PROJECT REPORT

FOR

US GEOLOGICAL SURVEY
NGTOC III
ROLLA, MO

NORTH PLATTE, NE LIDAR (ARRA)

August 11, 2010

AERO-METRIC PROJECT NO. 1-100327

Airborne GPS Survey Report

For

US GEOLOGICAL SURVEY
NGTOC III

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AERO-METRIC Project No. 1-100327

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USGS – ARRA – NORTH PLATTE, NE LIDAR TASK ORDER

AERO-METRIC Project No. 1-100327

1 INTRODUCTION

This report contains a summary of the LiDAR data acquisition and processing for the **North Platte, NE. LiDAR (ARRA) TASK ORDER**.

1.1 Contact Info

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

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1.2 Purpose

AERO-METRIC, INC. acquired highly accurate Light Detection and Ranging (LiDAR) data for the river basin area around North Platte, NE which comprises approximately 407 square miles for the United States Geological Survey. Using a Leica ALS50-II LiDAR system, data was collected at 6800' to support the project's nominal pulse spacing (NPS) requirement.

1.3 Project Location

The entire project area is approximately 407 square miles stretching between North Platte, NE and the Nebraska – Wyoming border. The area was defined and supplied by USGS on March 22, 2010.

1.4 Time Period

LiDAR data acquisition occurred from April 27th, 2010 thru May 3rd, 2010. A total of 4 flight missions were required to cover the project area. See Section 6 of the report for each flight and sensor log. QC surveys and control were completed between April 21st and July 26th, 2010.

1.5 Project Scope

AERO-METRIC, INC. acquired highly accurate Light Detection and Ranging (LiDAR) data for an area that encompasses approximately 407 square miles in

Nebraska. Using a Leica ALS50-II LiDAR system, data was collected from 6800' AMT to support the project area's requirements.

As specified in our proposal dated March 22, 2010 we were to achieve a TIN accuracy of 15cm. The accuracy as tested and published in this report in Section 8 has easily met the vertical accuracy requirement.

1.6 Conditions Affecting Progress

- None.

2 GEODETIC CONTROL

2.1 Network Scope

Base horizontal control for the check point survey consisted of one NGS Order B station: **D 50**; one NGS Second Order station: **MUNDT**; and one NGS Third Order station: **H 8**.

Horizontal control is referenced to the Universal Transverse Mercator (UTM) Coordinate System – Zone 13, based on the North American Datum of 1983/2007 (NAD83/07). Final coordinates are published in meters.

Base vertical control for the check point survey consisted of one NGS First Order, Class 2 station: **MUNDT**; three NGS Second Order stations: **D 50**, **H 8**, and **Q 63**; and one NGS Third Order stations: **A 51**. The NGS Third Order station **D 361 RESET** was also observed, but not used as control. 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).

Base horizontal and vertical control for the Airborne GPS surveys consisted of 3 three temporary base stations: **KBFF**, **103** and **104**.

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 and elevation of **D 50** fixed:

HORIZONTAL CLOSURES (in meters)

STATION	NORTHING	EASTING	LINEAR	DISTANCE	PROPORTION
H 8	0.144	0.057	0.155	52854.1	1: 340000
MUNDT	0.064	0.019	0.067	85687.7	1:1279000

VERTICAL CLOSURES (in meters)

STATION	ADJUSTED ELEVATION	PUBLISHED ELEVATION	DIFFERENCE	DISTANCE	ALLOWABLE 3rd ORDER CLOSURE
A 51	1144.599	1144.620	0.021	57902.4	0.091
H 8	1545.359	1545.355	0.004	52854.1	0.087
Q 63	1244.649	1244.646	0.003	20513.7	0.054
MUNDT	1258.796	1258.813	0.017	85687.7	0.111

The NGS bench mark **D 361 RESET** was evaluated, but not held in the final constrained adjustments. The rest of the above control were held in the fully constrained scaled least squares base network adjustments to derive the ground control checkpoint values

3 LiDAR ACQUISITION & PROCEDURES

3.1 Acquisition Time Period

LiDAR data acquisition and Airborne GPS control surveys were completed between April 21st, 2010 and May 3th, 2010. A total of 4 flight missions were required to cover the project area.

3.2 LiDAR Planning

The LiDAR data for this project was collected with Fugro Horizon's Leica ALS50-II LiDAR system (Serial Number 36).

The following are the acquisition settings for the area:

- Flying Height (Above Ground): 6800 feet
- Laser Pulse Rate: 100 kHz
- Mirror Scan Frequency: 43.6 Hz
- Scan Angle (+/-): 15°
- Side Lap: 35 %
- Ground Speed: 150 kts
- Nominal Pulse Spacing: 2.0 meters

3.3 LiDAR Acquisition

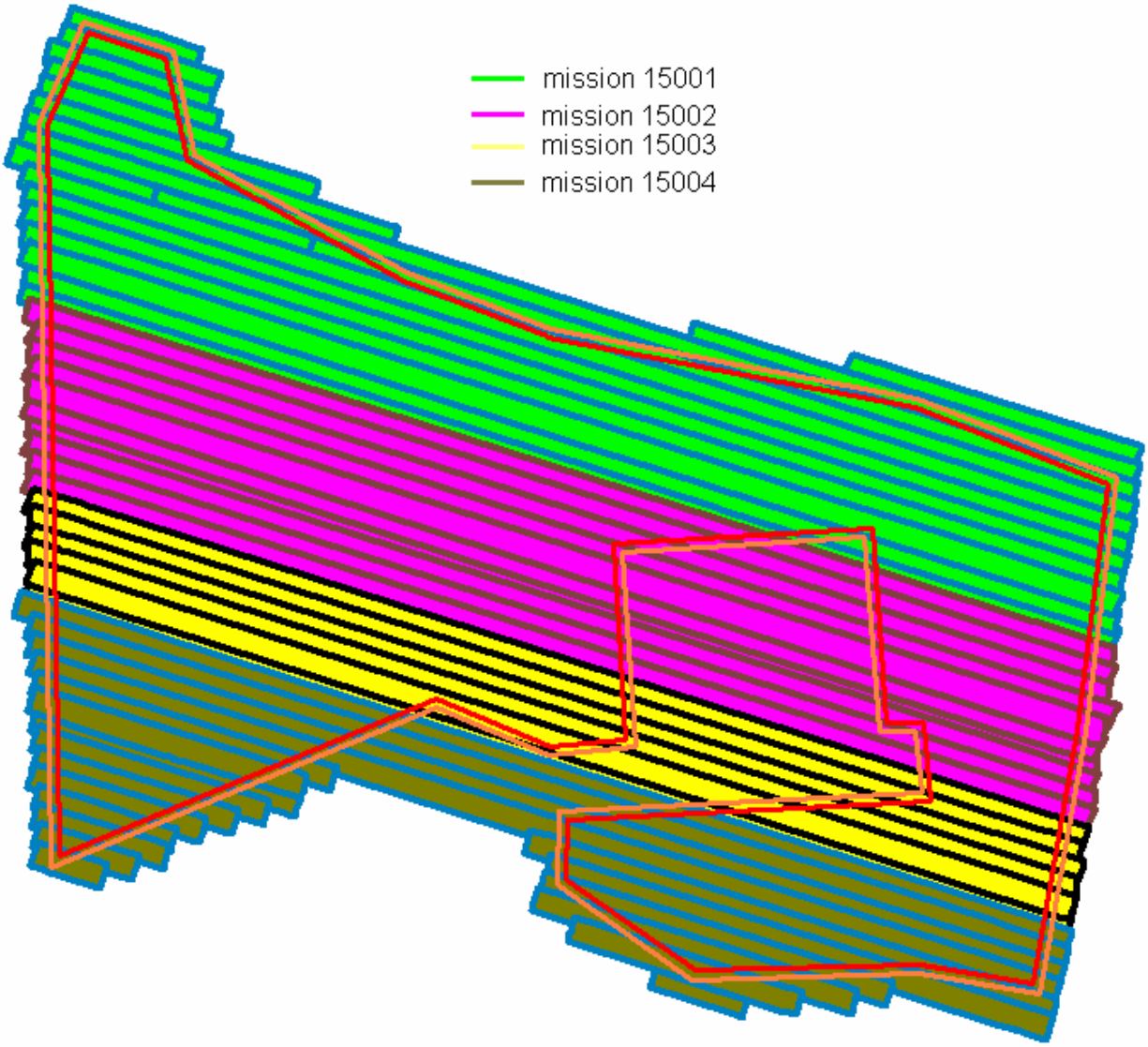
A total of 4 flight missions were required to cover the project area. The missions were flown using the above planned values. See below for a sketch of the acquisition missions and Section 6 of the report for each flight log.

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

Each mission was typically four to five hours long. Before take-off, the LiDAR system and the Airborne GPS and IMU system 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 to four) 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 stations: KBFF, 103 and 104.



North Platte, NE

4 QC SURVEYS

The check point survey was completed between April 21st and July 26th, 2010 using Rapid Static GPS techniques. A total of 43 check points were surveyed across the project area in open terrain areas. Twenty-two of these points were used to calibrate the LiDAR point cloud and twenty-one points were delivered to USGS to assess the Fundamental Vertical Accuracy of the dataset.

See Section 5 of the control report for a complete listing.

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, was 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 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 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.

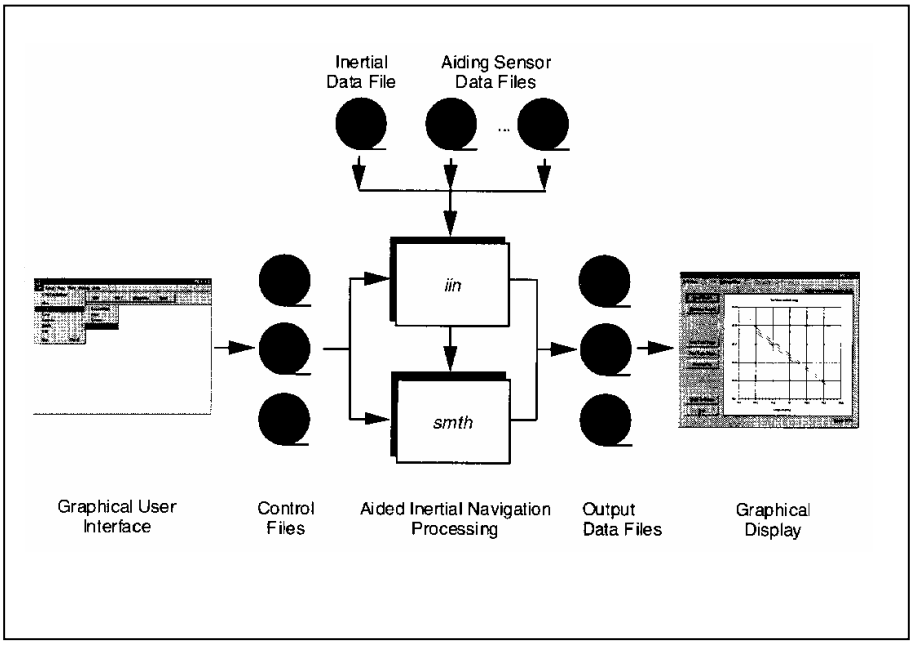
   Once the analyst accepts a forward and reverse processing solution, the trajectory plot is analyzed and the combined solution is stored in a file format acceptable for the IMU post processor.

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

4. When the processed trajectory (either through POSGPS) data was 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:

   Diagram 3 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.[3]
     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. [3]

- 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*. [3]

  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. [3]

  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. s*mth* 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. [3]

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 "point cloud" was generated using The ABGPS/IMU post processed data along with the LiDAR raw measurements. These data were processed using Leica's ALS Post- Processing Software. This software was used to match the raw LiDAR measurements with the computed ABGPS/IMU positions and attitudes of the LiDAR sensor. A series of corrective re-iterations was run to refine the calibration variables. These variables included Roll, Pitch, Heading, and Pitch Slope Error. 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

AERO-METRIC routinely performs two types of calibrations on its Optech Gemini LiDAR system. The same calibration process was used for this acquisition but the Leica ALS-50 MPia LiDAR Sensor was used for this collection. 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

The system calibration for the ALS-50 MPia system is performed at 3 elevations. Typically, this calibration is done at 800, 1700, and 2400 meters AGL. A series of 4 flight lines are flown at each altitude. The calibration flight consists of 2 sets of perpendicular flight lines to each other. Each set is comprised of 2 flight lines flown in opposing directions directly over each other.

Once the system calibration is completed the Data is processed using Applanix POS or Leica's IPAS positioning software. The accuracies of the POS data are evaluated to insure the best possible solution. The data is then combined with the Laser data and the data is processed using ALS Post-Processor. The data is then evaluated and necessary system calibration adjustments are made to verify the system within an operation platform.

In-situ Calibration

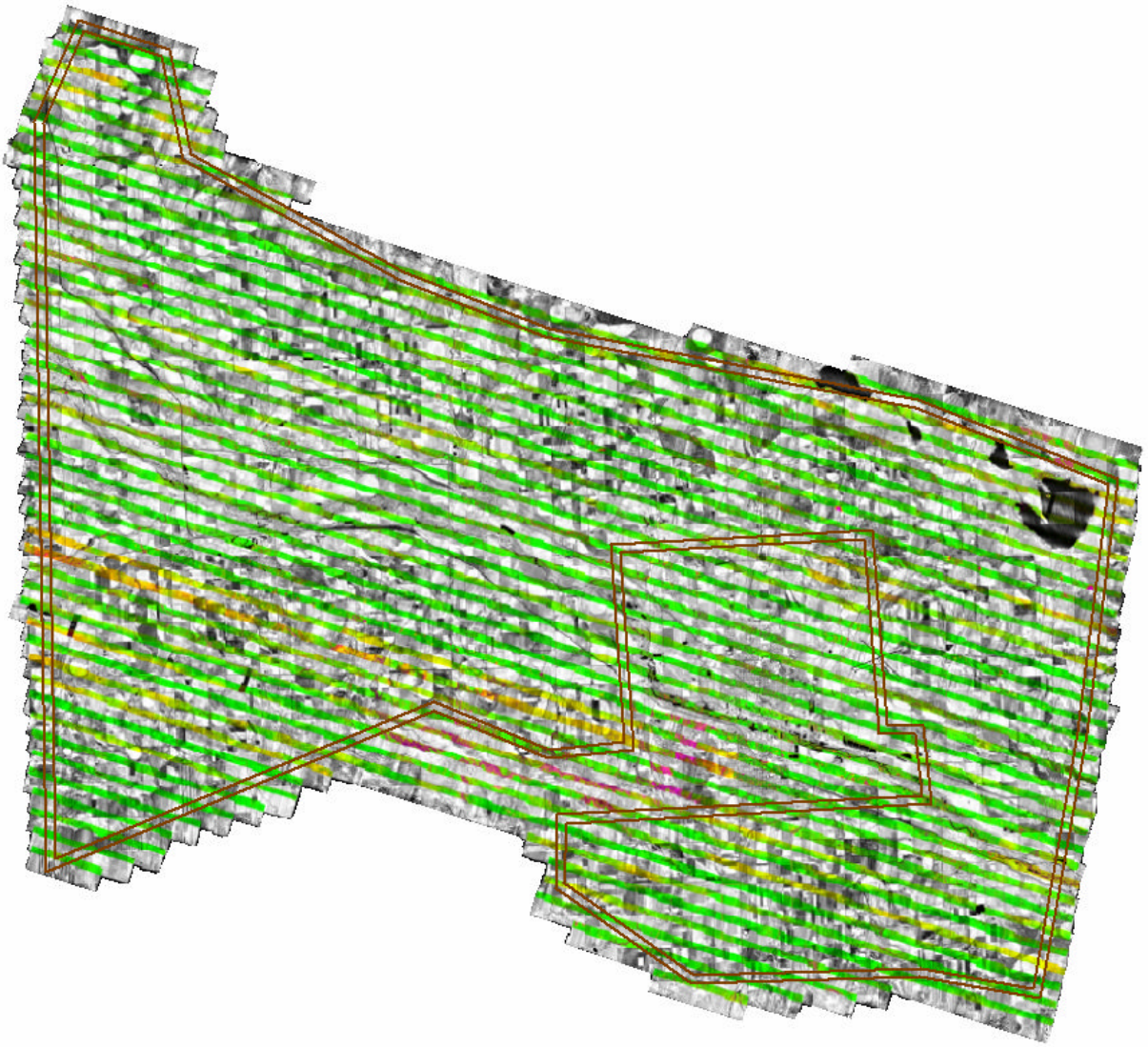
The in-situ calibration is performed, as needed using the mission's data. This calibration is performed to refine the system parameters that are affected by the on-site conditions.

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 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.

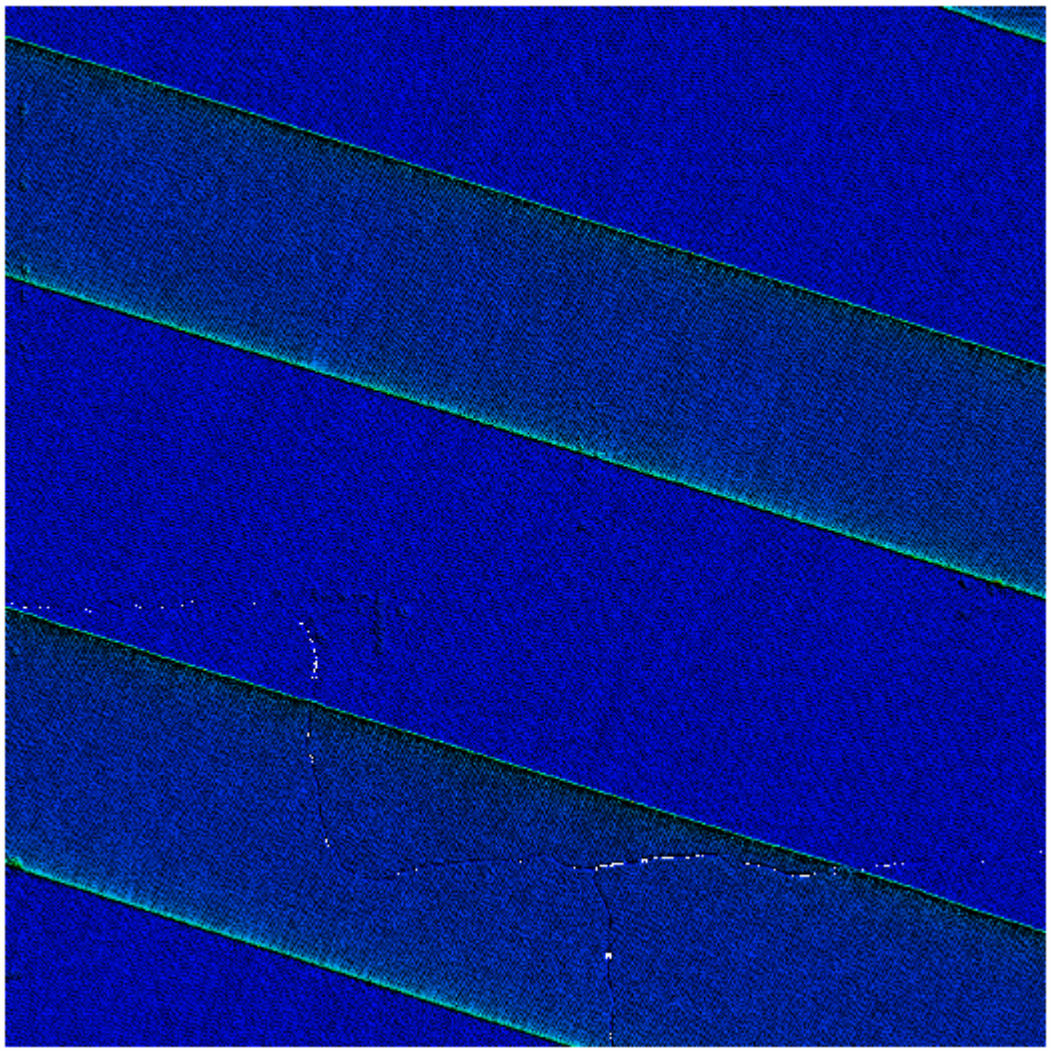
5.4 LiDAR Processing

The LAS files were then imported, verified, and parsed into manageable, tiled grids using GeoCue version 6.1.21.4. 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, Aero-Metric 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 are screen captures of the elevation orthos where green indicates a flightline comparison of less than 0.05 meters; yellow is 0.05 – 0.10 meters; orange is 0.10 - 0.15 meters; red 0.15 – 0.20 meters; and magenta > 0.20 meters. The red and magenta areas in the screen captures below were re-evaluated.



In addition to the relative accuracy assessment, Aero-Metric also reviews a few tiles to ensure that the desired density has been met. Aero-Metric utilizes in-house proprietary software to complete this task. Initially a grid is placed according to the version 12 specifications, which is based on the nominal post spacing. The results indicated that the density of the sampled tiles achieved 98% of the points meeting the specified data density criteria. Below are the statistics and also a screen capture of the results of an inspected tile.



Sampled tiles: (3_58656350, 3_60456260, 3_61056275, 3_61656350).

(Version 12 – 2.0m)
Total number of cells: 2,250,000
Total number of cells with one point: 209,977
Percentage of cells with 1 point or more: 98%

Once both the accuracy between swaths and data density is accepted an automated classification algorithm is performed using TerraSolid's TerraScan, version 10.011. 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 removed points misclassified as ground (class 2) to unclassified (class 1). Erroneous low points, high points, including clouds are classified to class 7.

5.5 Check Point Validation

The data was then verified using the ground control data collected by Aero-Metric. TerraScan then computes the vertical differences between the surveyed elevation and the LiDAR derived elevation for each 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)

The 2 meter bare-earth DEMs were created in the following manner. First, ArcGrids in ASCII format were created using TerraModeler version 10.003 (TerraSolid Ltd.). The ASCII grids were then imported into ARC and translated to raster format and placed in a geodatabase DEM feature dataset.

Collected breaklines are first collected in a Microstation environment using the base specifications. Upon acceptance the breaklines, either polygons or lines,

are translated into ARC and imported to the final geodatabase as separate features.

