
8008		526114.312	141077.592	1023.028
	Mean Coordinate	526114.288	141077.578	1023.038
Max Split	(Horiz Distance = 0.055)	0.047	0.028	0.020
8009		526808.307	142146.419	1026.058
8009		526808.356	142146.408	1026.051
	Mean Coordinate	526808.332	142146.414	1026.054
Max Split	(Horiz Distance = 0.050)	0.049	0.011	0.007
8010		525618.090	142288.084	1031.620
8010		525618.211	142288.016	1031.682
	Mean Coordinate	525618.150	142288.050	1031.651
Max Split	(Horiz Distance = 0.139)	0.121	0.068	0.062
8011		499422.909	117071.979	1025.911
8011		499422.876	117071.902	1025.953
	Mean Coordinate	499422.892	117071.940	1025.932
Max Split	(Horiz Distance = 0.084)	0.033	0.077	0.042

□



Point Num	Description	X (f)	Y (f)	Elev (f)
8012		527958.942	114515.810	1043.181
8012		527959.010	114515.862	1043.124
	Mean Coordinate	527958.976	114515.836	1043.152
Max Split	(Horiz Distance = 0.086)	0.068	0.052	0.057
8013		549867.616	121060.909	1002.933
8013		549867.614	121060.877	1002.921
	Mean Coordinate	549867.615	121060.893	1002.927
Max Split	(Horiz Distance = 0.032)	0.002	0.032	0.012
8014		580453.181	128187.061	1027.150
8014		580453.136	128187.056	1027.226
	Mean Coordinate	580453.158	128187.058	1027.188
Max Split	(Horiz Distance = 0.045)	0.045	0.005	0.076
8015		627112.253	158640.776	1044.894
8015		627112.290	158640.870	1044.862
	Mean Coordinate	627112.272	158640.823	1044.878
Max Split	(Horiz Distance = 0.101)	0.037	0.094	0.032
8016		626773.570	159256.073	1044.498
8016		626773.660	159256.075	1044.507
	Mean Coordinate	626773.615	159256.074	1044.502
Max Split	(Horiz Distance = 0.090)	0.090	0.002	0.009
8017		581149.674	158484.296	1010.642
8017		581149.600	158484.228	1010.544
	Mean Coordinate	581149.637	158484.262	1010.593
Max Split	(Horiz Distance = 0.100)	0.074	0.068	0.098
8018		552657.013	157303.745	992.641
8018		552657.065	157303.722	992.572
	Mean Coordinate	552657.039	157303.734	992.606
Max Split	(Horiz Distance = 0.057)	0.052	0.023	0.069
8019		551418.346	157604.856	1005.977
8019		551418.361	157604.784	1005.977
	Mean Coordinate	551418.354	157604.820	1005.977
Max Split	(Horiz Distance = 0.074)	0.015	0.072	0.000
8020		540576.670	188799.306	912.721
8020		540576.655	188799.284	912.695
	Mean Coordinate	540576.662	188799.295	912.708
Max Split	(Horiz Distance = 0.027)	0.015	0.022	0.026
8021		551895.372	191569.040	989.771
8021		551895.386	191569.010	989.812
	Mean Coordinate	551895.379	191569.025	989.792
Max Split	(Horiz Distance = 0.033)	0.014	0.030	0.041
8022		608458.520	184094.622	1007.594
8022		608458.486	184094.611	1007.502
	Mean Coordinate	608458.503	184094.616	1007.548
Max Split	(Horiz Distance = 0.036)	0.034	0.011	0.092

Point Num	Description	X (f)	Y (f)	Elev (f)
8023		606780.167	186056.598	979.473
8023		606780.209	186056.518	979.429
	Mean Coordinate	606780.188	186056.558	979.451
Max Split	(Horiz Distance = 0.090)	0.042	0.080	0.044
8024		630858.630	205744.369	1063.198
8024		630858.654	205744.413	1063.142
	Mean Coordinate	630858.642	205744.391	1063.170
Max Split	(Horiz Distance = 0.050)	0.024	0.044	0.056
8025		617930.539	230370.419	1044.758
8025		617930.560	230370.357	1044.658
	Mean Coordinate	617930.550	230370.388	1044.708
Max Split	(Horiz Distance = 0.065)	0.021	0.062	0.100
8026		619982.636	230809.639	1043.853
8026		619982.664	230809.668	1043.968
	Mean Coordinate	619982.650	230809.654	1043.910
Max Split	(Horiz Distance = 0.040)	0.028	0.029	0.115
8027		600669.690	217276.529	994.507
8027		600669.652	217276.466	994.489
	Mean Coordinate	600669.671	217276.498	994.498
Max Split	(Horiz Distance = 0.074)	0.038	0.063	0.018
8028		600416.385	212476.876	1008.674
8028		600416.417	212476.861	1008.571
	Mean Coordinate	600416.401	212476.868	1008.622
Max Split	(Horiz Distance = 0.035)	0.032	0.015	0.103
8029		617799.818	243312.806	1053.724
8029		617799.831	243312.809	1053.833
	Mean Coordinate	617799.824	243312.808	1053.778
Max Split	(Horiz Distance = 0.013)	0.013	0.003	0.109
8030	AIRPORT	590248.294	236523.751	1010.000
8030	AIRPORT	590248.231	236523.697	1010.066
	Mean Coordinate	590248.262	236523.724	1010.033
Max Split	(Horiz Distance = 0.083)	0.063	0.054	0.066
8031	HOMEDEPOT	581172.636	224049.433	1001.040
8031	HOME DEPOT	581172.620	224049.173	1001.067
	Mean Coordinate	581172.628	224049.303	1001.054
Max Split	(Horiz Distance = 0.260)	0.016	0.260	0.027
8032		545085.122	209380.915	887.071
8032		545085.119	209380.870	887.072
	Mean Coordinate	545085.120	209380.892	887.072
Max Split	(Horiz Distance = 0.045)	0.003	0.045	0.001
8033		552024.096	212004.121	853.593
8033		552024.074	212004.104	853.598
	Mean Coordinate	552024.085	212004.112	853.596
Max Split	(Horiz Distance = 0.028)	0.022	0.017	0.005

Point Num	Description	X (f)	Y (f)	Elev (f)
8034		560303.299	212926.811	773.341
8034		560303.225	212926.780	773.237
	Mean Coordinate	560303.262	212926.796	773.289
Max Split	(Horiz Distance = 0.080)	0.074	0.031	0.104
8035	SKYLINE	561634.315	207040.106	987.983
8035	SKYLINE	561634.336	207040.118	987.970
	Mean Coordinate	561634.326	207040.112	987.976
Max Split	(Horiz Distance = 0.024)	0.021	0.012	0.013
8036	IL RD	565088.369	202982.644	968.063
8036	IL RD	565088.397	202982.681	968.155
	Mean Coordinate	565088.383	202982.662	968.109
Max Split	(Horiz Distance = 0.046)	0.028	0.037	0.092
8037	E OF CR 16	567911.935	195146.748	1006.703
8037	E OF CR 16	567911.894	195146.711	1006.689
	Mean Coordinate	567911.914	195146.730	1006.696
Max Split	(Horiz Distance = 0.055)	0.041	0.037	0.014
8038	JAIL	567086.397	214117.329	794.330
8038	JAIL	567086.352	214117.395	794.326
	Mean Coordinate	567086.374	214117.362	794.328
Max Split	(Horiz Distance = 0.080)	0.045	0.066	0.004
8039	TIRES ASSOC	568883.689	226026.456	834.913
8039	TIRE ASSOC	568883.736	226026.387	834.905
	Mean Coordinate	568883.712	226026.422	834.909
Max Split	(Horiz Distance = 0.083)	0.047	0.069	0.008
8040	TOURTALLOTTE	574385.702	222834.920	848.770
8040	TURTELLOTTE	574385.728	222834.892	848.739
	Mean Coordinate	574385.715	222834.906	848.754
Max Split	(Horiz Distance = 0.038)	0.026	0.028	0.031
8041	MAD E MALL	576685.816	218272.514	1004.792
8041	MAD E MALL	576685.836	218272.466	1004.759
	Mean Coordinate	576685.826	218272.490	1004.776
Max Split	(Horiz Distance = 0.052)	0.020	0.048	0.033
8042	E OF VIC & MAIN	577887.575	213745.375	1000.048
8042	EAST VIC	577887.493	213745.308	1000.124
	Mean Coordinate	577887.534	213745.342	1000.086
Max Split	(Horiz Distance = 0.106)	0.082	0.067	0.076
8043	LION LAKE	574638.883	208722.974	999.031
8043	LION LAKE	574638.842	208723.072	999.027
	Mean Coordinate	574638.862	208723.023	999.029
Max Split	(Horiz Distance = 0.106)	0.041	0.098	0.004
8044	EAST HS	580156.512	212448.315	1000.887
8044	EAST HS	580156.581	212448.295	1000.839
	Mean Coordinate	580156.546	212448.305	1000.863
Max Split	(Horiz Distance = 0.072)	0.069	0.020	0.048

Point Num	Description	X (f)	Y (f)	Elev (f)
8045	RIVERHILLS	581806.333	219111.837	1003.563
8045	RIVERHILLS MALL	581806.276	219111.790	1003.574
	Mean Coordinate	581806.304	219111.814	1003.568
Max Split	(Horiz Distance = 0.074)	0.057	0.047	0.011
Horizontal	Splits (45 points):	Mean = 0.063	Std. Deviation = 0.076	
Vertical	Splits (45 points):	Mean = 0.046	Std. Deviation = 0.059	

## MnMultShotBE.txt

Photo Control Multi-Shot Report (English) 07/18/2006 Page 1  
 Desc:Blue Earth County Photo Control Test Shots  
 Horizontal Datum:NAD83(96) Blue Earth County Vertical Datum:NAVD88  
 Files:aBLUEEARTHCO\_1.csv  
 (Photo Control Maximum Splits: Horizontal = 0.25ft Vertical = 0.20ft)

