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PROJECT REPORT

FOR

U.S. Geological Survey

City Of Rocks National Monument

September 6th, 2011

AEROMETRIC PROJECT NO. 1110403



Airborne GPS Survey Report

For

**U.S. Geological Survey
City of Rocks National Monument, Idaho**

LIDAR

NGTOC

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Prepared by

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AEROMETRIC Project No. 1110403

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USGS

City Of Rocks National Monument

Aerometric Project No. 1110403

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1 INTRODUCTION

This report contains a summary of the LiDAR data acquisition and processing for the **USGS – CITY OF ROCKS NATIONAL MONUMENT TASK ORDER, CASSIA COUNTY, IDAHO.**

1.1 Contact Info

Questions regarding the technical aspects of this report should be addressed to:

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1.2 Purpose

KEYSTONE AERIAL SURVEYS, INC. acquired highly accurate Light Detection and Ranging (LiDAR) data for the City of Rocks National Monument for the United States Geological Survey. Using Keystone's Optech Gemini LiDAR system, data was collected at 1800 meters to support the project area requirements.

1.3 Project Locations

This phase of the project covers the City of Rocks National Monument as designed and supplied by USGS under Task Order No. G11PD00294, Contract No. G10PC00025 entered into on March 25, 2011 between the US Geological Survey – NGTOC III and AeroMetric, Inc.

1.4 Time Period

LiDAR data acquisition was completed between June 24th, 2011 and July 26th, 2011. A total of 11 flight missions were required to cover the project area. See Item 3.4 for a sketch of the acquisition missions and Section 6 of the report for each flight log. QC surveys were completed between July 15th and August 24th, 2011.

1.5 Project Scope

KEYSTONE AERIAL SURVEYS, INC. acquired highly accurate Light Detection and Ranging (LiDAR) data for the City of Rocks National Monument area which encompass approximately 81 square miles in Idaho. Using Keystone's Gemini LiDAR system, data was collected at 1800 meters to support this phase of the project area's requirements.

As documented in our proposal dated March 21st, 2011 we were to achieve a TIN accuracy of 24.5 cm for the area. The accuracy as tested and published in part 4 of this report has easily met the vertical accuracy requirements.

1.6 Conditions Affecting Progress

- None.

2 GEODETIC CONTROL

2.1 Network Scope

Base horizontal control for the check point surveys consisted of two NGS CORS stations: **P007** and **P100**.

Horizontal control is referenced to the Universal Transverse Mercator (UTM) Coordinate System – Zone 11, based on the North American Datum of 1983/2007 (NAD83/07). Final coordinates are published in meters.

Base vertical control for the check point surveys consisted of one NGS First Order, Class 2 station: **H 29**. Four NGS First Order, Class 2 stations (**2536.65**, **4837.22**, **A 116**, and **C 116**) were also observed, but not constrained in the final adjustment as their published elevations did not agree with the on site station **H 29**. The NGS Geoid Model GEOID09 was applied to the derived ellipsoid heights that approximate the North American Vertical Datum of 1988.

Vertical control is based on the North American Vertical Datum of 1988 (NAVD88).

NGS recovery sheets are located in Section 2 of the Control Survey Report.

2.2 Network Computations

GPS measurements were done in two stages. Initial computations were done with LEICA Geo Office (LGO), version 4.0. LGO permits the conversion of raw satellite

data collected by the receivers to a meaningful coordinate difference between points (baseline solutions). Once the baseline solutions were determined, they were input into the GeoSurv-GeoLab2 series of programs (Geolab version 2.4d). Adjustments were performed for analysis and quality closure holding the position of **P100** and the elevation of **H 29** fixed, as shown below.

HORIZONTAL CLOSURES (in meters)

STATION	NORTHING	EASTING	LINEAR	DISTANCE	PROPORTION
P007	0.011	0.022	0.025	127687.2	1:5191000

VERTICAL CLOSURES (in meters)

STATION	ADJUSTED ELEVATION	PUBLISHED ELEVATION	DIFFERENCE	DISTANCE	ALLOWABLE 3 rd ORDER CLOSURE
2536.65*	1438.808	1438.923	0.115	34921.7	0.071
4837.22*	1424.664	1424.867	0.203	39847.3	0.076
A 116*	1346.903	1348.510	1.607	61086.2	0.094
C 116*	1371.225	1371.641	0.416	53548.5	0.088

* Not constrained in final adjustment

All the published control values were held in the fully constrained scaled least squares base network adjustment that was used to derive the Ground Control Checkpoints unless marked otherwise above.

3 LiDAR ACQUISITION & PROCEDURES

3.1 Acquisition Time Period

LiDAR data acquisition and Airborne GPS control surveys were completed between June 24th and July 26th, 2011. A total of 11 flight missions were required to cover the City of Rocks National Monument area.

3.2 LiDAR Planning

The LiDAR data for this project was collected with Keystone's Optech Gemini Airborne LiDAR system. All flight planning and acquisition was completed using Optech's ALTM-Nav, version 2.1.25b (flight planning and LiDAR control software).

The following are the acquisition settings for the City of Rocks National Monument area.

- Flying Height (Above Ground): 1800 meters AGL
- Laser Pulse Rate: 70 kHz
- Mirror Scan Frequency: 43 Hz
- Scan Angle (+/-): 12°
- Side Lap: 65 %
- Ground Speed: 160 kts
- Nominal Point Spacing: 1 meter

3.3 LiDAR Acquisition

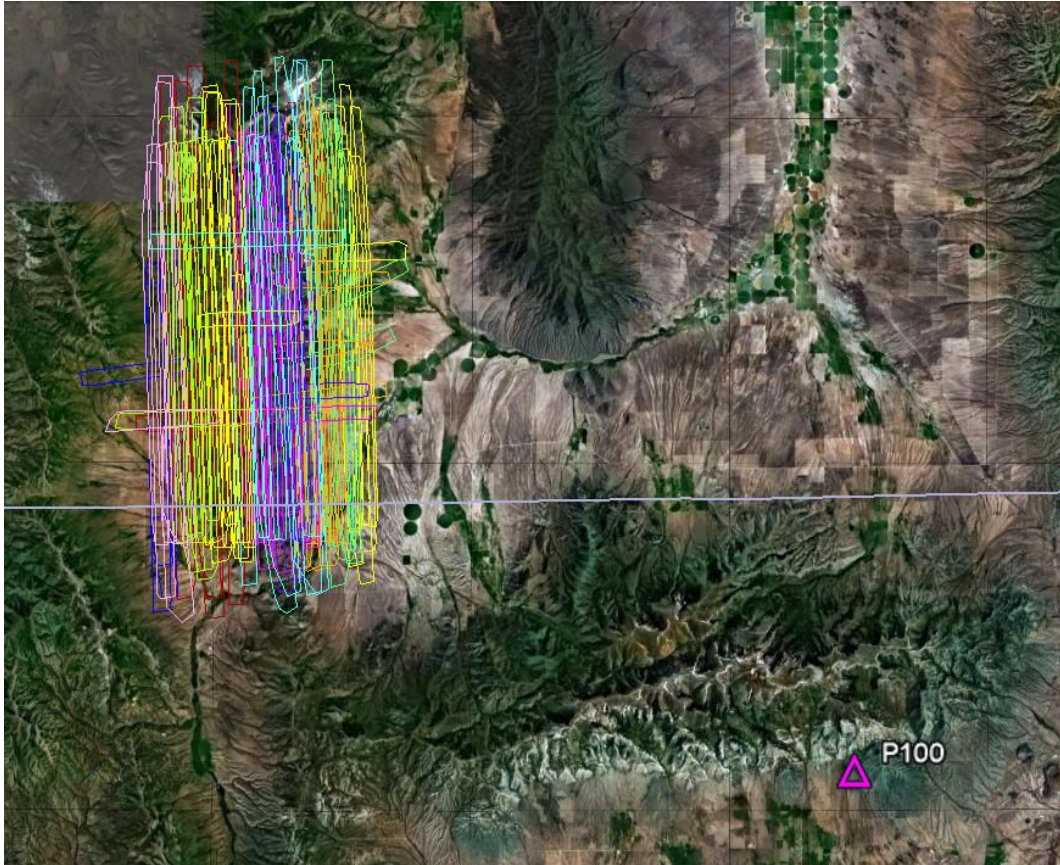
A total of 11 flight missions were required to cover the project area. The missions were flown using the above planned values. See section 3.4 for a sketch of the acquisition missions and Section 6 of the report for each flight log.

Airborne GPS and IMU trajectories for the LiDAR sensor were also acquired during the time of flight.

Each mission was typically about four hours long. Before take-off, the LiDAR system and the Airborne GPS and IMU systems were initiated for a period of five minutes and then again after landing for another five minutes. The missions acquired data according to the planned flight lines and included a minimum of one (usually two) cross flights. The cross flights were flown perpendicular to the planned flight lines and their data used in the in-situ calibration of the sensor.

3.4 LiDAR Trajectory Processing

The airborne positioning was based on the following control station: P100.



4 QC SURVEYS

The check point survey was performed between July 15th and August 24th, 2011 using Rapid Static GPS techniques. A total of 70 check points were surveyed across the City of Rocks National Monument project area. For this project, these points were collected in hard surface, short grass, and tall grass classification categories. Hard surface points were used to assess Fundamental Vertical Accuracy. For the project area, sixty points were not used in the assessment and were delivered to the client.

A common control station mentioned above to support the Airborne GPS acquisition was also used to complete the QC surveys.

Horizontal - NAD 83/07 UTM Zone 11N
Vertical - NAVD88 Meters

Station	Easting	Northing	Known Z	Lidar Z	DZ
901	768958.251	4654104.637	1769.480	1769.57	0.090
902	777792.434	4655426.596	1643.959	1643.87	-0.089
903	775977.538	4669118.037	1769.654	1769.51	-0.144
904	770673.743	4664517.962	2051.559	2051.65	0.091
905	772442.391	4662506.518	1878.307	1878.21	-0.097
906	776940.080	4663735.262	1696.319	1696.3	-0.020
907	777903.377	4660645.697	1632.509	1632.46	-0.050
908	777201.804	4657783.785	1664.042	1663.98	-0.062
909	770754.891	4657984.030	1869.087	1869.08	-0.007
910	773005.627	4660891.712	1845.053	1844.95	-0.103

Average dz	-0.039
Minimum dz	-0.144
Maximum dz	0.091
Average magnitude	0.075
Root mean square	0.085
Std deviation	0.079

5 FINAL LIDAR PROCESSING

5.1 ABGPS and IMU Processing

Airborne GPS

Applanix - POSGPS

Utilizing carrier phase ambiguity resolution on the fly (i.e., without initialization). The solution to sub-decimeter kinematic positioning without the operational constraint of static initialization as used in semi-kinematic or stop-and-go positioning was utilized for the airborne GPS post-processing.

The processing technique used by Applanix, Inc. for achieving the desired accuracy is Kinematic Ambiguity Resolution (KAR). KAR searches for ambiguities and uses a special method to evaluate the relative quality of each intersection (RMS). The quality indicator is used to evaluate the accuracy of the solution for each processing computation. In addition to the quality indicator, the software will compute separation plots between any two solutions, which will ultimately determine the acceptance of the airborne GPS post processing.

Inertial Data

The post-processing of inertial and aiding sensor data (i.e. airborne GPS post processed data) is to compute an optimally blended navigation solution. The Kalman filter-based aided inertial navigation algorithm generates an accurate (in the sense of least-square error) navigation solution that will retain the best characteristics of the processed input data. An example of inertial/GPS sensor blending is the following: inertial data is smooth in the short term. However, a free-inertial navigation solution has errors that grow without bound with time. A GPS navigation solution exhibits short-term noise but has errors that are bounded. This optimally blended navigation solution will retain the best features of both, i.e. the blended navigation solution has errors that are smooth and bounded.

The resultant processing generates the following data:

- Position: Latitude, Longitude, Altitude
- Velocity: North, East, and Down components
- 3-axis attitude: roll, pitch, true heading
- Acceleration: x, y, z components
- Angular rates: x, y, z components

The Applanix software, version 4.4 as well as MMS version 5.2 were used to determine both the ABGPS trajectory and the blending of inertial data.

The airborne GPS and blending of inertial and GPS post-processing were completed in multiple steps.

1. The collected data was transferred from the field data collectors to the main computer. Data was saved under the project number and separated between LiDAR mission dates. Inside each mission date, a sub-directory was created with the aircraft's tail number and an A or B suffix was attached for the time of day when the data was collected. Inside the tail number sub-directory, five sub-directories were also created EO, GPS, IMU, PROC, and RAW.
2. The aircraft raw data (IMU and GPS data combined) was run through a data extractor program. This separated the IMU and GPS data. In addition to the extracting of data, it provided the analyst the first statistics on the overall flight. The program was POSPac (POS post-processing PACKage).

3. Executing POSGPS program to derive accurate GPS positions for all flights:

Applanix POSGPS

The software utilized for the data collected was PosGPS, a kinematic on-the-fly (OTF) processing software package. Post processing of the data is computed from each base station (Note: only base stations within the flying area were used) in both a forward and backward direction. This provides the analyst the ability to Quality Check (QC) the post processing, since different ambiguities are determined from different base stations and also with the same data from different directions.

The trajectory separation program is designed to display the time of week that the airborne or roving antenna traveled, and compute the differences found between processing runs. Processed data can be compared between a forward/reverse solution from one base station, a reverse solution from one base station and a forward solution from the second base station, etc. For the Applanix POSGPS processing, this is considered the final QC check for the given mission. If wrong ambiguities were found with one or both runs, the analyst would see disagreements from the trajectory plot, and re-processing would continue until an agreement was determined.

Once the analyst accepts a forward and reverse processing solution, the trajectory plot is analyzed and the combined solution is stored in a file format acceptable for the IMU post processor.

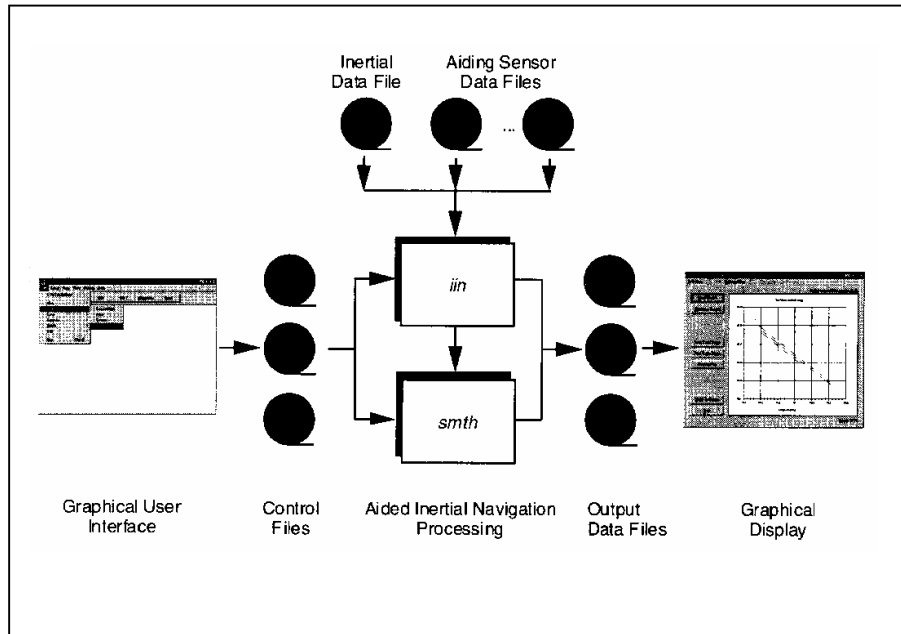
Please see Section 7 of the control report for the final accepted trajectory plots.

4. When the processed trajectory data is accepted after quality control analysis, the combined solution is stored in a file format acceptable for the IMU post processor (i.e. POSProc).

5. Execute POSProc.

POSProc comprises a set of individual processing interface tools that execute and provide the following functions:

This diagram shows the organization of these tools, and is a function of the



POSProc processing components.

- **Integrated Inertial Navigation (*iin*) Module.**
 The name *iin* is a contraction of Integrated Inertial Navigation. *iin* reads inertial data and aiding data from data files specified in a processing environment file and computes the aided inertial navigation solution. The inertial data comes from a strapdown IMU. *iin* outputs the navigation data between start and end times at a data rate as specified in the environment file. *iin* also outputs Kalman filter data for analysis of estimation error statistics and smoother data that the smoothing program *smth* uses to improve the navigation solution accuracy.
iin implements a full strapdown inertial navigator that solves Newton's equation of motion on the earth using inertial data from a strapdown IMU. The inertial navigator implements coning and sculling compensation to handle potential problems caused by vibration of the IMU.

- Smoother Module (*smth*).
smth is a companion processing module to *iin*. *smth* is comprised of two individual functions that run in sequence. *smth* first runs the *smoother function* and then runs the *navigation correction function*.

The *smth* smoother function performs backwards-in-time processing of the forwards-in-time blended navigation solution and Kalman filter data generated by *iin* to compute smoothed error estimates. *smth* implements a modified Bryson-Frazier smoothing algorithm specifically designed for use with the *iin* Kalman filter. The resulting smoothed strapdown navigator error estimates at a given time point are the optimal estimates based on all input data before and after the given time point. In this sense, *smth* makes use of all available information in the input data. *smth* writes the smoothed error estimates and their RMS estimation errors to output data files.

The *smth* navigation correction function implements a feedforward error correction mechanism similar to that in the *iin* strapdown navigation solution using the smoothed strapdown navigation errors. *smth* reads in the smoothed error estimates and with these, corrects the strapdown navigation data. The resulting navigation solution is called a Best Estimate of Trajectory (BET), and is the best obtainable estimate of vehicle trajectory with the available inertial and aiding sensor data.

The above mentioned modules provide the analyst the following statistics to ensure that the most optimal solution was achieved: a log of the *iin* processing, the Kalman filter Measurement Residuals, Smoothed RMS Estimation Errors, and Smoothed Sensor Errors and RMS.

5.2 LiDAR “Point Cloud” Processing

The ABGPS/IMU post processed data along with the LiDAR raw measurements were processed using Optech Incorporated’s ASDA software. This software was used to match the raw LiDAR measurements with the computed ABGPS/IMU positions and attitudes of the LiDAR sensor. The result was a “point cloud” of LiDAR measured points referenced to the ground control system.

5.3 LIDAR CALIBRATION

Introduction

The purpose of the LiDAR system calibration is to refine the system parameters in order for the post-processing software to produce a “point cloud” that best fits the actual ground.

The following report outlines the calibration techniques employed for this project.

Calibration Procedures

AEROMETRIC routinely performs two types of calibrations on its Optech 3100 LiDAR system. The first calibration, system calibration, is performed whenever the LiDAR system is installed in the aircraft. This calibration is performed to define the system parameters affected by the physical misalignment of the system versus aircraft. The second calibration, in-situ calibration, is performed for each mission using that mission’s data. This calibration is performed to refine the system parameters that are affected by the on-site conditions as needed.

System Calibration and Correction Software

Optech developed proprietary calibration software in December of 2009 that performs the system calibration. The results from this new software achieved excellent results and an accuracy that meets the project requirements.

This new calibration tool incorporates Optech’s proprietary optical sensor models to compute laser point positions and provide laser point calibration improvements on a per flightline basis for the entire project area. It furthermore calculates planar surfaces at different angles from each flight line and then uses a robust least squares solution to compute the orientation parameters at the optical level instead of the traditional methods relating to the ground points. Determining and correcting at the optical level is critical when correcting the data especially when working in terrain and aggressive design parameters as found in this project. Each flight line was computed individually and output in LAS 1.2 format.

In-situ Calibration

The in-situ calibration is performed as needed using the mission’s data. This calibration is performed to refine the system parameters that are affected by the on-site conditions.

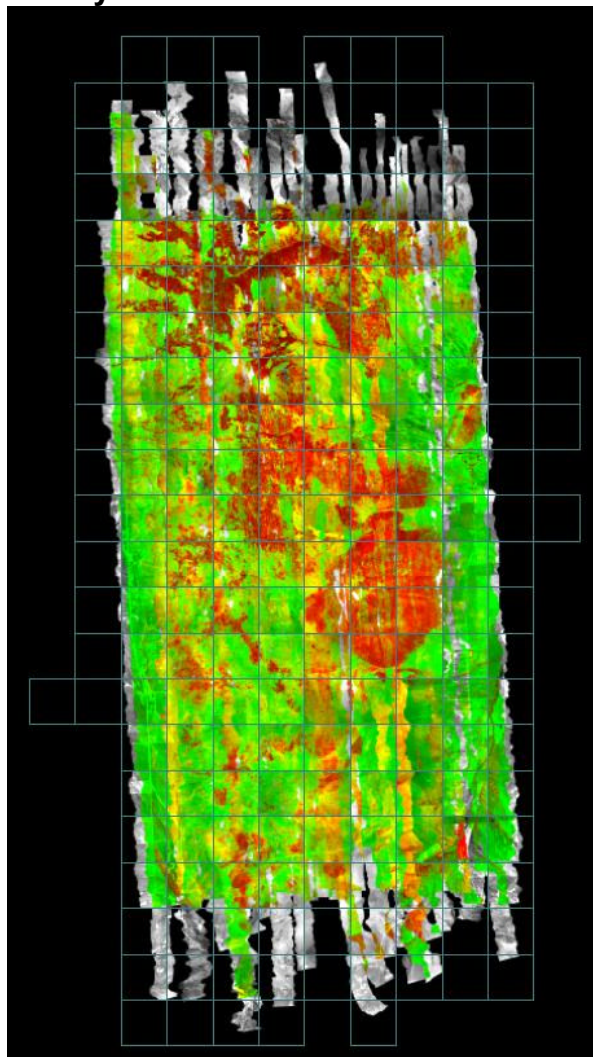
For each mission, LiDAR data for at least one cross flight is acquired over the mission’s acquisition site. The processed data of the cross flight is compared to the perpendicular flight lines using either the Optech proprietary software or TerraSolid's TerraMatch software to determine if any systematic errors are present. In this calibration, the data of individual flight lines are compared against each other and their systematic errors are corrected in the final processed data.

5.4 LiDAR Processing

The LAS files were then imported, verified, and parsed into manageable, tiled grids using GeoCue version 7.0.34.5. GeoCue allows for ease of data management and process tracking.

The first step after the data has been processed and calibrated is to perform a relative accuracy assessment on the flightline to flightline comparisons and also a data density test prior to any further processing. To determine a proper accuracy assessment between flightlines, AeroMetric uses GeoCue to create Orthos by elevation differences. The generated orthos have assigned elevation ranges that allow the technician to evaluate if the data passes the accuracy assessment and also determine if additional calibration efforts are needed based on the bias trends. Below is a screen capture of the elevation ortho where green indicates a flightline comparison of less than 0.10 meters; yellow is 0.100 – 0.200 meters; orange is 0.200 – 0.300 meters; red is greater than 0.30 meters.

City of Rocks National Monument



In addition to the relative accuracy assessment, AeroMetric also reviews some tiles to ensure that the required density has been met. AeroMetric utilizes an in-house proprietary software to complete this task. Initially a grid was placed according to the version 12 specification that is based on the nominal post spacing of 1 meter. The results indicated that the density of the sampled tiles achieved 99.7% of the points meeting the specified data density criteria. Below are the statistics from the results of the inspected tiles as shown in the next image.

11_685665	11_700665	11_715665	11_730665	11_745665
11_685650	11_700650	11_715650	11_730650	11_745650
11_685635	11_700635	11_715635	11_730635	11_745635

Sampled tiles: City of Rocks (11_685665, 11_700665 11_715665, 11_730665, 11_745665, 11_685650, 11_700650, 11_715650, 11_730650, 11_745650, 11_685635, 11_700635, 11_715635, 11_730635, 11_745635). These tiles were selected for having minimal surface water visible.

Run 1 (Version 12 – 1 meter)

Total number of cells: 33,750,000

Total number of cells with one point: 838,689

Total number of cells with one or more points: 33,645,869

Percentage of tiles with 1 or more points: 99.7%

Once both the accuracy between swaths and data density is accepted an automated classification algorithm is performed using TerraSolid’s TerraScan, version 11.005. This will produce the majority of the bare-earth datasets.

The remainder of the data was classified using manual classification techniques. The majority of the manual edit moved points misclassified as ground (class 2) to

unclassified (class 1). Erroneous low points, high points, including clouds are classified to class 7.

During the edit review breaklines are placed using Microstation for hydro-enforcement of water and areas poorly defined by LiDAR returns (e.g. areas beneath overpasses and bridge decks). For the extents of this project, no such features were large enough to meet the capture requirements per the project specifications.

5.5 Check Point Validation

The data was then verified using the ground control data collected by AeroMetric. TerraScan is used to compute the vertical differences between the surveyed elevation and the LiDAR derived elevation closest to the surveyed point.

A report listing the differences and common statistics was created and can be found in Section 8 of this report.

5.6 LiDAR Data Delivery

Raw point cloud data supplied is in the following format:

- LAS, version 1.2
- GPS times adjusted to GPS Absolute
- Full swaths and delivered as 1 file per swath which did not exceed 2gb.

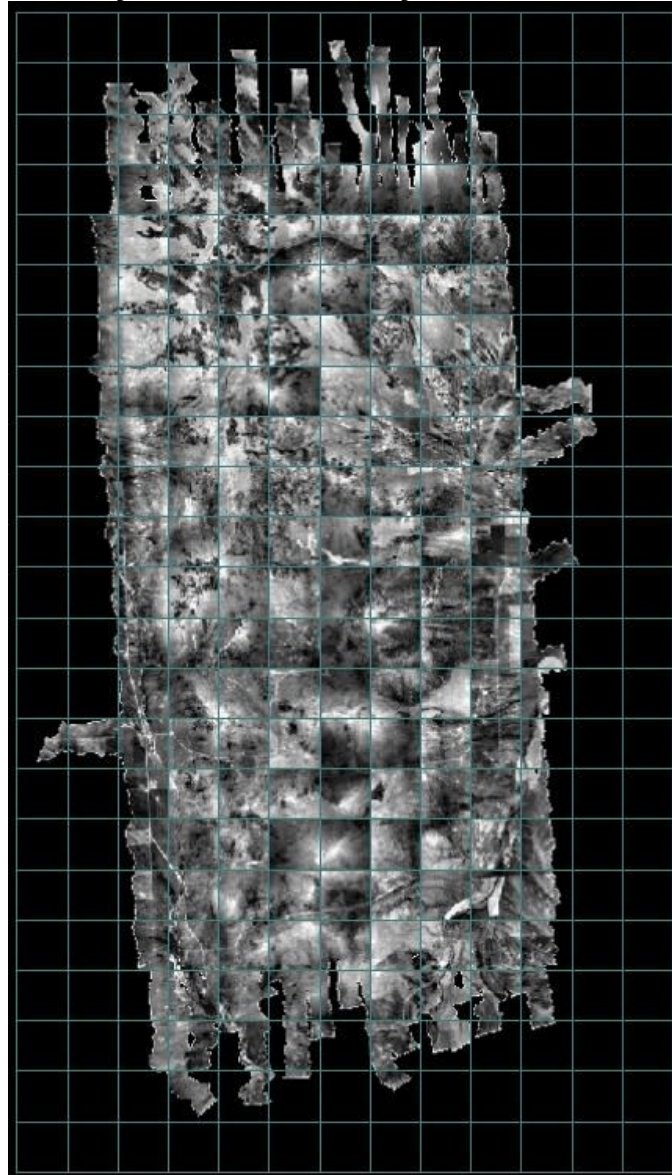
Classified point cloud data is also being supplied using the following criteria.

- LAS, version 1.2
- GPS times adjusted to GPS Absolute
- Classification scheme:
 - Code 1 – Processed, but unclassified
 - Code 2 – Ground
 - Code 7 – Noise
 - Code 9 - Water**
 - Code 10 – Ignored Ground (Breakline proximity)**

** these classes were not utilized in this project based upon the features observed within the project limits

The 1 meter bare-earth DEMs were created in the following manner. First, ArcGrids in ASCII format were created using TerraModeler version 11.001 (TerraSolid Ltd.). The ASCII grids were then imported into ARC and translated to .IMG raster format.

City of Rocks Intensity Raster



6 CONCLUSION

Because of the rigorous procedures and use of new technology, this project will serve the USGS and all users requiring the provided LiDAR derivative products for the City of Rocks National Monument Area in Idaho well into the future. Although this project challenged both the equipment and personnel, the results are extremely accurate and reliable.

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

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DATABASE = ,PROGRAM = datasheet, VERSION = 7.87.3
1      National Geodetic Survey,      Retrieval Date = JULY 18, 2011
NU0969 *****
NU0969 DESIGNATION - 2536.65
NU0969 PID - NU0969
NU0969 STATE/COUNTY- ID/CASSIA
NU0969 USGS QUAD - BRIDGE (1976)
NU0969
NU0969 *CURRENT SURVEY CONTROL
NU0969
NU0969* NAD 83(1986)- 42 10 08. (N) 113 20 39. (W) SCALED
NU0969* NAVD 88 - 1438.923 (meters) 4720.87 (feet) ADJUSTED
NU0969
NU0969 GEOID HEIGHT- -14.69 (meters) GEOID09
NU0969 DYNAMIC HT - 1437.958 (meters) 4717.70 (feet) COMP
NU0969 MODELED GRAV- 979,901.2 (mgal) NAVD 88
NU0969
NU0969 VERT ORDER - FIRST CLASS II
NU0969
NU0969.The horizontal coordinates were scaled from a topographic map and have
NU0969.an estimated accuracy of +/- 6 seconds.
NU0969
NU0969.The orthometric height was determined by differential leveling and
NU0969.adjusted in June 1991.
NU0969
NU0969.The geoid height was determined by GEOID09.
NU0969
NU0969.The dynamic height is computed by dividing the NAVD 88
NU0969.geopotential number by the normal gravity value computed on the
NU0969.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
NU0969.degrees latitude (g = 980.6199 gals.).
NU0969
NU0969.The modeled gravity was interpolated from observed gravity values.
NU0969
NU0969; North East Units Estimated Accuracy
NU0969;SPC ID C - 55,990. 554,190. MT (+/- 180 meters Scaled)
NU0969
NU0969 SUPERSEDED SURVEY CONTROL
NU0969
NU0969 NGVD 29 (??/??/92) 1437.845 (m) 4717.33 (f) ADJ UNCH 1 2
NU0969
NU0969.Superseded values are not recommended for survey control.
NU0969.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NU0969.See file dsdata.txt to determine how the superseded data were derived.
NU0969
NU0969_U.S. NATIONAL GRID SPATIAL ADDRESS: 12TUM063711(NAD 83)
NU0969_MARKER: DB = BENCH MARK DISK
NU0969_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
NU0969_SP_SET: PREFAB CONC. POST IN EARTH
```

NU0969_STAMPING: O.F.F. 204.64 B.M. 2336.65

NU0969_MARK LOGO: IDPWD

NU0969_MAGNETIC: O = OTHER; SEE DESCRIPTION

NU0969_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY

NU0969

NU0969	HISTORY	- Date	Condition	Report By
NU0969	HISTORY	- UNK	MONUMENTED	IDPWD
NU0969	HISTORY	- 1934	GOOD	NGS
NU0969	HISTORY	- 1968	GOOD	USGS
NU0969	HISTORY	- 19741119	GOOD	USGS

NU0969

NU0969 STATION DESCRIPTION

NU0969

NU0969'DESCRIBED BY NATIONAL GEODETIC SURVEY 1934

NU0969'9.6 MI S FROM MALTA.

NU0969'9.6 MILES SOUTH ALONG U.S. HIGHWAY 30 S FROM THE SPEED LIMIT SIGN AND

NU0969'BRIDGE AT MALTA, AND 130 FEET WEST OF THE CENTERLINE OF THE HIGHWAY.

NU0969'AN IDAHO DEPARTMENT OF PUBLIC WORKS STANDARD DISK, STAMPED O.F.F.

NU0969'204.64 B.M. 2536.65 AND SET IN THE TOP OF A CONCRETE POST. NOTE-- THE

NU0969'ACTUAL STAMPING OF THE IDAHO DEPARTMENT OF PUBLIC WORKS STANDARD DISK

NU0969'WAS FOUND TO BE O.F.F.204.64 B.M. 2336.65.

NU0969

NU0969 STATION RECOVERY (1968)

NU0969

NU0969'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1968

NU0969'RECOVERED IN GOOD CONDITION.

NU0969

NU0969 STATION RECOVERY (1974)

NU0969

NU0969'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1974

NU0969'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:00

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```
DATABASE = ,PROGRAM = datasheet, VERSION = 7.87.3
1      National Geodetic Survey, Retrieval Date = JULY 18, 2011
NU0966 *****
NU0966 DESIGNATION - 4837.22
NU0966 PID - NU0966
NU0966 STATE/COUNTY- ID/CASSIA
NU0966 USGS QUAD - BRIDGE (1976)
NU0966
NU0966 *CURRENT SURVEY CONTROL
NU0966
NU0966* NAD 83(1986)- 42 12 45. (N) 113 21 25. (W) SCALED
NU0966* NAVD 88 - 1424.867 (meters) 4674.75 (feet) ADJUSTED
NU0966
NU0966 GEOID HEIGHT- -14.64 (meters) GEOID09
NU0966 DYNAMIC HT - 1423.926 (meters) 4671.66 (feet) COMP
NU0966 MODELED GRAV- 979,912.1 (mgal) NAVD 88
NU0966
NU0966 VERT ORDER - FIRST CLASS II
NU0966
NU0966.The horizontal coordinates were scaled from a topographic map and have
NU0966.an estimated accuracy of +/- 6 seconds.
NU0966
NU0966.The orthometric height was determined by differential leveling and
NU0966.adjusted in June 1991.
NU0966
NU0966.The geoid height was determined by GEOID09.
NU0966
NU0966.The dynamic height is computed by dividing the NAVD 88
NU0966.geopotential number by the normal gravity value computed on the
NU0966.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
NU0966.degrees latitude (g = 980.6199 gals.).
NU0966
NU0966.The modeled gravity was interpolated from observed gravity values.
NU0966
NU0966; North East Units Estimated Accuracy
NU0966;SPC ID C - 60,820. 553,100. MT (+/- 180 meters Scaled)
NU0966
NU0966 SUPERSEDED SURVEY CONTROL
NU0966
NU0966 NGVD 29 (??/??/92) 1423.798 (m) 4671.24 (f) ADJ UNCH 1 2
NU0966
NU0966.Superseded values are not recommended for survey control.
NU0966.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NU0966.See file dsdata.txt to determine how the superseded data were derived.
NU0966
NU0966_U.S. NATIONAL GRID SPATIAL ADDRESS: 12TUM054760 (NAD 83)
NU0966_MARKER: DD = SURVEY DISK
NU0966_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
NU0966_SP_SET: PREFAB CONC. POST IN EARTH
```

NU0966_STAMPING: OFF 204.56 4837.22

NU0966_MARK LOGO: IDPWD

NU0966_MAGNETIC: O = OTHER; SEE DESCRIPTION

NU0966_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY

NU0966

NU0966	HISTORY	- Date	Condition	Report By
NU0966	HISTORY	- UNK	MONUMENTED	IDPWD
NU0966	HISTORY	- 1934	GOOD	NGS
NU0966	HISTORY	- 19741120	GOOD	USGS

NU0966

NU0966 STATION DESCRIPTION

NU0966

NU0966'DESCRIBED BY NATIONAL GEODETIC SURVEY 1934

NU0966'6.5 MI S FROM MALTA.

NU0966'6.5 MILES SOUTH ALONG U.S. HIGHWAY 30 S FROM THE SPEED LIMIT SIGN AND

NU0966'BRIDGE AT MALTA, AND 180 FEET WEST OF THE CENTERLINE OF THE HIGHWAY.

NU0966'AN IDAHO DEPARTMENT OF PUBLIC WORKS STANDARD DISK, STAMPED OFF 204.56

NU0966'4837.22 AND SET IN THE TOP OF A CONCRETE POST.

NU0966

NU0966 STATION RECOVERY (1974)

NU0966

NU0966'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1974

NU0966'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:00

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```
DATABASE = ,PROGRAM = datasheet, VERSION = 7.87.3
1      National Geodetic Survey,      Retrieval Date = JULY 20, 2011
NU0952 *****
NU0952 DESIGNATION - A 116
NU0952 PID - NU0952
NU0952 STATE/COUNTY- ID/CASSIA
NU0952 USGS QUAD - IDAHOME (1978)
NU0952
NU0952 *CURRENT SURVEY CONTROL
NU0952
NU0952* NAD 83(1986)- 42 24 08. (N) 113 23 25. (W) SCALED
NU0952* NAVD 88 - 1348.510 (meters) 4424.24 (feet) ADJUSTED
NU0952
NU0952 GEOID HEIGHT- -14.50 (meters) GEOID09
NU0952 DYNAMIC HT - 1347.669 (meters) 4421.48 (feet) COMP
NU0952 MODELED GRAV- 979,951.3 (mgal) NAVD 88
NU0952
NU0952 VERT ORDER - FIRST CLASS II
NU0952
NU0952.The horizontal coordinates were scaled from a topographic map and have
NU0952.an estimated accuracy of +/- 6 seconds.
NU0952
NU0952.The orthometric height was determined by differential leveling and
NU0952.adjusted in June 1991.
NU0952
NU0952.The geoid height was determined by GEOID09.
NU0952
NU0952.The dynamic height is computed by dividing the NAVD 88
NU0952.geopotential number by the normal gravity value computed on the
NU0952.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
NU0952.degrees latitude (g = 980.6199 gals.).
NU0952
NU0952.The modeled gravity was interpolated from observed gravity values.
NU0952
NU0952; North East Units Estimated Accuracy
NU0952;SPC ID C - 81,880. 550,190. MT (+/- 180 meters Scaled)
NU0952
NU0952 SUPERSEDED SURVEY CONTROL
NU0952
NU0952 NGVD 29 (??/??/92) 1347.484 (m) 4420.87 (f) ADJ UNCH 1 2
NU0952
NU0952.Superseded values are not recommended for survey control.
NU0952.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NU0952.See file dsdata.txt to determine how the superseded data were derived.
NU0952
NU0952_U.S. NATIONAL GRID SPATIAL ADDRESS: 12TUM032972(NAD 83)
NU0952_MARKER: DB = BENCH MARK DISK
NU0952_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
NU0952_SP_SET: PREFAB CONC. POST IN EARTH
```


NU0952_STAMPING: A 116 1958

NU0952_MARK LOGO: CGS

NU0952_MAGNETIC: O = OTHER; SEE DESCRIPTION

NU0952_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY

NU0952

NU0952	HISTORY	- Date	Condition	Report By
NU0952	HISTORY	- 1958	MONUMENTED	CGS
NU0952	HISTORY	- 19741210	GOOD	USGS

NU0952

NU0952 STATION DESCRIPTION

NU0952

NU0952'DESCRIBED BY COAST AND GEODETIC SURVEY 1958

NU0952'6.75 MI N FROM MALTA.

NU0952'6.75 MILES NORTH ALONG U.S. HIGHWAY 30 SOUTH FROM THE POST OFFICE AT
NU0952'MALTA, 1.05 MILES SOUTHEAST OF AN ABANDONED C.A.A. AIRWAY BEACON TOWER
NU0952'AT IDAHOME, 0.1 MILE NORTHWEST OF THE INTERSECTION OF A DRIVEWAY
NU0952'LEADING WEST TO A FARM AND A TRACK ROAD EAST, IN LINE WITH A ROW OF
NU0952'TELEPHONE POLES, AT THE Y JUNCTION OF FENCES, 50 1/2 FEET NORTHEAST OF
NU0952'THE CENTER LINE OF THE HIGHWAY, 10 FEET SOUTHWEST AND ACROSS A FENCE
NU0952'FROM THE CENTER OF A SMALL IRRIGATION DITCH, 9 1/2 FEET NORTHWEST OF A
NU0952'TELEPHONE POLE, 3.8 FEET SOUTHWEST OF A FENCE CORNER POST, 2.2 FEET
NU0952'SOUTHEAST OF A WITNESS POST, 1 1/2 FEET LOWER THAN THE HIGHWAY, AND
NU0952'SET IN THE TOP OF A CONCRETE POST PROJECTING 0.4 FOOT ABOVE THE
NU0952'GROUND.

NU0952

NU0952 STATION RECOVERY (1974)

NU0952

NU0952'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1974

NU0952'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:00

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```
DATABASE = ,PROGRAM = datasheet, VERSION = 7.87.3
1      National Geodetic Survey, Retrieval Date = JULY 20, 2011
NU0957 *****
NU0957 DESIGNATION - C 116
NU0957 PID - NU0957
NU0957 STATE/COUNTY- ID/CASSIA
NU0957 USGS QUAD - MALTA (1968)
NU0957
NU0957 *CURRENT SURVEY CONTROL
NU0957
NU0957* NAD 83(1986)- 42 20 08. (N) 113 22 12. (W) SCALED
NU0957* NAVD 88 - 1371.641 (meters) 4500.13 (feet) ADJUSTED
NU0957
NU0957 GEOID HEIGHT- -14.52 (meters) GEOID09
NU0957 DYNAMIC HT - 1370.778 (meters) 4497.29 (feet) COMP
NU0957 MODELED GRAV- 979,944.3 (mgal) NAVD 88
NU0957
NU0957 VERT ORDER - FIRST CLASS II
NU0957
NU0957.The horizontal coordinates were scaled from a topographic map and have
NU0957.an estimated accuracy of +/- 6 seconds.
NU0957
NU0957.The orthometric height was determined by differential leveling and
NU0957.adjusted in June 1991.
NU0957
NU0957.The geoid height was determined by GEOID09.
NU0957
NU0957.The dynamic height is computed by dividing the NAVD 88
NU0957.geopotential number by the normal gravity value computed on the
NU0957.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
NU0957.degrees latitude (g = 980.6199 gals.).
NU0957
NU0957.The modeled gravity was interpolated from observed gravity values.
NU0957
NU0957; North East Units Estimated Accuracy
NU0957;SPC ID C - 74,480. 551,920. MT (+/- 180 meters Scaled)
NU0957
NU0957 SUPERSEDED SURVEY CONTROL
NU0957
NU0957 NGVD 29 (??/??/92) 1370.613 (m) 4496.75 (f) ADJ UNCH 1 2
NU0957
NU0957.Superseded values are not recommended for survey control.
NU0957.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NU0957.See file dsdata.txt to determine how the superseded data were derived.
NU0957
NU0957_U.S. NATIONAL GRID SPATIAL ADDRESS: 12TUM047897(NAD 83)
NU0957_MARKER: DB = BENCH MARK DISK
NU0957_SETTING: 9 = SET IN PREFABRICATED CONCRETE POST IMBEDDED IN GROUND
NU0957_SP_SET: PREFAB CONC. POST IN EARTH
```

NU0957_STAMPING: C 116 1958

NU0957_MARK LOGO: CGS

NU0957_MAGNETIC: O = OTHER; SEE DESCRIPTION

NU0957_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY

NU0957

NU0957	HISTORY	- Date	Condition	Report By
NU0957	HISTORY	- 1958	MONUMENTED	CGS
NU0957	HISTORY	- 19741206	GOOD	USGS

NU0957

NU0957 STATION DESCRIPTION

NU0957

NU0957'DESCRIBED BY COAST AND GEODETIC SURVEY 1958

NU0957'1.95 MI N FROM MALTA.

NU0957'1.95 MILES NORTH ALONG U.S. HIGHWAY 30 SOUTH FROM THE POST OFFICE AT
NU0957'MALTA, BETWEEN AN EAST-WEST BLADED FIRE BRAKE AND A FENCE, 152 1/2
NU0957'FEET WEST OF THE CENTER LINE OF THE HIGHWAY, 99 FEET WEST OF A FENCE
NU0957'CORNER POST, 5 FEET SOUTH OF THE CENTER LINE OF THE FIRE BREAK, 1.1
NU0957'FEET NORTH OF THE FENCE, 2.3 FEET EAST OF A WITNESS POST, LEVEL WITH
NU0957'THE HIGHWAY, AND SET IN THE TOP OF A CONCRETE POST PROJECTING 0.4
NU0957'ABOVE THE GROUND.

NU0957

NU0957 STATION RECOVERY (1974)

NU0957

NU0957'RECOVERY NOTE BY US GEOLOGICAL SURVEY 1974

NU0957'RECOVERED IN GOOD CONDITION.

*** retrieval complete.

Elapsed Time = 00:00:00

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```
DATABASE = ,PROGRAM = datasheet, VERSION = 7.87.3
1      National Geodetic Survey,      Retrieval Date = JULY 18, 2011
NU1071 *****
NU1071 DESIGNATION - H 29
NU1071 PID - NU1071
NU1071 STATE/COUNTY- ID/CASSIA
NU1071 USGS QUAD - LYMAN PASS (1976)
NU1071
NU1071 *CURRENT SURVEY CONTROL
NU1071
NU1071* NAD 83(1986)- 42 02 02. (N) 113 45 53. (W) SCALED
NU1071* NAVD 88 - 1810.821 (meters) 5941.00 (feet) ADJUSTED
NU1071
NU1071 GEOID HEIGHT- -14.76 (meters) GEOID09
NU1071 DYNAMIC HT - 1809.472 (meters) 5936.58 (feet) COMP
NU1071 MODELED GRAV- 979,812.4 (mgal) NAVD 88
NU1071
NU1071 VERT ORDER - FIRST CLASS II
NU1071
NU1071.The horizontal coordinates were scaled from a topographic map and have
NU1071.an estimated accuracy of +/- 6 seconds.
NU1071
NU1071.The orthometric height was determined by differential leveling and
NU1071.adjusted in June 1991.
NU1071
NU1071.The geoid height was determined by GEOID09.
NU1071
NU1071.The dynamic height is computed by dividing the NAVD 88
NU1071.geopotential number by the normal gravity value computed on the
NU1071.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
NU1071.degrees latitude (g = 980.6199 gals.).
NU1071
NU1071.The modeled gravity was interpolated from observed gravity values.
NU1071
NU1071; North East Units Estimated Accuracy
NU1071;SPC ID C - 40,810. 519,480. MT (+/- 180 meters Scaled)
NU1071
NU1071 SUPERSEDED SURVEY CONTROL
NU1071
NU1071 NGVD 29 (??/??/92) 1809.659 (m) 5937.19 (f) ADJ UNCH 1 2
NU1071
NU1071.Superseded values are not recommended for survey control.
NU1071.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NU1071.See file dsdata.txt to determine how the superseded data were derived.
NU1071
NU1071_U.S. NATIONAL GRID SPATIAL ADDRESS: 12TTM711572(NAD 83)
NU1071_MARKER: DB = BENCH MARK DISK
NU1071_SETTING: 0 = UNSPECIFIED SETTING
NU1071_STAMPING: H 29 1934
```

NU1071_STABILITY: D = MARK OF QUESTIONABLE OR UNKNOWN STABILITY
NU1071_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
NU1071+SATELLITE: SATELLITE OBSERVATIONS - October 20, 2005

NU1071

NU1071	HISTORY	- Date	Condition	Report By
NU1071	HISTORY	- 1934	MONUMENTED	CGS
NU1071	HISTORY	- 1968	GOOD	USGS
NU1071	HISTORY	- 20051020	GOOD	INDIV

NU1071

NU1071 STATION DESCRIPTION

NU1071

NU1071'DESCRIBED BY US GEOLOGICAL SURVEY 1968

NU1071'18.4 MI S FROM OAKLEY.

NU1071'17.7 MILES SOUTH ALONG BIRCH CREEK ROAD FROM THE OREGON SHORT LINE
NU1071'RAILROAD STATION AT OAKLEY, 1.05 MILES NORTH OF MOULTON, 33 FEET EAST
NU1071'OF THE ROAD, 245 FEET NORTH OF AN EAST - WEST INTERSECTION. NOTE--
NU1071'THE NORTHEAST - SOUTHWEST ROAD IS NO LONGER IN EXISTENCE. ALL OTHER
NU1071'REFERENCES ARE CORRECT.

NU1071

NU1071 STATION RECOVERY (2005)

NU1071

NU1071'RECOVERY NOTE BY INDIVIDUAL CONTRIBUTORS 2005

NU1071'RECOVERED AS DESCRIBED, NOTE -- THE NORTHEAST - SOUTHWEST ROAD EXISTS.
NU1071'

*** retrieval complete.

Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4
1 National Geodetic Survey, Retrieval Date = AUGUST 23, 2011
DL7710 *****
DL7710 CORS - This is a GPS Continuously Operating Reference Station.
DL7710 DESIGNATION - SALMONFALLNV2007 CORS ARP
DL7710 CORS_ID - P007
DL7710 PID - DL7710
DL7710 STATE/COUNTY- NV/ELKO
DL7710 USGS QUAD - HENRY (1982)
DL7710
DL7710 *CURRENT SURVEY CONTROL
DL7710
DL7710* NAD 83(CORS)- 41 43 27.10566(N) 114 49 10.91306(W) ADJUSTED
DL7710* NAVD 88 - ** (meters) ** (feet)
DL7710
DL7710 EPOCH DATE - 2002.00
DL7710 X - -2,001,729.844 (meters) COMP
DL7710 Y - -4,328,231.723 (meters) COMP
DL7710 Z - 4,223,912.215 (meters) COMP
DL7710 ELLIP HEIGHT- 1687.207 (meters) (05/??/10) ADJUSTED
DL7710 GEOID HEIGHT- -15.85 (meters) GEOID09
DL7710 HORZ ORDER - SPECIAL (CORS)
DL7710 ELLP ORDER - SPECIAL (CORS)
DL7710
DL7710. ITRF positions are available for this station.
DL7710.The coordinates were established by GPS observations
DL7710.and adjusted by the National Geodetic Survey in May 2010.
DL7710.The coordinates are valid at the epoch date displayed above.
DL7710.The epoch date for horizontal control is a decimal equivalence
DL7710.of Year/Month/Day.
DL7710
DL7710
DL7710.The PID for the CORS L1 Phase Center is DL7711.
DL7710
DL7710.The XYZ, and position/ellipsoidal ht. are equivalent.
DL7710
DL7710.The ellipsoidal height was determined by GPS observations
DL7710.and is referenced to NAD 83.
DL7710
DL7710.The geoid height was determined by GEOID09.
DL7710
DL7710; North East Units Scale Factor Converg.
DL7710;SPC NV E - 8,774,349.214 263,534.092 MT 0.99994966 +0 30 29.7
DL7710;SPC NV E -28,787,177.38 864,611.43 sFT 0.99994966 +0 30 29.7
DL7710
DL7710! - Elev Factor x Scale Factor = Combined Factor
DL7710!SPC NV E - 0.99973544 x 0.99994966 = 0.99968511
DL7710
DL7710 SUPERSEDED SURVEY CONTROL
```

DL7710
DL7710.No superseded survey control is available for this station.
DL7710
DL7710_U.S. NATIONAL GRID SPATIAL ADDRESS: 11TPG8135021451(NAD 83)
DL7710_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DL7710
DL7710 STATION DESCRIPTION
DL7710
DL7710'DESCRIBED BY NATIONAL GEODETIC SURVEY 2010
DL7710'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DL7710'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DL7710'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DL7710' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG
DL7710' HTTP://WWW.NGS.NOAA.GOV/CORS.

*** retrieval complete.
Elapsed Time = 00:00:01

The NGS Data Sheet

See file [dsdata.txt](#) for more information about the datasheet.

```
DATABASE = NGSIDB , PROGRAM = datasheet95, VERSION = 7.87.4
1 National Geodetic Survey, Retrieval Date = AUGUST 23, 2011
DL7734 *****
DL7734 CORS - This is a GPS Continuously Operating Reference Station.
DL7734 DESIGNATION - PARKVALLEYUT2007 CORS ARP
DL7734 CORS_ID - P100
DL7734 PID - DL7734
DL7734 STATE/COUNTY- UT/BOX ELDER
DL7734 USGS QUAD - PARK VALLEY (1990)
DL7734
DL7734 *CURRENT SURVEY CONTROL
DL7734
DL7734* NAD 83(CORS)- 41 51 24.46618(N) 113 17 39.12368(W) ADJUSTED
DL7734* NAVD 88 - ** (meters) ** (feet)
DL7734
DL7734 EPOCH DATE - 2002.00
DL7734 X - -1,881,970.775 (meters) COMP
DL7734 Y - -4,371,104.980 (meters) COMP
DL7734 Z - 4,235,027.369 (meters) COMP
DL7734 ELLIP HEIGHT- 1884.129 (meters) (05/??/10) ADJUSTED
DL7734 GEOID HEIGHT- -14.76 (meters) GEOID09
DL7734 HORZ ORDER - SPECIAL (CORS)
DL7734 ELLP ORDER - SPECIAL (CORS)
DL7734
DL7734.ITRF positions are available for this station.
DL7734.The coordinates were established by GPS observations
DL7734.and adjusted by the National Geodetic Survey in May 2010.
DL7734.The coordinates are valid at the epoch date displayed above.
DL7734.The epoch date for horizontal control is a decimal equivalence
DL7734.of Year/Month/Day.
DL7734
DL7734
DL7734.The PID for the CORS L1 Phase Center is DL7735.
DL7734
DL7734.The XYZ, and position/ellipsoidal ht. are equivalent.
DL7734
DL7734.The ellipsoidal height was determined by GPS observations
DL7734.and is referenced to NAD 83.
DL7734
DL7734.The geoid height was determined by GEOID09.
DL7734
DL7734; North East Units Scale Factor Converg.
DL7734;SPC UT N - 1,170,725.626 351,024.941 MT 1.00001275 -1 10 58.9
DL7734;SPC UT N - 3,840,955.66 1,151,654.33 sFT 1.00001275 -1 10 58.9
DL7734
DL7734! - Elev Factor x Scale Factor = Combined Factor
DL7734!SPC UT N - 0.99970457 x 1.00001275 = 0.99971732
DL7734
DL7734 SUPERSEDED SURVEY CONTROL
```


DL7734

DL7734.No superseded survey control is available for this station.

DL7734

DL7734_U.S. NATIONAL GRID SPATIAL ADDRESS: 12TUM0956836421(NAD 83)

DL7734_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA

DL7734

DL7734

STATION DESCRIPTION

DL7734

DL7734'DESCRIBED BY NATIONAL GEODETIC SURVEY 2010

DL7734'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND

DL7734'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE

DL7734'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.

DL7734' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG

DL7734' HTTP://WWW.NGS.NOAA.GOV/CORS.