6 CONCLUSION

Because of the rigorous procedures and use of new technology, this project will serve USGS and all users requiring the provided LiDAR derivative products for the North Platte River area of Nebraska well into the future. Although this project tested the limits of 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.

```
DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 MN0677 ***********************************************************************
 MN0677  DESIGNATION -  A 51 RESET
 MN0677  PID         -  MN0677
 MN0677  STATE/COUNTY-  NE/MORRILL
 MN0677  USGS QUAD   -  BAYARD (1965)
 MN0677
 MN0677                          *CURRENT SURVEY CONTROL
 MN0677  ______________________________________________________________________
 MN0677* NAD 83(1986)-  41 45 05.      (N)    103 19 28.      (W)      SCALED
 MN0677* NAVD 88     -       1144.62   (meters)    3755.3     (feet)   RESET
 MN0677  ______________________________________________________________________
 MN0677  GEOID HEIGHT-          -19.44   (meters)                       GEOID09
 MN0677  VERT ORDER  -  THIRD
 MN0677
 MN0677.The horizontal coordinates were scaled from a topographic map and have
 MN0677.an estimated accuracy of +/- 6 seconds.
 MN0677
 MN0677.The orthometric height was computed from unverified reset data.
 MN0677.No vertical observational check was made to the station.
 MN0677
 MN0677.The geoid height was determined by GEOID09.
 MN0677
 MN0677;                     North         East     Units  Estimated Accuracy
 MN0677;SPC NE       -    218,270.      223,660.      MT   (+/- 180 meters Scaled)
 MN0677
 MN0677                           SUPERSEDED SURVEY CONTROL
 MN0677
 MN0677  NGVD 29 (08/02/06) 1144.01    (m)          3753.3     (f) RESET       3
 MN0677
 MN0677.Superseded values are not recommended for survey control.
 MN0677.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 MN0677.See file dsdata.txt to determine how the superseded data were derived.
 MN0677
 MN0677_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TFG393235(NAD 83)
 MN0677_MARKER: DV = VERTICAL CONTROL DISK
 MN0677_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 MN0677_SP_SET: CONCRETE POST
 MN0677_STAMPING: A 51 RESET 1986
 MN0677_MARK LOGO: NGS
 MN0677_MAGNETIC: N = NO MAGNETIC MATERIAL
 MN0677_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 MN0677+STABILITY: SURFACE MOTION
 MN0677_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
 MN0677+SATELLITE: SATELLITE OBSERVATIONS - April 22, 2010
 MN0677
 MN0677  HISTORY     - Date     Condition        Report By
 MN0677  HISTORY     - 1986     MONUMENTED       NEDR
 MN0677  HISTORY     - 20100422 GOOD             AEROME
 MN0677
 MN0677                           STATION DESCRIPTION
 MN0677
 MN0677'DESCRIBED BY NEBRASKA ROADS DEPARTMENT 1986
 MN0677'FROM THE INTERSECTION OF HIGHWAYS 92 AND 26 GO NORTH ON 26 FOR
```

MN0677'APPROXIMATELY 2.35 MILES, GO SOUTH 364 FEET (110.9 M) FROM THE SOUTH
MN0677'TRACK OF THE MAINLINE OF THE BURLINGTON NORTHERN RAILROAD TO STATION
MN0677'MARKING 7+00 MARKED IN CONCRETE ON THE WEST EDGE OF THE HIGHWAY, MARK
MN0677'IS 1 FOOT (0.3 M) EAST OF A WITNESS POST.
MN0677
MN0677 STATION RECOVERY (2010)
MN0677
MN0677'RECOVERY NOTE BY AERO METRIC INC 2010
MN0677'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 = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 MN0253 ***********************************************************************
 MN0253  FBN         -  This is a Federal Base Network Control Station.
 MN0253  DESIGNATION -  D 50
 MN0253  PID         -  MN0253
 MN0253  STATE/COUNTY-  NE/SCOTTS BLUFF
 MN0253  USGS QUAD   -  MORRILL (1963)
 MN0253
 MN0253                        *CURRENT SURVEY CONTROL
 MN0253  ______________________________________________________________________
 MN0253* NAD 83(2007)-  41 57 52.06907(N)    103 57 37.12474(W)     ADJUSTED
 MN0253* NAVD 88     -      1223.284  (meters)    4013.39   (feet)  ADJUSTED
 MN0253  ______________________________________________________________________
 MN0253  EPOCH DATE  -        2002.00
 MN0253  X           -  -1,146,065.361 (meters)                     COMP
 MN0253  Y           -  -4,610,218.987 (meters)                     COMP
 MN0253  Z           -   4,243,475.504 (meters)                     COMP
 MN0253  LAPLACE CORR-          -5.41  (seconds)                    DEFLEC09
 MN0253  ELLIP HEIGHT-        1205.043 (meters)          (02/10/07) ADJUSTED
 MN0253  GEOID HEIGHT-         -18.23  (meters)                     GEOID09
 MN0253  DYNAMIC HT  -        1222.500 (meters)    4010.82  (feet)  COMP
 MN0253
 MN0253  ------- Accuracy Estimates (at 95% Confidence Level in cm) --------
 MN0253  Type    PID    Designation                       North   East  Ellip
 MN0253  ----------------------------------------------------------------------
 MN0253  NETWORK MN0253 D 50                               0.41   0.31   1.16
 MN0253  ----------------------------------------------------------------------
 MN0253  MODELED GRAV-     979,939.6   (mgal)                       NAVD 88
 MN0253
 MN0253  VERT ORDER  -  SECOND    CLASS 0
 MN0253
 MN0253.The horizontal coordinates were established by GPS observations
 MN0253.and adjusted by the National Geodetic Survey in February 2007.
 MN0253
 MN0253.The datum tag of NAD 83(2007) is equivalent to NAD 83(NSRS2007).
 MN0253.See National Readjustment for more information.
 MN0253.The horizontal coordinates are valid at the epoch date displayed above.
 MN0253.The epoch date for horizontal control is a decimal equivalence
 MN0253.of Year/Month/Day.
 MN0253
 MN0253.The orthometric height was determined by differential leveling and
 MN0253.adjusted in June 1991.
 MN0253
 MN0253.Photographs are available for this station.
 MN0253
 MN0253.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 MN0253
 MN0253.The Laplace correction was computed from DEFLEC09 derived deflections.
 MN0253
 MN0253.The ellipsoidal height was determined by GPS observations
 MN0253.and is referenced to NAD 83.
 MN0253
 MN0253.The geoid height was determined by GEOID09.
 MN0253
```

MN0253.The dynamic height is computed by dividing the NAVD 88
MN0253.geopotential number by the normal gravity value computed on the
MN0253.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
MN0253.degrees latitude (g = 980.6199 gals.).
MN0253
MN0253.The modeled gravity was interpolated from observed gravity values.
MN0253
MN0253;   North   East   Units Scale Factor Converg.
MN0253;SPC NE   -   244,127.417   171,918.947   MT 0.99969057   -2 37 28.2
MN0253;SPC NE   -   800,941.37   564,037.41   sFT 0.99969057   -2 37 28.2
MN0253;UTM 13   - 4,646,353.380   586,152.852   MT 0.99969133   +0 41 42.9
MN0253
MN0253!   - Elev Factor x Scale Factor =   Combined Factor
MN0253!SPC NE   -   0.99981103 x   0.99969057 =   0.99950166
MN0253!UTM 13   -   0.99981103 x   0.99969133 =   0.99950242
MN0253
MN0253   SUPERSEDED SURVEY CONTROL
MN0253
MN0253 ELLIP H (07/10/01) 1205.017 (m)   GP(   ) 4 1
MN0253 NAD 83(1995)- 41 57 52.06830(N)   103 57 37.12462(W) AD(   ) B
MN0253 ELLIP H (06/25/96) 1205.079 (m)   GP(   ) 1 1
MN0253 NAVD 88 (06/25/96) 1223.28   (m)   4013.4   (f) LEVELING   3
MN0253 NGVD 29 (??/??/92) 1222.582 (m)   4011.09   (f) ADJ UNCH   2 0
MN0253
MN0253.Superseded values are not recommended for survey control.
MN0253.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
MN0253.See file dsdata.txt to determine how the superseded data were derived.
MN0253
MN0253_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TEG8615246353(NAD 83)
MN0253_MARKER: DB = BENCH MARK DISK
MN0253_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
MN0253_SP_SET: SET IN TOP OF CONCRETE MONUMENT
MN0253_STAMPING: D 50 1934
MN0253_MARK LOGO: CGS
MN0253_MAGNETIC: A = STEEL ROD ADJACENT TO MONUMENT
MN0253_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
MN0253+STABILITY: SURFACE MOTION
MN0253_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
MN0253+SATELLITE: SATELLITE OBSERVATIONS - April 21, 2010
MN0253
MN0253 HISTORY   - Date   Condition   Report By
MN0253 HISTORY   - 1934   MONUMENTED   CGS
MN0253 HISTORY   - 19950720 GOOD   NGS
MN0253 HISTORY   - 20000510 GOOD   NGS
MN0253 HISTORY   - 20030724 GOOD   NGS
MN0253 HISTORY   - 20060716 GOOD   JCLS
MN0253 HISTORY   - 20100421 GOOD   AEROME
MN0253
MN0253   STATION DESCRIPTION
MN0253
MN0253'DESCRIBED BY COAST AND GEODETIC SURVEY 1934
MN0253'1.8 MI NW FROM MORRILL.
MN0253'ABOUT 1.8 MILES NORTHWEST ALONG THE CHICAGO, BURLINGTON AND QUINCY
MN0253'RAILROAD FROM THE STATION AT MORRILL, SCOTTS BLUFF COUNTY, AT
MN0253'MILEAGE 48+3, AT THE CROSSING OF AN IRRIGATION DITCH, 40.8 FEET
MN0253'NORTHEAST OF THE NORTH RAIL, 40.0 FEET SOUTHWEST OF THE CENTER
MN0253'LINE OF U.S. HIGHWAY 26, AND 20.0 FEET NORTHWEST OF THE CENTER LINE
MN0253'OF THE DITCH. A STANDARD DISK, STAMPED D 50 1934 AND SET IN THE
MN0253'TOP OF A CONCRETE POST.
MN0253
MN0253   STATION RECOVERY (1995)
MN0253
MN0253'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1995 (JAO)
MN0253'THE MARK IS LOCATED ABOUT 4.75 MI (7.64 KM) EAST OF THE
MN0253'WYOMING-NEBRASKA STATE LINE, 1.5 MI (2.4 KM) WEST OF MORRILL, ON
MN0253'RIGHT-OF-WAY BETWEEN U.S. HIGHWAY 26 AND THE BURLINGTON NORTHERN

MN0253'RAILROAD, ON THE WEST BANK OF A SMALL CANAL AND NEAR THE CENTER OF
MN0253'SEC17, T23N, R57W. TO REACH THE MARK FROM THE JUNCTION OF STATE ROAD
MN0253'L79D LINK AND U.S. HIGHWAY 26 AT THE WEST EDGE OF MORRILL, GO WEST ON
MN0253'U.S. HIGHWAY 26 FOR 1.55 MI (2.49 KM) TO THE MARK ON THE LEFT. THE
MN0253'DISK IS SET INTO THE TOP OF A SQUARE CONCRETE MONUMENT THAT IS
MN0253'RECESSED ABOUT 0.8 FT (24.4 CM) BELOW THE GROUND SURFACE. IT IS 137.4
MN0253'FT (41.9 M) WEST OF AN END GUYED UTILITY POLE, 101.6 FT (31.0 M)
MN0253'NORTH-NORTHWEST OF THE TOP OF AN IRRIGATION SLUICE GATE VALVE, 71.0 FT
MN0253'(21.6 M) SOUTH OF THE CENTERLINE OF THE HIGHWAY, 43.0 FT (13.1 M)
MN0253'NORTH OF THE CENTERLINE OF THE RAILROAD TRACK, 28.6 FT (8.7 M)
MN0253'SOUTH-SOUTHWEST OF THE CENTER OF THE TOP OF THE SOUTH END OF AN
MN0253'IRRIGATION CANAL CULVERT HEADWALL, 0.4 FT (12.2 CM) NORTH OF A WITNESS
MN0253'POST AND ABOUT 2 FT (0.6 M) HIGHER THAN THE HIGHWAY. REBAR WAS DRIVEN
MN0253'ALONG THE NORTH SIDE OF THE MARK.
MN0253
MN0253   STATION RECOVERY (2000)
MN0253
MN0253'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2000 (JBW)
MN0253'RECOVERED AS DESCRIBED WITH A NEW TO REACH AS FOLLOWS--TO REACH FROM
MN0253'THE JUNCTIONS OF US HIGHWAY 26 AND COUNTY ROAD (LINK TO STATE HIGHWAY
MN0253'92) ON THE WEST SIDE OF MORRILL, GO WEST ON HIGHWAY 26 FOR 1.55 MI
MN0253'(2.49 KM) TO THE STATION ON THE LEFT JUST BEFORE A U-SHAPED TURN AREA
MN0253'ON THE LEFT.
MN0253
MN0253   STATION RECOVERY (2003)
MN0253
MN0253'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2003 (DW)
MN0253'RECOVERED IN GOOD CONDITION.
MN0253
MN0253   STATION RECOVERY (2006)
MN0253
MN0253'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2006
MN0253'RECOVERED IN GOOD CONDITION.
MN0253
MN0253   STATION RECOVERY (2010)
MN0253
MN0253'RECOVERY NOTE BY AERO METRIC INC 2010
MN0253'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.

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 AG9631 ***********************************************************************
 AG9631  DESIGNATION -  D 361 RESET
 AG9631  PID         -  AG9631
 AG9631  STATE/COUNTY-  NE/SCOTTS BLUFF
 AG9631  USGS QUAD   -  SCOTTSBLUFF SOUTH (1976)
 AG9631
 AG9631                        *CURRENT SURVEY CONTROL
 AG9631  ______________________________________________________________________
 AG9631* NAD 83(1986)-  41 52 26.     (N)    103 38 12.     (W)     SCALED
 AG9631* NAVD 88     -      1192.67   (meters)    3913.0    (feet)  RESET
 AG9631  ______________________________________________________________________
 AG9631  GEOID HEIGHT-         -18.93  (meters)                     GEOID09
 AG9631  VERT ORDER  -  THIRD
 AG9631
 AG9631.The horizontal coordinates were scaled from a topographic map and have
 AG9631.an estimated accuracy of +/- 6 seconds.
 AG9631
 AG9631.The orthometric height was computed from unverified reset data.
 AG9631
 AG9631.The geoid height was determined by GEOID09.
 AG9631
 AG9631;                    North         East    Units  Estimated Accuracy
 AG9631;SPC NE       -   232,900.      198,290.      MT  (+/- 180 meters Scaled)
 AG9631
 AG9631                          SUPERSEDED SURVEY CONTROL
 AG9631
 AG9631.No superseded survey control is available for this station.
 AG9631
 AG9631_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TFG131366(NAD 83)
 AG9631_MARKER: DV = VERTICAL CONTROL DISK
 AG9631_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 AG9631_STAMPING: D 361 RESET 1995
 AG9631_MARK LOGO: NGS
 AG9631_MAGNETIC: B = BAR MAGNET IMBEDDED IN MONUMENT
 AG9631_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 AG9631+STABILITY: SURFACE MOTION
 AG9631_SATELLITE: THE SITE LOCATION WAS REPORTED AS NOT SUITABLE FOR
 AG9631+SATELLITE: SATELLITE OBSERVATIONS - April 22, 2010
 AG9631
 AG9631  HISTORY     - Date     Condition        Report By
 AG9631  HISTORY     - 1995     MONUMENTED       NEDR
 AG9631  HISTORY     - 20100421 GOOD             AEROME
 AG9631  HISTORY     - 20100422 GOOD             AEROME
 AG9631
 AG9631                          STATION DESCRIPTION
 AG9631
 AG9631'DESCRIBED BY NEBRASKA ROADS DEPARTMENT 1995 (TWR)
 AG9631'TO REACH FROM THE INTERSECTION OF U.S.  HIGHWAY 26 AND 21ST STREET, IN
 AG9631'SCOTTSBLUFF, GO NORTH ON 21ST STREET FOR 0.65 MI (1.05 KM) TO 27TH
 AG9631'STREET, THEN TURN RIGHT AND GO EAST ON A GRAVELED ROAD FOR
 AG9631'APPROXIMATELY 100 FT (30.5 M) TO THE MARK ON THE RIGHT, ON ROAD
 AG9631'RIGHT-OF-WAY AND IN THE NW1/4, SEC25, T22N, R54W.  THE DISK IS SET
 AG9631'INTO THE TOP OF A ROUND CONCRETE POST THAT IS 34.67 M (113.75 FT)
```

AG9631'SOUTHEAST OF THE CENTER OF THE INTERSECTION OF 21ST STREET AND 27TH
AG9631'STREET, 30.35 M (99.57 FT) SOUTHEAST OF A NAIL IN A LIGHT POLE, 21.869
AG9631'M (71.749 FT) EAST-SOUTHEAST OF A NAIL IN THE SOUTH SIDE OF A POWER
AG9631'POLE, 10.83 M (35.53 FT) SOUTH OF THE CENTERLINE OF 27TH STREET, 4.694
AG9631'M (15.400 FT) WEST-SOUTHWEST OF A NAIL IN THE NORTH SIDE OF A POWER
AG9631'POLE AND 0.3 M (1.0 FT) NORTH OF A WITNESS POST. A MAGNET WAS PLACED
AG9631'INTO THE CONCRETE.
AG9631
AG9631   STATION RECOVERY (2010)
AG9631
AG9631'RECOVERY NOTE BY AERO METRIC INC 2010
AG9631'RECOVERED IN GOOD CONDITION.
AG9631
AG9631   STATION RECOVERY (2010)
AG9631
AG9631'RECOVERY NOTE BY AERO METRIC INC 2010
AG9631'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.

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 MM0216 ***********************************************************************
 MM0216  DESIGNATION -  H 8
 MM0216  PID         -  MM0216
 MM0216  STATE/COUNTY-  NE/KEITH
 MM0216  USGS QUAD   -  OGALLALA (1971)
 MM0216
 MM0216                         *CURRENT SURVEY CONTROL
 MM0216  ______________________________________________________________________
 MM0216* NAD 83(1986)-  41 07 46.      (N)    101 37 49.      (W)      SCALED
 MM0216* NAVD 88     -       970.307   (meters)    3183.42    (feet)   ADJUSTED
 MM0216  ______________________________________________________________________
 MM0216  GEOID HEIGHT-         -21.05   (meters)                       GEOID09
 MM0216  DYNAMIC HT  -         969.708  (meters)    3181.45    (feet)   COMP
 MM0216  MODELED GRAV-     979,974.2    (mgal)                         NAVD 88
 MM0216
 MM0216  VERT ORDER  -  FIRST     CLASS II
 MM0216
 MM0216.The horizontal coordinates were scaled from a topographic map and have
 MM0216.an estimated accuracy of +/- 6 seconds.
 MM0216
 MM0216.The orthometric height was determined by differential leveling and
 MM0216.adjusted in June 1991.
 MM0216
 MM0216.The geoid height was determined by GEOID09.
 MM0216
 MM0216.The dynamic height is computed by dividing the NAVD 88
 MM0216.geopotential number by the normal gravity value computed on the
 MM0216.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 MM0216.degrees latitude (g = 980.6199 gals.).
 MM0216
 MM0216.The modeled gravity was interpolated from observed gravity values.
 MM0216
 MM0216;                    North         East     Units  Estimated Accuracy
 MM0216;SPC NE       -   145,190.      363,160.      MT   (+/- 180 meters Scaled)
 MM0216
 MM0216                          SUPERSEDED SURVEY CONTROL
 MM0216
 MM0216  NGVD 29 (??/??/92)  969.882  (m)         3182.02    (f) ADJ UNCH    1 2
 MM0216
 MM0216.Superseded values are not recommended for survey control.
 MM0216.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 MM0216.See file dsdata.txt to determine how the superseded data were derived.
 MM0216
 MM0216_U.S. NATIONAL GRID SPATIAL ADDRESS: 14TKL792564(NAD 83)
 MM0216_MARKER: DB = BENCH MARK DISK
 MM0216_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 MM0216_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 MM0216_STAMPING: 3182.021 H 8 1933
 MM0216_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 MM0216+STABILITY: SURFACE MOTION
 MM0216
 MM0216  HISTORY     - Date     Condition        Report By
 MM0216  HISTORY     - 1933     MONUMENTED       CGS
```

MM0216 HISTORY   - 1971   MARK NOT FOUND   NGS
MM0216 HISTORY   - 1986   MARK NOT FOUND   NGS
MM0216
MM0216   STATION DESCRIPTION
MM0216
MM0216'DESCRIBED BY COAST AND GEODETIC SURVEY 1933
MM0216'4.8 MI E FROM OGALLALA.
MM0216'ABOUT 4.8 MILES EAST ALONG THE UNION PACIFIC RAILROAD FROM
MM0216'OGALLALA, KEITH COUNTY, AT MILEPOST 330, AT A PRIVATE-ROAD
MM0216'CROSSING, 42 FEET EAST OF THE CENTER LINE OF THE ROAD, ABOUT
MM0216'175 FEET SOUTH OF THE CENTER LINE OF U.S. HIGHWAY 30, 45.2 FEET
MM0216'SOUTH OF THE SOUTH RAIL OF THE SOUTH MAIN TRACK, AND 2 FEET
MM0216'NORTH OF THE SOUTH RIGHT-OF-WAY FENCE. A STANDARD DISK, STAMPED
MM0216'3182.021 H 8 1933 AND SET IN THE TOP OF A CONCRETE POST PROJECTING
MM0216'ABOUT 3 INCHES ABOVE GROUND.
MM0216
MM0216   STATION RECOVERY (1971)
MM0216
MM0216'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1971
MM0216'MARK NOT FOUND.
MM0216
MM0216   STATION RECOVERY (1986)
MM0216
MM0216'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1986
MM0216'NOT RECOVERED.

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

The NGS Data Sheet

See file dsdata.txt for more information about the datasheet.

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DATABASE =  ,PROGRAM = datasheet, VERSION = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 NP0148 ***********************************************************************
 NP0148  DESIGNATION -  MUNDT
 NP0148  PID         -  NP0148
 NP0148  STATE/COUNTY-  NE/BOX BUTTE
 NP0148  USGS QUAD   -  BEREA CREEK WEST (1948)
 NP0148
 NP0148                         *CURRENT SURVEY CONTROL
 NP0148  ______________________________________________________________________
 NP0148* NAD 83(1995)-  42 11 26.84444(N)    102 58 14.05145(W)     ADJUSTED
 NP0148* NAVD 88     -      1258.813  (meters)    4129.96   (feet)  ADJUSTED
 NP0148  ______________________________________________________________________
 NP0148  LAPLACE CORR-          -1.18  (seconds)                     DEFLEC09
 NP0148  GEOID HEIGHT-         -18.46  (meters)                      GEOID09
 NP0148  DYNAMIC HT  -        1258.078 (meters)    4127.54   (feet)  COMP
 NP0148  MODELED GRAV-     979,993.9   (mgal)                        NAVD 88
 NP0148
 NP0148  HORZ ORDER  -  SECOND
 NP0148  VERT ORDER  -  FIRST     CLASS II
 NP0148
 NP0148.The horizontal coordinates were established by classical geodetic methods
 NP0148.and adjusted by the National Geodetic Survey in August 1997.
 NP0148
 NP0148.The orthometric height was determined by differential leveling and
 NP0148.adjusted in June 1991.
 NP0148
 NP0148.Photographs are available for this station.
 NP0148
 NP0148.The Laplace correction was computed from DEFLEC09 derived deflections.
 NP0148
 NP0148.The geoid height was determined by GEOID09.
 NP0148
 NP0148.The dynamic height is computed by dividing the NAVD 88
 NP0148.geopotential number by the normal gravity value computed on the
 NP0148.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 NP0148.degrees latitude (g = 980.6199 gals.).
 NP0148
 NP0148.The modeled gravity was interpolated from observed gravity values.
 NP0148
 NP0148;                    North         East     Units Scale Factor Converg.
 NP0148;SPC NE       -   265,957.752   254,737.087   MT  0.99973001   -1 58 06.9
 NP0148;SPC NE       -   872,563.06    835,749.93    sFT  0.99973001   -1 58 06.9
 NP0148;UTM  13      - 4,672,953.365   667,573.079   MT  0.99994552   +1 21 47.8
 NP0148
 NP0148!             -  Elev Factor  x  Scale Factor =   Combined Factor
 NP0148!SPC NE       -   0.99980550  x   0.99973001  =   0.99953557
 NP0148!UTM  13      -   0.99980550  x   0.99994552  =   0.99975103
 NP0148
 NP0148:                Primary Azimuth Mark                     Grid Az
 NP0148:SPC NE       -  MUNDT AZ MK                              091 37 47.9
 NP0148:UTM  13      -  MUNDT AZ MK                              088 17 53.2
 NP0148
 NP0148|-----------------------------------------------------------------------|
 NP0148| PID    Reference Object                    Distance      Geod. Az   |
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NP0148|                                                              dddmmss.s |
NP0148| NP0150 MUNDT RM 1                              12.741 METERS 04312     |
NP0148| NP0147 MUNDT AZ MK                                           0893941.0 |
NP0148| NP0650 ALLIANCE MUNICIPAL TANK               APPROX.12.1 KM 1402517.9 |
NP0148| NP0149 MUNDT RM 2                              9.412 METERS 26920     |
NP0148| NP0651 BEREA DEAVER ELEVATOR CO ELEV         APPROX. 2.6 KM 3473458.2 |
NP0148|-------------------------------------------------------------------------|
NP0148
NP0148                          SUPERSEDED SURVEY CONTROL
NP0148
NP0148  NAD 83(1993)-  42 11 26.84416(N)    102 58 14.05137(W) AD(       ) 2
NP0148  NAD 83(1986)-  42 11 26.84188(N)    102 58 14.04920(W) AD(       ) 2
NP0148  NAD 27      -  42 11 26.97500(N)    102 58 12.32500(W) AD(       ) 2
NP0148  NGVD 29 (??/??/92) 1258.212  (m)         4127.98   (f) ADJ UNCH    1 2
NP0148
NP0148.Superseded values are not recommended for survey control.
NP0148.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
NP0148.See file dsdata.txt to determine how the superseded data were derived.
NP0148
NP0148_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TFG6757372953(NAD 83)
NP0148_MARKER: DS = TRIANGULATION STATION DISK
NP0148_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
NP0148_SP_SET: CONCRETE POST
NP0148_STAMPING: MUNDT 1946
NP0148_MARK LOGO: CGS
NP0148_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
NP0148+STABILITY: SURFACE MOTION
NP0148_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
NP0148+SATELLITE: SATELLITE OBSERVATIONS - July 15, 2006
NP0148
NP0148  HISTORY     - Date     Condition        Report By
NP0148  HISTORY     - 1946     MONUMENTED       CGS
NP0148  HISTORY     - 1956     GOOD             CGS
NP0148  HISTORY     - 1956     GOOD             NGS
NP0148  HISTORY     - 1985     GOOD             NGS
NP0148  HISTORY     - 20060715 GOOD             JCLS
NP0148
NP0148                           STATION DESCRIPTION
NP0148
NP0148'DESCRIBED BY COAST AND GEODETIC SURVEY 1946 (CAG)
NP0148'IT IS ABOUT 8 MILES, AIRLINE, NORTHWEST OF ALLIANCE, 1.5 MILE
NP0148'SOUTH-SOUTHEAST OF BEREA, IN THE 1/4 OF SEC. 30, T 26 N, R 48
NP0148'W, AND AT THE SOUTHEAST CORNER OF A CULTIVATED FIELD, 37
NP0148'FEET NORTH OF THE CENTER OF A GRAVELED ROAD AND 17 FEET WEST
NP0148'OF THE CENTER OF A TRACK ROAD.  IT PROJECTS 2 INCHES AND
NP0148'IS STAMPED MUNDT 1946.
NP0148'
NP0148'REFERENCE MARK NO. 1 IS 68 FEET SOUTH OF THE CENTER OF A
NP0148'GRAVELED ROAD, 13 FEET EAST OF THE CENTER OF A TRACK ROAD
NP0148'AND 6 INCHES WEST OF A FENCE LINE.  IT PROJECTS 3 INCHES
NP0148'AND IS STAMPED MUNDT NO 1 1946.
NP0148'
NP0148'REFERENCE MARK NO. 2 IS 36 FEET NORTH OF THE CENTER OF A
NP0148'GRAVELED ROAD AND AT THE SOUTH EDGE OF A CULTIVATED FIELD.  IT
NP0148'PROJECTS 4 INCHES AND IS STAMPED MUNDT NO 2 1946.
NP0148'
NP0148'AZIMUTH MARK IS ON THE HIGHWAY RIGHT-OF-WAY BETWEEN THE
NP0148'RAILROAD AND STATE HIGHWAY NO. 2, 92 FEET NORTHEAST OF THE
NP0148'CENTER OF INTERSECTION OF CROSSROAD, 41 FEET EAST OF THE
NP0148'CENTERLINE OF STATE HIGHWAY NO. 2, AND 9 FEET SOUTHEAST OF
NP0148'A TELEPHONE POLE.  IT PROJECTS 6 INCHES AND IS STAMPED MUNDT
NP0148'1946.
NP0148'
NP0148'TO REACH FROM THE JUNCTION OF STATE HIGHWAYS NO. 19 AND NO. 2,
NP0148'WHICH IS 1.5 MILES WEST OF THE BUSINESS DISTRICT OF ALLIANCE,
NP0148'GO NORTHWEST ON STATE HIGHWAY NO. 2 FOR 7.5 MILES TO A CROSSROAD,
```