Point Num	Description	X (f)	Y (f)	Elev (f)
8111	no elev	499512.612	117115.369	1025.750
8111	no elev	499512.528	117115.363	1025.828
	Mean Coordinate	499512.570	117115.366	1025.789
Max Split	(Horiz Distance = 0.084)	0.084	0.006	0.078
8135		561528.161	207162.054	987.293
8135		561528.194	207162.115	987.339
	Mean Coordinate	561528.178	207162.084	987.316
Max Split	(Horiz Distance = 0.069)	0.033	0.061	0.046
8136		565008.034	202966.323	965.809
8136		565008.039	202966.348	965.811
	Mean Coordinate	565008.036	202966.336	965.810
Max Split	(Horiz Distance = 0.025)	0.005	0.025	0.002
8143		574648.606	208750.675	999.352
8143		574648.635	208750.680	999.375
	Mean Coordinate	574648.620	208750.678	999.364
Max Split	(Horiz Distance = 0.029)	0.029	0.005	0.023
8201		564843.485	203213.498	956.839
8201		564843.473	203213.501	956.814
	Mean Coordinate	564843.479	203213.500	956.826
Max Split	(Horiz Distance = 0.012)	0.012	0.003	0.025
8202		561482.199	206703.073	983.849
8202		561482.245	206703.142	983.680
	Mean Coordinate	561482.222	206703.108	983.764
Max Split	(Horiz Distance = 0.083)	0.046	0.069	0.169
8203		561334.667	207005.649	988.998
8203		561334.741	207005.609	989.111
	Mean Coordinate	561334.704	207005.629	989.054
Max Split	(Horiz Distance = 0.084)	0.074	0.040	0.113
8204		572919.253	215793.774	998.366
8205		572919.476	215793.933	998.453
8205		572919.440	215793.956	998.351
	Mean Coordinate	572919.458	215793.944	998.402
Max Split	(Horiz Distance = 0.043)	0.036	0.023	0.102
8206		573120.516	215811.781	997.891
8206		573120.500	215811.852	997.939
	Mean Coordinate	573120.508	215811.816	997.915
Max Split	(Horiz Distance = 0.073)	0.016	0.071	0.048
8207		574648.615	208723.057	999.317
8207		574648.618	208723.079	999.341
	Mean Coordinate	574648.616	208723.068	999.329
Max Split	(Horiz Distance = 0.022)	0.003	0.022	0.024

□

MnMultShotBE.txt

Photo Control Multi-Shot Report (English) 07/18/2006 Page 2  
 Desc: Blue Earth County Photo Control Test Shots  
 Horizontal Datum: NAD83(96) Blue Earth County Vertical Datum: NAVD88  
 Files: aBLUEEARTHCO\_1.csv  
 (Photo Control Maximum Splits: Horizontal = 0.25ft Vertical = 0.20ft)

Point Num	Description	X (f)	Y (f)	Elev (f)
8208		574799.900	208718.443	998.389
8208		574799.932	208718.447	998.405
	Mean Coordinate	574799.916	208718.445	998.397
Max Split	(Horiz Distance = 0.032)	0.032	0.004	0.016
8209		499423.062	117191.133	1025.741
8209		499423.065	117191.123	1025.686
	Mean Coordinate	499423.064	117191.128	1025.714
Max Split	(Horiz Distance = 0.010)	0.003	0.010	0.055
8210		613307.856	101061.475	1050.118
8210		613307.873	101061.512	1050.117
	Mean Coordinate	613307.864	101061.494	1050.118
Max Split	(Horiz Distance = 0.041)	0.017	0.037	0.001
8211		613616.487	100781.745	1052.492
8211		613616.570	100781.823	1052.445
	Mean Coordinate	613616.528	100781.784	1052.468
Max Split	(Horiz Distance = 0.114)	0.083	0.078	0.047

Horizontal Splits (14 points): Mean = 0.052 Std. Deviation = 0.063  
 Vertical Splits (14 points): Mean = 0.054 Std. Deviation = 0.073  
 \* Splits Over Photo Control Maximums: Horizontal = 0 Vertical = 0

## MnMultShot0706T03.txt

Multi-Shot Coordinate Tabulation (English) 05/17/2006 Page 1  
 T.H.:30 S.P.:0706-25  
 Horizontal Datum:NAD83(96) BLUE EARTH Vertical Datum:NAVD88  
 Files:s0706T03.txt

Point Num	Description	X (f)	Y (f)	Elev (f)
8501	TPRO	584121.808	129366.618	1033.898
8501	TPRO	584121.804	129366.583	1033.944
	Mean Coordinate	584121.806	129366.600	1033.921
Max Split	(Horiz Distance = 0.035)	0.004	0.035	0.046
8502	TPRO	583998.681	129252.909	1030.609
8502	TPRO	583998.729	129252.993	1030.704
	Mean Coordinate	583998.705	129252.951	1030.656
Max Split	(Horiz Distance = 0.097)	0.048	0.084	0.095
8503	TPRO	583823.566	129134.711	1031.003
8503	TPRO	583823.557	129134.732	1030.983
	Mean Coordinate	583823.562	129134.722	1030.993
Max Split	(Horiz Distance = 0.023)	0.009	0.021	0.020
8504	TPRO	583599.906	129249.261	1032.070
8504	TPRO	583599.955	129249.247	1032.052
	Mean Coordinate	583599.930	129249.254	1032.061
Max Split	(Horiz Distance = 0.051)	0.049	0.014	0.018
8505	TPRO	583177.091	129253.739	1035.680
8505	TPRO	583177.183	129253.764	1035.562
	Mean Coordinate	583177.137	129253.752	1035.621
Max Split	(Horiz Distance = 0.095)	0.092	0.025	0.118
8506	TPRO	582870.470	129251.535	1036.318
8506	TPRO	582870.463	129251.554	1036.342
	Mean Coordinate	582870.466	129251.544	1036.330
Max Split	(Horiz Distance = 0.020)	0.007	0.019	0.024
8507	TPRO	582565.332	129179.099	1039.301
8507	TPRO	582565.325	129179.052	1039.278
	Mean Coordinate	582565.328	129179.076	1039.290
Max Split	(Horiz Distance = 0.048)	0.007	0.047	0.023
8508	TPRO	582221.809	129078.014	1036.042
8508	TPRO	582221.762	129078.001	1036.090
	Mean Coordinate	582221.786	129078.008	1036.066
Max Split	(Horiz Distance = 0.049)	0.047	0.013	0.048
8509	TPRO	581846.378	129280.953	1038.934
8509	TPRO	581846.407	129280.934	1038.919
	Mean Coordinate	581846.392	129280.944	1038.926
Max Split	(Horiz Distance = 0.035)	0.029	0.019	0.015
8510	TPRO	581459.296	129362.157	1037.956
8510	TPRO	581459.254	129362.223	1037.959
	Mean Coordinate	581459.275	129362.190	1037.958
Max Split	(Horiz Distance = 0.078)	0.042	0.066	0.003

Point Num	Description	X (f)	Y (f)	Elev (f)
8511	TPRO	581179.919	129393.877	1036.929
8511	TPRO	581179.902	129393.918	1036.909
	Mean Coordinate	581179.910	129393.898	1036.919
Max Split	(Horiz Distance = 0.044)	0.017	0.041	0.020
8512	TPRO	581226.122	129168.670	1036.660
8512	TPRO	581226.115	129168.631	1036.674
	Mean Coordinate	581226.118	129168.650	1036.667
Max Split	(Horiz Distance = 0.040)	0.007	0.039	0.014
8513	TPRO	581020.893	129226.375	1035.848
8513	TPRO	581020.880	129226.373	1035.831
	Mean Coordinate	581020.886	129226.374	1035.840
Max Split	(Horiz Distance = 0.013)	0.013	0.002	0.017
8514	TPRO	580807.464	129079.126	1034.592
8514	TPRO	580807.388	129079.152	1034.617
	Mean Coordinate	580807.426	129079.139	1034.604
Max Split	(Horiz Distance = 0.080)	0.076	0.026	0.025
8515	TPRO	580458.443	129196.687	1033.838
8515	TPRO	580458.445	129196.752	1033.832
	Mean Coordinate	580458.444	129196.720	1033.835
Max Split	(Horiz Distance = 0.065)	0.002	0.065	0.006
8516	TPRO	580467.942	129292.066	1033.679
8516	TPRO	580467.914	129292.181	1033.682
	Mean Coordinate	580467.928	129292.124	1033.680
Max Split	(Horiz Distance = 0.118)	0.028	0.115	0.003
8517	TPRO	580241.260	129228.863	1026.248
8517	TPRO	580241.212	129228.879	1026.243
	Mean Coordinate	580241.236	129228.871	1026.246
Max Split	(Horiz Distance = 0.051)	0.048	0.016	0.005
8518	TPRO	580138.018	129196.216	1023.601
8518	TPRO	580137.984	129196.225	1023.623
	Mean Coordinate	580138.001	129196.220	1023.612
Max Split	(Horiz Distance = 0.035)	0.034	0.009	0.022
8519	TPRO	579886.691	129166.243	1020.112
8519	TPRO	579886.709	129166.280	1020.071
	Mean Coordinate	579886.700	129166.262	1020.092
Max Split	(Horiz Distance = 0.041)	0.018	0.037	0.041
8520	TPRO	579891.248	129050.434	1020.586
8520	TPRO	579891.216	129050.464	1020.584
	Mean Coordinate	579891.232	129050.449	1020.585
Max Split	(Horiz Distance = 0.044)	0.032	0.030	0.002



Point Num	Description	X (f)	Y (f)	Elev (f)
8521	TPRO	579850.028	129194.789	1020.552
8521	TPRO	579850.041	129194.779	1020.516
	Mean Coordinate	579850.034	129194.784	1020.534
Max Split	(Horiz Distance = 0.016)	0.013	0.010	0.036
8522	TPRO	579470.060	129413.768	1011.966
8522	TPRO	579470.070	129413.710	1011.971
	Mean Coordinate	579470.065	129413.739	1011.968
Max Split	(Horiz Distance = 0.059)	0.010	0.058	0.005
8523	TPRO	579466.242	129228.708	1016.310
8523	TPRO	579466.246	129228.672	1016.312
	Mean Coordinate	579466.244	129228.690	1016.311
Max Split	(Horiz Distance = 0.036)	0.004	0.036	0.002
8524	TPRO	579495.138	129173.400	1017.359
8524	TPRO	579495.142	129173.396	1017.365
	Mean Coordinate	579495.140	129173.398	1017.362
Max Split	(Horiz Distance = 0.006)	0.004	0.004	0.006
8525	TPRO	579485.233	129164.824	1018.098
8525	TPRO	579485.263	129164.802	1018.059
	Mean Coordinate	579485.248	129164.813	1018.078
Max Split	(Horiz Distance = 0.037)	0.030	0.022	0.039
Horizontal	Splits (25 points):	Mean = 0.049	Std. Deviation = 0.057	
Vertical	Splits (25 points):	Mean = 0.026	Std. Deviation = 0.039	

# Point Derivation Report

Project : M3238048 Field

User name	peterbl	Date & Time	5/9/2006 11:33
Coordinate System	Blue Earth99	Zone	Blue Earth99
Project Datum	Blue Earth96		
Vertical Datum		Geoid Model	Minn03
Coordinate Units	US survey feet		
Distance Units	US survey feet		
Height Units	US survey feet		

## Point Derivations

Observations or coordinates in red are out of tolerance. They have not been used to determine the coordinate of the point.