*** retrieval complete.

Elapsed Time = 00:00:01

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

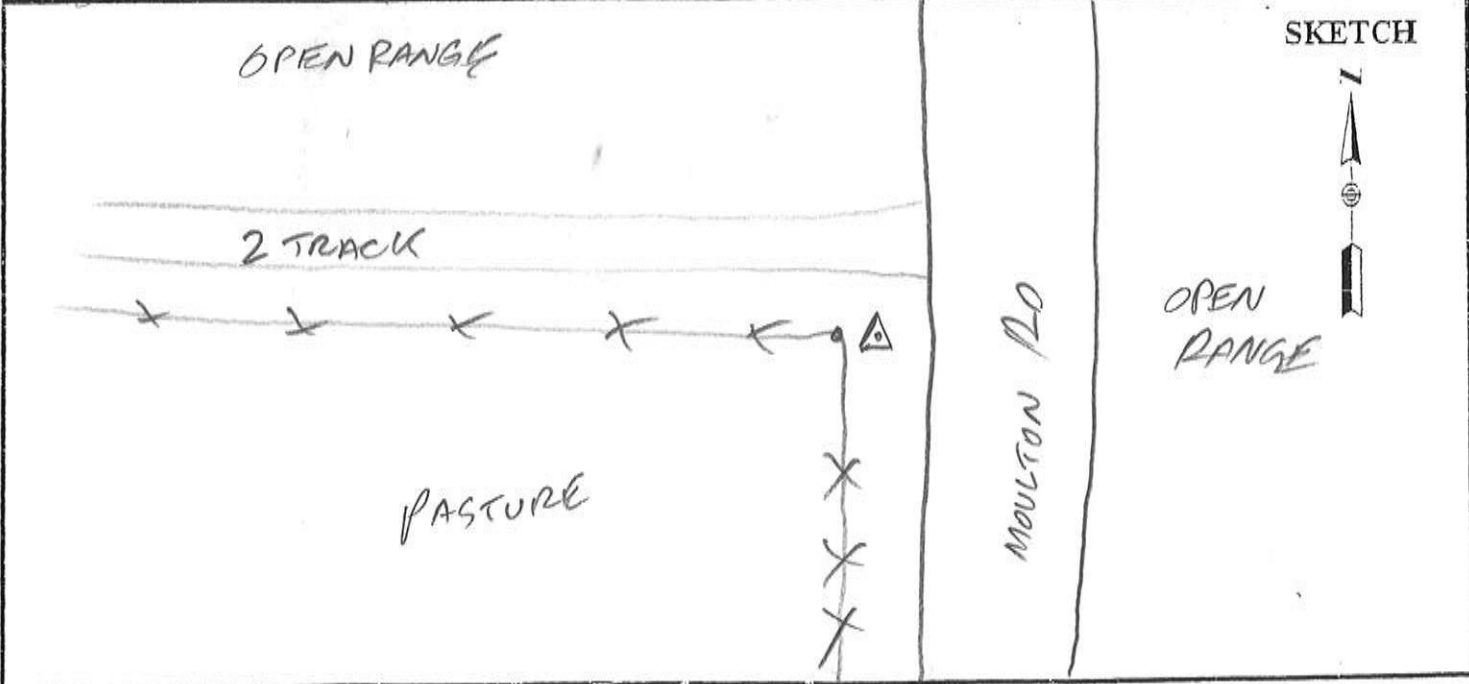
PROJECT <u>1110403</u>	SITE NUMBER <u>1</u>
OPERATOR <u>WJN</u>	SITE NAME <u>2</u>
DATE <u>7/15/11</u>	

TRACKING TIMES (LOCAL) MEASURE <u>COT</u>	SENSOR TYPE <u>500</u> 9500 <u>399</u> 299
START <u>11:04</u>	MEMORY CARD <u>101</u>
STOP <u>17:33</u>	BATTERY NO. _____
	CONTROLLER NO. _____
	SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 399E/9500 <u>0.389</u> 500 <u>0.360</u>	OBSTRUCTIONS: <u>NO</u>
HEIGHT READINGS MTS FT <u>1.305</u> _____ <u>1.694</u> _____	STATION DESCRIPTIONS <u>Set 13"</u> <u>Rebar 2.5' E OF</u> <u>FENCE INT. FLUSH w/ GP</u>

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS <u>SKC</u>
------------------------	---

TIME	GDOP	SATELLITES	EPOCH	EPOCH
<u>17:04</u>	<u>2.1</u>	<u>10/9-10</u>	<u>42 02 58.92012</u>	<u>0.005</u>
<u>23:33</u>	<u>1.9</u>	<u>9/9-9</u>	<u>113 38 14.79150</u>	<u>0.005</u>
			<u>1608.093</u>	



SWOT CENSUS / BPOE EXPERT

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WVN
DATE 7/15/11

SITE NUMBER 1
SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:35
STOP 17:15

SENSOR TYPE 500 9500 399 299
MEMORY CARD 16
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 0.360
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.306 _____

1-656

OBSTRUCTIONS: NO

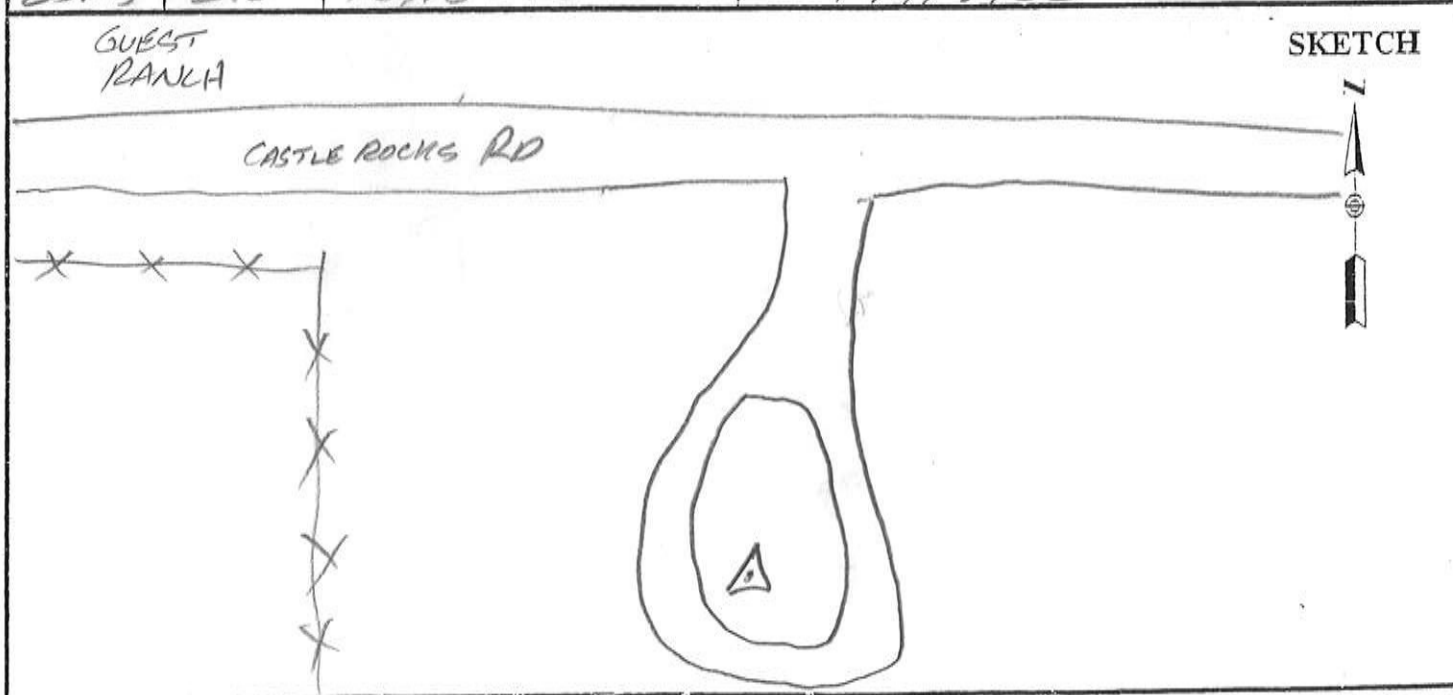
STATION DESCRIPTIONS set 18"
Rebar w/ PLASTIC CAP
FLUSH w/

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
GKG

TIME	GDOP	SATELLITES
<u>16:35</u>	<u>1.9</u>	<u>9/9-9</u>
<u>23:15</u>	<u>2.0</u>	<u>10/10-10</u>

<u>42 07 30.26240</u>	<u>8</u>
<u>113 39 32.08700</u>	<u>5</u>
<u>1741.753</u>	



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

VERT CONT

PROJECT 1110403
OPERATOR WVN
DATE 7/15/11

SITE NUMBER 1
SITE NAME H 29

TRACKING TIMES (LOCAL) MEASURE MDT
START 11:37
STOP 11:57

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.038 _____

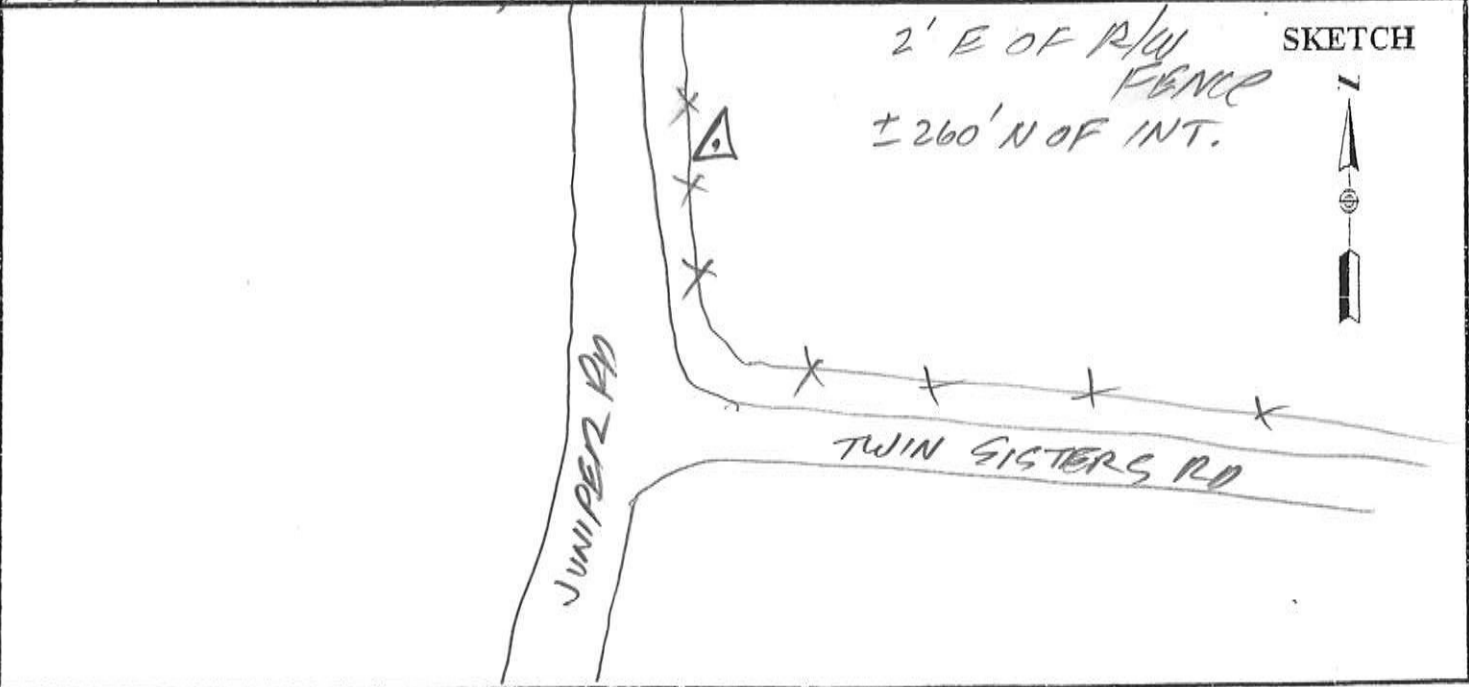
1.398

STATION DESCRIPTIONS Ed BRASS
DISK IN CONC POST, 0.8 AG,
MKA H29 1934
USCGS
As described

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
17:37	2.1	10/9-10
17:57	2.0	7/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

VERT CONTR

PROJECT 1110403
OPERATOR WJN
DATE 7/15/11

SITE NUMBER 2
SITE NAME 4837.22

TRACKING TIMES (LOCAL) MEASURE MD7
START 15:09
STOP 15:44

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
0.903 _____

1.263

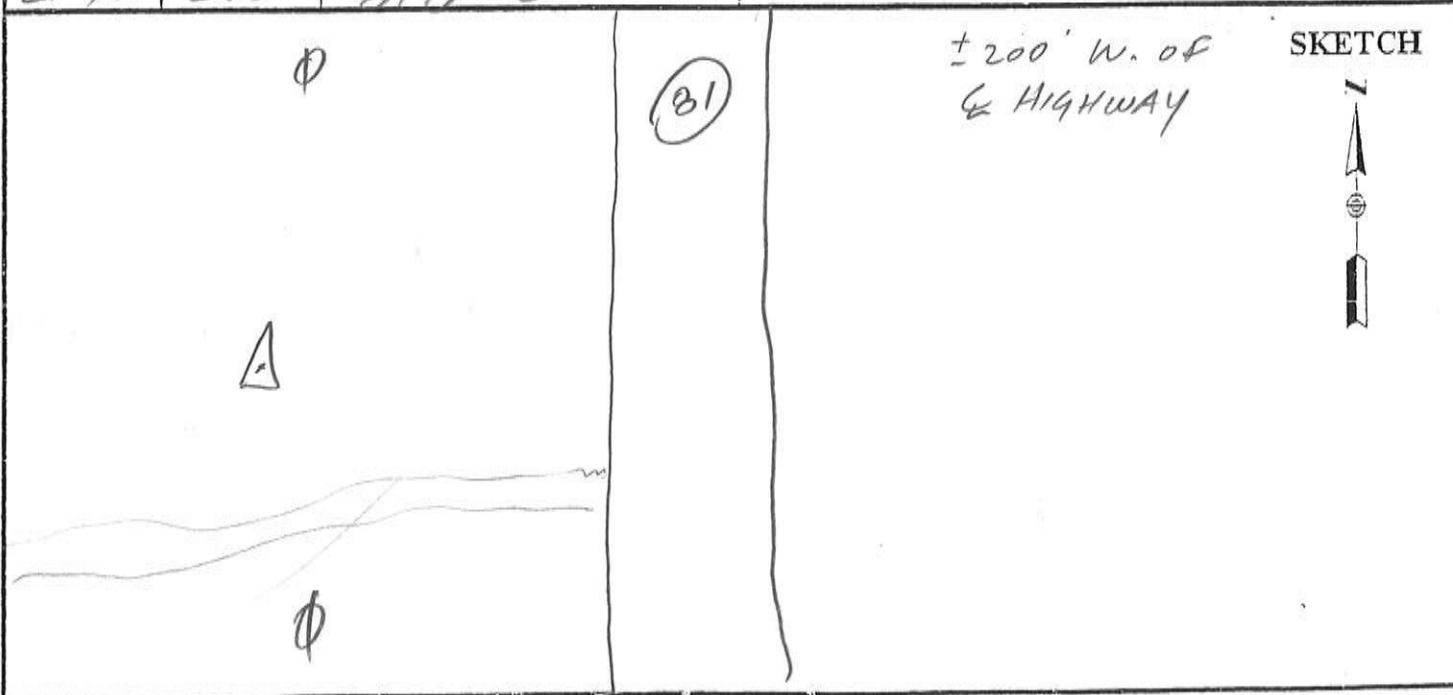
OBSTRUCTIONS: OH POWER LINES

STATION DESCRIPTIONS BRASS
DISK IN CONC POST MKD
OFF 204.56 4837.22
5fp alongside AGENCY:
IDPWD AS Described

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
<u>21:09</u>	<u>1.8</u>	<u>9/9-9</u>
<u>21:44</u>	<u>2.5</u>	<u>8/8-8</u>

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
RAIN



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

Next cont.

PROJECT 110403
OPERATOR WJN
DATE 7/15/11

SITE NUMBER 3
SITE NAME 2536.65 NGS NAME
↑ contrary to MARKINGS

TRACKING TIMES (LOCAL) MEASURE MDT
START 16:00
STOP 16:33

SENSOR TYPE (500) 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
0.937 _____

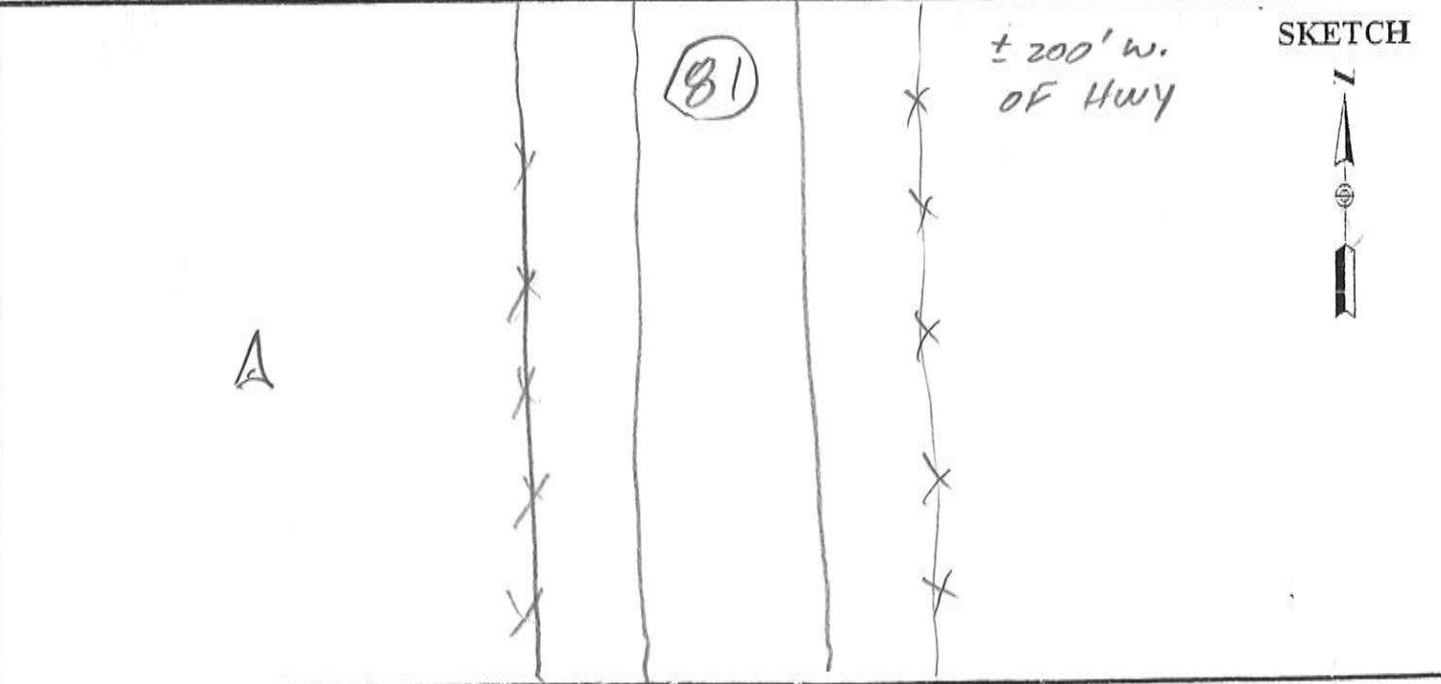
1.297

STATION DESCRIPTIONS BRASS DISK
IN CONC POST MKD
2336.65 204.64
IDPWT
AS DESCRIBED

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
22:00	2.6	8/8-8
22:33	2.0	8/8-8



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

BASO

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 1
SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE MDT
START 9:38
STOP 16:24

SENSOR TYPE 500 9500 399 299
MEMORY CARD 67
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389 *0.35*
 500 0.360

HEIGHT READINGS MTS FT
1.306 _____

1.656

OBSTRUCTIONS: No

STATION DESCRIPTIONS Rebar and
CAP SET 7/14/11

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
15:38	3.0	7/7-7
22:24	2.1	9/9-9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

AS DESCRIBED

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 1
SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:04
STOP 16:05

SENSOR TYPE 500 9500 399 299
MEMORY CARD _____
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.261 _____

1.650

OBSTRUCTIONS: NO

STATION DESCRIPTIONS Rebar and
CAP set 7/14/11

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
<u>16:04</u>	<u>2.1</u>	<u>9/8-9</u>
<u>22:05</u>	<u>2.0</u>	<u>9/9-9</u>

AS DESCRIBED

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

PROJECT 1110403
OPERATOR WJP
DATE 5/16/11

SITE NUMBER 1
SITE NAME 3

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:11
STOP 10:26

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: _____

HEIGHT READINGS MTS FT
1247 _____

STATION DESCRIPTIONS IN SHORT
GRASS @ INT OF
FAINT TRAILS

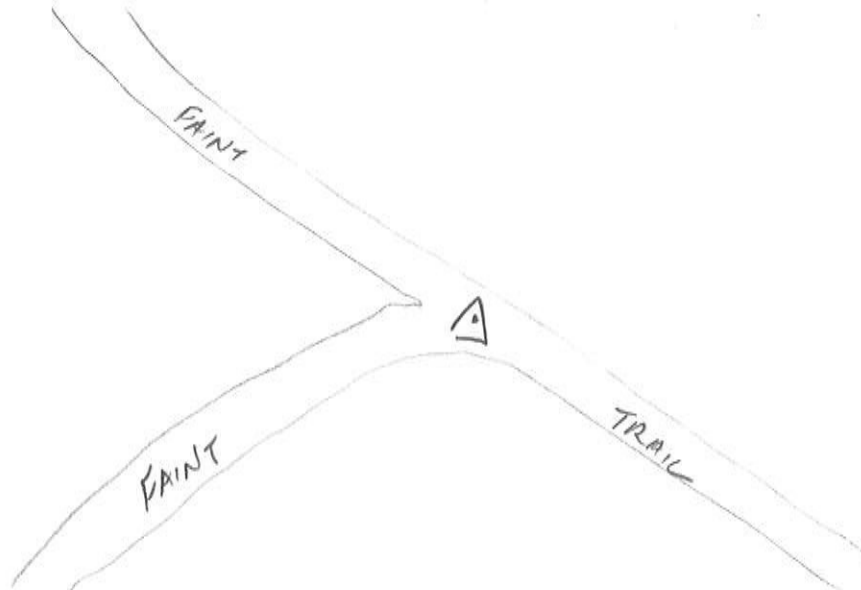
1.607

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
S/KC

TIME	GDOP	SATELLITES
16:11	2.0	9/9-9
16:26	2.0	9/9-9

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110 403
OPERATOR WJW
DATE 5/16/11

SITE NUMBER 1
SITE NAME 4

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:17
STOP 10:32

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.266 _____

1.626

OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT
IN LONG GRASS

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
<u>16:17</u>	<u>2.5</u>	<u>8/8-9</u>
<u>16:32</u>	<u>2.0</u>	<u>9/9-9</u>

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
GKC

SKETCH

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 2
SITE NAME 5

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:43
STOP 10:58

SENSOR TYPE 500 9500 399 299
MEMORY CARD 4
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.260 _____

1.620

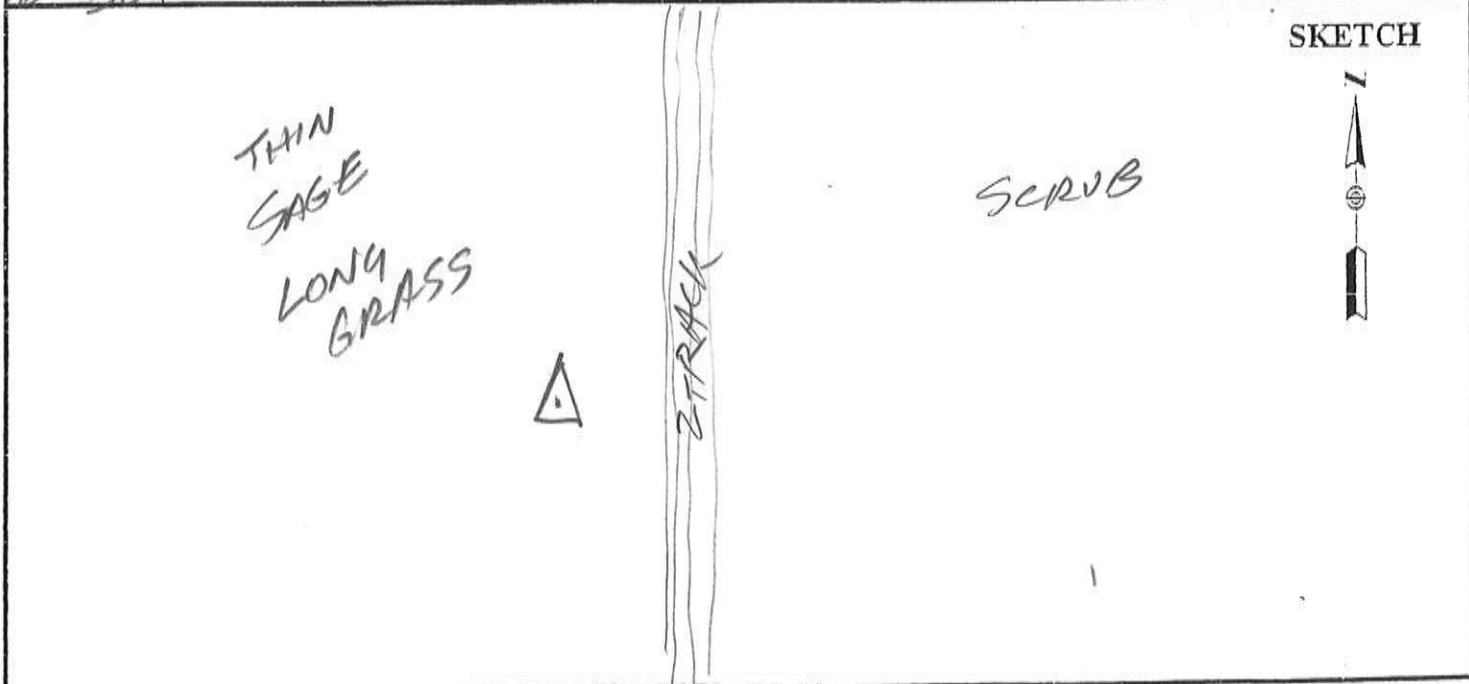
OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT IN
LONG GRASS ± 12'
S OF 2-TRACK

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
<u>16:43</u>	<u>2.0</u>	<u>9/9-9</u>
<u>16:58</u>	<u>2.2</u>	<u>8/8-8</u>

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1610403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 2
SITE NAME 6

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:47
STOP 11:02

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.267 _____

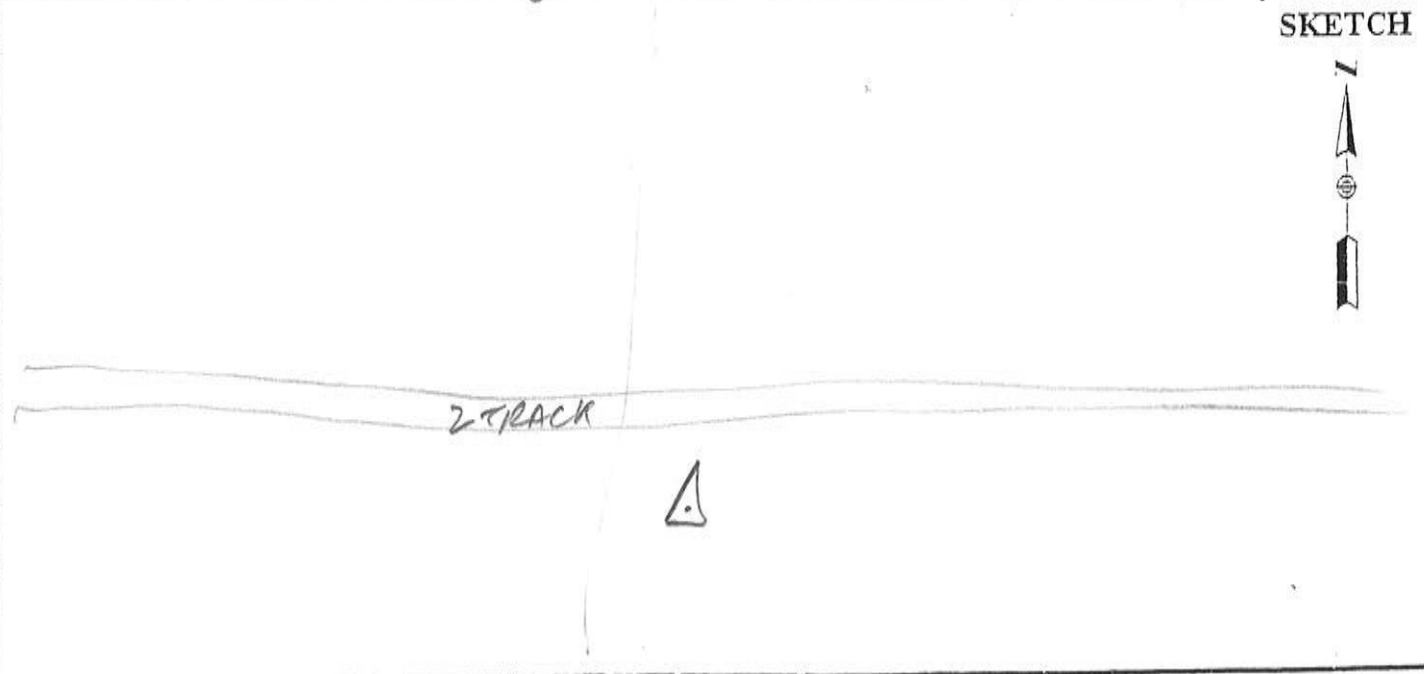
STATION DESCRIPTIONS POINT
IN HEAVY GAGE

1.627

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
<u>16</u>	<u>2.5</u>	<u>8/8-8</u>
<u>17:02</u>	<u>2.3</u>	<u>8/9-9</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 3
SITE NAME 7

TRACKING TIMES (LOCAL) MEASURE MDT
START 11:11
STOP 11:27

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.290 _____

STATION DESCRIPTIONS POINT IN
BARE AREA, OLD
TRAIL

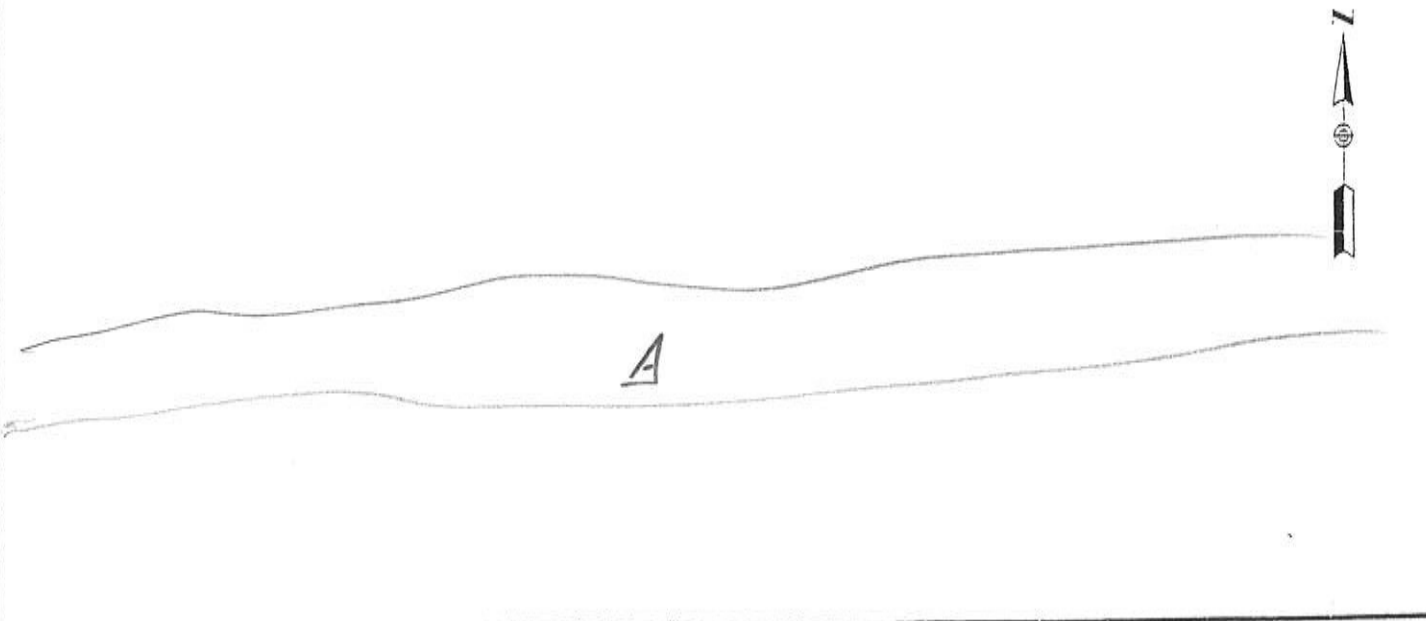
1.650

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
GKC

TIME	GDOP	SATELLITES
17:11	2.2	10/10-10
17:27	2.2	10/10+10

SKETCH



3

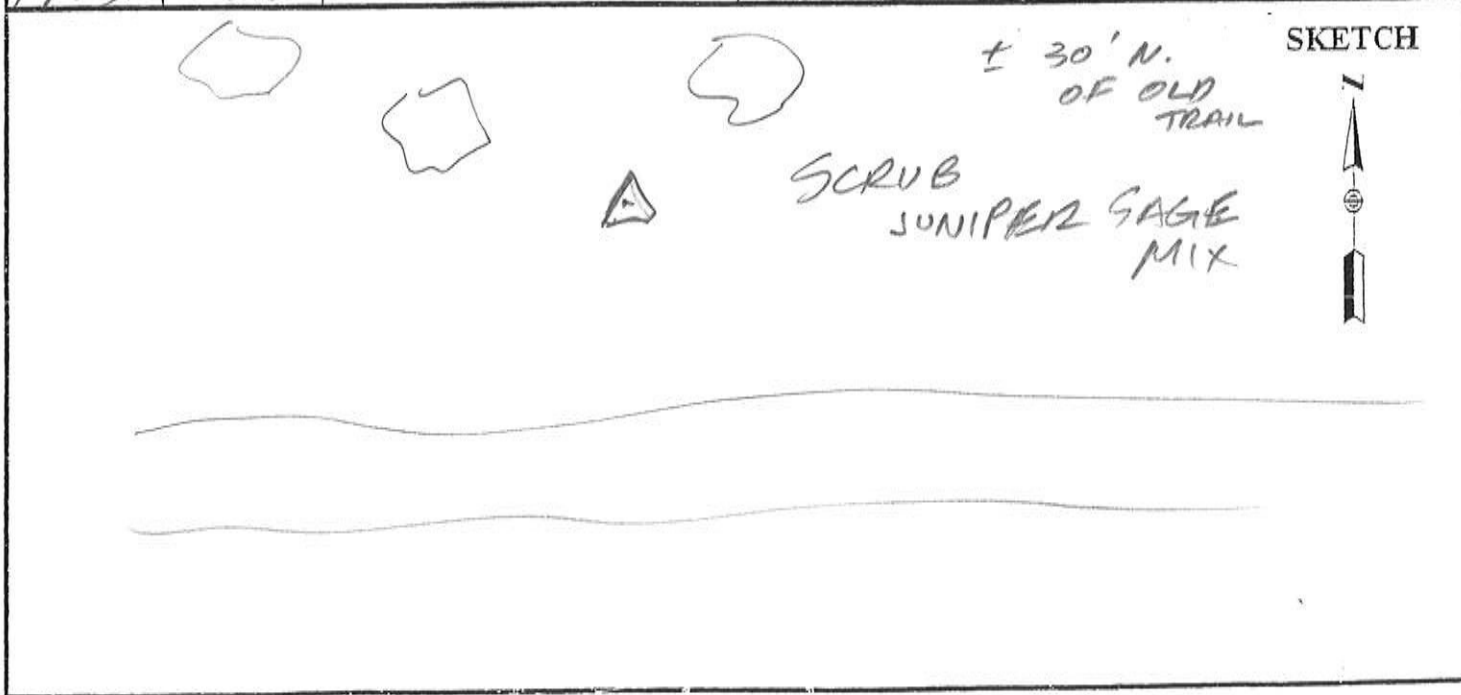
AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT <u>1110403</u>	SITE NUMBER <u>3</u>
OPERATOR <u>WJN</u>	SITE NAME <u>B</u>
DATE <u>7/16/11</u>	

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u>	SENSOR TYPE <u>500</u> 9500 399 299
START <u>11:15</u>	MEMORY CARD <u>14</u>
STOP <u>11:31</u>	BATTERY NO. _____
	CONTROLLER NO. _____
	SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>TALL JUNIPERS</u> <u>NW, NE</u>
HEIGHT READINGS MTS FT <u>1.266</u> _____	STATION DESCRIPTIONS <u>POINT IN</u> <u>SCRUB</u>

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS									
	<u>SKC JUNIPERS</u>									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">TIME</th> <th style="width: 15%;">GDOP</th> <th style="width: 70%;">SATELLITES</th> </tr> </thead> <tbody> <tr> <td><u>17:15</u></td> <td><u>2.2</u></td> <td></td> </tr> <tr> <td><u>17:31</u></td> <td><u>2.2</u></td> <td></td> </tr> </tbody> </table>	TIME	GDOP	SATELLITES	<u>17:15</u>	<u>2.2</u>		<u>17:31</u>	<u>2.2</u>		
TIME	GDOP	SATELLITES								
<u>17:15</u>	<u>2.2</u>									
<u>17:31</u>	<u>2.2</u>									



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

PROJECT 1110 403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 4
SITE NAME 9

TRACKING TIMES (LOCAL) MEASURE MDT
START 11:59
STOP 12:19

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1-275 _____

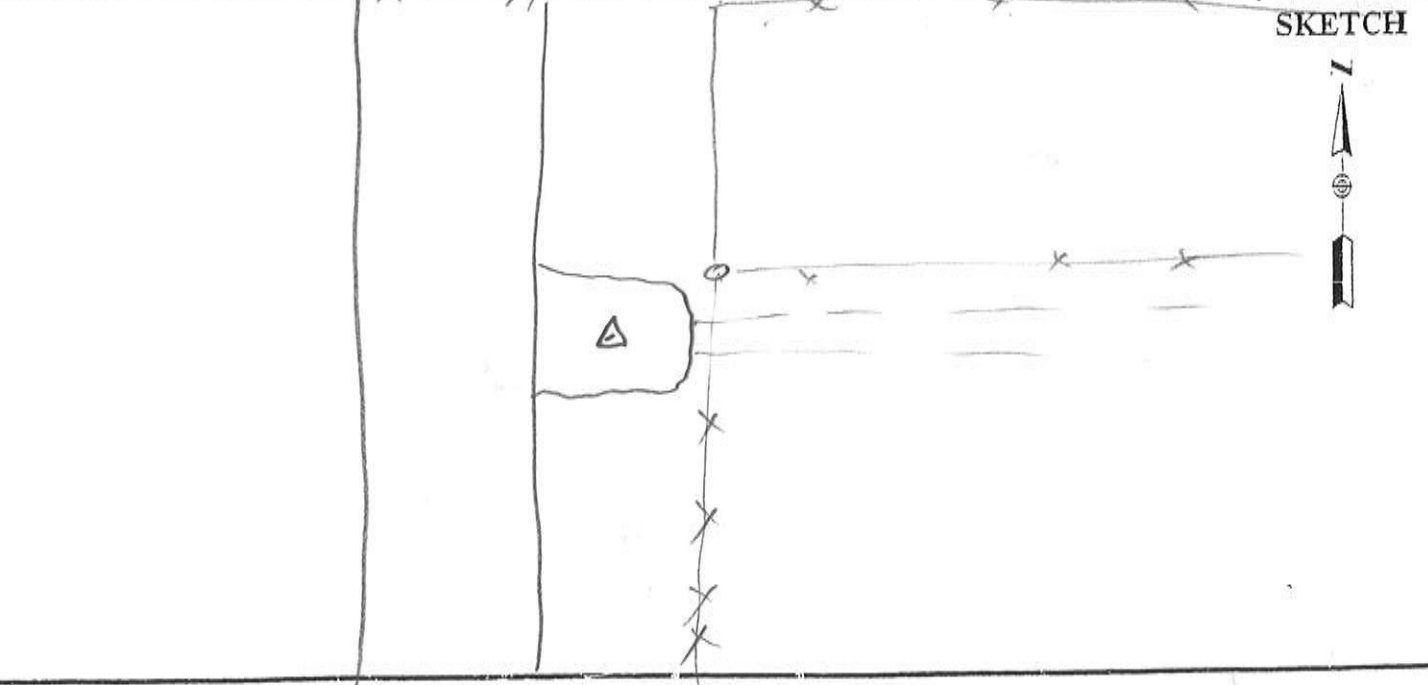
1-635

STATION DESCRIPTIONS CENTER OF
BARE EARTH AREA
BETWEEN N-S RD
AND FENCE OPP 2-TRACK
E

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
WINDY

TIME	GDOP	SATELLITES
17:59	2.5	9/9-9
18:19	2.2	9/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 4
SITE NAME 10

TRACKING TIMES (LOCAL) MEASURE MDT
START 12:03
STOP 12:23

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.240 _____

1.600

OBSTRUCTIONS: No

STATION DESCRIPTIONS POINT IN
TALL WEEDS, GRASS
W. OF N-S RD
± 50' W OF E

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
<u>18 03</u>	<u>2.5</u>	<u>9/9-9</u>
<u>18 23</u>	<u>2.2</u>	<u>9/9-9</u>

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC Very Windy
Becoming PC

Mixed
weeds
LONG GRASS

SKETCH

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

*
2

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 5
SITE NAME 11

TRACKING TIMES (LOCAL) MEASURE MDT
START 12:32
STOP 12:49

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.270 _____

1.030

OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT IN
LONG GRASS ±40' E
OF 4 N-S ROAD

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
10:32	1.8	11/11-11
10:49	2.0	10/10-10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
PC AND VERY WINDY
FOR THE REMAINDER OF
DAY

LONG GRASS -
weeds

▲

SKETCH

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110 403
OPERATOR WJW
DATE 7/16/11

SITE NUMBER 5
SITE NAME 12

TRACKING TIMES (LOCAL) MEASURE MDT
START 12:37
STOP 12:54

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.299 _____

STATION DESCRIPTIONS POINT IN
HEAVY SAGEBRUSH


SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
18:37	1.8	11/11-11
18:54	2.0	10/10-10

HEAVY SAGE
SCRUB
▲

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
OPERATOR WJN
DATE 7/16/11

SITE NUMBER 6
SITE NAME 13

TRACKING TIMES (LOCAL) MEASURE MDT
START 13:12
STOP 13:27

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.306 _____

1.660

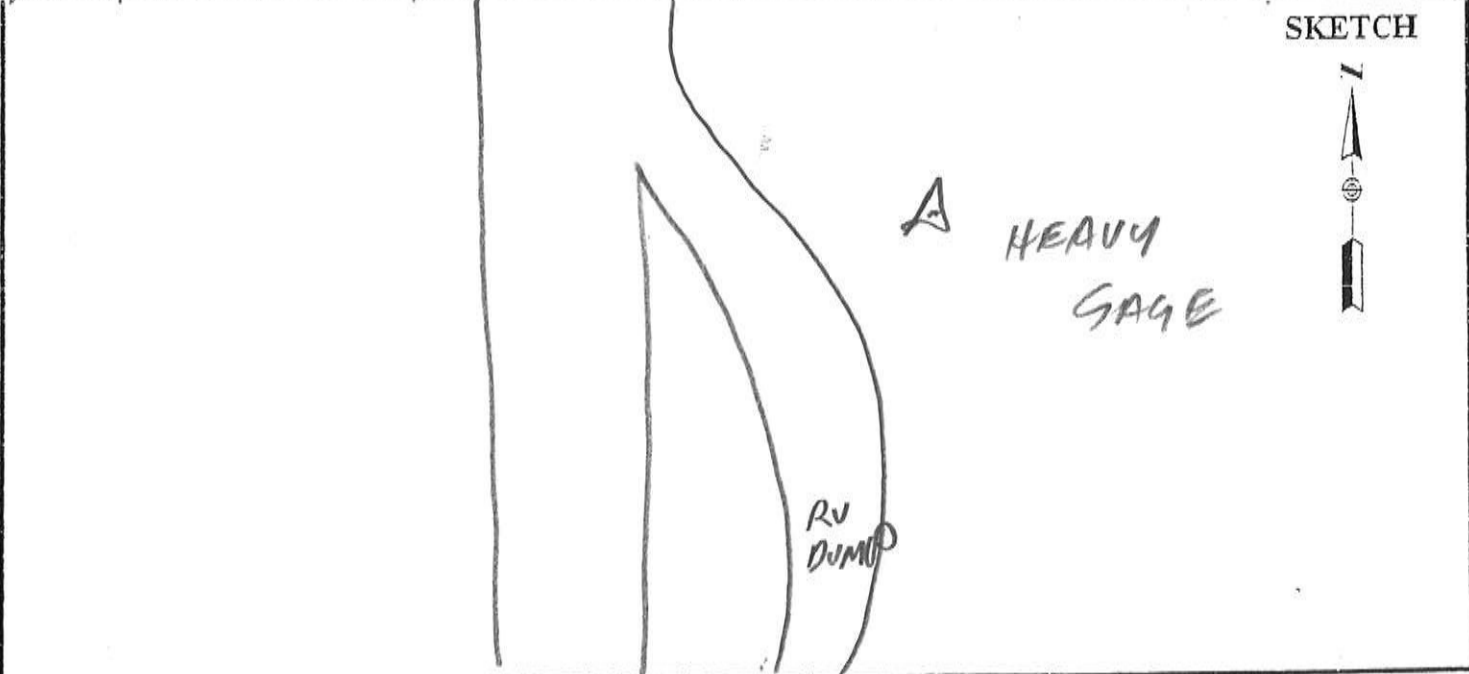
OBSTRUCTIONS: N

STATION DESCRIPTIONS POINT IN
HEAVY SAGE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:12	1.8	10/10-10
19:27	1.8	10/10-10



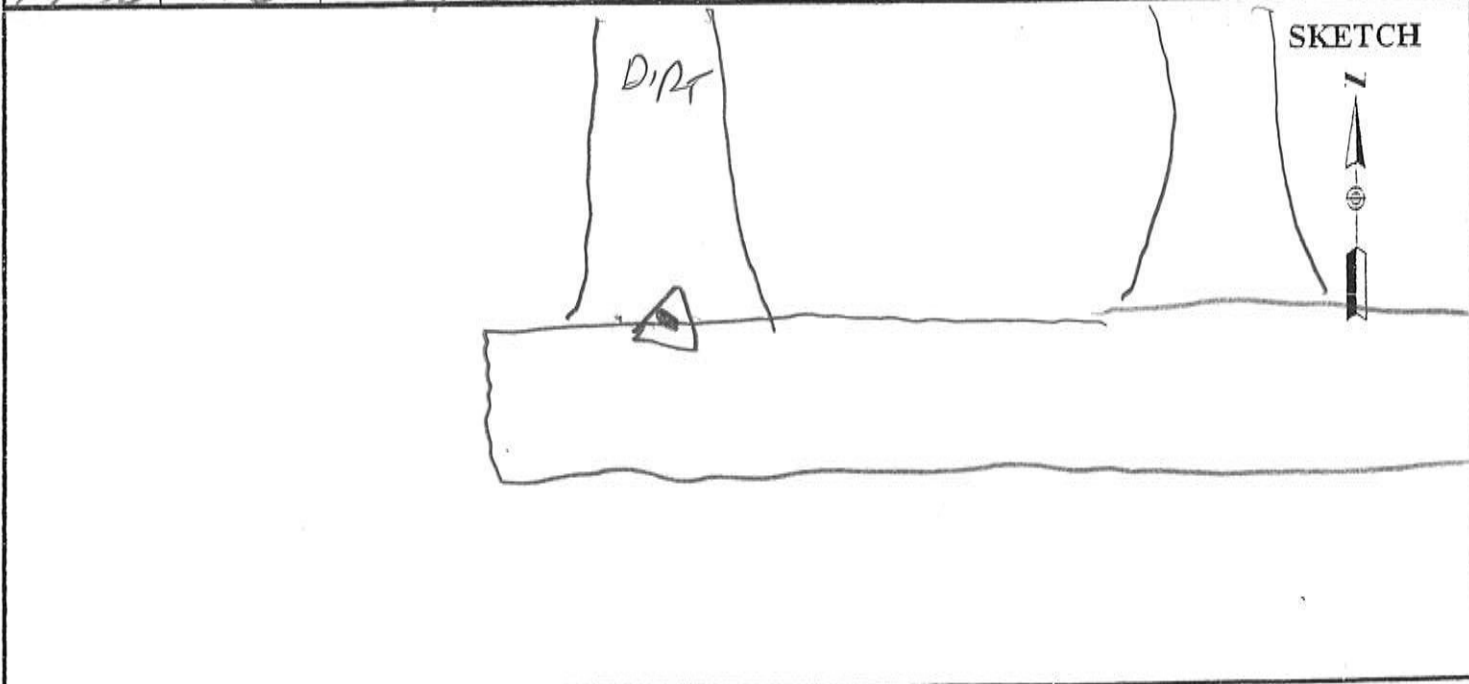
AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT <u>1110403</u>	SITE NUMBER <u>6</u>
OPERATOR <u>WJM</u>	SITE NAME <u>14</u>
DATE <u>7/15/11</u>	

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u>	SENSOR TYPE <u>500</u> 9500 399 299
START <u>13:21</u>	MEMORY CARD <u>14</u>
STOP <u>13:36</u>	BATTERY NO. _____
	CONTROLLER NO. _____
	SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>No</u>
HEIGHT READINGS MTS FT <u>1.301</u> _____ <u>1.661</u>	STATION DESCRIPTIONS <u>N EDGE</u> <u>Rd @ & DIRT ENT</u> <u>N.</u>

SATELLITE OBSERVATIONS			WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
TIME	GDOP	SATELLITES	
<u>19:21</u>	<u>1.8</u>	<u>10/10-10</u>	
<u>19:36</u>	<u>1.8</u>	<u>10/10-10</u>	



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
 OPERATOR UNAN
 DATE _____

SITE NUMBER 7
 SITE NAME 15

TRACKING TIMES (LOCAL) MEASURE MDT
 START 13:55
 STOP 14:11

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.324 _____

1.684

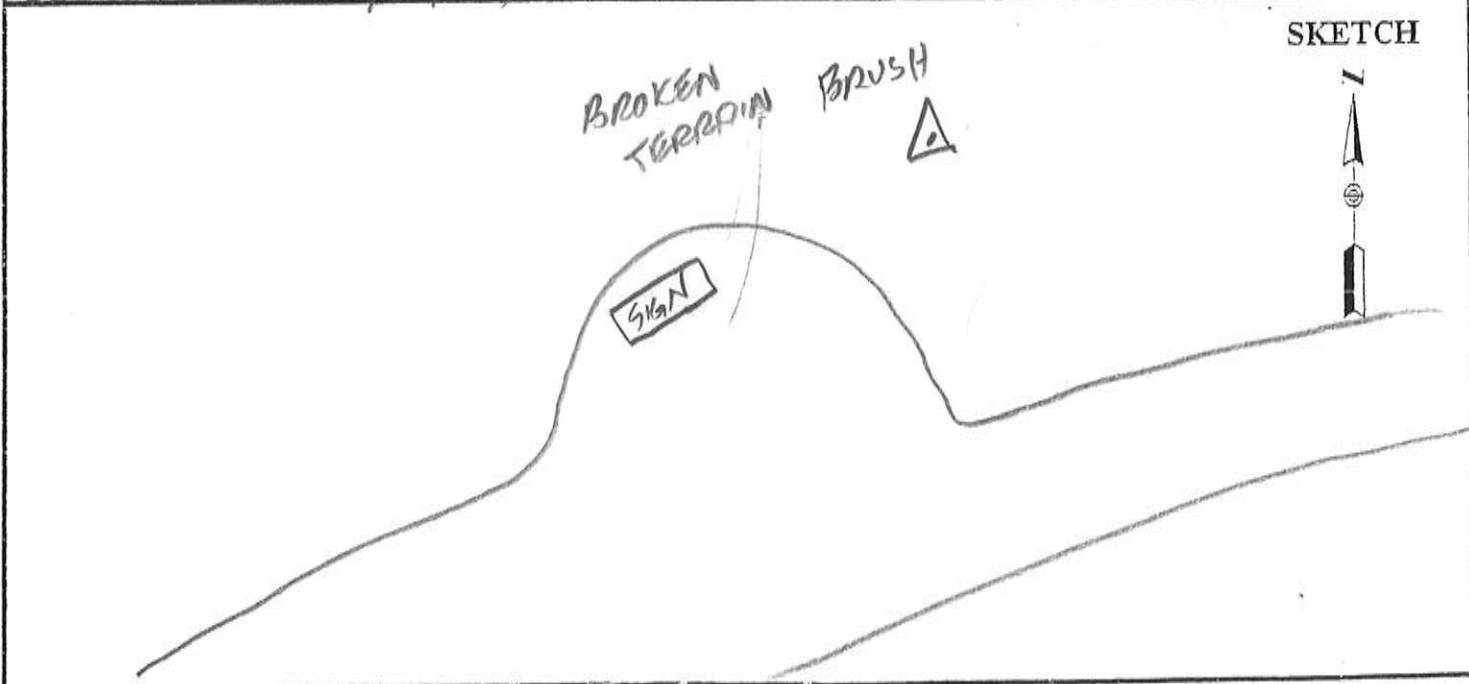
OBSTRUCTIONS: Terrain S

STATION DESCRIPTIONS POINT IN
HEAVY BRUSH

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1955	2.5	9/9-9
2011	2.9	9/9-9



2

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE _____

SITE NUMBER 7
SITE NAME 16

TRACKING TIMES (LOCAL) MEASURE MDI
START 14:05
STOP 14:20

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TERRAIN S

HEIGHT READINGS MTS FT
1.244 _____

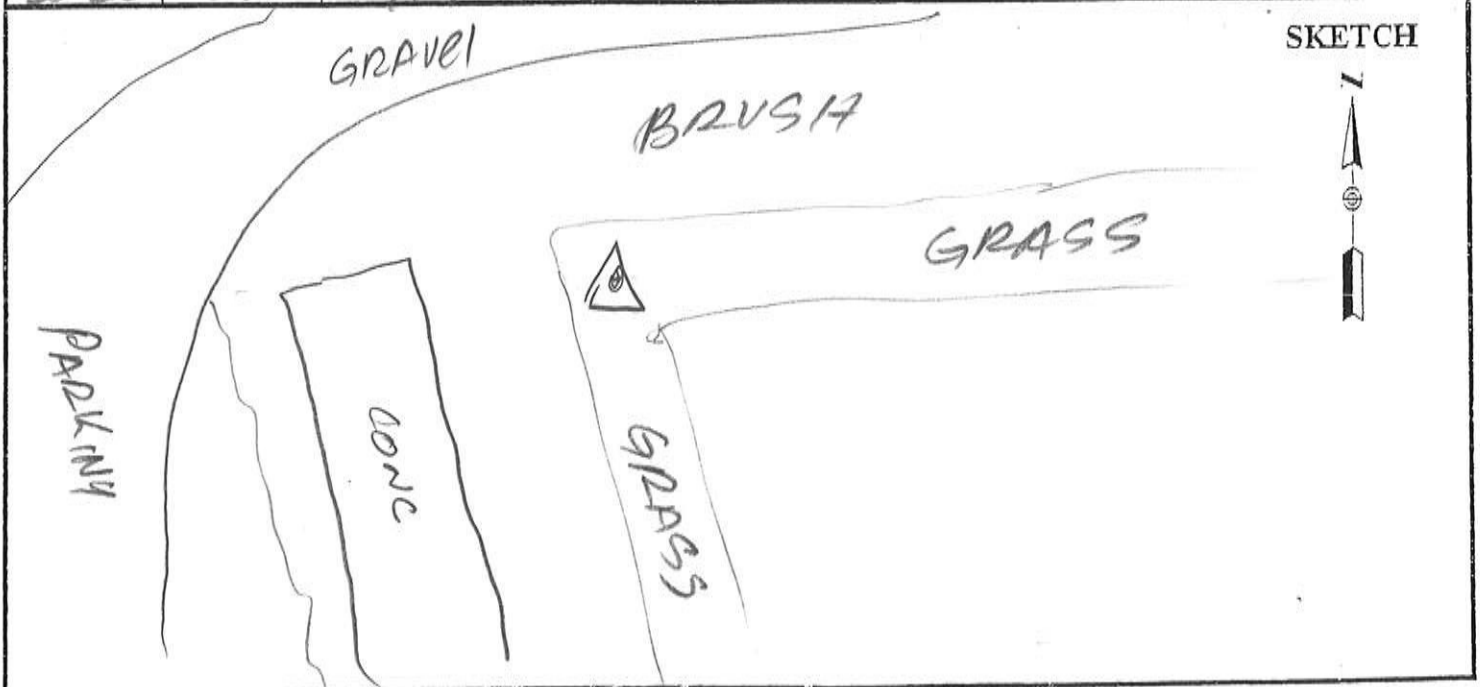
1.604

STATION DESCRIPTIONS 44 OF
WIDE LONG GRASS
STRIPS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
2005	2.2	9/9-9
2020	2.1	9/9-9



1

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
 OPERATOR WJAI
 DATE 7/16/11

SITE NUMBER 8
 SITE NAME 17

TRACKING TIMES (LOCAL) MEASURE MDT
 START 14:31
 STOP 14:52

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TERRAINS

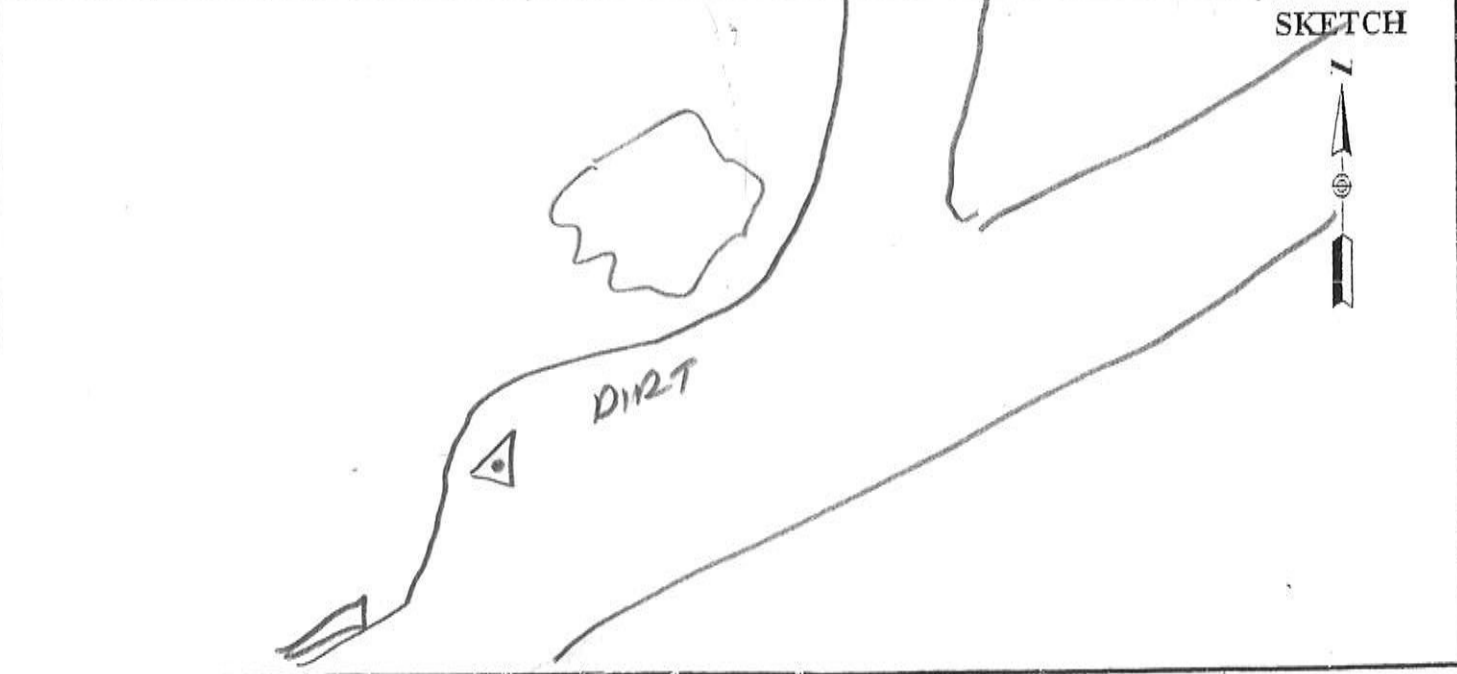
HEIGHT READINGS MTS FT
 1.296 _____
 1.656 _____

STATION DESCRIPTIONS POINT IN
DIRT / BARE EARTH
TURNOUT.

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
20:31	3.0	10/6-9
20:52	2.4	8/8-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

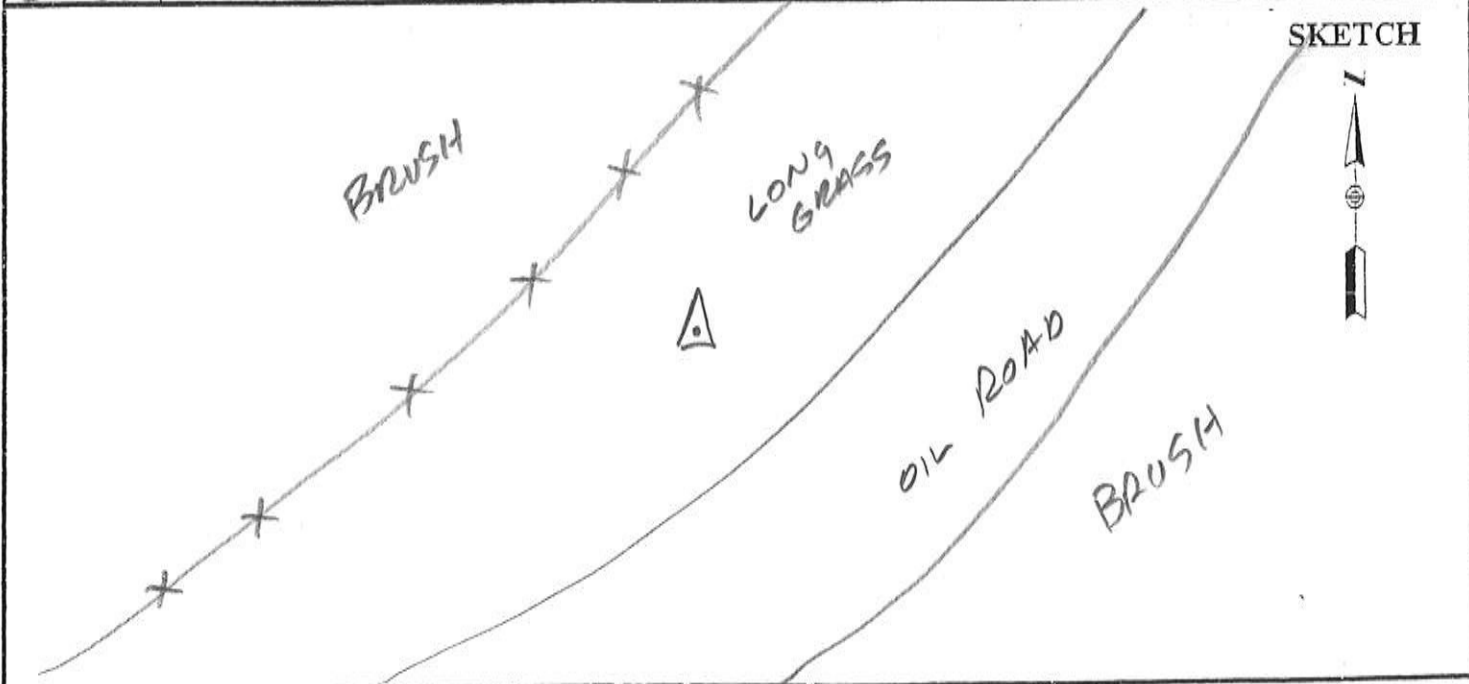
2

PROJECT <u>1110403</u> OPERATOR <u>WJN</u> DATE _____	SITE NUMBER <u>8</u> SITE NAME <u>18</u>
---	---

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u> START <u>14:35</u> STOP <u>14:50</u>	SENSOR TYPE <u>500</u> 9500 399 299 MEMORY CARD <u>14</u> BATTERY NO. _____ CONTROLLER NO. _____ SENSOR NO. _____
--	---

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>TERRAIN S</u> _____ _____ _____
HEIGHT READINGS MTS FT <u>1.291</u> _____ <u>1.651</u>	STATION DESCRIPTIONS <u>POINT IN</u> <u>LONG GRASS BETWEEN</u> <u>RD AND NW R/W FENCE</u> _____ _____

SATELLITE OBSERVATIONS			WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
TIME	GDOP	SATELLITES	
<u>20:35</u>			
<u>20:50</u>			



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
OPERATOR UNN
DATE 7/15/11

SITE NUMBER 9
SITE NAME 19

TRACKING TIMES (LOCAL) MEASURE MDT
START 15:04
STOP 15:21

SENSOR TYPE 500 9500 399 299
MEMORY CARD _____
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.261 _____

1.621

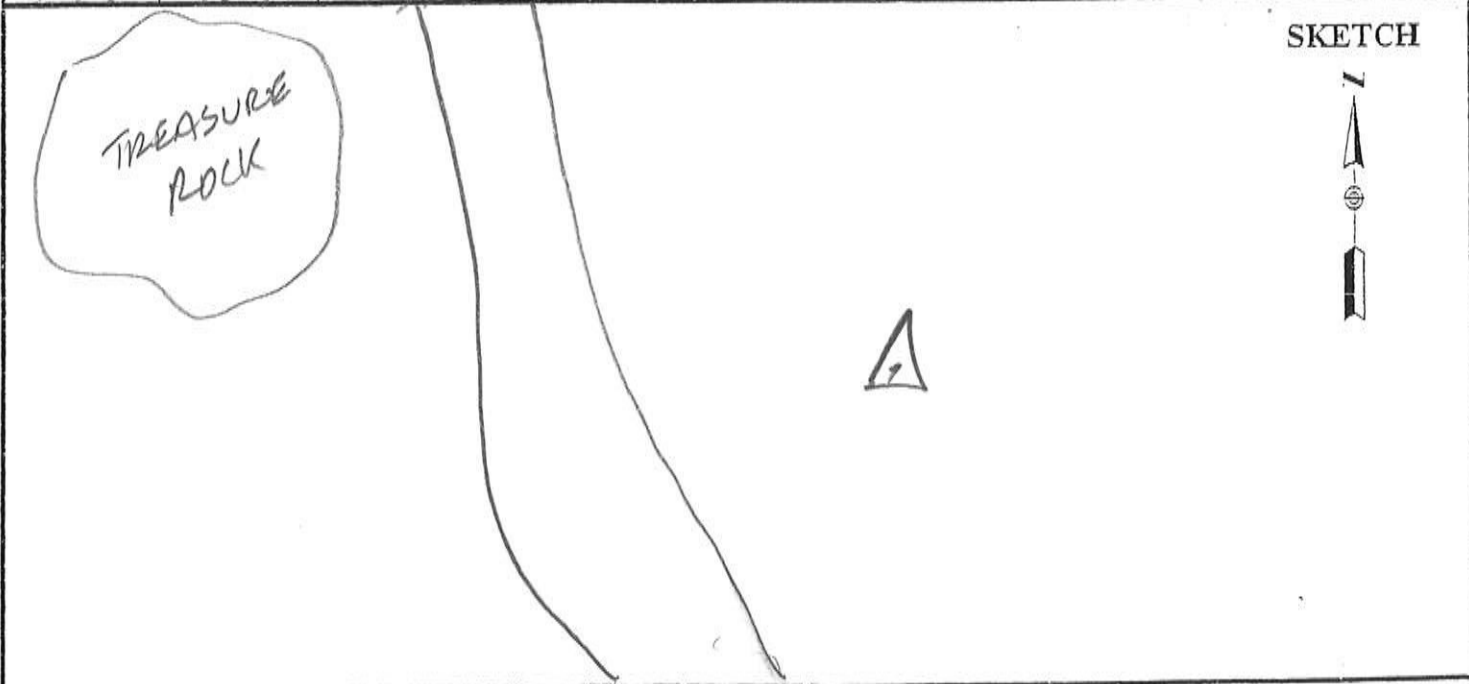
OBSTRUCTIONS: ROCK E.