NP0148'TURN LEFT, WEST, AND GO 0.55 MILE TO A FARM ROAD RIGHT AND
NP0148'THE STATION AS DESCRIBED.
NP0148'
NP0148'TO REACH THE AZIMUTH MARK FROM THE STATION, GO EAST ON GRAVELED
NP0148'ROAD FOR 0.55 MILE TO STATE HIGHWAY NO. 2 AND THE AZIMUTH
NP0148'MARK AS DESCRIBED.
NP0148
NP0148 STATION RECOVERY (1956)
NP0148
NP0148'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1956
NP0148'8.35 MILES NORTHWEST ALONG THE CHICAGO, BURLINGTON AND QUINCY
NP0148'RAILROAD FROM THE STATION AT ALLIANCE, THENCE 0.55 MILE WEST
NP0148'ALONG A GRAVELED ROAD, 36 FEET NORTH OF THE CENTER LINE OF
NP0148'AN EAST AND WEST ROAD, 31.5 FEET WEST OF A FENCE CORNER,
NP0148'18 FEET WEST OF THE CENTER LINE OF A PRIVATE ROAD LEADING NORTH,
NP0148'2 FEET SOUTH OF A WITNESS POST, IN THE SOUTHWEST 1/4 OF SECTION
NP0148'30, TOWNSHIP 26 NORTH, RANGE 48 WEST, IN THE SOUTHEAST CORNER
NP0148'OF A CULTIVATED FIELD, A TRIANGULATION STATION DISK SET IN
NP0148'THE TOP OF A CONCRETE POST WHICH IS FLUSH WITH THE GROUND,
NP0148'STAMPED MUNDT 1946.
NP0148'
NP0148'MUNDT R.M. 1 IS 41.8 FEET NORTHEAST OF TRIANGULATION STATION
NP0148'MUNDT 1946, 69 FEET NORTH OF THE CENTER LINE OF AN EAST AND
NP0148'WEST ROAD, 14 FEET EAST OF THE CENTER LINE OF A PRIVATE
NP0148'ROAD LEADING NORTH, 0.6 FOOT WEST OF A FENCE, A REFERENCE
NP0148'MARK DISK SET IN THE TOP OF A CONCRETE POST WHICH IS FLUSH WITH
NP0148'THE GROUND, STAMPED MUNDT NO 1 1946.
NP0148'
NP0148'MUNDT R.M. 2 IS 30.8 FEET WEST OF TRIANGULATION STATION
NP0148'MUNDT 1946, 35 FEET NORTH OF THE CENTER LINE OF AN EAST AND
NP0148'WEST ROAD, 49 FEET WEST OF THE CENTER LINE OF A PRIVATE ROAD
NP0148'LEADING NORTH, A REFERENCE MARK DISK SET IN THE TOP OF A
NP0148'CONCRETE POST WHICH IS FLUSH WITH THE GROUND, STAMPED MUNDT
NP0148'NO 2 1946.
NP0148'
NP0148'MUNDT 1946 AZIMUTH IS 0.55 MILE EAST OF TRIANGULATION STATION
NP0148'MUNDT 1946.
NP0148'
NP0148'47.3 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE CHICAGO,
NP0148'BURLINGTON AND QUINCY RAILROAD, 10-1/2 POLES SOUTHEAST OF
NP0148'MILEPOST 374, 91 FEET NORTH OF THE INTERSECTION OF THE CENTER
NP0148'LINES OF STATE HIGHWAY 2 AND AN EAST AND WEST ROAD, 40 FEET
NP0148'NORTHEAST OF THE CENTER LINE OF THE HIGHWAY, 1.5 FEET SOUTHEAST
NP0148'OF A WITNESS POST, IN THE SOUTHWEST 1/4 OF SECTION 29, TOWNSHIP
NP0148'26 NORTH, RANGE 48 WEST, AN AZIMUTH MARK DISK SET IN THE
NP0148'TOP OF A CONCRETE POST WHICH PROJECTS 0.1 FOOT ABOVE THE
NP0148'GROUND, STAMPED MUNDT 1946.
NP0148
NP0148 STATION RECOVERY (1956)
NP0148
NP0148'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1956
NP0148'8.9 MI NW FROM ALLIANCE.
NP0148'8.35 MILES NORTHWEST ALONG THE CHICAGO, BURLINGTON AND QUINCY
NP0148'RAILROAD FROM THE STATION AT ALLIANCE, THENCE 0.55 MILE WEST
NP0148'ALONG A GRAVELED ROAD, 36 FEET NORTH OF THE CENTER LINE OF AN
NP0148'EAST AND WEST ROAD, 31.5 FEET WEST OF A FENCE CORNER, 18 FEET
NP0148'WEST OF THE CENTER LINE OF A PRIVATE ROAD LEADING NORTH, 2 FEET
NP0148'SOUTH OF A WITNESS POST, IN THE SOUTHEAST CORNER OF A CULTIVATED
NP0148'FIELD, SET IN THE TOP OF A CONCRETE POST WHICH IS FLUSH WITH THE
NP0148'GROUND, IN THE SOUTHWEST 1/4 OF SECTION 30, TOWNSHIP 26 NORTH,
NP0148'RANGE 48 WEST.
NP0148
NP0148 STATION RECOVERY (1985)
NP0148
NP0148'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1985
NP0148'RECOVERED IN GOOD CONDITION.

NP0148
NP0148 STATION RECOVERY (2006)
NP0148
NP0148'RECOVERY NOTE BY JOHN CHANCE LAND SURVEYS INC 2006
NP0148'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 = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 DH7223 ***********************************************************************
 DH7223  CORS         -  This is a GPS Continuously Operating Reference Station.
 DH7223  DESIGNATION -  SCOTTS BLUFF CNTY CORS ARP
 DH7223  CORS_ID      -  NESC
 DH7223  PID          -  DH7223
 DH7223  STATE/COUNTY-  NE/SCOTTS BLUFF
 DH7223  USGS QUAD    -  SCOTTSBLUFF SOUTH (1976)
 DH7223
 DH7223                         *CURRENT SURVEY CONTROL
 DH7223  ______________________________________________________________________
 DH7223* NAD 83(CORS)-  41 49 37.75219(N)    103 39 39.72051(W)     ADJUSTED
 DH7223* NAVD 88      -              **(meters)           **(feet)
 DH7223  ______________________________________________________________________
 DH7223  EPOCH DATE   -        2002.00
 DH7223  X            -  -1,124,370.782 (meters)                    COMP
 DH7223  Y            -  -4,626,024.944 (meters)                    COMP
 DH7223  Z            -   4,232,106.519 (meters)                    COMP
 DH7223  ELLIP HEIGHT-        1183.401 (meters)          (12/??/05) ADJUSTED
 DH7223  GEOID HEIGHT-         -18.97  (meters)                    GEOID09
 DH7223  HORZ ORDER   -  SPECIAL (CORS)
 DH7223  ELLP ORDER   -  SPECIAL (CORS)
 DH7223
 DH7223.ITRF positions are available for this station.
 DH7223.The coordinates were established by GPS observations
 DH7223.and adjusted by the National Geodetic Survey in December 2005.
 DH7223.The coordinates are valid at the epoch date displayed above.
 DH7223.The epoch date for horizontal control is a decimal equivalence
 DH7223.of Year/Month/Day.
 DH7223
 DH7223
 DH7223.The PID for the CORS L1 Phase Center is DH7224.
 DH7223
 DH7223.The XYZ, and position/ellipsoidal ht. are equivalent.
 DH7223
 DH7223.The ellipsoidal height was determined by GPS observations
 DH7223.and is referenced to NAD 83.
 DH7223
 DH7223.The geoid height was determined by GEOID09.
 DH7223
 DH7223;                    North         East     Units Scale Factor Converg.
 DH7223;SPC NE       -   227,801.932   196,051.046   MT  0.99967428   -2 25 34.2
 DH7223;SPC NE       -   747,380.17    643,210.81    sFT  0.99967428   -2 25 34.2
 DH7223
 DH7223!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DH7223!SPC NE       -   0.99981442  x   0.99967428  =   0.99948876
 DH7223
 DH7223                          SUPERSEDED SURVEY CONTROL
 DH7223
 DH7223.No superseded survey control is available for this station.
 DH7223
 DH7223_U.S. NATIONAL GRID SPATIAL ADDRESS: 13TFG1119031452(NAD 83)
 DH7223_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
 DH7223
```

DH7223 STATION DESCRIPTION
DH7223
DH7223'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DH7223'STATION IS A GPS CORS. LATEST INFORMATION INCLUDING POSITIONS AND
DH7223'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH7223'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH7223' FTP CORS.NGS.NOAA.GOV: CORS/COORD AND CORS/STATION_LOG
DH7223' HTTP://WWW.NGS.NOAA.GOV/CORS.

*** 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 = 7.85
1        National Geodetic Survey,   Retrieval Date = JULY 12, 2010
 MM0184 ***********************************************************************
 MM0184  DESIGNATION -  Q 63
 MM0184  PID         -  MM0184
 MM0184  STATE/COUNTY-  NE/THOMAS
 MM0184  USGS QUAD   -  THEDFORD (1986)
 MM0184
 MM0184                         *CURRENT SURVEY CONTROL
 MM0184  ______________________________________________________________________
 MM0184* NAD 83(1986)-  41 58 36.     (N)    100 34 32.     (W)     SCALED
 MM0184* NAVD 88     -       868.233  (meters)    2848.53   (feet)  ADJUSTED
 MM0184  ______________________________________________________________________
 MM0184  GEOID HEIGHT-         -21.67  (meters)                     GEOID09
 MM0184  DYNAMIC HT  -         867.786 (meters)    2847.06   (feet)  COMP
 MM0184  MODELED GRAV-     980,078.0   (mgal)                       NAVD 88
 MM0184
 MM0184  VERT ORDER  -  SECOND    CLASS 0
 MM0184
 MM0184.The horizontal coordinates were scaled from a topographic map and have
 MM0184.an estimated accuracy of +/- 6 seconds.
 MM0184
 MM0184.The orthometric height was determined by differential leveling and
 MM0184.adjusted in June 1991.
 MM0184
 MM0184.The geoid height was determined by GEOID09.
 MM0184
 MM0184.The dynamic height is computed by dividing the NAVD 88
 MM0184.geopotential number by the normal gravity value computed on the
 MM0184.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 MM0184.degrees latitude (g = 980.6199 gals.).
 MM0184
 MM0184.The modeled gravity was interpolated from observed gravity values.
 MM0184
 MM0184;                    North         East     Units  Estimated Accuracy
 MM0184;SPC NE       -   238,130.      452,310.      MT  (+/- 180 meters Scaled)
 MM0184
 MM0184                          SUPERSEDED SURVEY CONTROL
 MM0184
 MM0184  NGVD 29 (??/??/92)  867.918  (m)         2847.49   (f) ADJ UNCH    2 0
 MM0184
 MM0184.Superseded values are not recommended for survey control.
 MM0184.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 MM0184.See file dsdata.txt to determine how the superseded data were derived.
 MM0184
 MM0184_U.S. NATIONAL GRID SPATIAL ADDRESS: 14TLM694483(NAD 83)
 MM0184_MARKER: DB = BENCH MARK DISK
 MM0184_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 MM0184_SP_SET: SET IN TOP OF CONCRETE MONUMENT
 MM0184_STAMPING: Q 63 1934
 MM0184_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 MM0184+STABILITY: SURFACE MOTION
 MM0184
 MM0184  HISTORY     - Date     Condition        Report By
 MM0184  HISTORY     - 1934     MONUMENTED       CGS
```

MM0184 HISTORY   - 1982   GOOD   NEDR
MM0184
MM0184   STATION DESCRIPTION
MM0184
MM0184'DESCRIBED BY COAST AND GEODETIC SURVEY 1934
MM0184'AT THEDFORD.
MM0184'AT THEDFORD, THOMAS COUNTY, AT THE COUNTY COURTHOUSE, 24.2
MM0184'FEET WEST OF THE CENTERLINE OF THE SOUTH ENTRANCE, 3.2 FEET
MM0184'SOUTHEAST OF THE SOUTHWEST CORNER, AND 2.4 FEET SOUTHJ OF THE
MM0184'SOUTH SIDE OF THE BUILDING. A STANDARD DISK, STAMPED Q 63 1934
MM0184'AND SET IN THE TOP OF A CONCRETE POST.
MM0184
MM0184   STATION RECOVERY (1982)
MM0184
MM0184'RECOVERY NOTE BY NEBRASKA ROADS DEPARTMENT 1982
MM0184'RECOVERED IN GOOD CONDITION.

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

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

PROJECT 1-000327
OPERATOR MG
DATE 4·21·10

SITE NUMBER 1
SITE NAME 101

TRACKING TIMES (LOCAL) MEASURE ✓
START 7:56 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)

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.296

STATION DESCRIPTIONS set rebar + cap

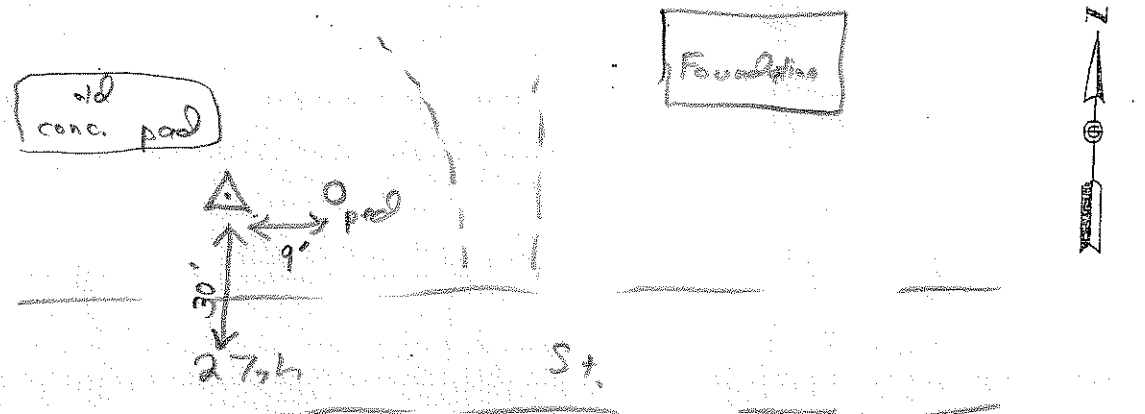
AT502 1656

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
856	3.5	6/7

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
41 52 27.4
103 38 02.9

SKETCH



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

Base

PROJECT 1-100387
OPERATOR MB
DATE 4.21.10

SITE NUMBER 3
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE _____
START 2:22p
STOP 2:48p

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

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

OBSTRUCTIONS: non-

HEIGHT READINGS MTS FT
1.338

AT502

1698

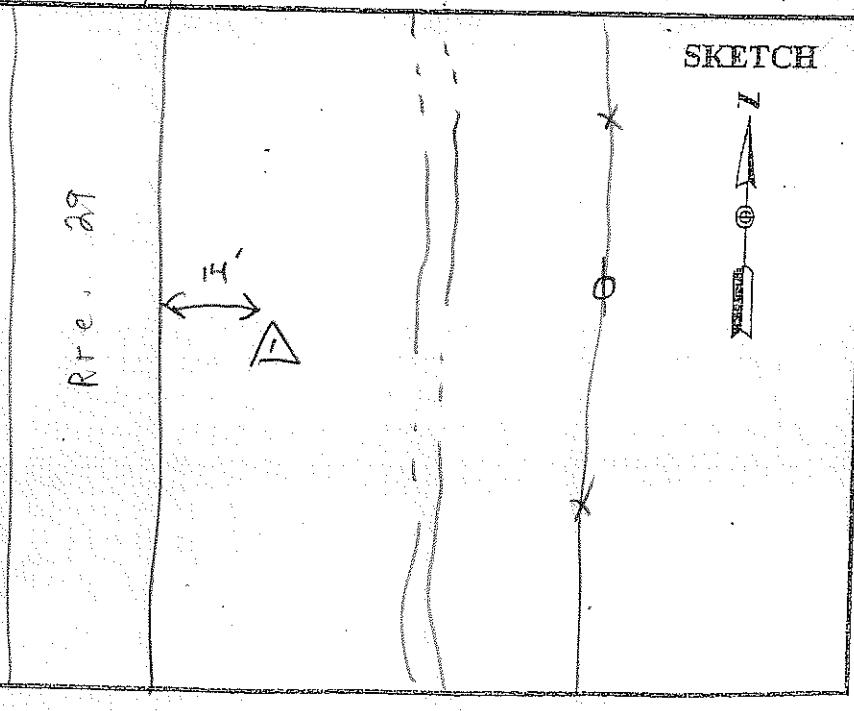
STATION DESCRIPTIONS set rebar + cap
#103 is located 1.8 miles N. of intersection of Rte's 29 + 26 in the town of Mitchell.

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1522	2.2	7/7
1548		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
41 58 07.0
103 48 50.2

SKETCH



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

PROJECT 1-100387
OPERATOR MG
DATE 4.21.10

SITE NUMBER 1
SITE NAME 102

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:23a.
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

OBSTRUCTIONS: LP north

HEIGHT READINGS MTS FT
.872

STATION DESCRIPTIONS Set chiseled 'T' on S. end of yellow conc ROW marker 4' NE of NE corner of grate; 2' W of orange + white post; 9' S. of LP

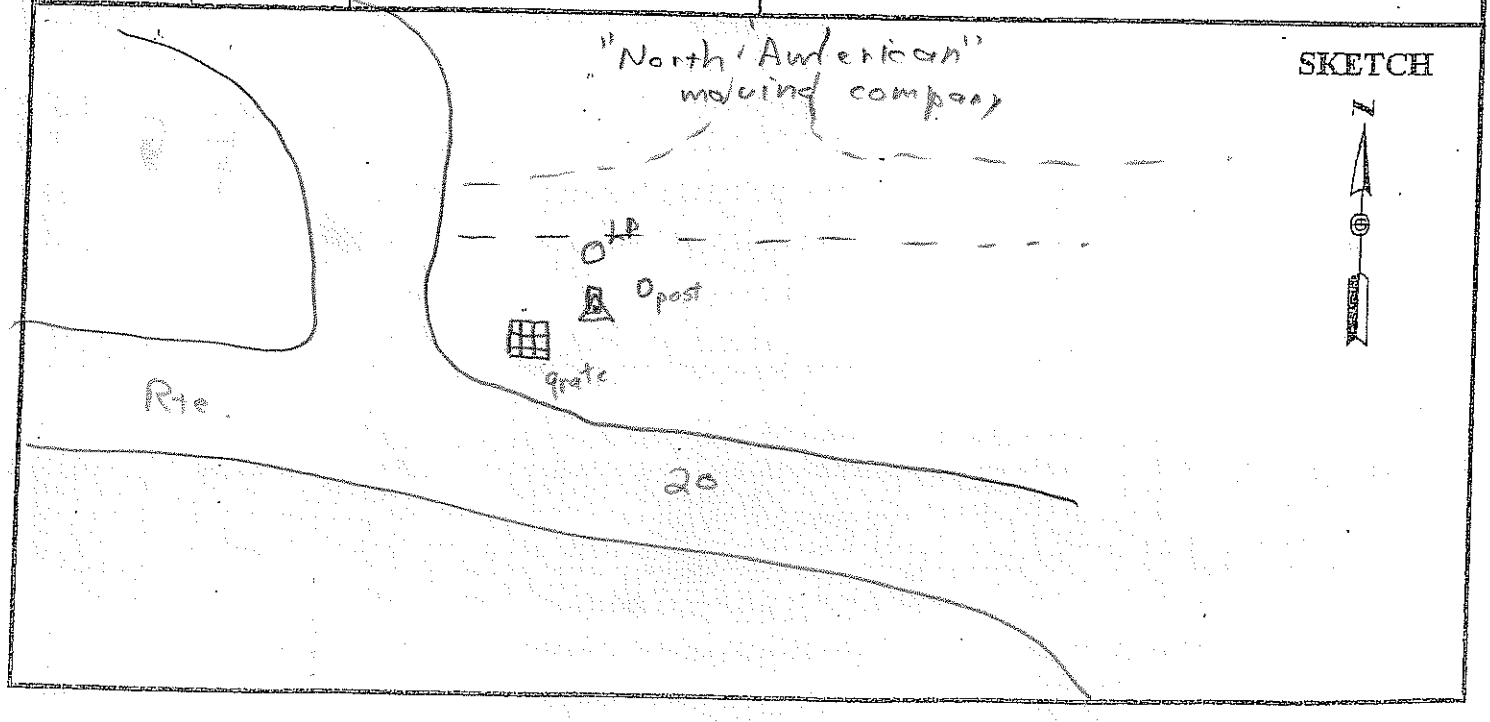
AT502 1232

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
923	1.8	8/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
41 53 47.0
103 42 48.6

SKETCH



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

Control

PROJECT 1-100327
OPERATOR MD
DATE 4·21·10

SITE NUMBER 1
SITE NAME Q 63

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:21a.
STOP 10:26a

SENSOR TYPE 500 9500 399 299
MEMORY CARD 732
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
1.483

STATION DESCRIPTIONS Fnd brass cap / conc. mon. "Q 63 1934"