Resultant coordinates for point : 82							
Northing	Easting	Elevation	Height				
229138.193sft	583222.086sft	995.091sft	902.159sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B204 (600-82)	NEh	Enabled	0.000sft	0.045sft	0.045sft	0.024sft	0.024sft
B2 (500-82)	NEh	Enabled	0.000sft	-0.057sft	0.057sft	-0.026sft	-0.026sft

Resultant coordinates for point : 98							
Northing	Easting	Elevation	Height				
229162.295sft	588556.848sft	989.072sft	896.011sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B197 (600-98)	NEh	Enabled	0.020sft	0.008sft	0.022sft	0.075sft	0.075sft
B3 (500-98)	NEh	Enabled	-0.031sft	-0.011sft	0.033sft	-0.072sft	-0.072sft

Resultant coordinates for point : 132							
Northing	Easting	Elevation	Height				
229125.467sft	590203.921sft	1004.181sft	911.079sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B195 (600-132)	NEh	Enabled	-0.002sft	0.047sft	0.047sft	0.085sft	0.085sft
B4 (500-132)	NEh	Enabled	0.002sft	-0.052sft	0.053sft	-0.090sft	-0.090sft

Resultant coordinates for point : 134							
Northing	Easting	Elevation	Height				
229127.243sft	592869.141sft	990.837sft	897.667sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B192 (600-134)	NEh	Enabled	0.015sft	0.009sft	0.018sft	0.025sft	0.025sft
B5 (500-134)	NEh	Enabled	-0.013sft	-0.008sft	0.015sft	-0.023sft	-0.023sft

Resultant coordinates for point : 133							
Northing	Easting	Elevation	Height				
227640.584sft	591484.842sft	994.858sft	901.712sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B194 (600-133)	NEh	Enabled	-0.007sft	0.012sft	0.014sft	0.049sft	0.049sft
B6 (500-133)	NEh	Enabled	0.007sft	-0.011sft	0.013sft	-0.048sft	-0.048sft

Resultant coordinates for point : 104							
Northing	Easting	Elevation	Height				
227659.620sft	590051.008sft	996.299sft	903.190sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B196 (600-104)	NEh	Enabled	-0.031sft	0.032sft	0.044sft	0.012sft	0.012sft
B7 (500-104)	NEh	Enabled	0.040sft	-0.041sft	0.057sft	-0.011sft	-0.011sft

Resultant coordinates for point : 99							
Northing	Easting	Elevation	Height				
227675.908sft	588376.322sft	1010.384sft	917.318sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B199 (600-99)	NEh	Enabled	0.007sft	0.022sft	0.023sft	0.030sft	0.030sft
B8 (500-99)	NEh	Enabled	-0.010sft	-0.031sft	0.032sft	-0.034sft	-0.034sft

Resultant coordinates for point : 91							
Northing	Easting	Elevation	Height				
227672.650sft	586383.328sft	1000.177sft	907.160sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B201 (600-91)	NEh	Enabled	-0.034sft	0.061sft	0.070sft	-0.027sft	-0.027sft
B9 (500-91)	NEh	Enabled	0.026sft	-0.047sft	0.054sft	0.018sft	0.018sft

Resultant coordinates for point : 83							
Northing	Easting	Elevation	Height				
227677.158sft	583258.243sft	995.629sft	902.688sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B202 (600-83)	NEh	Enabled	-0.004sft	0.040sft	0.040sft	0.039sft	0.039sft
B10 (500-83)	NEh	Enabled	0.005sft	-0.045sft	0.046sft	-0.052sft	-0.052sft

Resultant coordinates for point : 84							
Northing	Easting	Elevation	Height				
226147.283sft	583242.344sft	1004.231sft	911.283sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B219 (600-84)	NEh	Enabled	0.070sft	0.052sft	0.087sft	-0.036sft	-0.036sft
B11 (500-84)	NEh	Enabled	-0.086sft	-0.064sft	0.108sft	0.047sft	0.047sft

Resultant coordinates for point : 142							
Northing	Easting	Elevation	Height				
226008.427sft	587227.883sft	996.967sft	903.919sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B200 (600-142)	NEh	Enabled	-0.027sft	0.052sft	0.058sft	0.020sft	0.020sft
B12 (500-142)	NEh	Enabled	0.032sft	-0.061sft	0.069sft	-0.022sft	-0.022sft

Resultant coordinates for point : 100							
Northing	Easting	Elevation	Height				
226149.210sft	588617.869sft	998.535sft	905.452sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B198 (600-100)	NEh	Enabled	-0.009sft	0.018sft	0.020sft	0.054sft	0.054sft
B13 (500-100)	NEh	Enabled	0.015sft	-0.030sft	0.033sft	-0.077sft	-0.077sft

Resultant coordinates for point : 105							
Northing	Easting	Elevation	Height				
226146.782sft	589935.562sft	1001.096sft	907.980sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B213 (600-105)	NEh	Enabled	0.008sft	0.046sft	0.047sft	0.041sft	0.041sft
B14 (500-105)	NEh	Enabled	-0.007sft	-0.042sft	0.043sft	-0.052sft	-0.052sft

Resultant coordinates for point : 136							
Northing	Easting	Elevation	Height				
223922.568sft	592134.678sft	991.805sft	898.616sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B211 (600-136)	NEh	Enabled	0.132sft	0.015sft	0.133sft	0.024sft	0.024sft
B15 (500-136)	NEh	Enabled	-0.110sft	-0.012sft	0.111sft	-0.025sft	-0.025sft

Resultant coordinates for point : 106							
Northing	Easting	Elevation	Height				
224646.963sft	591007.748sft	1002.126sft	908.972sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B212 (600-106)	NEh	Enabled	0.000sft	0.019sft	0.019sft	0.063sft	0.063sft
B16 (500-106)	NEh	Enabled	0.000sft	-0.022sft	0.022sft	-0.087sft	-0.087sft

Resultant coordinates for point : 101							
Northing	Easting	Elevation	Height				
224659.123sft	588567.033sft	998.206sft	905.115sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B214 (600-101)	NEh	Enabled	0.004sft	0.030sft	0.030sft	0.060sft	0.060sft
B17 (500-101)	NEh	Enabled	-0.003sft	-0.025sft	0.025sft	-0.074sft	-0.074sft

Resultant coordinates for point : 93							
Northing	Easting	Elevation	Height				
224673.797sft	586462.791sft	1005.030sft	911.993sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B206 (600-93)	NEh	Enabled	-0.044sft	0.004sft	0.044sft	0.061sft	0.061sft
B18 (500-93)	NEh	Enabled	0.031sft	-0.003sft	0.031sft	-0.056sft	-0.056sft

Resultant coordinates for point : 92							
Northing	Easting	Elevation	Height				
226139.485sft	584637.004sft	1002.022sft	909.039sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B312 (600-92)	NEh	Enabled	-0.037sft	0.063sft	0.073sft	0.003sft	0.003sft
B19 (500-92)	NEh	Enabled	0.046sft	-0.079sft	0.091sft	-0.003sft	-0.003sft

Resultant coordinates for point : 90							
Northing	Easting	Elevation	Height				
229128.748sft	584239.371sft	996.097sft	903.142sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B203 (600-90)	NEh	Enabled	0.000sft	0.008sft	0.008sft	0.087sft	0.087sft
B20 (500-90)	NEh	Enabled	0.000sft	-0.012sft	0.012sft	-0.089sft	-0.089sft

Resultant coordinates for point : 135							
Northing	Easting	Elevation	Height				
226741.936sft	592502.296sft	992.548sft	899.370sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B193 (600-135)	NEh	Enabled	-0.030sft	0.089sft	0.094sft	0.124sft	0.124sft
B21 (500-135)	NEh	Enabled	0.023sft	-0.069sft	0.072sft	-0.085sft	-0.085sft

Resultant coordinates for point : 137							
Northing	Easting	Elevation	Height				
221717.718sft	592569.837sft	1014.124sft	920.909sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B215 (600-137)	NEh	Enabled	0.003sft	0.010sft	0.010sft	0.092sft	0.092sft
B22 (500-137)	NEh	Enabled	-0.002sft	-0.008sft	0.009sft	-0.083sft	-0.083sft

Resultant coordinates for point : 107							
Northing	Easting	Elevation	Height				
223166.762sft	591258.293sft	1009.720sft	916.550sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B210 (600-107)	NEh	Enabled	0.010sft	0.040sft	0.041sft	0.018sft	0.018sft
B23 (500-107)	NEh	Enabled	-0.008sft	-0.032sft	0.033sft	-0.014sft	-0.014sft

Resultant coordinates for point : 108							
Northing	Easting	Elevation	Height				
221697.044sft	589976.848sft	1002.323sft	909.176sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B209 (600-108)	NEh	Enabled	-0.030sft	0.070sft	0.076sft	-0.020sft	-0.020sft
B24 (500-108)	NEh	Enabled	0.035sft	-0.081sft	0.088sft	0.024sft	0.024sft

Resultant coordinates for point : 103							
Northing	Easting	Elevation	Height				
221672.630sft	588613.247sft	1011.164sft	918.053sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B208 (600-103)	NEh	Enabled	-0.019sft	0.007sft	0.020sft	0.089sft	0.089sft
B25 (500-103)	NEh	Enabled	0.023sft	-0.009sft	0.024sft	-0.117sft	-0.117sft

Resultant coordinates for point : 102							
Northing	Easting	Elevation	Height				
223243.351sft	588426.106sft	1004.723sft	911.626sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B207 (600-102)	NEh	Enabled	-0.099sft	-0.011sft	0.100sft	0.151sft	0.151sft
B26 (500-102)	NEh	Enabled	0.076sft	0.009sft	0.076sft	-0.118sft	-0.118sft

Resultant coordinates for point : 95							
Northing	Easting	Elevation	Height				
221688.931sft	586586.875sft	1011.327sft	918.268sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B216 (600-95)	NEh	Enabled	0.013sft	0.053sft	0.055sft	-0.001sft	-0.001sft
B27 (500-95)	NEh	Enabled	-0.021sft	-0.088sft	0.090sft	0.001sft	0.001sft

Resultant coordinates for point : 87							
Northing	Easting	Elevation	Height				
221611.686sft	583226.711sft	1003.906sft	910.931sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B220 (600-87)	NEh	Enabled	-0.031sft	0.066sft	0.073sft	0.037sft	0.037sft
B28 (500-87)	NEh	Enabled	0.032sft	-0.068sft	0.075sft	-0.035sft	-0.035sft

Resultant coordinates for point : 94							
Northing	Easting	Elevation	Height				
223159.899sft	584923.075sft	1009.561sft	916.554sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B29 (500-94)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 86							
Northing	Easting	Elevation	Height				
223108.189sft	583343.435sft	1005.906sft	912.937sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B217 (600-86)	NEh	Enabled	-0.031sft	0.046sft	0.056sft	0.067sft	0.067sft
B30 (500-86)	NEh	Enabled	0.029sft	-0.042sft	0.051sft	-0.060sft	-0.060sft

Resultant coordinates for point : 85							
Northing	Easting	Elevation	Height				
224593.726sft	583261.293sft	1003.522sft	910.563sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B218 (600-85)	NEh	Enabled	0.005sft	0.035sft	0.035sft	0.076sft	0.076sft
B31 (500-85)	NEh	Enabled	-0.005sft	-0.034sft	0.034sft	-0.076sft	-0.076sft

Resultant coordinates for point : 123							
Northing	Easting	Elevation	Height				
226149.433sft	595068.875sft	999.597sft	906.348sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B188 (600-123)	NEh	Enabled	0.040sft	0.044sft	0.060sft	0.037sft	0.037sft
B32 (500-123)	NEh	Enabled	-0.031sft	-0.033sft	0.045sft	-0.026sft	-0.026sft