STATION DESCRIPTIONS POINT
IN HEAVY SAGE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
21 04	2.3	9/9-9
21 17	1.9	9/9-9



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR UNIN
 DATE 7/15/11

SITE NUMBER 9
 SITE NAME 20

TRACKING TIMES (LOCAL) MEASURE MTS
 START 15:16
 STOP 15:35

SENSOR TYPE 500 9500 399 299
 MEMORY CARD _____
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TERRAIN S
ROCK W

HEIGHT READINGS MTS FT
1.291 _____

STATION DESCRIPTIONS POINT
IN LONG GRASS ±
30' SW OF WINDING
IRR. OIL RD

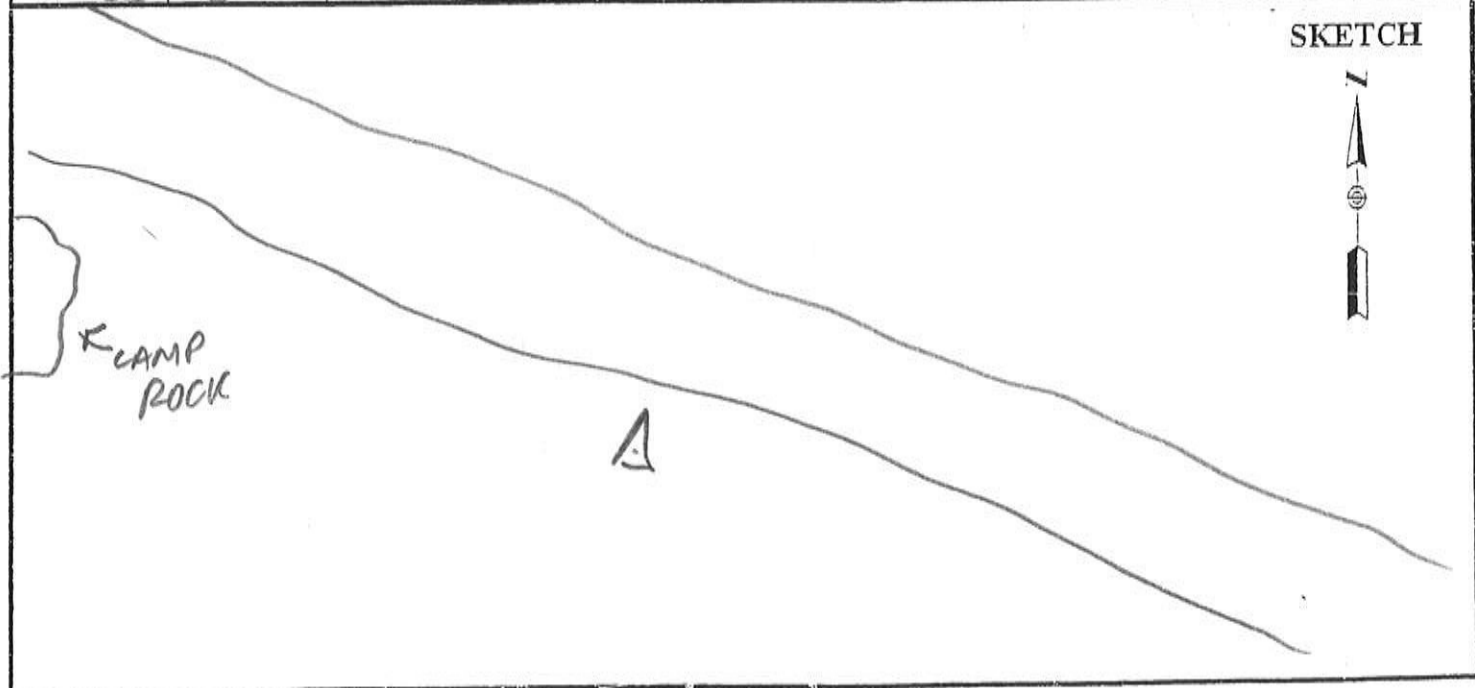
1.651

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
21:16	2.0	9/9-9
21:35	2.4	8/8-9

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

PROJECT 1110403
 OPERATOR W.J.N
 DATE 7/16/11

SITE NUMBER 10
 SITE NAME 21

TRACKING TIMES (LOCAL) MEASURE MDT
 START 15:32
 STOP 15:49

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.317 _____
 1.677 _____

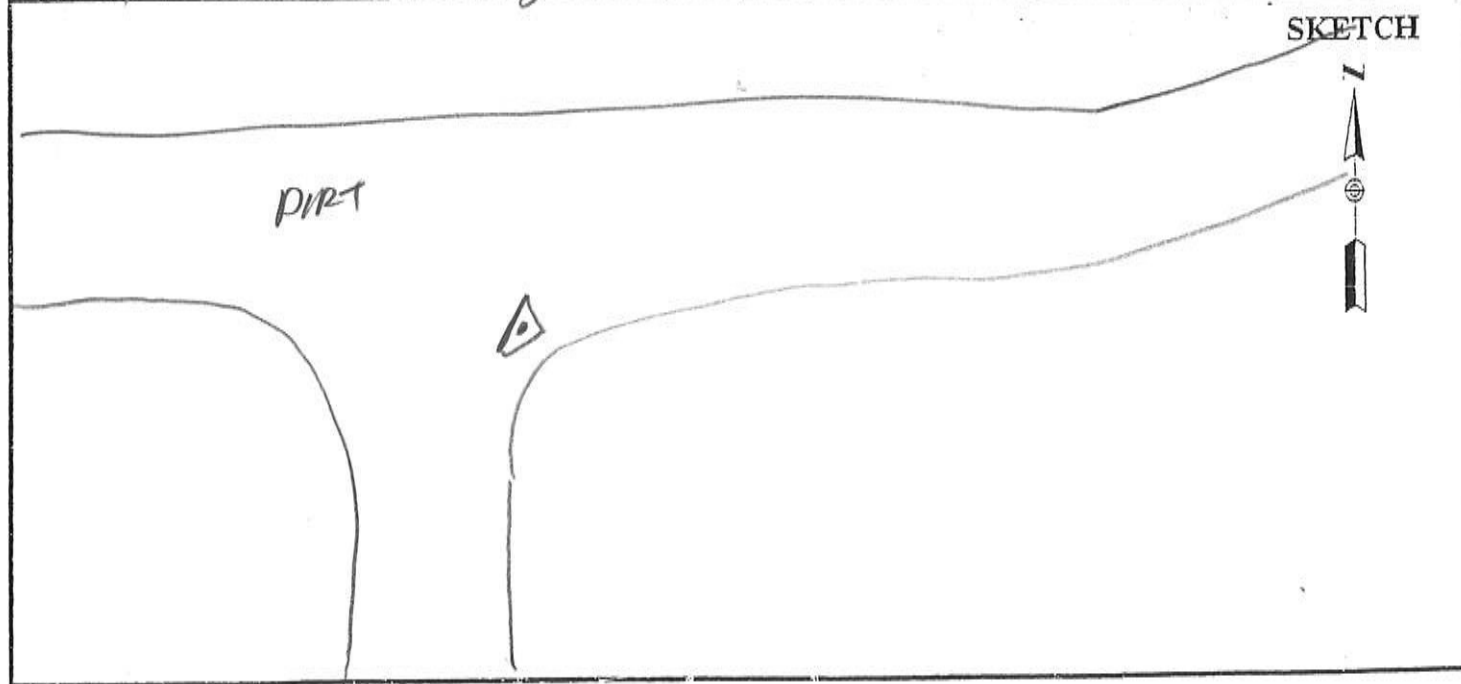
OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT IN
BARE DIRT AREA
SE COR OF INT
OLD TRAILS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
21 32	2.4	8/8-8
21 49	2.6	8/8-8



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

BASE

PROJECT 1110403
 OPERATOR WJP
 DATE 7/17/11

SITE NUMBER 1
 SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE MDT
 START 9:15
 STOP 15:06

SENSOR TYPE . 500 9500 399 299
 MEMORY CARD 67
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 -35
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
 1.290 _____

STATION DESCRIPTIONS Rebar
and CAP Set 7/14/11

1.640

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>1515</u>	<u>2.3</u>	<u>7/7-7</u>
<u>2106</u>	<u>1.9</u>	<u>10/10-10</u>

As Before described

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 1
 SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE MDT
 START 9:37
 STOP 15:24

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 101
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: No

HEIGHT READINGS MTS FT
1.254 _____

1.643

STATION DESCRIPTIONS Rebar and
CAP SET 7/14/11

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
15:37	1.9	9/8-9
21:24	2.1	9/9-9

As Described

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

3

PROJECT	<u>1110403</u>	SITE NUMBER	<u>1</u>
OPERATOR	<u>WJN</u>	SITE NAME	<u>22</u>
DATE	<u>7/17/11</u>		

TRACKING TIMES (LOCAL) MEASURE	<u>MDT</u>	SENSOR TYPE	<u>500</u> 9500 399 299
START	<u>10:07</u>	MEMORY CARD	<u>11</u>
STOP	<u>10:22</u>	BATTERY NO.	
		CONTROLLER NO.	
		SENSOR NO.	

SENSOR CONSTANT	299/399	0.441
	399E/9500	0.389
	500	<u>0.360</u>
HEIGHT READINGS	MTS	FT
	<u>1.279</u>	
	<u>1.639</u>	

OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT IN
SAGE BRUSH

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
GKL

TIME	GDOP	SATELLITES
<u>16:07</u>	<u>1.9</u>	<u>9/9-9</u>
<u>16:22</u>	<u>3.0</u>	<u>7/7-7</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
OPERATOR UJN
DATE 7/17/11

SITE NUMBER 1
SITE NAME 23

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:13
STOP 10:29

SENSOR TYPE 500 9500 399 299
MEMORY CARD _____
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: OH Power Lines
to E

HEIGHT READINGS MTS FT
1.330 _____

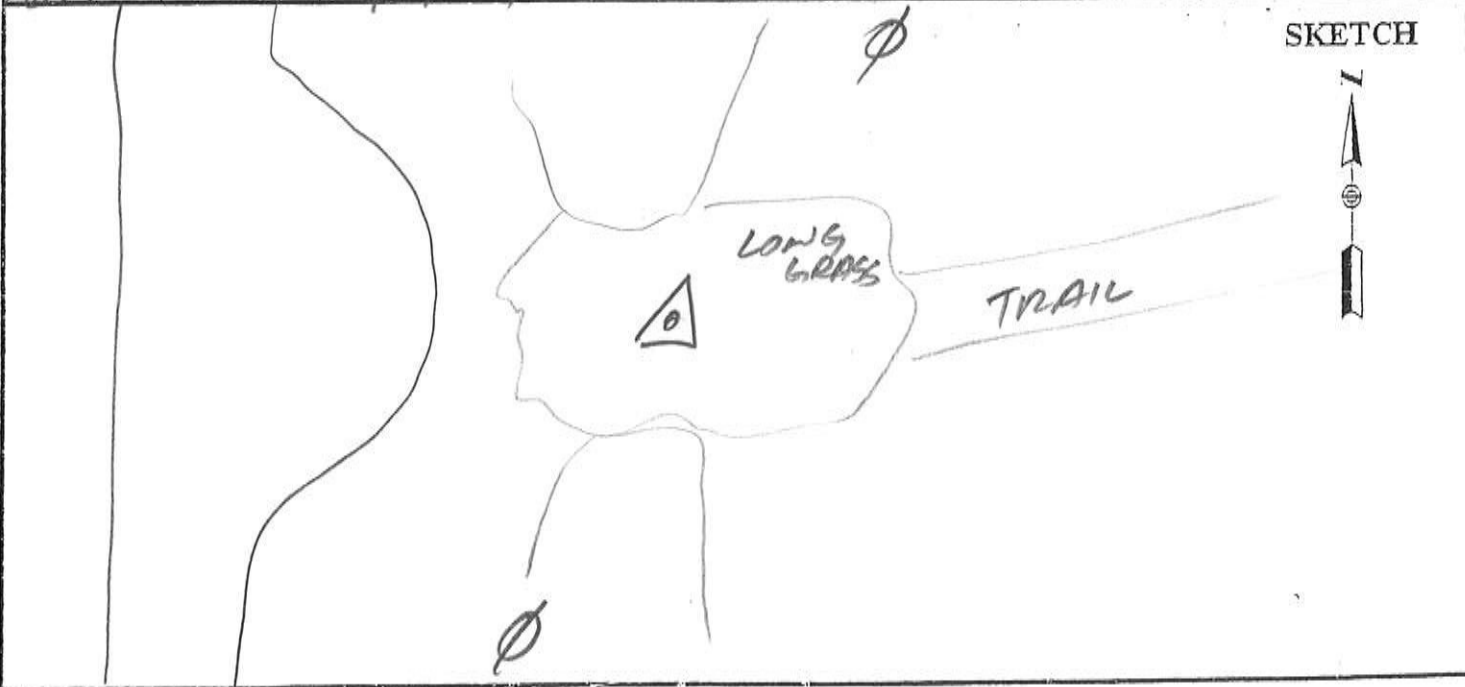
STATION DESCRIPTIONS POINT IN
LONG GRASS

1.690

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>16:13</u>	<u>1.9</u>	<u>9/9-9</u>
<u>16:17</u>	<u>2.0</u>	<u>9/9-9</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

PROJECT 1110403
OPERATOR WJN
DATE 7/17/11

SITE NUMBER 2
SITE NAME 24

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:26
STOP 10:42

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: No

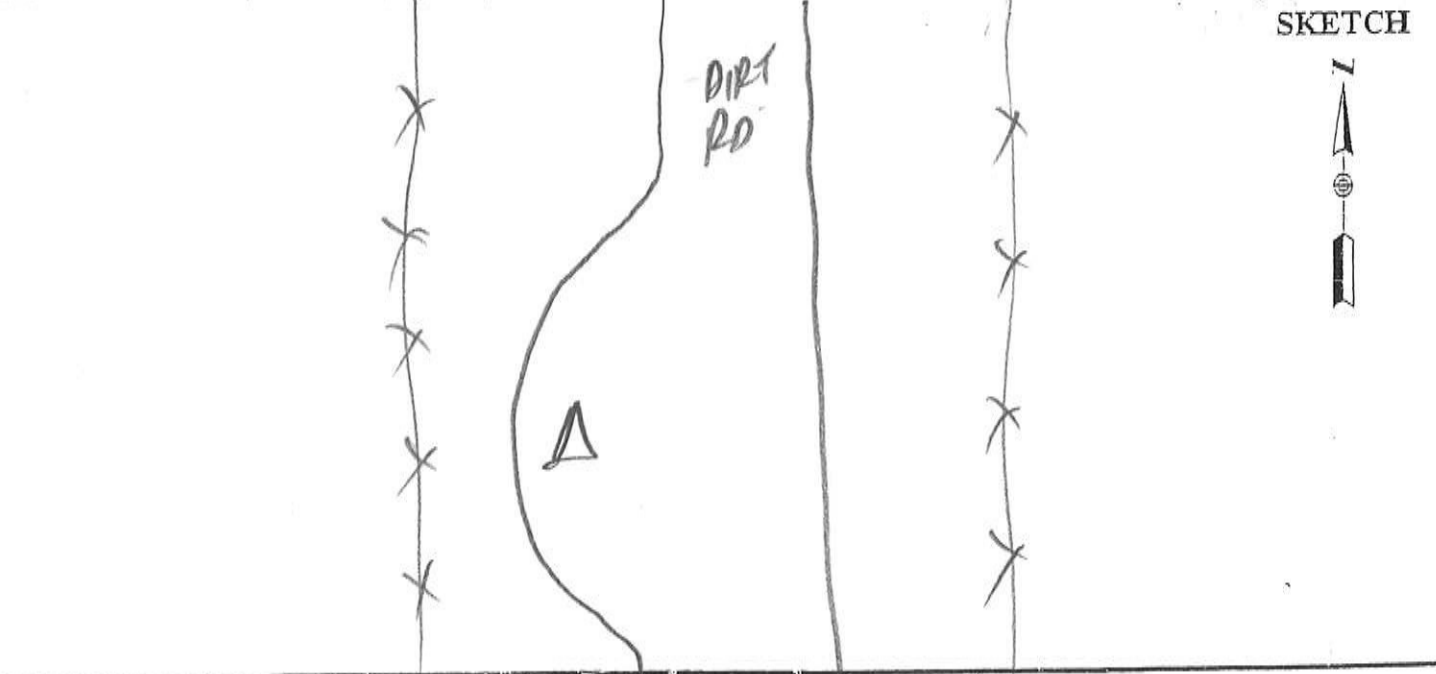
HEIGHT READINGS MTS FT
1.292 _____

STATION DESCRIPTIONS POINT IN
DIRT TURNOUT

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SK

TIME	GDOP	SATELLITES
<u>10:26</u>	<u>1.8</u>	<u>9/9-9</u>
<u>10:42</u>	<u>1.9</u>	<u>9/9-9</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

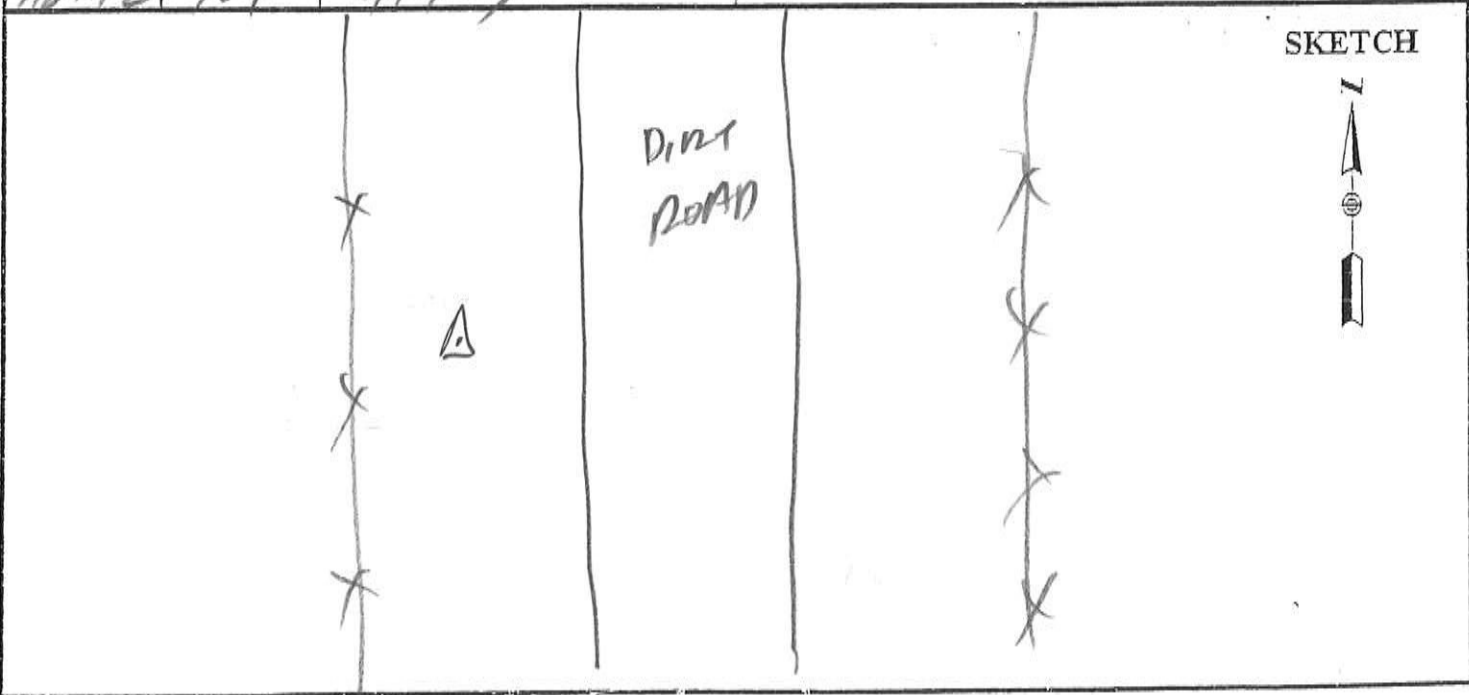
PROJECT <u>1110403</u> OPERATOR <u>WAIN</u> DATE <u>7/17/11</u>	SITE NUMBER <u>2</u> SITE NAME <u>25</u>
---	---

TRACKING TIMES (LOCAL) MEASURE <u>NOT</u> START <u>10:35</u> STOP <u>10:42</u>	SENSOR TYPE <u>500</u> 9500 399 299 MEMORY CARD <u>14</u> BATTERY NO. _____ CONTROLLER NO. _____ SENSOR NO. _____
--	---

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: _____ _____ _____ _____
HEIGHT READINGS MTS FT <u>1.365</u> _____	STATION DESCRIPTIONS <u>POINT</u> <u>IN SPARSE GRASS</u> <u>BETWEEN RD AND</u> <u>R/W FENCE</u>

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
------------------------	---

TIME	GDOP	SATELLITES
16:35	1.9	9/9-9
16:42	1.9	9/9-9



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 3
 SITE NAME 26

TRACKING TIMES (LOCAL) MEASURE MDT
 START 10:57
 STOP 11:12

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.335 _____

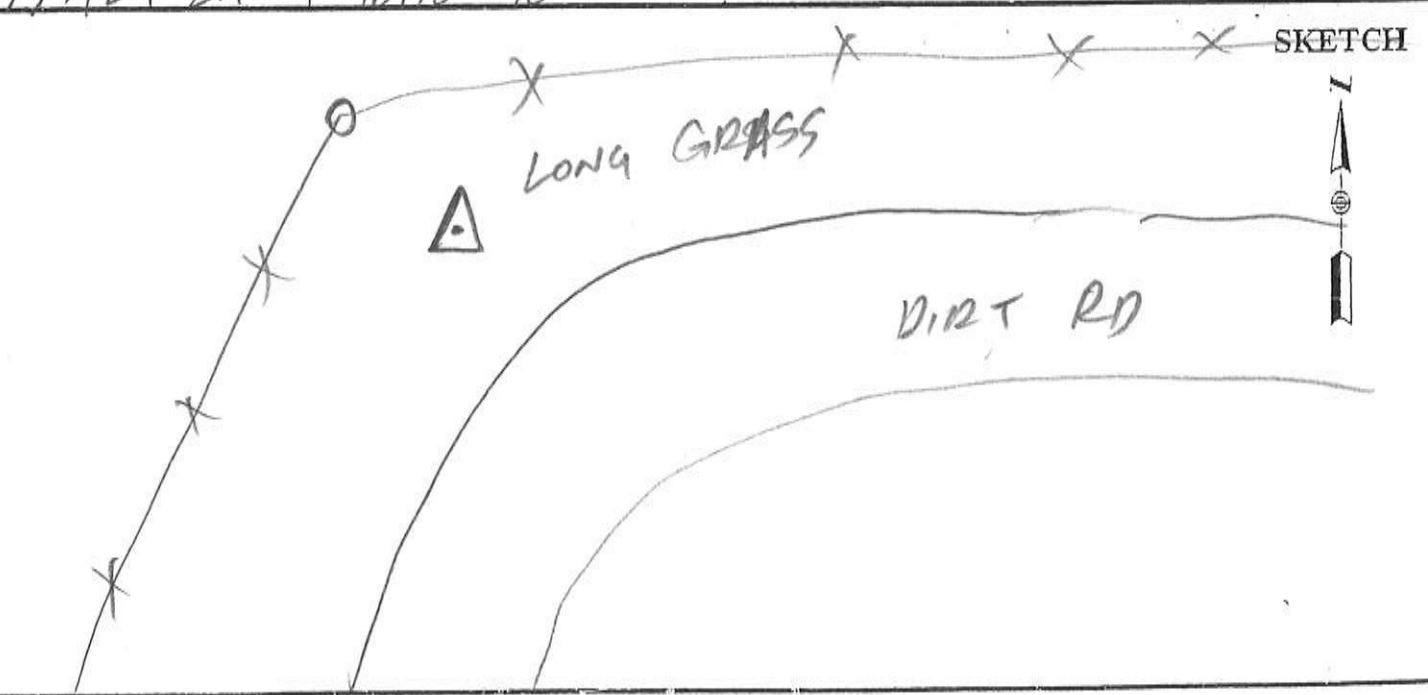
OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT
IN LONG GRASS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
16:57	2.2	9/9-9
17:12	2.1	10/10-10



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 3
 SITE NAME 27

TRACKING TIMES (LOCAL) MEASURE MDT
 START 11:03
 STOP 11:18

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 14
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

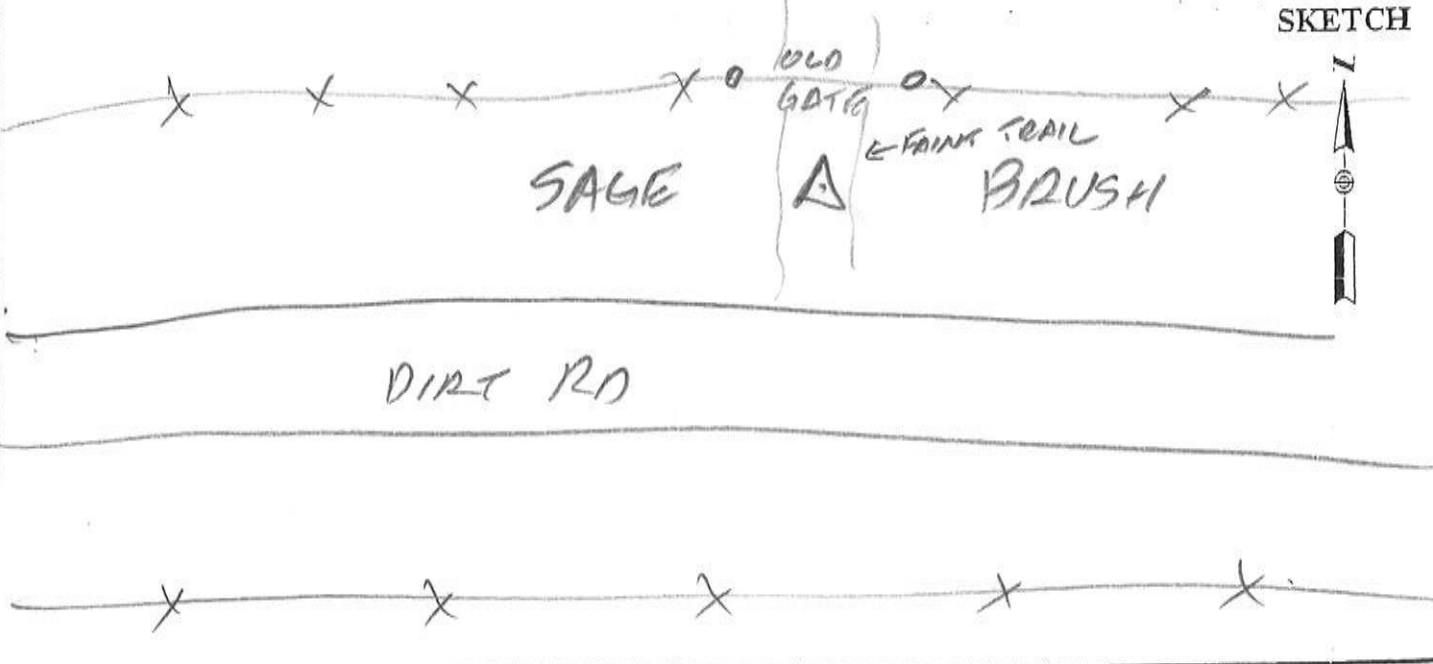
HEIGHT READINGS MTS FT
 1.305 _____

STATION DESCRIPTIONS POINT IN SAGE BRUSH

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
17:03	2.3	9/9-9
17:18	2.1	10/10-10



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR U/VN
DATE 7/17/11

SITE NUMBER 4
SITE NAME ZB

TRACKING TIMES (LOCAL) MEASURE MDT
START 11:27
STOP 11:45

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TERRAIN N-E

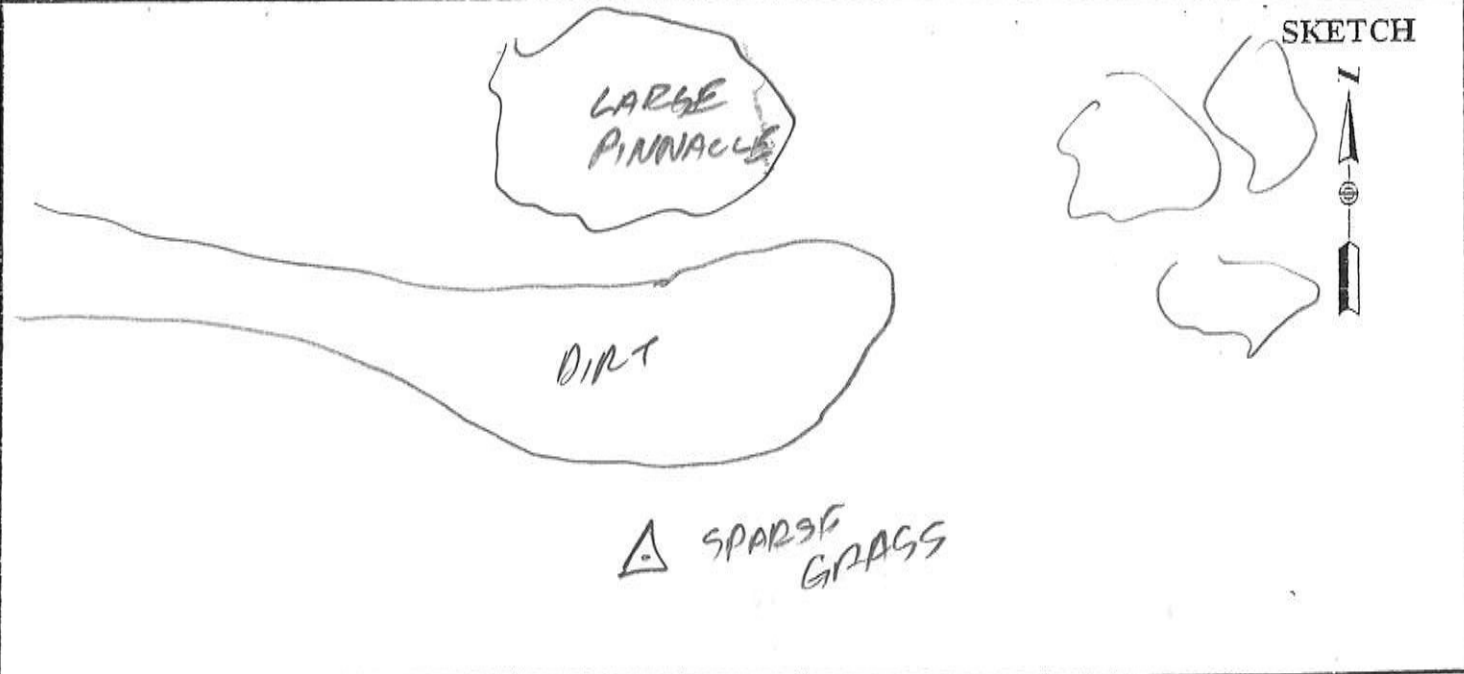
HEIGHT READINGS MTS FT
1.302 _____

STATION DESCRIPTIONS POINT IN
SPARSE GRASS, BARE EARTH

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
17:27	2.5	7/7-10
17:45	2.2	10/10-10



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 4
 SITE NAME 29

TRACKING TIMES (LOCAL) MEASURE NOT
 START 11:32
 STOP 11:50

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 14
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

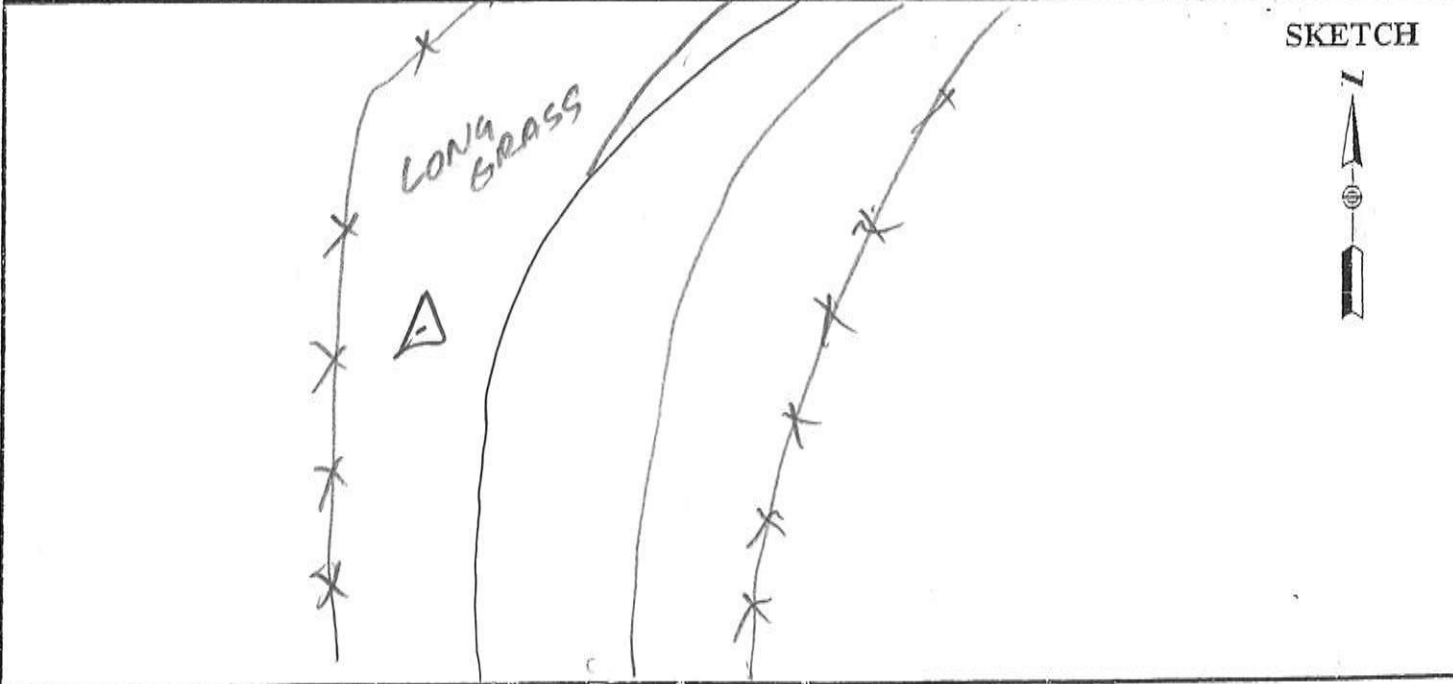
HEIGHT READINGS MTS FT
 1.285 _____

STATION DESCRIPTIONS POINT IN
LONG GRASS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
17:32	2.2	10/10-10
17:50	2.5	9/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 4
 SITE NAME 29

TRACKING TIMES (LOCAL) MEASURE NOT
 START 11:32
 STOP 11:50

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 14
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

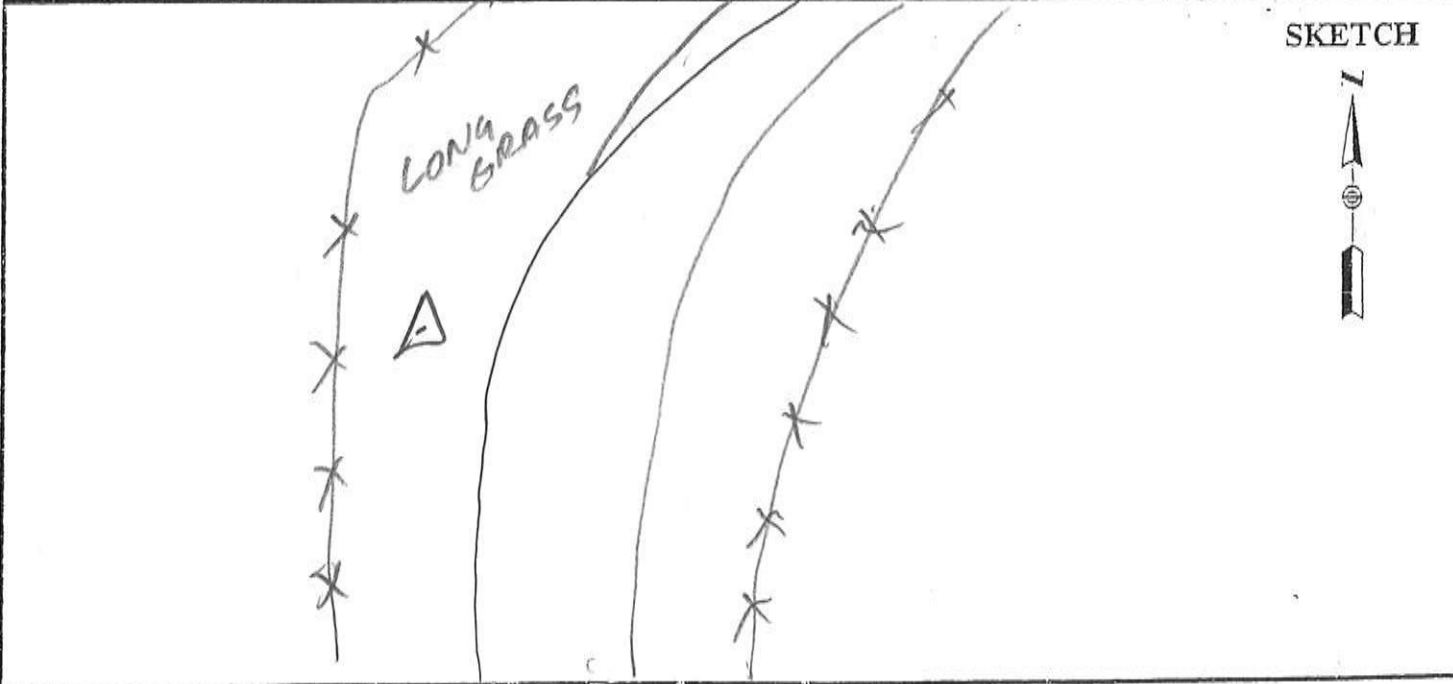
HEIGHT READINGS MTS FT
 1.285 _____

STATION DESCRIPTIONS POINT IN
LONG GRASS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
17:32	2.2	10/10-10
17:50	2.5	9/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

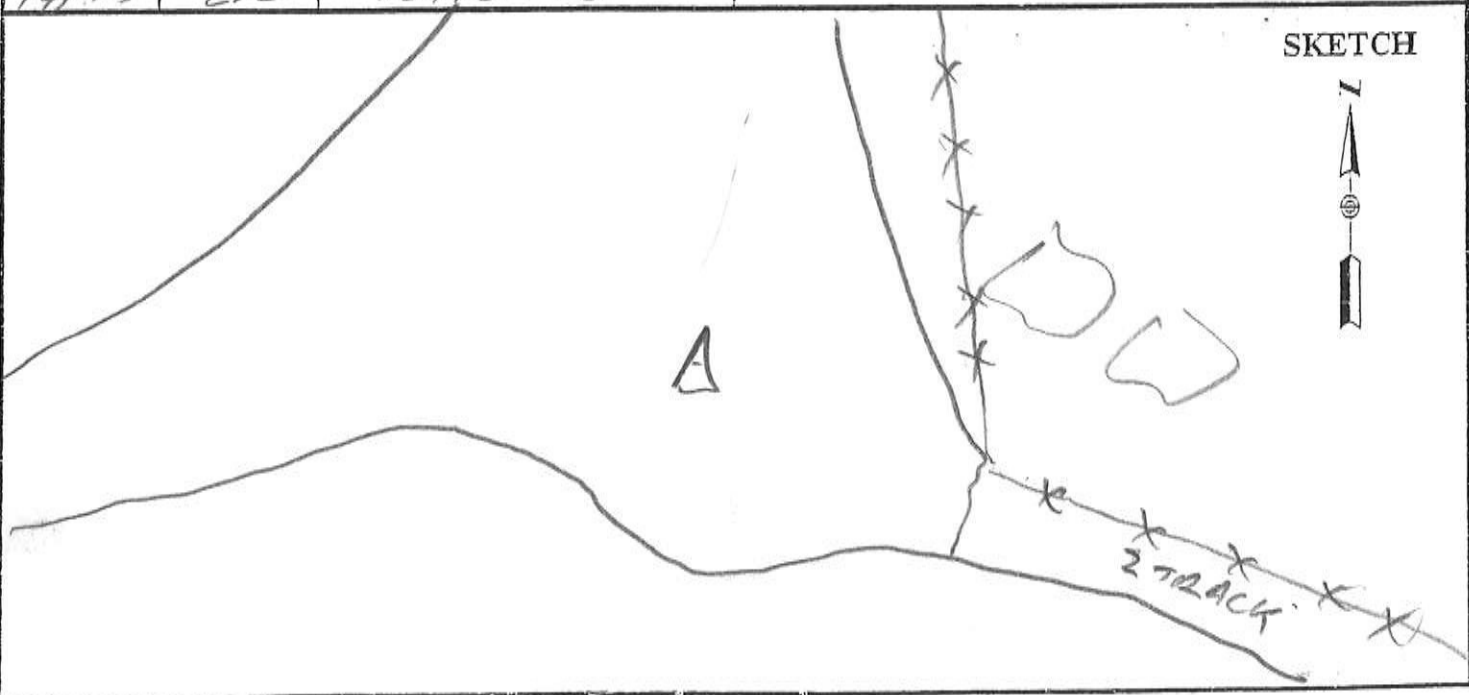
1

PROJECT <u>1110403</u>	SITE NUMBER <u>5</u>
OPERATOR <u>WVN</u>	SITE NAME <u>30</u>
DATE <u>7/17/11</u>	

TRACKING TIMES (LOCAL) MEASURE <u>NOT</u>	SENSOR TYPE <u>500</u> 9500 399 299
START <u>11:57</u>	MEMORY CARD <u>11</u>
STOP <u>12:15</u>	BATTERY NO. _____
	CONTROLLER NO. _____
	SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>No</u>
HEIGHT READINGS MTS FT <u>1.355</u> _____	STATION DESCRIPTIONS <u>POINT IN</u> <u>BASE DIRT/GRAVEL</u> <u>TURNOUT OPP FENCE</u> <u>SE.</u>

SATELLITE OBSERVATIONS			WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
TIME	GDOP	SATELLITES	
17:57	2.5	9/9-9	
19:15	2.2	10/10-10	



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 5
 SITE NAME 31

TRACKING TIMES (LOCAL) MEASURE MDT
 START 12:01
 STOP 12:20

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 914
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

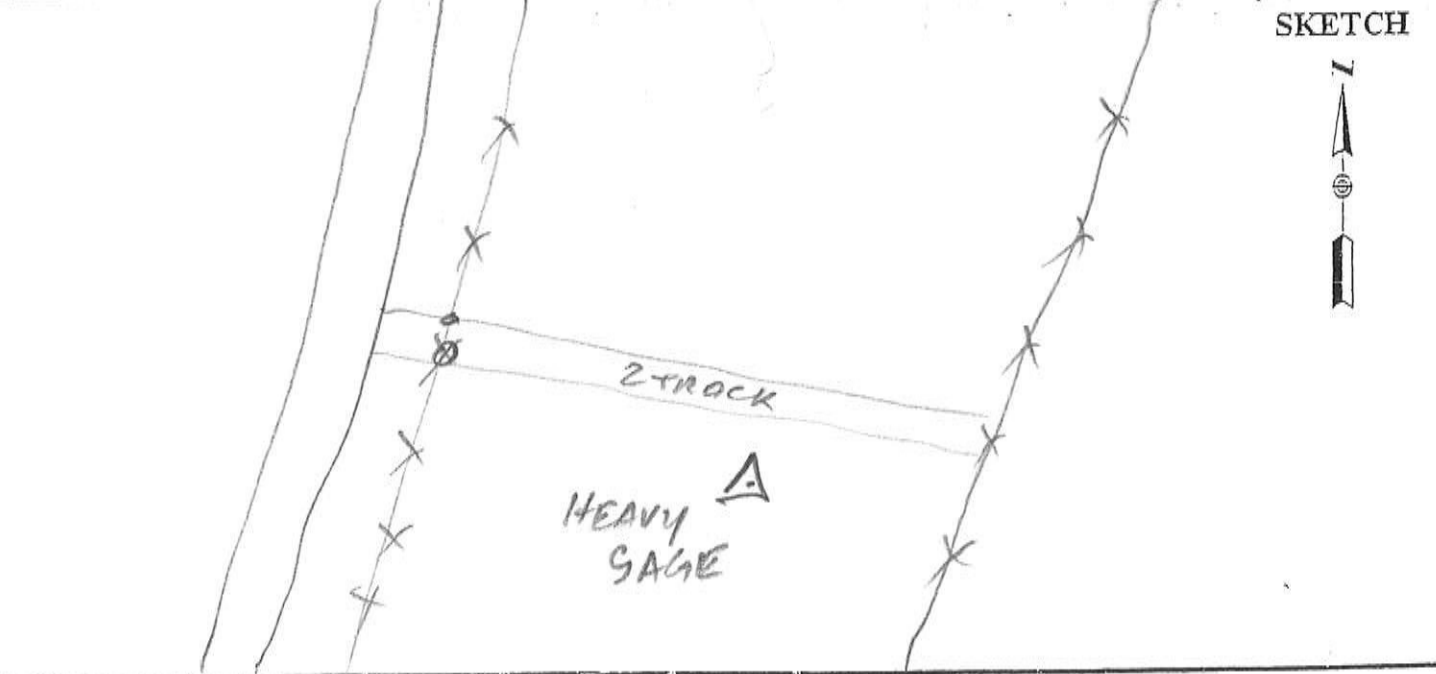
HEIGHT READINGS MTS FT
 1.242 _____

STATION DESCRIPTIONS POINT IN
HEAVY SAGE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
18:01	2.5	9/9-9
18:20	2.3	10/10-10



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
 OPERATOR WJN
 DATE 7/17/11

SITE NUMBER 6
 SITE NAME 32

TRACKING TIMES (LOCAL) MEASURE MDT
 START 12:27
 STOP 12:46

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
 1.250 _____

STATION DESCRIPTIONS POINT IN
SAGE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
18:27	1.8	11/11-11
18:46	1.8	11/11-11

SKETCH

PINYON
 SAGE

A



DIRT RD

1

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/17/11

SITE NUMBER 6
SITE NAME 33

TRACKING TIMES (LOCAL) MEASURE MDT
START 12:32
STOP 12:50

SENSOR TYPE 500 9500 399 299
MEMORY CARD _____
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TREE E

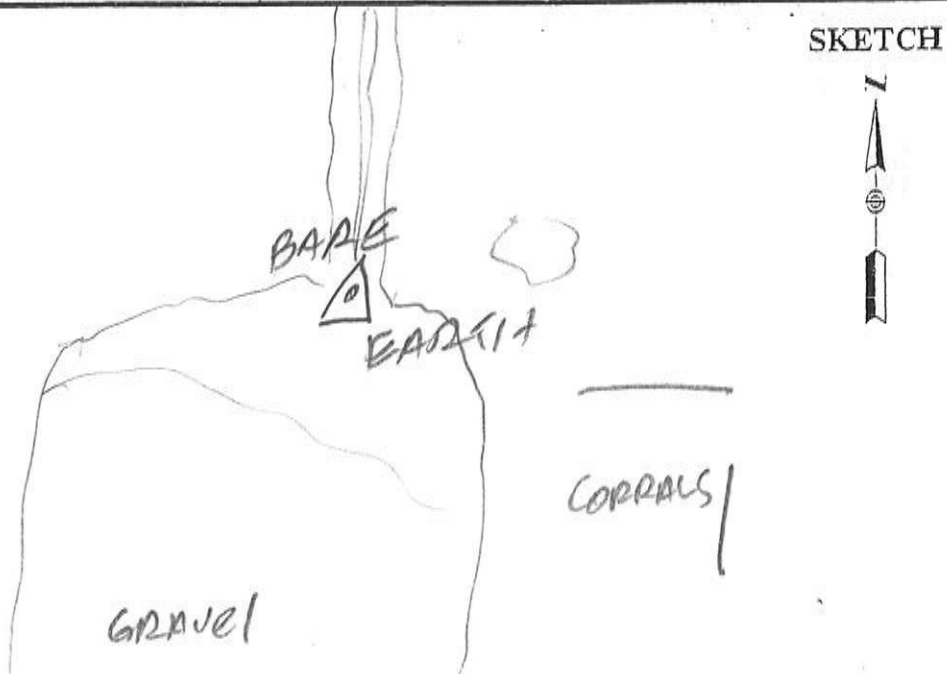
HEIGHT READINGS MTS FT
1.277 _____

STATION DESCRIPTIONS POINT IN
BARE GROUND @
N EDGE DARKER
GROUND @ SEND OF
TWO TRACK

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
18:32	1.9	11/10-11
18:50	1.9	11/10-11



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 110403
OPERATOR UJN
DATE 7/17/11

SITE NUMBER 7
SITE NAME 34

TRACKING TIMES (LOCAL) MEASURE MDT
START 12:58
STOP 12:20

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: N/A

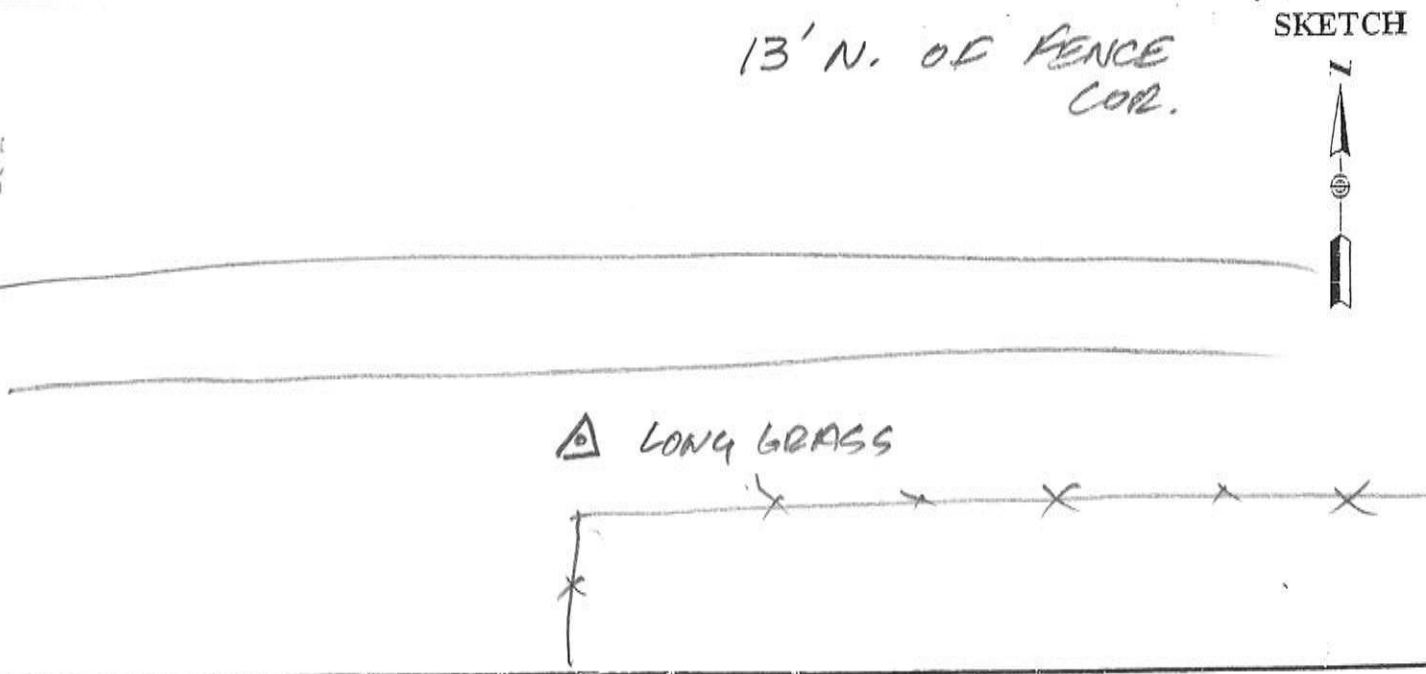
HEIGHT READINGS MTS FT
1.227 _____

STATION DESCRIPTIONS POINT IN
LONG GRASS BETWEEN
RN EDGE AND FENCE
COR

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
18:58	1.8	11/11-11
19:20		



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR WIN
 DATE 7/17/11

SITE NUMBER 7
 SITE NAME 35

TRACKING TIMES (LOCAL) MEASURE MD7
 START 13:04
 STOP _____

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 14
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

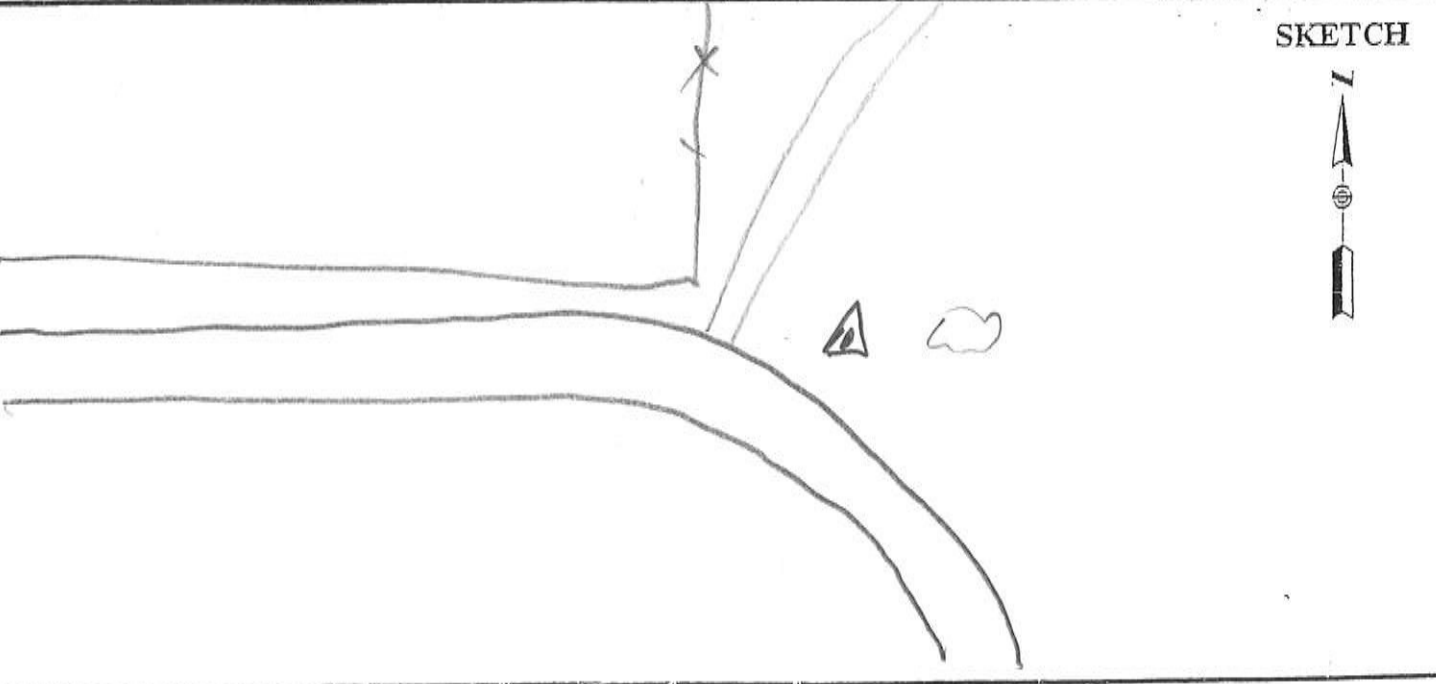
HEIGHT READINGS MTS FT
 1.245 _____

STATION DESCRIPTIONS POINT IN
LONG GRASS BETWEEN
INT OF 2 TRACK AND
LARGE BARE AREA AROUND
FIRE PIT - OPP & RD W

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>19:04</u>	<u>1.8</u>	<u>11/11-11</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
OPERATOR WJN
DATE 7/12/11

SITE NUMBER 8
SITE NAME 36

TRACKING TIMES (LOCAL) MEASURE MDT
START 13:34
STOP 13:51

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

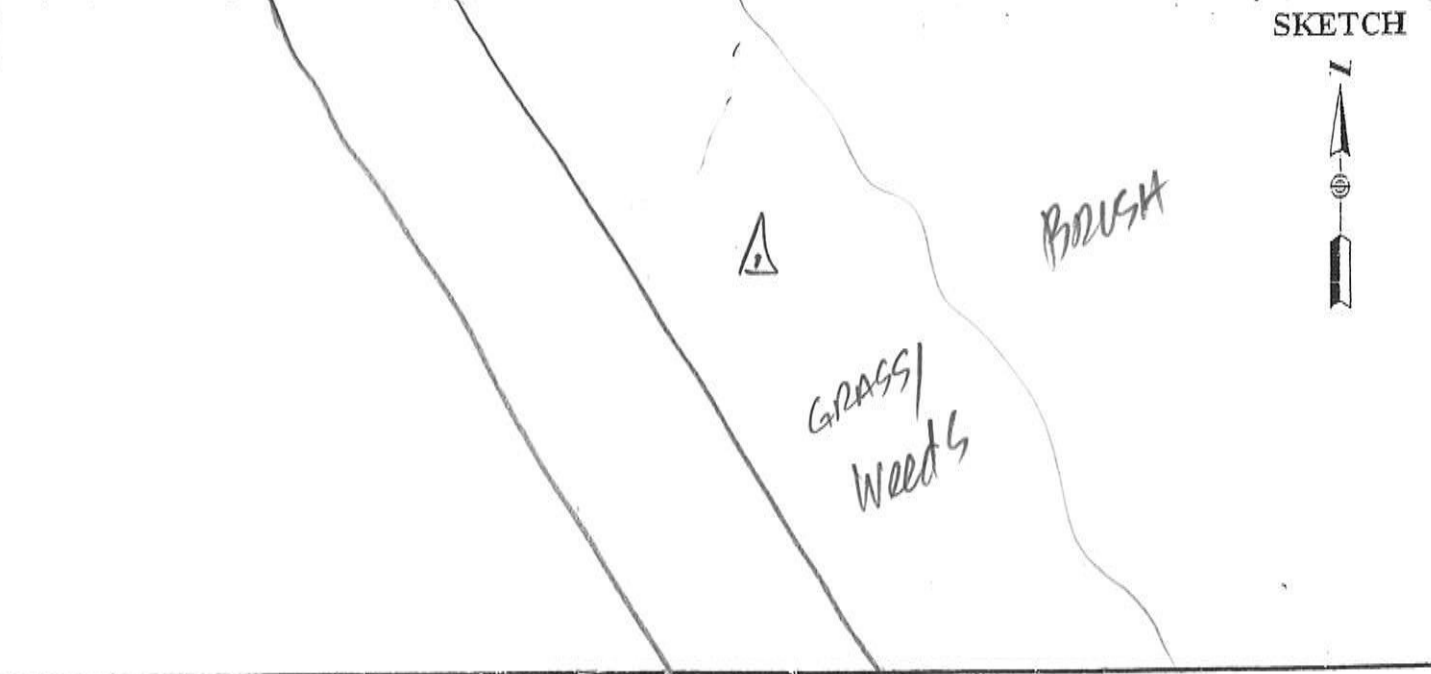
HEIGHT READINGS MTS FT
1.205 _____

STATION DESCRIPTIONS POINT IN
LONG GRASS
28' NE OF E RD

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:34	1.8	11/11-11
19:51	1.8	10/10-10



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WVN
DATE 7/17/11

SITE NUMBER 2
SITE NAME 37

TRACKING TIMES (LOCAL) MEASURE MDT
START 13:44
STOP 14:06

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: _____

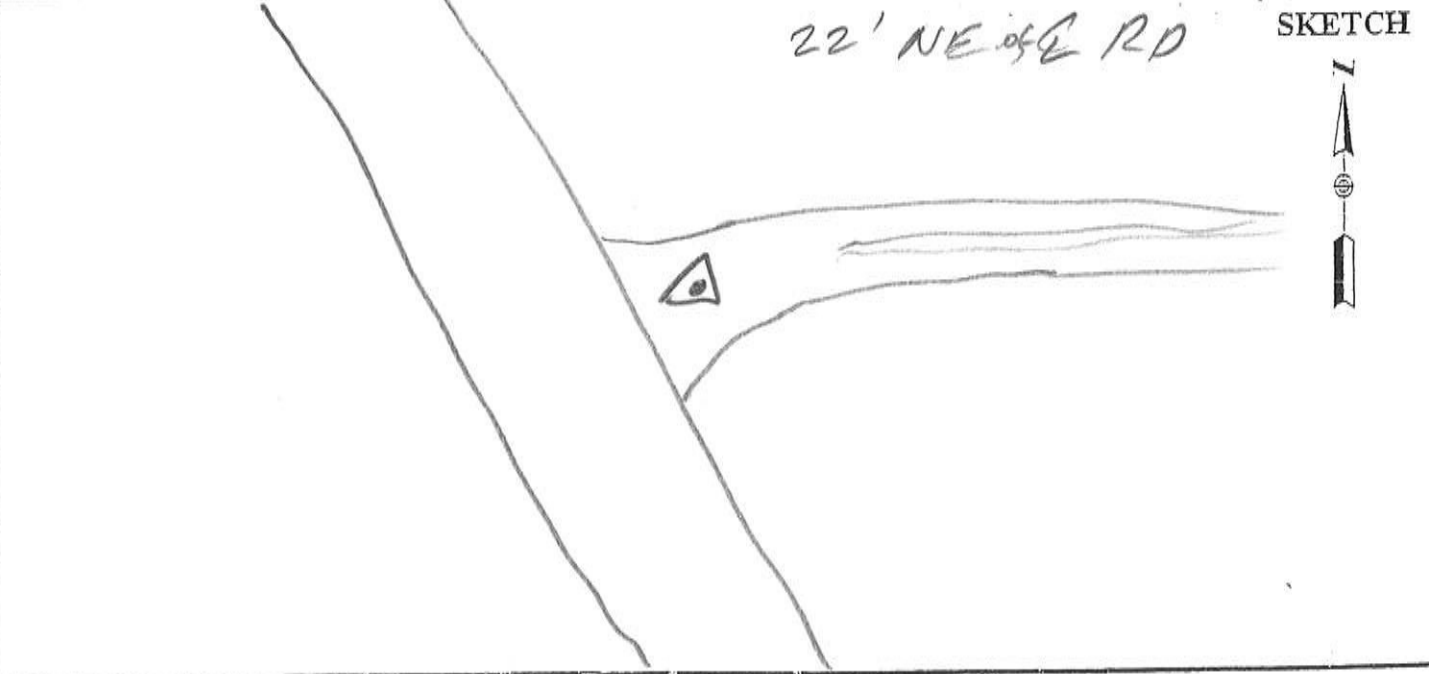
HEIGHT READINGS MTS FT
1.284 _____

STATION DESCRIPTIONS POINT 1A
Q BARE NORTH AREA

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:44	1.8	10/10-10
20:06	1.8	10/10-10



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

2

PROJECT	<u>1110403</u>	SITE NUMBER	<u>9</u>
OPERATOR	<u>WJN</u>	SITE NAME	<u>38</u>
DATE	<u>7/17/11</u>		

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u>	SENSOR TYPE	<u>500</u>	9500	399	299
START <u>14:34</u>	MEMORY CARD	<u>11</u>			
STOP <u>14:49</u>	BATTERY NO.				
	CONTROLLER NO.				
	SENSOR NO.				