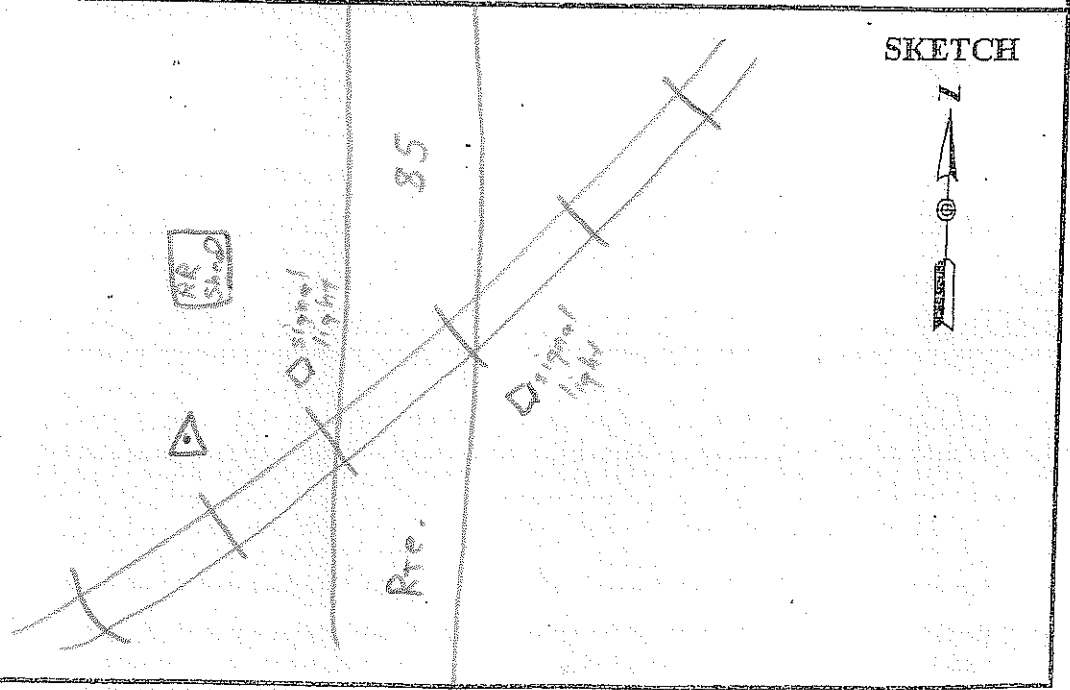
AT502 1243

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1021	1.8	9/10
1126		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

CONTROL

PROJECT 1-100327
OPERATOR NB
DATE 4.21.10

SITE NUMBER 2
SITE NAME D 50

TRACKING TIMES (LOCAL) MEASURE V
START 1:22 p
STOP 2:03 p

SENSOR TYPE 500 9500 399 299
MEMORY CARD 732
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
1.542

STATION DESCRIPTIONS D50 USC+GS
cap/conc. mon "D 50 1934"

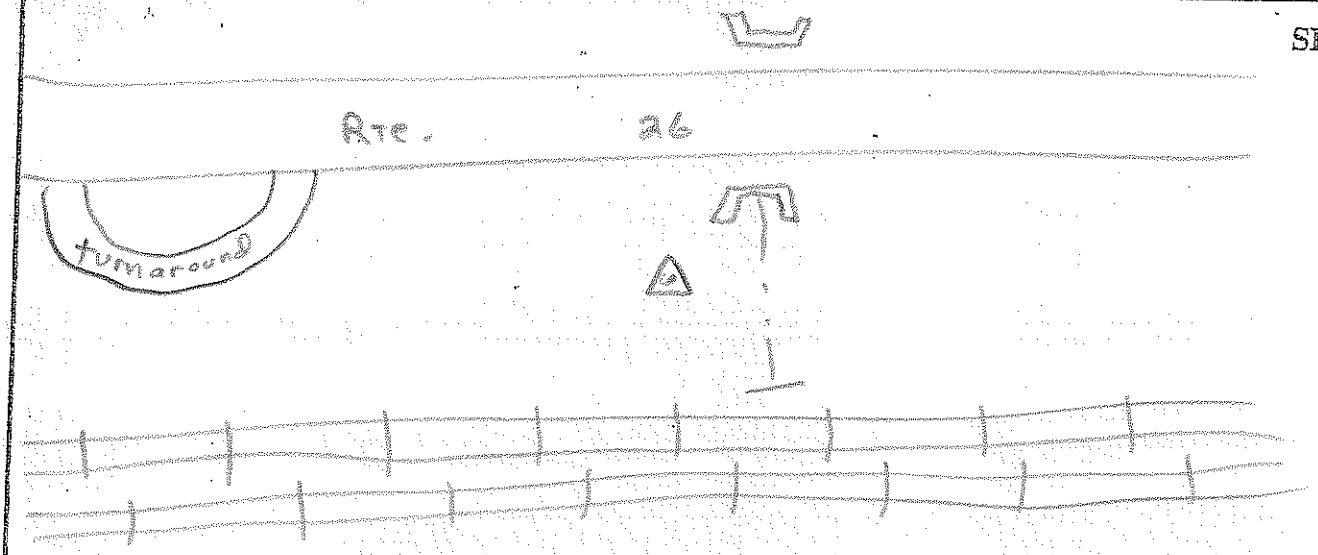
ATSO2 1902

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1422	2.9	7/7
1503		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

Base

PROJECT 1-100327
OPERATOR MB
DATE 4.22.10

SITE NUMBER 1
SITE NAME 102

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:01a.
STOP

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:

HEIGHT READINGS MTS FT
872

STATION DESCRIPTIONS

AT502

1232

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
901	1.9	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.22.10

SITE NUMBER 1
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:16 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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.388

STATION DESCRIPTIONS

AT 502 1.748

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
916	1.9	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

see previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.22.10

SITE NUMBER 1
SITE NAME H 8

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:25 a.
STOP 10:45 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.226

STATION DESCRIPTIONS COE cap/conc mon

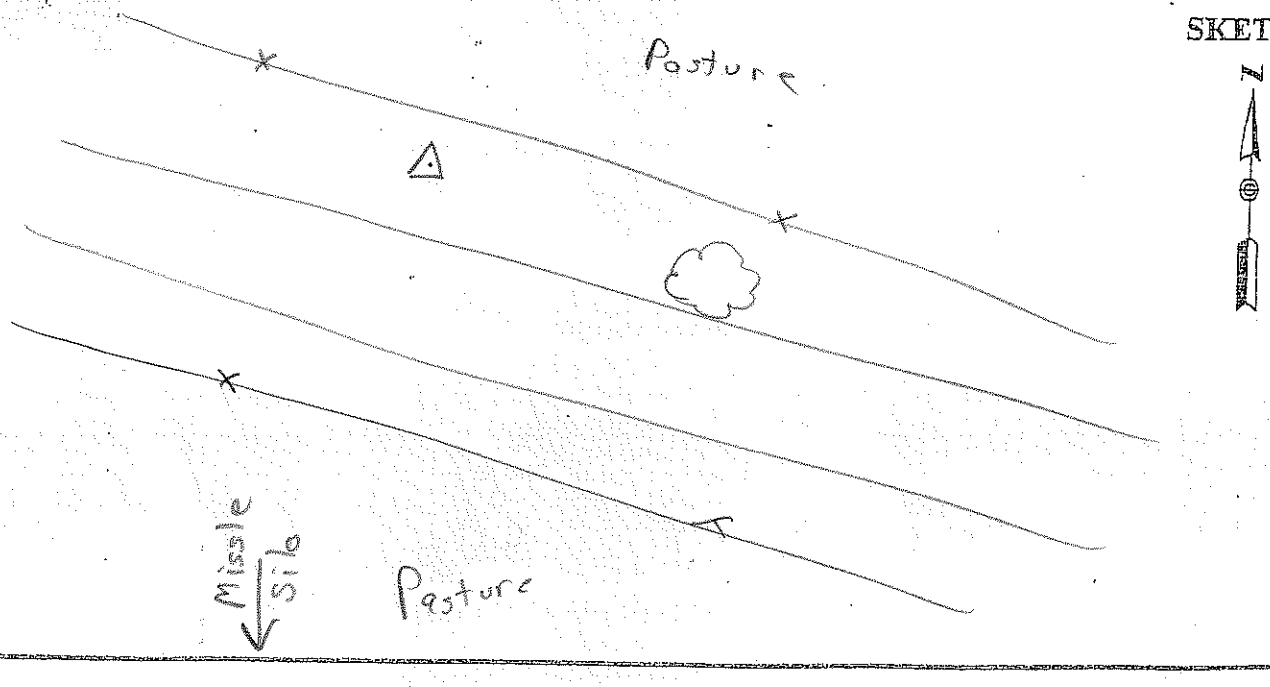
AT502 1.586

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1025	1.8	10/11
1145		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR MB
DATE 4.22.10

SITE NUMBER 2
SITE NAME A 51 RESET

TRACKING TIMES (LOCAL) MEASURE ✓
START 12:27
STOP 1:30

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.317

STATION DESCRIPTIONS fnd NGS copy / conc. mon. "A 51 Reset 1986"

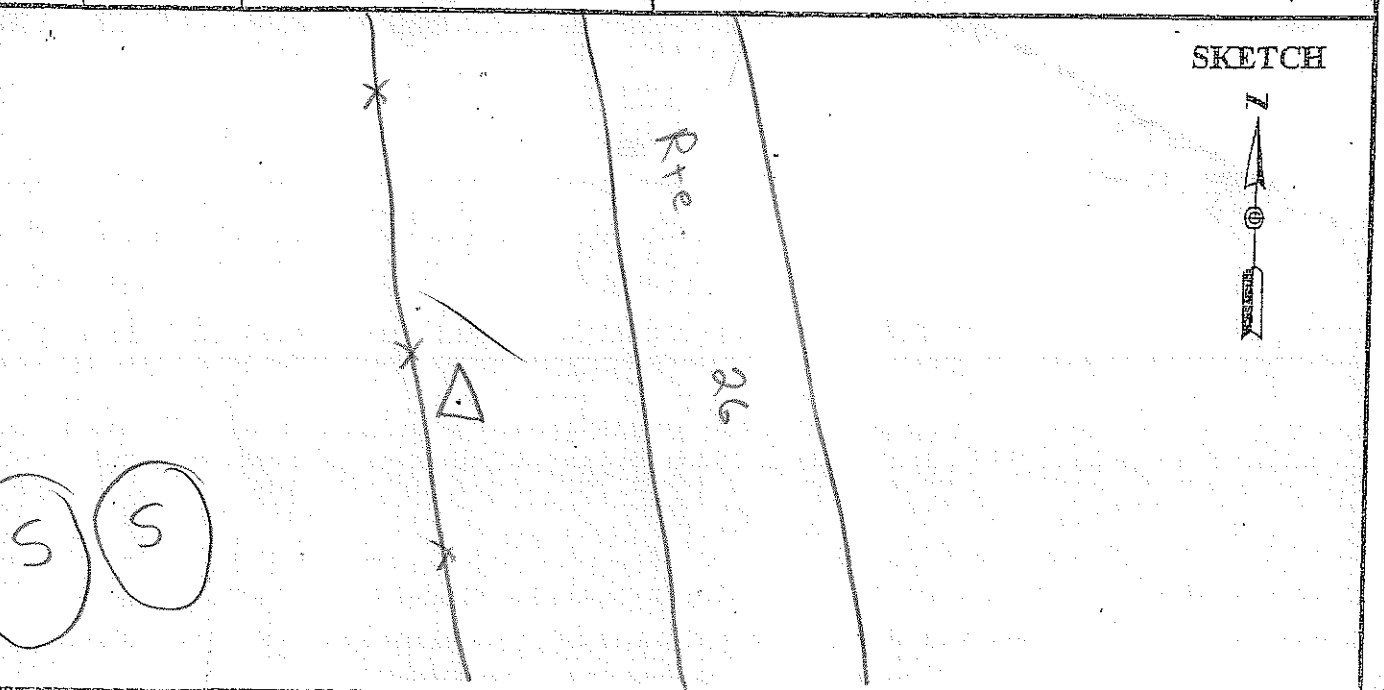
AT502 1677

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1327	2.2	7/7
1430		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

CONTROL

PROJECT 1-100327
OPERATOR MB
DATE 4.22.10

SITE NUMBER 3
SITE NAME D 361 RESET

TRACKING TIMES (LOCAL) MEASURE ✓
START 2:21 p
STOP 2:51 p

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

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

OBSTRUCTIONS: trees SW ↔ SE

HEIGHT READINGS MTS FT
1.304

STATION DESCRIPTIONS fnd conc. mon / brass cap "D 361 RESET 1995"

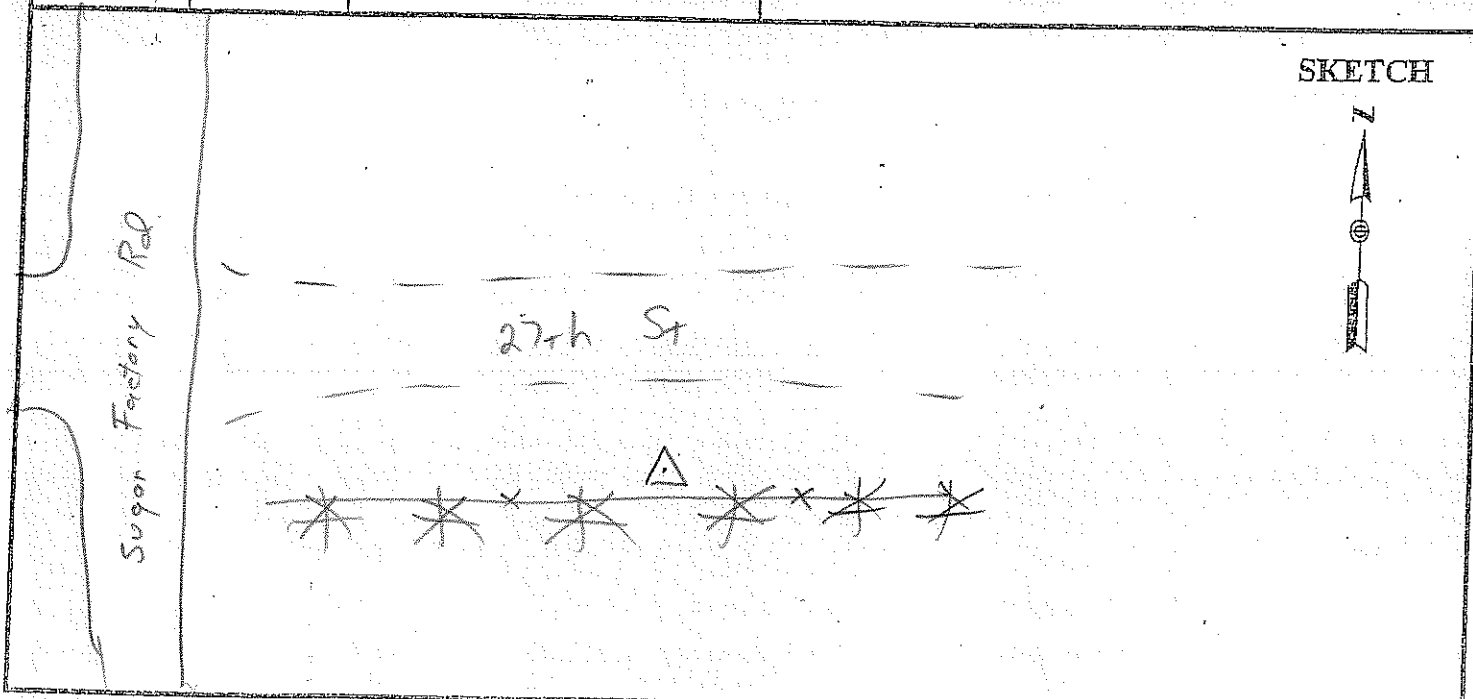
ATS02 1664

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1521	3.2	5/6
1551		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR MB
DATE 4-23-10

SITE NUMBER 1
SITE NAME 102

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:11 a
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
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
.878

AT502

STATION DESCRIPTIONS

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
911	1.8	10/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.23.10

SITE NUMBER 1
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:29a.
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 704
BATTERY NO. C10
CONTROLLER NO.
SENSOR NO.

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.268

STATION DESCRIPTIONS

AT502 1628

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
929	4.7	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

see previous

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

VRT lidar

PROJECT 1-100327
OPERATOR MB
DATE 4.23.10

SITE NUMBER 1
SITE NAME 1

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:38a.
STOP 9:01a.

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)

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.386

STATION DESCRIPTIONS NW corner at intersection

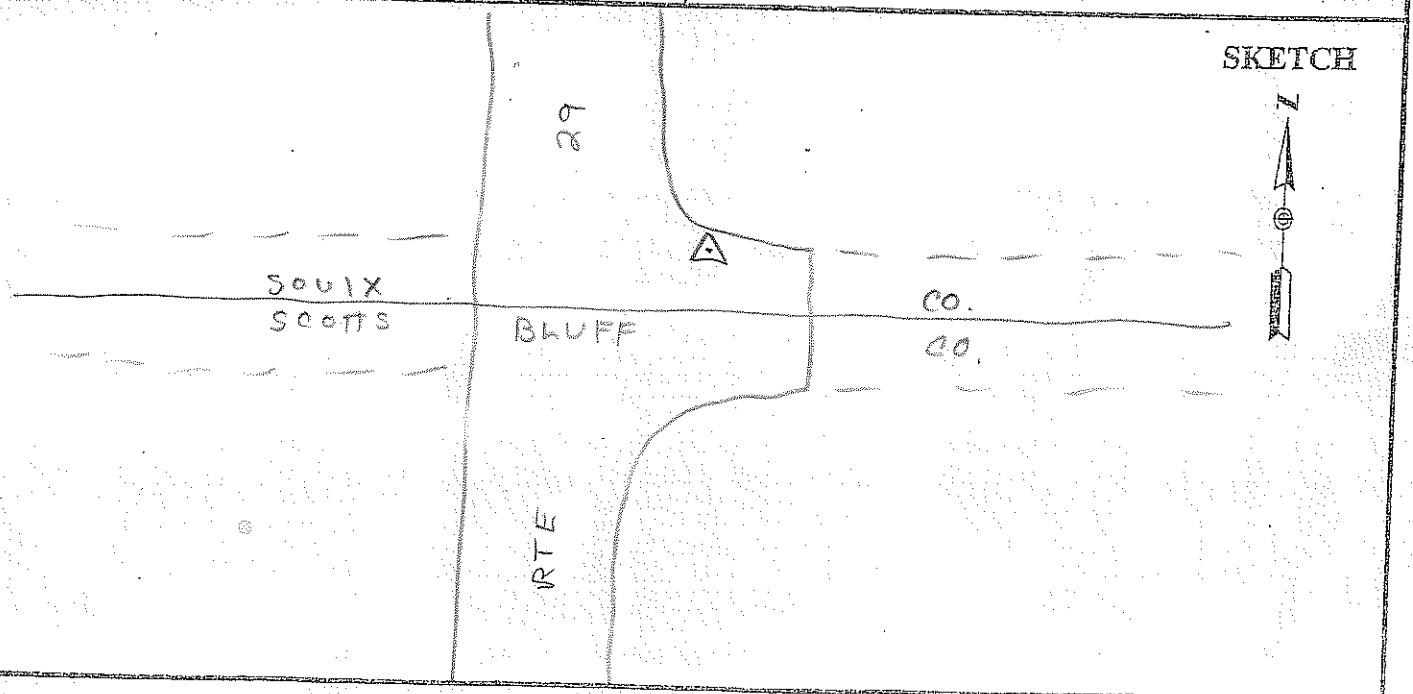
AT502 1.796

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
938	1.6	10/11
1001		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

✓ AT 1:2ar

PROJECT 1-100327
OPERATOR MB
DATE 4.23.10

SITE NUMBER 2
SITE NAME 2

TRACKING TIMES (LOCAL) MEASURE _____
START ~~9:26a~~ 9:40a
STOP ~~9:57a~~ 10:11a

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.360
~~1.324~~

STATION DESCRIPTIONS W bound lane

AT 502 1.720

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
10 ~~10:26~~	2.5	8/9
11 11 ~~10:57~~		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

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

√ PT lidar

PROJECT 1-100327
OPERATOR MB
DATE 4.23.10

SITE NUMBER 3
SITE NAME 3

TRACKING TIMES (LOCAL) MEASURE √
START 10:41a.
STOP 11:26a.

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)

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.420

STATION DESCRIPTIONS NE corner of intersection

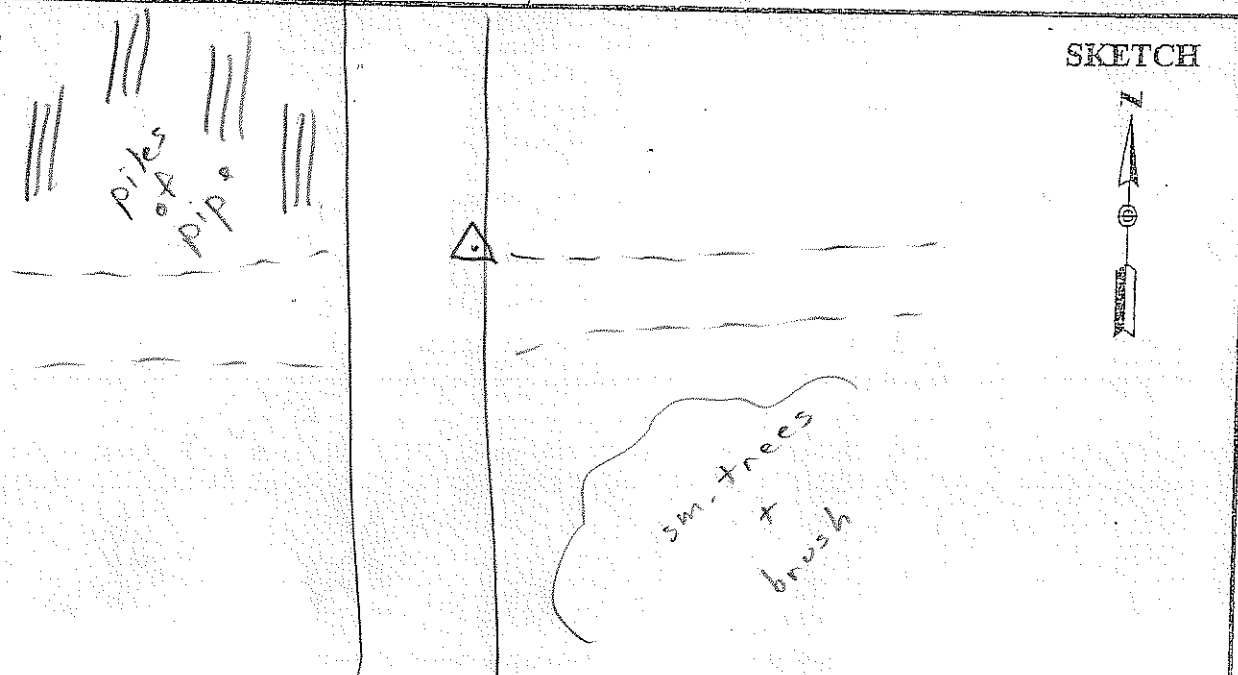
AT502 1.780

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1141	2.6	11/11
1226		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

VPT lidar

PROJECT 1-100327
OPERATOR MB
DATE 4.23.10

SITE NUMBER 4
SITE NAME 4

TRACKING TIMES (LOCAL) MEASURE V
START 11:40 a.
STOP 12:20 p

SENSOR TYPE 500 9500 399 299
MEMORY CARD 231
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
1.388