Resultant coordinates for point : 122							
Northing	Easting	Elevation	Height				
224636.452sft	594980.512sft	1007.019sft	913.761sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B33 (500-122)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 19							
Northing	Easting	Elevation	Height				
217219.537sft	604457.841sft	1002.732sft	909.162sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B287 (502-19)	NEh	Enabled	0.007sft	0.006sft	0.009sft	-0.045sft	-0.045sft
B35 (500-19)	NEh	Enabled	-0.008sft	-0.007sft	0.010sft	0.052sft	0.052sft

Resultant coordinates for point : 20							
Northing	Easting	Elevation	Height				
218690.939sft	604465.596sft	1019.538sft	925.982sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B288 (502-20)	NEh	Enabled	-0.014sft	0.014sft	0.020sft	-0.033sft	-0.033sft
B36 (500-20)	NEh	Enabled	0.013sft	-0.013sft	0.019sft	0.032sft	0.032sft

Resultant coordinates for point : 64							
Northing	Easting	Elevation	Height				
216417.280sft	601381.964sft	1001.309sft	907.814sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B37 (500-64)	NEh	Enabled	-0.020sft	-0.010sft	0.022sft	0.036sft	0.036sft
B295 (502-64)	NEh	Enabled	0.023sft	0.011sft	0.025sft	-0.044sft	-0.044sft

Resultant coordinates for point : 63							
Northing	Easting	Elevation	Height				
216509.985sft	599206.054sft	1006.328sft	912.893sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B310 (502-63)	NEh	Enabled	0.012sft	0.011sft	0.016sft	-0.062sft	-0.062sft
B38 (500-63)	NEh	Enabled	-0.014sft	-0.012sft	0.018sft	0.079sft	0.079sft

Resultant coordinates for point : 66							
Northing	Easting	Elevation	Height				
216432.196sft	595799.508sft	992.759sft	899.417sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B309 (502-66)	NEh	Enabled	-0.006sft	-0.017sft	0.018sft	0.002sft	0.002sft
B39 (500-66)	NEh	Enabled	0.005sft	0.015sft	0.016sft	-0.002sft	-0.002sft

Resultant coordinates for point : 67							
Northing	Easting	Elevation	Height				
216433.591sft	592720.646sft	1012.208sft	918.952sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B230 (600-67)	NEh	Enabled	-0.014sft	0.043sft	0.045sft	-0.024sft	-0.024sft
B40 (500-67)	NEh	Enabled	0.015sft	-0.047sft	0.049sft	0.024sft	0.024sft

Resultant coordinates for point : 65							
Northing	Easting	Elevation	Height				
217196.936sft	593897.155sft	1011.820sft	918.537sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B231 (600-65)	NEh	Enabled	-0.009sft	0.048sft	0.049sft	0.000sft	0.000sft
B41 (500-65)	NEh	Enabled	0.010sft	-0.053sft	0.054sft	0.000sft	0.000sft

Resultant coordinates for point : 48							
Northing	Easting	Elevation	Height				
209646.468sft	593950.905sft	1002.799sft	909.459sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B249 (502-48)	NEh	Enabled	-0.018sft	0.014sft	0.023sft	-0.030sft	-0.030sft
B42 (500-48)	NEh	Enabled	0.024sft	-0.018sft	0.030sft	0.035sft	0.035sft

Resultant coordinates for point : 46							
Northing	Easting	Elevation	Height				
212685.072sft	593911.763sft	1010.540sft	917.224sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B250 (502-46)	NEh	Enabled	-0.020sft	0.021sft	0.029sft	-0.073sft	-0.073sft
B43 (500-46)	NEh	Enabled	0.022sft	-0.023sft	0.032sft	0.074sft	0.074sft

Resultant coordinates for point : 55								
Northing	Easting	Elevation	Height					
215699.210sft	593909.722sft	1009.691sft	916.396sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B252 (502-55)	NEh	Enabled	-0.001sft	0.001sft	0.002sft	-0.021sft	-0.021sft	
B44 (500-55)	NEh	Enabled	0.001sft	-0.001sft	0.002sft	0.016sft	0.016sft	

Resultant coordinates for point : 118								
Northing	Easting	Elevation	Height					
220161.573sft	593848.781sft	1007.632sft	914.372sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B183 (600-118)	NEh	Enabled	0.000sft	0.017sft	0.017sft	0.038sft	0.038sft	
B45 (500-118)	NEh	Enabled	0.000sft	-0.027sft	0.027sft	-0.067sft	-0.067sft	

Resultant coordinates for point : 131								
Northing	Easting	Elevation	Height					
221710.701sft	593854.491sft	1012.310sft	919.061sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B184 (600-131)	NEh	Enabled	-0.018sft	0.043sft	0.047sft	0.103sft	0.103sft	
B46 (500-131)	NEh	Enabled	0.020sft	-0.046sft	0.050sft	-0.084sft	-0.084sft	

Resultant coordinates for point : 130								
Northing	Easting	Elevation	Height					
223175.410sft	593866.639sft	1004.005sft	910.766sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B186 (600-130)	NEh	Enabled	-0.032sft	0.021sft	0.038sft	0.043sft	0.043sft	
B47 (500-130)	NEh	Enabled	0.069sft	-0.047sft	0.083sft	-0.081sft	-0.081sft	

Resultant coordinates for point : 129								
Northing	Easting	Elevation	Height					
224639.197sft	593882.500sft	999.211sft	905.982sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B187 (600-129)	NEh	Enabled	0.043sft	0.016sft	0.046sft	-0.043sft	-0.043sft	
B48 (500-129)	NEh	Enabled	-0.035sft	-0.013sft	0.037sft	0.036sft	0.036sft	

Resultant coordinates for point : 128								
Northing	Easting	Elevation	Height					
226148.917sft	593877.383sft	1007.789sft	914.571sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B189 (600-128)	NEh	Enabled	-0.038sft	0.034sft	0.051sft	0.072sft	0.072sft	
B49 (500-128)	NEh	Enabled	0.058sft	-0.051sft	0.077sft	-0.104sft	-0.104sft	

Resultant coordinates for point : 127								
Northing	Easting	Elevation	Height					
227645.570sft	593871.676sft	1002.743sft	909.536sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B190 (600-127)	NEh	Enabled	0.004sft	0.033sft	0.033sft	0.058sft	0.058sft	
B50 (500-127)	NEh	Enabled	-0.007sft	-0.064sft	0.064sft	-0.108sft	-0.108sft	

Resultant coordinates for point : 126								
Northing	Easting	Elevation	Height					
229129.037sft	593866.688sft	997.392sft	904.197sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B191 (600-126)	NEh	Enabled	-0.010sft	0.034sft	0.036sft	0.072sft	0.072sft	
B51 (500-126)	NEh	Enabled	0.013sft	-0.042sft	0.044sft	-0.088sft	-0.088sft	

Resultant coordinates for point : 1								
Northing	Easting	Elevation	Height					
209789.667sft	609745.181sft	1017.018sft	923.250sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B273 (502-1)	NEh	Enabled	-0.004sft	-0.006sft	0.007sft	-0.066sft	-0.066sft	
B52 (500-1)	NEh	Enabled	0.003sft	0.006sft	0.007sft	0.099sft	0.099sft	

Resultant coordinates for point : 2								
Northing	Easting	Elevation	Height					
211280.048sft	609716.630sft	1006.515sft	912.761sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B265 (502-2)	NEh	Enabled	0.014sft	0.031sft	0.034sft	-0.049sft	-0.049sft	
B53 (500-2)	NEh	Enabled	-0.010sft	-0.021sft	0.024sft	0.047sft	0.047sft	

Resultant coordinates for point : 3								
Northing	Easting	Elevation	Height					
212738.535sft	609718.148sft	1015.085sft	921.345sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B283 (502-3)	NEh	Enabled	0.005sft	0.003sft	0.006sft	-0.034sft	-0.034sft	
B54 (500-3)	NEh	Enabled	-0.005sft	-0.004sft	0.006sft	0.045sft	0.045sft	

Resultant coordinates for point : 4							
Northing	Easting	Elevation	Height				
214223.804sft	609755.762sft	1008.298sft	914.570sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B282 (502-4)	NEh	Enabled	0.050sft	0.014sft	0.052sft	-0.029sft	-0.029sft
B55 (500-4)	NEh	Enabled	-0.043sft	-0.012sft	0.045sft	0.028sft	0.028sft

Resultant coordinates for point : 5							
Northing	Easting	Elevation	Height				
215696.008sft	609751.786sft	1003.724sft	910.009sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B281 (502-5)	NEh	Enabled	0.056sft	0.014sft	0.058sft	-0.065sft	-0.065sft
B56 (500-5)	NEh	Enabled	-0.041sft	-0.010sft	0.042sft	0.052sft	0.052sft

Resultant coordinates for point : 6							
Northing	Easting	Elevation	Height				
217218.769sft	609698.733sft	1009.312sft	915.614sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B280 (502-6)	NEh	Enabled	-0.010sft	0.004sft	0.011sft	-0.032sft	-0.032sft
B57 (500-6)	NEh	Enabled	0.016sft	-0.006sft	0.017sft	0.050sft	0.050sft

Resultant coordinates for point : 7							
Northing	Easting	Elevation	Height				
218739.786sft	609697.056sft	1033.859sft	940.176sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B279 (502-7)	NEh	Enabled	-0.036sft	0.045sft	0.058sft	-0.032sft	-0.032sft
B58 (500-7)	NEh	Enabled	0.027sft	-0.035sft	0.044sft	0.029sft	0.029sft

Resultant coordinates for point : 8							
Northing	Easting	Elevation	Height				
217227.021sft	608413.103sft	1032.028sft	938.361sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B286 (502-8)	NEh	Enabled	-0.042sft	0.029sft	0.051sft	0.023sft	0.023sft
B59 (500-8)	NEh	Enabled	0.041sft	-0.028sft	0.049sft	-0.018sft	-0.018sft

Resultant coordinates for point : 12							
Northing	Easting	Elevation	Height				
214262.400sft	608408.721sft	1023.125sft	929.430sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B284 (502-12)	NEh	Enabled	0.049sft	0.002sft	0.049sft	0.006sft	0.006sft
B60 (500-12)	NEh	Enabled	-0.047sft	-0.002sft	0.048sft	-0.006sft	-0.006sft

Resultant coordinates for point : 13							
Northing	Easting	Elevation	Height				
211238.836sft	608131.939sft	993.255sft	899.538sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B264 (502-13)	NEh	Enabled	0.057sft	0.025sft	0.062sft	-0.004sft	-0.004sft
B61 (500-13)	NEh	Enabled	-0.074sft	-0.032sft	0.081sft	0.005sft	0.005sft

Resultant coordinates for point : 15							
Northing	Easting	Elevation	Height				
212703.565sft	607103.745sft	1025.828sft	932.152sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B311 (502-15)	NEh	Enabled	0.062sft	0.016sft	0.064sft	-0.092sft	-0.092sft
B62 (500-15)	NEh	Enabled	-0.065sft	-0.017sft	0.067sft	0.087sft	0.087sft