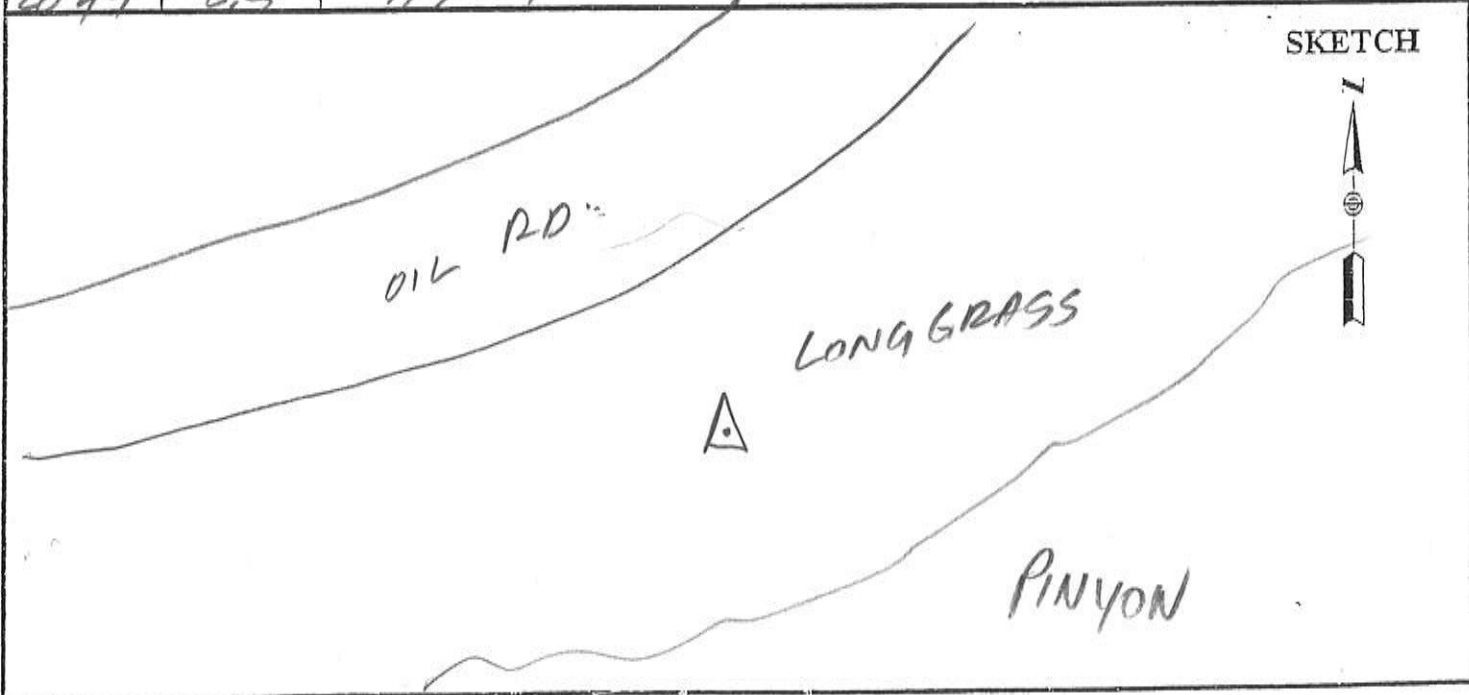
SENSOR CONSTANT	299/399	0.441
	399E/9500	0.389
	500	<u>0.360</u>
HEIGHT READINGS	MTS	FT
	<u>1.241</u>	

OBSTRUCTIONS: TREES / TERRAIN
S. HALF OF HORIZON

STATION DESCRIPTIONS POINT IN
LONG GRASS ± 27'
SE OF E RD.

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
<u>20 24</u>	<u>2.3</u>	<u>7/7-8</u>
<u>20 49</u>	<u>2.5</u>	<u>7/7-7</u>

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

BASE

PROJECT 1110403
 OPERATOR WJN
 DATE 7/18/11

SITE NUMBER 1
 SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE MDZ
 START 8:33
 STOP 15:54

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 16
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 0.35
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: No

HEIGHT READINGS MTS FT
 1.227 _____
 1.577 _____

STATION DESCRIPTIONS Rebar and
CAP sat 7/14/11

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
SKC

TIME	GDOP	SATELLITES
<u>14:33</u>	<u>2.5</u>	<u>8/8-8</u>
<u>21:54</u>		

As described

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

BASO

PROJECT 110403
 OPERATOR WIN
 DATE 7/19/11

SITE NUMBER 1
 SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE NOT
 START 9:00
 STOP 15:36

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 101
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: No

HEIGHT READINGS MTS FT
1.257 _____

STATION DESCRIPTIONS Rebar and
 Cap set 7/14/11

1.646

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
16:00	2.0	8/8-8
21:36	2.1	9/9-9

As Described

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 110403
OPERATOR WJN
DATE 11/8/11

SITE NUMBER 1
SITE NAME 39

TRACKING TIMES (LOCAL) MEASURE MDT
START 9:17
STOP 9:32

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

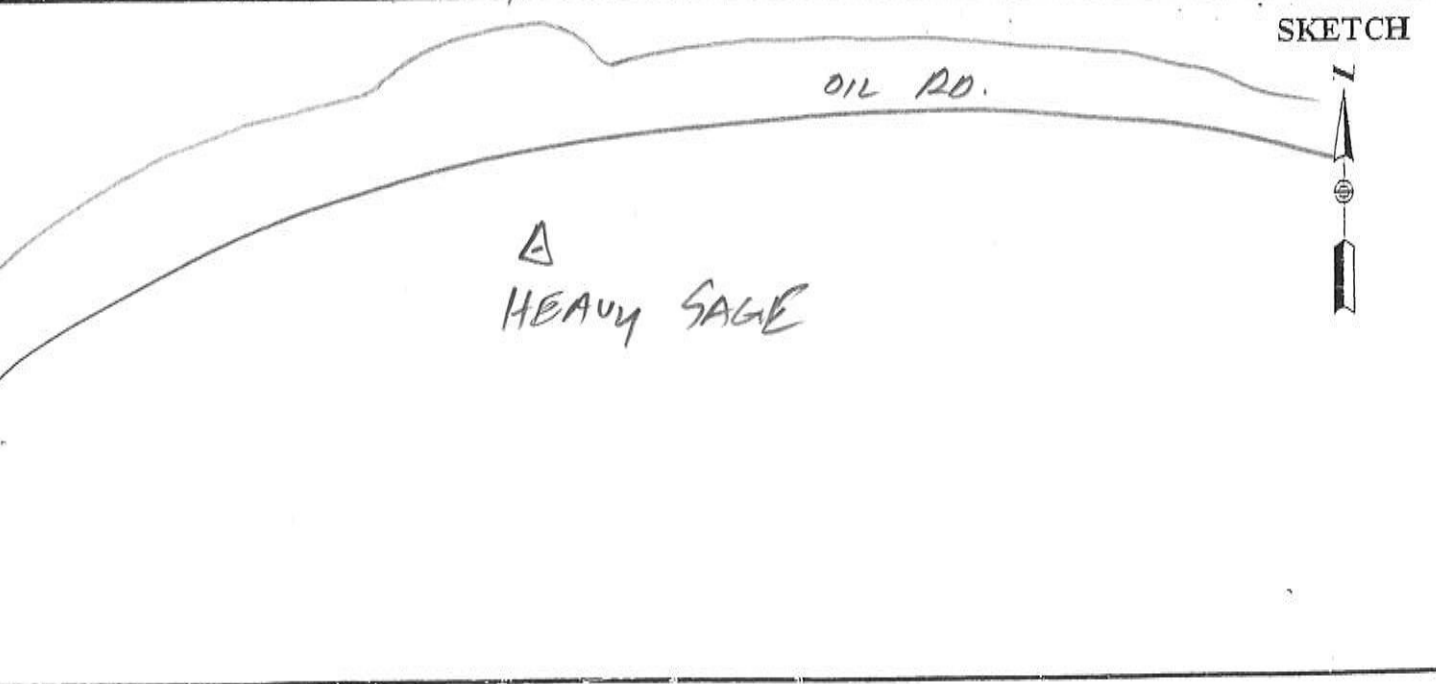
HEIGHT READINGS MTS FT
1.216 _____

OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT IN TALL HEAVY SAGE

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
15:17	2.0	8/8-8
15:32	3.0	7/7-7

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

PROJECT 1110403
OPERATOR WLN
DATE 7/18/11

SITE NUMBER 2
SITE NAME 40

TRACKING TIMES (LOCAL) MEASURE MDT
START 9:37
STOP 9:52

SENSOR TYPE 500 9500 399 299
MEMORY CARD _____
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: ROCK IN

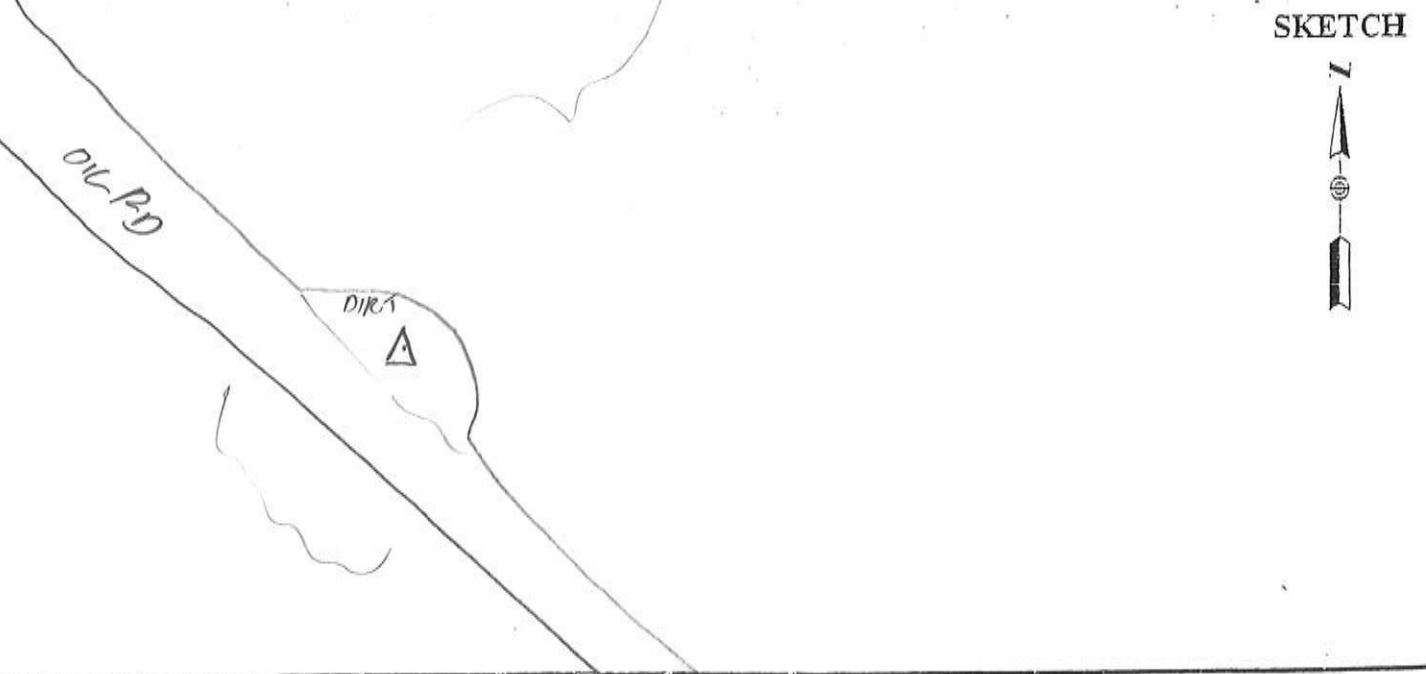
HEIGHT READINGS MTS FT
1.320 _____

STATION DESCRIPTIONS POINT IN
BARE EARTH AREA
ADJ TO OIL RD.

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
15:37	3.0	7/7-7
1552	2.6	7/7-7



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/18/11

SITE NUMBER 3
SITE NAME 41

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:01
STOP 10:16

SENSOR TYPE 500 9500 399 299
MEMORY CARD _____
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: ROCKS ALL
QUADRANTS

HEIGHT READINGS MTS FT
1.337 _____

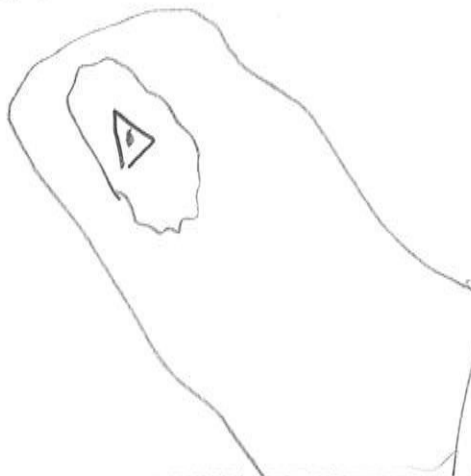
STATION DESCRIPTIONS CENTER
OR LARGE, FLAT,
FLUSH ROCK

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
16:01	1.9	8/8-8
16:16	2.0	9/9-9

CAMP SITE



SKETCH



3

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/18/11

SITE NUMBER 4
SITE NAME 42

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:23
STOP 10:38

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

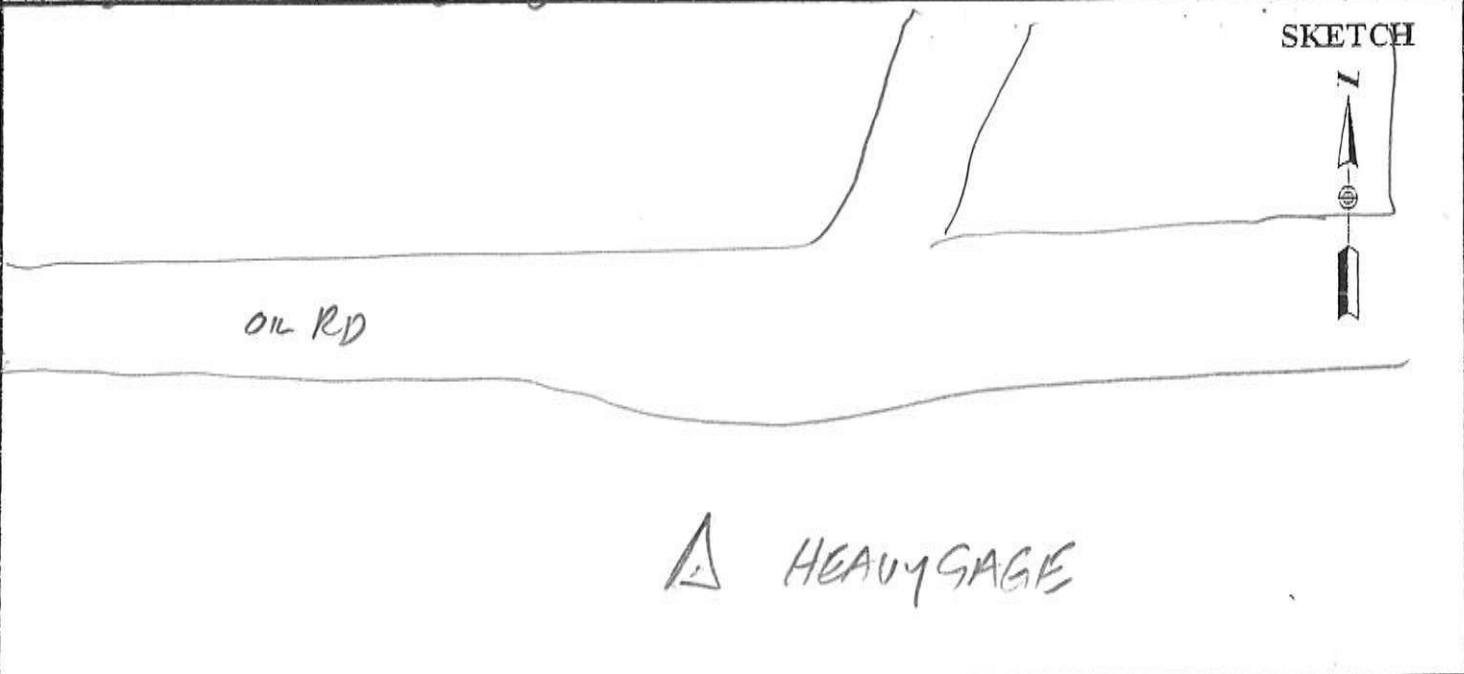
HEIGHT READINGS MTS FT
1.320 _____

STATION DESCRIPTIONS POINT IN
SAGE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>16:23</u>	<u>2.4</u>	<u>8/8-8</u>
<u>16:38</u>	<u>2.2</u>	<u>8/8-8</u>



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR UWN
 DATE 7/18/11

SITE NUMBER 5
 SITE NAME 43

TRACKING TIMES (LOCAL) MEASURE INDT
 START 10:44
 STOP 10:59

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TERRAIN
WEST GRASS

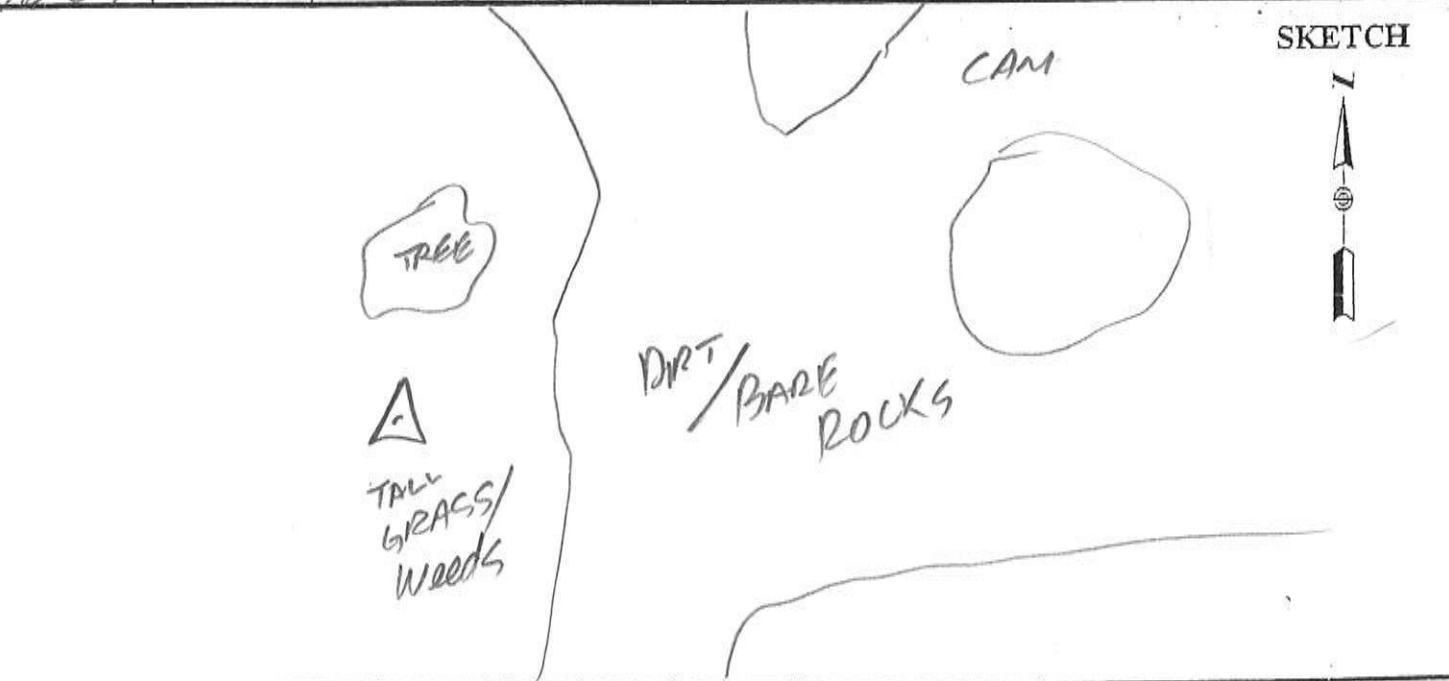
HEIGHT READINGS MTS FT
 1.270 _____

STATION DESCRIPTIONS POINT IN
LONG GRASS
10'G OF SMALL TREE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
16:44	2.2	8/8-8
16:59	2.1	8/8-8



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
OPERATOR WJN
DATE 7/18/11

SITE NUMBER 6
SITE NAME 44

TRACKING TIMES (LOCAL) MEASURE MDT
START 11:07
STOP 11:22

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

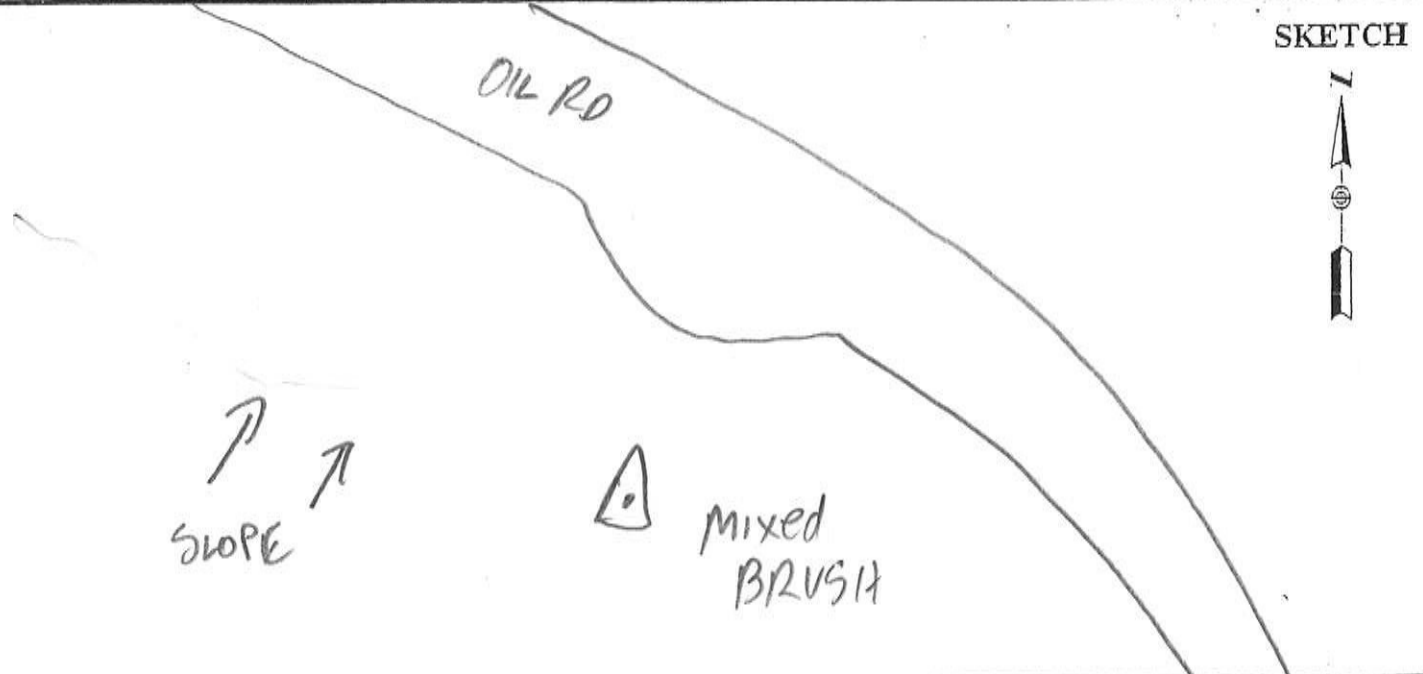
HEIGHT READINGS MTS FT
1.250 _____

STATION DESCRIPTIONS POINT IN
MIXED BRUSH, PINON,
SAGE, BERRY.

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
17:07	2.5	8/8-10
17:22	2.1	10/10-10



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

1

PROJECT 1110403
OPERATOR WJN
DATE 7/18/11

SITE NUMBER 7
SITE NAME 45

TRACKING TIMES (LOCAL) MEASURE MDT
START 11:28
STOP 11:43

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TERRAN W, S

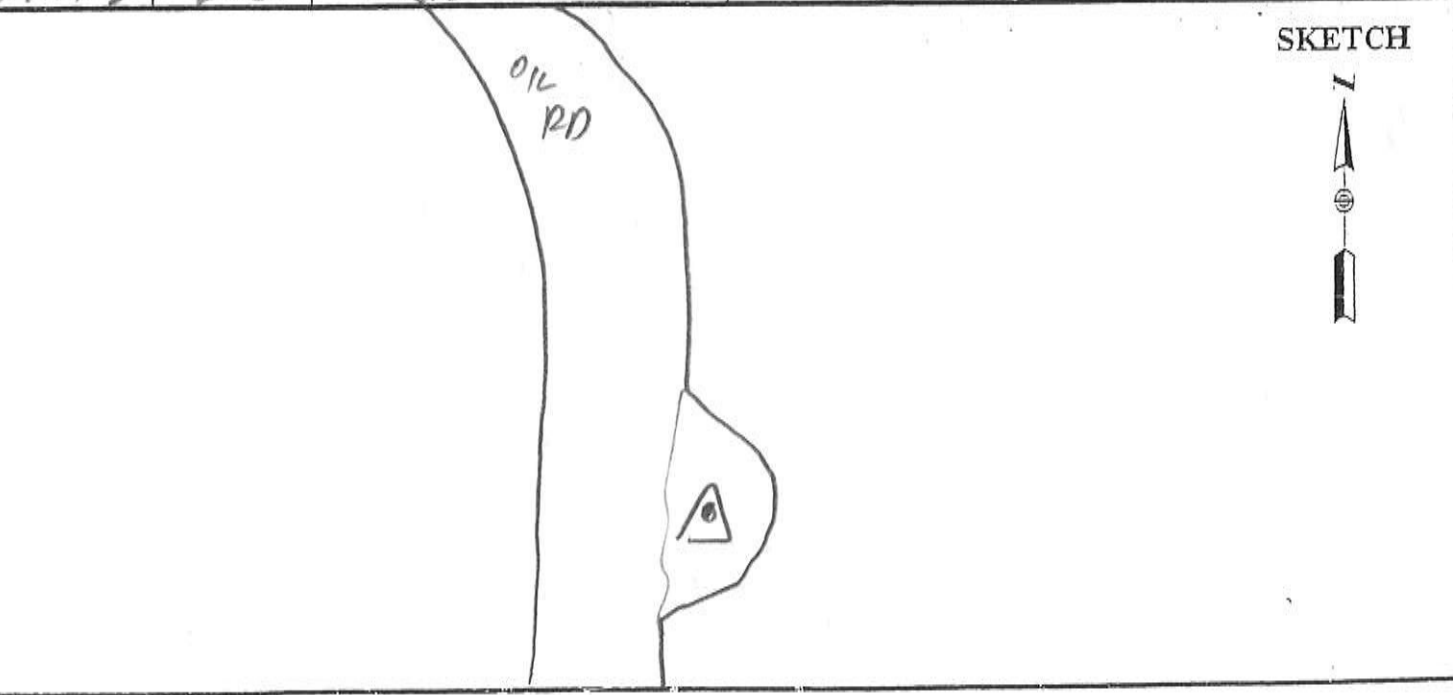
HEIGHT READINGS MTS FT
1.317 _____

STATION DESCRIPTIONS CENTER
OF BARE GROUND
TURNOUT

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
17:28	2.5	8/8-10
17:43	2.0	12/10-10



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT <u>1110403</u> OPERATOR <u>UJN</u> DATE <u>7/10/11</u>	SITE NUMBER <u>8</u> SITE NAME <u>46</u>
--	---

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u> START <u>11:51</u> STOP <u>12:07</u>	SENSOR TYPE <u>500</u> 9500 399 299 MEMORY CARD <u>11</u> BATTERY NO. _____ CONTROLLER NO. _____ SENSOR NO. _____
--	---

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>TERRAIN, TREES</u> <u>ALL QUADRANTS</u>
HEIGHT READINGS MTS FT <u>1.300</u> _____	STATION DESCRIPTIONS <u>POINT IN</u> <u>THICK SPRING GRASS</u>

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
------------------------	---

TIME	GDOP	SATELLITES
17:51	2.5	9/9-9
18:07	2.7	9/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/18/11

SITE NUMBER 9
SITE NAME 47

TRACKING TIMES (LOCAL) MEASURE MDT
START 12:15
STOP 12:34

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: Terrain / TREES
ALL QUADRANTS

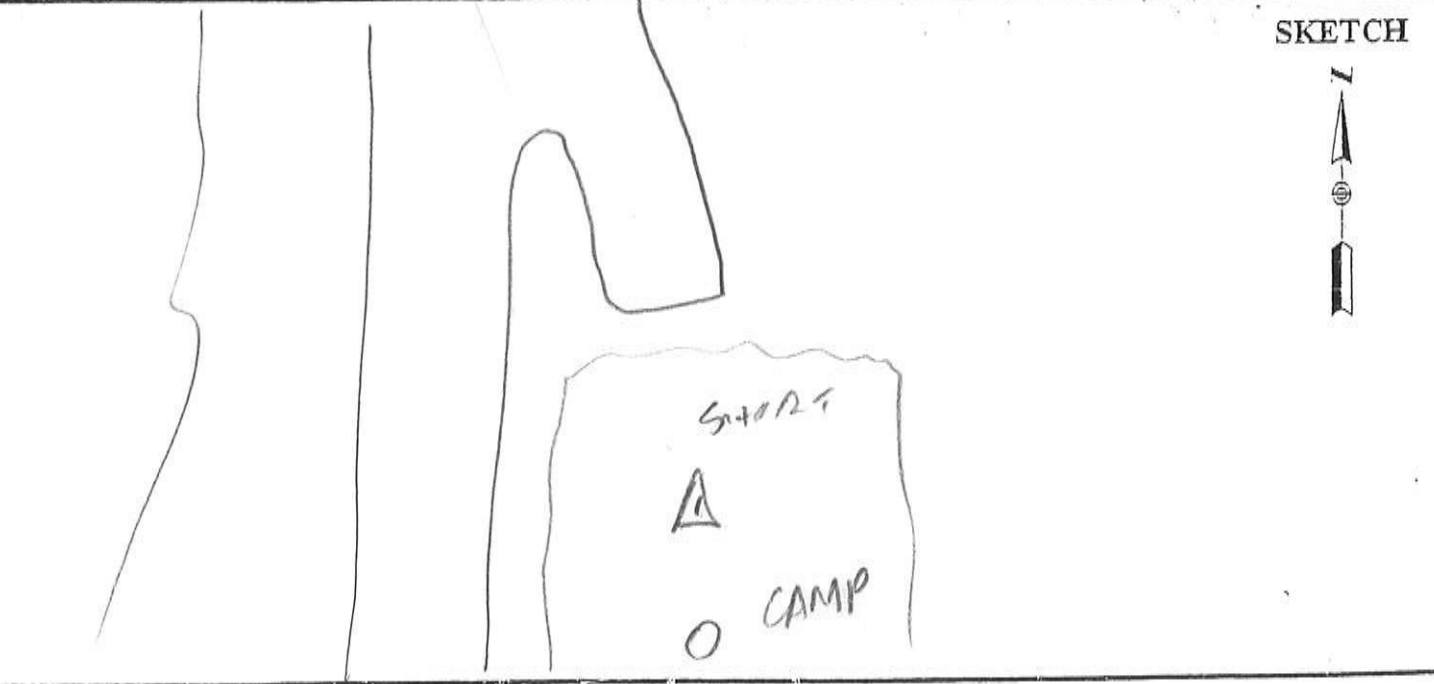
HEIGHT READINGS MTS FT
1.290 _____

STATION DESCRIPTIONS POINT IN
SHORT GRASS MIXED
BARE EARTH IN
CENTER OF CAMP SITE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1815	3.3	7/7-10
1834	2.4	8/8-11



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3

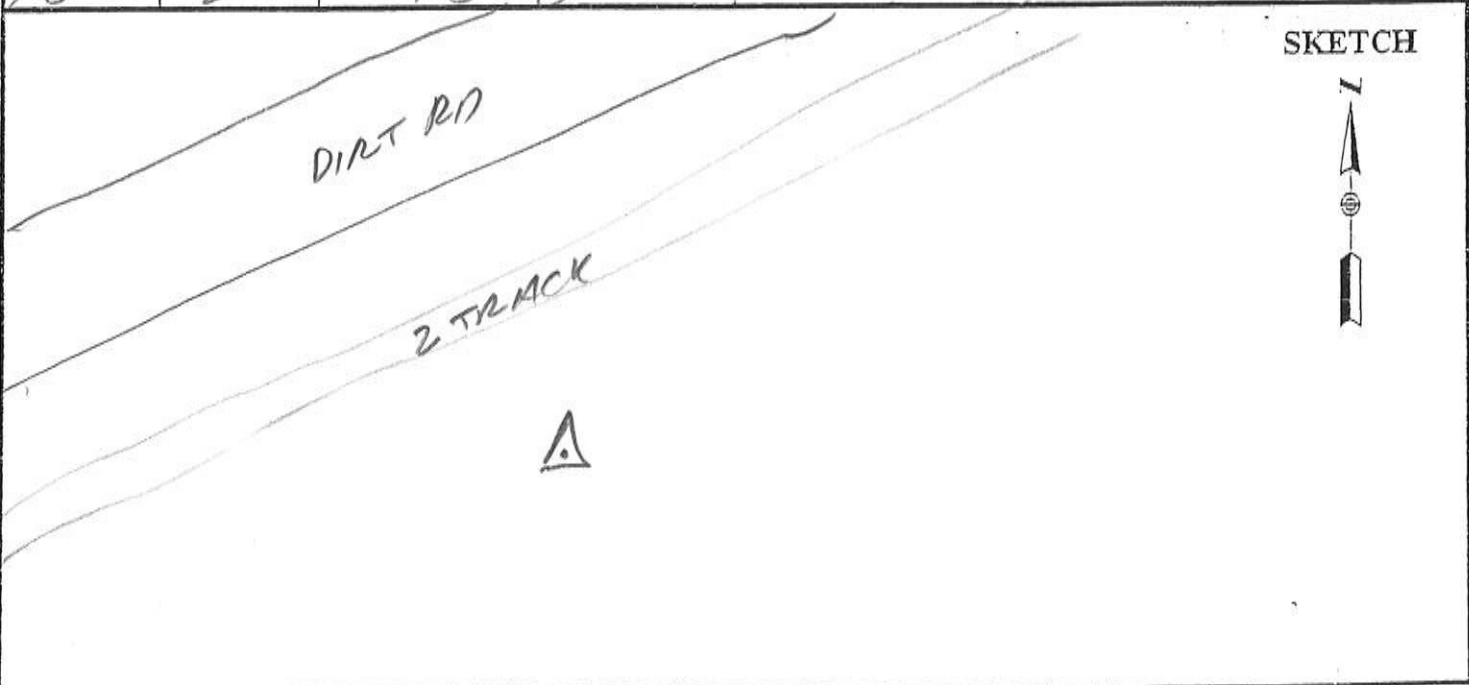
PROJECT <u>1110403</u> OPERATOR <u>WJN</u> DATE <u>7/13/11</u>	SITE NUMBER <u>10</u> SITE NAME <u>48</u>
--	--

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u> START <u>12:42</u> STOP <u>12:57</u>	SENSOR TYPE <u>500</u> 9500 399 299 MEMORY CARD <u>11</u> BATTERY NO. _____ CONTROLLER NO. _____ SENSOR NO. _____
--	---

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>CASTLE ROCKS</u> <u>SE</u>
HEIGHT READINGS MTS FT <u>1.308</u> _____	STATION DESCRIPTIONS <u>POINT IN</u> <u>SAGE, GREASE WOOD</u> <u>± 22' SE OF ♀ 2 TRACK</u>

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
------------------------	---

TIME	GDOP	SATELLITES
<u>18:41</u>	<u>1.9</u>	<u>11/11-11</u>
<u>18:57</u>	<u>2.0</u>	<u>10/10-10</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 110403
OPERATOR WJN
DATE 7/18/11

SITE NUMBER 11
SITE NAME 49

TRACKING TIMES (LOCAL) MEASURE MDT
START 13:04
STOP 13:22

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.236 _____

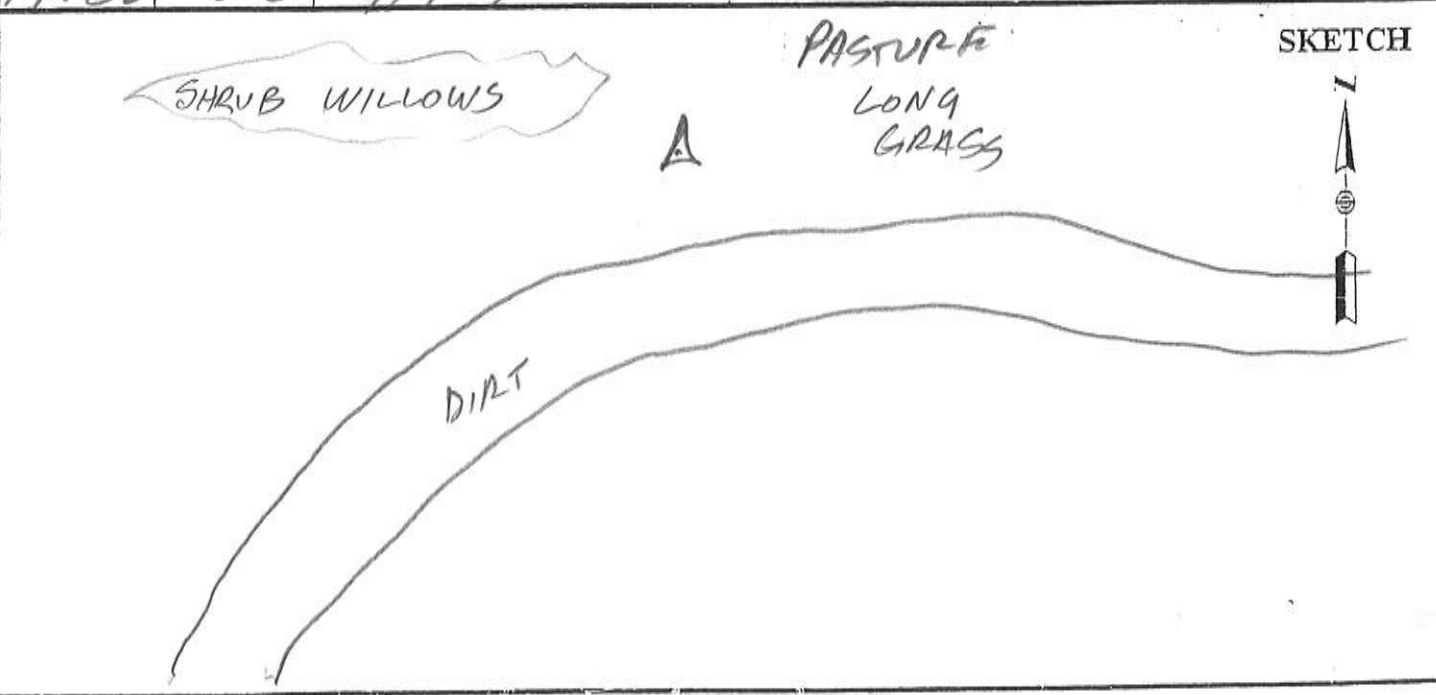
OBSTRUCTIONS: TERRAIN W
AND S

STATION DESCRIPTIONS POINT IN
LONG GRASS
± 33' NW OF E RD

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:04	2.1	9/9-11
19:22	2.2	9/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
OPERATOR MMW
DATE 7/18/11

SITE NUMBER 12
SITE NAME 50

TRACKING TIMES (LOCAL) MEASURE MDT
START 13:36
STOP 13:53

SENSOR TYPE 500 9500 399 299
MEMORY CARD 11
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.216 _____

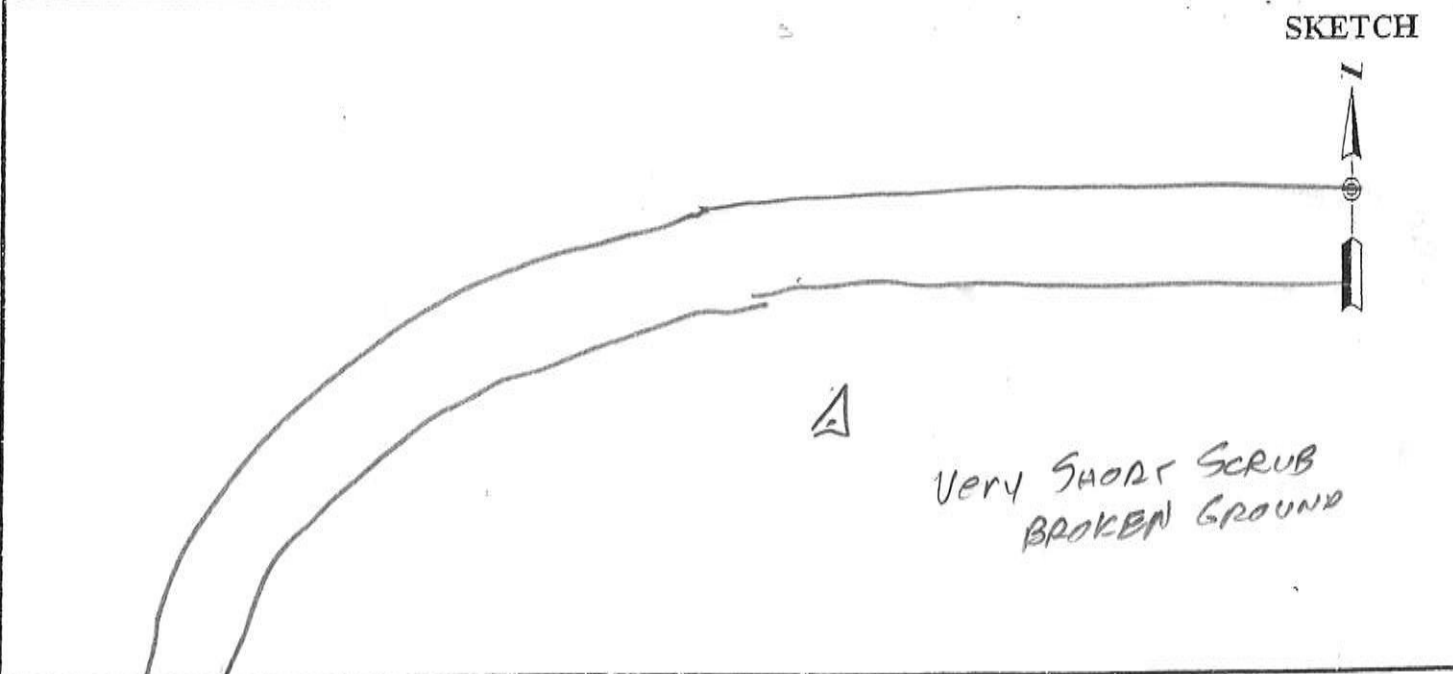
OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT
IN VERY SHORT SCRUB
± 24' S OF ♀ DIRT RD.

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>19:36</u>	<u>2.1</u>	<u>9/9-9</u>
<u>19:53</u>	<u>1.6</u>	<u>11/11-11</u>



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
 OPERATOR WJN
 DATE 7/18/11

SITE NUMBER 13
 SITE NAME 51

TRACKING TIMES (LOCAL) MEASURE MDT
 START 14:07
 STOP 14:20

SENSOR TYPE 500 9500 399 299
 MEMORY CARD _____
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: terrain E

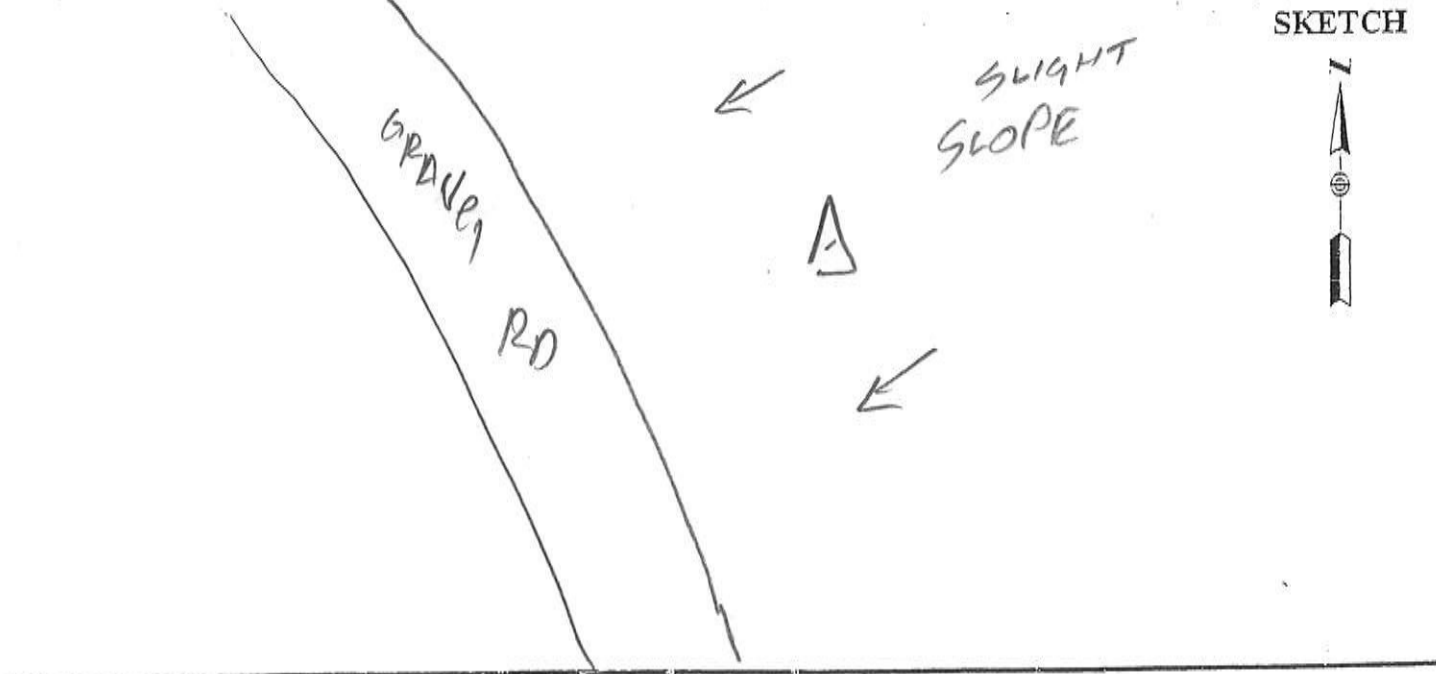
HEIGHT READINGS MTS FT
 1.268 _____

STATION DESCRIPTIONS POINT IN
SAGE

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
20:07	1.9	8/8-8
20:25	2.0	8/8-8



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

3

PROJECT 1110403
 OPERATOR WJAT
 DATE 7/18/11

SITE NUMBER 14
 SITE NAME 52

TRACKING TIMES (LOCAL) MEASURE MDT
 START 14:42
 STOP 15:02

SENSOR TYPE 500 9500 399 299
 MEMORY CARD _____
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
 1.229 _____

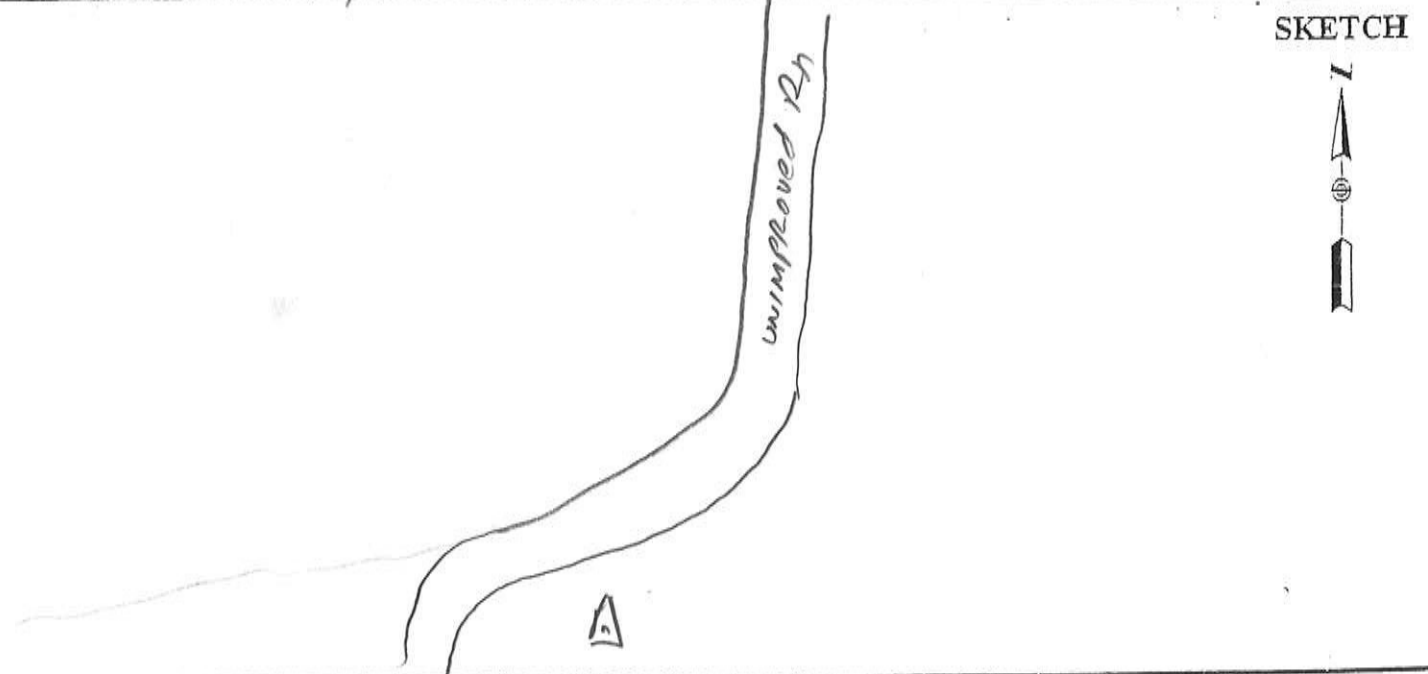
OBSTRUCTIONS: NT

STATION DESCRIPTIONS POINT 1A1
BRUSH

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:42	2.0	8/8-8
20:02	1.9	9/9-9



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

BACK

PROJECT 1110403
OPERATOR WJN
DATE 7/19/11

SITE NUMBER 1
SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE MDT
START 9:04
STOP 14:58

SENSOR TYPE 500 9500 399 299
MEMORY CARD 16
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 *0.35*
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.246 _____

STATION DESCRIPTIONS Rebar and
CAP SET 7/14/11

1.596

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<i>15:04</i>	<i>2.4</i>	<i>7/7-7</i>
<i>20:58</i>	<i>1.9</i>	<i>9/9-9</i>

As Described

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

BAGE

PROJECT 1110403
 OPERATOR WJN
 DATE 7/19/11

SITE NUMBER 1
 SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE MDT
 START 9:34
 STOP 14:40

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 101
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.242

1.631

STATION DESCRIPTIONS Rebar and
CAP SET 7/14/11

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>15:34</u>	<u>2.9</u>	<u>7/7-7</u>
<u>20:40</u>	<u>1.7</u>	<u>10/10-10</u>

As described

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

Z

PROJECT 1110403
OPERATOR WJN
DATE 7/19/11

SITE NUMBER 1
SITE NAME 53

TRACKING TIMES (LOCAL) MEASURE MDT
START 9:46
STOP 10:03

SENSOR TYPE 500 9500 399 299
MEMORY CARD 911
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.309 _____

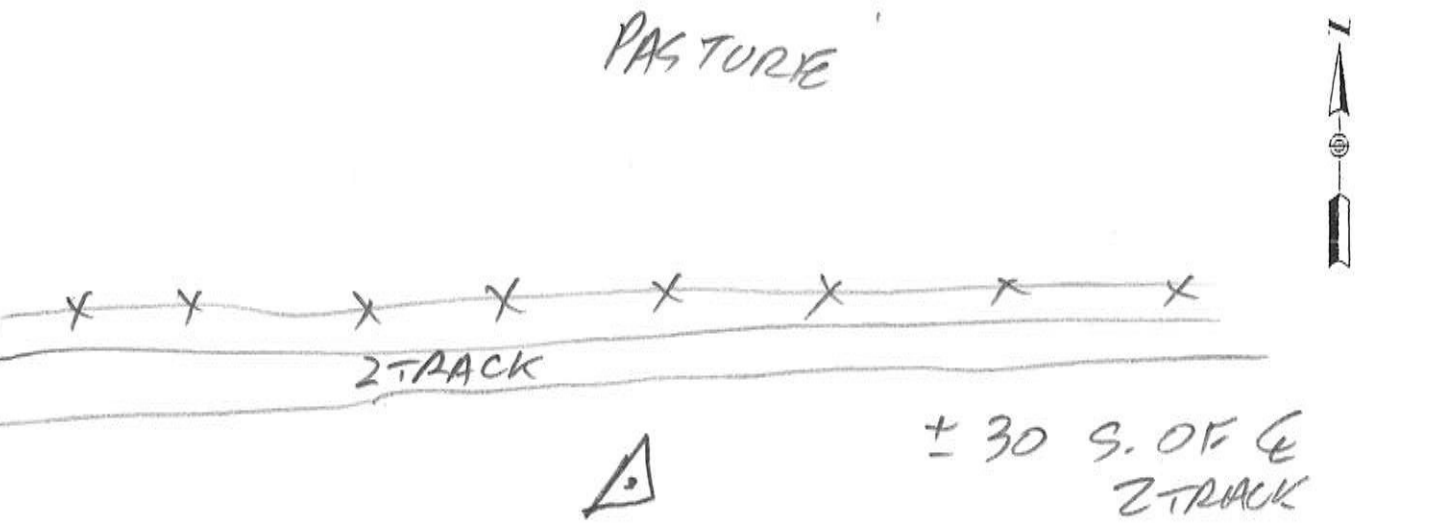
STATION DESCRIPTIONS POINT IN
LONG GRASS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
15:46	2.3	8/8-8
16:02	2.0	9/9-9

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

/

PROJECT 1110403
OPERATOR WJN
DATE 7/19/11

SITE NUMBER 1
SITE NAME 54

TRACKING TIMES (LOCAL) MEASURE MDT
START 19:52
STOP 10:09

SENSOR TYPE 500 9500 399 299
MEMORY CARD 12
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.239 _____

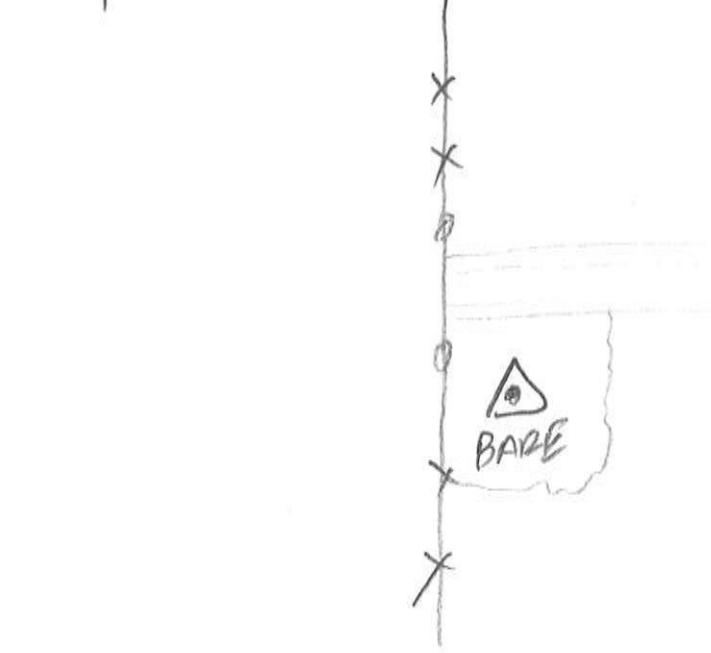
OBSTRUCTIONS: NO

STATION DESCRIPTIONS POINT ON BARE EARTH

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
15:52	2.2	8/8-8
16:09	2.0	9/9-9



6.5' E OF FENCE SKETCH
12.0'S OF E 2-TRACK

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT 1110403
OPERATOR WJN
DATE 7/9/11

SITE NUMBER 2
SITE NAME 55

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:17
STOP 10:42

SENSOR TYPE 500 9500 399 299
MEMORY CARD 911
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
1.257 _____