STATION DESCRIPTIONS E. side pavement

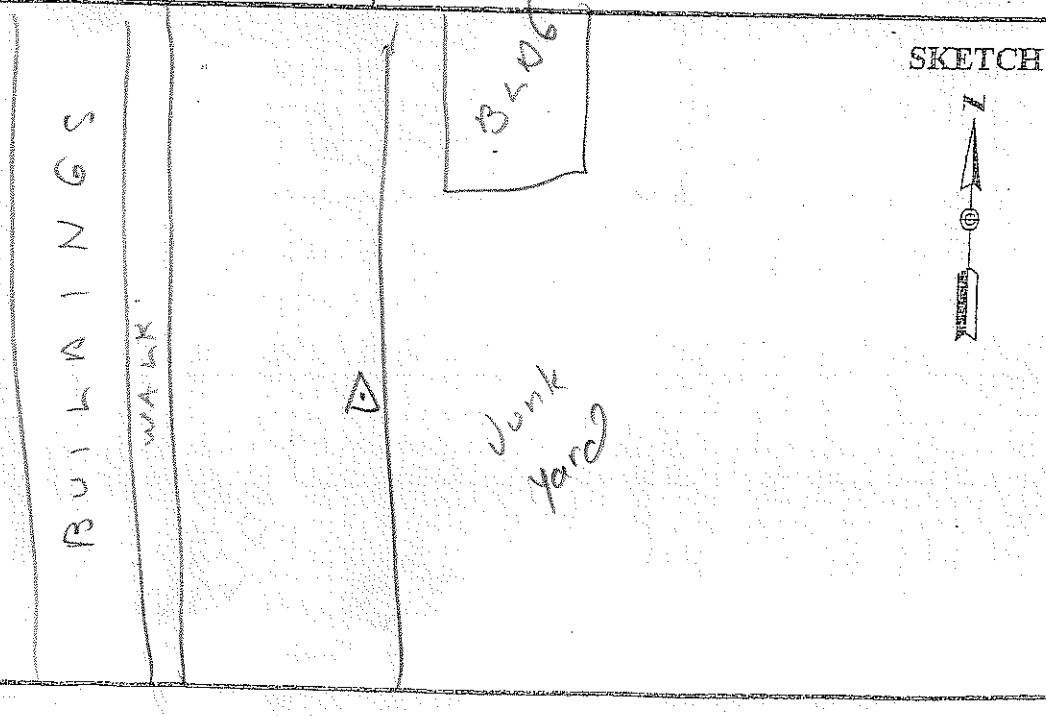
AT502 1748

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1240	3.2	5/5
1320		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

√ PT 1/2 ar

PROJECT 1-400327
OPERATOR MB
DATE 4.23.10

SITE NUMBER 5
SITE NAME 5

TRACKING TIMES (LOCAL) MEASURE √
START 12:34 p
STOP 1:11 p

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.390

STATION DESCRIPTIONS on sidewalk

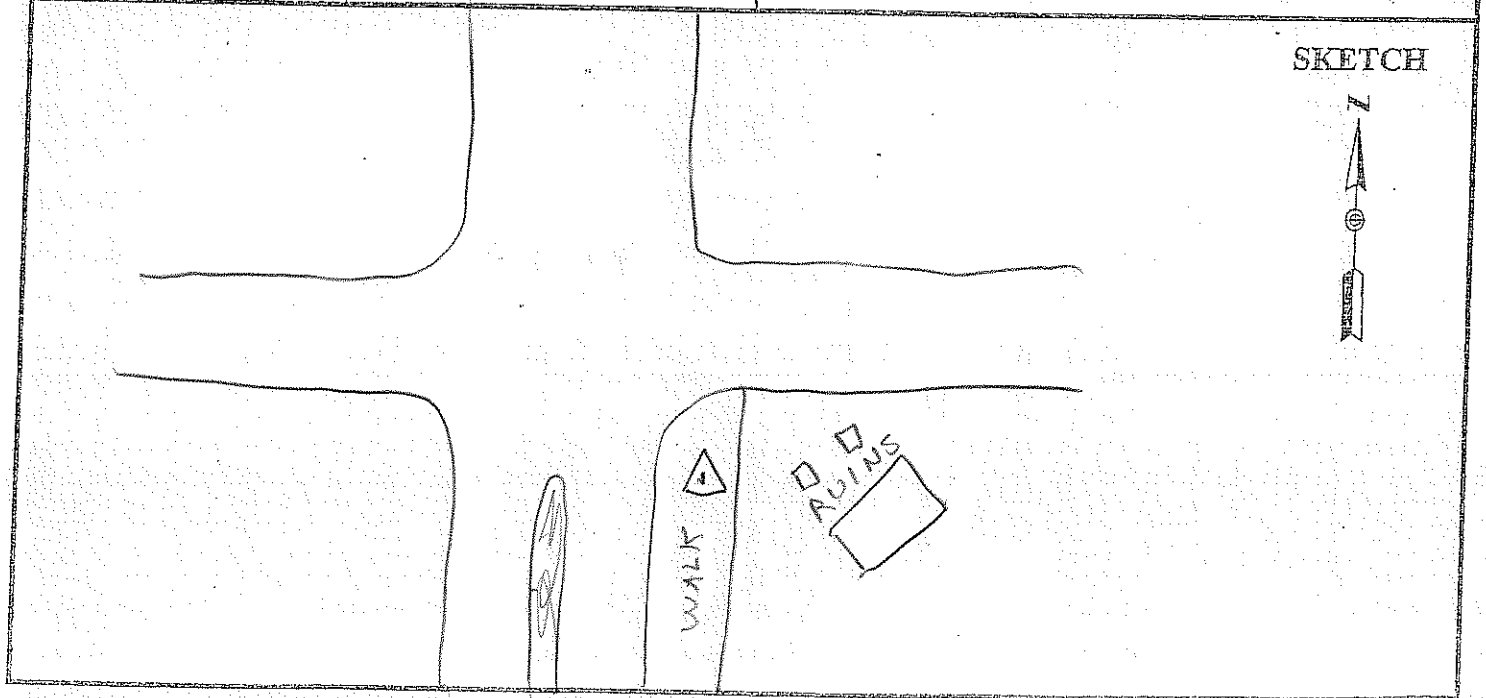
AT502 1.750

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1324	1.7	8/9
1411		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

1pt lidar

PROJECT 1-100327
OPERATOR MB
DATE 4·23·10

SITE NUMBER 6
SITE NAME 6

TRACKING TIMES (LOCAL) MEASURE ✓
START 1:23 p
STOP 1:50 p

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.380

STATION DESCRIPTIONS SE corner of intersection

AT502 1.740

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1423	2.9	7/7
1450		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

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

✓ PT lidar

PROJECT 1-100327
OPERATOR NB
DATE 4.23.10

SITE NUMBER 7
SITE NAME 7

TRACKING TIMES (LOCAL) MEASURE ✓
START 2:09p
STOP 2:30p

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.371

STATION DESCRIPTIONS in parking area

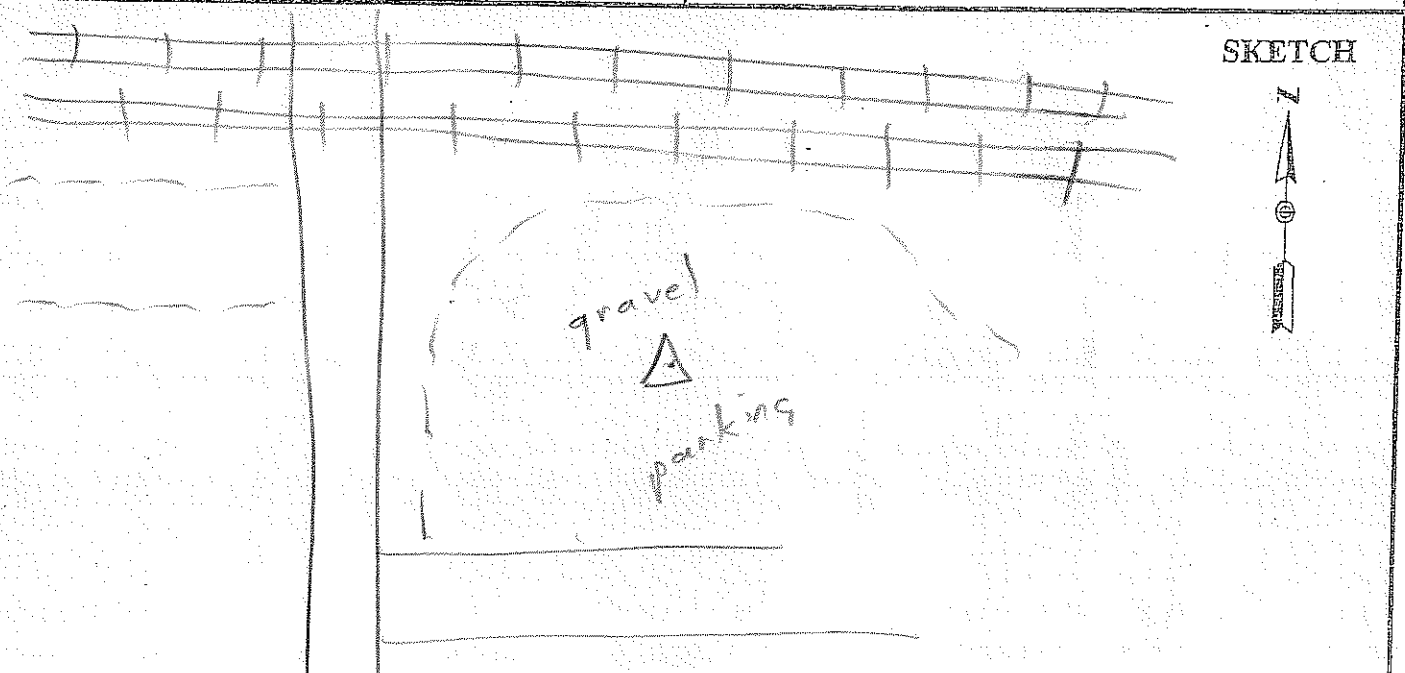
AT502 1731

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1502	2.3	7/7
1530		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR MB
DATE 4.24.10

SITE NUMBER 1
SITE NAME 101

TRACKING TIMES (LOCAL) MEASURE ✓
START 7:30 a.
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
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
1.266

STATION DESCRIPTIONS

ATSO2 1.626

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
830	2.5	8/8

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.24.10

SITE NUMBER 1
SITE NAME 102

TRACKING TIMES (LOCAL) MEASURE _____
START 8:00 a.
STOP _____

SENSOR TYPE 500 9500 399 299
MEMORY CARD 704
BATTERY NO. C8
CONTROLLER NO. _____
SENSOR NO. _____

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

OBSTRUCTIONS: _____

HEIGHT READINGS MTS FT
.749 _____

STATION DESCRIPTIONS _____

AT502 1109

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
900	1.8	9/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.24.10

SITE NUMBER 1
SITE NAME 8

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:15 a.
STOP 8:40 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.344

STATION DESCRIPTIONS in gravel parking area

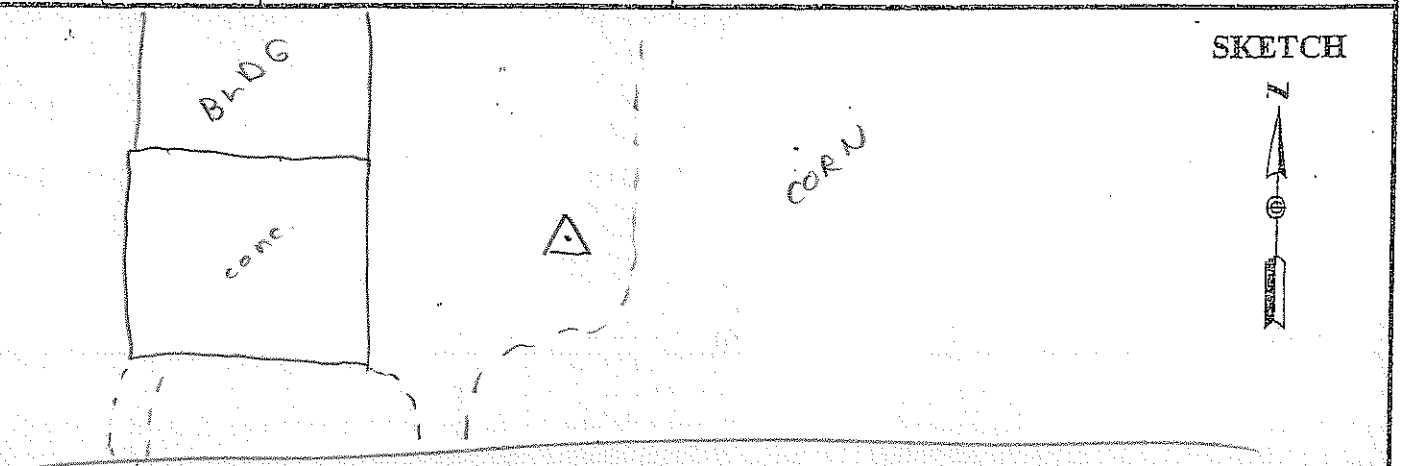
AT502 1.704

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
915	2.5	9/9
940		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

✓ PT 1:2an

PROJECT 1-100327
OPERATOR MB
DATE 4.24.10

SITE NUMBER 2
SITE NAME 9

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:19 a.
STOP 9:59 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.358

STATION DESCRIPTIONS SE corner of intersection

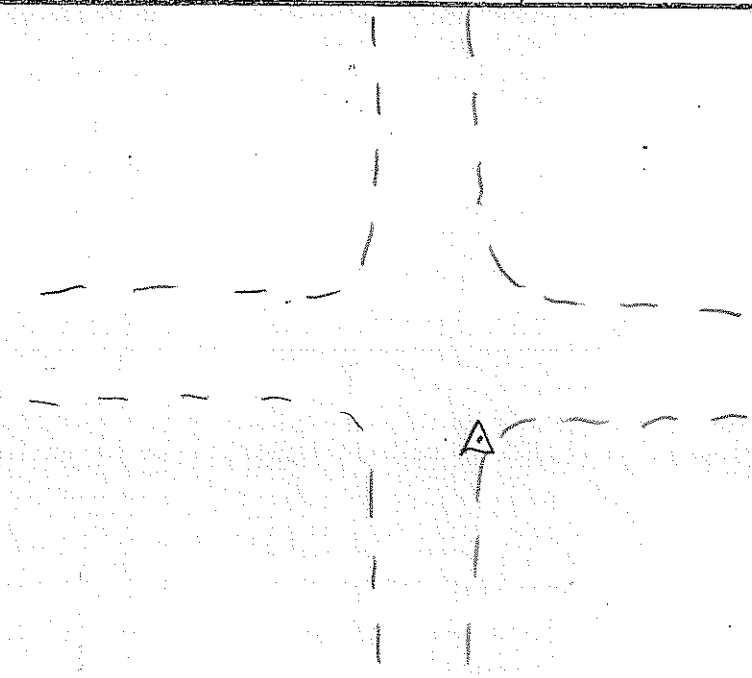
AT502 1718

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1019	1.6	12/12
1059		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

lidar

PROJECT 1-100327
OPERATOR MB
DATE 4.24.10

SITE NUMBER 3
SITE NAME 10

TRACKING TIMES (LOCAL) MEASURE ✓
START 10:21a.
STOP 10:47a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.367

STATION DESCRIPTIONS E. side gravel road

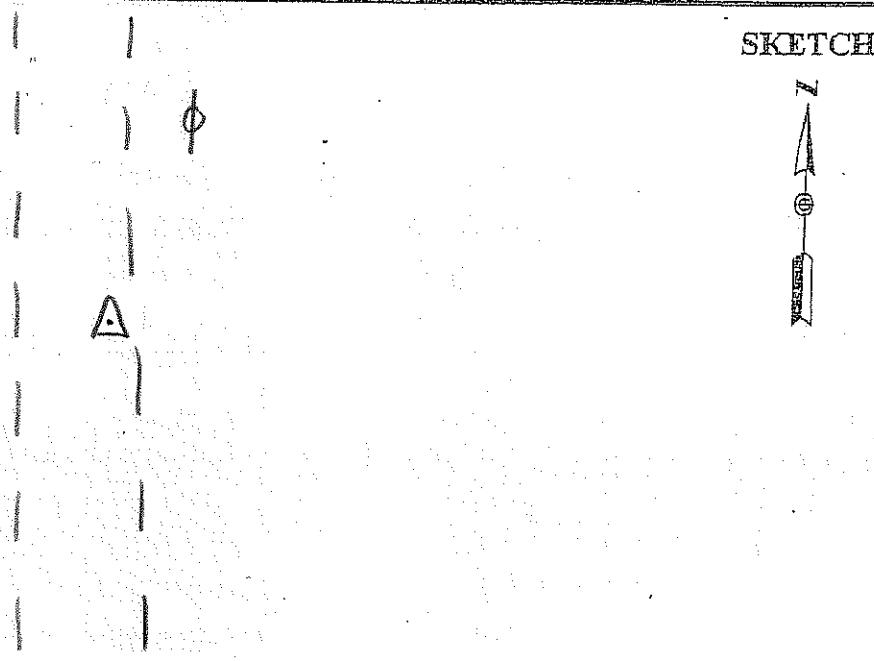
AT502 1727

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1121	2.1	12/12
1147		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR MB
DATE 4.24.10

SITE NUMBER 4
SITE NAME 11

TRACKING TIMES (LOCAL) MEASURE ✓
START 11:00 a.
STOP 11:18 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.263

STATION DESCRIPTIONS SE corner of intersection

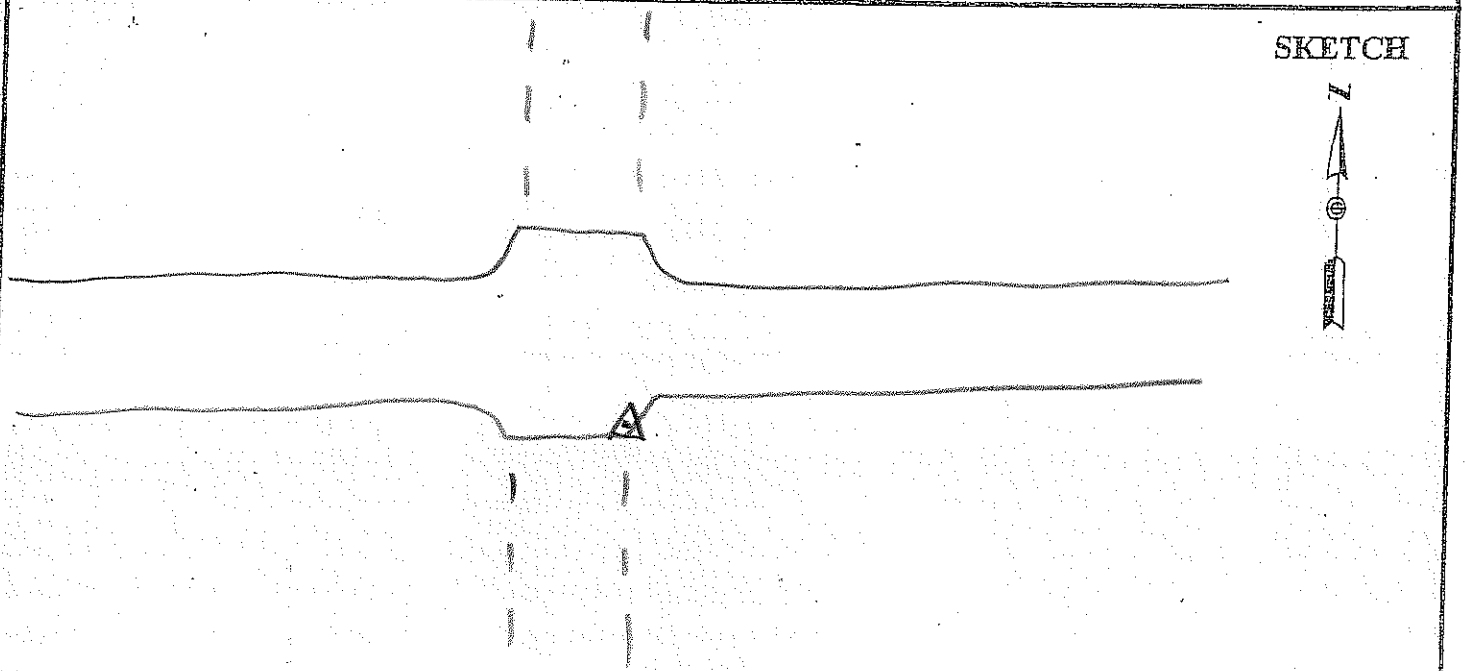
AT 502 1.623

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1200	2.3	10/11
1218		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR MS
DATE 4.24.10

SITE NUMBER 5
SITE NAME 12

TRACKING TIMES (LOCAL) MEASURE ✓
START 11:37a.
STOP 11:57a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
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
1.274

STATION DESCRIPTIONS NE shoulder

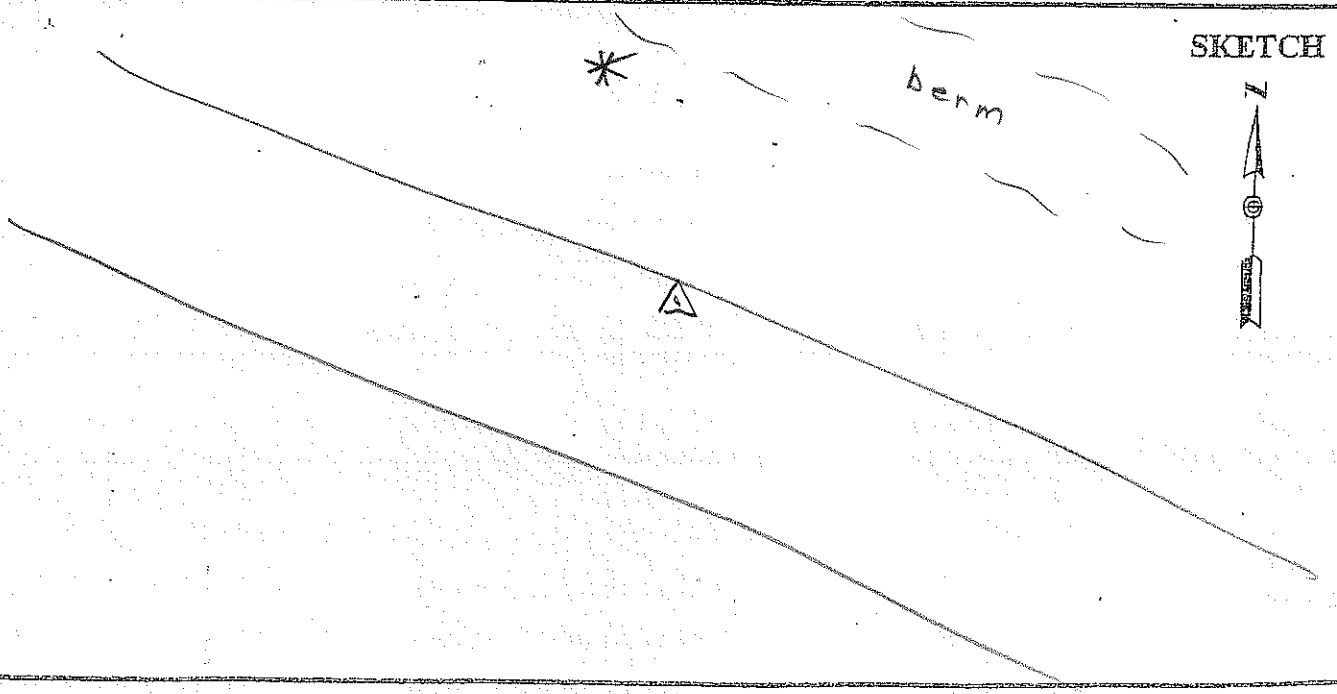
AT502 1634

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1237	1.6	12/12
1257		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