Resultant coordinates for point : 27							
Northing	Easting	Elevation	Height				
211209.423sft	605468.646sft	1003.776sft	910.128sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B263 (502-27)	NEh	Enabled	-0.010sft	0.002sft	0.010sft	-0.043sft	-0.043sft
B63 (500-27)	NEh	Enabled	0.009sft	-0.002sft	0.009sft	0.039sft	0.039sft

Resultant coordinates for point : 26							
Northing	Easting	Elevation	Height				
212679.126sft	604873.901sft	1015.779sft	922.159sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B262 (502-26)	NEh	Enabled	0.049sft	-0.016sft	0.051sft	-0.038sft	-0.038sft
B64 (500-26)	NEh	Enabled	-0.047sft	0.015sft	0.049sft	0.036sft	0.036sft

Resultant coordinates for point : 14							
Northing	Easting	Elevation	Height				
209739.074sft	606684.217sft	987.426sft	893.733sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B266 (502-14)	NEh	Enabled	0.031sft	-0.023sft	0.039sft	-0.019sft	-0.019sft
B65 (500-14)	NEh	Enabled	-0.030sft	0.022sft	0.037sft	0.019sft	0.019sft

Resultant coordinates for point : 29							
Northing	Easting	Elevation	Height				
211123.335sft	603385.476sft	1016.163sft	922.570sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B260 (502-29)	NEh	Enabled	0.045sft	0.004sft	0.045sft	0.009sft	0.009sft
B66 (500-29)	NEh	Enabled	-0.044sft	-0.004sft	0.044sft	-0.010sft	-0.010sft

Resultant coordinates for point : 30							
Northing	Easting	Elevation	Height				
209701.952sft	601868.425sft	969.299sft	875.734sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B300 (502-30)	NEh	Enabled	-0.017sft	0.010sft	0.019sft	-0.053sft	-0.053sft
B67 (500-30)	NEh	Enabled	0.021sft	-0.012sft	0.024sft	0.053sft	0.053sft

Resultant coordinates for point : 31							
Northing	Easting	Elevation	Height				
211146.416sft	601866.240sft	1009.145sft	915.594sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B301 (502-31)	NEh	Enabled	0.011sft	0.003sft	0.011sft	-0.031sft	-0.031sft
B68 (500-31)	NEh	Enabled	-0.015sft	-0.004sft	0.015sft	0.034sft	0.034sft

Resultant coordinates for point : 32							
Northing	Easting	Elevation	Height				
212702.321sft	601862.062sft	1012.041sft	918.503sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B302 (502-32)	NEh	Enabled	-0.016sft	-0.016sft	0.023sft	-0.061sft	-0.061sft
B69 (500-32)	NEh	Enabled	0.019sft	0.019sft	0.027sft	0.065sft	0.065sft

Resultant coordinates for point : 33							
Northing	Easting	Elevation	Height				
214177.810sft	601701.939sft	1013.096sft	919.575sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B303 (502-33)	NEh	Enabled	-0.037sft	-0.003sft	0.037sft	0.017sft	0.017sft
B70 (500-33)	NEh	Enabled	0.027sft	0.002sft	0.027sft	-0.011sft	-0.011sft

Resultant coordinates for point : 9							
Northing	Easting	Elevation	Height				
218732.199sft	606437.475sft	1026.433sft	932.828sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B278 (502-9)	NEh	Enabled	0.000sft	0.027sft	0.027sft	-0.099sft	-0.099sft
B71 (500-9)	NEh	Enabled	0.000sft	-0.027sft	0.027sft	0.090sft	0.090sft

Resultant coordinates for point : 18							
Northing	Easting	Elevation	Height				
217219.281sft	606424.474sft	1028.433sft	934.815sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B277 (502-18)	NEh	Enabled	0.042sft	0.188sft	0.045sft	-0.015sft	-0.015sft
B72 (500-18)	NEh	Enabled	-0.043sft	-0.019sft	0.047sft	0.015sft	0.015sft

Resultant coordinates for point : 61							
Northing	Easting	Elevation	Height				
217220.076sft	600335.941sft	1004.733sft	911.273sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B74 (500-61)	NEh	Enabled	-0.008sft	-0.005sft	0.009sft	0.031sft	0.031sft
B294 (502-61)	NEh	Enabled	0.007sft	0.004sft	0.009sft	-0.030sft	-0.030sft

Resultant coordinates for point : 21							
Northing	Easting	Elevation	Height				
217210.964sft	602066.312sft	994.869sft	901.362sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B75 (500-21)	NEh	Enabled	-0.031sft	-0.065sft	0.072sft	0.051sft	0.051sft
B292 (502-21)	NEh	Enabled	0.030sft	0.064sft	0.071sft	-0.054sft	-0.054sft

Resultant coordinates for point : 25							
Northing	Easting	Elevation	Height				
216448.395sft	603076.064sft	996.563sft	903.022sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B76 (500-25)	NEh	Enabled	0.040sft	-0.019sft	0.044sft	-0.020sft	-0.020sft
B291 (502-25)	NEh	Enabled	-0.028sft	0.013sft	0.031sft	0.015sft	0.015sft

Resultant coordinates for point : 23							
Northing	Easting	Elevation	Height				
215703.297sft	604620.483sft	996.816sft	903.228sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B289 (502-23)	NEh	Enabled	-0.002sft	0.029sft	0.029sft	-0.041sft	-0.041sft
B77 (500-23)	NEh	Enabled	0.004sft	-0.052sft	0.052sft	0.061sft	0.061sft



Resultant coordinates for point : 16							
Northing	Easting	Elevation	Height				
214189.170sft	606116.845sft	1024.009sft	930.370sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B78 (500-16)	NEh	Enabled	0.000sft	-0.062sft	0.062sft	0.013sft	0.013sft
B290 (502-16)	NEh	Enabled	0.000sft	0.061sft	0.061sft	-0.013sft	-0.013sft

Resultant coordinates for point : 17							
Northing	Easting	Elevation	Height				
215686.073sft	605332.826sft	1025.619sft	932.014sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B276 (502-17)	NEh	Enabled	0.008sft	-0.023sft	0.024sft	-0.055sft	-0.055sft
B79 (500-17)	NEh	Enabled	-0.007sft	0.020sft	0.021sft	0.055sft	0.055sft

Resultant coordinates for point : 11							
Northing	Easting	Elevation	Height				
215666.850sft	607040.336sft	1029.068sft	935.419sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B275 (502-11)	NEh	Enabled	0.030sft	0.026sft	0.040sft	-0.018sft	-0.018sft
B80 (500-11)	NEh	Enabled	-0.026sft	-0.023sft	0.035sft	0.018sft	0.018sft

Resultant coordinates for point : 24							
Northing	Easting	Elevation	Height				
214288.814sft	604360.227sft	994.261sft	900.668sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B272 (502-24)	NEh	Enabled	0.048sft	0.029sft	0.056sft	-0.093sft	-0.093sft
B81 (500-24)	NEh	Enabled	-0.037sft	-0.022sft	0.043sft	0.077sft	0.077sft

Resultant coordinates for point : 34							
Northing	Easting	Elevation	Height				
214189.067sft	603072.170sft	989.445sft	895.884sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B271 (502-34)	NEh	Enabled	-0.050sft	0.076sft	0.091sft	-0.056sft	-0.056sft
B82 (500-34)	NEh	Enabled	0.030sft	-0.046sft	0.055sft	0.033sft	0.033sft

Resultant coordinates for point : 10							
Northing	Easting	Elevation	Height				
216502.759sft	609224.841sft	1015.024sft	921.330sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B285 (502-10)	NEh	Enabled	-0.012sft	-0.025sft	0.027sft	0.004sft	0.004sft
B83 (500-10)	NEh	Enabled	0.018sft	0.038sft	0.042sft	-0.006sft	-0.006sft

Resultant coordinates for point : 60							
Northing	Easting	Elevation	Height				
215727.507sft	602523.287sft	994.119sft	900.587sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B84 (500-60)	NEh	Enabled	-0.039sft	-0.069sft	0.079sft	0.084sft	0.084sft
B293 (502-60)	NEh	Enabled	0.028sft	0.048sft	0.056sft	-0.066sft	-0.066sft

Resultant coordinates for point : 59							
Northing	Easting	Elevation	Height				
215726.367sft	600283.847sft	1012.804sft	919.333sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B85 (500-59)	NEh	Enabled	0.009sft	-0.066sft	0.067sft	0.066sft	0.066sft
B296 (502-59)	NEh	Enabled	-0.007sft	0.048sft	0.048sft	-0.061sft	-0.061sft

Resultant coordinates for point : 58							
Northing	Easting	Elevation	Height				
214969.240sft	599370.519sft	998.528sft	905.076sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B86 (500-58)	NEh	Enabled	-0.016sft	-0.003sft	0.016sft	0.106sft	0.106sft
B297 (502-58)	NEh	Enabled	0.008sft	0.002sft	0.008sft	-0.071sft	-0.071sft

Resultant coordinates for point : 43							
Northing	Easting	Elevation	Height				
214188.325sft	600368.551sft	1003.793sft	910.308sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B304 (502-43)	NEh	Enabled	-0.017sft	0.014sft	0.022sft	-0.061sft	-0.061sft
B87 (500-43)	NEh	Enabled	0.029sft	-0.022sft	0.036sft	0.090sft	0.090sft

Resultant coordinates for point : 38							
Northing	Easting	Elevation	Height				
212554.368sft	599484.662sft	991.720sft	898.246sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B298 (502-38)	NEh	Enabled	0.027sft	-0.024sft	0.037sft	0.049sft	0.049sft
B88 (500-38)	NEh	Enabled	-0.028sft	0.025sft	0.038sft	-0.042sft	-0.042sft

Resultant coordinates for point : 39								
Northing	Easting	Elevation	Height					
211915.087sft	600654.555sft	1003.430sft	909.919sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B299 (502-39)	NEh	Enabled	0.028sft	0.008sft	0.029sft	-0.043sft	-0.043sft	
B89 (500-39)	NEh	Enabled	-0.036sft	-0.010sft	0.037sft	0.049sft	0.049sft	

Resultant coordinates for point : 35								
Northing	Easting	Elevation	Height					
211155.171sft	599677.067sft	965.744sft	872.252sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B259 (502-35)	NEh	Enabled	-0.003sft	0.024sft	0.024sft	-0.036sft	-0.036sft	
B90 (500-35)	NEh	Enabled	0.002sft	-0.018sft	0.018sft	0.039sft	0.039sft	

Resultant coordinates for point : 37								
Northing	Easting	Elevation	Height					
210428.335sft	600794.792sft	962.120sft	868.591sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B258 (502-37)	NEh	Enabled	0.059sft	0.030sft	0.066sft	-0.049sft	-0.049sft	
B91 (500-37)	NEh	Enabled	-0.060sft	-0.031sft	0.068sft	0.068sft	0.068sft	

Resultant coordinates for point : 36								
Northing	Easting	Elevation	Height					
209728.380sft	599782.001sft	999.017sft	905.512sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B257 (502-36)	NEh	Enabled	-0.020sft	0.016sft	0.026sft	-0.032sft	-0.032sft	
B92 (500-36)	NEh	Enabled	0.020sft	-0.016sft	0.026sft	0.034sft	0.034sft	