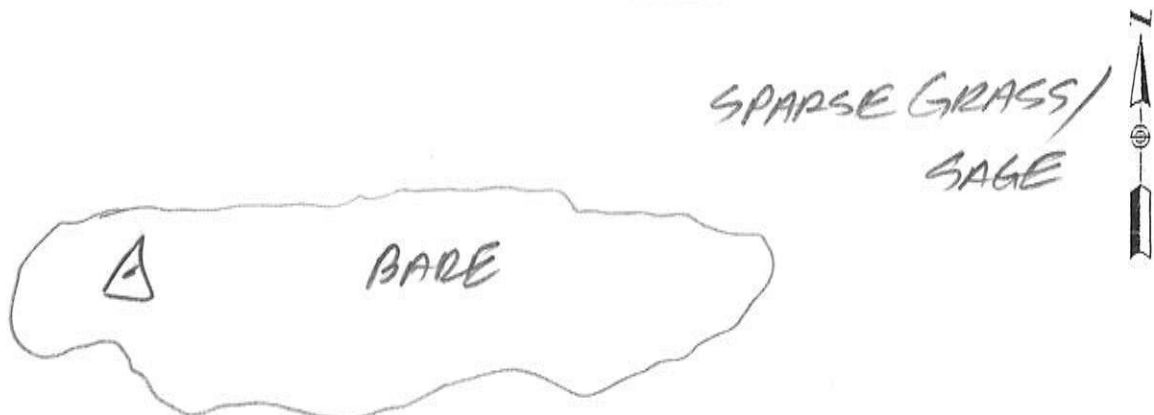
STATION DESCRIPTIONS POINT IN
BARE EARTH, center
OF W'ly end

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>10:17</u>	<u>1.9</u>	<u>9/9-9</u>
<u>10:42</u>	<u>1.9</u>	<u>9/9-9</u>

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

3
3

PROJECT 1110403
OPERATOR WJN
DATE 7/19/11

SITE NUMBER 2
SITE NAME 56

TRACKING TIMES (LOCAL) MEASURE MDT
START 10:22
STOP 10:39

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.276 _____

OBSTRUCTIONS: _____

STATION DESCRIPTIONS POINT IN
SAGE, ± 36' S. OF
E-W 2 TRACK

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
<u>16:22</u>	<u>2.0</u>	<u>7/7-9</u>
<u>16:39</u>	<u>1.9</u>	<u>9/9-9</u>

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

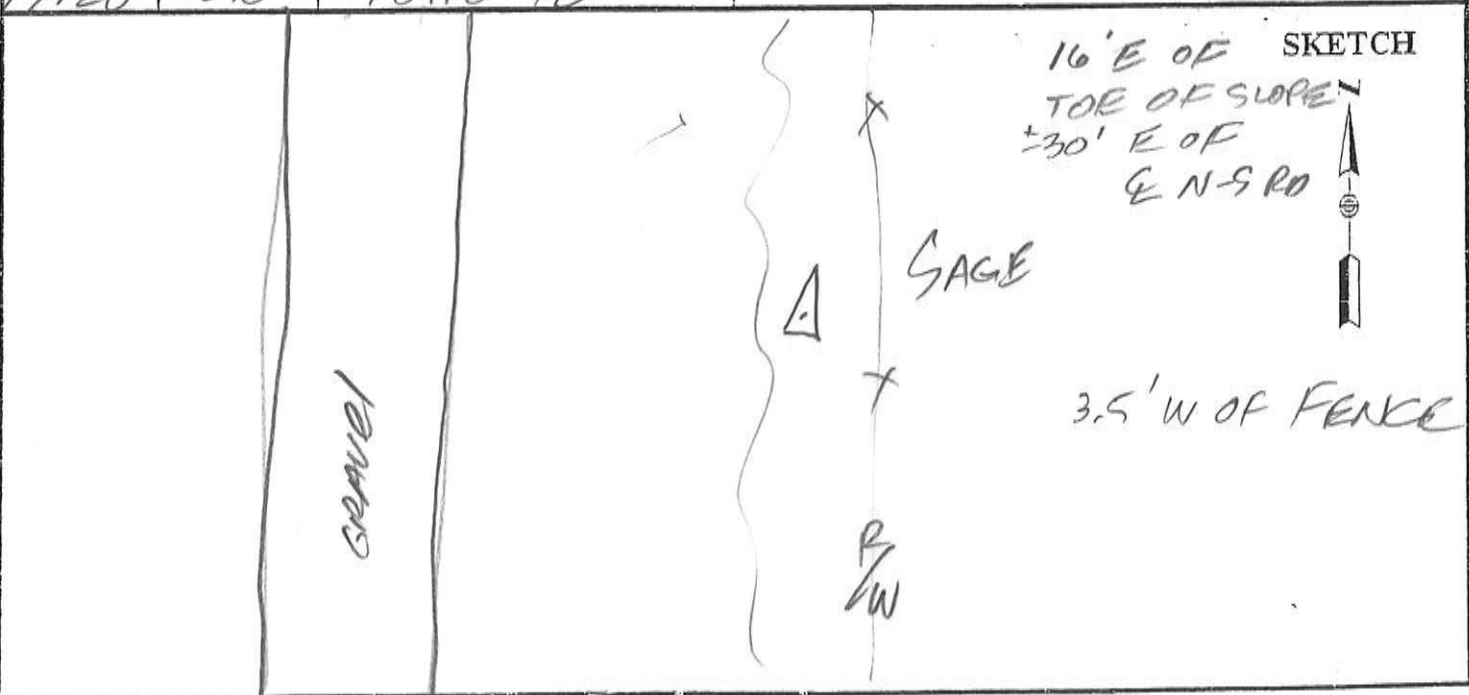
3

PROJECT <u>1110403</u>	SITE NUMBER <u>3</u>
OPERATOR <u>WIN</u>	SITE NAME <u>57</u>
DATE <u>7/19/11</u>	

TRACKING TIMES (LOCAL) MEASURE <u>MDT</u>	SENSOR TYPE <u>500</u> 9500 399 299
START <u>11:05</u>	MEMORY CARD <u>11</u>
STOP <u>11:20</u>	BATTERY NO. _____
	CONTROLLER NO. _____
	SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 0.360	OBSTRUCTIONS: _____
HEIGHT READINGS MTS FT <u>1.274</u> _____	STATION DESCRIPTIONS <u>POINT</u> <u>IN SAGE BRUSH</u>

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS									
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">TIME</th> <th style="width: 15%;">GDOP</th> <th style="width: 70%;">SATELLITES</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">17:05</td> <td style="padding: 2px;">2.2</td> <td style="padding: 2px;">10/10-10</td> </tr> <tr> <td style="padding: 2px;">17:20</td> <td style="padding: 2px;">2.0</td> <td style="padding: 2px;">10/10-10</td> </tr> </tbody> </table>	TIME	GDOP	SATELLITES	17:05	2.2	10/10-10	17:20	2.0	10/10-10	
TIME	GDOP	SATELLITES								
17:05	2.2	10/10-10								
17:20	2.0	10/10-10								



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

2

PROJECT 1110403
 OPERATOR WJN
 DATE 7/19/11

SITE NUMBER 4
 SITE NAME 58

TRACKING TIMES (LOCAL) MEASURE MDT
 START 11:40
 STOP 11:57

SENSOR TYPE 500 9500 399 299
 MEMORY CARD _____
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TREES S

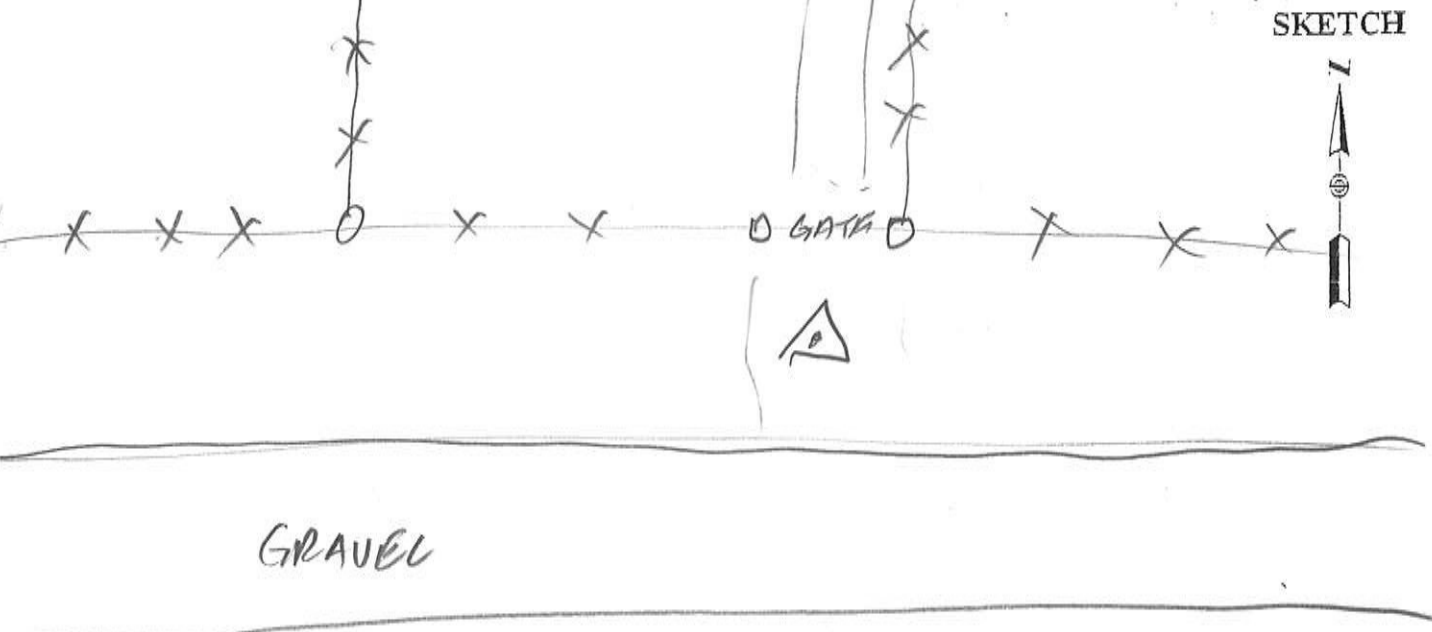
HEIGHT READINGS MTS FT
 1.267 _____

STATION DESCRIPTIONS CENTER OF WIDE LONG GRASS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
17:40	2.0	9/9-9
17:57	2.6	8/8-8



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

PROJECT <u>1110403</u>	SITE NUMBER <u>5</u>
OPERATOR <u>4JN</u>	SITE NAME <u>59</u>
DATE <u>7/19/11</u>	

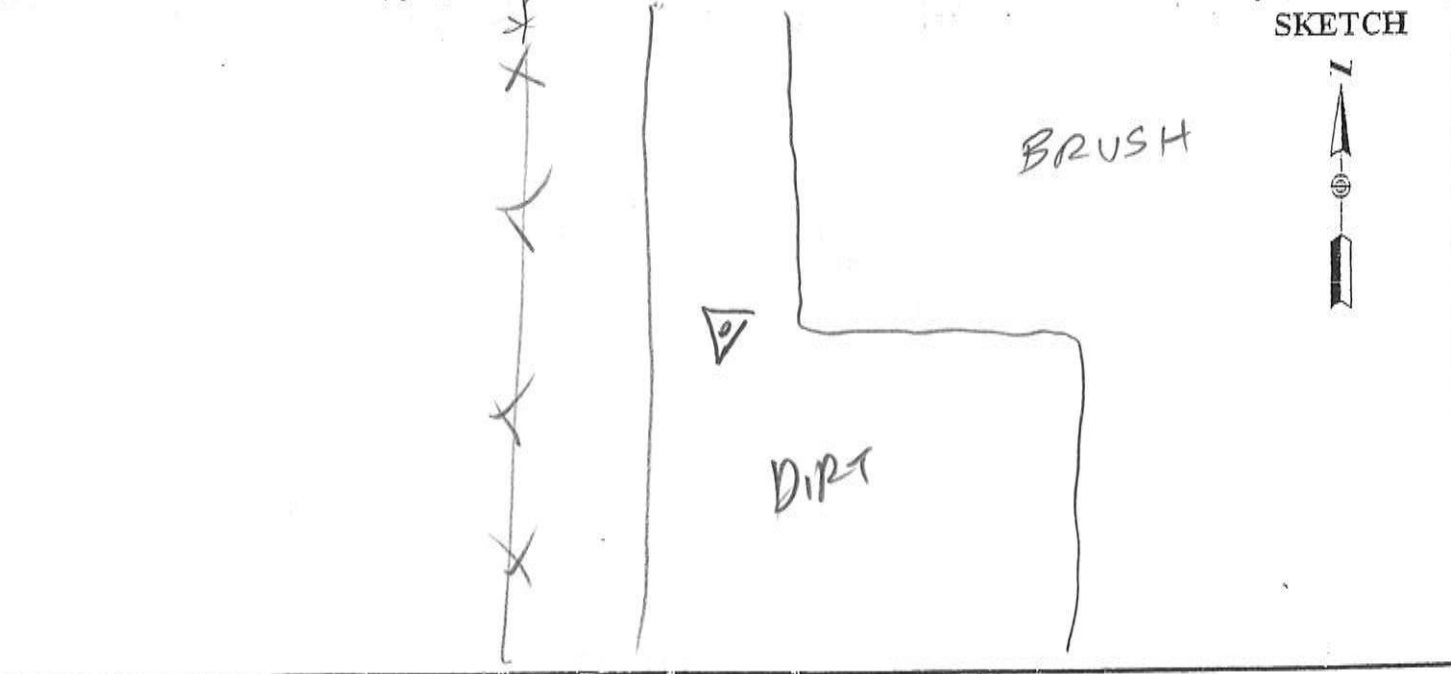
TRACKING TIMES (LOCAL) MEASURE <u>MDT</u>	SENSOR TYPE <u>500</u> 9500 399 299
START <u>12:06</u>	MEMORY CARD <u>11</u>
STOP <u>12:28</u>	BATTERY NO. _____
	CONTROLLER NO. _____
	SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441 399E/9500 0.389 500 <u>0.360</u>	OBSTRUCTIONS: <u>NO</u>
---	-------------------------

HEIGHT READINGS MTS FT <u>1.297</u> _____	STATION DESCRIPTIONS <u>EAST, DIRT, NW AREA OF DIRT PARKING AREA</u>
--	--

SATELLITE OBSERVATIONS	WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
------------------------	---

TIME	GDOP	SATELLITES
<u>18:06</u>	<u>2.5</u>	<u>10/10-10</u>
<u>18:28</u>	<u>2.0</u>	<u>9/9-9</u>



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

5

PROJECT 110403
OPERATOR WIN
DATE 7/19/11

SITE NUMBER 3
SITE NAME 60

TRACKING TIMES (LOCAL) MEASURE MPT
START 12:13
STOP 12:43

SENSOR TYPE 500 9500 399 299
MEMORY CARD 14
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

HEIGHT READINGS MTS FT
1.336 _____

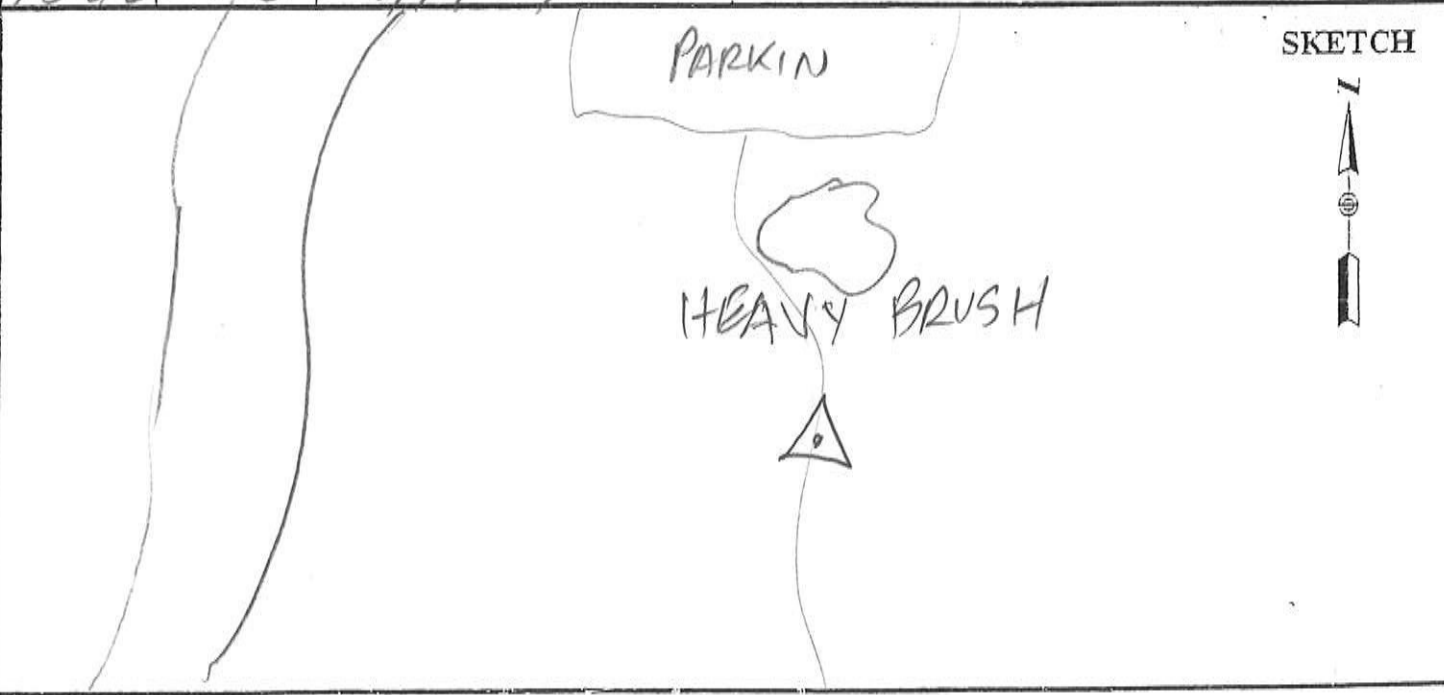
OBSTRUCTIONS: TERRAIN S, W
TREE

STATION DESCRIPTIONS POINT IN
BRUSH, CEDAR MIX

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
18:13	2.5	10/10-10
18:42	2.0	9/9-9



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

Vert Cont.

PROJECT 1101403
 OPERATOR WJN
 DATE 7/19/11

SITE NUMBER 5
 SITE NAME C116

TRACKING TIMES (LOCAL) MEASURE MDT
 START 13:23
 STOP 14:04

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 11
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: Horses

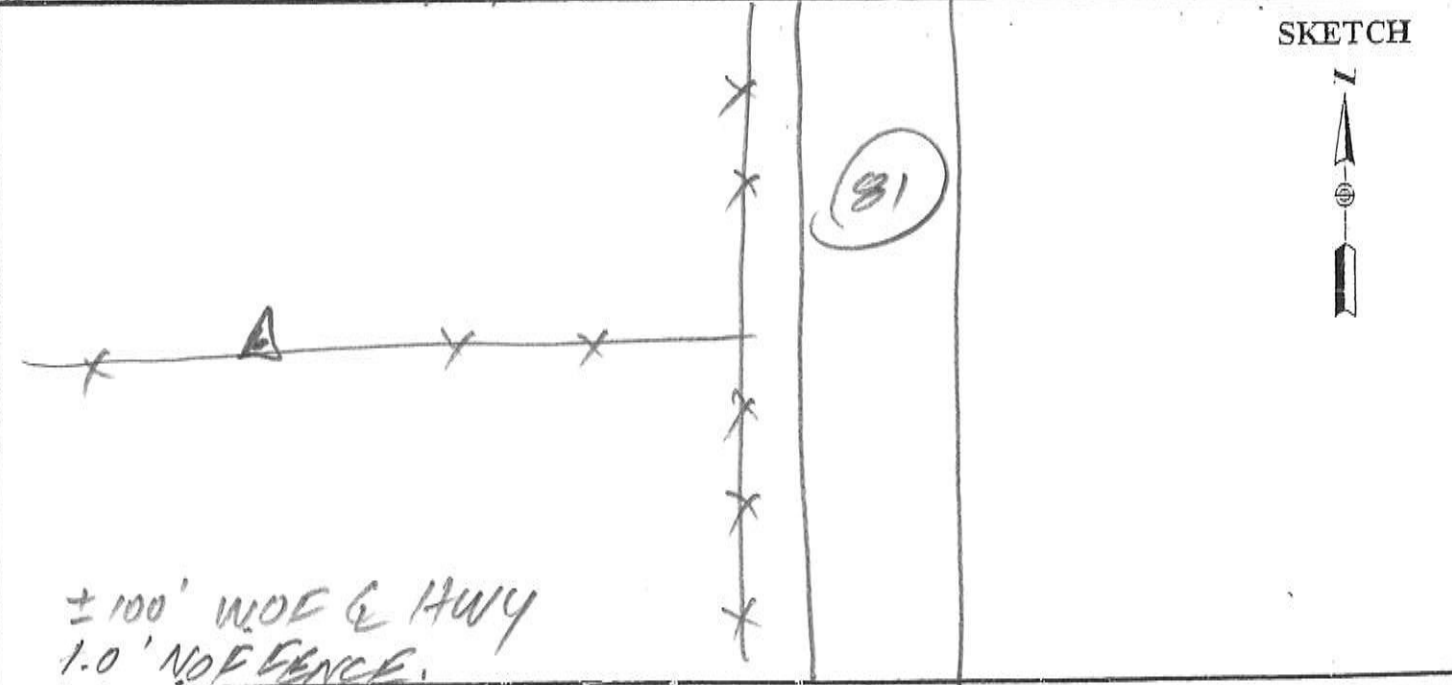
HEIGHT READINGS MTS FT
1.048 _____
 1.408

STATION DESCRIPTIONS BRASS
DISK IN CONC
" C116 1958 "
USCG
AS DESCRIBED BY N45

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:23	1.9	8/8-8
20:04	1.8	9/9-9



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

Vert center

PROJECT 110403
 OPERATOR UNN
 DATE 7/19/11

SITE NUMBER 4
 SITE NAME A116

TRACKING TIMES (LOCAL) MEASURE MDT
 START 13:51
 STOP 15:35

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 14
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: NO

HEIGHT READINGS MTS FT
 1.085 _____

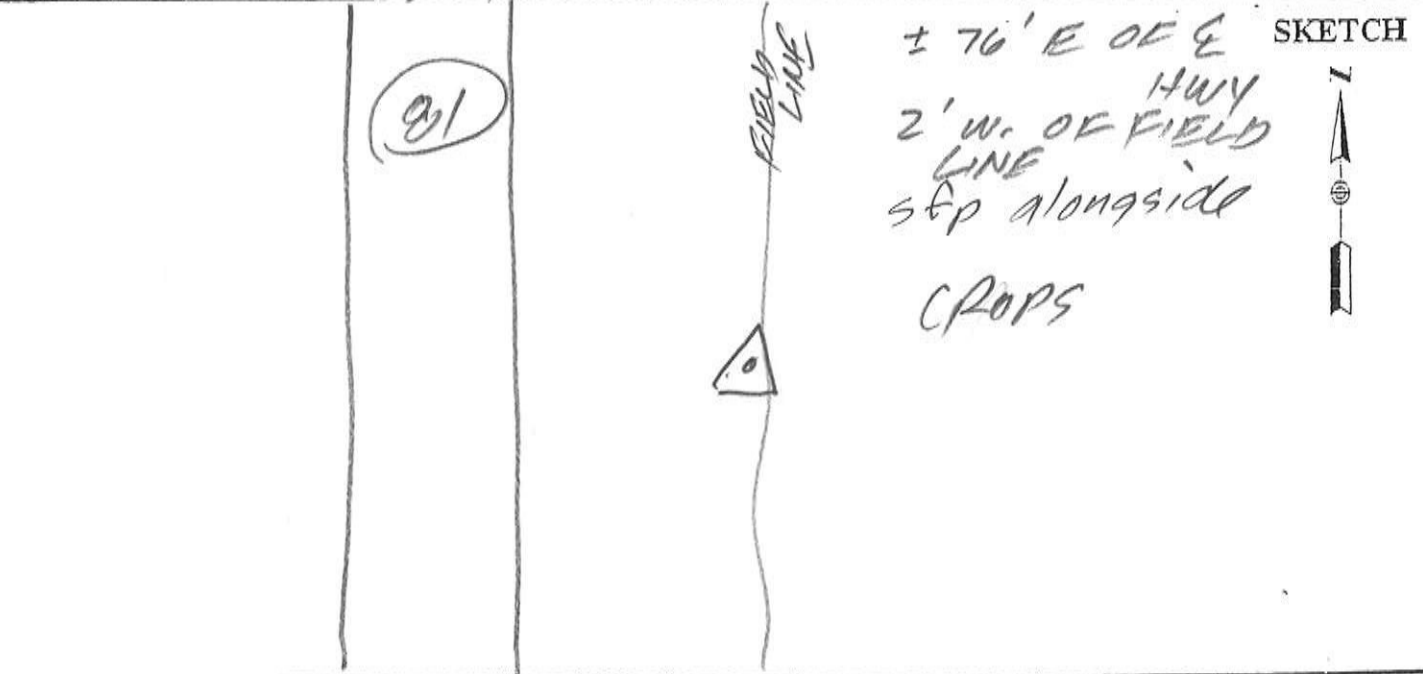
STATION DESCRIPTIONS BRASS
DISK IN CONC MKD
"A 116 1958"
USGG
As described by NGS

1.445

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
19:51	1.7	10/10-10
21:35	2.0	9/9-9



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

H+V Control

PROJECT 1110403
 OPERATOR WJM
 DATE 7/20/11

SITE NUMBER 1
 SITE NAME BURLEY

TRACKING TIMES (LOCAL) MEASURE MDT
 START 9:45
 STOP 10:55

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 601
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: TREES

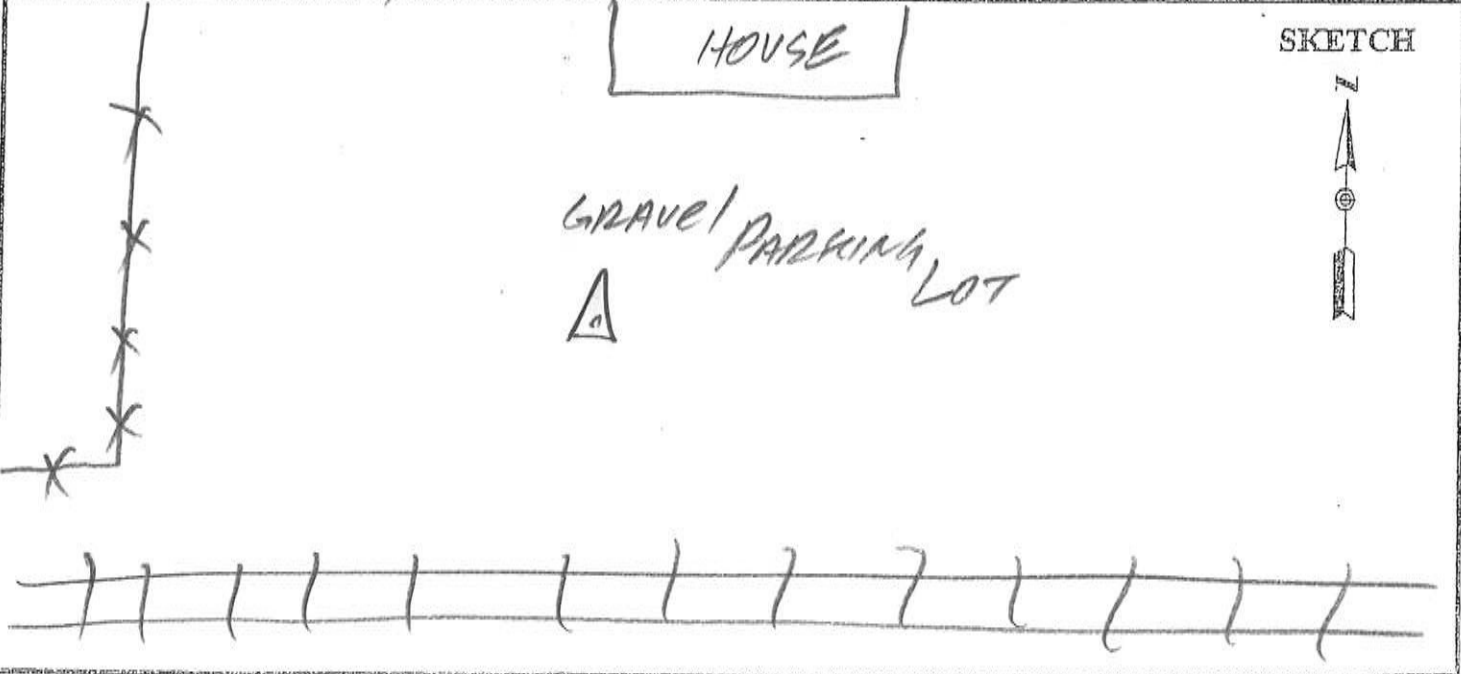
HEIGHT READINGS MTS FT
 1.077 _____
 1.437

STATION DESCRIPTIONS BRASS
DISK IN CONC. MTD
"BURLEY 1950"
As described by NGS
USC AND GS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
TIE TO CORS

TIME	GDOP	SATELLITES
<u>15:45</u>	<u>2.0</u>	<u>9/9-9</u>
<u>10:55</u>	<u>1.9</u>	<u>10/10-10</u>



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53085

Base

PROJECT 110403
 OPERATOR M3
 DATE 8-24-11

SITE NUMBER 1
 SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE _____
 START 8:28 a.
 STOP _____

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 732
 BATTERY NO. CB
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
500 0.360

OBSTRUCTIONS: _____

HEIGHT READINGS MTS FT
1.420 _____
 _____ 1.780

STATION DESCRIPTIONS _____

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
928	4.0	6/9

SKETCH



See previous

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

Base

PROJECT 1110403
OPERATOR MB
DATE 8.24.11

SITE NUMBER 1
SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE
START 8:46 a.
STOP _____

SENSOR TYPE 500 9500 399 299
MEMORY CARD 704
BATTERY NO. CB
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
399E/9500 0.389
500 0.360

HEIGHT READINGS MTS FT
1.389 _____

OBSTRUCTIONS: _____

STATION DESCRIPTIONS _____

1.749

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
946	4.1	7/8

SKETCH

see
previous



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

✓ AT.

hand

PROJECT 1110403
OPERATOR MA
DATE 8.24.11

SITE NUMBER 1
SITE NAME 3

TRACKING TIMES (LOCAL) MEASURE _____

START 8:59 a.

STOP 9:15 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
399E/9500 0.389
500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.460 _____

STATION DESCRIPTIONS 2 E/W road

1.820

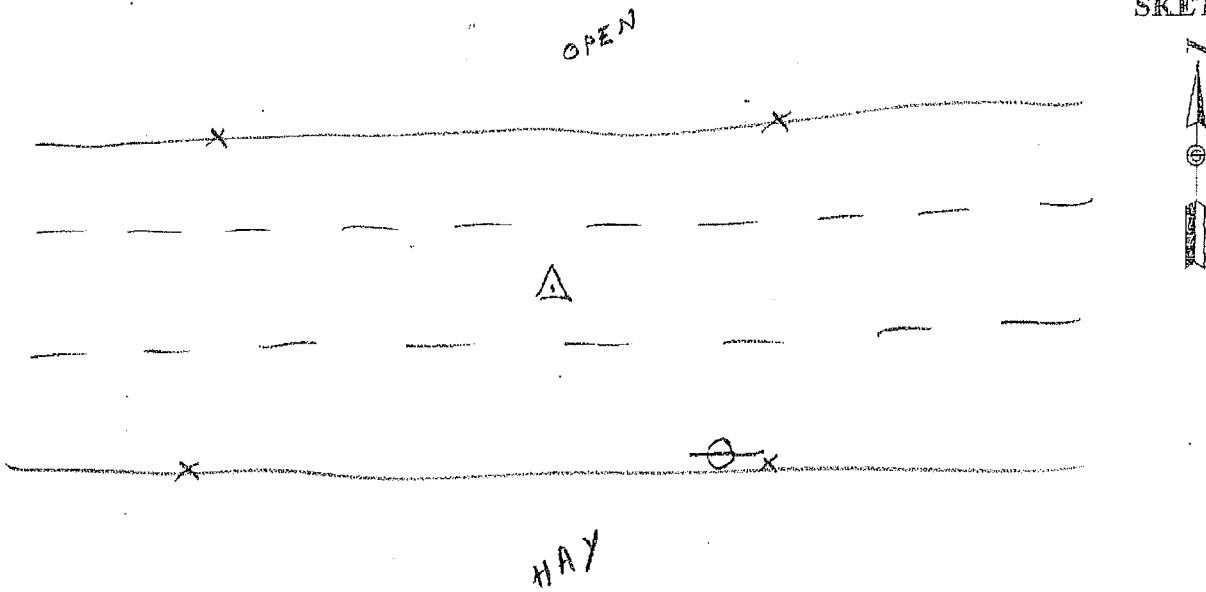
SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

photo - N

TIME	GDOP	SATELLITES
959	2.8	6/7
1015		

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

✓AT

hand

PROJECT 1110403
 OPERATOR MB
 DATE 8.24.11

SITE NUMBER 2
 SITE NAME 9

TRACKING TIMES (LOCAL) MEASURE
 START 9:32 a.
 STOP 9:52 a.

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 603
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
500 0.360

OBSTRUCTIONS: Done

HEIGHT READINGS MTS FT
1.389

STATION DESCRIPTIONS ⊕ + ⊕ roads

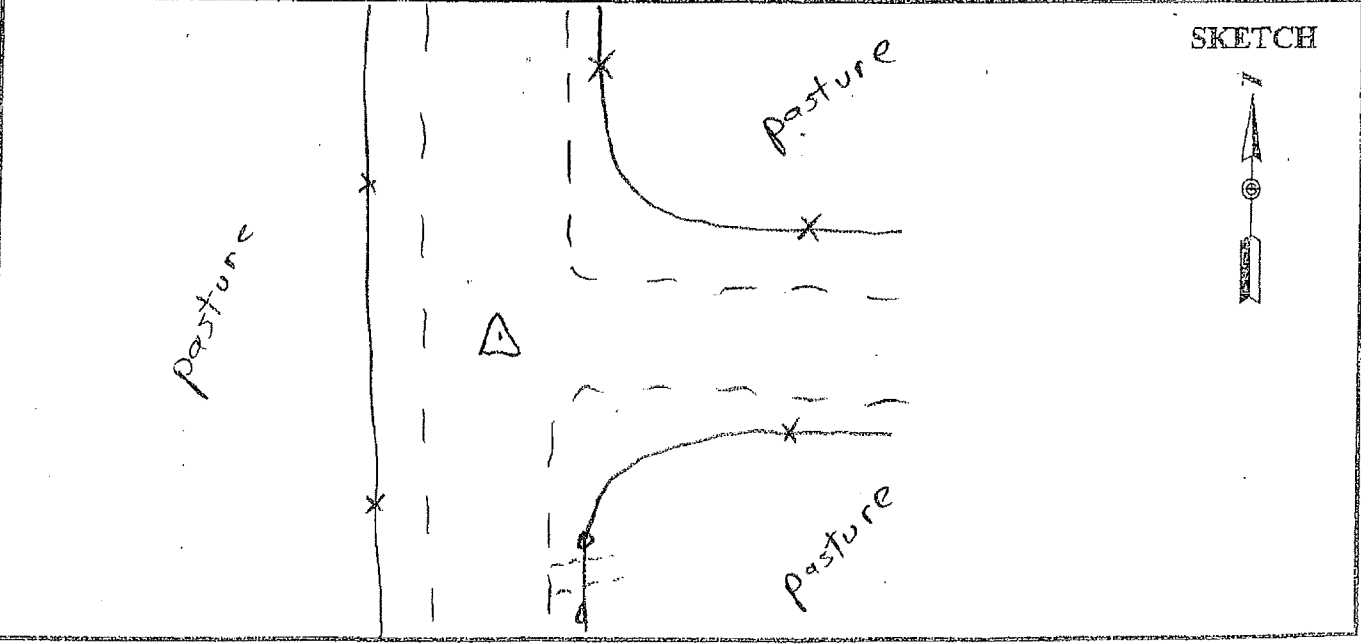
1749

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1032	2.7	7/9
1052		

photo - E



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53085

✓PT hand

PROJECT 1110403
 OPERATOR MB
 DATE 8.24.11

SITE NUMBER 3
 SITE NAME 14

TRACKING TIMES (LOCAL) MEASURE ✓
 START 10:16 a.
 STOP 10:36 a.

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 603
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.380
 (500) (0.360)

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.420 _____
 _____ 1.780

STATION DESCRIPTIONS in pull-off area

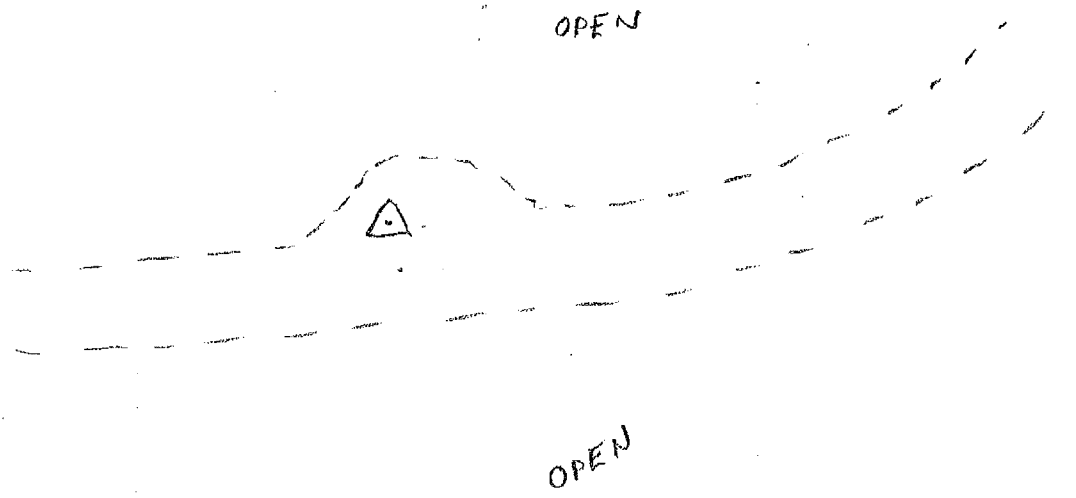
SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1116	1.9	11/11
1136		

photo - SW

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

✓PT hard

PROJECT 1110403
 OPERATOR MO
 DATE 8-24-11

SITE NUMBER 4
 SITE NAME 25

TRACKING TIMES (LOCAL) MEASURE _____
 START 10:48 a.
 STOP 11:08 a.

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 603
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

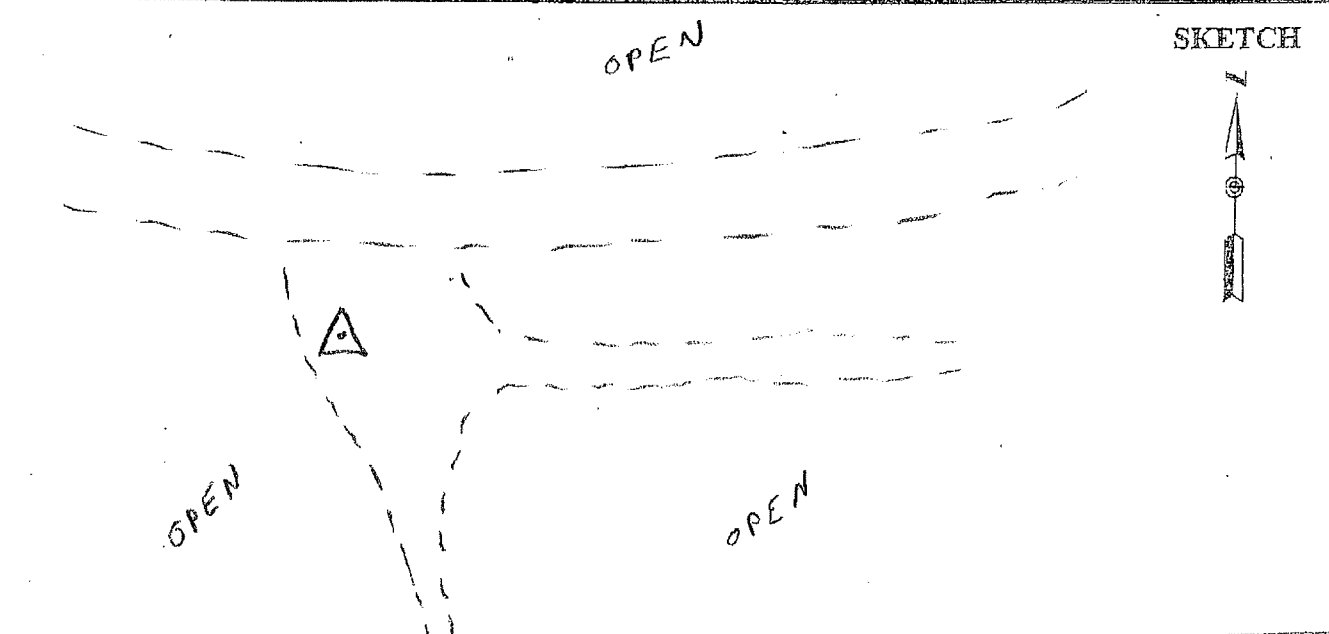
SENSOR CONSTANT 299/399 0.441
 399E/9500 0.380
500 0.360
 HEIGHT READINGS MTS FT
1.415 _____
 _____ 1.775

OBSTRUCTIONS: none

 STATION DESCRIPTIONS on two track

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
1148	1.8	10/10
1208		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
photo - E



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

✓ AT

hand

PROJECT 1110403
OPERATOR MD
DATE 8-24-11

SITE NUMBER 5
SITE NAME 33

TRACKING TIMES (LOCAL) MEASURE
START 11:40 a.
STOP 12:00 p.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
BATTERY NO. _____
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
399E/9500 0.380
500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.423 _____

STATION DESCRIPTIONS in parking area

1.783

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

photo - SE

TIME	GDOP	SATELLITES
1240	1.9	8/8
1300		

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

√PT

hand

PROJECT 1110403
 OPERATOR MS
 DATE 8.24.11

SITE NUMBER 6
 SITE NAME 37

TRACKING TIMES (LOCAL) MEASURE
 START 12:13 p
 STOP 12:33 p

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 603
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.388
 500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.418 _____
 _____ 1.778

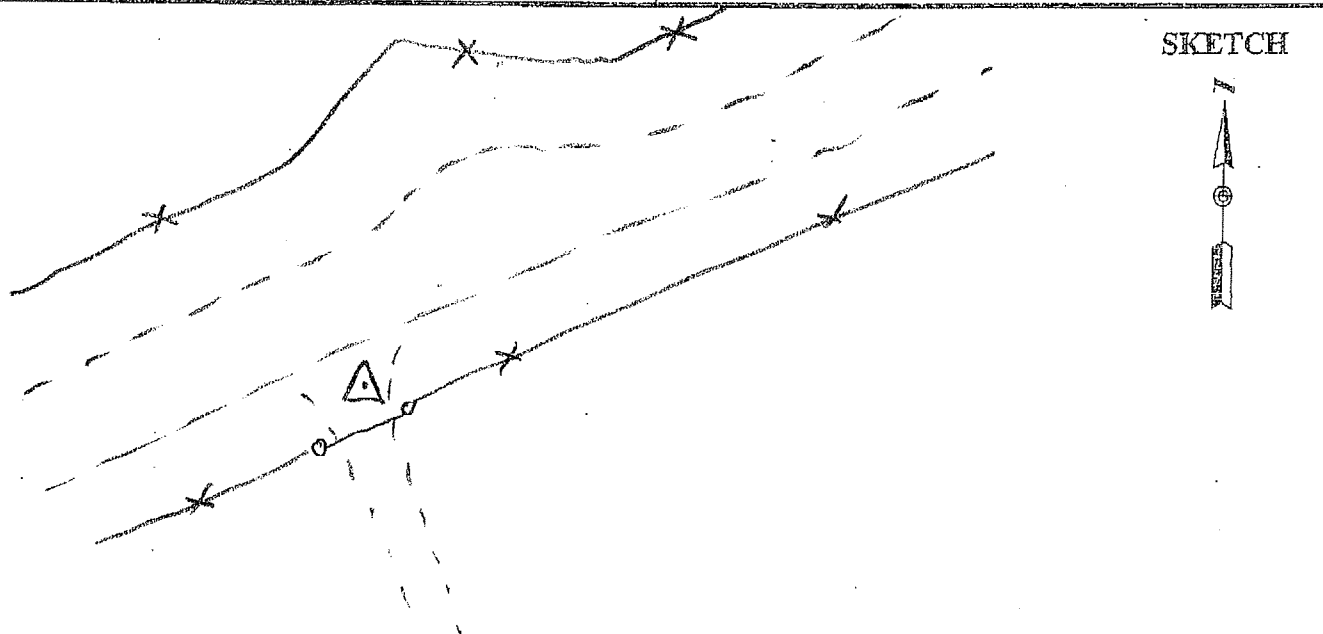
STATION DESCRIPTIONS in area at beginning of trail

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1313	2.3	7/7
1333		

photo - S



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

VOT. hand

PROJECT 1110403
 OPERATOR MB
 DATE 8-24-11

SITE NUMBER 7
 SITE NAME 40

TRACKING TIMES (LOCAL) MEASURE

START 12:42 P
 STOP 1:02 P

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 603
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
 1.438 _____

STATION DESCRIPTIONS Φ + Φ roads

1798

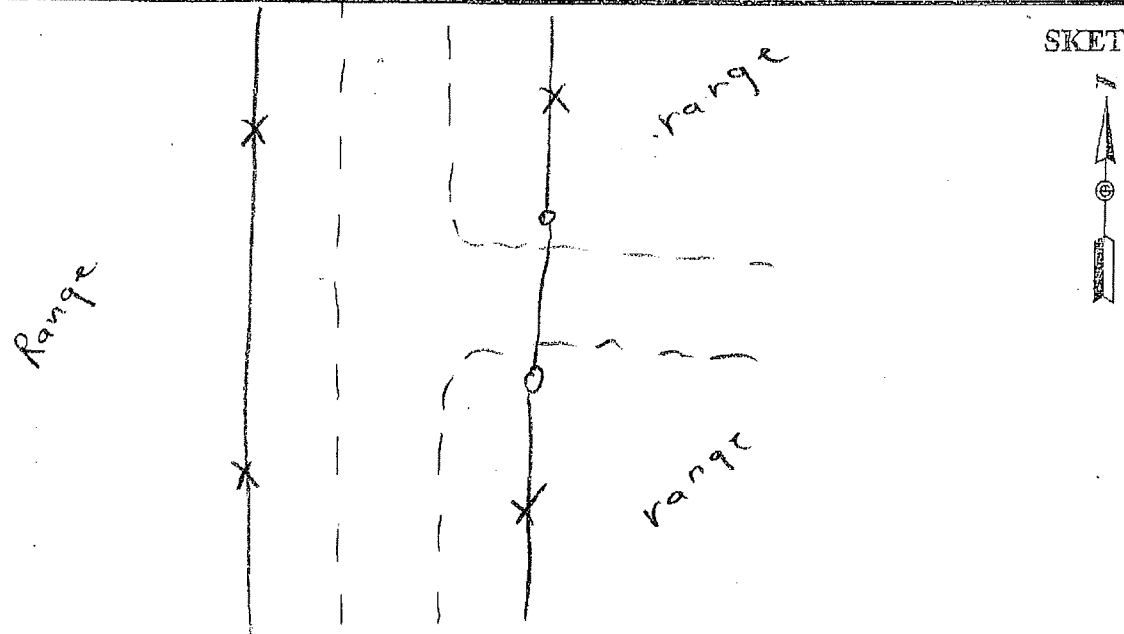
SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1342	2.1	9/9
1402		

photo - E

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083 Base

PROJECT 1110403
OPERATOR MS
DATE 8.25.11

SITE NUMBER 1
SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE
START 7:50 a.
STOP _____


SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
BATTERY NO. CB
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
399E/9500 0.389
500 0.360
HEIGHT READINGS MTS FT
1.328 _____
1.748

OBSTRUCTIONS: _____
STATION DESCRIPTIONS _____

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
850	3.2	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH
see previous


AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

Base

PROJECT 1110403
 OPERATOR MD
 DATE 8.25.11

SITE NUMBER 1
 SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE
 START 8:07 a.
 STOP _____

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 603
 BATTERY NO. 2B
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
500 0.360

OBSTRUCTIONS: _____

HEIGHT READINGS MTS FT
1.455 _____
 _____ 1.815

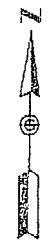
STATION DESCRIPTIONS

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
907	3.3	9/9

SKETCH



see previous

AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083

VAT

hand

PROJECT 1110403
OPERATOR MD
DATE 8.25.11

SITE NUMBER 1
SITE NAME 47

TRACKING TIMES (LOCAL) MEASURE

START 9:18 a.
STOP 9:43 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 704
BATTERY NO. CB
CONTROLLER NO. _____
SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
399E/9500 0.389
500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.427
1.787

STATION DESCRIPTIONS center of road

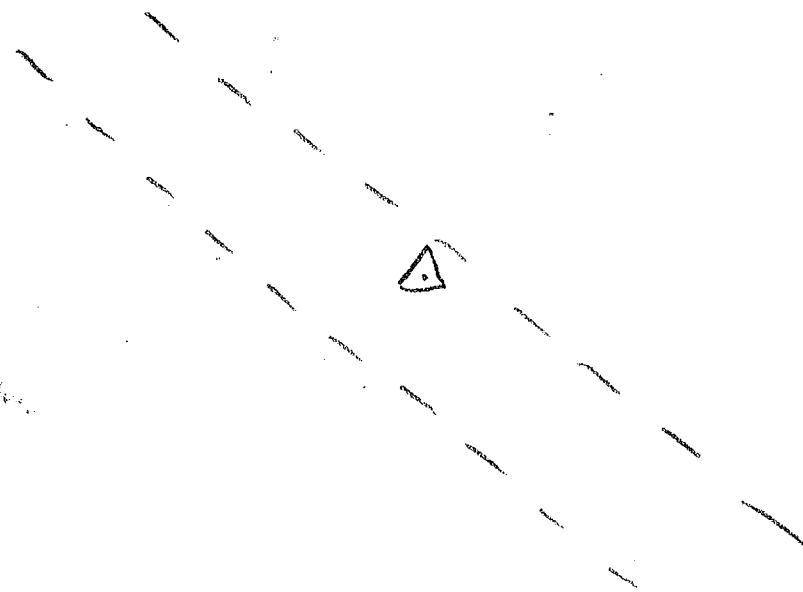
SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1948	2.5	9/9
1043		

photo - NE

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

✓PT

hand

PROJECT 1110403
 OPERATOR MO
 DATE 8.25.11

SITE NUMBER 2
 SITE NAME 55

TRACKING TIMES (LOCAL) MEASURE
 START 9:56 a.
 STOP 10:18 a.

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 204
 BATTERY NO. CD
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.406
1.766

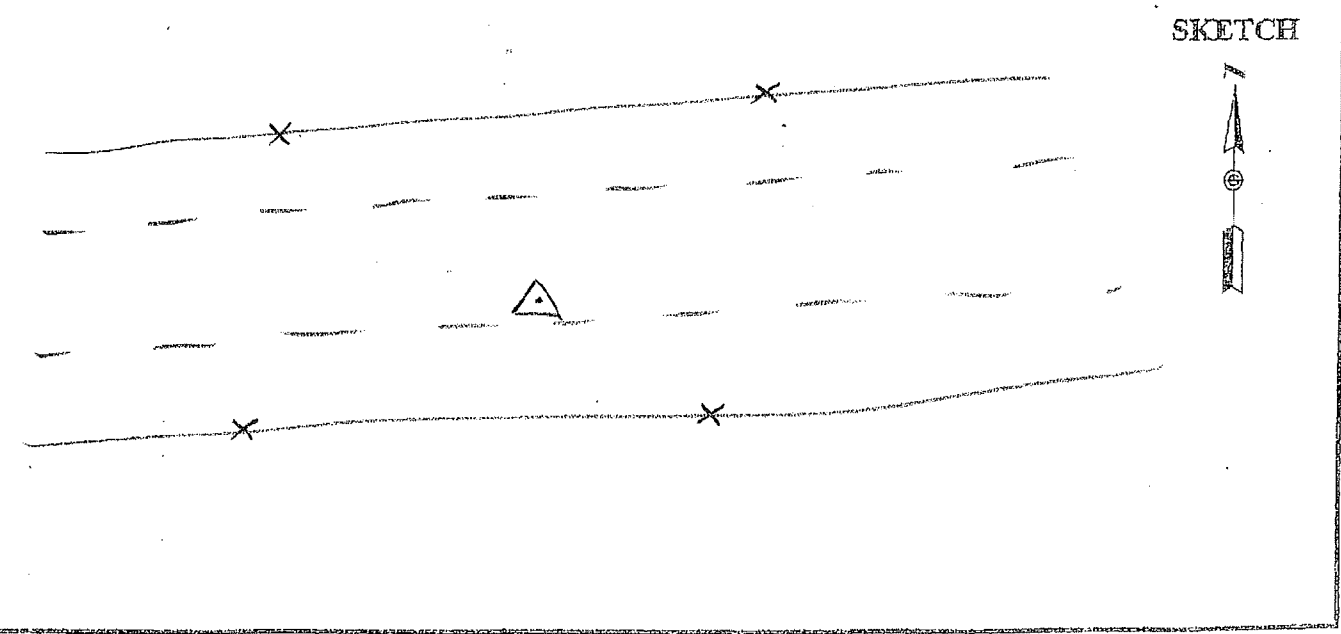
STATION DESCRIPTIONS S. lane of road

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1056	1.9	11/11
1118		

photo - S



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

✓PT

hand

PROJECT 1110403
 OPERATOR MB
 DATE 8.25.11

SITE NUMBER 3
 SITE NAME 59

TRACKING TIMES (LOCAL) MEASURE
 START 10:32 a.
 STOP 10:52 a.

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 704
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
 (500) (0.360)

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.422 _____
 _____ 1.782

STATION DESCRIPTIONS in 2 track

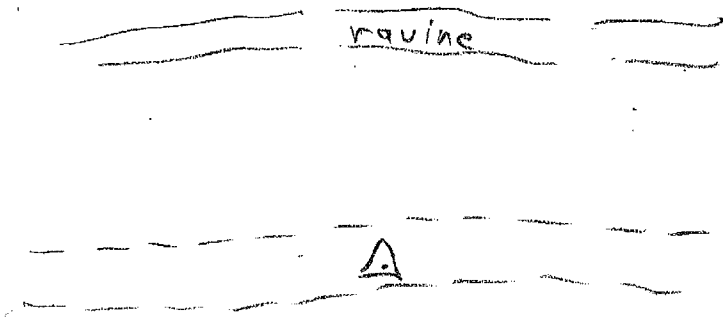
SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

TIME	GDOP	SATELLITES
1132	2.0	10/10
1152		

photo - N

SKETCH



AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53082

hand ✓ DT

PROJECT 1110403
 OPERATOR NO
 DATE 8.25.11

SITE NUMBER 4
 SITE NAME 601

TRACKING TIMES (LOCAL) MEASURE
 START 11:22 a.
 STOP 11:44 a.

SENSOR TYPE 500 9500 399 299
 MEMORY CARD 704
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
 399E/9500 0.389
500 0.360

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.404 _____
 _____ 1.764

STATION DESCRIPTIONS E. side of road

SATELLITE OBSERVATIONS

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
photo - E

TIME	GDOP	SATELLITES
1222	2.1	7/7
1244		

SKETCH

AERO-METRIC, INC.
 4020 TECHNOLOGY PARKWAY
 SHEBOYGAN, WISCONSIN 53083

✓AT hand

PROJECT 1110403
 OPERATOR N/A
 DATE 8.25.11

SITE NUMBER 5
 SITE NAME 62

TRACKING TIMES (LOCAL) MEASURE
 START 11:52 a.
 STOP 12:11 p.