AERO-METRIC, INC.
4020 TECHNOLOGY PARKWAY
SHEBOYGAN, WISCONSIN 53083 V AT 1120

PROJECT 1-100327
OPERATOR NB
DATE 11.24.10

SITE NUMBER 6
SITE NAME 13

TRACKING TIMES (LOCAL) MEASURE ✓
START 12:13 p
STOP 12:38 p

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

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

HEIGHT READINGS MTS FT
1.385

AT502 1745

OBSTRUCTIONS: none

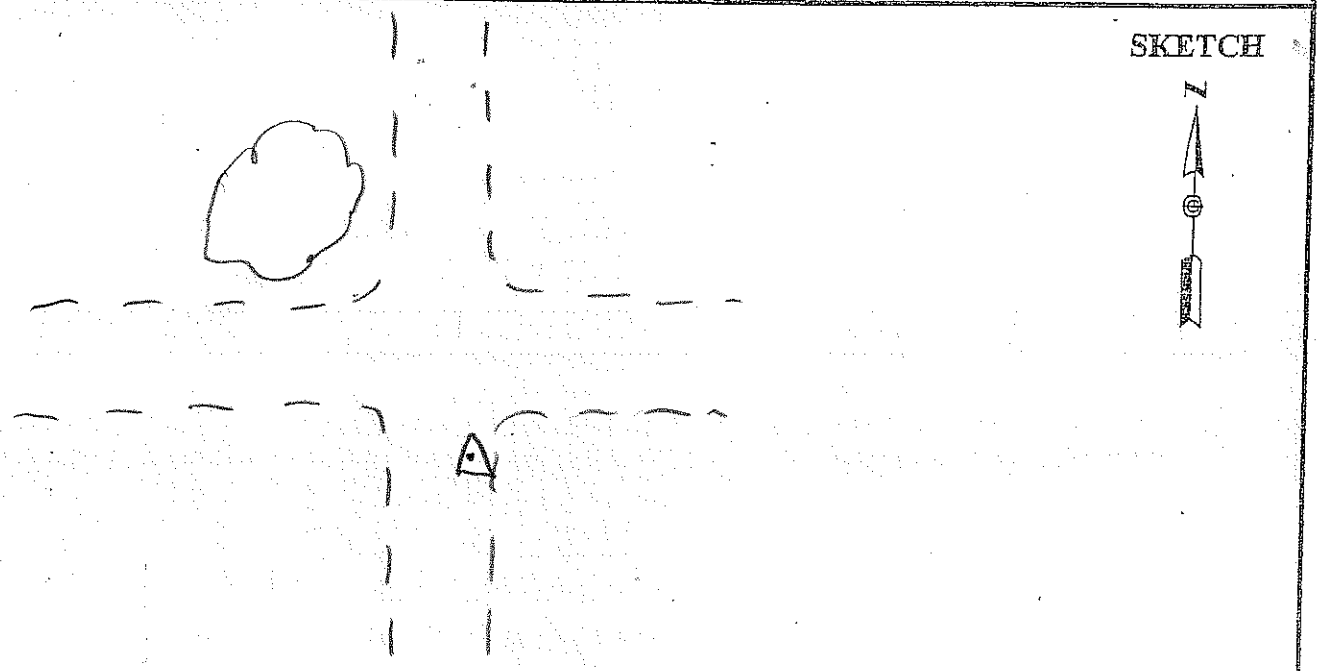
STATION DESCRIPTIONS E. side road

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1313	2.2	7/7
1338		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

√ pt lidar

PROJECT 1-100237
OPERATOR MB
DATE 4·24·10

SITE NUMBER 7
SITE NAME 14

TRACKING TIMES (LOCAL) MEASURE ✓
START 12:50 p
STOP 1:07 p

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

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

OBSTRUCTIONS: sub sta. west

HEIGHT READINGS MTS FT
1.290

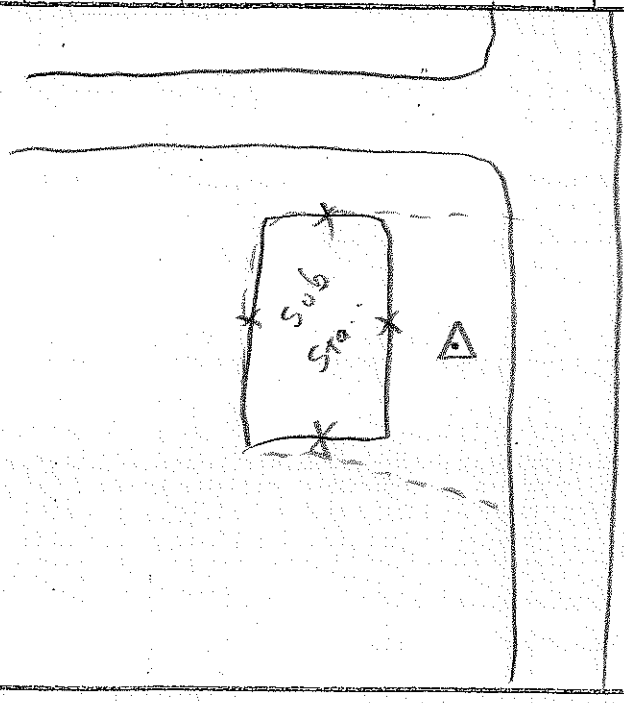
STATION DESCRIPTIONS in gravel area

AT602 1.650

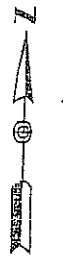
SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1350	2.1	8/8
1407		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS



SKETCH



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

VOT lidar

PROJECT 1-100327
OPERATOR MD
DATE 4.24.10

SITE NUMBER 8
SITE NAME 15

TRACKING TIMES (LOCAL) MEASURE ✓
START 1:23 p
STOP 1:49 p

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

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

OBSTRUCTIONS: light house N

HEIGHT READINGS MTS FT
1.305

STATION DESCRIPTIONS paved parking area

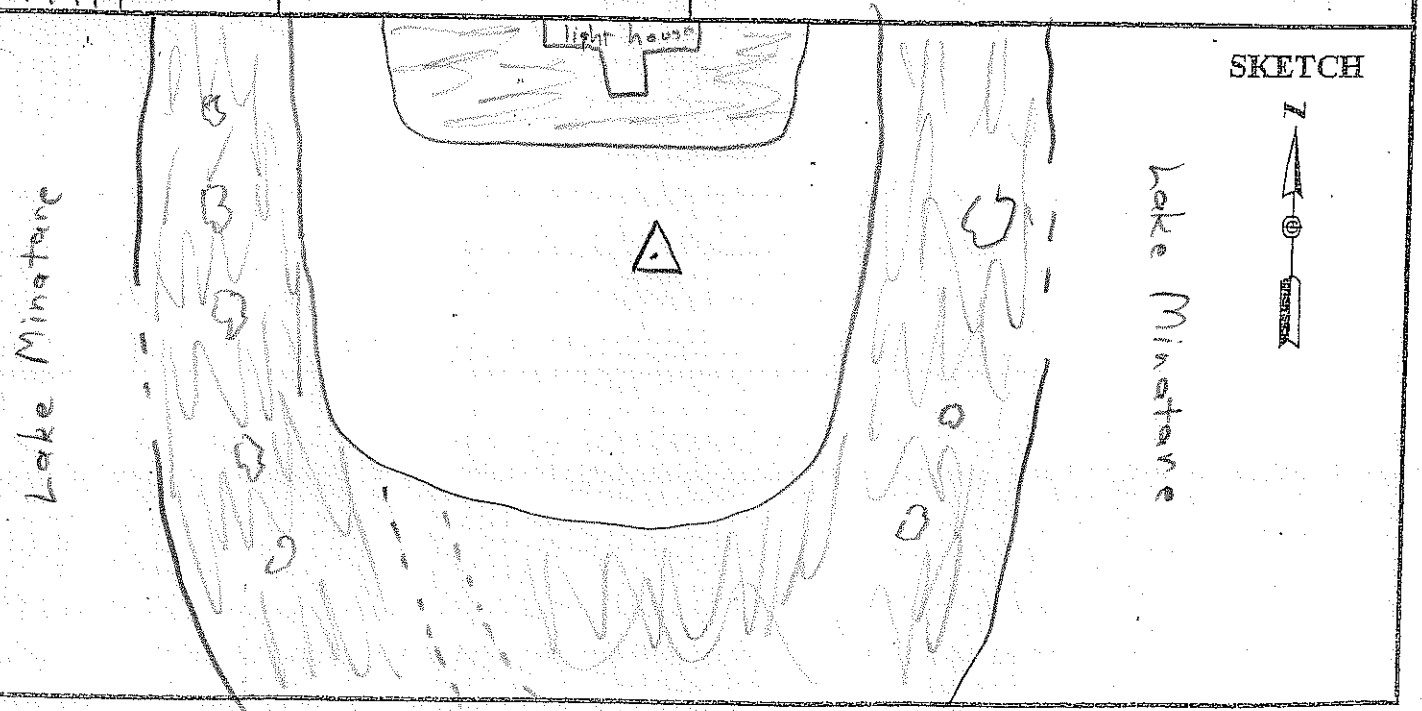
AT502 1.665

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1423	2.6	6/7
1449		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR MS
DATE 4.25.10

SITE NUMBER 1
SITE NAME 101

TRACKING TIMES (LOCAL) MEASURE ✓
START 7:46a
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
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
1.149

STATION DESCRIPTIONS

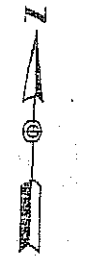
AT502 1.509

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
840	2.0	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.25.10

SITE NUMBER 1
SITE NAME 102

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:04a
STOP

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

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
,862

STATION DESCRIPTIONS

AT502 1242

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
904	1.8	10/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See Previous

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

lidar

PROJECT 1-100327
OPERATOR VB
DATE 4.25.10

SITE NUMBER 1
SITE NAME 16

TRACKING TIMES (LOCAL) MEASURE ✓
START 8:31a.
STOP 8:54a.

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: trees NE

HEIGHT READINGS MTS FT
1.335

STATION DESCRIPTIONS E. side road by Field lane

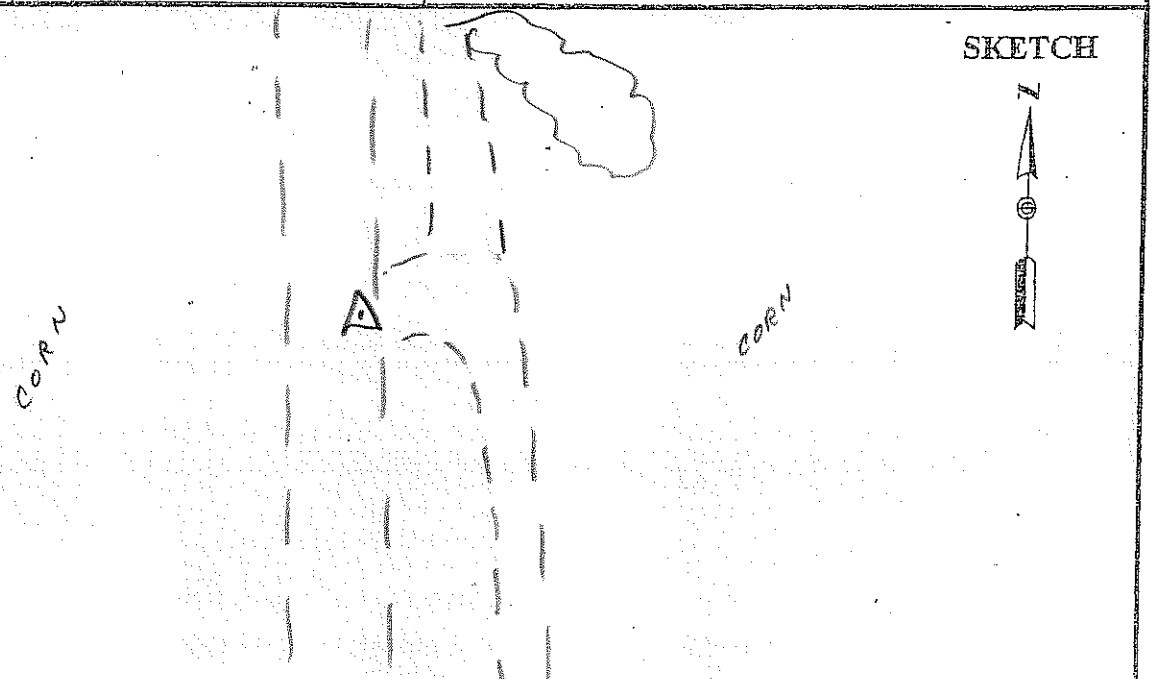
AT502 1695

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
931	1.6	11/11
954		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

✓ PT lidar

PROJECT 1-100327
OPERATOR MS
DATE 4.25.10

SITE NUMBER 2
SITE NAME 17

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:08a.
STOP 9:26a.

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
1.329

STATION DESCRIPTIONS N. side road

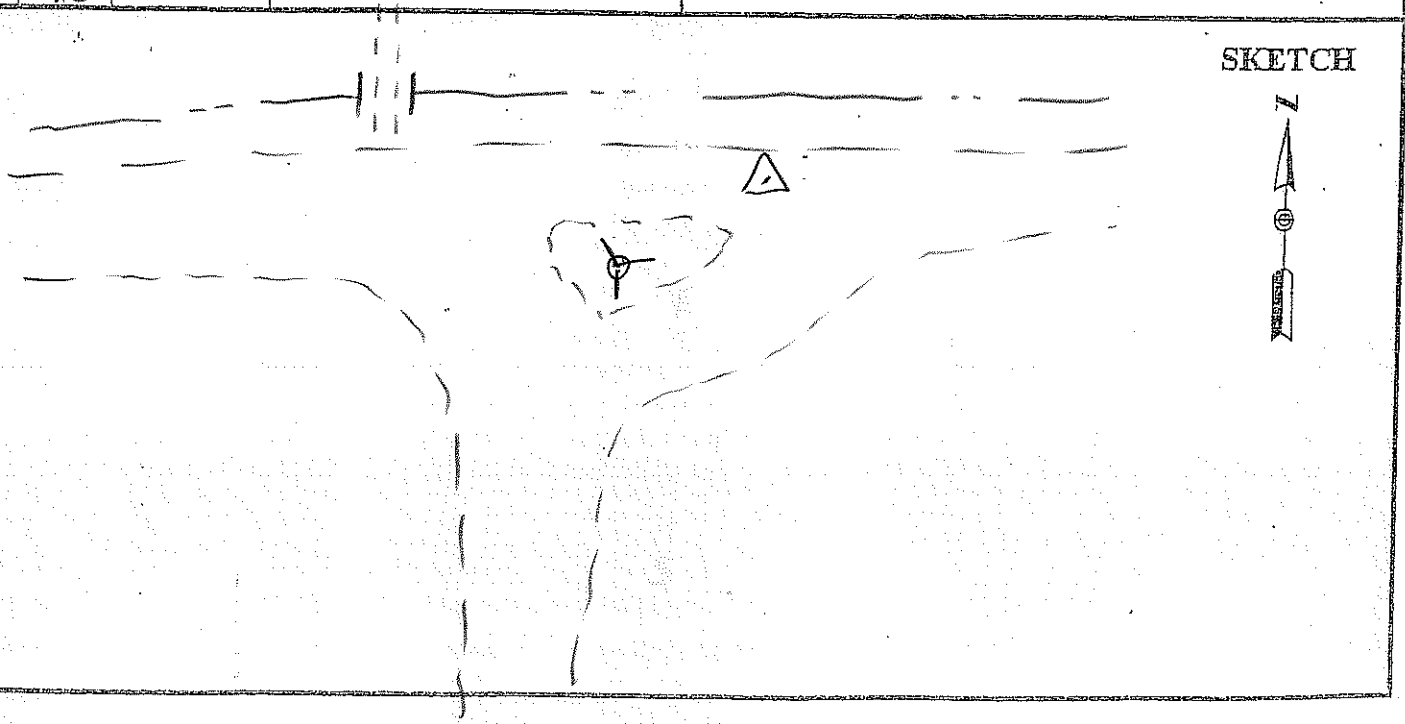
AT 502 1689

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1008	1.8	10/11
1026		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

√PT lidar

PROJECT 1-100327
OPERATOR MD
DATE 4.25.10

SITE NUMBER 3
SITE NAME 18

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:44 a.
STOP 10:08 a.

SENSOR TYPE 500 9500 399 299
MEMORY CARD 704
BATTERY NO. 08
CONTROLLER NO.
SENSOR NO.

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

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.336

STATION DESCRIPTIONS S. side road

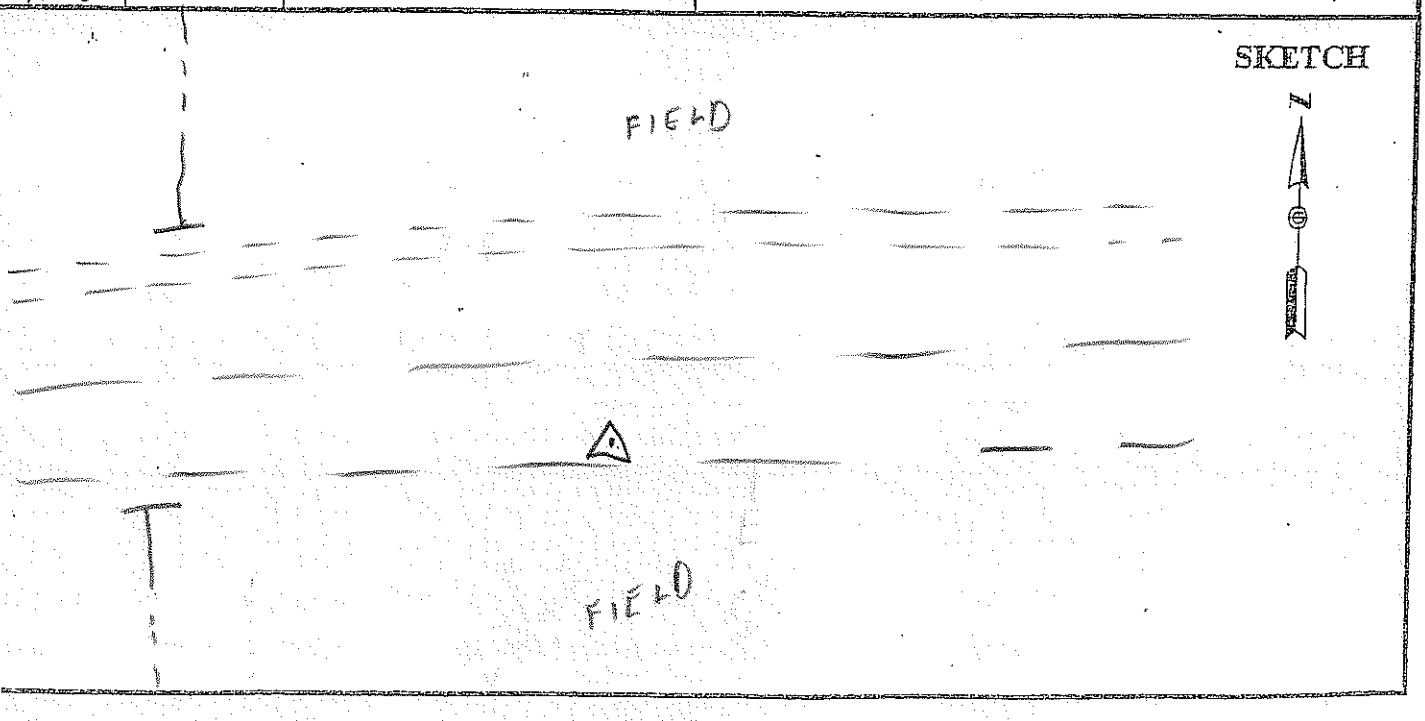
AT 502 1696

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1044	1.7	12/12
1108		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

√ pt 1.2a.

PROJECT 1-100327
OPERATOR MC
DATE 4-25-10

SITE NUMBER 4
SITE NAME 19

TRACKING TIMES (LOCAL) MEASURE ✓
START 10:19 a.
STOP 10:49 a

SENSOR TYPE 500 9500 399 299
MEMORY CARD 204
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
1.332

STATION DESCRIPTIONS S. side road

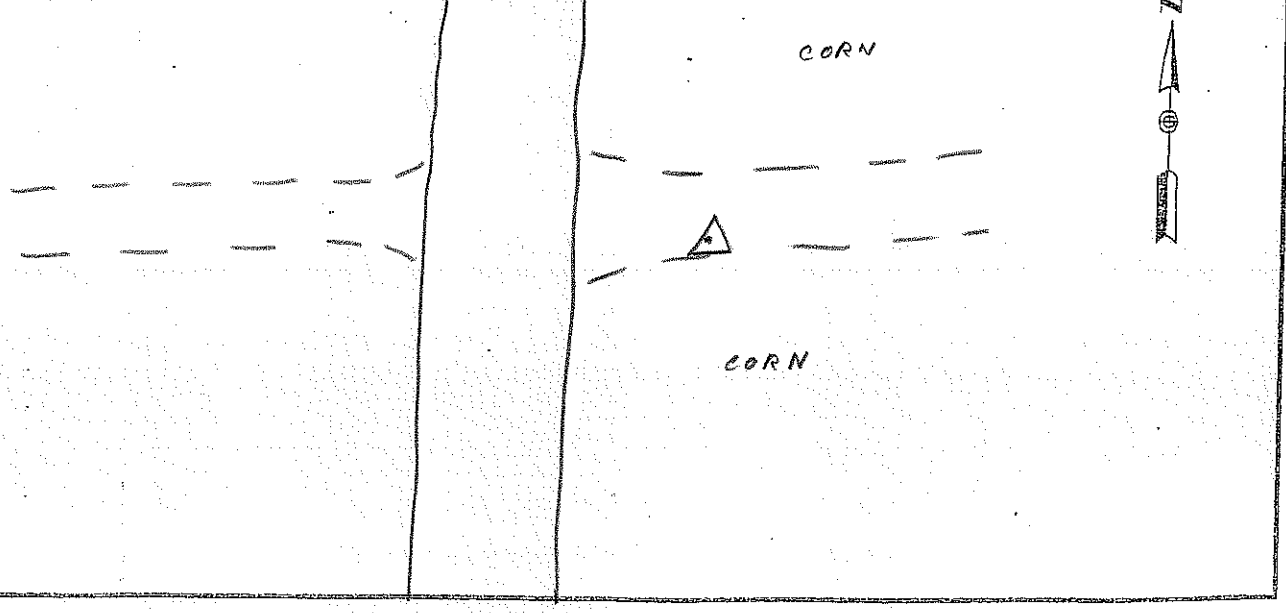
ATS02 1692

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1119	3.1	8/8
1149		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

√ pt 11Qar

PROJECT 1-100327
OPERATOR NB
DATE 4.25.10

SITE NUMBER 5
SITE NAME 20

TRACKING TIMES (LOCAL) MEASURE √
START 10:59 a.
STOP 11:26 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
1.266

STATION DESCRIPTIONS N. side road

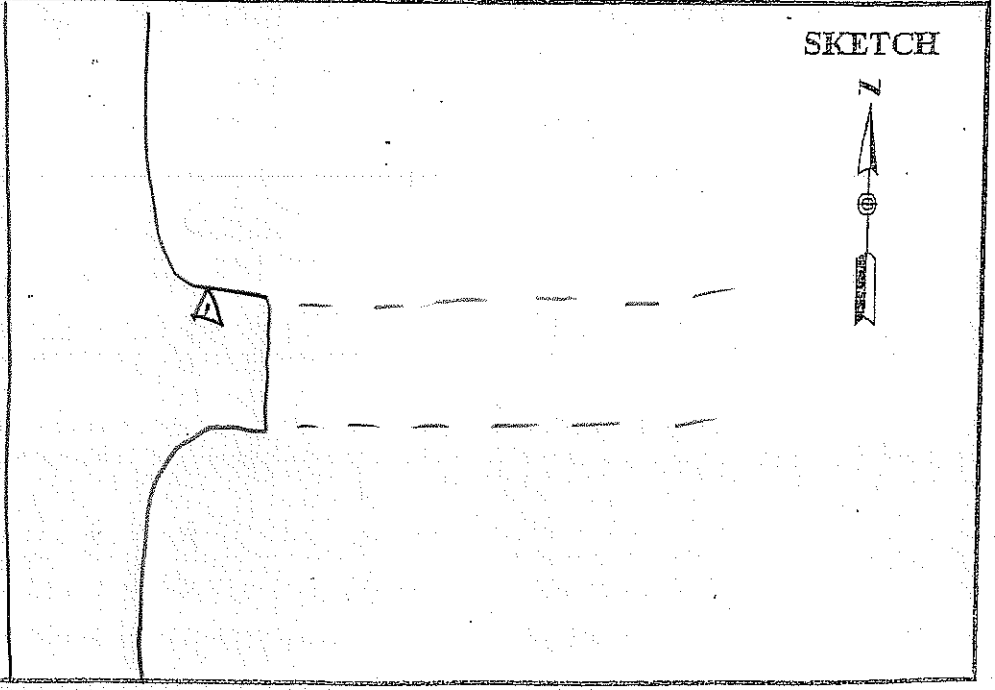
AT502 1.626

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1159	2.1	10/10
1226		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

√ pt 1:2ar

PROJECT 1-100327
OPERATOR MB
DATE 4.25.10

SITE NUMBER 6
SITE NAME 21

TRACKING TIMES (LOCAL) MEASURE ✓
START 11:37 a.
STOP 12:02 p

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
1.364

STATION DESCRIPTIONS N. side road

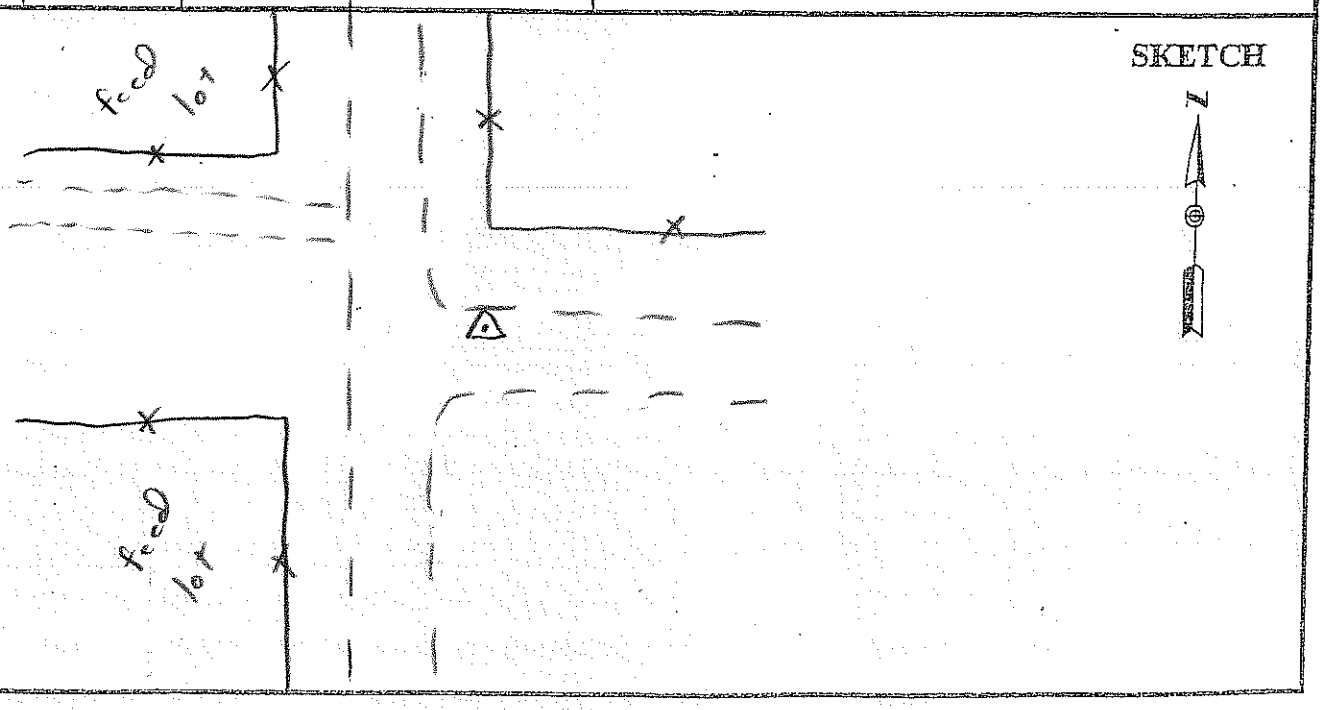
AT502 1.724

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1237	2.4	11/11
1302		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



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

PROJECT 1-100327
OPERATOR NB
DATE 4.26.10

SITE NUMBER 1
SITE NAME 101

TRACKING TIMES (LOCAL) MEASURE ✓
START 9:23a
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
BATTERY NO. C18
CONTROLLER NO.
SENSOR NO.