Resultant coordinates for point : 57								
Northing	Easting	Elevation	Height					
215701.007sft	597873.609sft	1014.987sft	921.583sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B307 (502-57)	NEh	Enabled	0.044sft	0.007sft	0.045sft	-0.023sft	-0.023sft	
B93 (500-57)	NEh	Enabled	-0.033sft	-0.005sft	0.033sft	0.022sft	0.022sft	

Resultant coordinates for point : 44								
Northing	Easting	Elevation	Height					
214183.816sft	597886.487sft	980.888sft	887.470sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B306 (502-44)	NEh	Enabled	-0.014sft	0.013sft	0.019sft	-0.061sft	-0.061sft	
B94 (500-44)	NEh	Enabled	0.015sft	-0.014sft	0.021sft	0.079sft	0.079sft	

Resultant coordinates for point : 40								
Northing	Easting	Elevation	Height					
211141.218sft	597899.696sft	1011.430sft	917.990sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B267 (502-40)	NEh	Enabled	-0.005sft	0.024sft	0.024sft	0.041sft	0.041sft	
B95 (500-40)	NEh	Enabled	0.005sft	-0.022sft	0.022sft	-0.044sft	-0.044sft	

Resultant coordinates for point : 62								
Northing	Easting	Elevation	Height					
217214.081sft	598077.374sft	1011.537sft	918.139sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B245 (600-62)	NEh	Enabled	-0.011sft	0.042sft	0.043sft	-0.053sft	-0.053sft	
B96 (500-62)	NEh	Enabled	0.013sft	-0.051sft	0.052sft	0.050sft	0.050sft	

Resultant coordinates for point : 117								
Northing	Easting	Elevation	Height					
217468.013sft	599213.971sft	1008.088sft	914.660sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B308 (502-117)	NEh	Enabled	0.042sft	0.028sft	0.050sft	-0.031sft	-0.031sft	
B97 (500-117)	NEh	Enabled	-0.042sft	-0.028sft	0.050sft	0.035sft	0.035sft	

Resultant coordinates for point : 22								
Northing	Easting	Elevation	Height					
218720.921sft	601396.683sft	1004.271sft	910.795sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B99 (500-22)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft	

Resultant coordinates for point : 116								
Northing	Easting	Elevation	Height					
218717.190sft	597334.359sft	1002.008sft	908.641sft					
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height	
B100 (500-116)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft	

Resultant coordinates for point : 49							
Northing	Easting	Elevation	Height				
211187.367sft	592536.677sft	1012.852sft	919.563sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B101 (500-49)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 50							
Northing	Easting	Elevation	Height				
209642.670sft	591339.557sft	1010.420sft	917.154sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B248 (502-50)	NEh	Enabled	0.034sft	0.014sft	0.037sft	-0.017sft	-0.017sft
B102 (500-50)	NEh	Enabled	-0.052sft	-0.022sft	0.056sft	0.024sft	0.024sft

Resultant coordinates for point : 51							
Northing	Easting	Elevation	Height				
211124.869sft	591235.129sft	1006.161sft	912.907sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B247 (502-51)	NEh	Enabled	-0.003sft	0.002sft	0.004sft	-0.033sft	-0.033sft
B103 (500-51)	NEh	Enabled	0.006sft	-0.004sft	0.007sft	0.065sft	0.065sft

Resultant coordinates for point : 41							
Northing	Easting	Elevation	Height				
209648.486sft	596605.481sft	996.033sft	902.617sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B305 (502-41)	NEh	Enabled	0.017sft	0.023sft	0.029sft	-0.036sft	-0.036sft
B104 (500-41)	NEh	Enabled	-0.018sft	-0.025sft	0.031sft	0.035sft	0.035sft

Resultant coordinates for point : 47							
Northing	Easting	Elevation	Height				
211157.550sft	595604.596sft	994.571sft	901.195sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B268 (502-47)	NEh	Enabled	0.029sft	0.044sft	0.053sft	-0.026sft	-0.026sft
B105 (500-47)	NEh	Enabled	-0.026sft	-0.039sft	0.047sft	0.026sft	0.026sft

Resultant coordinates for point : 42							
Northing	Easting	Elevation	Height				
212687.282sft	596553.054sft	1002.033sft	908.642sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B269 (502-42)	NEh	Enabled	0.014sft	0.027sft	0.030sft	-0.011sft	-0.011sft
B106 (500-42)	NEh	Enabled	-0.014sft	-0.027sft	0.030sft	0.011sft	0.011sft

Resultant coordinates for point : 45							
Northing	Easting	Elevation	Height				
214170.300sft	595254.762sft	1005.588sft	912.245sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B270 (502-45)	NEh	Enabled	0.050sft	0.004sft	0.051sft	-0.100sft	-0.100sft
B107 (500-45)	NEh	Enabled	-0.064sft	-0.006sft	0.064sft	0.111sft	0.111sft

Resultant coordinates for point : 56							
Northing	Easting	Elevation	Height				
215713.640sft	596170.091sft	981.897sft	888.538sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B256 (502-56)	NEh	Enabled	0.039sft	-0.018sft	0.043sft	-0.024sft	-0.024sft
B108 (500-56)	NEh	Enabled	-0.034sft	0.016sft	0.038sft	0.026sft	0.026sft

Resultant coordinates for point : 115							
Northing	Easting	Elevation	Height				
217238.991sft	596904.550sft	1010.343sft	916.977sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B109 (500-115)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 54							
Northing	Easting	Elevation	Height				
214227.428sft	592883.313sft	1009.416sft	916.139sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B251 (502-54)	NEh	Enabled	-0.010sft	-0.021sft	0.023sft	-0.044sft	-0.044sft
B110 (500-54)	NEh	Enabled	0.007sft	0.014sft	0.016sft	0.029sft	0.029sft

Resultant coordinates for point : 68							
Northing	Easting	Elevation	Height				
215671.433sft	591312.797sft	1017.580sft	924.357sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B253 (502-68)	NEh	Enabled	0.051sft	0.002sft	0.051sft	-0.039sft	-0.039sft
B111 (500-68)	NEh	Enabled	-0.059sft	-0.002sft	0.059sft	0.037sft	0.037sft

Resultant coordinates for point : 53							
Northing	Easting	Elevation	Height				
214184.340sft	591268.288sft	1010.186sft	916.953sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B254 (502-53)	NEh	Enabled	0.009sft	0.027sft	0.029sft	-0.101sft	-0.101sft
B112 (500-53)	NEh	Enabled	-0.008sft	-0.025sft	0.026sft	0.096sft	0.096sft

Resultant coordinates for point : 52							
Northing	Easting	Elevation	Height				
212658.975sft	591326.790sft	1007.083sft	913.838sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B113 (500-52)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 28							
Northing	Easting	Elevation	Height				
209730.409sft	604062.367sft	973.726sft	880.101sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B261 (502-28)	NEh	Enabled	0.021sft	-0.002sft	0.021sft	-0.039sft	-0.039sft
B114 (500-28)	NEh	Enabled	-0.022sft	0.003sft	0.022sft	0.063sft	0.063sft

Resultant coordinates for point : 70							
Northing	Easting	Elevation	Height				
215692.017sft	590042.381sft	1015.499sft	922.311sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B115 (500-70)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 71							
Northing	Easting	Elevation	Height				
214204.006sft	588633.596sft	1006.817sft	913.656sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B116 (500-71)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 72							
Northing	Easting	Elevation	Height				
215674.477sft	587300.086sft	1009.473sft	916.357sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B255 (502-72)	NEh	Enabled	-0.016sft	0.010sft	0.019sft	-0.042sft	-0.042sft
B117 (500-72)	NEh	Enabled	0.016sft	-0.009sft	0.018sft	0.039sft	0.039sft

Resultant coordinates for point : 69							
Northing	Easting	Elevation	Height				
217208.545sft	591276.830sft	1019.397sft	926.186sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B229 (600-69)	NEh	Enabled	0.014sft	0.026sft	0.030sft	-0.031sft	-0.031sft
B118 (500-69)	NEh	Enabled	-0.033sft	-0.062sft	0.070sft	0.045sft	0.045sft

Resultant coordinates for point : 75							
Northing	Easting	Elevation	Height				
217178.779sft	588609.586sft	1014.326sft	921.186sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B228 (600-75)	NEh	Enabled	0.017sft	-0.001sft	0.017sft	0.108sft	0.108sft
B119 (500-75)	NEh	Enabled	-0.009sft	0.001sft	0.009sft	-0.057sft	-0.057sft

Resultant coordinates for point : 140							
Northing	Easting	Elevation	Height				
217804.695sft	587313.481sft	1009.669sft	916.567sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B120 (500-140)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 76							
Northing	Easting	Elevation	Height				
217224.771sft	586009.675sft	1012.722sft	919.650sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B121 (500-76)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 139							
Northing	Easting	Elevation	Height				
217943.464sft	584647.735sft	1013.015sft	919.983sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B237 (600-139)	NEh	Enabled	-0.021sft	0.058sft	0.062sft	0.022sft	0.022sft
B122 (500-139)	NEh	Enabled	0.023sft	-0.065sft	0.069sft	-0.023sft	-0.023sft

Resultant coordinates for point : 138							
Northing	Easting	Elevation	Height				
218773.131sft	588681.972sft	1008.705sft	915.574sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B236 (600-138)	NEh	Enabled	-0.024sft	0.031sft	0.040sft	0.027sft	0.027sft
B123 (500-138)	NEh	Enabled	0.025sft	-0.033sft	0.041sft	-0.021sft	-0.021sft

Resultant coordinates for point : 114							
Northing	Easting	Elevation	Height				
218522.336sft	595019.707sft	1011.712sft	918.407sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B244 (600-114)	NEh	Enabled	-0.018sft	0.066sft	0.069sft	-0.026sft	-0.026sft
B124 (500-114)	NEh	Enabled	0.020sft	-0.072sft	0.075sft	0.025sft	0.025sft

Resultant coordinates for point : 113							
Northing	Easting	Elevation	Height				
218684.088sft	592562.855sft	1008.504sft	915.267sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B232 (600-113)	NEh	Enabled	0.001sft	0.068sft	0.068sft	-0.002sft	-0.002sft
B125 (500-113)	NEh	Enabled	-0.001sft	-0.070sft	0.070sft	0.002sft	0.002sft

Resultant coordinates for point : 141							
Northing	Easting	Elevation	Height				
220175.431sft	586354.834sft	1006.187sft	913.124sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B222 (600-141)	NEh	Enabled	0.001sft	0.046sft	0.046sft	0.034sft	0.034sft
B127 (500-141)	NEh	Enabled	-0.002sft	-0.061sft	0.061sft	-0.041sft	-0.041sft

Resultant coordinates for point : 121							
Northing	Easting	Elevation	Height				
223182.047sft	594378.288sft	993.963sft	900.710sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B156 (500-121)	NEh	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	0.000sft