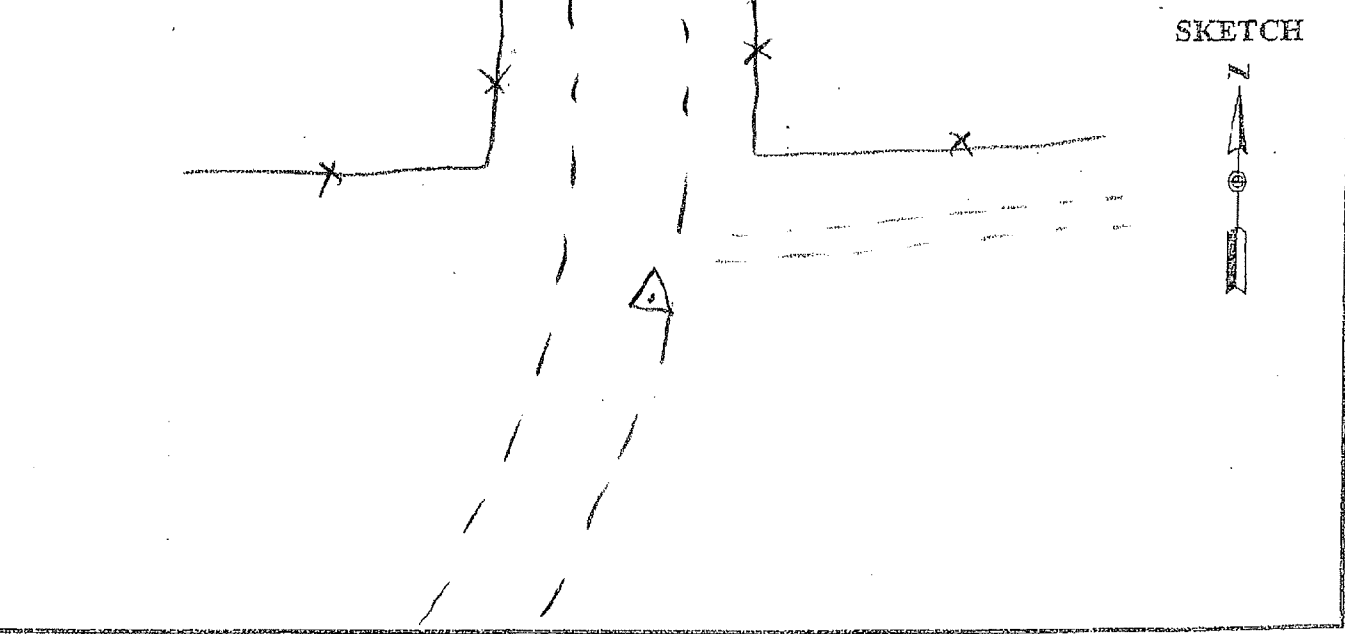
SENSOR TYPE 500 9500 399 299
 MEMORY CARD 704
 BATTERY NO. _____
 CONTROLLER NO. _____
 SENSOR NO. _____

SENSOR CONSTANT 299/399 0.441
~~399E/9500~~ ~~0.388~~
500 0.360
 HEIGHT READINGS MTS FT
1.400 _____
 _____ 1.760

OBSTRUCTIONS: none
 STATION DESCRIPTIONS E. side road

SATELLITE OBSERVATIONS		
TIME	GDOP	SATELLITES
1252	1.9	7/8
1311		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
photo - E



05:52:07, Fri Aug 26, 2011

INI file: C:\WINNT\GEOLAB.INI
 Input file: Q:\1110403\GEOM~6B2\SURVEY\GEO\C.IOB
 Output file: Q:\1110403\GEOM~6B2\SURVEY\GEO\C.LST

Geoid File: C:\GEOLAB2\G2009U01.GEO

PARAMETERS		OBSERVATIONS	
Description	Number	Description	Number
No. of Stations	79	Directions	0
Coord Parameters	232	Distances	0
Free Latitudes	77	Azimuths	0
Free Longitudes	77	Vertical Angles	0
Free Heights	78	Zenithal Angles	0
Fixed Coordinates	5	Angles	0
Astro. Latitudes	0	Heights	0
Astro. Longitudes	0	Height Differences	0
Geoid Records	0	Auxiliary Params.	0
All Aux. Pars.	0	2-D Coords.	0
Direction Pars.	0	2-D Coord. Diffs.	0
Scale Parameters	0	3-D Coords.	0
Constant Pars.	0	3-D Coord. Diffs.	531
Rotation Pars.	0		
Translation Pars.	0		
	-----		-----
Total Parameters	232	Total Observations	531
Degrees of Freedom =		299	

SUMMARY OF SELECTED OPTIONS

OPTION	SELECTION
Computation Mode	Adjustment
Maximum Iterations	5
Convergence Criterion	0.00100
Confidence Level for Statistics	95.000
Covariance Matrix Computation	Connected Portion Only
Residual Rejection Criterion	Tau Max
Confidence Region Types	3D Station Relative
Relative Confidence Regions	Connected Only
Variance Factor (VF) Known	Yes
CMULT (Multiply Parm Cov With VF)	Yes
RMULT (Multiply Res Cov With VF)	No
Force Convergence in Max Iters	Yes
Distances Affect 3D	No
Full Inverse Computed	No
Normals Reordered	Yes
Coordinates Generated	No
Geoid Interpolation Method	Bi-Linear

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
NEO	000	1	4669067.407 0.015	776174.287 0.015	1756.131 0.006	UTM 11
SFMC		1	1.00053861	2 14 32.826215	UTM 11	
NEO	000	10	4655412.675 0.016	777763.761 0.016	1645.377 0.008	UTM 11
SFMC		10	1.00054947	2 14 44.318945	UTM 11	
NEO	000	11	4658649.743 0.015	778351.697 0.015	1633.716 0.007	UTM 11
SFMC		11	1.00055349	2 15 9.661886	UTM 11	
NEO	000	12	4659039.755 0.015	778306.837 0.015	1633.018 0.007	UTM 11
SFMC		12	1.00055318	2 15 9.354662	UTM 11	
NEO	000	13	4664104.609 0.015	778210.655 0.015	1639.947 0.007	UTM 11
SFMC		13	1.00055251	2 15 19.508282	UTM 11	
NEO	000	14	4664328.450 0.016	768899.542 0.016	1996.866 0.009	UTM 11
SFMC		14	1.00048981	2 10 48.911212	UTM 11	
NEO	000	15	4664447.321 0.015	775275.813 0.015	1769.123 0.007	UTM 11
SFMC		15	1.00053252	2 13 54.916516	UTM 11	
NEO	000	16	4664807.418 0.015	774179.181 0.015	1868.074 0.007	UTM 11
SFMC		16	1.00052510	2 13 23.886932	UTM 11	
NEO	000	17	4663574.786 0.015	774506.265 0.015	1768.324 0.007	UTM 11
SFMC		17	1.00052731	2 13 30.301851	UTM 11	
NEO	000	18	4663424.902 0.015	774428.494 0.015	1777.632 0.007	UTM 11
SFMC		18	1.00052679	2 13 27.659230	UTM 11	
NEO	000	19	4663199.320 0.015	773301.253 0.015	1824.712 0.008	UTM 11
SFMC		19	1.00051919	2 12 54.272973	UTM 11	
NEO	000	2	4660766.957 0.015	778278.918 0.015	1622.770 0.006	UTM 11
SFMC		2	1.00055299	2 15 12.958114	UTM 11	
NEO	000	20	4663263.050 0.015	773983.747 0.015	1791.967 0.008	UTM 11
SFMC		20	1.00052379	2 13 14.302878	UTM 11	
NEO	000	21	4662512.004 0.015	772906.850 0.015	1849.971 0.008	UTM 11
SFMC		21	1.00051654	2 12 41.066051	UTM 11	
NEO	000	22	4661960.911 0.015	772953.338 0.015	1878.995 0.008	UTM 11
SFMC		22	1.00051685	2 12 41.036391	UTM 11	
NEO	000	23	4662437.650 0.015	772920.655 0.015	1847.534 0.008	UTM 11
SFMC		23	1.00051663	2 12 41.281326	UTM 11	
NEO	000	24	4661865.073 0.015	772940.206 0.015	1878.877 0.008	UTM 11
SFMC		24	1.00051676	2 12 40.413800	UTM 11	
NEO	000	25	4664769.206	770359.822	2080.594	UTM 11

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
			0.016	0.016	0.009	
SFMC		25	1.00049950	2 11 32.539495	UTM 11	
NEO	000	2536.65	4675008.600	801985.581	1438.808	UTM 11
			0.018	0.018	0.015	
SFMC		2536.65	1.00072227	2 27 21.892725	UTM 11	
NEO	000	26	4660357.803	772087.800	1861.971	UTM 11
			0.016	0.016	0.008	
SFMC		26	1.00051105	2 12 11.838743	UTM 11	
NEO	000	27	4660413.270	772556.953	1849.485	UTM 11
			0.015	0.015	0.008	
SFMC		27	1.00051419	2 12 25.624248	UTM 11	
NEO	000	28	4659550.845	771687.899	1901.132	UTM 11
			0.016	0.016	0.009	
SFMC		28	1.00050837	2 11 58.192224	UTM 11	
NEO	000	29	4658738.503	771441.860	1850.917	UTM 11
			0.016	0.016	0.009	
SFMC		29	1.00050673	2 11 49.011896	UTM 11	
NEO	000	3	4669188.999	777577.178	1718.418	UTM 11
			0.015	0.015	0.007	
SFMC		3	1.00054817	2 15 14.051417	UTM 11	
NEO	000	30	4657966.383	771698.912	1840.058	UTM 11
			0.016	0.016	0.009	
SFMC		30	1.00050845	2 11 54.558905	UTM 11	
NEO	000	31	4658214.640	771836.694	1829.758	UTM 11
			0.016	0.016	0.009	
SFMC		31	1.00050937	2 11 59.183369	UTM 11	
NEO	000	32	4657897.339	770897.568	1858.794	UTM 11
			0.016	0.016	0.010	
SFMC		32	1.00050310	2 11 31.094813	UTM 11	
NEO	000	33	4664820.495	774166.774	1870.990	UTM 11
			0.015	0.015	0.007	
SFMC		33	1.00052502	2 13 23.558538	UTM 11	
NEO	000	34	4658015.334	769195.074	1830.379	UTM 11
			0.017	0.017	0.010	
SFMC		34	1.00049178	2 10 41.900312	UTM 11	
NEO	000	35	4658555.053	768629.219	1826.721	UTM 11
			0.017	0.017	0.011	
SFMC		35	1.00048803	2 10 26.783034	UTM 11	
NEO	000	36	4655021.622	768306.364	1784.484	UTM 11
			0.018	0.018	0.012	
SFMC		36	1.00048591	2 10 8.694071	UTM 11	
NEO	000	37	4664673.499	777195.738	1668.044	UTM 11
			0.015	0.015	0.007	
SFMC		37	1.00054557	2 14 51.406082	UTM 11	
NEO	000	38	4663930.229	774938.237	1781.375	UTM 11
			0.015	0.015	0.007	
SFMC		38	1.00053023	2 13 43.777637	UTM 11	
NEO	000	39	4662421.318	772673.841	1860.487	UTM 11
			0.015	0.015	0.008	
SFMC		39	1.00051497	2 12 34.056501	UTM 11	
NEO	000	4	4660551.956	777791.624	1635.755	UTM 11
			0.015	0.015	0.007	

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
SFMC		4	1.00054965	2 14 58.235209	UTM 11	
NEO	000	40	4662496.606 0.015	778286.515 0.015	1630.939 0.007	UTM 11
SFMC		40	1.00055303	2 15 17.602717	UTM 11	
NEO	000	41	4662906.051 0.015	772312.072 0.015	1902.636 0.008	UTM 11
SFMC		41	1.00051255	2 12 24.740210	UTM 11	
NEO	000	42	4663034.379 0.016	771834.261 0.016	1920.040 0.008	UTM 11
SFMC		42	1.00050935	2 12 11.151269	UTM 11	
NEO	000	43	4663175.990 0.016	771562.085 0.016	1938.701 0.008	UTM 11
SFMC		43	1.00050753	2 12 3.581097	UTM 11	
NEO	000	44	4663755.314 0.016	770975.908 0.016	1998.733 0.009	UTM 11
SFMC		44	1.00050361	2 11 47.958577	UTM 11	
NEO	000	45	4664088.272 0.016	770849.689 0.016	2020.302 0.009	UTM 11
SFMC		45	1.00050277	2 11 45.112515	UTM 11	
NEO	000	46	4664337.667 0.016	770782.240 0.016	2029.276 0.009	UTM 11
SFMC		46	1.00050232	2 11 43.769370	UTM 11	
NEO	000	47	4654910.467 0.018	768376.162 0.018	1783.524 0.012	UTM 11
SFMC		47	1.00048637	2 10 10.447464	UTM 11	
NEO	000	48	4664788.216 0.016	770412.865 0.016	2084.614 0.009	UTM 11
SFMC		48	1.00049986	2 11 34.131918	UTM 11	
NEO	000	4837.22	4679793.747 0.019	800723.814 0.019	1424.664 0.016	UTM 11
SFMC		4837.22	1.00071290	2 26 58.327479	UTM 11	
NEO	000	49	4664703.784 0.016	769632.760 0.016	2036.368 0.009	UTM 11
SFMC		49	1.00049467	2 11 11.198062	UTM 11	
NEO	000	5	4660196.894 0.015	777133.645 0.015	1654.635 0.007	UTM 11
SFMC		5	1.00054516	2 14 38.193281	UTM 11	
NEO	000	50	4666468.424 0.016	769421.975 0.016	2224.710 0.009	UTM 11
SFMC		50	1.00049327	2 11 9.432810	UTM 11	
NEO	000	51	4664548.611 0.017	767801.264 0.016	1923.353 0.010	UTM 11
SFMC		51	1.00048256	2 10 17.464130	UTM 11	
NEO	000	52	4668679.862 0.017	767570.806 0.016	1995.003 0.010	UTM 11
SFMC		52	1.00048103	2 10 20.925915	UTM 11	
NEO	000	53	4658301.551 0.015	777993.108 0.015	1643.269 0.007	UTM 11
SFMC		53	1.00055103	2 14 58.349633	UTM 11	
NEO	000	54	4658281.166 0.015	777548.083 0.015	1652.111 0.007	UTM 11
SFMC		54	1.00054799	2 14 45.362984	UTM 11	

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
NEO	000	55	4658523.659 0.017	768109.250 0.017	1811.312 0.011	UTM 11
SFMC		55	1.00048460	2 10 11.588129	UTM 11	
NEO	000	56	4657754.766 0.015	776817.082 0.015	1672.518 0.007	UTM 11
SFMC		56	1.00054300	2 14 22.778351	UTM 11	
NEO	000	57	4665608.146 0.015	777251.550 0.015	1677.145 0.007	UTM 11
SFMC		57	1.00054595	2 14 55.415426	UTM 11	
NEO	000	58	4669192.718 0.015	777481.440 0.015	1721.520 0.007	UTM 11
SFMC		58	1.00054751	2 15 11.268733	UTM 11	
NEO	000	59	4657842.577 0.016	772328.476 0.016	1811.873 0.009	UTM 11
SFMC		59	1.00051267	2 12 12.548322	UTM 11	
NEO	000	6	4660103.514 0.015	777031.741 0.015	1659.695 0.007	UTM 11
SFMC		6	1.00054446	2 14 34.991976	UTM 11	
NEO	000	60	4669097.310 0.015	775408.126 0.015	1809.539 0.006	UTM 11
SFMC		60	1.00053341	2 14 10.556921	UTM 11	
NEO	000	61	4654301.580 0.016	777580.356 0.016	1652.790 0.009	UTM 11
SFMC		61	1.00054822	2 14 36.164011	UTM 11	
NEO	000	62	4657519.411 0.015	778386.472 0.015	1626.992 0.007	UTM 11
SFMC		62	1.00055373	2 15 7.783700	UTM 11	
NEO	000	7	4659520.382 0.015	776253.158 0.015	1701.228 0.007	UTM 11
SFMC		7	1.00053916	2 14 10.869133	UTM 11	
NEO	000	8	4659525.817 0.015	776240.898 0.015	1702.434 0.007	UTM 11
SFMC		8	1.00053908	2 14 10.526449	UTM 11	
NEO	000	9	4666329.576 0.015	777207.764 0.015	1685.215 0.007	UTM 11
SFMC		9	1.00054565	2 14 55.980049	UTM 11	
NEO	000	901	4654104.637 0.018	768958.251 0.018	1769.480 0.012	UTM 11
SFMC		901	1.00049022	2 10 25.363461	UTM 11	
NEO	000	902	4655426.596 0.016	777792.434 0.016	1643.959 0.008	UTM 11
SFMC		902	1.00054967	2 14 45.187051	UTM 11	
NEO	000	903	4669118.036 0.015	775977.539 0.015	1769.654 0.006	UTM 11
SFMC		903	1.00053727	2 14 27.216762	UTM 11	
NEO	000	904	4664517.962 0.016	770673.743 0.016	2051.559 0.009	UTM 11
SFMC		904	1.00050159	2 11 41.058266	UTM 11	
NEO	000	905	4662506.518 0.015	772442.391 0.015	1878.307 0.008	UTM 11
SFMC		905	1.00051342	2 12 27.533175	UTM 11	
NEO	000	906	4663735.263	776940.080	1696.320	UTM 11

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
			0.015	0.015	0.007	
SFMC		906	1.00054383	2 14 41.570576	UTM 11	
NEO	000	907	4660645.698	777903.376	1632.510	UTM 11
			0.015	0.015	0.007	
SFMC		907	1.00055042	2 15 1.724961	UTM 11	
NEO	000	908	4657783.785	777201.804	1664.042	UTM 11
			0.015	0.015	0.007	
SFMC		908	1.00054563	2 14 34.032448	UTM 11	
NEO	000	909	4657984.031	770754.891	1869.087	UTM 11
			0.016	0.016	0.010	
SFMC		909	1.00050215	2 11 27.163235	UTM 11	
NEO	000	910	4660891.713	773005.627	1845.053	UTM 11
			0.015	0.015	0.008	
SFMC		910	1.00051721	2 12 39.875443	UTM 11	
NEO	000	A 116	4700733.870	797094.798	1346.903	UTM 11
			0.024	0.024	0.022	
SFMC		A 116	1.00068615	2 26 9.813190	UTM 11	
NEO	000	C 116	4693415.119	799051.501	1371.225	UTM 11
			0.025	0.025	0.022	
SFMC		C 116	1.00070052	2 26 47.108211	UTM 11	
NEO	001	H 29	4658579.039	767798.963	1810.821	UTM 11
			0.016	0.016	0.000	
SFMC		H 29	1.00048255	2 10 2.703022	UTM 11	
NEO	110	P007	4621451.817	681350.115	1702.921	UTM 11
			0.000	0.000	0.052	
SFMC		P007	1.00000472	1 27 5.346030	UTM 11	
NEO	110	P100	4640519.643	807616.411	1898.783	UTM 11
			0.000	0.000	0.016	
SFMC		P100	1.00076461	2 28 28.948931	UTM 11	

Adjusted PLH Coordinates:

CODE	FFF	STATION		LATITUDE STD DEV	LONGITUDE STD DEV	ELIP-HEIGHT STD DEV
PLH	000	1	N 42 07	30.26309 0.015	W113 39 32.08715 0.015	1741.597 0.006
PLH	000	10	N 42 00	6.26783 0.016	W113 38 46.28638 0.016	1630.533 0.008
PLH	000	11	N 42 01	50.29819 0.015	W113 38 15.24843 0.015	1618.900 0.007
PLH	000	12	N 42 02	2.97919 0.015	W113 38 16.53000 0.015	1618.209 0.007
PLH	000	13	N 42 04	47.03958 0.015	W113 38 12.04900 0.015	1625.240 0.007
PLH	000	14	N 42 05	5.95762 0.016	W113 44 56.26385 0.016	1982.239 0.009
PLH	000	15	N 42 05	1.85444 0.015	W113 40 18.98579 0.015	1754.474 0.007
PLH	000	16	N 42 05	14.89118 0.015	W113 41 6.03034 0.015	1853.447 0.007
PLH	000	17	N 42 04	34.58075 0.015	W113 40 53.89816 0.015	1753.659 0.007
PLH	000	18	N 42 04	29.82693 0.015	W113 40 57.53013 0.015	1762.964 0.007
PLH	000	19	N 42 04	23.93928 0.015	W113 41 46.88501 0.015	1810.048 0.008
PLH	000	2	N 42 02	58.92053 0.015	W113 38 14.79153 0.015	1607.990 0.006
PLH	000	20	N 42 04	25.14661 0.015	W113 41 17.12582 0.015	1777.300 0.008
PLH	000	21	N 42 04	2.18450 0.015	W113 42 5.17369 0.015	1835.292 0.008
PLH	000	22	N 42 03	44.28761 0.015	W113 42 4.07869 0.015	1864.301 0.008
PLH	000	23	N 42 03	59.76041 0.015	W113 42 4.69869 0.015	1832.854 0.008
PLH	000	24	N 42 03	41.20175 0.015	W113 42 4.80985 0.015	1864.181 0.008
PLH	000	25	N 42 05	18.42064 0.016	W113 43 52.07240 0.016	2065.980 0.009
PLH	000	2536.65	N 42 10	8.26693 0.018	W113 20 39.00388 0.018	1424.124 0.015
PLH	000	26	N 42 02	53.47487 0.016	W113 42 44.35687 0.016	1847.243 0.008
PLH	000	27	N 42 02	54.68555 0.015	W113 42 23.88877 0.015	1834.758 0.008
PLH	000	28	N 42 02	27.85095 0.016	W113 43 3.07085 0.016	1886.389 0.009
PLH	000	29	N 42 02	1.86072 0.016	W113 43 15.10863 0.016	1836.156 0.009
PLH	000	3	N 42 07	32.41611 0.015	W113 38 30.88182 0.015	1703.869 0.007
PLH	000	30	N 42 01	36.54739 0.016	W113 43 5.23440 0.016	1825.278 0.009
PLH	000	31	N 42 01	44.41235 0.016	W113 42 58.83849 0.016	1814.983 0.009

Adjusted PLH Coordinates:

CODE	FFF	STATION		LATITUDE STD DEV	LONGITUDE STD DEV	ELIP-HEIGHT STD DEV
PLH	000	32	N 42 01	35.30675 0.016	W113 43 40.14037 0.016	1844.014 0.010
PLH	000	33	N 42 05	15.33005 0.015	W113 41 6.54742 0.015	1856.363 0.007
PLH	000	34	N 42 01	41.22927 0.017	W113 44 53.86208 0.017	1815.608 0.010
PLH	000	35	N 42 01	59.39693 0.017	W113 45 17.54089 0.017	1811.964 0.011
PLH	000	36	N 42 00	5.40936 0.018	W113 45 37.37289 0.018	1769.655 0.012
PLH	000	37	N 42 05	6.74486 0.015	W113 38 55.17569 0.015	1653.371 0.007
PLH	000	38	N 42 04	45.54234 0.015	W113 40 34.52894 0.015	1766.715 0.007
PLH	000	39	N 42 03	59.54013 0.015	W113 42 15.44823 0.015	1845.808 0.008
PLH	000	4	N 42 02	52.58153 0.015	W113 38 36.32054 0.015	1620.977 0.007
PLH	000	40	N 42 03	54.89567 0.015	W113 38 11.50437 0.015	1616.193 0.007
PLH	000	41	N 42 04	15.68245 0.015	W113 42 30.35290 0.015	1887.973 0.008
PLH	000	42	N 42 04	20.43196 0.016	W113 42 50.89724 0.016	1905.381 0.008
PLH	000	43	N 42 04	25.35472 0.016	W113 43 2.48594 0.016	1924.047 0.008
PLH	000	44	N 42 04	44.83621 0.016	W113 43 26.98869 0.016	1984.099 0.009
PLH	000	45	N 42 04	55.77089 0.016	W113 43 31.91840 0.016	2005.673 0.009
PLH	000	46	N 42 05	3.92765 0.016	W113 43 34.43385 0.016	2014.653 0.009
PLH	000	47	N 42 00	1.72547 0.018	W113 45 34.52636 0.018	1768.693 0.012
PLH	000	48	N 42 05	18.97027 0.016	W113 43 49.73558 0.016	2070.001 0.009
PLH	000	4837.22	N 42 12	44.84900 0.019	W113 21 24.98575 0.019	1410.023 0.016
PLH	000	49	N 42 05	17.20269 0.016	W113 44 23.77807 0.016	2021.752 0.009
PLH	000	5	N 42 02	41.92440 0.015	W113 39 5.49891 0.015	1639.857 0.007
PLH	000	50	N 42 06	14.58618 0.016	W113 44 30.01168 0.016	2210.131 0.009
PLH	000	51	N 42 05	14.43537 0.017	W113 45 43.62918 0.016	1908.722 0.010
PLH	000	52	N 42 07	28.45333 0.017	W113 45 46.83621 0.016	1980.428 0.010
PLH	000	53	N 42 01	39.48418 0.015	W113 38 31.41041 0.015	1628.450 0.007
PLH	000	54	N 42 01	39.38975 0.015	W113 38 50.76507 0.015	1637.295 0.007

Adjusted PLH Coordinates:

CODE	FFF	STATION		LATITUDE STD DEV	LONGITUDE STD DEV	ELIP-HEIGHT STD DEV
PLH	000	55	N 42 01	59.01902 0.017	W113 45 40.17060 0.017	1796.554 0.011
PLH	000	56	N 42 01	23.27771 0.015	W113 39 23.39420 0.015	1657.705 0.007
PLH	000	57	N 42 05	36.92652 0.015	W113 38 51.15588 0.015	1662.498 0.007
PLH	000	58	N 42 07	32.65844 0.015	W113 38 35.03813 0.015	1706.973 0.007
PLH	000	59	N 42 01	31.75650 0.016	W113 42 38.10834 0.016	1797.086 0.009
PLH	000	6	N 42 02	39.03106 0.015	W113 39 10.08293 0.015	1644.916 0.007
PLH	000	60	N 42 07	32.20078 0.015	W113 40 5.34943 0.015	1795.015 0.006
PLH	000	61	N 41 59	30.53609 0.016	W113 38 56.13438 0.016	1637.935 0.009
PLH	000	62	N 42 01	13.66741 0.015	W113 38 15.66882 0.015	1612.166 0.007
PLH	000	7	N 42 02	21.14160 0.015	W113 39 44.88190 0.015	1686.448 0.007
PLH	000	8	N 42 02	21.33301 0.015	W113 39 45.40502 0.015	1687.654 0.007
PLH	000	9	N 42 06	0.33334 0.015	W113 38 51.82759 0.015	1670.589 0.007
PLH	000	901	N 41 59	34.92463 0.018	W113 45 10.59155 0.018	1754.630 0.012
PLH	000	902	N 42 00	6.68203 0.016	W113 38 45.01840 0.016	1629.115 0.008
PLH	000	903	N 42 07	32.15117 0.015	W113 39 40.55567 0.015	1755.125 0.006
PLH	000	904	N 42 05	9.89850 0.016	W113 43 38.84837 0.016	2036.940 0.009
PLH	000	905	N 42 04	2.58696 0.015	W113 42 25.36031 0.015	1863.633 0.008
PLH	000	906	N 42 04	36.70060 0.015	W113 39 7.88302 0.015	1681.625 0.007
PLH	000	907	N 42 02	55.47366 0.015	W113 38 31.30749 0.015	1617.731 0.007
PLH	000	908	N 42 01	23.72964 0.015	W113 39 6.64394 0.015	1649.227 0.007
PLH	000	909	N 42 01	38.28977 0.016	W113 43 46.19086 0.016	1854.311 0.010
PLH	000	910	N 42 03	9.61246 0.015	W113 42 3.60066 0.015	1830.333 0.008
PLH	000	A 116	N 42 24	7.42235 0.024	W113 23 24.24036 0.024	1332.398 0.022
PLH	000	C 116	N 42 20	7.90955 0.025	W113 22 12.47482 0.025	1356.709 0.022
PLH	001	H 29	N 42 02	1.19217 0.016	W113 45 53.55290 0.016	1796.065 0.000
PLH	110	P007	N 41 43	27.10566 0.000	W114 49 10.91306 0.000	1687.071 0.052

Adjusted PLH Coordinates:

CODE	FFF	STATION		LATITUDE STD DEV		LONGITUDE STD DEV	ELIP-HEIGHT STD DEV
PLH	110	P100	N 41 51	24.46618 0.000	W113 17	39.12368 0.000	1884.019 0.016

Geoid Values:

CODE	NAME	N/S DEFLECTION			E/W DEFLECTION			UNDULATION	
GEOI	1	-	0	0	5.1	+	0 0	1.8	-14.533
GEOI	10	-	0	0	2.0	+	0 0	0.0	-14.844
GEOI	11	-	0	0	3.5	+	0 0	1.4	-14.816
GEOI	12	-	0	0	3.5	+	0 0	1.5	-14.809
GEOI	13	-	0	0	6.1	+	0 0	2.3	-14.707
GEOI	14	-	0	0	4.0	-	0 0	0.7	-14.628
GEOI	15	-	0	0	5.8	+	0 0	2.2	-14.649
GEOI	16	-	0	0	5.7	+	0 0	1.7	-14.627
GEOI	17	-	0	0	5.7	+	0 0	1.8	-14.665
GEOI	18	-	0	0	5.7	+	0 0	1.8	-14.668
GEOI	19	-	0	0	5.6	+	0 0	1.2	-14.664
GEOI	2	-	0	0	4.3	+	0 0	2.1	-14.780
GEOI	20	-	0	0	5.7	+	0 0	1.7	-14.667
GEOI	21	-	0	0	5.5	+	0 0	1.3	-14.679
GEOI	22	-	0	0	5.5	+	0 0	1.3	-14.694
GEOI	23	-	0	0	5.5	+	0 0	1.3	-14.680
GEOI	24	-	0	0	5.5	+	0 0	1.4	-14.696
GEOI	25	-	0	0	4.7	-	0 0	0.2	-14.614
GEOI	2536.65	-	0	0	2.1	-	0 0	0.1	-14.684
GEOI	26	-	0	0	5.1	+	0 0	0.8	-14.728
GEOI	27	-	0	0	5.2	+	0 0	1.2	-14.727
GEOI	28	-	0	0	4.8	+	0 0	0.8	-14.743
GEOI	29	-	0	0	4.8	+	0 0	0.8	-14.761
GEOI	3	-	0	0	5.5	+	0 0	2.0	-14.549
GEOI	30	-	0	0	4.8	+	0 0	0.8	-14.780
GEOI	31	-	0	0	4.8	+	0 0	0.8	-14.776
GEOI	32	-	0	0	4.9	+	0 0	0.5	-14.779
GEOI	33	-	0	0	5.7	+	0 0	1.7	-14.627
GEOI	34	-	0	0	4.8	+	0 0	0.3	-14.771
GEOI	35	-	0	0	4.7	+	0 0	0.3	-14.757
GEOI	36	-	0	0	4.0	+	0 0	0.4	-14.829
GEOI	37	-	0	0	6.0	+	0 0	2.5	-14.673
GEOI	38	-	0	0	5.8	+	0 0	1.8	-14.660
GEOI	39	-	0	0	5.5	+	0 0	1.3	-14.678
GEOI	4	-	0	0	4.4	+	0 0	1.9	-14.778
GEOI	40	-	0	0	5.2	+	0 0	2.3	-14.746
GEOI	41	-	0	0	5.5	+	0 0	1.2	-14.663
GEOI	42	-	0	0	5.5	+	0 0	0.7	-14.659
GEOI	43	-	0	0	5.4	+	0 0	0.7	-14.654
GEOI	44	-	0	0	4.8	+	0 0	0.8	-14.634
GEOI	45	-	0	0	4.8	-	0 0	0.0	-14.629
GEOI	46	-	0	0	4.8	-	0 0	0.1	-14.623
GEOI	47	-	0	0	4.0	+	0 0	0.5	-14.831
GEOI	48	-	0	0	4.7	-	0 0	0.2	-14.613
GEOI	4837.22	-	0	0	1.2	-	0 0	0.4	-14.641
GEOI	49	-	0	0	4.4	-	0 0	0.2	-14.615
GEOI	5	-	0	0	4.6	+	0 0	1.8	-14.778
GEOI	50	-	0	0	3.7	-	0 0	0.6	-14.579
GEOI	51	-	0	0	3.5	-	0 0	1.2	-14.631
GEOI	52	-	0	0	1.9	-	0 0	2.8	-14.575
GEOI	53	-	0	0	3.6	+	0 0	1.2	-14.819
GEOI	54	-	0	0	3.8	+	0 0	1.2	-14.816
GEOI	55	-	0	0	4.6	+	0 0	0.1	-14.758

Geoid Values:

CODE	NAME	N/S DEFLECTION			E/W DEFLECTION			UNDULATION		
GEOI	56	-	0	0	3.0	+	0	0	1.0	-14.813
GEOI	57	-	0	0	6.0	+	0	0	2.5	-14.648
GEOI	58	-	0	0	5.5	+	0	0	2.0	-14.547
GEOI	59	-	0	0	4.8	+	0	0	0.8	-14.787
GEOI	6	-	0	0	4.6	+	0	0	1.8	-14.778
GEOI	60	-	0	0	4.8	+	0	0	1.7	-14.523
GEOI	61	-	0	0	2.1	-	0	0	0.4	-14.855
GEOI	62	-	0	0	2.2	+	0	0	1.1	-14.826
GEOI	7	-	0	0	4.2	+	0	0	1.4	-14.780
GEOI	8	-	0	0	4.2	+	0	0	1.4	-14.780
GEOI	9	-	0	0	6.0	+	0	0	2.4	-14.626
GEOI	901	-	0	0	4.1	+	0	0	0.6	-14.849
GEOI	902	-	0	0	2.0	+	0	0	0.0	-14.844
GEOI	903	-	0	0	5.0	+	0	0	1.7	-14.530
GEOI	904	-	0	0	4.8	-	0	0	0.1	-14.619
GEOI	905	-	0	0	5.5	+	0	0	1.3	-14.674
GEOI	906	-	0	0	6.0	+	0	0	2.5	-14.695
GEOI	907	-	0	0	4.4	+	0	0	1.9	-14.778
GEOI	908	-	0	0	2.8	+	0	0	1.0	-14.816
GEOI	909	-	0	0	4.9	+	0	0	0.5	-14.777
GEOI	910	-	0	0	5.2	+	0	0	1.2	-14.720
GEOI	A 116	+	0	0	0.7	+	0	0	0.2	-14.505
GEOI	C 116	-	0	0	1.3	+	0	0	0.9	-14.516
GEOI	H 29	-	0	0	4.5	+	0	0	0.1	-14.756
GEOI	P007	-	0	0	5.6	-	0	0	0.5	-15.850
GEOI	P100	-	0	0	12.9	+	0	0	3.6	-14.764

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
GROUP:	071511.ASC	, obs#:	1			
DXCT		1	2536.65	25263.27820 0.028	-0.000 0.025	-0.008 0.01
DYCT		1	2536.65	-7160.74600 0.028	-0.009 0.025	-0.374 0.35
DZCT		1	2536.65	3402.40460 0.028	0.001 0.025	0.045 0.04
GROUP:	071511.ASC	, obs#:	2			
DXCT		2	2536.65	25847.27000 0.029	-0.003 0.026	-0.129 0.12
DYCT		2	2536.65	-1397.21590 0.030	-0.001 0.026	-0.035 0.03
DZCT		2	2536.65	9706.67890 0.030	0.006 0.026	0.221 0.21
GROUP:	071511.ASC	, obs#:	3			
DXCT		1	4837.22	25584.89080 0.029	0.003 0.025	0.110 0.10
DYCT		1	4837.22	-3753.26980 0.029	-0.006 0.025	-0.258 0.24
DZCT		1	4837.22	6973.30780 0.029	-0.003 0.025	-0.128 0.12
GROUP:	071511.ASC	, obs#:	4			
DXCT		2	4837.22	26168.88470 0.031	-0.003 0.028	-0.091 0.09
DYCT		2	4837.22	2010.25400 0.031	0.008 0.028	0.293 0.28
DZCT		2	4837.22	13277.57710 0.031	0.007 0.028	0.233 0.22
GROUP:	071511.ASC	, obs#:	5			
DXCT		1	H 29	-10783.43740 0.014	-0.004 0.013	-0.336 0.32
DYCT		1	H 29	-2741.58720 0.014	-0.002 0.013	-0.173 0.17
DZCT		1	H 29	-7501.46520 0.014	-0.001 0.013	-0.088 0.08
GROUP:	071511.ASC	, obs#:	6			
DXCT		2	H 29	-10199.45630 0.011	0.003 0.010	0.334 0.30
DYCT		2	H 29	3021.94800 0.011	0.001 0.010	0.104 0.09
DZCT		2	H 29	-1197.18970 0.011	0.002 0.010	0.245 0.22
GROUP:	071611.ASC	, obs#:	7			
DXCT		1	10	-2685.08110 0.015	-0.002 0.014	-0.113 0.11
DYCT		1	10	-8755.99740 0.015	-0.009 0.014	-0.630 0.63
DZCT		1	10	-10247.33700 0.015	0.013 0.014	0.979 0.97
GROUP:	071611.ASC	, obs#:	8			
DXCT		2	10	-2101.09430 0.006	0.000 0.002	0.128 0.05

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DYCT		2	10	-2992.46900 0.006	0.001 0.002	0.659 0.27
DZCT		2	10	-3943.04240 0.006	-0.002 0.002	-0.996 0.42
GROUP: 071611.ASC ,obs#: 9						
DXCT		1	11	-1165.49150 0.011	0.003 0.011	0.285 0.30
DYCT		1	11	-7065.94930 0.011	-0.002 0.011	-0.191 0.20
DZCT		1	11	-7869.81750 0.011	0.003 0.011	0.266 0.28
GROUP: 071611.ASC ,obs#: 10						
DXCT		2	11	-581.49960 0.002	-0.000 0.000	-0.261 0.06
DYCT		2	11	-1302.41310 0.003	0.000 0.001	0.208 0.05
DZCT		2	11	-1565.53540 0.003	-0.000 0.001	-0.278 0.08
GROUP: 071611.ASC ,obs#: 11						
DXCT		1	12	-1087.23410 0.011	0.002 0.011	0.155 0.16
DYCT		1	12	-6813.60430 0.011	-0.006 0.011	-0.564 0.59
DZCT		1	12	-7579.59870 0.011	0.009 0.011	0.830 0.87
GROUP: 071611.ASC ,obs#: 12						
DXCT		2	12	-503.24380 0.002	-0.000 0.000	-0.063 0.01
DYCT		2	12	-1050.07220 0.002	0.000 0.000	0.671 0.16
DZCT		2	12	-1275.31040 0.002	-0.000 0.000	-0.897 0.22
GROUP: 071611.ASC ,obs#: 13						
DXCT		1	13	364.96900 0.006	0.001 0.005	0.171 0.15
DYCT		1	13	-3752.57760 0.006	-0.007 0.005	-1.315 1.24
DZCT		1	13	-3815.56980 0.006	0.018 0.005	3.657 3.36
GROUP: 071611.ASC ,obs#: 14						
DXCT		2	13	948.95860 0.004	-0.000 0.002	-0.081 0.05
DYCT		2	13	2010.95130 0.004	0.003 0.002	1.409 0.87
DZCT		2	13	2488.73460 0.004	-0.007 0.002	-3.682 2.22
GROUP: 071611.ASC ,obs#: 15						
DXCT		1	906	-913.53260 0.006	-0.001 0.005	-0.155 0.14
DYCT		1	906	-3471.95310 0.006	0.001 0.005	0.206 0.20
DZCT		1	906	-4014.61360 0.015	0.015	2.917

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.006	0.005	2.69
GROUP:	071611.ASC	, obs#:	16			
DXCT	2		906	-329.54520 0.004	0.000 0.002	0.240 0.14
DYCT	2		906	2291.58650 0.004	-0.000 0.002	-0.050 0.03
DZCT	2		906	2289.68570 0.004	-0.006 0.002	-2.894 1.78
GROUP:	071611.ASC	, obs#:	17			
DXCT	1		15	-2223.73650 0.005	-0.005 0.004	-1.349 1.01
DYCT	1		15	-2388.87000 0.005	0.008 0.004	2.129 1.64
DZCT	1		15	-3389.60590 0.005	0.009 0.004	2.649 2.01
GROUP:	071611.ASC	, obs#:	18			
DXCT	2		15	-1639.75750 0.005	0.005 0.004	1.349 1.02
DYCT	2		15	3374.68400 0.005	-0.008 0.004	-2.123 1.65
DZCT	2		15	2914.69220 0.005	-0.010 0.004	-2.647 2.03
GROUP:	071611.ASC	, obs#:	19			
DXCT	1		16	-3135.42500 0.005	-0.003 0.003	-0.799 0.54
DYCT	1		16	-1774.81670 0.005	0.006 0.003	1.841 1.27
DZCT	1		16	-3024.66650 0.005	0.008 0.003	2.631 1.80
GROUP:	071611.ASC	, obs#:	20			
DXCT	2		16	-2551.44270 0.006	0.004 0.005	0.801 0.66
DYCT	2		16	3988.73660 0.006	-0.009 0.005	-1.866 1.54
DZCT	2		16	3279.63350 0.006	-0.013 0.005	-2.644 2.18
GROUP:	071611.ASC	, obs#:	21			
DXCT	1		17	-3185.15370 0.006	0.000 0.005	0.050 0.04
DYCT	1		17	-2582.59020 0.006	0.000 0.005	0.085 0.07
DZCT	1		17	-4014.90900 0.006	0.021 0.005	4.475 3.68
GROUP:	071611.ASC	, obs#:	22			
DXCT	2		17	-2601.16470 0.005	-0.000 0.003	-0.048 0.03
DYCT	2		17	3180.94880 0.005	-0.000 0.003	-0.051 0.03
DZCT	2		17	2289.40560 0.005	-0.014 0.003	-4.474 3.08

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
GROUP: 071611.ASC ,obs#: 23						
DXCT		1	18	-3303.89520 0.006	-0.000 0.005	-0.025 0.02
DYCT		1	18	-2645.40660 0.006	-0.002 0.005	-0.351 0.29
DZCT		1	18	-4117.57790 0.006	0.025 0.005	5.030 4.20
^^^^^^^^^^^^^^^^^^^^^^^^^^^^						
GROUP: 071611.ASC ,obs#: 24						
DXCT		2	18	-2719.90680 0.005	0.000 0.003	0.030 0.02
DYCT		2	18	3118.12880 0.005	0.001 0.003	0.414 0.28
DZCT		2	18	2186.74200 0.005	-0.016 0.003	-5.034 3.45
^^^^^^^^^^^^^^^^^^^^^^^^^^^^						
GROUP: 071611.ASC ,obs#: 25						
DXCT		1	19	-4406.08550 0.007	-0.002 0.005	-0.383 0.31
DYCT		1	19	-2332.95170 0.007	0.000 0.005	0.010 0.01
DZCT		1	19	-4220.89360 0.007	0.012 0.005	2.274 1.84
GROUP: 071611.ASC ,obs#: 26						
DXCT		2	19	-3822.10040 0.006	0.001 0.004	0.389 0.27
DYCT		2	19	3430.58670 0.006	0.000 0.004	0.022 0.02
DZCT		2	19	2083.40620 0.006	-0.009 0.004	-2.275 1.59
GROUP: 071611.ASC ,obs#: 27						
DXCT		1	20	-3759.67250 0.007	-0.003 0.005	-0.666 0.55
DYCT		1	20	-2562.79270 0.007	0.003 0.005	0.566 0.47
DZCT		1	20	-4215.17400 0.007	0.007 0.005	1.426 1.18
GROUP: 071611.ASC ,obs#: 28						
DXCT		2	20	-3175.68950 0.005	0.002 0.003	0.664 0.44
DYCT		2	20	3200.75050 0.005	-0.002 0.003	-0.544 0.37
DZCT		2	20	2089.11710 0.005	-0.005 0.003	-1.421 0.96
GROUP: 071611.ASC ,obs#: 29						
DXCT		1	21	-4979.52180 0.008	-0.005 0.006	-0.893 0.75
DYCT		1	21	-2593.01490 0.008	-0.001 0.006	-0.233 0.20
DZCT		1	21	-4702.38320 0.008	0.009 0.006	1.408 1.19
GROUP: 071611.ASC ,obs#: 30						

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DXCT		2	21	-4395.54200 0.006	0.003 0.004	0.900 0.59
DYCT		2	21	3170.52110 0.006	0.001 0.004	0.263 0.18
DZCT		2	21	1601.90980 0.006	-0.005 0.004	-1.414 0.94
GROUP: 071611.ASC ,obs#: 31						
DXCT		1	907	-963.49250 0.009	0.011 0.009	1.211 1.28
DYCT		1	907	-5683.09680 0.009	-0.002 0.009	-0.206 0.22
DZCT		1	907	-6376.74510 0.009	-0.002 0.009	-0.175 0.19
GROUP: 071611.ASC ,obs#: 32						
DXCT		2	907	-379.49270 0.001	-0.000 0.000	-0.800 0.44
DYCT		2	907	80.43990 0.001	-0.000 0.000	-0.520 0.34
DZCT		2	907	-72.46780 0.001	0.000 0.000	0.537 0.25
GROUP: 071611.ASC ,obs#: 33						
DXCT		1	4	-1094.06530 0.009	0.010 0.009	1.056 1.12
DYCT		1	4	-5693.82310 0.009	-0.001 0.009	-0.156 0.17
DZCT		1	4	-6440.85120 0.009	-0.002 0.009	-0.175 0.19
GROUP: 071611.ASC ,obs#: 34						
DXCT		2	4	-510.06680 0.001	-0.000 0.000	-0.788 0.30
DYCT		2	4	69.71400 0.001	-0.000 0.000	-0.446 0.19
DZCT		2	4	-136.57390 0.001	0.000 0.000	0.499 0.15
GROUP: 071611.ASC ,obs#: 35						
DXCT		1	5	-1802.86110 0.010	-0.009 0.009	-0.917 0.96
DYCT		1	5	-5639.20870 0.010	-0.015 0.009	-1.567 1.65
DZCT		1	5	-6672.45880 0.010	0.010 0.009	1.057 1.11
GROUP: 071611.ASC ,obs#: 36						
DXCT		2	5	-1218.88140 0.002	0.000 0.000	1.269 0.25
DYCT		2	5	124.31450 0.002	0.000 0.000	1.804 0.39
DZCT		2	5	-368.16960 0.001	-0.000 0.000	-1.344 0.24
GROUP: 071611.ASC ,obs#: 37						
DXCT		1	6	-1924.95160 0.010	-0.009 0.009	-0.962 1.01
DYCT		1	6	-5655.12250	-0.015	-1.583

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.010	0.009	1.67
DZCT		1	6	-6735.38270	0.010	1.089
				0.010	0.009	1.14
GROUP:	071611.ASC	,obs#:	38			
DXCT		2	6	-1340.97240	0.000	1.192
				0.002	0.000	0.23
DYCT		2	6	108.40040	0.001	1.753
				0.002	0.000	0.37
DZCT		2	6	-431.09310	-0.000	-1.270
				0.002	0.000	0.23
GROUP:	071611.ASC	,obs#:	39			
DXCT		1	7	-2818.97990	0.007	0.745
				0.010	0.010	0.77
DYCT		1	7	-5700.80260	-0.005	-0.462
				0.010	0.010	0.48
DZCT		1	7	-7117.58170	-0.003	-0.295
				0.010	0.010	0.30
GROUP:	071611.ASC	,obs#:	40			
DXCT		2	7	-2234.98350	-0.000	-0.717
				0.003	0.001	0.20
DYCT		2	7	62.73100	0.000	0.404
				0.003	0.001	0.12
DZCT		2	7	-813.30580	0.000	0.290
				0.003	0.001	0.08
GROUP:	071611.ASC	,obs#:	41			
DXCT		1	8	-2828.77200	0.005	0.461
				0.010	0.010	0.47
DYCT		1	8	-5693.16610	-0.008	-0.840
				0.010	0.010	0.87
DZCT		1	8	-7112.38640	-0.003	-0.306
				0.010	0.010	0.31
GROUP:	071611.ASC	,obs#:	42			
DXCT		2	8	-2244.77860	-0.000	-0.401
				0.003	0.001	0.11
DYCT		2	8	70.36350	0.001	0.794
				0.003	0.001	0.24
DZCT		2	8	-808.11060	0.000	0.278
				0.003	0.001	0.08
GROUP:	071611.ASC	,obs#:	43			
DXCT		1	902	-2654.49120	-0.001	-0.051
				0.015	0.014	0.05
DYCT		1	902	-8758.90730	-0.005	-0.342
				0.015	0.014	0.34
DZCT		1	902	-10238.78330	0.010	0.743
				0.015	0.014	0.74
GROUP:	071611.ASC	,obs#:	44			
DXCT		2	902	-2070.50340	0.000	0.058
				0.006	0.002	0.02
DYCT		2	902	-2995.37430	0.001	0.360
				0.006	0.002	0.15
DZCT		2	902	-3934.49250	-0.002	-0.751
				0.006	0.002	0.31

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
GROUP: 071711.ASC ,obs#: 45						
DXCT		1	22	-5113.87800 0.008	0.000 0.007	0.024 0.02
DYCT		1	22	-2961.69470 0.008	-0.010 0.007	-1.428 1.24
DZCT		1	22	-5092.99850 0.008	0.000 0.007	0.000 0.00
GROUP: 071711.ASC ,obs#: 46						
DXCT		2	22	-4529.88960 0.006	0.000 0.004	0.103 0.07
DYCT		2	22	2801.82870 0.006	0.005 0.004	1.417 0.98
DZCT		2	22	1211.28090 0.006	-0.000 0.004	-0.114 0.07
GROUP: 071711.ASC ,obs#: 47						
DXCT		1	23	-4988.95050 0.008	0.004 0.006	0.645 0.54
DYCT		1	23	-2641.64290 0.008	-0.004 0.006	-0.663 0.56
DZCT		1	23	-4759.54300 0.008	-0.005 0.006	-0.791 0.67
GROUP: 071711.ASC ,obs#: 48						
DXCT		2	23	-4404.95540 0.006	-0.002 0.004	-0.633 0.44
DYCT		2	23	3121.88910 0.006	0.002 0.004	0.581 0.41
DZCT		2	23	1544.72810 0.006	0.003 0.004	0.781 0.53
GROUP: 071711.ASC ,obs#: 49						
DXCT		1	24	-5154.89220 0.009	0.006 0.007	0.815 0.71
DYCT		1	24	-3013.28450 0.009	-0.001 0.007	-0.177 0.15
DZCT		1	24	-5163.77220 0.008	-0.014 0.007	-2.068 1.81
GROUP: 071711.ASC ,obs#: 50						
DXCT		2	24	-4570.89500 0.006	-0.003 0.003	-0.858 0.54
DYCT		2	24	2750.25240 0.006	0.000 0.003	0.091 0.06
DZCT		2	24	1140.48550 0.006	0.007 0.003	2.081 1.29
GROUP: 071711.ASC ,obs#: 51						
DXCT		1	910	-5381.83040 0.009	-0.006 0.008	-0.696 0.63
DYCT		1	910	-3599.44040 0.009	-0.011 0.008	-1.335 1.22
DZCT		1	910	-5910.32090 0.009	-0.010 0.008	-1.254 1.14
GROUP: 071711.ASC ,obs#: 52						
DXCT		2	910	-4797.84950 0.006	0.002 0.003	0.717 0.41

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DYCT		2	910	2164.08330 0.006	0.004 0.003	1.327 0.77
DZCT		2	910	393.94450 0.006	0.004 0.003	1.209 0.68
GROUP: 071711.ASC ,obs#: 53						
DXCT		1	26	-6379.38930 0.010	-0.002 0.009	-0.226 0.20
DYCT		1	26	-3539.46430 0.010	0.002 0.009	0.246 0.22
DZCT		1	26	-6268.81710 0.010	-0.019 0.009	-2.253 2.01
GROUP: 071711.ASC ,obs#: 54						
DXCT		2	26	-5795.40340 0.007	0.001 0.004	0.214 0.12
DYCT		2	26	2224.07720 0.007	-0.001 0.004	-0.260 0.15
DZCT		2	26	35.43440 0.007	0.008 0.004	2.254 1.31
GROUP: 071711.ASC ,obs#: 55						
DXCT		1	27	-5934.50590 0.010	-0.001 0.009	-0.107 0.10
DYCT		1	27	-3697.38610 0.010	0.004 0.009	0.511 0.47
DZCT		1	27	-6249.43180 0.010	-0.021 0.009	-2.422 2.20
GROUP: 071711.ASC ,obs#: 56						
DXCT		2	27	-5350.51850 0.006	0.000 0.003	0.095 0.05
DYCT		2	27	2066.15840 0.006	-0.002 0.003	-0.524 0.30
DZCT		2	27	54.81880 0.006	0.008 0.003	2.424 1.36
GROUP: 071711.ASC ,obs#: 57						
DXCT		1	28	-6998.24110 0.011	-0.007 0.009	-0.783 0.70
DYCT		1	28	-3877.83550 0.011	-0.001 0.009	-0.098 0.09
DZCT		1	28	-6829.90360 0.011	-0.006 0.009	-0.628 0.56
GROUP: 071711.ASC ,obs#: 58						
DXCT		2	28	-6414.26290 0.007	0.003 0.004	0.783 0.45
DYCT		2	28	1885.70160 0.007	0.000 0.004	0.103 0.06
DZCT		2	28	-525.63300 0.007	0.002 0.004	0.625 0.37
GROUP: 071711.ASC ,obs#: 59						
DXCT		1	29	-7452.85390 0.012	-0.009 0.010	-0.847 0.76
DYCT		1	29	-4224.02070 0.012	-0.002 0.010	-0.209 0.19
DZCT		1	29	-7459.29640	-0.001	-0.097

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.012	0.010	0.09
GROUP:	071711.ASC	,obs#:	60			
DXCT	2		29	-6868.87740	0.003	0.848
				0.008	0.004	0.48
DYCT	2		29	1539.51470	0.001	0.216
				0.008	0.004	0.12
DZCT	2		29	-1155.01880	0.000	0.095
				0.008	0.004	0.06
GROUP:	071711.ASC	,obs#:	61			
DXCT	1		30	-7452.00210	-0.004	-0.378
				0.013	0.011	0.35
DYCT	1		30	-4786.88890	-0.004	-0.371
				0.013	0.011	0.34
DZCT	1		30	-8046.87760	0.001	0.060
				0.013	0.011	0.06
GROUP:	071711.ASC	,obs#:	62			
DXCT	2		30	-6868.01910	0.001	0.379
				0.008	0.004	0.21
DYCT	2		30	976.64400	0.001	0.373
				0.008	0.004	0.21
DZCT	2		30	-1742.59770	-0.000	-0.063
				0.008	0.004	0.04
GROUP:	071711.ASC	,obs#:	63			
DXCT	1		31	-7248.81790	-0.004	-0.375
				0.012	0.011	0.34
DYCT	1		31	-4690.30610	0.001	0.114
				0.013	0.011	0.10
DZCT	1		31	-7873.45680	-0.006	-0.528
				0.013	0.011	0.48
GROUP:	071711.ASC	,obs#:	64			
DXCT	2		31	-6664.83470	0.001	0.374
				0.007	0.004	0.20
DYCT	2		31	1073.23400	-0.000	-0.116
				0.007	0.004	0.06
DZCT	2		31	-1569.18550	0.002	0.528
				0.007	0.004	0.29
GROUP:	071711.ASC	,obs#:	65			
DXCT	1		32	-8203.26850	-0.004	-0.340
				0.013	0.011	0.30
DYCT	1		32	-4499.95240	-0.001	-0.117
				0.013	0.011	0.11
DZCT	1		32	-8062.77610	0.000	0.007
				0.013	0.011	0.01
GROUP:	071711.ASC	,obs#:	66			
DXCT	2		32	-7619.28520	0.002	0.340
				0.008	0.005	0.20
DYCT	2		32	1263.58420	0.001	0.117
				0.008	0.005	0.07
DZCT	2		32	-1758.49700	-0.000	-0.007
				0.009	0.005	0.00
GROUP:	071711.ASC	,obs#:	67			
DXCT	1		909	-8309.00230	-0.003	-0.294

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.013	0.011	0.26
DYCT		1	909	-4394.50570	0.001	0.106
				0.013	0.011	0.09
DZCT		1	909	-7987.49570	0.001	0.096
				0.013	0.011	0.09
GROUP: 071711.ASC ,obs#: 68						
DXCT		2	909	-7725.01830	0.001	0.294
				0.009	0.005	0.17
DYCT		2	909	1369.03440	-0.000	-0.105
				0.009	0.005	0.06
DZCT		2	909	-1683.21520	-0.000	-0.096
				0.009	0.005	0.06
GROUP: 071711.ASC ,obs#: 69						
DXCT		1	34	-9698.39070	-0.002	-0.180
				0.014	0.011	0.16
DYCT		1	34	-3685.72280	-0.001	-0.110
				0.014	0.011	0.10
DZCT		1	34	-7946.02560	0.010	0.851
				0.014	0.011	0.73
GROUP: 071711.ASC ,obs#: 70						
DXCT		2	34	-9114.40520	0.001	0.182
				0.010	0.006	0.11
DYCT		2	34	2077.81370	0.001	0.115
				0.010	0.006	0.07
DZCT		2	34	-1641.73190	-0.005	-0.852
				0.010	0.006	0.54
GROUP: 071711.ASC ,obs#: 71						
DXCT		1	35	-10044.78780	-0.004	-0.322
				0.014	0.011	0.27
DYCT		1	35	-3120.18530	-0.006	-0.532
				0.014	0.011	0.45
DZCT		1	35	-7531.98660	0.013	1.158
				0.014	0.011	0.98
GROUP: 071711.ASC ,obs#: 72						
DXCT		2	35	-9460.80480	0.002	0.324
				0.011	0.006	0.21
DYCT		2	35	2643.34380	0.003	0.534
				0.011	0.006	0.35
DZCT		2	35	-1227.68740	-0.007	-1.159
				0.011	0.006	0.76
GROUP: 071711.ASC ,obs#: 73						
DXCT		1	36	-11398.51950	-0.005	-0.357
				0.017	0.014	0.31
DYCT		1	36	-5062.76120	0.013	0.906
				0.017	0.014	0.79
DZCT		1	36	-10173.87740	-0.041	-2.928
				0.017	0.014	2.55
GROUP: 071711.ASC ,obs#: 74						
DXCT		2	36	-10814.53840	0.003	0.354
				0.012	0.007	0.22
DYCT		2	36	700.79650	-0.007	-0.909
				0.012	0.007	0.57

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DZCT		2	36	-3869.66040 0.012	0.021 0.007	2.929 1.82
GROUP: 071711.ASC ,obs#: 75						
DXCT		1	901	-11083.31840 0.018	-0.003 0.015	-0.210 0.18
DYCT		1	901	-5877.07710 0.018	0.010 0.015	0.678 0.60
DZCT		1	901	-10883.13570 0.018	-0.036 0.015	-2.446 2.15
GROUP: 071711.ASC ,obs#: 76						
DXCT		2	901	-10499.33430 0.012	0.001 0.007	0.210 0.13
DYCT		2	901	-113.52400 0.012	-0.005 0.007	-0.677 0.41
DZCT		2	901	-4578.90950 0.012	0.017 0.007	2.446 1.49
GROUP: 071711.ASC ,obs#: 77						
DXCT		1	38	-2690.14830 0.006	0.004 0.004	0.851 0.68
DYCT		1	38	-2562.70200 0.006	0.006 0.004	1.366 1.11
DZCT		1	38	-3755.04310 0.006	0.006 0.004	1.316 1.07
GROUP: 071711.ASC ,obs#: 78						
DXCT		2	38	-2106.15330 0.005	-0.003 0.003	-0.861 0.61
DYCT		2	38	3200.84680 0.005	-0.005 0.003	-1.357 0.98
DZCT		2	38	2549.24590 0.005	-0.004 0.003	-1.299 0.95
GROUP: 071811.ASC ,obs#: 79						
DXCT		1	39	-5220.99520 0.008	0.001 0.006	0.186 0.16
DYCT		1	39	-2555.24520 0.008	-0.004 0.006	-0.649 0.55
DZCT		1	39	-4755.89930 0.008	-0.016 0.006	-2.512 2.14
GROUP: 071811.ASC ,obs#: 80						
DXCT		2	39	-4637.00470 0.006	-0.001 0.004	-0.186 0.12
DYCT		2	39	3208.28670 0.006	0.002 0.004	0.621 0.41
DZCT		2	39	1548.35370 0.006	0.010 0.004	2.504 1.69
GROUP: 071811.ASC ,obs#: 81						
DXCT		1	905	-5409.68870 0.008	-0.007 0.006	-1.099 0.91
DYCT		1	905	-2418.03430 0.008	-0.002 0.006	-0.266 0.22
DZCT		1	905	-4674.14870 0.008	-0.017 0.006	-2.638 2.19
GROUP: 071811.ASC ,obs#: 82						

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DXCT		2	905	-4825.71140 0.007	0.004 0.004	1.093 0.73
DYCT		2	905	3345.50160 0.007	0.001 0.004	0.211 0.14
DZCT		2	905	1630.10270 0.007	0.011 0.004	2.629 1.82
GROUP: 071811.ASC ,obs#: 83						
DXCT		1	41	-5413.19130 0.008	-0.007 0.006	-1.162 0.94
DYCT		1	41	-2140.45090 0.008	-0.017 0.006	-2.885 2.35
DZCT		1	41	-4357.82870 0.008	0.001 0.006	0.148 0.12
GROUP: 071811.ASC ,obs#: 84						
DXCT		2	41	-4829.21520 0.007	0.006 0.005	1.228 0.89
DYCT		2	41	3623.05680 0.007	0.014 0.005	2.909 2.15
DZCT		2	41	1946.45220 0.007	-0.001 0.005	-0.228 0.16
GROUP: 071811.ASC ,obs#: 85						
DXCT		1	42	-5811.43810 0.008	0.002 0.006	0.407 0.32
DYCT		1	42	-1872.39570 0.008	-0.001 0.006	-0.174 0.14
DZCT		1	42	-4237.34160 0.008	-0.011 0.006	-1.864 1.46
GROUP: 071811.ASC ,obs#: 86						
DXCT		2	42	-5227.44480 0.008	-0.002 0.005	-0.448 0.34
DYCT		2	42	3891.14120 0.008	0.001 0.005	0.100 0.08
DZCT		2	42	2066.91710 0.007	0.009 0.005	1.867 1.38
GROUP: 071811.ASC ,obs#: 87						
DXCT		1	43	-6020.03270 0.008	-0.004 0.006	-0.658 0.51
DYCT		1	43	-1684.69850 0.008	0.003 0.006	0.497 0.38
DZCT		1	43	-4112.05470 0.008	-0.011 0.006	-1.975 1.52
GROUP: 071811.ASC ,obs#: 88						
DXCT		2	43	-5436.05130 0.008	0.003 0.005	0.647 0.48
DYCT		2	43	4078.84550 0.008	-0.003 0.005	-0.503 0.38
DZCT		2	43	2192.20250 0.008	0.010 0.005	1.975 1.46
GROUP: 071811.ASC ,obs#: 89						
DXCT		1	44	-6391.68830 0.008	0.001 0.005	0.109 0.08
DYCT		1	44	-1129.97590	0.002	0.293

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.008	0.005	0.21
DZCT		1	44	-3625.51840	-0.013	-2.421
				0.008	0.005	1.77
GROUP:	071811.ASC	, obs#:	90			
DXCT		2	44	-5807.69840	-0.001	-0.113
				0.008	0.006	0.09
DYCT		2	44	4633.56600	-0.002	-0.300
				0.009	0.006	0.24
DZCT		2	44	2678.73250	0.015	2.422
				0.009	0.006	1.89
GROUP:	071811.ASC	, obs#:	91			
DXCT		1	45	-6410.89240	-0.003	-0.654
				0.008	0.005	0.46
DYCT		1	45	-891.97050	0.001	0.279
				0.008	0.005	0.20
DZCT		1	45	-3360.58620	-0.004	-0.810
				0.008	0.005	0.58
GROUP:	071811.ASC	, obs#:	92			
DXCT		2	45	-5826.91140	0.004	0.655
				0.009	0.006	0.52
DYCT		2	45	4871.57120	-0.002	-0.279
				0.009	0.006	0.22
DZCT		2	45	2943.68330	0.005	0.809
				0.009	0.006	0.64
GROUP:	071811.ASC	, obs#:	93			
DXCT		1	46	-6398.63590	0.002	0.342
				0.008	0.005	0.24
DYCT		1	46	-720.34030	0.004	0.859
				0.008	0.005	0.60
DZCT		1	46	-3167.72980	-0.001	-0.246
				0.008	0.005	0.17
GROUP:	071811.ASC	, obs#:	94			
DXCT		2	46	-5814.64330	-0.002	-0.341
				0.009	0.007	0.27
DYCT		2	46	5043.20820	-0.006	-0.859
				0.009	0.007	0.69
DZCT		2	46	3136.54630	0.002	0.246
				0.009	0.007	0.20
GROUP:	071811.ASC	, obs#:	95			
DXCT		1	904	-6448.50250	-0.002	-0.430
				0.008	0.005	0.30
DYCT		1	904	-581.57030	0.004	0.752
				0.008	0.005	0.52
DZCT		1	904	-3016.02340	-0.003	-0.688
				0.008	0.005	0.48
GROUP:	071811.ASC	, obs#:	96			
DXCT		2	904	-5864.51900	0.003	0.434
				0.009	0.007	0.35
DYCT		2	904	5181.97710	-0.005	-0.751
				0.009	0.007	0.62
DZCT		2	904	3288.24740	0.005	0.685
				0.009	0.007	0.56