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.313

STATION DESCRIPTIONS

AT 502 1.673

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1023	6.3	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.26.10

SITE NUMBER 2
SITE NAME 102

TRACKING TIMES (LOCAL) MEASURE ✓
START 10:42 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)

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
.893

STATION DESCRIPTIONS

AT 102 1.253

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1042	7.7	6/6

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.26.10

SITE NUMBER 1
SITE NAME MUNDT

TRACKING TIMES (LOCAL) MEASURE ✓
START 11:08 a.
STOP 12:30 p

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
BATTERY NO. C/S
CONTROLLER NO.
SENSOR NO.

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.011

STATION DESCRIPTIONS

AT502 1.371

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1208	3.0	10/11
1330		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

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

PROJECT 1-100327
OPERATOR MB
DATE 4.27.10

SITE NUMBER 1
SITE NAME 104

TRACKING TIMES (LOCAL) MEASURE ✓
START 12:12 p
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 603
BATTERY NO. C13
CONTROLLER NO.
SENSOR NO.

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

OBSTRUCTIONS: none

HEIGHT READINGS MTS FT
1.289

AT502 1649

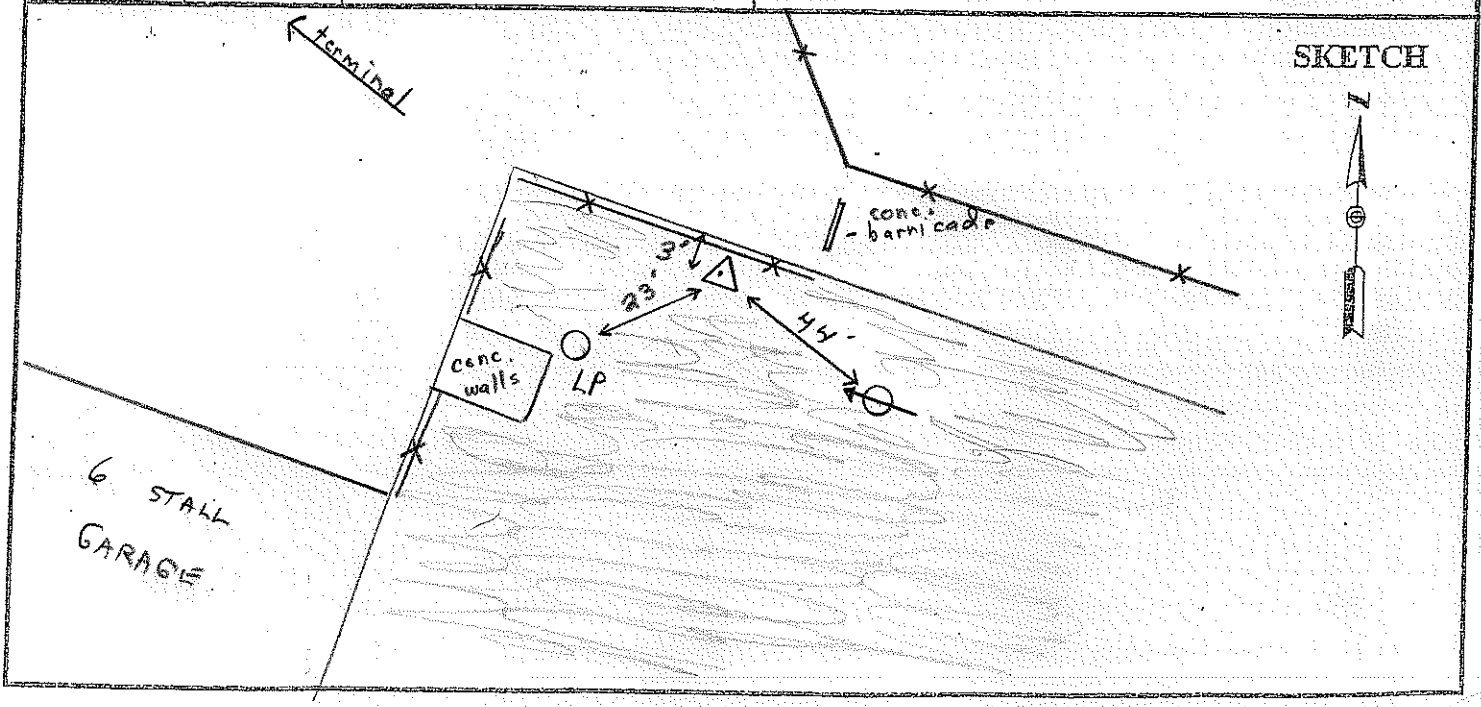
STATION DESCRIPTIONS set rebar + cap on the grounds of the Western Nebraska Regional Airport #104 is located SE of the terminal

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1312	1.4	11/11

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS
41° 52' 08.0"
103° 35' 35.0"

SKETCH



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

PROJECT 1-100327
OPERATOR MB
DATE 4.27.10

SITE NUMBER 1
SITE NAME 103

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.283

STATION DESCRIPTIONS

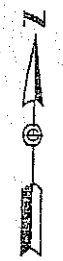
AT502 1.643

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1222	1.6	10/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.27.10

SITE NUMBER 1
SITE NAME 101

TRACKING TIMES (LOCAL) MEASURE ✓
START 12:35 p
STOP 1:00 p

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)

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.386

STATION DESCRIPTIONS

AT502 1686

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
1335	2.1	7/8
1400		

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

see previous

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

PROJECT 1-100327
OPERATOR MD
DATE 4.28.10

SITE NUMBER 1
SITE NAME 104

TRACKING TIMES (LOCAL) MEASURE ✓
START 6:25a.
STOP

SENSOR TYPE 500 9500 399 299
MEMORY CARD 731
BATTERY NO. 03
CONTROLLER NO.
SENSOR NO.

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.355

STATION DESCRIPTIONS

AT502 1.715

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
725	1.8	10/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 4.28.10

SITE NUMBER 1
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE ✓
START 5:57a
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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.231

STATION DESCRIPTIONS

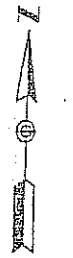
AT502 1.591

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
657	2.0	10/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 5-1-10

SITE NUMBER 1
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE V
START 6:05 a.
STOP

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:

HEIGHT READINGS MTS FT
1.311

STATION DESCRIPTIONS

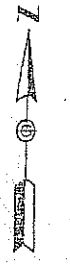
AT502 1.671

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
705	1.8	9/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



See previous

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

Base

PROJECT 1-100327
OPERATOR MB
DATE 5.1.10

SITE NUMBER 1
SITE NAME 104

TRACKING TIMES (LOCAL) MEASURE ✓
START 6:31a.
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~~

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.316

STATION DESCRIPTIONS

AT502 1.676

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
731	1.5	11/11

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

Base

PROJECT 1-100327
OPERATOR MS
DATE 5.2.10

SITE NUMBER 1
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE ✓
START 5:42a.
STOP

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

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.311

AT502 1.691

STATION DESCRIPTIONS

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
642	1.8	10/10

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See previous

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

PROJECT 1-100327
OPERATOR MB
DATE 5.2.10

SITE NUMBER 1
SITE NAME 104

TRACKING TIMES (LOCAL) MEASURE ✓
START 6:06a
STOP

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:

HEIGHT READINGS MTS FT
1.372

STATION DESCRIPTIONS

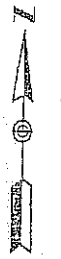
AT502 1.732

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
706	1.9	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH



See previous

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

PROJECT 1-100307
OPERATOR MJ
DATE 5.4.10

SITE NUMBER 1
SITE NAME 103

TRACKING TIMES (LOCAL) MEASURE ✓
START 5:43a.
STOP

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

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

OBSTRUCTIONS:

HEIGHT READINGS MTS FT
1.292

STATION DESCRIPTIONS

MT502 1652

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
643	2.1	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

See prior

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

PROJECT 1-100327
OPERATOR MB
DATE 5.4.10

SITE NUMBER 1
SITE NAME 104

TRACKING TIMES (LOCAL) MEASURE _____
START 6:06a
STOP _____

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

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

OBSTRUCTIONS: _____

HEIGHT READINGS MTS FT
1.368 _____

STATION DESCRIPTIONS _____

AJ502 1.728

SATELLITE OBSERVATIONS

TIME	GDOP	SATELLITES
706	1.9	9/9

WEATHER CONDITIONS/IMPORTANT OBSERVATIONS

SKETCH

see prior

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================================================================================
                1100327  USGS-N. PLATTE      CONSTRAINED ADJ
GeoLab V2.4d                  GRS 80            UNITS: m,DMS          Page 0001
================================================================================
09:09:36, Mon Jul 26, 2010

INI file:    C:\WINNT\GEOLAB.INI
Input file:  R:\1100327\GEOM~F4O\SURVEY\GEO\C_ALL.IOB
Output file: R:\1100327\GEOM~F4O\SURVEY\GEO\C_ALL.LST

Geoid File:  C:\GEOLAB2\G2003U02.GEO
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PARAMETERS		OBSERVATIONS	
Description	Number	Description	Number
No. of Stations	53	Directions	0
Coord Parameters	148	Distances	0
Free Latitudes	50	Azimuths	0
Free Longitudes	50	Vertical Angles	0
Free Heights	48	Zenithal Angles	0
Fixed Coordinates	11	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.	339
Rotation Pars.	0		
Translation Pars.	0		
	--------		--------
Total Parameters	148	Total Observations	339
Degrees of Freedom =	191		

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

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================================================================================
                1100327  USGS-N. PLATTE      CONSTRAINED ADJ
GeoLab V2.4d                  GRS 80            UNITS: m,DMS          Page 0002
================================================================================
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Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
NEO	000	1	4650552.811	598202.137	1262.619	UTM 13
			0.010	0.010	0.008	
SFMC		1	0.99971866	0 47 36.644142		UTM 13
NEO	000	10	4635226.061	595312.207	1275.289	UTM 13
			0.011	0.011	0.010	
SFMC		10	0.99971179	0 45 59.220013		UTM 13
NEO	000	101	4636716.887	613340.885	1191.621	UTM 13
			0.009	0.009	0.008	
SFMC		101	0.99975807	0 54 42.500328		UTM 13
NEO	000	102	4639067.086	606721.434	1193.476	UTM 13
			0.009	0.009	0.008	
SFMC		102	0.99974015	0 51 33.152621		UTM 13
NEO	000	103	4646967.124	598278.194	1215.527	UTM 13
			0.010	0.010	0.008	
SFMC		103	0.99971885	0 47 35.622907		UTM 13
NEO	000	104	4636174.490	616760.693	1202.967	UTM 13
			0.009	0.009	0.008	
SFMC		104	0.99976776	0 56 20.924338		UTM 13
NEO	000	11	4635581.640	603361.487	1200.210	UTM 13
			0.010	0.010	0.008	
SFMC		11	0.99973146	0 49 52.506436		UTM 13
NEO	000	12	4641817.174	603645.089	1216.084	UTM 13
			0.010	0.010	0.008	
SFMC		12	0.99973218	0 50 6.627132		UTM 13
NEO	000	13	4649038.364	604616.322	1251.771	UTM 13
			0.011	0.011	0.009	
SFMC		13	0.99973467	0 50 41.716699		UTM 13
NEO	000	14	4644369.568	609601.846	1228.786	UTM 13
			0.010	0.010	0.008	
SFMC		14	0.99974781	0 53 1.928735		UTM 13
NEO	000	15	4643144.644	624259.211	1263.079	UTM 13
			0.011	0.011	0.010	
SFMC		15	0.99979000	1 0 5.880483		UTM 13
NEO	000	16	4625397.436	606987.975	1226.873	UTM 13
			0.011	0.011	0.010	
SFMC		16	0.99974085	0 51 27.520219		UTM 13
NEO	000	17	4629452.668	606911.978	1271.748	UTM 13
			0.010	0.010	0.009	
SFMC		17	0.99974065	0 51 29.281582		UTM 13
NEO	000	18	4626866.046	616329.297	1206.872	UTM 13
			0.011	0.011	0.009	
SFMC		18	0.99976652	0 55 58.552056		UTM 13
NEO	000	19	4623737.884	621527.282	1185.059	UTM 13
			0.012	0.012	0.011	
SFMC		19	0.99978174	0 58 25.095353		UTM 13
NEO	000	2	4652056.233	590105.372	1248.183	UTM 13
			0.011	0.011	0.010	
SFMC		2	0.99969990	0 43 42.416697		UTM 13
NEO	000	20	4628707.774	623027.648	1165.976	UTM 13
			0.011	0.011	0.010	
SFMC		20	0.99978625	0 59 13.923444		UTM 13
NEO	000	21	4633571.079	621336.009	1188.217	UTM 13

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
			0.010	0.010	0.009	
SFMC		21	0.99978116	0 58 30.464463	UTM 13	
NEO	000	3	4661500.661	580049.530	1269.680	UTM 13
			0.015	0.015	0.014	
SFMC		3	0.99967885	0 38 56.763959	UTM 13	
NEO	000	30	4650461.967	594989.272	1250.586	UTM 13
			0.010	0.010	0.008	
SFMC		30	0.99971103	0 46 3.129857	UTM 13	
NEO	000	31	4653626.843	588426.273	1262.369	UTM 13
			0.012	0.012	0.010	
SFMC		31	0.99969621	0 42 54.835507	UTM 13	
NEO	000	32	4656920.156	580417.863	1261.478	UTM 13
			0.014	0.014	0.013	
SFMC		32	0.99967957	0 39 4.124359	UTM 13	
NEO	000	33	4649065.974	578960.887	1228.690	UTM 13
			0.014	0.014	0.013	
SFMC		33	0.99967672	0 38 15.965311	UTM 13	
NEO	000	34	4634340.811	581046.742	1263.643	UTM 13
			0.014	0.014	0.013	
SFMC		34	0.99968083	0 39 5.676131	UTM 13	
NEO	000	35	4634512.082	588993.669	1279.193	UTM 13
			0.012	0.012	0.011	
SFMC		35	0.99969746	0 42 55.766289	UTM 13	
NEO	000	36	4646283.872	589754.658	1216.238	UTM 13
			0.011	0.011	0.009	
SFMC		36	0.99969913	0 43 27.457910	UTM 13	
NEO	000	37	4643929.187	599114.626	1203.511	UTM 13
			0.010	0.010	0.008	
SFMC		37	0.99972088	0 47 57.159763	UTM 13	
NEO	000	38	4635901.014	598527.648	1261.219	UTM 13
			0.012	0.012	0.010	
SFMC		38	0.99971945	0 47 32.886448	UTM 13	
NEO	000	39	4644385.738	609473.524	1227.825	UTM 13
			0.012	0.012	0.011	
SFMC		39	0.99974747	0 52 58.220869	UTM 13	
NEO	000	4	4650074.813	578896.849	1230.981	UTM 13
			0.014	0.014	0.013	
SFMC		4	0.99967659	0 38 14.834074	UTM 13	
NEO	000	40	4649024.144	601431.046	1254.978	UTM 13
			0.010	0.010	0.008	
SFMC		40	0.99972660	0 49 9.120219	UTM 13	
NEO	000	41	4636301.988	616405.759	1204.016	UTM 13
			0.009	0.009	0.008	
SFMC		41	0.99976674	0 56 10.786613	UTM 13	
NEO	000	42	4632100.568	618090.152	1173.371	UTM 13
			0.010	0.010	0.008	
SFMC		42	0.99977160	0 56 55.009217	UTM 13	
NEO	000	43	4627329.285	607088.276	1248.120	UTM 13
			0.011	0.011	0.009	
SFMC		43	0.99974112	0 51 32.299847	UTM 13	
NEO	000	44	4626869.348	614963.837	1200.780	UTM 13
			0.010	0.010	0.009	

Adjusted NEO Coordinates:

CODE	FFF	STATION	NORTHING STD DEV	EASTING STD DEV	O-HEIGHT STD DEV	MAPPROJ
SFMC		44	0.99976264	0 55 19.148621		UTM 13
NEO	000	45	4627067.573	622623.761	1167.394	UTM 13
			0.011	0.011	0.009	
SFMC		45	0.99978503	0 59 0.427192		UTM 13
NEO	000	46	4630050.929	622984.581	1168.229	UTM 13
			0.010	0.010	0.009	
SFMC		46	0.99978612	0 59 14.187000		UTM 13
NEO	000	47	4635301.175	622897.008	1208.835	UTM 13
			0.010	0.010	0.008	
SFMC		47	0.99978586	0 59 17.549617		UTM 13
NEO	000	48	4639996.599	622780.540	1232.696	UTM 13
			0.010	0.010	0.009	
SFMC		48	0.99978550	0 59 19.451624		UTM 13
NEO	000	49	4643112.268	624267.710	1262.738	UTM 13
			0.011	0.011	0.009	
SFMC		49	0.99979002	1 0 6.090155		UTM 13
NEO	000	5	4640918.147	579713.498	1234.975	UTM 13
			0.014	0.014	0.012	
SFMC		5	0.99967819	0 38 31.892008		UTM 13
NEO	000	50	4643303.757	616329.004	1248.737	UTM 13
			0.010	0.010	0.008	
SFMC		50	0.99976652	0 56 16.018108		UTM 13
NEO	000	51	4647711.427	612808.106	1260.830	UTM 13
			0.011	0.011	0.009	
SFMC		51	0.99975659	0 54 38.433273		UTM 13
NEO	000	6	4636026.594	587352.466	1260.691	UTM 13
			0.012	0.012	0.011	
SFMC		6	0.99969389	0 42 9.484539		UTM 13
NEO	000	7	4646081.136	588644.540	1217.024	UTM 13
			0.011	0.011	0.009	
SFMC		7	0.99969669	0 42 55.050690		UTM 13
NEO	000	8	4643318.798	598446.489	1203.060	UTM 13
			0.011	0.011	0.009	
SFMC		8	0.99971926	0 47 37.219733		UTM 13
NEO	000	9	4632753.832	584303.458	1275.978	UTM 13
			0.015	0.015	0.014	
SFMC		9	0.99968745	0 40 38.691228		UTM 13
NEO	001	A 51 RESET	4623450.507	639306.716	1144.620	UTM 13
			0.020	0.020	0.000	
SFMC		A 51 RESET	0.99983881	1 6 57.252869		UTM 13
NEO	000	D 361 RESET	4636693.573	613185.495	1192.743	UTM 13
			0.010	0.010	0.009	
SFMC		D 361 RESET	0.99975764	0 54 37.977593		UTM 13
NEO	111	D 50	4646353.380	586152.852	1223.284	UTM 13
			0.000	0.000	0.000	
SFMC		D 50	0.99969133	0 41 42.900335		UTM 13
NEO	111	H 8	4601134.994	558845.145	1545.355	UTM 13
			0.000	0.000	0.000	
SFMC		H 8	0.99964261	0 28 5.413856		UTM 13
NEO	111	MUNDT	4672953.365	667573.079	1258.813	UTM 13
			0.000	0.000	0.000	
SFMC		MUNDT	0.99994552	1 21 47.825163		UTM 13