Resultant coordinates for point : 120							
Northing	Easting	Elevation	Height				
221720.855sft	595036.115sft	1007.353sft	914.072sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B157 (500-120)	NEh	Enabled	0.027sft	-0.034sft	0.044sft	-0.071sft	-0.071sft
B185 (600-120)	NEh	Enabled	-0.020sft	0.026sft	0.033sft	0.073sft	0.073sft

Resultant coordinates for point : 119							
Northing	Easting	Elevation	Height				
220366.024sft	595087.845sft	1010.064sft	916.771sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B158 (500-119)	NEh	Enabled	0.060sft	-0.036sft	0.070sft	-0.093sft	-0.093sft
B182 (600-119)	NEh	Enabled	-0.051sft	0.030sft	0.060sft	0.104sft	0.104sft

Resultant coordinates for point : 110							
Northing	Easting	Elevation	Height				
218707.582sft	590165.907sft	1017.848sft	924.677sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B160 (500-110)	NEh	Enabled	-0.024sft	-0.057sft	0.062sft	-0.003sft	-0.003sft
B233 (600-110)	NEh	Enabled	0.018sft	0.042sft	0.046sft	0.003sft	0.003sft

Resultant coordinates for point : 112							
Northing	Easting	Elevation	Height				
219122.249sft	587560.158sft	1014.010sft	920.911sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B161 (500-112)	NEh	Enabled	0.037sft	-0.061sft	0.071sft	-0.022sft	-0.022sft
B234 (600-112)	NEh	Enabled	-0.038sft	0.062sft	0.072sft	0.025sft	0.025sft

Resultant coordinates for point : 111							
Northing	Easting	Elevation	Height				
218754.510sft	585896.806sft	1013.089sft	920.030sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B162 (500-111)	NEh	Enabled	0.012sft	-0.052sft	0.053sft	0.035sft	0.035sft
B235 (600-111)	NEh	Enabled	-0.009sft	0.039sft	0.040sft	-0.028sft	-0.028sft

Resultant coordinates for point : 88							
Northing	Easting	Elevation	Height				
220418.129sft	583413.482sft	1008.058sft	915.071sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B163 (500-88)	NEh	Enabled	-0.047sft	-0.035sft	0.059sft	-0.055sft	-0.055sft
B224 (600-88)	NEh	Enabled	0.044sft	0.032sft	0.054sft	0.066sft	0.066sft

Resultant coordinates for point : 96							
Northing	Easting	Elevation	Height				
220118.718sft	584902.784sft	1007.394sft	914.369sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B164 (500-96)	NEh	Enabled	-0.025sft	0.006sft	0.026sft	-0.103sft	-0.103sft
B223 (600-96)	NEh	Enabled	0.021sft	-0.005sft	0.022sft	0.100sft	0.100sft

Resultant coordinates for point : 97							
Northing	Easting	Elevation	Height				
220304.556sft	588614.676sft	1008.895sft	915.775sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B165 (500-97)	NEh	Enabled	0.004sft	-0.054sft	0.054sft	-0.064sft	-0.064sft
B221 (600-97)	NEh	Enabled	-0.005sft	0.068sft	0.068sft	0.073sft	0.073sft

Resultant coordinates for point : 89							
Northing	Easting	Elevation	Height				
218683.722sft	583285.029sft	1011.895sft	918.902sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B166 (500-89)	NEh	Enabled	0.042sft	-0.021sft	0.047sft	-0.053sft	-0.053sft
B225 (600-89)	NEh	Enabled	-0.033sft	0.017sft	0.037sft	0.045sft	0.045sft

Resultant coordinates for point : 79							
Northing	Easting	Elevation	Height				
217239.797sft	583295.154sft	1012.738sft	919.736sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B167 (500-79)	NEh	Enabled	0.064sft	-0.021sft	0.067sft	-0.134sft	-0.134sft
B226 (600-79)	NEh	Enabled	-0.066sft	0.022sft	0.070sft	0.128sft	0.128sft

Resultant coordinates for point : 78							
Northing	Easting	Elevation	Height				
215804.690sft	583294.096sft	1010.831sft	917.821sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B168 (500-78)	NEh	Enabled	0.035sft	-0.069sft	0.077sft	0.011sft	0.011sft
B241 (600-78)	NEh	Enabled	-0.033sft	0.065sft	0.072sft	-0.012sft	-0.012sft

Resultant coordinates for point : 77							
Northing	Easting	Elevation	Height				
214013.154sft	583294.347sft	1007.168sft	914.146sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B169 (500-77)	NEh	Enabled	0.035sft	-0.029sft	0.045sft	-0.018sft	-0.018sft
B242 (600-77)	NEh	Enabled	-0.022sft	0.018sft	0.029sft	0.014sft	0.014sft

Resultant coordinates for point : 73							
Northing	Easting	Elevation	Height				
214245.043sft	585988.289sft	1015.223sft	922.133sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B170 (500-73)	NEh	Enabled	0.015sft	-0.050sft	0.052sft	0.010sft	0.010sft
B243 (600-73)	NEh	Enabled	-0.018sft	0.059sft	0.062sft	-0.013sft	-0.013sft

Resultant coordinates for point : 74							
Northing	Easting	Elevation	Height				
215667.449sft	585980.953sft	1016.269sft	923.189sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B171 (500-74)	NEh	Enabled	0.008sft	-0.039sft	0.040sft	0.001sft	0.001sft
B239 (600-74)	NEh	Enabled	-0.009sft	0.042sft	0.042sft	-0.001sft	-0.001sft

Resultant coordinates for point : 81							
Northing	Easting	Elevation	Height				
215002.751sft	584684.692sft	1009.077sft	916.026sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B172 (500-81)	NEh	Enabled	0.002sft	0.010sft	0.010sft	-0.130sft	-0.130sft
B240 (600-81)	NEh	Enabled	-0.001sft	-0.009sft	0.009sft	0.093sft	0.093sft

Resultant coordinates for point : 80							
Northing	Easting	Elevation	Height				
216423.360sft	584702.338sft	1013.987sft	920.944sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
B173 (500-80)	NEh	Enabled	-0.017sft	-0.010sft	0.019sft	-0.100sft	-0.100sft
B238 (600-80)	NEh	Enabled	0.018sft	0.010sft	0.021sft	0.098sft	0.098sft

Resultant coordinates for point : 109							
Northing	Easting	Elevation	Height				
220482.775sft	591197.748sft	1009.232sft	915.955sft				
ID	Used to calc.	Status	Δ North	Δ East	Distance (Horiz)	Δ Elevation	Δ Height
CG155 Office entered	NEe	Enabled	0.000sft	0.000sft	0.000sft	0.000sft	-0.090sft
B126 (500-109)	h	Enabled	0.047sft	-0.065sft	0.081sft	0.090sft	0.000sft

**From:** "William White" <bwhite@tier3-inc.com>  
**To:** "Peter Jenkins" <peter.jenkins@dot.state.mn.us>  
**Date:** 5/17/05 10:37AM  
**Subject:** 5/24 meeting

Hi Peter - I've got the County signed up for 9:00 am on Tuesday. It will be Paul Schmitt, Charlie Berg, and myself - you and Steve Jobe (if you bring him with.)

I'd like to get your thoughts on the content of the MOU - specifically, what the MNDOT "scope of work" would be - a description of the work activities, quantities, accuracies, and deliverables - number of points to be confirmed, a brief description of the work that involves, the level of accuracy deemed acceptable by MNDOT (and the county), description of the report, etc. - those are the kind of thing I really don't have any expertise in. I'll work with the County on their component - I'm thinking mostly restrictions on use - are there other things they should be focusing on? Are their County resources or input that you need?

Let me know - thanks - look forward to seeing you next week.

Bill

Tier 3, Incorporated  
William O. White, III  
7808 Wildcreek Trail  
Huntsville, AL 35802  
cell: 256-457-2317  
office: 651-344-3551  
facsimile: 651-344-3552  
bwhite@tier3-inc.com  
www.tier3-inc.com

**From:** "William White" <bwhite@tier3-inc.com>  
**To:** "Peter Jenkins" <Peter.Jenkins@dot.state.mn.us>  
**Date:** 5/19/05 3:12PM  
**Subject:** RE: 5/24 meeting

Hi Peter -- Here is the basic info on the deliverables -- let me know if you need more specificity.

The ortho deliverables will be .5' pixel, 1" = 200', approx. 1" = 1000" negative scale, color, uncompressed tiffs or geotiffs, and companion SIDs.

LiDAR deliverables will probably be ascii 3D Gen (ESRI) files -- point cloud should be about 3.5' to 5' spacing, and of sufficient density to create 2' contours.

They are doing a pilot area in the north central part of the County -- around the suburban area where the MN River starts heading north from Mankato. Ortho and LiDAR deliverables for the pilot should be middle of June.

Intended use -- primary is for annual tax map production, which is an overlay of their parcel base (microstation now, ArcGIS later)-- don't know yet if that is going to be ad hoc or if they'll do a full run early next year.

Environmental services(ES)will be the primary initial beneficiary of the LiDAR -- probably in-house creation of contours for flood plains, riparian areas, landfill, wetlands, etc. ES is also responsible for maintenance of street centerlines, and those will probably be re-digitized or otherwise edited to register with the new orthos.

City of Mankato has a need for new contours in about 90 sq. miles of the northeast section of the City, and the County will be looking to negotiate a deal with them.

Tertiary users will be ditch management contour creation (probably shape files or geomedia .mdb); highway ortho and contour pre-design activities (primarily microstation); public safety will want access to new orthos (MapInfo/SID's).

I've forwarded the draft MOU to Paul Schmitt, and will give it some thought before we meet. Look forward to Tuesday.

Bill

-----Original Message-----

From: Peter Jenkins [mailto:Peter.Jenkins@dot.state.mn.us]  
Sent: Wednesday, May 18, 2005 12:10 PM  
To: bwhite@tier3-inc.com  
Subject: Re: 5/24 meeting

Bill:

Steve and I are playing telephone tag, but he would like to attend. One of a few questions that I will need to have answered involve the deliverables. Without knowing what the nature of the data is, its hard to know if Mn/DOT's expectation is the same as Blue Earth County's. If



our expectations are similar then a simple MOU would do. If not then we may have to be more specific in our language so that we all walk away feeling good.

An example of what I'm looking for would be the pixel resolution of the ortho, this is important because it will determine the directions Steve gives to his crews as to what test points are needed. Pixel resolution will also determine the accuracy expectations, if the pixel resolution is 2 foot then a accuracy expectation of 6 inches is unreasonable. Something in the range of 4 to 10 feet would be a realistic outcome.

There are similar issues with what platform the county intends to run this data on. A data set that we received from one county where we were not involved up-front, delivered data that was tremendously large and it has caused issues with our CADD machines. We are doing a work around and this is causing some stress on the part of our district client who now want to use this data. I'll also want to know what the county's intended use for this data is, these are important metadata questions which also help in determining the procedure for testing.

I think that the MOU I sent you previously is similar to the one the county signed for the Monument Densification Project. The County Engineer signed that particular one so he is familiar with the process but the IT folks might not be. We certainly can do some adjustments to it at the meeting. Just so that you have a copy of what I have so far, here it is.