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
GROUP: 071811.ASC ,obs#: 97						
DXCT		1	48	-6611.99860 0.008	0.004 0.005	0.795 0.54
DYCT		1	48	-331.50930 0.008	0.007 0.005	1.359 0.93
DZCT		1	48	-2786.07140 0.008	-0.007 0.005	-1.491 1.02
GROUP: 071811.ASC ,obs#: 98						
DXCT		2	48	-6028.00040 0.009	-0.006 0.007	-0.786 0.65
DYCT		2	48	5432.04560 0.010	-0.010 0.007	-1.336 1.11
DZCT		2	48	3518.18950 0.010	0.011 0.007	1.471 1.22
GROUP: 071811.ASC ,obs#: 99						
DXCT		1	49	-7328.72860 0.008	0.002 0.005	0.456 0.31
DYCT		1	49	-17.19680 0.009	0.012 0.005	2.114 1.47
DZCT		1	49	-2858.90030 0.009	-0.004 0.005	-0.755 0.52
GROUP: 071811.ASC ,obs#: 100						
DXCT		2	49	-6744.73410 0.010	-0.003 0.008	-0.441 0.36
DYCT		2	49	5746.36970 0.010	-0.016 0.008	-2.104 1.73
DZCT		2	49	3445.36890 0.010	0.006 0.008	0.729 0.60
GROUP: 071811.ASC ,obs#: 101						
DXCT		1	50	-7038.15900 0.008	0.001 0.004	0.254 0.15
DYCT		1	50	999.37840 0.008	0.009 0.005	1.903 1.19
DZCT		1	50	-1418.41960 0.008	0.003 0.004	0.575 0.35
GROUP: 071811.ASC ,obs#: 102						
DXCT		2	50	-6454.16700 0.011	-0.002 0.009	-0.244 0.21
DYCT		2	50	6762.94330 0.011	-0.018 0.009	-1.908 1.69
DZCT		2	50	4885.86750 0.011	-0.006 0.009	-0.595 0.53
GROUP: 071811.ASC ,obs#: 103						
DXCT		1	51	-8998.25910 0.010	-0.000 0.007	-0.024 0.02
DYCT		1	51	746.55270 0.010	0.009 0.007	1.305 0.92
DZCT		1	51	-2998.04870 0.010	-0.000 0.007	-0.003 0.00
GROUP: 071811.ASC ,obs#: 104						
DXCT		2	51	-8414.27090 0.012	0.000 0.009	0.028 0.02

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DYCT		2	51	6510.11170 0.012	-0.012 0.009	-1.305 1.06
DZCT		2	51	3306.23030 0.012	-0.000 0.009	-0.003 0.00
GROUP: 071811.ASC ,obs#: 105						
DXCT		1	52	-7969.62040 0.009	-0.000 0.005	-0.072 0.04
DYCT		1	52	3265.85000 0.009	-0.000 0.005	-0.086 0.05
DZCT		1	52	118.76510 0.009	0.003 0.005	0.624 0.37
GROUP: 071811.ASC ,obs#: 106						
DXCT		2	52	-7385.63300 0.014	0.001 0.012	0.071 0.06
DYCT		2	52	9029.38700 0.014	0.001 0.012	0.082 0.07
DZCT		2	52	6423.05480 0.014	-0.008 0.012	-0.624 0.57
GROUP: 071911.ASC ,obs#: 107						
DXCT		1	53	-1598.60500 0.012	0.004 0.011	0.332 0.34
DYCT		1	53	-7128.02490 0.012	0.002 0.011	0.176 0.18
DZCT		1	53	-8111.31350 0.012	-0.010 0.011	-0.873 0.91
GROUP: 071911.ASC ,obs#: 108						
DXCT		2	53	-1014.61240 0.003	-0.000 0.001	-0.364 0.09
DYCT		2	53	-1364.48430 0.003	-0.000 0.001	-0.256 0.07
DZCT		2	53	-1807.04500 0.003	0.001 0.001	0.892 0.23
GROUP: 071911.ASC ,obs#: 109						
DXCT		1	54	-2009.98380 0.012	0.001 0.011	0.062 0.06
DYCT		1	54	-6957.21480 0.012	-0.000 0.011	-0.001 0.00
DZCT		1	54	-8107.55610 0.012	-0.010 0.011	-0.896 0.93
GROUP: 071911.ASC ,obs#: 110						
DXCT		2	54	-1425.99440 0.003	-0.000 0.001	-0.113 0.03
DYCT		2	54	-1193.67630 0.003	-0.000 0.001	-0.093 0.03
DZCT		2	54	-1803.28790 0.003	0.001 0.001	0.891 0.25
GROUP: 071911.ASC ,obs#: 111						
DXCT		1	908	-2478.04440 0.012	0.017 0.012	1.437 1.48
DYCT		1	908	-7115.14880 0.012	0.011 0.012	0.922 0.95
DZCT		1	908	-8458.57540	-0.021	-1.778

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.012	0.012	1.82
GROUP:	071911.ASC	, obs#:	112			
DXCT	2		908	-1894.03760 0.003	-0.001 0.001	-1.524 0.46
DYCT	2		908	-1351.59860 0.004	-0.001 0.001	-1.045 0.32
DZCT	2		908	-2154.31880 0.003	0.002 0.001	1.847 0.55
GROUP:	071911.ASC	, obs#:	113			
DXCT	1		56	-2837.38540 0.012	0.017 0.012	1.478 1.52
DYCT	1		56	-6974.82010 0.012	0.010 0.012	0.848 0.87
DZCT	1		56	-8463.26100 0.012	-0.021 0.012	-1.796 1.84
GROUP:	071911.ASC	, obs#:	114			
DXCT	2		56	-2253.37790 0.004	-0.002 0.001	-1.570 0.51
DYCT	2		56	-1211.27070 0.004	-0.001 0.001	-0.985 0.32
DZCT	2		56	-2159.00480 0.004	0.002 0.001	1.871 0.59
GROUP:	071911.ASC	, obs#:	115			
DXCT	1		57	-55.85200 0.004	-0.000 0.002	-0.127 0.08
DYCT	1		57	-2472.06620 0.004	0.001 0.002	0.566 0.38
DZCT	1		57	-2647.97960 0.004	-0.001 0.002	-0.491 0.32
GROUP:	071911.ASC	, obs#:	116			
DXCT	2		57	528.13570 0.005	0.001 0.004	0.147 0.13
DYCT	2		57	3291.47600 0.005	-0.002 0.004	-0.564 0.48
DZCT	2		57	3656.29620 0.005	0.002 0.004	0.483 0.41
GROUP:	071911.ASC	, obs#:	117			
DXCT	1		58	1230.80750 0.002	0.000 0.000	0.783 0.15
DYCT	1		58	-456.86370 0.002	0.001 0.000	2.179 0.56
DZCT	1		58	31.60650 0.002	-0.001 0.000	-2.238 0.67
GROUP:	071911.ASC	, obs#:	118			
DXCT	2		58	1814.80020 0.009	-0.004 0.009	-0.439 0.46
DYCT	2		58	5306.69170 0.009	-0.016 0.009	-1.821 1.92
DZCT	2		58	6335.86690 0.009	0.018 0.009	1.977 2.09
GROUP:	071911.ASC	, obs#:	119			
DXCT	1		903	-166.55190	0.000	0.000*

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.000	0.000	0.00
DYCT	1		903	104.69200	0.000	0.000*
				0.001	0.000	0.20
DZCT	1		903	52.29230	-0.000	0.000*
				0.001	0.000	0.24
GROUP: 071911.ASC ,obs#: 120						
DXCT	2		903	417.43020	0.007	0.709
				0.009	0.009	0.75
DYCT	2		903	5868.23840	-0.008	-0.854
				0.009	0.009	0.91
DZCT	2		903	6356.56630	0.005	0.529
				0.009	0.009	0.57
GROUP: 071911.ASC ,obs#: 121						
DXCT	1		60	-699.75470	-0.000	0.000*
				0.001	0.000	0.02
DYCT	1		60	307.17900	0.000	0.370
				0.001	0.000	0.06
DZCT	1		60	80.18490	-0.000	-0.166
				0.001	0.000	0.03
GROUP: 071911.ASC ,obs#: 122						
DXCT	2		60	-115.76830	0.002	0.237
				0.009	0.009	0.25
DYCT	2		60	6070.72120	-0.004	-0.398
				0.009	0.009	0.42
DZCT	2		60	6384.46320	0.001	0.071
				0.010	0.009	0.08
GROUP: 071911.ASC ,obs#: 123						
DXCT	1	A	116	28725.25440	0.005	0.147
				0.040	0.035	0.13
DYCT	1	A	116	10398.99080	0.008	0.232
				0.040	0.035	0.21
DZCT	1	A	116	22500.02620	-0.020	-0.570
				0.040	0.035	0.52
GROUP: 071911.ASC ,obs#: 124						
DXCT	2	A	116	29309.25640	-0.008	-0.195
				0.047	0.042	0.19
DYCT	2	A	116	16162.53350	0.004	0.090
				0.047	0.042	0.09
DZCT	2	A	116	28804.28940	-0.004	-0.096
				0.047	0.042	0.09
GROUP: 071911.ASC ,obs#: 125						
DXCT	1	C	116	28248.89830	0.011	0.395
				0.036	0.029	0.34
DYCT	1	C	116	5158.36540	0.011	0.377
				0.036	0.029	0.32
DZCT	1	C	116	17055.11520	-0.021	-0.735
				0.036	0.029	0.63
GROUP: 071911.ASC ,obs#: 126						
DXCT	2	C	116	28832.89150	0.007	0.191
				0.041	0.035	0.17
DYCT	2	C	116	10921.88210	0.033	0.918
				0.041	0.035	0.84

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DZCT		2	C 116	23359.37420 0.041	-0.001 0.035	-0.032 0.03
GROUP: ROB_TEST.ASC, obs#: 127						
DXCT		P100	1	-19740.95300 0.045	0.003 0.043	0.071 0.07
DYCT		P100	1	30430.07160 0.045	0.011 0.043	0.263 0.27
DZCT		P100	1	22058.66150 0.045	-0.010 0.043	-0.229 0.23
GROUP: ROB_TEST.ASC, obs#: 128						
DXCT		P007	1	100018.13670 0.113	-0.028 0.111	-0.253 0.27
DYCT		P007	1	-12443.20330 0.113	0.012 0.107	0.110 0.11
DZCT		P007	1	33173.80190 0.113	0.022 0.107	0.201 0.20
GROUP: ROB_TEST.ASC, obs#: 129						
DXCT		P007	1	100018.11250 0.113	-0.004 0.111	-0.036 0.04
DYCT		P007	1	-12443.22260 0.113	0.031 0.107	0.291 0.29
DZCT		P007	1	33173.82360 0.113	-0.000 0.107	-0.001 0.00
GROUP: ROB_TEST.ASC, obs#: 130						
DXCT		P100	1	-19740.94090 0.045	-0.009 0.043	-0.212 0.21
DYCT		P100	1	30430.09200 0.045	-0.009 0.043	-0.214 0.22
DZCT		P100	1	22058.62560 0.045	0.026 0.043	0.609 0.61
GROUP: ROB_TEST.ASC, obs#: 131						
DXCT		P100	2	-20324.94690 0.038	0.008 0.035	0.237 0.23
DYCT		P100	2	24666.52620 0.038	0.018 0.035	0.520 0.51
DZCT		P100	2	15754.39510 0.038	-0.022 0.035	-0.640 0.63
GROUP: ROB_TEST.ASC, obs#: 132						
DXCT		P007	2	99434.13790 0.112	-0.018 0.109	-0.164 0.17
DYCT		P007	2	-18206.72960 0.112	-0.000 0.105	-0.003 0.00
DZCT		P007	2	26869.52400 0.112	0.020 0.105	0.194 0.20
GROUP: ROB_TEST.ASC, obs#: 133						
DXCT		1	2	-583.97860 0.009	-0.010 0.009	-1.106 1.17
DYCT		1	2	-5763.53990 0.009	0.001 0.009	0.162 0.17
DZCT		1	2	-6304.29880 0.009	0.020 0.009	2.187 2.31
GROUP: ROB_TEST.ASC, obs#: 134						

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DXCT		1	2	-583.99030 0.009	0.002 0.009	0.186 0.20
DYCT		1	2	-5763.54630 0.009	0.008 0.009	0.868 0.92
DZCT		1	2	-6304.27330 0.009	-0.006 0.009	-0.628 0.66
GROUP: ROB_TEST.ASC, obs#: 135						
DXCT		P007	2	99434.13270 0.112	-0.013 0.109	-0.117 0.12
DYCT		P007	2	-18206.76590 0.112	0.036 0.105	0.341 0.34
DZCT		P007	2	26869.57360 0.112	-0.029 0.105	-0.276 0.28
GROUP: ROB_TEST.ASC, obs#: 136						
DXCT		P100	2	-20324.94330 0.038	0.005 0.035	0.134 0.13
DYCT		P100	2	24666.55950 0.038	-0.015 0.035	-0.430 0.42
DZCT		P100	2	15754.36360 0.038	0.009 0.035	0.260 0.26
GROUP: ROB_TEST.ASC, obs#: 137						
DXCT		1	2536.65	25263.27810 0.028	-0.000 0.025	-0.004 0.00
DYCT		1	2536.65	-7160.74750 0.028	-0.008 0.025	-0.313 0.29
DZCT		1	2536.65	3402.40480 0.028	0.001 0.025	0.037 0.03
GROUP: ROB_TEST.ASC, obs#: 138						
DXCT		2	2536.65	25847.26980 0.029	-0.003 0.026	-0.122 0.12
DYCT		2	2536.65	-1397.21720 0.030	0.000 0.026	0.014 0.01
DZCT		2	2536.65	9706.67950 0.030	0.005 0.026	0.198 0.19
GROUP: ROB_TEST.ASC, obs#: 139						
DXCT		P100	2536.65	5522.31700 0.037	0.011 0.032	0.341 0.32
DYCT		P100	2536.65	23269.29700 0.037	0.031 0.032	0.946 0.88
DZCT		P100	2536.65	25461.07860 0.037	-0.021 0.032	-0.654 0.61
GROUP: ROB_TEST.ASC, obs#: 140						
DXCT		1	4837.22	25584.88980 0.029	0.004 0.025	0.151 0.14
DYCT		1	4837.22	-3753.26950 0.029	-0.007 0.025	-0.270 0.25
DZCT		1	4837.22	6973.30730 0.029	-0.003 0.025	-0.107 0.10
GROUP: ROB_TEST.ASC, obs#: 141						
DXCT		2	4837.22	26168.88290 0.031	-0.001 0.028	-0.027 0.03
DYCT		2	4837.22	2010.25130	0.011	0.390

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.031	0.028	0.37
DZCT		2	4837.22	13277.57770	0.006	0.211
				0.031	0.028	0.20
GROUP: ROB_TEST.ASC, obs#: 142						
DXCT		P100	4837.22	5843.95190	-0.008	-0.219
				0.043	0.038	0.21
DYCT		P100	4837.22	26676.81280	-0.006	-0.162
				0.043	0.038	0.15
DZCT		P100	4837.22	29031.96620	-0.010	-0.260
				0.043	0.038	0.25
GROUP: ROB_TEST.ASC, obs#: 143						
DXCT		2	A 116	29309.25540	-0.007	-0.172
				0.047	0.042	0.16
DYCT		2	A 116	16162.53280	0.004	0.106
				0.047	0.042	0.10
DZCT		2	A 116	28804.29130	-0.006	-0.141
				0.047	0.042	0.14
GROUP: ROB_TEST.ASC, obs#: 144						
DXCT		1	A 116	28725.24900	0.011	0.302
				0.040	0.035	0.28
DYCT		1	A 116	10398.99520	0.004	0.105
				0.040	0.035	0.10
DZCT		1	A 116	22499.99460	0.012	0.337
				0.040	0.035	0.31
GROUP: ROB_TEST.ASC, obs#: 145						
DXCT		P100	A 116	8984.32030	-0.011	-0.178
				0.065	0.060	0.18
DYCT		P100	A 116	40829.12810	-0.046	-0.767
				0.065	0.060	0.76
DZCT		P100	A 116	44558.61760	0.040	0.668
				0.065	0.061	0.66
GROUP: ROB_TEST.ASC, obs#: 146						
DXCT		2	C 116	28832.92010	-0.022	-0.607
				0.042	0.036	0.56
DYCT		2	C 116	10921.91780	-0.003	-0.088
				0.041	0.036	0.08
DZCT		2	C 116	23359.35740	0.016	0.441
				0.041	0.036	0.41
GROUP: ROB_TEST.ASC, obs#: 147						
DXCT		P100	C 116	8507.96090	-0.001	-0.024
				0.057	0.052	0.02
DYCT		P100	C 116	35588.54390	-0.085	-1.640
				0.057	0.052	1.58
DZCT		P100	C 116	39113.71920	0.027	0.514
				0.057	0.052	0.50
GROUP: ROB_TEST.ASC, obs#: 148						
DXCT		1	H 29	-10783.43710	-0.005	-0.359
				0.014	0.013	0.34
DYCT		1	H 29	-2741.58720	-0.002	-0.173
				0.014	0.013	0.17
DZCT		1	H 29	-7501.46130	-0.005	-0.390
				0.014	0.013	0.38

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
GROUP: ROB_TEST.ASC, obs#: 149						
DXCT		2	H 29	-10199.45580 0.011	0.003 0.010	0.282 0.25
DYCT		2	H 29	3021.94830 0.011	0.001 0.010	0.073 0.07
DZCT		2	H 29	-1197.18850 0.011	0.001 0.010	0.120 0.11
GROUP: ROB_TEST.ASC, obs#: 150						
DXCT		P100	H 29	-30524.38860 0.047	-0.003 0.044	-0.070 0.07
DYCT		P100	H 29	27688.47390 0.047	0.020 0.044	0.442 0.45
DZCT		P100	H 29	14557.17830 0.047	0.007 0.044	0.159 0.16
GROUP: ROB_TEST.ASC, obs#: 151						
DXCT		P100	P007	-119759.07870 0.136	0.020 0.135	0.149 0.16
DYCT		P100	P007	42873.26140 0.136	0.013 0.131	0.099 0.10
DZCT		P100	P007	-11115.13890 0.136	-0.033 0.131	-0.250 0.26
GROUP: 082411.ASC , obs#: 152						
DXCT		2	1	583.99430 0.009	-0.006 0.009	-0.628 0.66
DYCT		2	1	5763.53210 0.009	0.006 0.009	0.700 0.74
DZCT		2	1	6304.26700 0.009	0.012 0.009	1.324 1.40
GROUP: 082411.ASC , obs#: 153						
DXCT		2	14	-7510.22400 0.011	-0.004 0.008	-0.438 0.35
DYCT		2	14	5860.98890 0.011	0.001 0.008	0.157 0.13
DZCT		2	14	3161.31330 0.011	0.008 0.008	0.967 0.78
GROUP: 082411.ASC , obs#: 154						
DXCT		1	14	-8094.21880 0.009	0.003 0.006	0.438 0.30
DYCT		1	14	97.45270 0.009	-0.001 0.006	-0.158 0.11
DZCT		1	14	-3142.95200 0.009	-0.006 0.006	-0.967 0.67
GROUP: 082411.ASC , obs#: 155						
DXCT		2	25	-6080.55660 0.010	-0.005 0.007	-0.639 0.53
DYCT		2	25	5445.98480 0.010	-0.006 0.007	-0.835 0.70
DZCT		2	25	3502.91720 0.010	-0.001 0.007	-0.147 0.12
GROUP: 082411.ASC , obs#: 156						
DXCT		1	25	-6664.55300 0.008	0.003 0.005	0.638 0.43

Residuals (critical value = 4.024):

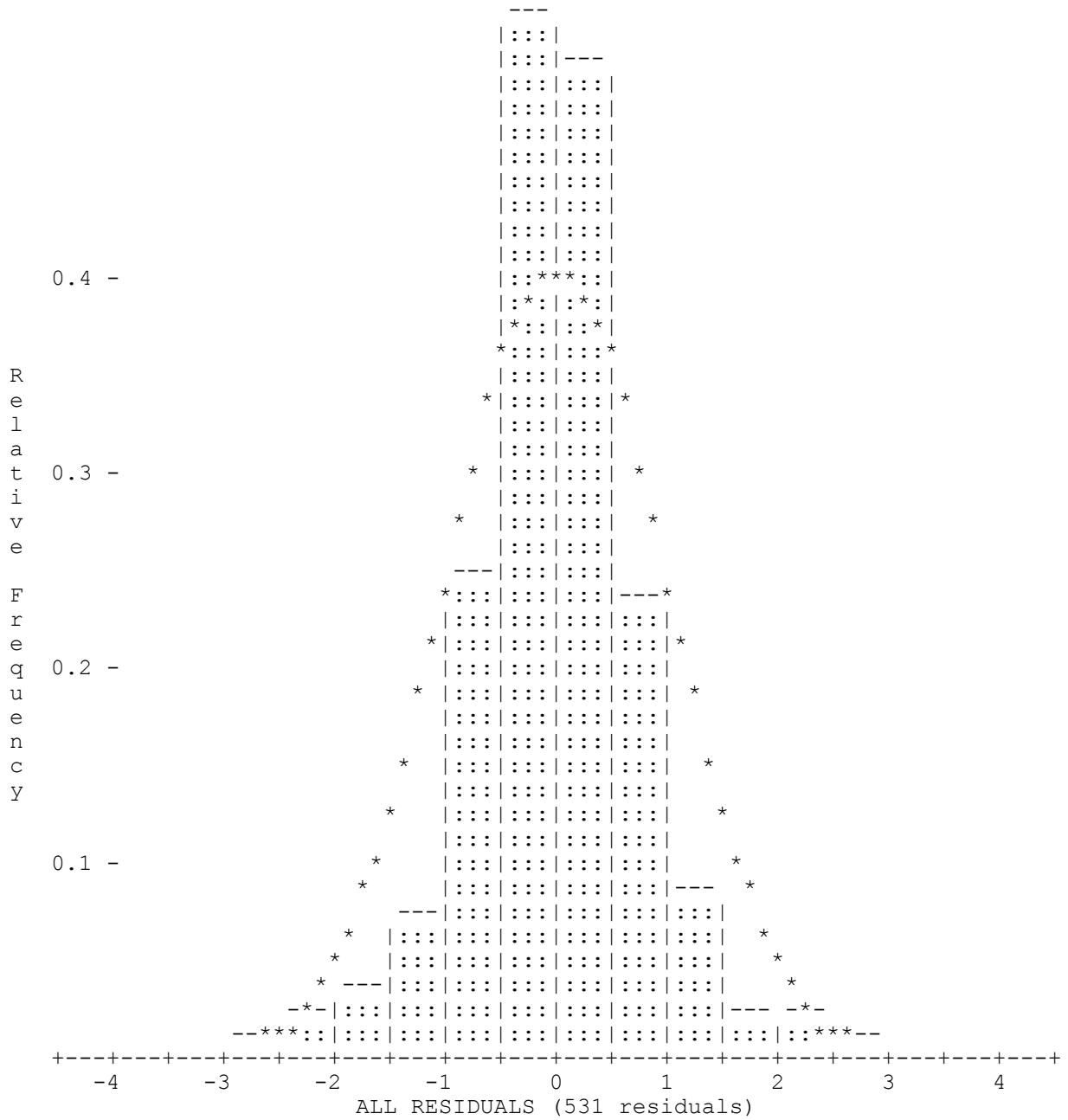
TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DYCT		1	25	-317.56390 0.008	0.004 0.005	0.835 0.56
DZCT		1	25	-2801.36360 0.008	0.001 0.005	0.149 0.10
GROUP: 082411.ASC ,obs#: 157						
DXCT		2	3	1901.18240 0.009	0.001 0.009	0.131 0.14
DYCT		2	3	5265.87750 0.009	0.017 0.009	1.926 2.01
DZCT		2	3	6328.24370 0.009	0.012 0.009	1.337 1.40
GROUP: 082411.ASC ,obs#: 158						
DXCT		1	3	1317.19500 0.002	-0.000 0.000	-0.240 0.04
DYCT		1	3	-497.64340 0.002	-0.001 0.000	-1.863 0.38
DZCT		1	3	23.97690 0.002	-0.000 0.000	-1.246 0.27
GROUP: 082411.ASC ,obs#: 159						
DXCT		2	33	-2559.54700 0.006	-0.000 0.005	-0.101 0.08
DYCT		2	33	3999.83090 0.006	0.004 0.005	0.813 0.67
DZCT		2	33	3291.62670 0.006	0.001 0.005	0.240 0.20
GROUP: 082411.ASC ,obs#: 160						
DXCT		1	33	-3143.53640 0.005	0.000 0.003	0.097 0.07
DYCT		1	33	-1763.70110 0.005	-0.003 0.003	-0.810 0.55
DZCT		1	33	-3012.65040 0.005	-0.001 0.003	-0.232 0.16
GROUP: 082411.ASC ,obs#: 161						
DXCT		2	37	195.76910 0.004	-0.004 0.003	-1.297 0.91
DYCT		2	37	2762.81630 0.004	0.001 0.003	0.316 0.22
DZCT		2	37	2958.93750 0.004	-0.003 0.003	-0.873 0.62
GROUP: 082411.ASC ,obs#: 162						
DXCT		1	37	-388.22780 0.005	0.005 0.004	1.297 1.02
DYCT		1	37	-3000.72010 0.005	-0.001 0.004	-0.316 0.25
DZCT		1	37	-3345.34710 0.005	0.003 0.004	0.872 0.69
GROUP: 082411.ASC ,obs#: 163						
DXCT		2	40	530.78860 0.002	-0.000 0.000	-0.539 0.14
DYCT		2	40	1024.23040 0.002	0.000 0.001	0.009 0.00
DZCT		2	40	1288.11350 0.002	-0.000 0.001	-0.180 0.00

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.002	0.000	0.05
GROUP:	082411.ASC	,obs#:	164			
DXCT	1		40	-53.20410	0.004	0.543
				0.007	0.007	0.56
DYCT	1		40	-4739.30790	-0.000	-0.018
				0.007	0.007	0.02
DZCT	1		40	-5016.16690	0.001	0.187
				0.007	0.007	0.19
GROUP:	082411.ASC	,obs#:	165			
DXCT	2		9	705.83570	-0.001	-0.181
				0.006	0.005	0.17
DYCT	2		9	3735.76750	0.013	2.471
				0.006	0.005	2.32
DZCT	2		9	4197.73860	0.005	0.904
				0.006	0.005	0.85
GROUP:	082411.ASC	,obs#:	166			
DXCT	1		9	121.84590	0.000	0.159
				0.003	0.001	0.08
DYCT	1		9	-2027.75420	-0.004	-2.442
				0.003	0.001	1.23
DZCT	1		9	-2106.53430	-0.001	-0.837
				0.003	0.002	0.43
GROUP:	082511.ASC	,obs#:	167			
DXCT	1		2	-583.98730	-0.001	-0.145
				0.009	0.009	0.15
DYCT	1		2	-5763.53810	-0.000	-0.037
				0.009	0.009	0.04
DZCT	1		2	-6304.26020	-0.019	-2.075
				0.009	0.009	2.19
GROUP:	082511.ASC	,obs#:	168			
DXCT	1		47	-11368.92420	0.009	0.671
				0.017	0.014	0.58
DYCT	1		47	-5158.13300	0.009	0.612
				0.017	0.014	0.53
DZCT	1		47	-10259.02600	-0.025	-1.797
				0.017	0.014	1.57
GROUP:	082511.ASC	,obs#:	169			
DXCT	2		47	-10784.92140	-0.005	-0.670
				0.012	0.007	0.41
DYCT	2		47	605.41840	-0.004	-0.610
				0.012	0.007	0.38
DZCT	2		47	-3954.78520	0.013	1.796
				0.012	0.007	1.11
GROUP:	082511.ASC	,obs#:	170			
DXCT	1		55	-10519.87850	-0.002	-0.190
				0.014	0.011	0.16
DYCT	1		55	-2907.09840	0.004	0.376
				0.014	0.011	0.31
DZCT	1		55	-7550.94200	-0.013	-1.145
				0.014	0.011	0.96
GROUP:	082511.ASC	,obs#:	171			
DXCT	2		55	-9935.89330	0.001	0.190

Residuals (critical value = 4.024):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
				0.011	0.007	0.12
DYCT		2	55	2856.44680	-0.003	-0.377
				0.011	0.007	0.25
DZCT		2	55	-1246.68360	0.008	1.145
				0.011	0.007	0.75
GROUP: 082511.ASC ,obs#: 172						
DXCT		1	59	-6911.89720	-0.000	-0.043
				0.013	0.011	0.04
DYCT		1	59	-5109.39160	0.003	0.300
				0.013	0.011	0.28
DZCT		1	59	-8175.57130	-0.015	-1.388
				0.013	0.011	1.29
GROUP: 082511.ASC ,obs#: 173						
DXCT		2	59	-6327.90920	0.000	0.041
				0.007	0.003	0.02
DYCT		2	59	654.15120	-0.001	-0.304
				0.007	0.003	0.16
DZCT		2	59	-1871.31240	0.005	1.389
				0.007	0.003	0.72
GROUP: 082511.ASC ,obs#: 174						
DXCT		1	61	-3190.91950	0.005	0.311
				0.016	0.014	0.30
DYCT		1	61	-9345.99210	0.009	0.621
				0.016	0.014	0.61
DZCT		1	61	-11061.89480	-0.012	-0.837
				0.016	0.014	0.82
GROUP: 082511.ASC ,obs#: 175						
DXCT		2	61	-2606.92550	-0.001	-0.316
				0.007	0.003	0.14
DYCT		2	61	-3582.44290	-0.002	-0.628
				0.007	0.003	0.27
DZCT		2	61	-4757.63030	0.002	0.842
				0.007	0.003	0.37
GROUP: 082511.ASC ,obs#: 176						
DXCT		1	62	-1475.79100	-0.000	-0.039
				0.013	0.012	0.04
DYCT		1	62	-7750.80310	-0.008	-0.664
				0.013	0.012	0.68
DZCT		1	62	-8714.09810	-0.002	-0.161
				0.013	0.012	0.17
GROUP: 082511.ASC ,obs#: 177						
DXCT		2	62	-891.80290	0.000	0.045
				0.003	0.001	0.01
DYCT		2	62	-1987.27330	0.001	0.661
				0.004	0.001	0.19
DZCT		2	62	-2409.82120	0.000	0.151
				0.004	0.001	0.04



S T A T I S T I C S S U M M A R Y

Residual Critical Value Type	Tau Max
Residual Critical Value	4.0238
Number of Flagged Residuals	4
Convergence Criterion	0.0010
Final Iteration Counter Value	2
Confidence Level Used	95.0000
Estimated Variance Factor	1.0000
Number of Degrees of Freedom	299

Chi-Square Test on the Variance Factor:

8.5723e-01 < 1.0000 < 1.1819e+00 ?

THE TEST PASSES

NOTE: All confidence regions were computed using the following factors:

Variance factor used	=	1.0000
3-D expansion factor	=	2.7955

Note that, for relative confidence regions, precisions are computed from the ratio of the major semi-axis and the spatial distance between the two stations.

3D Station Confidence Regions (95.000 percent):

STATION	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)
1	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
10	0.043 (0, 0)	0.043 (90, 0)	0.024 (0, 90)
11	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
12	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
13	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
14	0.045 (0, 0)	0.045 (90, 0)	0.026 (0, 90)
15	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
16	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
17	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
18	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
19	0.043 (0, 0)	0.043 (90, 0)	0.022 (0, 90)
2	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
20	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
21	0.043 (0, 0)	0.043 (90, 0)	0.022 (0, 90)
22	0.043 (180, 0)	0.043 (90, 0)	0.023 (0, 90)
23	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
24	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
25	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
2536.65	0.052 (0, 0)	0.052 (90, 0)	0.042 (0, 90)
26	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
27	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
28	0.044 (0, 0)	0.044 (90, 0)	0.025 (0, 90)
29	0.045 (0, 0)	0.045 (90, 0)	0.025 (0, 90)
3	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
30	0.045 (0, 0)	0.045 (90, 0)	0.026 (0, 90)
31	0.044 (0, 0)	0.044 (90, 0)	0.025 (0, 90)
32	0.045 (0, 0)	0.045 (90, 0)	0.027 (0, 90)
33	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
34	0.047 (0, 0)	0.047 (90, 0)	0.029 (0, 90)
35	0.047 (0, 0)	0.047 (90, 0)	0.030 (0, 90)
36	0.049 (0, 0)	0.049 (90, 0)	0.033 (0, 90)
37	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
38	0.042 (0, 0)	0.042 (90, 0)	0.021 (0, 90)
39	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
4	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
40	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
41	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
42	0.043 (0, 0)	0.043 (90, 0)	0.024 (0, 90)
43	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
44	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
45	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
46	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
47	0.049 (0, 0)	0.049 (90, 0)	0.033 (0, 90)
48	0.044 (0, 0)	0.044 (90, 0)	0.025 (0, 90)
4837.22	0.054 (0, 0)	0.054 (90, 1)	0.044 (270, 89)
49	0.045 (0, 0)	0.045 (90, 0)	0.026 (0, 90)
5	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
50	0.045 (0, 0)	0.044 (90, 0)	0.026 (0, 90)
51	0.046 (0, 0)	0.046 (90, 0)	0.028 (0, 90)
52	0.046 (0, 0)	0.046 (90, 0)	0.028 (0, 90)
53	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
54	0.041 (0, 0)	0.041 (90, 0)	0.020 (0, 90)
55	0.047 (0, 0)	0.047 (90, 0)	0.030 (0, 90)

3D Station Confidence Regions (95.000 percent):

STATION	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)
56	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
57	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
58	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
59	0.044 (0, 0)	0.044 (90, 0)	0.025 (0, 90)
6	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
60	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
61	0.044 (0, 0)	0.044 (90, 0)	0.025 (0, 90)
62	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
7	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
8	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
9	0.041 (0, 0)	0.041 (90, 0)	0.019 (0, 90)
901	0.050 (0, 0)	0.049 (90, 0)	0.033 (0, 90)
902	0.043 (0, 0)	0.043 (90, 0)	0.024 (0, 90)
903	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
904	0.044 (0, 0)	0.044 (90, 0)	0.024 (0, 90)
905	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
906	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
907	0.041 (0, 0)	0.041 (90, 0)	0.018 (0, 90)
908	0.042 (0, 0)	0.042 (90, 0)	0.020 (0, 90)
909	0.045 (0, 0)	0.045 (90, 0)	0.027 (0, 90)
910	0.043 (0, 0)	0.043 (90, 0)	0.023 (0, 90)
A 116	0.068 (0, 0)	0.068 (90, 0)	0.060 (0, 90)
C 116	0.069 (90, 0)	0.069 (0, 0)	0.062 (0, 90)
H 29	0.044 (0, 0)	0.044 (90, 0)	0.000 (0, 90)
P007	0.146 (0, 90)	0.000 (0, 0)	0.000 (90, 0)
P100	0.045 (0, 90)	0.000 (0, 0)	0.000 (90, 0)

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)	DISTANCE	PPM
1	10	0.016 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	13743.542	1.16
1	11	0.008 (0, 90)	0.007 (0, 0)	0.007 (90, 0)	10640.489	0.77
1	12	0.007 (0, 90)	0.006 (0, 0)	0.006 (90, 0)	10249.758	0.70
1	13	0.010 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	5364.096	1.82
1	14	0.020 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	8683.549	2.28
1	15	0.011 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	4705.428	2.26
1	16	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	4704.191	2.40
1	17	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	5738.841	1.97
1	18	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	5904.926	1.94
1	19	0.013 (0, 90)	0.013 (0, 0)	0.013 (90, 0)	6532.389	2.00
1	2	0.003 (0, 90)	0.003 (0, 0)	0.003 (90, 0)	8561.738	0.40
1	20	0.012 (0, 90)	0.012 (0, 0)	0.012 (90, 0)	6202.474	1.95
1	21	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	7323.370	1.90
1	22	0.015 (226, 71)	0.014 (90, 14)	0.014 (357, 12)	7801.415	1.95
1	23	0.015 (270, 74)	0.014 (0, 0)	0.014 (90, 16)	7383.846	1.99
1	24	0.014 (0, 90)	0.014 (90, 0)	0.014 (0, 0)	7894.139	1.80
1	25	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	7236.346	2.35
1	2536.65	0.038 (0, 90)	0.038 (0, 0)	0.038 (90, 0)	26478.029	1.44
1	26	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	9618.874	1.66
1	27	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	9377.881	1.61
1	28	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	10519.542	1.65
1	29	0.019 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	11359.078	1.63
1	3	0.005 (0, 90)	0.004 (0, 0)	0.004 (90, 0)	1408.271	3.32
1	30	0.019 (0, 90)	0.019 (0, 0)	0.018 (90, 0)	11966.577	1.57
1	31	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	11684.853	1.56
1	32	0.020 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	12351.179	1.64

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)	DISTANCE	PPM
1	33	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	4697.716	2.38
1	34	0.023 (0, 90)	0.023 (0, 0)	0.023 (90, 0)	13068.380	1.79
1	35	0.024 (0, 90)	0.024 (0, 0)	0.024 (90, 0)	12936.926	1.85
1	36	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	16095.540	1.76
1	37	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	4510.695	2.08
1	38	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	5282.480	2.09
1	39	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	7510.447	1.92
1	4	0.006 (0, 90)	0.004 (90, 0)	0.004 (0, 0)	8666.094	0.66
1	40	0.006 (0, 90)	0.006 (0, 0)	0.006 (90, 0)	6901.144	0.93
1	41	0.015 (0, 90)	0.015 (90, 0)	0.014 (0, 0)	7271.518	2.12
1	42	0.016 (0, 90)	0.015 (90, 0)	0.015 (0, 0)	7431.945	2.14
1	43	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7482.521	2.11
1	44	0.017 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7434.715	2.22
1	45	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7293.063	2.26
1	46	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7176.066	2.29
1	47	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	16158.793	1.75
1	48	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	7182.660	2.38
1	4837.22	0.040 (0, 90)	0.040 (0, 0)	0.040 (90, 0)	26782.473	1.49
1	49	0.019 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	7866.629	2.36
1	5	0.006 (0, 90)	0.005 (0, 0)	0.005 (90, 0)	8920.356	0.65
1	50	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	7248.886	2.55
1	51	0.022 (0, 90)	0.022 (0, 0)	0.022 (90, 0)	9513.901	2.31
1	52	0.022 (0, 90)	0.022 (0, 0)	0.022 (90, 0)	8613.637	2.59
1	53	0.009 (0, 90)	0.008 (90, 0)	0.008 (0, 0)	10915.943	0.79
1	54	0.009 (0, 90)	0.008 (90, 0)	0.008 (0, 0)	10870.856	0.86
1	55	0.025 (0, 90)	0.025 (0, 0)	0.025 (90, 0)	13271.624	1.85

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)	DISTANCE	PPM
1	56	0.011 (0, 90)	0.010 (90, 0)	0.010 (0, 0)	11328.097	0.95
1	57	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	3622.986	2.56
1	58	0.005 (0, 90)	0.005 (0, 0)	0.004 (90, 0)	1313.244	4.19
1	59	0.018 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	11862.563	1.48
1	6	0.006 (0, 90)	0.005 (0, 0)	0.005 (90, 0)	9002.849	0.65
1	60	0.004 (0, 90)	0.003 (0, 0)	0.002 (90, 0)	768.404	4.71
1	61	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	14828.861	1.23
1	62	0.010 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	11755.364	0.86
1	7	0.008 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	9544.937	0.86
1	8	0.008 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	9539.405	0.87
1	9	0.008 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	2926.455	2.80
1	901	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	16607.930	1.72
1	902	0.016 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	13733.075	1.15
1	903	0.002 (0, 90)	0.001 (0, 0)	0.001 (90, 0)	203.555	11.65
1	904	0.017 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7142.678	2.34
1	905	0.015 (0, 90)	0.014 (90, 0)	0.014 (0, 0)	7547.153	1.95
1	906	0.010 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	5385.722	1.86
1	907	0.006 (0, 90)	0.004 (90, 0)	0.004 (0, 0)	8595.860	0.70
1	908	0.010 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	11327.562	0.90
1	909	0.021 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	12334.963	1.66
1	910	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	8766.540	1.64
1	A 116	0.058 (0, 90)	0.058 (0, 0)	0.058 (90, 0)	37941.139	1.52
1	C 116	0.059 (234, 56)	0.059 (100, 25)	0.059 (0, 21)	33398.892	1.77
1	H 29	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	13419.051	1.32
1	P007	0.145 (62, 90)	0.041 (180, 0)	0.041 (270, 0)	106108.235	1.37
1	P100	0.042 (0, 90)	0.041 (0, 0)	0.041 (90, 0)	42453.259	0.99

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)	DISTANCE	PPM
10	2	0.016 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	5377.458	2.91
11	2	0.007 (0, 90)	0.007 (0, 0)	0.006 (90, 0)	2117.858	3.53
12	2	0.006 (0, 90)	0.005 (0, 0)	0.005 (90, 0)	1726.940	3.68
13	2	0.010 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	3337.397	2.86
14	2	0.020 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	10037.364	1.98
15	2	0.011 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	4751.063	2.24
16	2	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	5759.835	1.98
17	2	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	4703.807	2.38
18	2	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	4680.000	2.43
19	2	0.013 (0, 90)	0.013 (0, 0)	0.013 (90, 0)	5542.374	2.35
2	20	0.012 (0, 90)	0.012 (0, 0)	0.012 (90, 0)	4969.323	2.41
2	21	0.014 (0, 90)	0.014 (0, 0)	0.013 (90, 0)	5651.466	2.45
2	22	0.015 (226, 71)	0.014 (90, 14)	0.013 (357, 12)	5462.359	2.77
2	23	0.015 (270, 74)	0.014 (0, 0)	0.013 (90, 16)	5615.697	2.60
2	24	0.014 (0, 90)	0.014 (90, 0)	0.014 (0, 0)	5455.064	2.59
2	25	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	8882.698	1.92
2	2536.65	0.038 (0, 90)	0.038 (0, 0)	0.038 (90, 0)	27645.129	1.38
2	26	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	6207.613	2.55
2	27	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	5735.857	2.59
2	28	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	6706.332	2.57
2	29	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	7133.415	2.58
2	3	0.006 (0, 90)	0.006 (0, 0)	0.005 (90, 0)	8449.317	0.68
2	30	0.019 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	7152.632	2.60
2	31	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	6930.669	2.61
2	32	0.020 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	7921.013	2.54
2	33	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	5777.956	1.95

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)	DISTANCE	PPM
2	34	0.023 (0, 90)	0.023 (0, 0)	0.023 (90, 0)	9491.311	2.45
2	35	0.024 (0, 90)	0.024 (0, 0)	0.024 (90, 0)	9899.561	2.41
2	36	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	11507.363	2.46
2	37	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	4052.996	2.29
2	38	0.011 (0, 90)	0.011 (0, 0)	0.011 (90, 0)	4602.164	2.39
2	39	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	5847.424	2.46
2	4	0.005 (0, 90)	0.002 (90, 0)	0.002 (0, 0)	532.617	8.78
2	40	0.006 (0, 90)	0.005 (0, 0)	0.005 (90, 0)	1729.168	3.22
2	41	0.015 (0, 90)	0.014 (90, 0)	0.014 (0, 0)	6343.231	2.42
2	42	0.016 (0, 90)	0.015 (90, 0)	0.015 (0, 0)	6836.620	2.33
2	43	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7140.964	2.21
2	44	0.017 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	7897.783	2.09
2	45	0.017 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	8145.572	2.03
2	46	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	8311.554	1.98
2	47	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	11503.103	2.45
2	48	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	8844.298	1.94
2	4837.22	0.040 (0, 90)	0.040 (0, 0)	0.040 (90, 0)	29413.360	1.36
2	49	0.019 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	9506.980	1.96
2	5	0.005 (0, 90)	0.004 (0, 0)	0.004 (90, 0)	1279.326	3.74
2	50	0.019 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	10548.228	1.76
2	51	0.022 (0, 90)	0.022 (0, 0)	0.022 (90, 0)	11140.579	1.98
2	52	0.022 (0, 90)	0.022 (0, 0)	0.022 (90, 0)	13316.642	1.68
2	53	0.008 (0, 90)	0.007 (90, 0)	0.007 (0, 0)	2481.263	3.23
2	54	0.009 (0, 90)	0.008 (90, 0)	0.008 (0, 0)	2590.399	3.40
2	55	0.025 (0, 90)	0.024 (0, 0)	0.024 (90, 0)	10413.233	2.36
2	56	0.010 (0, 90)	0.010 (90, 0)	0.010 (0, 0)	3347.565	3.09

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ, VANG)	MED-SEMI (AZ, VANG)	MIN-SEMI (AZ, VANG)	DISTANCE	PPM
2	57	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	4947.852	1.91
2	58	0.006 (0, 90)	0.006 (0, 0)	0.005 (90, 0)	8461.544	0.76
2	59	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	6631.149	2.62
2	6	0.005 (0, 90)	0.004 (0, 0)	0.004 (90, 0)	1412.727	3.45
2	60	0.005 (0, 90)	0.004 (0, 0)	0.004 (90, 0)	8810.698	0.56
2	61	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	6501.154	2.77
2	62	0.010 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	3248.354	2.96
2	7	0.008 (0, 90)	0.007 (0, 0)	0.007 (90, 0)	2379.192	3.17
2	8	0.008 (0, 90)	0.007 (0, 0)	0.007 (90, 0)	2386.844	3.20
2	9	0.009 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	5663.507	1.51
2	901	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	11454.918	2.48
2	902	0.016 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	5360.923	2.90
2	903	0.004 (0, 90)	0.004 (0, 0)	0.003 (90, 0)	8661.200	0.48
2	904	0.017 (0, 90)	0.017 (0, 0)	0.016 (90, 0)	8488.697	1.98
2	905	0.015 (0, 90)	0.014 (90, 0)	0.014 (0, 0)	6094.022	2.41
2	906	0.010 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	3256.164	3.01
2	907	0.005 (0, 90)	0.002 (90, 0)	0.002 (0, 0)	394.635	12.65
2	908	0.010 (0, 90)	0.009 (90, 0)	0.009 (0, 0)	3171.007	3.07
2	909	0.020 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	8023.924	2.54
2	910	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	5278.050	2.68
2	A 116	0.058 (0, 90)	0.058 (0, 0)	0.058 (90, 0)	44158.198	1.31
2	C 116	0.059 (233, 56)	0.059 (100, 24)	0.059 (0, 22)	38681.837	1.53
2	H 29	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	10704.872	1.65
2	P007	0.145 (67, 90)	0.041 (180, 0)	0.041 (270, 0)	104597.331	1.39
2	P100	0.042 (0, 90)	0.041 (0, 0)	0.041 (90, 0)	35633.437	1.18
2536.65	P100	0.053 (0, 84)	0.052 (180, 6)	0.052 (90, 0)	34931.693	1.50

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ,VANG)	MED-SEMI (AZ,VANG)	MIN-SEMI (AZ,VANG)	DISTANCE	PPM
4837.22	P100	0.054 (0, 90)	0.054 (0, 0)	0.054 (90, 0)	39857.975	1.37
A 116	P100	0.069 (0, 81)	0.068 (180, 9)	0.068 (90, 0)	61099.965	1.13
C 116	P100	0.069 (0, 90)	0.069 (90, 0)	0.069 (0, 0)	53561.263	1.29
H 29	P100	0.045 (270, 85)	0.044 (0, 0)	0.044 (90, 5)	43707.011	1.03
P007	P100	0.150 (0, 90)	0.000 (0, 0)	0.000 (90, 0)	127686.713	1.17

05:52:54, Fri Aug 26, 2011

1110403 USGS-CITY OF ROCKS *** GROUND SURVEY FILE ***

HORIZONTAL - NAD 83/07 UTM ZONE 11

VERTICAL - NAVD88 METERS

STATION	EASTING	NORTHING	ELEVATION
1	776174.287	4669067.407	1756.131
2	778278.918	4660766.957	1622.770
3	777577.178	4669188.999	1718.418
4	777791.624	4660551.956	1635.755
5	777133.645	4660196.894	1654.635
6	777031.741	4660103.514	1659.695
7	776253.158	4659520.382	1701.228
8	776240.898	4659525.817	1702.434
9	777207.764	4666329.576	1685.215
10	777763.761	4655412.675	1645.377
11	778351.697	4658649.743	1633.716
12	778306.837	4659039.755	1633.018
13	778210.655	4664104.609	1639.947
14	768899.542	4664328.450	1996.866
15	775275.813	4664447.321	1769.123
16	774179.181	4664807.418	1868.074
17	774506.265	4663574.786	1768.324
18	774428.494	4663424.902	1777.632
19	773301.253	4663199.320	1824.712
20	773983.747	4663263.050	1791.967
21	772906.850	4662512.004	1849.971
22	772953.338	4661960.911	1878.995
23	772920.655	4662437.650	1847.534
24	772940.206	4661865.073	1878.877
25	770359.822	4664769.206	2080.594
26	772087.800	4660357.803	1861.971
27	772556.953	4660413.270	1849.485
28	771687.899	4659550.845	1901.132
29	771441.860	4658738.503	1850.917
30	771698.912	4657966.383	1840.058
31	771836.694	4658214.640	1829.758
32	770897.568	4657897.339	1858.794
33	774166.774	4664820.495	1870.990
34	769195.074	4658015.334	1830.379
35	768629.219	4658555.053	1826.721
36	768306.364	4655021.622	1784.484
37	777195.738	4664673.499	1668.044
38	774938.237	4663930.229	1781.375
39	772673.841	4662421.318	1860.487
40	778286.515	4662496.606	1630.939
41	772312.072	4662906.051	1902.636
42	771834.261	4663034.379	1920.040
43	771562.085	4663175.990	1938.701
44	770975.908	4663755.314	1998.733
45	770849.689	4664088.272	2020.302
46	770782.240	4664337.667	2029.276
47	768376.162	4654910.467	1783.524
48	770412.865	4664788.216	2084.614
49	769632.760	4664703.784	2036.368
50	769421.975	4666468.424	2224.710
51	767801.264	4664548.611	1923.353
52	767570.806	4668679.862	1995.003
53	777993.108	4658301.551	1643.269
54	777548.083	4658281.166	1652.111
55	768109.250	4658523.659	1811.312
56	776817.082	4657754.766	1672.518

57	777251.550	4665608.146	1677.145
58	777481.440	4669192.718	1721.520
59	772328.476	4657842.577	1811.873
60	775408.126	4669097.310	1809.539
61	777580.356	4654301.580	1652.790
62	778386.472	4657519.411	1626.992
901	768958.251	4654104.637	1769.480
902	777792.434	4655426.596	1643.959
903	775977.539	4669118.036	1769.654
904	770673.743	4664517.962	2051.559
905	772442.391	4662506.518	1878.307
906	776940.080	4663735.263	1696.320
907	777903.376	4660645.698	1632.510
908	777201.804	4657783.785	1664.042
909	770754.891	4657984.031	1869.087
910	773005.627	4660891.713	1845.053
2536.65	801985.581	4675008.600	1438.808
4837.22	800723.814	4679793.747	1424.664
H 29	767798.963	4658579.039	1810.821
P007	681350.115	4621451.817	1702.921
P100	807616.411	4640519.643	1898.783
A 116	797094.798	4700733.870	1346.903
C 116	799051.501	4693415.119	1371.225



RANGE Missing
code (105)

LIDAR FLIGHT REPORT

Title: KAS11-116-622-20110624A

Date: 6.24.2011
Project: City of Rocks
Aircraft: NG9622
Sensor: Optech

Pilot: AS
Operator: JP
HD: A

Flight Plan		Weather	
Roll Comp	<u>OF</u>	Pressure (gnd)	<u>29.94</u>
Scan Rate	<u>40</u>	Temperature (gnd)	<u>72°F</u>
Pulse Rate	<u>70</u>	Temperature (air)	<u>60°F</u>
Scan Angle	<u>12</u>	Dew Pt	<u>59°F</u>
Desired Rng	<u>1800</u>	Turbulence	<u>Severe</u>
Planned GPS	<u>157 kts</u>	Visibility	<u>10 SM</u>

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes	POS/AV File Name
TEST	19:40:45	19:42:30	W	0-130	2.0	21	147		
TEST	19:42:32	19:42:51	W	" "	" "	" "	" "		
TEST	19:50:40	19:51:42	N	1,800	1.53	22	159		ALTM Logfile Name
54	19:52:38	19:53:15	N	1,800	1.53	22	160	ABORT: RED SWATH	Too much Roll
54	20:02:09	20:04:46	N	1,800	1.62	22	158	Turbulence: RED SWATH	RE-FLY
54	20:16:44	20:20:40	N	1,800	1.67	21	159	"RANGE MISSING 105"	Additional Flight Remarks
CROSS	20:27:33	20:28:52	E	1,750	1.64	21	161		

Base Station
 Location: KIDA
 Point ID: N/A
 Position Type: Known/Autonomous
 Antenna Height: 2 Meters
 Latitude: W: 112 04 17.85
 Longitude: N: 43 30 45.93
 Location: KIDA
 Time On: 17:23 UTC
 Time Off: 21:38 UTC
 PDOP: 1.4
 SV's: 12

Airborne Station
 Time On: 17:48 UTC
 Kinematic On: 17:54 UTC
 Kinematic Off: 21:09 UTC
 Time Off: 21:14 UTC

Hobbs Start	<u>3060.6</u>
Hobbs End	<u>3063.0</u>
Flight Time	<u>3.6</u>



LIDAR FLIGHT REPORT

Title: KAIL-114-20110627C

Date: 6.27.11
 Project: _____
 Aircraft: N69622
 Sensor: OPTECH

Pilot: AS
 Operator: JP
 HD: D

Flight Plan		Weather	
Roll Comp	<u>OFF</u>	Pressure (gnd)	<u>29.97</u>
Scan Rate	<u>40 Hz</u>	Temperature (gnd)	
Pulse Rate	<u>70 kHz</u>	Temperature (air)	<u>58°F</u>
Scan Angle	<u>17°</u>	Dew Pt	
Desired Rng	<u>1,500</u>	Turbulence	<u>MODERATE</u>
Planned GPS	<u>163 KTS</u>	Visibility	<u>CLEAR</u>

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes	POS/AV File Name
TEST	00:07:04	00:07:48	NE	1,750	1.39	20	158		
15.5	00:08:16	00:15:02	N	1,800	1.54	19	166	1/2 Length Line	
16.5	00:19:50	00:30:46	S	1,300	1.57	19	168	Full Line	ALTM Logfile Name
→ 17.5	00:35:28	00:46:15	N	1,800	1.52	19	161	170 kts, South End	Line 18, 19: RE-FLY S. END
→ 18	00:53:34	01:01:50	S	1,600	1.62	18	158	RED SWATH, south END	
→ 19	01:06:12	01:17:36	N	1,700	1.36	23	160	RED SWATH, south END	Additional Flight Remarks
→ 20	01:22:17	1:33:47	S	1,600	1.33	20	165	SMALL GAP 1/2 OF Line 20	BETWEEN 19 & 20
CROSS	01:39:31	01:41:02	E	1,800	1.71	19	166		

RED SWATH S. END

Base Station
 Location: KIPD
 Point ID: N/A
 Position Type: Known / Autonomous
 Antenna Height: 2 Meters
 Latitude: W: 112° 04' 17.92
 Longitude: N: 43° 30' 45.94
 Time On: 13:14 UTC
 Time Off: 2:33 UTC
 PDOP: 1.9
 SV's: 11

Airborne Station
 Time On: 23:39 UTC
 Kinematic On: 23:38 UTC
 Kinematic Off: 02:08 UTC
 Time Off: 02:18 UTC

Hobbs Start	
Hobbs End	
Flight Time	<u>2.6</u>



Date: 7 12 11 Pilot: AS
 Project: City of Rocks Operator: JP
 Aircraft: N69622, Cessna 310
 Sensor: Optech HD: D

Flight Plan		Weather	
Roll Comp:	On or <u>Off</u>	Pressure (gnd):	
Multipulse:	On or <u>Off</u>	Temperature (gnd):	<u>81°F</u>
Beam Divergence:	Wide or <u>Narrow</u>	Temperature (air):	<u>60°F</u>
Scan Rate:	<u>40 Hz</u>	Dew Point:	
Pulse Rate:	<u>70 kHz</u>	Turbulence:	<u>CALM</u>
Scan Angle:	<u>12°</u>	Visibility:	<u>CLEAR</u>
Desired Range:	<u>1,800</u>		
Planned GPS:	<u>163</u>		

POS/AV Filename: KAS11_116_20110702A

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
TEST	17:26:58	17:28:17	S	1,680	1.29	21	161	
1	17:28:55	17:33:49	S	1,300	1.29	21	160	
2	17:39:28	17:44:02	N	1,800	1.51	20	162	
3	17:48:38	17:53:38	S	1,600	1.56	20	164	
4	17:57:07	18:02:10	N	1,830	1.72	20	159	
5	18:07:51	18:12:45	S	1,500	1.84	20	164	
6	18:16:14	18:16:42	N	1,500	1.84	21	160	ABORT
CROSS	18:22:45	18:24:08	W	1,800	1.88	21	156	

Base Station

Point ID: N/A
 Position Type: Known / Autonomous
 Antenna Height: 2 Meters
 Latitude: W-112 04 17.66
 Longitude: N-43 30 46.18

Location: KIDA
 Time On: 19:00 UTC
 Time Off: 22:16:22 UTC
 PDOP: 1.7
 SV's: 11

Airborne Station

Time On: 16:32 UTC
 Kinematic On: 16:37 UTC
 Kinematic Off: 18:55 UTC
 Time Off: 19:30 UTC

Hobbs Start: 3083.1
 Hobbs End: 3085.6
 Flight Time: 2.5



Date: 7/2/2011 Pilot: AS
 Project: City of Rocks Operator: JP
 Aircraft: N69622:CESSNA 310
 Sensor: Optech HD: D

POS/AV Filename: KAS11-116-20110702B

Flight Plan		Weather	
Roll Comp:	On or <u>Off</u>	Pressure (gnd):	
Multipulse:	On or <u>Off</u>	Temperature (gnd):	
Beam Divergence:	Wide or <u>Narrow</u>	Temperature (air):	
Scan Rate:	<u>40</u>	Dew Point:	
Pulse Rate:	<u>70</u>	Turbulence:	<u>MODERATE</u>
Scan Angle:	<u>12</u>	Visibility:	
Desired Range:			
Planned GPS:	<u>157 kts</u>		

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
TEST	19:58:51	19:59:42	S	1,500	1.62	20	166	
7	20:01:40	20:06:51	S	1,000	1.60	20	162	
6	20:10:34	20:15:37	N	1,900	1.52	22	160	
8	20:19:40	20:25:11	S	730	1.62	21	159	
9	20:29:18	20:30:27	N	1,800	1.28	23	160	ABORT: RED Swath/Wind
9	20:37:56	20:42:47	N	1,900	1.27	23	158	Short RED SWATH, S. End
10	20:47:42	20:52:38	S	1,200	1.32	22	163	RED SWATH @ South END
CROSS	21:01:19	21:02:27	E	1,900	1.40	21	156	
CROSS 2	21:05:03	21:06:14	W	1,800	1.39	21	157	

Base Station
 Point ID: N/A
 Position Type: Known / Autonomous
 Antenna Height: 2 Meters
 Latitude: W: 112 04 17.66
 Longitude: N: 43 30 46.18
 Location: KIOA
 Time On: 19:00 UTC
 Time Off: 22:16:22 UTC
 PDOP: 1.7
 SVs: 11

Airborne Station
 Time On: 19:23 UTC
 Kinematic On: 19:28 UTC
 Kinematic Off: 20:49 UTC
 Time Off: 20:54 UTC

Hobbs Start: 3085.6
 Hobbs End: 3088.4
 Flight Time: 2.8

Keystone Aerial Surveys, Inc. - LIDAR FLIGHT REPORT



Date: 07/13/11 Pilot: AS
 Project: City of Rocks, ID Operator: KS
 Aircraft: N69622
 Sensor: Dptech Gemini HD: A
N/A

Flight Plan		Weather	
Roll Comp:	On or <u>Off</u>	Pressure (gnd):	<u>29.91</u>
Multipulse:	On or <u>Off</u>	Temperature (gnd):	<u>22° C</u>
Beam Divergence:	Wide or <u>Narrow</u>	Temperature (air):	<u>18° C</u>
Scan Rate:	<u>43</u>	Dew Point:	<u>14° C</u>
Pulse Rate:	<u>70</u>	Turbulence:	<u>light to moderate</u>
Scan Angle:	<u>12</u>	Visibility:	<u>10 SM</u>
Desired Range:	<u>1800</u>		
Planned GPS:	<u>157</u>		

POS/AV Filename: KAS11-114-20110713A

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
Test	151610	151848	233	200	1.76	16	164	
9	153428	153935	178	1800	1.75	16	157	
10	155436	155912	358	1900	1.64	17	157	
11	160421	160921	178	1800	1.72	16	155	
12	161402	161904	358	1900	1.65	19	157	
13	162354	162913	178	1800	1.63	19	156	
14	163447	163949	358	1900	1.28	20	157	
15	164522	165030	178	1900	1.30	21	157	
16	170132	170638	358	1900	1.54	20	153	Red swath approx 8 mile from end of line
17	171247	171756	178	1900	1.72	20	158	Red swath approx 2-3 miles from end of line
18	172338	172437	358	1900	1.79	20	162	Red swath approx 9 mile from end of line - Turbulence
Cross	173043	173158	090	1800	1.78	21	151	Red swath at east end of cross tie
Cross	173555	173722	270	1800	1.86	21	151	Red swath at east end of cross tie
Cross	174118	174254	090	1900	1.90	21	168	

Base Station		Location: <u>KPIH</u>
Point ID: <u>N/A</u>	Time On: <u>140417</u> UTC	Time Off: <u>182400</u> UTC
Position Type: <u>Known / Autonomous</u>	PDOP: <u>1.8</u>	SV's: <u>11</u>
Antenna Height: <u>2</u> Meters		
Latitude: <u>42° 54' 29"</u>		
Longitude: <u>112° 35' 04"</u>		

Airborne Station	
Time On: <u>145240</u> UTC	Kinematic On: <u>145800</u> UTC
Time Off: <u>181358</u> UTC	Kinematic Off: <u>180858</u> UTC

Hobbs Start:	<u>3109.7</u>
Hobbs End:	<u>3113.2</u>
Flight Time:	<u>3.5</u>

Keystone Aerial Surveys, Inc. - LIDAR FLIGHT REPORT



Date: 07/17/11 Pilot: AS
 Project: City of Rocks, ID Operator: KS
 Aircraft: N69622
 Sensor: Optech Gemini HD: D
N/A

Flight Plan		Weather	
Roll Comp:	On or <u>Off</u>	Pressure (gnd):	<u>2999</u>
Multipulse:	On or <u>Off</u>	Temperature (gnd):	<u>17°C</u>
Beam Divergence:	Wide or <u>Narrow</u>	Temperature (air):	<u>18°C</u>
Scan Rate:	<u>43</u>	Dew Point:	<u>4°C</u>
Pulse Rate:	<u>70</u>	Turbulence:	<u>light - moderate</u>
Scan Angle:	<u>12</u>	Visibility:	<u>10 SM</u>
Desired Range:	<u>1800</u>		
Planned GS:	<u>157</u>		

POS/AV Filename: KAS11 - 116 - 20110717A

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
Test	151039	151150	227	300	1.76	15	165	Laser Emission ON/OFF
41	152323	152820	178	1800	1.73	15	155	Range missing 8.5 miles to end of line / Laser Emission ON/OFF
42	153241	153743	358	1800	1.70	15	160	Laser Emission ON/OFF throughout entire line
43	154311	154828	178	1800	1.65	14	151	Laser Emission ON/OFF
44	155158	155655	358	1800	1.72	15	158	
45	160059	160534	178	1800	1.73	17	156	
46	160945	161413	358	1800	1.64	18	160	
47	161929	162438	178	1800	1.26	20	156	
48	162740	163234	358	1800	1.29	21	163	Laser Emission on/off at very beginning of line
49	163715	164223	178	1800	1.30	21	155	Laser Emission on/off
CROSS	164551	164734	090	1800	1.54	20	155	
								Laser Emission on/off seemed to appear when turbulence was experienced

Base Station	
Point ID: <u>N/A</u>	Location: <u>KPIH</u>
Position Type: <u>Known / Autonomous</u>	Time On: <u>171910</u> UTC
Antenna Height: <u>2</u> Meters	Time Off: <u>173100</u> UTC
Latitude: <u>42 54 29</u>	PDOP: <u>1.7</u>
Longitude: <u>112 35 04</u>	SVs: <u>10</u>

Airborne Station	
Time On: <u>144430</u> UTC	
Kinematic On: <u>144930</u> UTC	
Kinematic Off: <u>171557</u> UTC	
Time Off: <u>172057</u> UTC	

Hobbs Start:	<u>3/22.9</u>
Hobbs End:	<u>3/25.6</u>
Flight Time:	<u>2.7</u>

Keystone Aerial Surveys, Inc. - LIDAR FLIGHT REPORT



Date: 07/18/11 Pilot: AS
 Project: City of Rocks, ID Operator: KS
 Aircraft: N69622 HD: C
 Sensor: Optech Gemini HD: N/A

Flight Plan		Weather	
Roll Comp:	On or <u>Off</u>	Pressure (gnd):	<u>30.05</u>
Multipulse:	On or <u>Off</u>	Temperature (gnd):	<u>27°C</u>
Beam Divergence:	Wide or <u>Narrow</u>	Temperature (air):	<u>19°C</u>
Scan Rate:	<u>43</u>	Dew Point:	<u>11°C</u>
Pulse Rate:	<u>70</u>	Turbulence:	<u>CALM</u>
Scan Angle:	<u>12</u>	Visibility:	<u>10.5M</u>
Desired Range:	<u>1800</u>		
Planned GS:	<u>157</u>		

POS/AV Filename: KAS11-116-20110718A

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
<i>Test</i>	150133	150248	245	300	1.76	16	179	
50	152117	152652	178	1800	1.72	16	158	
51	153644	154120	358	1800	1.69	16	157	<i>missed the beginning portion of line</i>
52	154558	155127	178	1800	1.57	17	157 155	
53	155528	160047	358	1800	1.73	15	157	
54	160645	161107	178	1800	1.64	18	155	
51	161436	161658	358	1800	1.28	20	152	<i>reflight - just very beginning</i>
cross	161928	162057	090	1800	1.29	20	160	

Base Station	
Location:	<u>KPEH</u>
Point ID:	<u>N/A</u>
Time On:	<u>142400</u> UTC
Position Type:	<u>Known / Autonomous</u>
Time Off:	<u>165800</u> UTC
Antenna Height:	<u>2</u> Meters
PDOP:	<u>2.0</u>
Latitude:	<u>42 54 29</u>
SV's:	<u>10</u>
Longitude:	<u>112 35 04</u>

Airborne Station	
Time On:	<u>144259</u> UTC
Kinematic On:	<u>144750</u> UTC
Kinematic Off:	<u>164655</u> UTC
Time Off:	<u>165155</u> UTC

Hobbs Start:	<u>3125.6</u>
Hobbs End:	<u>3127.8</u>
Flight Time:	<u>2.2</u>



Date: 07/26/11 Pilot: AS
 Project: City of Rocks, ID Operator: KS
 Aircraft: N6902Z
 Sensor: Optech Gemini HD: NEW SSD

Flight Plan		Weather	
Roll Comp:	On or <u>Off</u>	Pressure (gnd):	<u>3000</u>
Multipulse:	On or <u>Off</u>	Temperature (gnd):	<u>19°C</u>
Beam Divergence:	Wide or <u>Narrow</u>	Temperature (air):	<u>19°C</u>
Scan Rate:	<u>43</u>	Dew Point:	<u>9°C</u>
Pulse Rate:	<u>70</u>	Turbulence:	<u>CALM</u>
Scan Angle:	<u>12</u>	Visibility:	<u>10 SM</u>
Desired Range:	<u>1800</u>		
Planned GS:	<u>157</u>		

POS/AV Filename: KAS11-116-20110726 A

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
<i>Test</i>	<i>155455</i>	<i>155622</i>	<i>230</i>	<i>200</i>	<i>1.30</i>	<i>21</i>	<i>143</i>	
<i>15</i>	<i>161316</i>	<i>161542</i>	<i>178</i>	<i>1800</i>	<i>1.51</i>	<i>21</i>	<i>154</i>	<i>Red Swath - Aborted</i>
<i>15</i>	<i>162102</i>	<i>162638</i>	<i>178</i>	<i>1800</i>	<i>1.68</i>	<i>20</i>	<i>146</i>	
<i>16</i>	<i>163035</i>	<i>163554</i>	<i>358</i>	<i>1800</i>	<i>1.78</i>	<i>20</i>	<i>150</i>	
<i>17</i>	<i>164004</i>	<i>164551</i>	<i>178</i>	<i>1800</i>	<i>1.81</i>	<i>21</i>	<i>153</i>	
<i>18</i>	<i>164923</i>	<i>165441</i>	<i>358</i>	<i>1800</i>	<i>1.89</i>	<i>21</i>	<i>150</i>	
<i>24</i>	<i>165856</i>	<i>170418</i>	<i>178</i>	<i>1800</i>	<i>1.97</i>	<i>20</i>	<i>150</i>	
<i>25</i>	<i>170805</i>	<i>171307</i>	<i>358</i>	<i>1800</i>	<i>1.97</i>	<i>21</i>	<i>157</i>	
<i>26</i>	<i>171758</i>	<i>172336</i>	<i>178</i>	<i>1800</i>	<i>1.92</i>	<i>21</i>	<i>157</i>	
<i>27</i>	<i>172808</i>	<i>173340</i>	<i>358</i>	<i>1800</i>	<i>1.43</i>	<i>22</i>	<i>156</i>	
<i>28</i>	<i>173902</i>	<i>174426</i>	<i>178</i>	<i>1800</i>	<i>2.02</i>	<i>21</i>	<i>157</i>	
<i>32</i>	<i>174803</i>	<i>175311</i>	<i>358</i>	<i>1800</i>	<i>1.55</i>	<i>22</i>	<i>157</i>	
<i>Cross</i>	<i>175725</i>	<i>175944</i>	<i>090</i>	<i>1800</i>	<i>1.65</i>	<i>22</i>	<i>158</i>	

Base Station	
Location:	<u>KPIH</u>
Point ID:	<u>N/A</u>
Position Type:	<u>Known / Autonomous</u>
Antenna Height:	<u>2</u> Meters
Latitude:	<u>42 54 29</u>
Longitude:	<u>112 35 04</u>
Time On:	<u>151530</u> UTC
Time Off:	<u>231500</u> UTC
PDOP:	<u>2.2</u>
SVs:	<u>10</u>

Airborne Station	
Time On:	<u>153601</u> UTC
Kinematic On:	<u>154101</u> UTC
Kinematic Off:	<u>182653</u> UTC
Time Off:	<u>183153</u> UTC

Hobbs Start:	<u>3148.1</u>
Hobbs End:	<u>3151.3</u>
Flight Time:	<u>3.2</u>

Keystone Aerial Surveys, Inc. - LIDAR FLIGHT REPORT



Date: 07/26/11 Pilot: AS
 Project: City of Rocky, ID Operator: KS
 Aircraft: N49622
 Sensor: Optech Gemini HD: NEW SSD

Flight Plan		Weather	
Roll Comp:	On or Off	Pressure (gnd):	29.98
Multipulse:	On or Off	Temperature (gnd):	26 °C
Beam Divergence:	Wide or Narrow	Temperature (air):	°C
Scan Rate:	43	Dew Point:	21 °C
Pulse Rate:	70	Turbulence:	calm - light
Scan Angle:	12	Visibility:	10.5M
Desired Range:	1800		
Planned GS:	157		

POS/AV Filename: KAS11-116_20110726B

Line #	Start Time	End Time	HDG	Range	PDOP	SV	Speed (kts)	Flight Notes
Test	207957	204122	235	800	1.77	19	172	
33	210250	210835	178	1800	1.72	19	159	
34	211205	211717	358	1800	1.91	18	157	
35	212336	212837	178	1800	1.95	19	151	
41	213210	213742	358	1800	1.93	19	155	
42	214210	214803	178	1800	1.87	17	150	
43	215208	215731	358	1800	1.79	17	155	
45	220149	220726	178	1800	1.36	19	150	
48	221047	221608	358	1800	1.39	19	150	
49	221932	222459	178	1800	1.55	18	155	
Cross	222841	203011	090	1800	1.56	18	160	

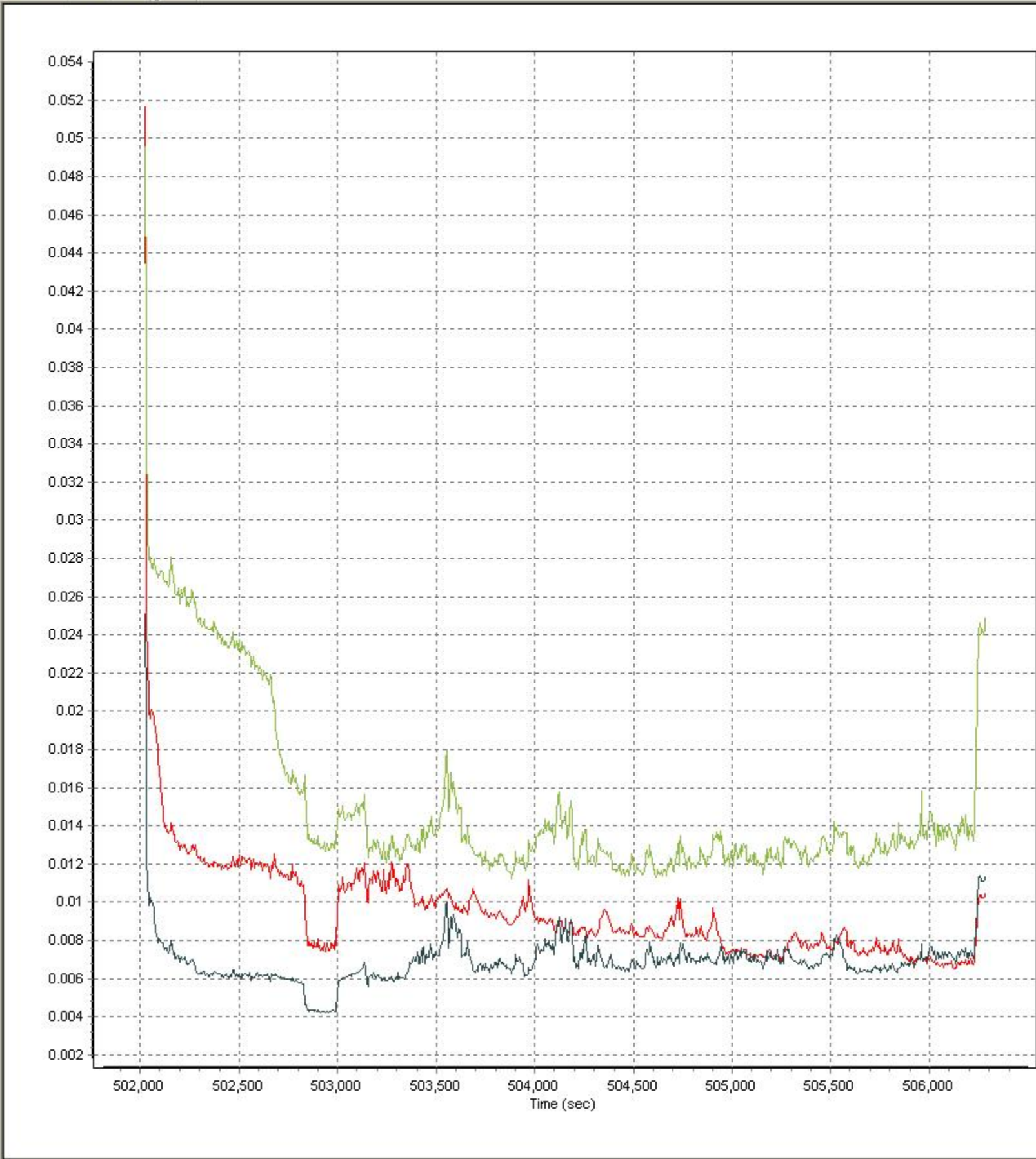
Base Station	
Location:	<u>KPFH</u>
Point ID:	<u>N/A</u>
Position Type:	<u>Known / Autonomous</u>
Antenna Height:	<u>2</u> Meters
Latitude:	<u>42 54 29</u>
Longitude:	<u>112 35 04</u>
Time On:	<u>151530</u> UTC
Time Off:	<u>231500</u> UTC
PDOP:	<u>2.2</u>
SV's:	<u>18</u>

Airborne Station	
Time On:	<u>190754</u> UTC <u>202726</u>
Kinematic On:	<u>191254</u> UTC <u>203236</u>
Kinematic Off:	<u>222846</u> UTC
Time Off:	<u>230340</u> UTC

Hobbs Start:	<u>3151.3</u>
Hobbs End:	<u>3154.4</u>
Flight Time:	<u>3.1</u>



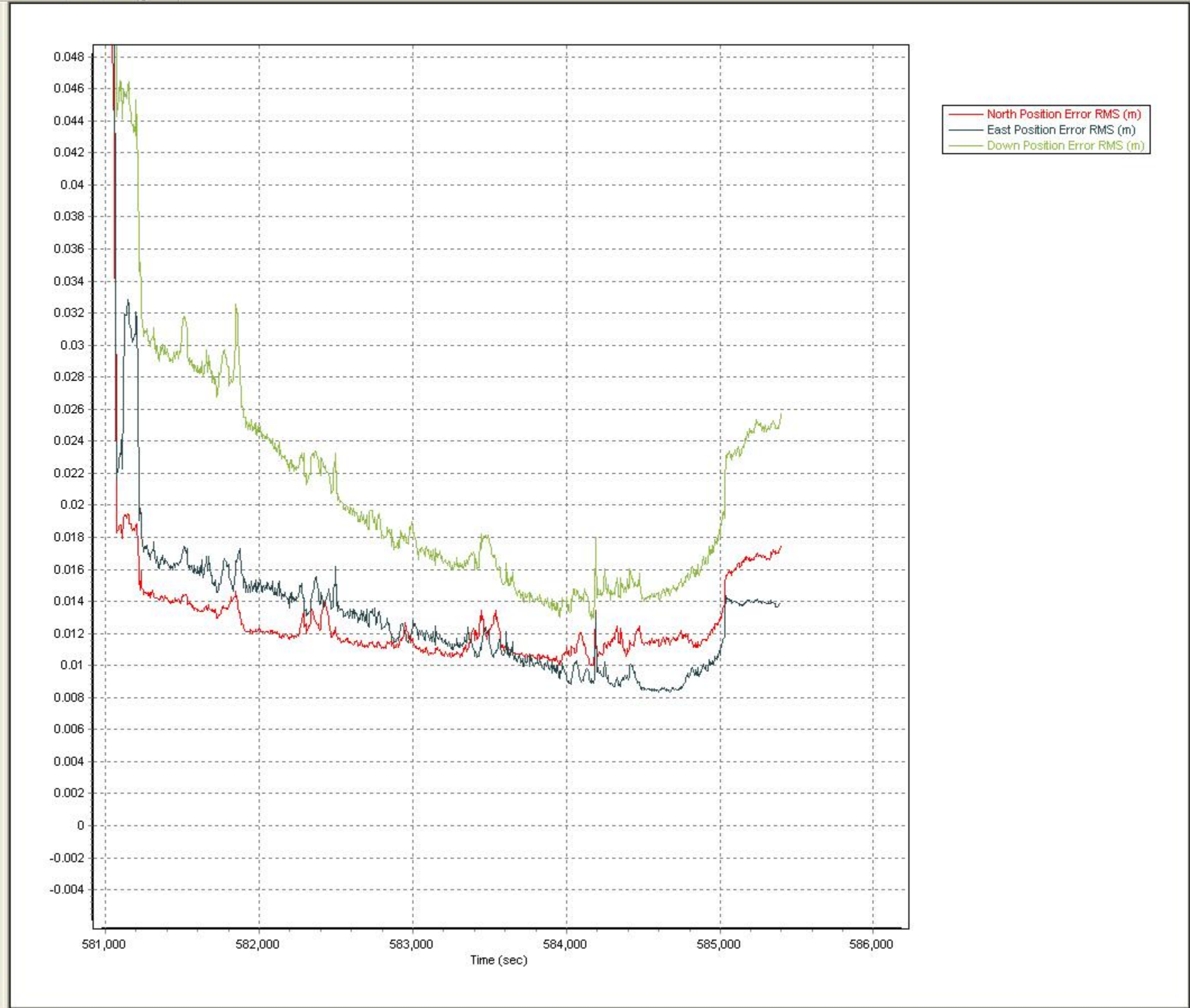
- Smoothed Performance Metrics, R
- North Position Error RMS (m)
- East Position Error RMS (m)
- Down Position Error RMS (m)
- North Velocity Error RMS (m/s)
- East Velocity Error RMS (m/se)
- Down Velocity Error RMS (m/s)
- Roll Error RMS (arc-min)
- Pitch Error RMS (arc-min)
- Heading Error RMS (arc-min)
- Smoothed Estimated Errors
- x accelerometer bias (micro-g)
- y accelerometer bias (micro-g)
- z accelerometer bias (micro-g)
- x accelerometer scale error (pp
- y accelerometer scale error (pp
- z accelerometer scale error (pp
- x gyro bias (deg/hr)
- y gyro bias (deg/hr)
- z gyro bias (deg/hr)
- x gyro scale error (ppm)
- y gyro scale error (ppm)
- z gyro scale error (ppm)
- Forward Processed Trajectory, Re
- Forward Processed Performance M
- Calibrated Installation Parameters
- Solution Status
- Forward Processed Estimated Erro
- Forward Processed Measurement
- Forward Processed GPS Measure
- Backward Processed GPS Measu
- Real-time Trajectory, Vehicle Fram
- Real-time Performance Metrics, Ve
- Real-time POS Estimated Errors
- Real-time POS Measurement Resi
- IMU Data
- Primary GPS Navigation Data
- Primary GPS Observables Data
- Primary GPS Satellite Data
- Base GPS Observables Data
- Base GPS Satellite Data



North Position Error RMS (m)
East Position Error RMS (m)
Down Position Error RMS (m)

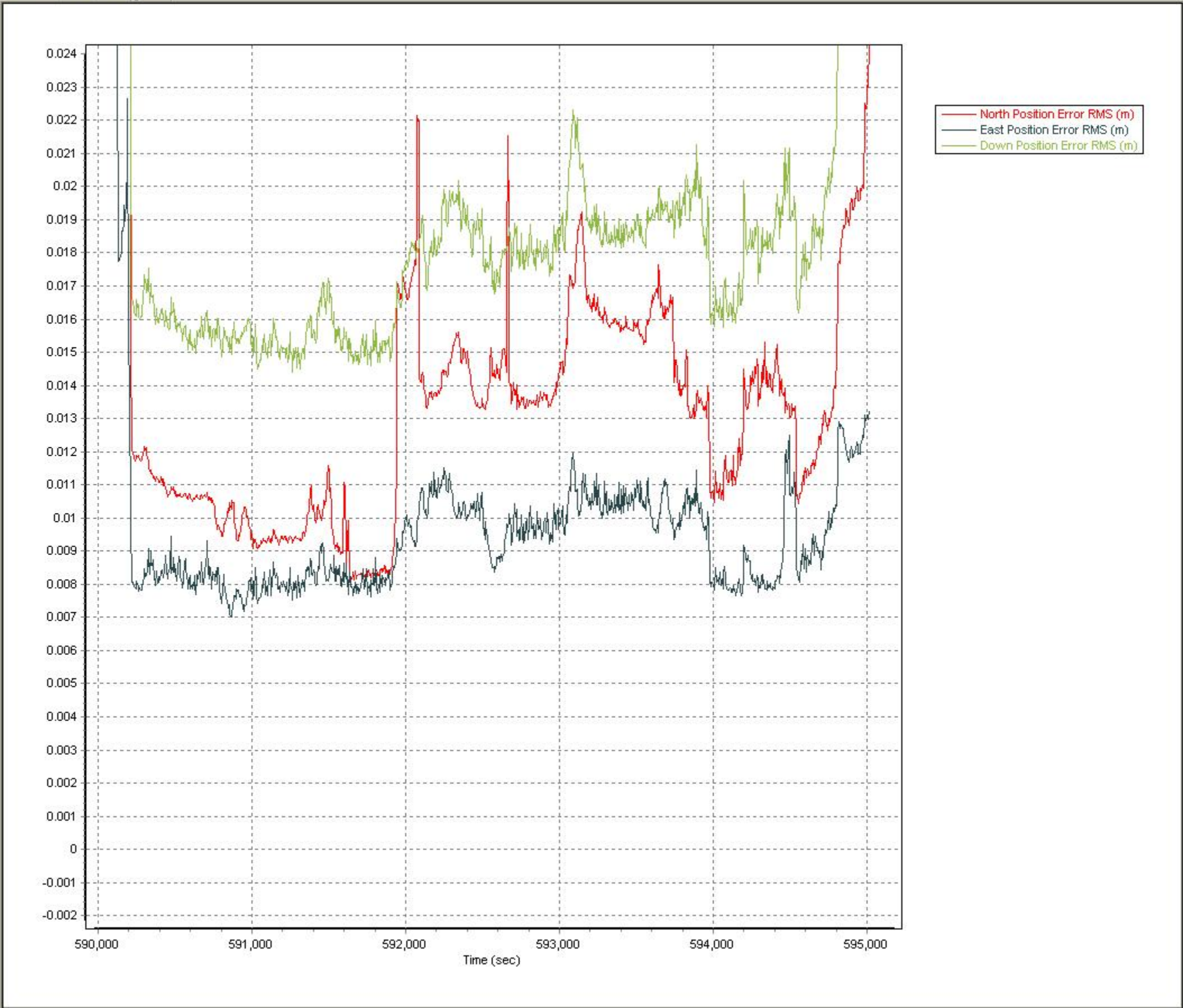


- [-] Smoothed Performance Metrics, R
- [-] North Position Error RMS (m)
- [-] East Position Error RMS (m)
- [-] Down Position Error RMS (m)
- [-] North Velocity Error RMS (m/s)
- [-] East Velocity Error RMS (m/s)
- [-] Down Velocity Error RMS (m/s)
- [-] Roll Error RMS (arc-min)
- [-] Pitch Error RMS (arc-min)
- [-] Heading Error RMS (arc-min)
- [+] Smoothed Estimated Errors
- [+] Forward Processed Trajectory, Re
- [+] Forward Processed Performance M
- [+] Calibrated Installation Parameters
- [+] Solution Status
- [+] Forward Processed Estimated Error
- [+] Forward Processed Measurement
- [+] Forward Processed GPS Measure
- [+] Backward Processed GPS Measu
- [+] Real-time Trajectory, Vehicle Fram
- [+] Real-time Performance Metrics, Ve
- [+] Real-time POS Estimated Errors
- [+] Real-time POS Measurement Resi
- [+] IMU Data
- [+] Primary GPS Navigation Data
- [+] Primary GPS Observables Data
- [+] Primary GPS Satellite Data
- [+] Base GPS Observables Data
- [+] Base GPS Satellite Data





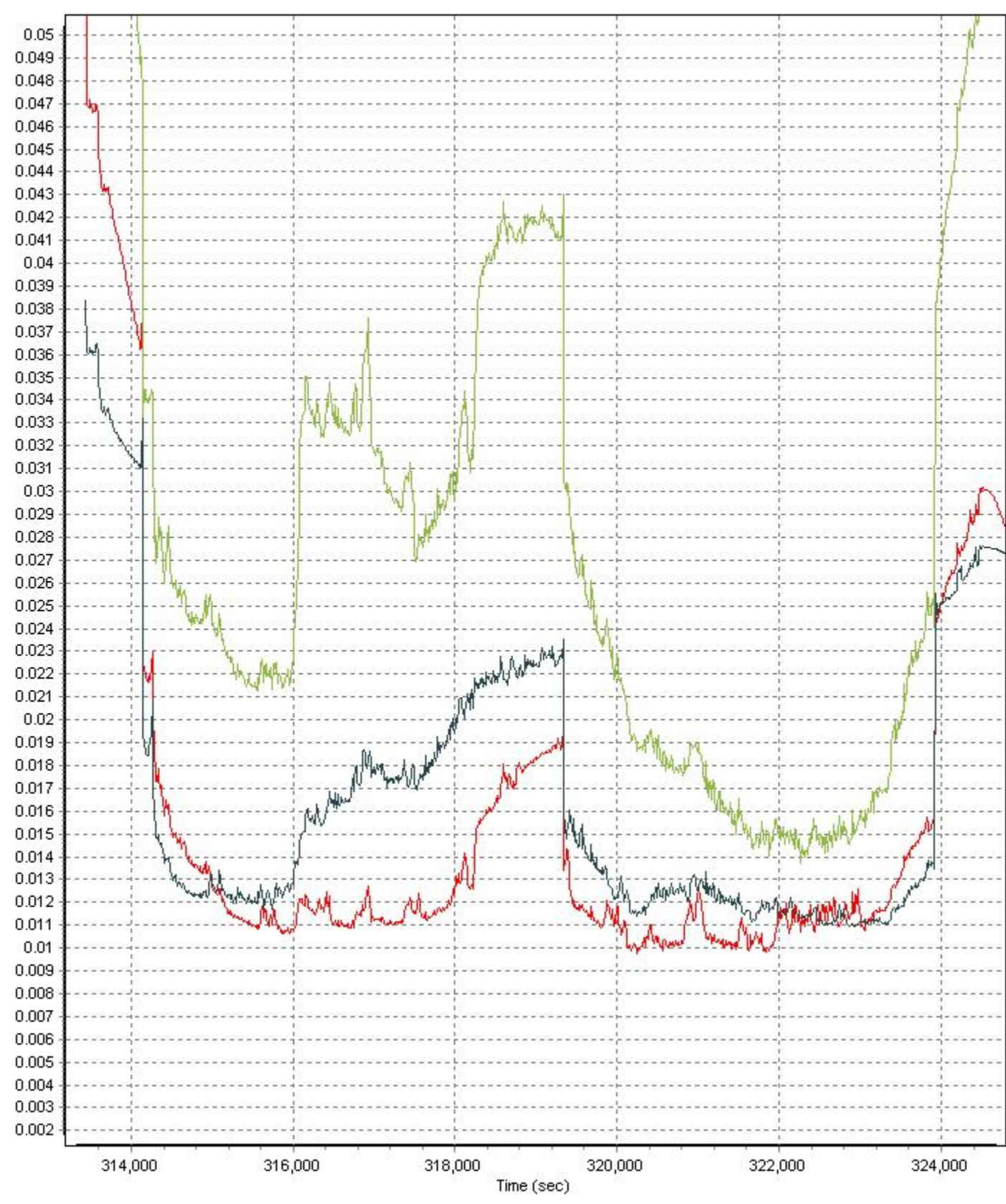
- Smoothed Performance Metrics, R
- North Position Error RMS (m)
- East Position Error RMS (m)
- Down Position Error RMS (m)
- North Velocity Error RMS (m/s)
- East Velocity Error RMS (m/se)
- Down Velocity Error RMS (m/s)
- Roll Error RMS (arc-min)
- Pitch Error RMS (arc-min)
- Heading Error RMS (arc-min)
- Smoothed Estimated Errors
- Forward Processed Trajectory, Re
- Forward Processed Performance M
- Calibrated Installation Parameters
- Solution Status
- Forward Processed Estimated Error
- Forward Processed Measurement
- Forward Processed GPS Measure
- Backward Processed GPS Measu
- Real-time Trajectory, Vehicle Fram
- Real-time Performance Metrics, Ve
- Real-time POS Estimated Errors
- Real-time POS Measurement Resi
- IMU Data
- Primary GPS Navigation Data
- Primary GPS Observables Data
- Primary GPS Satellite Data
- Base GPS Observables Data
- Base GPS Satellite Data



North Position Error RMS (m)
East Position Error RMS (m)
Down Position Error RMS (m)



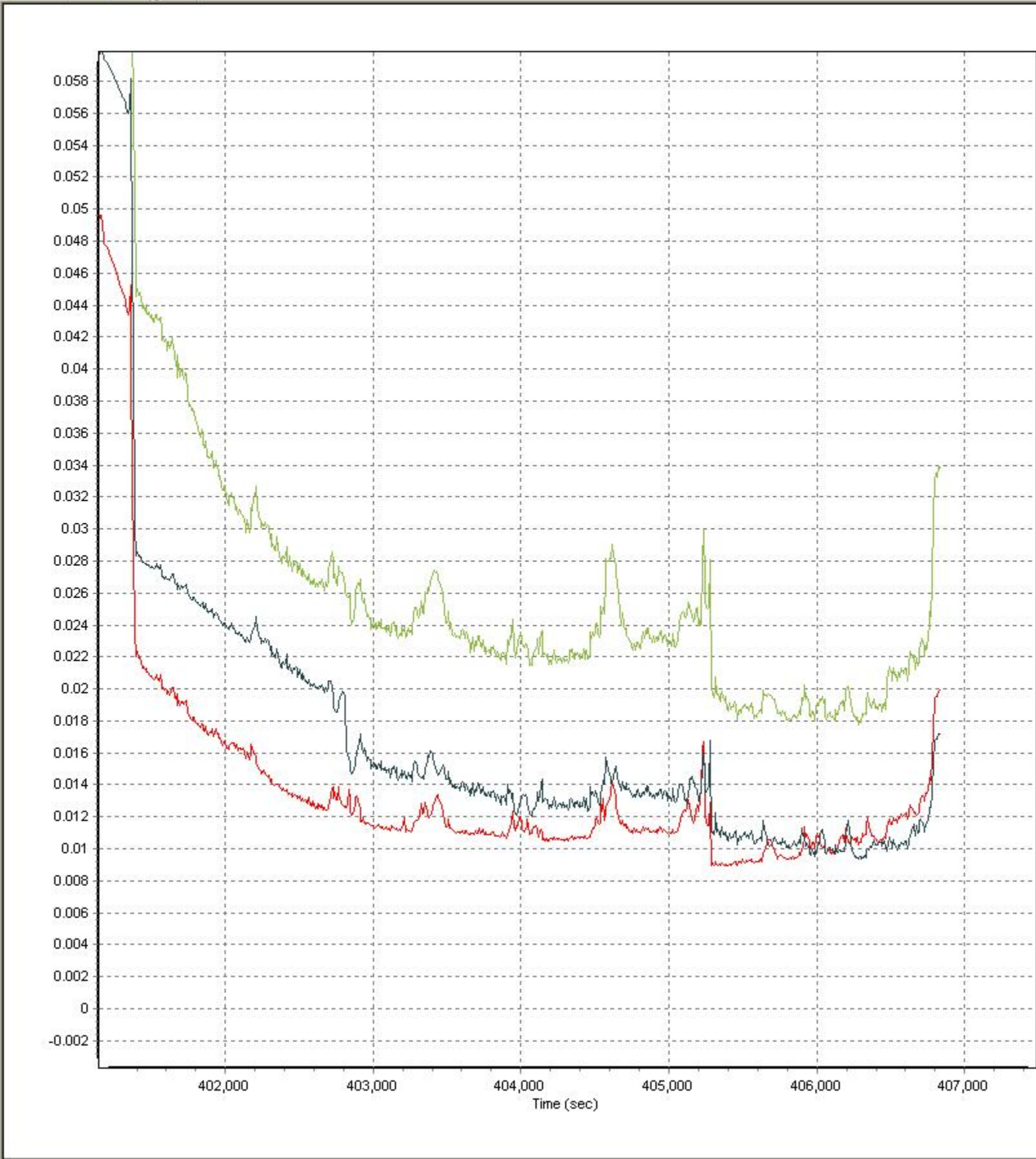
- [-] Smoothed Best Estimate of Trajectory, Reference Fr.
- [-] Smoothed Performance Metrics, Reference Frame
 - [x] North Position Error RMS (m)
 - [x] East Position Error RMS (m)
 - [x] Down Position Error RMS (m)
 - [x] North Velocity Error RMS (m/sec)
 - [x] East Velocity Error RMS (m/sec)
 - [x] Down Velocity Error RMS (m/sec)
 - [x] Roll Error RMS (arc-min)
 - [x] Pitch Error RMS (arc-min)
 - [x] Heading Error RMS (arc-min)
- [+] Smoothed Estimated Errors
- [+] Forward Processed Trajectory, Reference Frame
- [+] Forward Processed Performance Metrics, Reference
- [+] Calibrated Installation Parameters
- [+] Solution Status
- [+] Forward Processed Estimated Errors
- [+] Forward Processed Measurement Residuals
- [+] Forward Processed GPS Measurement Residuals
- [+] Backward Processed GPS Measurement Residuals
- [+] Real-time Trajectory, Vehicle Frame
- [+] Real-time Performance Metrics, Vehicle Frame
- [+] Real-time PDS Estimated Errors
- [+] Real-time PDS Measurement Residuals
- [+] IMU Data
- [+] Primary GPS Navigation Data
- [+] Primary GPS Observables Data
- [+] Primary GPS Satellite Data
- [+] Base GPS Observables Data
- [+] Base GPS Satellite Data



— North Position Error RMS (m)
 — East Position Error RMS (m)
 — Down Position Error RMS (m)



- Smoothed Best Estimate of Trajectory
- Smoothed Performance Metrics, Reference Frame
 - North Position Error RMS (m)
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 - Down Position Error RMS (m)
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 - East Velocity Error RMS (m/s)
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 - Pitch Error RMS (arc-min)
 - Heading Error RMS (arc-min)
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- Solution Status
- Forward Processed Estimated Errors
- Forward Processed Measurement Residuals
- Forward Processed GPS Measurements
- Backward Processed GPS Measurements
- Real-time Trajectory, Vehicle Frame
- Real-time Performance Metrics, Vehicle Frame
- Real-time POS Estimated Errors
- Real-time POS Measurement Residuals
- IMU Data
- Primary GPS Navigation Data
- Primary GPS Observables Data
- Primary GPS Satellite Data
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— North Position Error RMS (m)
— East Position Error RMS (m)
— Down Position Error RMS (m)

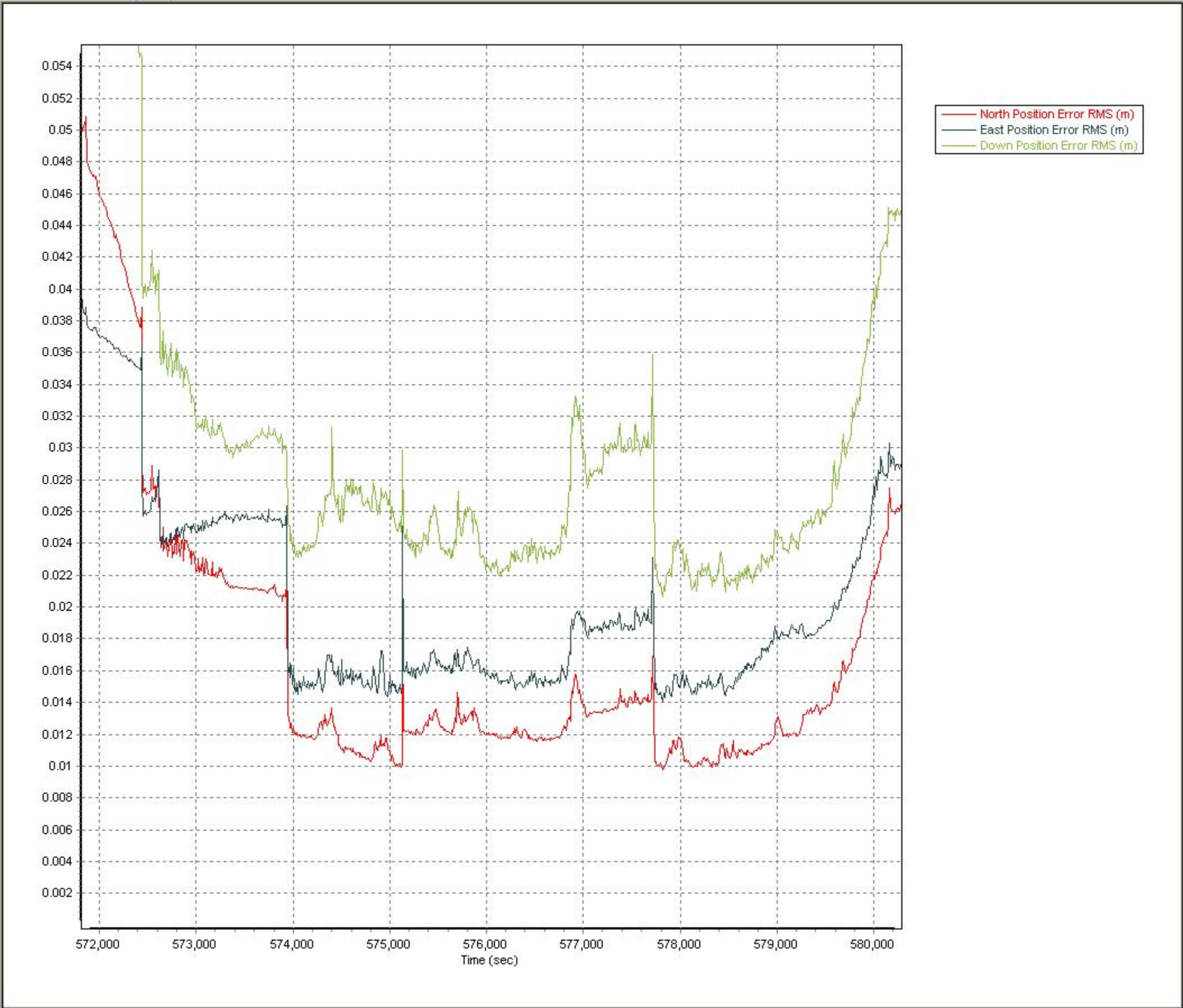


- Smoothed Performance Metrics, R
- North Position Error RMS (m)
- East Position Error RMS (m)
- Down Position Error RMS (m)
- North Velocity Error RMS (m/s)
- East Velocity Error RMS (m/se
- Down Velocity Error RMS (m/s
- Roll Error RMS (arc-min)
- Pitch Error RMS (arc-min)
- Heading Error RMS (arc-min)
- Smoothed Estimated Errors
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- Forward Processed Performance M
- Calibrated Installation Parameters
- Solution Status
- Forward Processed Estimated Erro
- Forward Processed Measurement
- Forward Processed GPS Measur
- Backward Processed GPS Measu
- Real-time Trajectory, Vehicle Fram
- Real-time Performance Metrics, Ve
- Real-time POS Estimated Errors
- Real-time POS Measurement Resi
- IMU Data
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- Base GPS Satellite Data



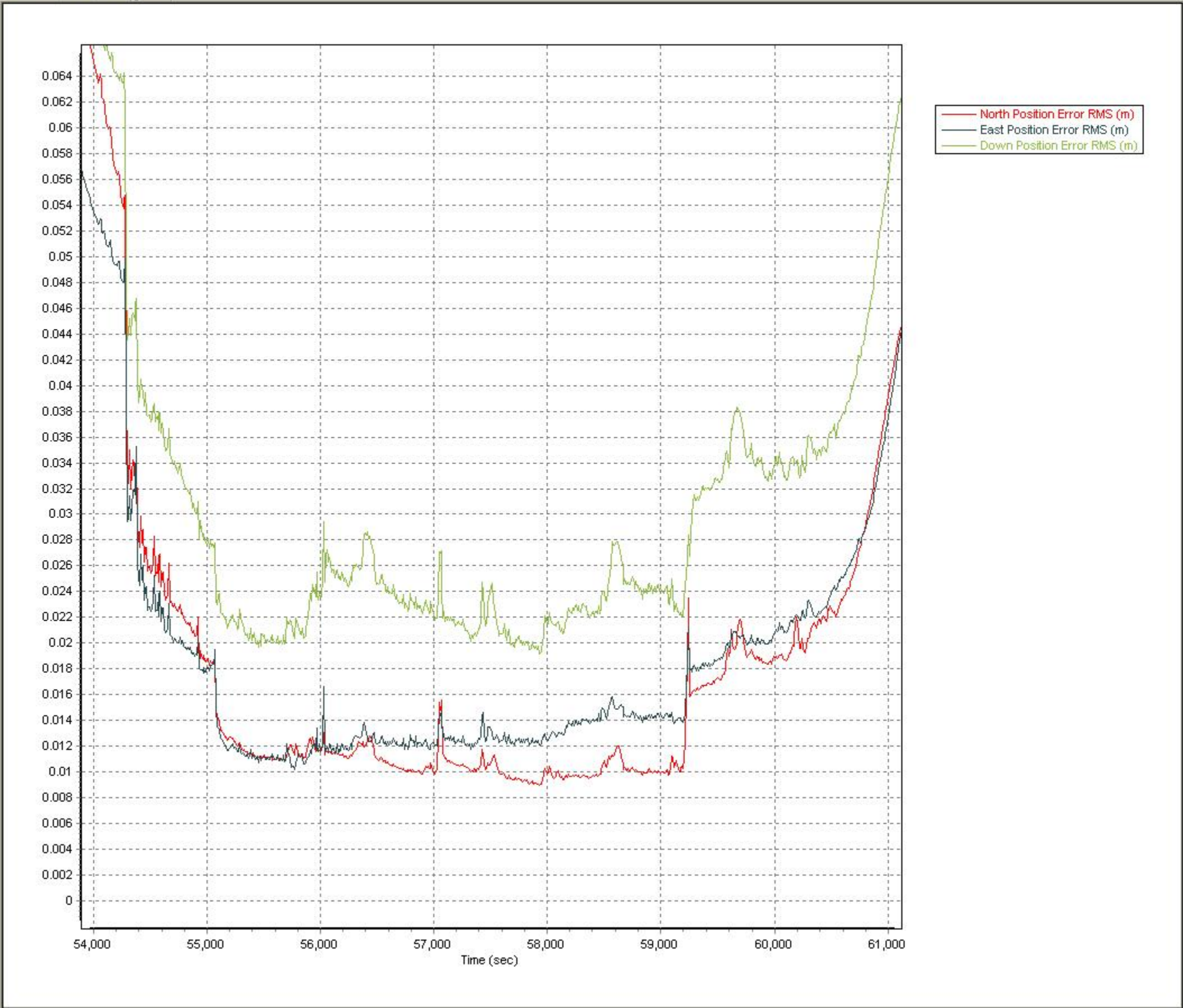


- Smoothed Performance Metrics, R
- North Position Error RMS (m)
- East Position Error RMS (m)
- Down Position Error RMS (m)
- North Velocity Error RMS (m/s)
- East Velocity Error RMS (m/s)
- Down Velocity Error RMS (m/s)
- Roll Error RMS (arc-min)
- Pitch Error RMS (arc-min)
- Heading Error RMS (arc-min)
- Smoothed Estimated Errors
- x accelerometer bias (micro-g)
- y accelerometer bias (micro-g)
- z accelerometer bias (micro-g)
- x accelerometer scale error (ppm)
- y accelerometer scale error (ppm)
- z accelerometer scale error (ppm)
- x gyro bias (deg/hr)
- y gyro bias (deg/hr)
- z gyro bias (deg/hr)
- x gyro scale error (ppm)
- y gyro scale error (ppm)
- z gyro scale error (ppm)
- Forward Processed Trajectory, Re
- Forward Processed Performance M
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- Solution Status
- Forward Processed Estimated Error
- Forward Processed Measurement
- Forward Processed GPS Measure
- Backward Processed GPS Measu
- Real-time Trajectory, Vehicle Fram
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- Real-time POS Estimated Errors
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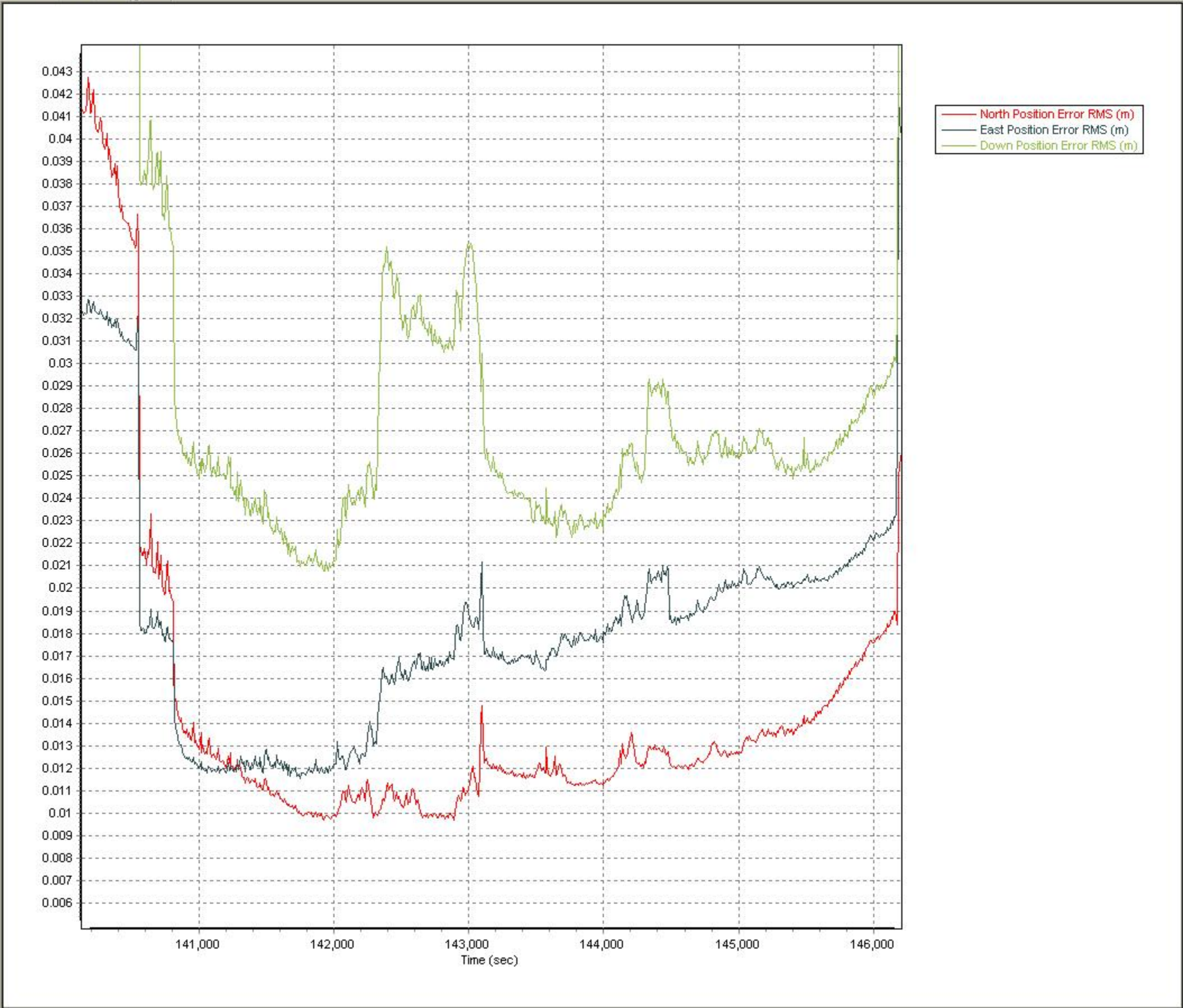


- Smoothed Performance Metrics, R
- North Position Error RMS (m)
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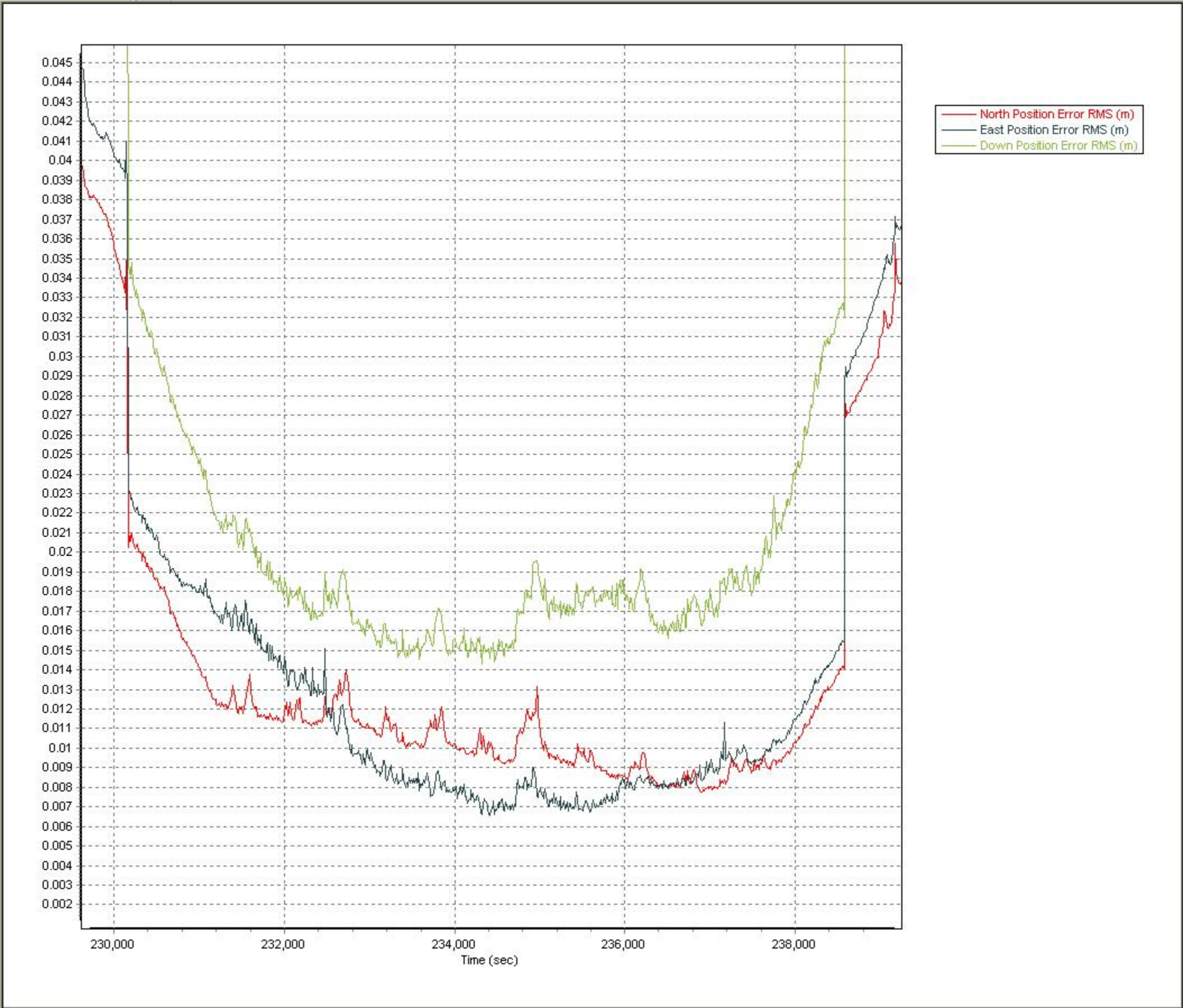


- Smoothed Best Estimate of Trajectory
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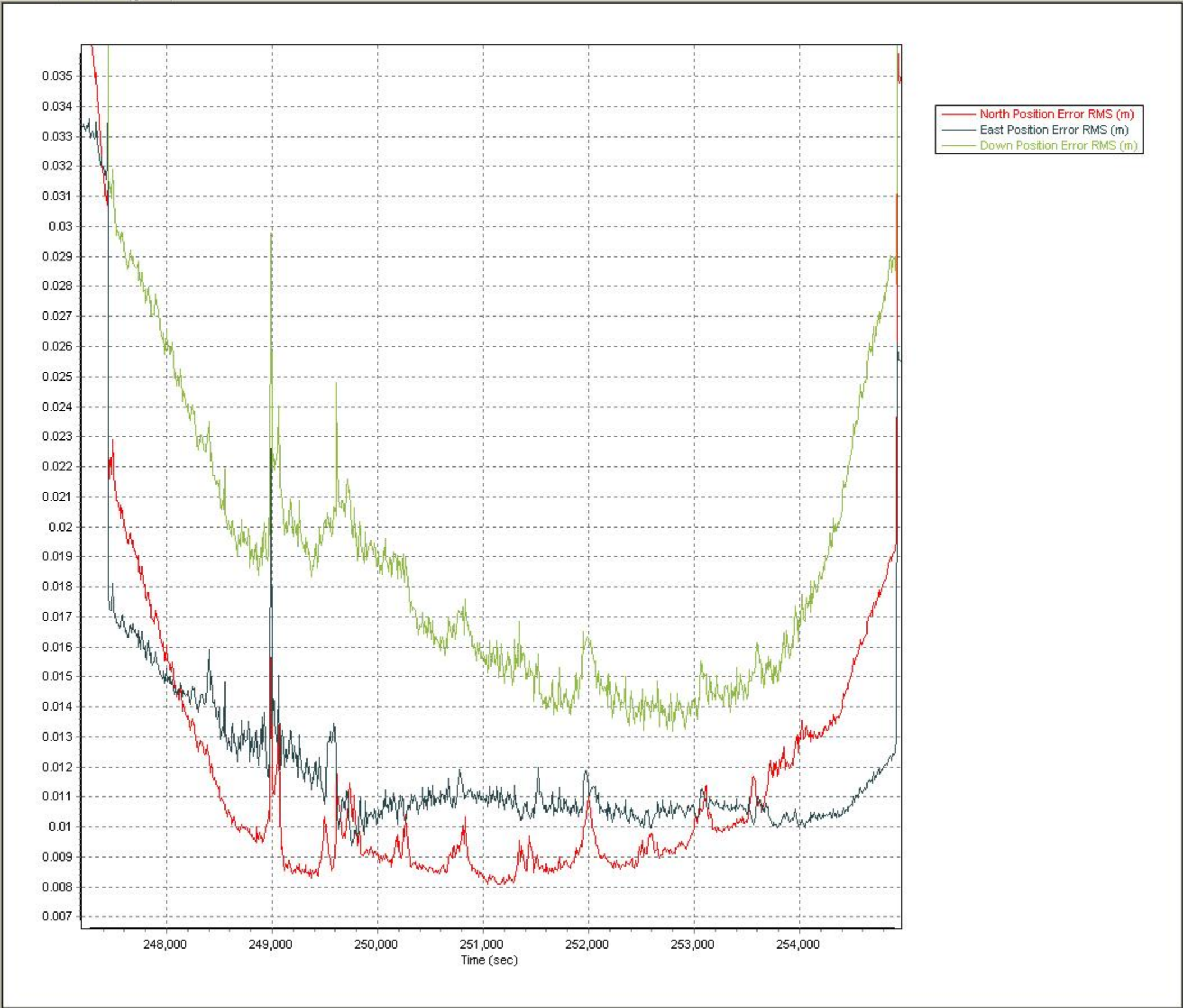


- [-] Smoothed Performance Metrics, Reference Frame
 - [x] North Position Error RMS (m)
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 - [x] Down Velocity Error RMS (m/s)
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 - [x] Heading Error RMS (arc-min)
- [-] Smoothed Estimated Errors
 - [x] x accelerometer bias (micro-g)
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 - [x] z accelerometer bias (micro-g)
 - [x] x accelerometer scale error (ppm)
 - [x] y accelerometer scale error (ppm)
 - [x] z accelerometer scale error (ppm)
 - [x] x gyro bias (deg/hr)
 - [x] y gyro bias (deg/hr)
 - [x] z gyro bias (deg/hr)
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- [+] Forward Processed GPS Measurements
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- [+] Real-time Performance Metrics, Vehicle Frame
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- [+] Real-time POS Measurement Residuals
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Q:\1110403\Lidar\QAQC\LIDAR_1110403gnd_082511.txt

Number	Easting	Northing	Known Z	Laser Z	Dz
901	768958.251	4654104.637	1769.480	1769.570	+0.090
902	777792.434	4655426.596	1643.959	1643.870	-0.089
903	775977.539	4669118.036	1769.654	1769.510	-0.144
904	770673.743	4664517.962	2051.559	2051.650	+0.091
905	772442.391	4662506.518	1878.307	1878.210	-0.097
906	776940.080	4663735.263	1696.320	1696.300	-0.020
907	777903.376	4660645.698	1632.510	1632.460	-0.050
908	777201.804	4657783.785	1664.042	1663.980	-0.062
909	770754.891	4657984.031	1869.087	1869.080	-0.007
910	773005.627	4660891.713	1845.053	1844.950	-0.103

Average dz	-0.039
Minimum dz	-0.144
Maximum dz	+0.091
Average magnitude	0.075
Root mean square	0.085
Std deviation	0.079