Pete

>>> "William White" <bwhite@tier3-inc.com> 05/17/05 10:15AM >>>  
Hi Peter - I've got the County signed up for 9:00 am on Tuesday. It will be Paul Schmitt, Charlie Berg, and myself - you and Steve Jobe (if you bring him with.)

I'd like to get your thoughts on the content of the MOU - specifically, what the MNDOT "scope of work" would be - a description of the work activities, quantities, accuracies, and deliverables - number of points to be confirmed, a brief description of the work that involves, the level of accuracy deemed acceptable by MNDOT (and the county), description of the report, etc. - those are the kind of thing I really don't have any expertise in. I'll work with the County on their component - I'm thinking mostly restrictions on use - are there other things they should be focusing on? Are their County resources or input that you need?

Let me know - thanks - look forward to seeing you next week.

Bill

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office: 651-344-3551

facsimile: 651-344-3552

bwhite@tier3-inc.com

www.tier3-inc.com

**CC:** "Paul Schmitt" <paul.schmitt@co.blue-earth.mn.us>

**From:** "Haeder, Darrin" <darrin.haeder@co.blue-earth.mn.us>  
**To:** <peter.jenkins@dot.state.mn.us>  
**Date:** 7/20/2006 8:44:14 AM  
**Subject:** Blue Earth County QC

I took over Paul Schmitt's position here at Blue Earth County in June and I wanted to touch base with you. I have some notes about Mn/DOT doing a quality control check on our data that mentioned your name but they don't have any kind of timeline for the project. If I could get an update on where things are at and maybe a projected completion date that would help me plan some things out here. If there is anything you need from me just let me know.

Thanks,

Darrin Haeder  
Blue Earth County  
Information Technology  
507-304-4159

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**From:** "Berg, Charles" <Charles.Berg@co.blue-earth.mn.us>  
**To:** <sjashbee@optimalgeo.com>, <Mike.Lalla@state.mn.us>, <peter.jenkins@dot.state.mn.us>  
**Date:** 4/15/2006 11:26:34 AM  
**Subject:** Confirmation: Blue Earth County Data

This is just to confirm the action items from our conference call this morning.

1. Mike will pull the photos off the USB hard drive, then send it to Steve Ashbee probably Monday or Tuesday of next week.
2. OptimalGeomatics will get started now with the plan outlined below.
3. Once Optimal is finished and has received the USB hard drive, they will put the V8 files on the drive and send it back to Mike and Pete at MnDOT.

Let me know if there are any corrections to the above action items.

Thanks for all your help with this!

Charlie

=====

-----Original Message-----

**From:** Steve Ashbee [mailto:SJAshbee@atlantictech.com]  
**Sent:** Wednesday, April 12, 2006 9:20 AM  
**To:** Berg, Charles  
**Cc:** Mike Vessel  
**Subject:** RE: Blue Earth County Data

Charlie,

I believe this is a good solution. It puts the onus on us to ensure the V7 files are as conducive to translation to V8 as they can be to start with. Also, if we do the translation, we will identify any issues encountered and document the solutions for future reference. As long as we're translating to V8, we will go ahead and add the V8 set as a final deliverable to Blue Earth County as well. Sooner or later more MicroStation V8 users will want to access the data anyway.

Steve

-----Original Message-----

**From:** Berg, Charles [mailto:Charles.Berg@co.blue-earth.mn.us]  
**Sent:** Tuesday, April 11, 2006 1:07 PM  
**To:** sjashbee@optimalgeo.com  
**Subject:** FW: Blue Earth County Data

Steve,

Does Pete's proposal below sound workable to you?

Thanks!

Charlie

-----Original Message-----

**From:** Peter Jenkins [mailto:Peter.Jenkins@dot.state.mn.us]  
**Sent:** Tuesday, April 11, 2006 12:57 PM  
**To:** Berg, Charles  
**Cc:** Mike Lalla

Subject: Blue Earth County Data

Charlie:

This is a followup on the e-mail sent regarding our discovery of converting V7 files to V8 within MicroStation. It would be my preference to use the files directly from Optimal Geomatics and not have to do a English-metric conversion. Don't get me wrong, we are fully capable of making this conversion but there are issues involved. As a surveyor, without knowing every parameter and definition there is a chance that errors could occur over a data set as large as your. Small errors are not noticeable in small data sets but may become noticeable when large areas are concerned.

My proposed solution would be for me to send your portable hard drive directly to Steve Ashbee. Have him load the same files he is re-sending you and ship them directly to me (I'll pay for shipping). This way I am testing the same files you were delivered. This is in the interest of safety so errors can be avoided.

Thanks  
Pete

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**From:** Steve Ashbee <SJAshbee@atlantictech.com>  
**To:** "Peter Jenkins" <Peter.Jenkins@dot.state.mn.us>  
**Date:** 9/22/2005 8:09:38 AM  
**Subject:** RE: Blue Earth County Section Corners

Peter,

Thanks for your help and support. As far as the time frame goes, I can make sure expectations are in line at Blue Earth County. We will be delivering digital orthos for Mankato and adjoining TWP's to the north and east over the next two weeks. By the end of October we will have about 1/2 of the county delivered.

From what you are telling us, a countywide rectification of their Tax Maps will likely need to involve a combination of Section Corner controls and photo-identifiable property corners that we can get from the orthos.

Once again, thanks for your generosity in this matter. It's a big help to us and Blue Earth County.

P.S. You must've been looking at September. Oct. 27th is a Thursday!!

Regards,

Steve

-----Original Message-----

**From:** Peter Jenkins [mailto:Peter.Jenkins@dot.state.mn.us]  
**Sent:** Thursday, September 22, 2005 6:57 AM  
**To:** SJAshbee@atlantictech.com  
**Subject:** RE: Blue Earth County Section Corners

Steve:

I have made arrangements to go to Mankato on Tuesday, 27 Oct. 05. Steve Jobe took a job as the County Surveyor for Wright County and the Mankato DOT has a void in their surveyor position right now. I'm afraid that due to my schedule that the 27th is the best that I can do. I think that with this one trip that I can get everything that is available. Keep in mind that Blue Earth does not have a County Surveyor and there is no requirement to supply coordinates as part of Certificate of Location of Government Corner, which are required. If there are recorded certificates that cover 30% of the county I'd be supervised and of those that have coordinates I guess will be less than half. I'll do my best to check every source and you'll get what ever I can find.

Pete

>>> Steve Ashbee <SJAshbee@atlantictech.com> 09/21/05 3:07 PM >>>  
Peter,

We would eventually be looking for Section Corners throughout the county, however, the pilot area, Mankato TWP would be first priority and we would like to get that information as soon as we can.

Following testing and determining expectations with respect to the rectifications, we plan to design a workflow that will output a suitable

product. At that point we would need any remaining Section Corners available throughout the County. I suspect it would be at least December before conclusions are drawn from the Pilot Area test.

Steve

-----Original Message-----

From: Peter Jenkins [mailto:Peter.Jenkins@dot.state.mn.us]

Sent: Wednesday, September 21, 2005 1:54 PM

To: SJAshbee@atlantictech.com

Subject: Re: Blue Earth County Section Corners

Steve:

To answer your question, yes there is information and yes I can get you some of it. First, are you looking for just the pilot area or the entire county? Secondly, I could go looking through the files for section corner coordinate information but it would end up being a "hodge podge" of information from many different sources, including the private sector. Third, how soon do you need this information?

Pete

>>> Steve Ashbee <SJAshbee@atlantictech.com> 09/21/05 1:47 PM >>>

Pete,

We have been asked to conduct a small test by Blue Earth County. They are interested in rectifying their Tax Maps to improve their geospatial accuracy and make them compatible with their new Digital Orthophoto base in the Blue Earth Coordinate System. The first step in the test will be to see what kind of results are available by simply anchoring their Section Corners to the correct coordinates.

Julie Roisen is the interested party at Blue Earth. She shared with us that the DOT had access to a considerable number of surveyed Section Corners in Blue Earth County which could be made available to us. If this is in fact the case could you provide us with or direct us to that data?

Regards,

Steve

**CC:** Ray D Dupree <rddupree@atlantictech.com>

**From:** Rebecca Novak  
**To:** Danny Flatgard  
**Date:** 11/19/2004 10:06:30 AM  
**Subject:** Re: Blue Earth County Planner

Dan,

I talked to Scott Salsbury in BE Co. Environmental Services.

The project is being coordinated in the county IT department.

The county has hired a consultant (TR3) to review technology needs, uses, etc. and they are partnering(?) on this project.

The Blue Earth County contact name and number:

Paul Schmidt 507-389-8159

Project will include new Orthophotos and information to create a Digital Elevation Model.

Request for proposals will go out this winter. Though they have talked to a couple of vendors about other things.

Have a great day!!

Rebecca

>>> Danny Flatgard 11/19/04 >>>

Hi Rebecca,

How are you? Are you ready for the weekend? I suppose you will be taking some time off next week to extend your long weekend up North?

The reason for this note is, Pete Jenkins heard that Blue Earth County is creating a DEM of the whole county, and he wanted to talk to the person responsible, as he is interested in Partnering with them. Pete said this project is being coordinated by the Blue Earth County Planner, but he didn't know her name. Do you know who the planner is? Or, could you find out someday/how? I have a meeting from 9:00 am - 12:30 pm, so you won't be able to reach me until sometime this afternoon. Thanks!

Dan



## APPENDIX A

NMAS Equivalent Contour Interval	NSSDA RMSE(z)	NSSDA Accuracy (z)	Required Accuracy for Reference Data for "Tested to Meet"
0.5	0.15 ft or 4.60 cm	0.30 ft or 9.10 cm	0.10 ft
1	0.30 ft or 9.25 cm	0.60 ft or 18.2 cm	0.20 ft
2	0.61 ft or 18.5 cm	1.19 ft or 36.3 cm	0.40 ft
4	1.22 ft or 37.0 cm	2.38 ft or 72.6 cm	0.79 ft
5	1.52 ft or 46.3 cm	2.98 ft or 90.8 cm	0.99 ft
10	3.04 ft or 92.7 cm	5.96 ft or 181.6 cm	1.98 ft

**Table 1 Comparison of NMAS/NSSDA Vertical Accuracy**

NMAS Mp Scale	NMAS CMAS 90%	NSSDA RMSE(r)	NSSDA Accuracy (r) 95% confidence level
1" = 100' or 1:1, 200	3.33 ft	2.20 ft or 67.0 cm	3.80 ft or 1.159 m
1" = 200' or 1: 2, 400	6.67 ft	4.39 ft or 1.339 m	7.60 ft or 2.318m
1" = 400' or 1: 4, 800	13.33 ft	8.79 ft or 2.678 m	15.21 ft or 4.635 m
1" = 500' or 1: 6,000	16.67 ft	10.98 ft or 3.348 m	19.01 ft or 5.794 m
1" = 1000' or 1: 12, 000	33.33 ft	21.97 ft or 6.695 m	38.02 ft or 11.588 m
1" = 2000' or 1: 24, 000*	40.00 ft	26.36 ft or 8.035m	45.62 ft or 13.906 m

**Table 2 Comparison of NMAS/MSSDA Horizontal Accuracy**