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Adjusted NEO Coordinates:
                                 NORTHING          EASTING   O-HEIGHT
 CODE FFF STATION               STD DEV           STD DEV    STD DEV MAPPROJ
 ---- --- ------------ ----------------- ----------------- ---------- -------
 NEO  001 Q 63              4654930.235       567529.958   1244.646 UTM 13
                                  0.022            0.022      0.000
 SFMC     Q 63               0.99965611    0 32 47.270957 UTM 13
```

Adjusted PLH Coordinates:

CODE	FFF	STATION	LATITUDE	STD DEV	LONGITUDE	STD DEV	ELIP-HEIGHT	STD DEV
PLH	000	1	N 42 00	3.13113	W103 48	51.22465	1244.147	
				0.010		0.010		0.008
PLH	000	10	N 41 51	47.54934	W103 51	5.74614	1256.726	
				0.011		0.011		0.010
PLH	000	101	N 41 52	27.31747	W103 38	2.90435	1172.637	
				0.009		0.009		0.008
PLH	000	102	N 41 53	46.81793	W103 42	48.47724	1174.676	
				0.009		0.009		0.008
PLH	000	103	N 41 58	6.85932	W103 48	50.07744	1196.993	
				0.010		0.010		0.008
PLH	000	104	N 41 52	7.94481	W103 35	34.97014	1183.906	
				0.009		0.009		0.008
PLH	000	11	N 41 51	55.43800	W103 45	16.45405	1181.451	
				0.010		0.010		0.008
PLH	000	12	N 41 55	17.44099	W103 45	0.21507	1197.384	
				0.010		0.010		0.008
PLH	000	13	N 41 59	11.06475	W103 44	13.43893	1233.180	
				0.011		0.011		0.009
PLH	000	14	N 41 56	37.28299	W103 40	39.95644	1210.028	
				0.010		0.010		0.008
PLH	000	15	N 41 55	49.75939	W103 30	4.51023	1244.065	
				0.011		0.011		0.010
PLH	000	16	N 41 46	23.56292	W103 42	45.80181	1207.943	
				0.011		0.011		0.010
PLH	000	17	N 41 48	35.05821	W103 42	46.46342	1252.843	
				0.010		0.010		0.009
PLH	000	18	N 41 47	6.43786	W103 36	0.25751	1187.700	
				0.011		0.011		0.009
PLH	000	19	N 41 45	22.23429	W103 32	17.43709	1165.756	
				0.012		0.012		0.011
PLH	000	2	N 42 00	55.35478	W103 54	42.29034	1229.902	
				0.011		0.011		0.010
PLH	000	20	N 41 48	2.49873	W103 31	8.78100	1146.686	
				0.011		0.011		0.010
PLH	000	21	N 41 50	41.07844	W103 32	18.47812	1169.026	
				0.010		0.010		0.009
PLH	000	3	N 42 06	5.44767	W104 01	54.79847	1251.885	
				0.015		0.015		0.014
PLH	000	30	N 42 00	1.60515	W103 51	10.91094	1232.168	
				0.010		0.010		0.008
PLH	000	31	N 42 01	46.95681	W103 55	54.43160	1244.163	
				0.012		0.012		0.010
PLH	000	32	N 42 03	36.81730	W104 01	41.03128	1243.571	
				0.014		0.014		0.013
PLH	000	33	N 41 59	22.72170	W104 02	48.22166	1210.701	
				0.014		0.014		0.013
PLH	000	34	N 41 51	24.57345	W104 01	24.86602	1245.492	
				0.014		0.014		0.013
PLH	000	35	N 41 51	27.05226	W103 55	40.15725	1260.805	
				0.012		0.012		0.011
PLH	000	36	N 41 57	48.36916	W103 55	0.71040	1197.885	
				0.011		0.011		0.009

Adjusted PLH Coordinates:

CODE	FFF	STATION	LATITUDE	STD DEV	LONGITUDE	STD DEV	ELIP-HEIGHT	STD DEV
PLH	000	37	N 41 56 28.00094	0.010	W103 48 15.58571	0.010	1184.922	0.008
PLH	000	38	N 41 52 8.01185	0.012	W103 48 45.89702	0.012	1242.577	0.010
PLH	000	39	N 41 56 37.87130	0.012	W103 40 45.51725	0.012	1209.071	0.011
PLH	000	4	N 41 59 55.45090	0.014	W104 02 50.51678	0.014	1213.007	0.013
PLH	000	40	N 41 59 12.10336	0.010	W103 46 31.84690	0.010	1236.430	0.008
PLH	000	41	N 41 52 12.26597	0.009	W103 35 50.27224	0.009	1184.964	0.008
PLH	000	42	N 41 49 55.17884	0.010	W103 34 40.24224	0.010	1154.215	0.008
PLH	000	43	N 41 47 26.13903	0.011	W103 42 40.20427	0.011	1229.197	0.009
PLH	000	44	N 41 47 7.26143	0.010	W103 36 59.39437	0.010	1181.640	0.009
PLH	000	45	N 41 47 9.55784	0.011	W103 31 27.49713	0.011	1148.094	0.009
PLH	000	46	N 41 48 46.06016	0.010	W103 31 9.64408	0.010	1148.955	0.009
PLH	000	47	N 41 51 36.29098	0.010	W103 31 9.51634	0.010	1189.652	0.008
PLH	000	48	N 41 54 8.55280	0.010	W103 31 11.05412	0.010	1213.624	0.009
PLH	000	49	N 41 55 48.70516	0.011	W103 30 4.16589	0.011	1243.723	0.009
PLH	000	5	N 41 54 58.29874	0.014	W104 02 19.48788	0.014	1216.892	0.012
PLH	000	50	N 41 55 59.26774	0.010	W103 35 48.63354	0.010	1229.845	0.008
PLH	000	51	N 41 58 23.98272	0.011	W103 38 18.43919	0.011	1242.096	0.009
PLH	000	6	N 41 52 16.81001	0.012	W103 56 50.52265	0.012	1242.355	0.011
PLH	000	7	N 41 57 42.24893	0.011	W103 55 49.03999	0.011	1198.700	0.009
PLH	000	8	N 41 56 8.51487	0.011	W103 48 44.96311	0.011	1184.476	0.009
PLH	000	9	N 41 50 31.89913	0.015	W103 59 4.45155	0.015	1257.726	0.014
PLH	001	A 51 RESET	N 41 45 2.40983	0.020	W103 19 28.06378	0.020	1125.168	0.000
PLH	000	D 361 RESET	N 41 52 26.64183	0.010	W103 38 9.65992	0.010	1173.763	0.009
PLH	111	D 50	N 41 57 52.06907	0.000	W103 57 37.12474	0.000	1205.035	0.000
PLH	111	H 8	N 41 33 35.00036	0.000	W104 17 39.50456	0.000	1527.915	0.000
PLH	111	MUNDT	N 42 11 26.84444	0.000	W102 58 14.05145	0.000	1240.327	0.000

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Adjusted PLH Coordinates:
                                    LATITUDE         LONGITUDE  ELIP-HEIGHT
 CODE FFF STATION                    STD DEV           STD DEV      STD DEV
 ---- --- ------------ ----------------- ----------------- ------------
 PLH  001 Q 63         N 42 02  36.67135 W104 11   2.54766     1227.132
                                   0.022             0.022        0.000
```

Geoid Values:

CODE	NAME	N/S DEFLECTION	E/W DEFLECTION	UNDULATION
GEOI	1	- 0 0 4.2	+ 0 0 2.3	-18.472
GEOI	10	- 0 0 0.7	+ 0 0 3.9	-18.563
GEOI	101	- 0 0 3.8	+ 0 0 3.0	-18.984
GEOI	102	- 0 0 3.3	+ 0 0 3.3	-18.800
GEOI	103	- 0 0 3.3	+ 0 0 2.6	-18.534
GEOI	104	- 0 0 4.2	+ 0 0 2.8	-19.061
GEOI	11	- 0 0 1.7	+ 0 0 3.7	-18.759
GEOI	12	- 0 0 3.0	+ 0 0 2.8	-18.700
GEOI	13	- 0 0 4.1	+ 0 0 2.1	-18.591
GEOI	14	- 0 0 4.3	+ 0 0 2.4	-18.758
GEOI	15	- 0 0 5.6	+ 0 0 2.4	-19.014
GEOI	16	- 0 0 1.0	+ 0 0 4.6	-18.930
GEOI	17	- 0 0 1.8	+ 0 0 4.4	-18.905
GEOI	18	- 0 0 1.6	+ 0 0 3.5	-19.172
GEOI	19	- 0 0 1.2	+ 0 0 2.6	-19.303
GEOI	2	- 0 0 4.1	+ 0 0 3.8	-18.280
GEOI	20	- 0 0 2.6	+ 0 0 2.4	-19.290
GEOI	21	- 0 0 4.2	+ 0 0 2.5	-19.191
GEOI	3	- 0 0 5.1	+ 0 0 4.5	-17.795
GEOI	30	- 0 0 3.9	+ 0 0 2.7	-18.418
GEOI	31	- 0 0 4.4	+ 0 0 3.9	-18.207
GEOI	32	- 0 0 4.5	+ 0 0 4.8	-17.907
GEOI	33	- 0 0 2.8	+ 0 0 5.1	-17.989
GEOI	34	- 0 0 0.6	+ 0 0 4.6	-18.151
GEOI	35	- 0 0 0.5	+ 0 0 4.6	-18.388
GEOI	36	- 0 0 2.4	+ 0 0 4.1	-18.352
GEOI	37	- 0 0 2.5	+ 0 0 2.7	-18.589
GEOI	38	- 0 0 1.0	+ 0 0 3.8	-18.643
GEOI	39	- 0 0 4.3	+ 0 0 2.4	-18.755
GEOI	4	- 0 0 3.1	+ 0 0 5.1	-17.974
GEOI	40	- 0 0 4.0	+ 0 0 2.1	-18.548
GEOI	41	- 0 0 4.2	+ 0 0 2.8	-19.052
GEOI	42	- 0 0 3.4	+ 0 0 2.9	-19.157
GEOI	43	- 0 0 1.4	+ 0 0 4.5	-18.923
GEOI	44	- 0 0 1.5	+ 0 0 3.6	-19.140
GEOI	45	- 0 0 2.0	+ 0 0 2.5	-19.300
GEOI	46	- 0 0 3.2	+ 0 0 2.4	-19.274
GEOI	47	- 0 0 4.7	+ 0 0 2.3	-19.183
GEOI	48	- 0 0 5.2	+ 0 0 2.3	-19.072
GEOI	49	- 0 0 5.6	+ 0 0 2.4	-19.015
GEOI	5	- 0 0 1.3	+ 0 0 4.9	-18.083
GEOI	50	- 0 0 5.3	+ 0 0 2.2	-18.892
GEOI	51	- 0 0 4.8	+ 0 0 2.1	-18.733
GEOI	6	- 0 0 0.5	+ 0 0 4.5	-18.336
GEOI	7	- 0 0 2.4	+ 0 0 4.2	-18.324
GEOI	8	- 0 0 2.5	+ 0 0 2.9	-18.584
GEOI	9	- 0 0 0.5	+ 0 0 4.6	-18.252
GEOI	A 51 RESET	- 0 0 0.4	- 0 0 0.0	-19.452
GEOI	D 361 RESET	- 0 0 3.7	+ 0 0 3.0	-18.980
GEOI	D 50	- 0 0 2.3	+ 0 0 4.6	-18.249
GEOI	H 8	- 0 0 0.8	+ 0 0 6.2	-17.440
GEOI	MUNDT	- 0 0 2.9	+ 0 0 0.6	-18.486
GEOI	Q 63	- 0 0 3.8	+ 0 0 5.3	-17.514

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================================================================================
Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT          FROM        TO                         STD DEV  STD DEV      PPM
---- ----------- ----------- ----------- ----------------- -------- --------
GROUP: 042110.ASC  ,obs#:    1
DXCT             101           102              -6011.72670    0.002    0.404
                                                     0.004    0.004     0.23
DYCT             101           102               3146.72200   -0.003   -0.815
                                                     0.004    0.004     0.47
DZCT             101           102               1827.79370   -0.003   -0.756
                                                     0.004    0.004     0.44
GROUP: 042110.ASC  ,obs#:    2
DXCT             101           103             -12832.83440    0.009    0.803
                                                     0.011    0.011     0.48
DYCT             101           103              10321.48140    0.012    1.138
                                                     0.011    0.011     0.69
DZCT             101           103               7812.48420    0.012    1.121
                                                     0.011    0.011     0.68
GROUP: 042110.ASC  ,obs#:    3
DXCT             102           103              -6821.09360   -0.007   -1.032
                                                     0.007    0.007     0.60
DYCT             102           103               7174.77810   -0.003   -0.429
                                                     0.007    0.007     0.25
DZCT             102           103               5984.70070    0.005    0.777
                                                     0.007    0.007     0.46
GROUP: 042110.ASC  ,obs#:    4
DXCT             101           D 50            -24690.87610    0.001    0.081
                                                     0.018    0.015     0.04
DYCT             101           D 50             12932.65690    0.023    1.499
                                                     0.018    0.016     0.81
DZCT             101           D 50              7478.50210    0.010    0.641
                                                     0.018    0.016     0.34
GROUP: 042110.ASC  ,obs#:    5
DXCT             102           D 50            -18679.14890   -0.001   -0.096
                                                     0.013    0.010     0.04
DYCT             102           D 50              9785.94270    0.019    1.811
                                                     0.013    0.010     0.86
DZCT             102           D 50              5650.70260    0.019    1.823
                                                     0.013    0.010     0.86
GROUP: 042110.ASC  ,obs#:    6
DXCT             101           Q 63            -41247.96120    0.003    0.131
                                                     0.030    0.023     0.06
DYCT             101           Q 63             23125.10660    0.008    0.308
                                                     0.030    0.026     0.17
DZCT             101           Q 63             14019.72970   -0.012   -0.455
                                                     0.030    0.026     0.24
GROUP: 042110.ASC  ,obs#:    7
DXCT             102           Q 63            -35236.23310    0.000    0.001
                                                     0.026    0.017     0.00
DYCT             102           Q 63             19978.39310    0.003    0.138
                                                     0.026    0.021     0.07
DZCT             102           Q 63             12191.92680    0.000    0.019
                                                     0.026    0.021     0.01
GROUP: 042210.ASC  ,obs#:    8
DXCT             102           103              -6821.09640   -0.004   -0.618
                                                     0.007    0.007     0.36
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                1100327  USGS-N. PLATTE      CONSTRAINED ADJ
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================================================================================
Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT           FROM         TO                       STD DEV  STD DEV      PPM
---- ------------ ------------ ------------ ------------------ -------- --------
DYCT              102          103                 7174.78020   -0.005   -0.742
                                                         0.007    0.007     0.43
DZCT              102          103                 5984.70190    0.004    0.606
                                                         0.007    0.007     0.35
GROUP: 042210.ASC  ,obs#:    9
DXCT              102            A 51 RESET        28914.34020   -0.003   -0.219
                                                         0.022    0.014     0.08
DYCT              102            A 51 RESET       -18012.34400   -0.006   -0.332
                                                         0.022    0.018     0.16
DZCT              102            A 51 RESET       -12092.14670    0.009    0.510
                                                         0.022    0.017     0.24
GROUP: 042210.ASC  ,obs#:   10
DXCT              103            A 51 RESET        35735.44050   -0.003   -0.118
                                                         0.029    0.023     0.06
DYCT              103            A 51 RESET       -25187.10190   -0.023   -0.900
                                                         0.029    0.026     0.49
DZCT              103            A 51 RESET       -18076.85950    0.016    0.614
                                                         0.029    0.025     0.33
GROUP: 042210.ASC  ,obs#:   11
DXCT              102            D 361 RESET        5856.82900    0.001    0.800
                                                         0.004    0.001     0.17
DYCT              102            D 361 RESET       -3124.32800   -0.000   -0.038
                                                         0.004    0.002     0.01
DZCT              102            D 361 RESET       -1842.55780   -0.006   -5.192
                                                         0.004    0.001     0.91
                                                                ^^^^^^^^^^^^^^^^^
GROUP: 042210.ASC  ,obs#:   12
DXCT              103            D 361 RESET       12677.93510   -0.004   -0.420
                                                         0.011    0.010     0.24
DYCT              103            D 361 RESET      -10299.10310   -0.000   -0.015
                                                         0.011    0.010     0.01
DZCT              103            D 361 RESET       -7827.34550    0.075    5.147
                                                         0.015    0.015     4.17
                                                                ^^^^^^^^^^^^^^^^^
GROUP: 042210.ASC  ,obs#:   13
DXCT              102            H 8               -52987.50980    0.032    0.888
                                                         0.038    0.036     0.53
DYCT              102            H 8               -12708.66670   -0.077   -2.110
                                                         0.038    0.037     1.26
DZCT              102            H 8               -27673.26330   -0.098   -2.678
                                                         0.038    0.037     1.60
GROUP: 042210.ASC  ,obs#:   14
DXCT              103            H 8               -46166.40770    0.031    0.856
                                                         0.037    0.036     0.51
DYCT              103            H 8               -19883.43030   -0.089   -2.456
                                                         0.037    0.036     1.47
DZCT              103            H 8               -33657.97510   -0.092   -2.550
                                                         0.037    0.036     1.52
GROUP: 042310.ASC  ,obs#:   15
DXCT              102            1                  -6282.02030   -0.000   -0.019
                                                         0.009    0.008     0.01
DYCT              102            1                   9477.81260    0.000    0.045
```

Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
				0.009	0.008	0.03
DZCT		102	1	8683.37080	-0.009	-1.129
				0.009	0.008	0.65
GROUP: 042310.ASC ,obs#: 16						
DXCT		103	1	539.08010	0.000	0.014
				0.002	0.001	0.00
DYCT		103	1	2303.03780	-0.000	-0.058
				0.002	0.001	0.01
DZCT		103	1	2698.65490	0.001	1.129
				0.002	0.001	0.17
GROUP: 042310.ASC ,obs#: 17						
DXCT		102	103	-6821.09600	-0.005	-0.677
				0.007	0.007	0.39
DYCT		102	103	7174.77480	0.000	0.060
				0.007	0.007	0.03
DZCT		102	103	5984.71650	-0.011	-1.564
				0.007	0.007	0.91
GROUP: 042310.ASC ,obs#: 18						
DXCT		102	2	-13865.69980	-0.002	-0.210
				0.013	0.012	0.12
DYCT		102	2	12471.20740	-0.014	-1.240
				0.013	0.012	0.69
DZCT		102	2	9871.32240	0.011	0.941
				0.013	0.012	0.52
GROUP: 042310.ASC ,obs#: 19						
DXCT		103	2	-7044.60220	0.001	0.210
				0.006	0.002	0.05
DYCT		103	2	5296.41470	0.003	1.239
				0.006	0.002	0.31
DZCT		103	2	3886.62970	-0.002	-0.940
				0.006	0.002	0.24
GROUP: 042310.ASC ,obs#: 20						
DXCT		102	3	-21974.19250	-0.001	-0.076
				0.021	0.018	0.04
DYCT		102	3	21077.72620	-0.001	-0.070
				0.021	0.018	0.04
DZCT		102	3	16991.02870	-0.001	-0.051
				0.021	0.018	0.03
GROUP: 042310.ASC ,obs#: 21						
DXCT		103	3	-15153.09390	0.001	0.076
				0.014	0.008	0.03
DYCT		103	3	13902.94920	0.001	0.070
				0.014	0.008	0.02
DZCT		103	3	11006.32140	0.000	0.051
				0.014	0.008	0.02
GROUP: 042310.ASC ,obs#: 22						
DXCT		102	4	-25065.70060	-0.009	-0.572
				0.018	0.015	0.29
DYCT		102	4	13997.47410	-0.004	-0.263
				0.020	0.017	0.15
DZCT		102	4	8486.39740	-0.005	-0.326
				0.019	0.015	0.17

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Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT          FROM        TO                         STD DEV  STD DEV      PPM
---- ----------- ----------- ----------- ----------------- -------- --------
GROUP: 042310.ASC  ,obs#:   23
DXCT             103         4               -18244.61260    0.004    0.572
                                                    0.012    0.007     0.19
DYCT             103         4                 6822.69270    0.002    0.271
                                                    0.012    0.006     0.09
DZCT             103         4                 2501.68420    0.002    0.332
                                                    0.012    0.007     0.11
GROUP: 042310.ASC  ,obs#:   24
DXCT             102         5               -25860.70700    0.001    0.109
                                                    0.017    0.013     0.05
DYCT             102         5                 7873.65220    0.002    0.132
                                                    0.017    0.013     0.07
DZCT             102         5                 1669.85810   -0.001   -0.099
                                                    0.017    0.013     0.05
GROUP: 042310.ASC  ,obs#:   25
DXCT             103         5               -19039.60420   -0.001   -0.109
                                                    0.012    0.007     0.04
DYCT             103         5                  698.87970   -0.001   -0.132
                                                    0.012    0.007     0.05
DZCT             103         5                 -4314.84990    0.001    0.099
                                                    0.012    0.007     0.04
GROUP: 042310.ASC  ,obs#:   26
DXCT             102         6               -19310.14030    0.003    0.325
                                                    0.012    0.009     0.16
DYCT             102         6                 2792.29390   -0.007   -0.692
                                                    0.012    0.009     0.33
DZCT             102         6                 -2022.71170    0.012    1.237
                                                    0.012    0.009     0.60
GROUP: 042310.ASC  ,obs#:   27
DXCT             103         6               -12489.03480   -0.002   -0.324
                                                    0.010    0.006     0.12
DYCT             103         6                 -4382.49190    0.004    0.695
                                                    0.010    0.006     0.26
DZCT             103         6                 -8007.39870   -0.007   -1.238
                                                    0.010    0.006     0.47
GROUP: 042310.ASC  ,obs#:   28
DXCT             102         7               -16310.83210   -0.008   -0.802
                                                    0.012    0.011     0.44
DYCT             102         7                 8993.95520   -0.008   -0.770
                                                    0.012    0.011     0.42
DZCT             102         7                 5421.12950    0.020    1.877
                                                    0.012    0.011     1.05
GROUP: 042310.ASC  ,obs#:   29
DXCT             103         7                 -9489.74210    0.002    0.799
                                                    0.006    0.003     0.22
DYCT             103         7                 1819.16980    0.002    0.762
                                                    0.006    0.003     0.21
DZCT             103         7                  -563.55130   -0.005   -1.875
                                                    0.006    0.003     0.50
GROUP: 042410.ASC  ,obs#:   30
DXCT             101         10              -17749.32790    0.005    0.582
                                                    0.011    0.009     0.30
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Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT           FROM         TO                       STD DEV  STD DEV      PPM
---- ------------ ------------ ------------ ------------------ -------- --------
DYCT              101          10                  3433.21420    0.008    0.861
                                                         0.011    0.009     0.44
DZCT              101          10                  -857.73800   -0.005   -0.514
                                                         0.011    0.009     0.26
GROUP: 042410.ASC  ,obs#:   31
DXCT              102          10                -11737.59510   -0.002   -0.581
                                                         0.007    0.004     0.20
DYCT              102          10                   286.50700   -0.004   -0.860
                                                         0.007    0.004     0.29
DZCT              102          10                 -2685.53550    0.002    0.513
                                                         0.007    0.004     0.17
GROUP: 042410.ASC  ,obs#:   32
DXCT              101          102                -6011.73030    0.005    1.292
                                                         0.004    0.004     0.75
DYCT              101          102                 3146.71650    0.002    0.541
                                                         0.004    0.004     0.31
DZCT              101          102                 1827.79080   -0.000   -0.040
                                                         0.004    0.004     0.02
GROUP: 042410.ASC  ,obs#:   33
DXCT              101          102                -6011.72520    0.000    0.034
                                                         0.004    0.004     0.02
DYCT              101          102                 3146.72680   -0.008   -1.994
                                                         0.004    0.004     1.15
DZCT              101          102                 1827.78040    0.010    2.516
                                                         0.004    0.004     1.46
GROUP: 042410.ASC  ,obs#:   34
DXCT              101          11                 -9872.63950    0.007    1.318
                                                         0.006    0.005     0.71
DYCT              101          11                  1723.08630    0.005    0.845
                                                         0.006    0.005     0.46
DZCT              101          11                  -726.68360   -0.003   -0.498
                                                         0.006    0.005     0.27
GROUP: 042410.ASC  ,obs#:   35
DXCT              102          11                 -3860.90560   -0.002   -1.321
                                                         0.003    0.001     0.35
DYCT              102          11                 -1423.62670   -0.001   -0.853
                                                         0.003    0.001     0.23
DZCT              102          11                 -2554.47760    0.001    0.511
                                                         0.003    0.001     0.14
GROUP: 042410.ASC  ,obs#:   36
DXCT              101          12                 -8522.24290   -0.003   -0.462
                                                         0.007    0.006     0.26
DYCT              101          12                  5665.69210    0.004    0.604
                                                         0.007    0.006     0.34
DZCT              101          12                  3924.15940   -0.000   -0.064
                                                         0.007    0.006     0.04
GROUP: 042410.ASC  ,obs#:   37
DXCT              102          12                 -2510.52110    0.000    0.460
                                                         0.003    0.001     0.10
DYCT              102          12                  2518.97770   -0.001   -0.604
                                                         0.003    0.001     0.14
DZCT              102          12                  2096.36830    0.000    0.072
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Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
				0.003	0.001	0.02
GROUP: 042410.ASC ,obs#: 38						
DXCT		101	13	-6336.86390	0.001	0.100
				0.009	0.008	0.05
DYCT		101	13	10065.63160	-0.005	-0.618
				0.010	0.008	0.32
DZCT		101	13	9309.64400	0.003	0.371
				0.009	0.008	0.19
GROUP: 042410.ASC ,obs#: 39						
DXCT		102	13	-325.13770	-0.000	-0.107
				0.006	0.003	0.04
DYCT		102	13	6918.90590	0.002	0.615
				0.006	0.003	0.21
DZCT		102	13	7481.85750	-0.001	-0.365
				0.006	0.003	0.12
GROUP: 042410.ASC ,obs#: 40						
DXCT		101	14	-2308.04080	0.001	0.358
				0.005	0.004	0.18
DYCT		101	14	5834.35890	-0.001	-0.317
				0.005	0.004	0.16
DZCT		101	14	5765.54820	0.001	0.242
				0.005	0.004	0.12
GROUP: 042410.ASC ,obs#: 41						
DXCT		102	14	3703.68650	-0.001	-0.354
				0.004	0.002	0.12
DYCT		102	14	2687.63820	0.001	0.318
				0.004	0.002	0.11
DZCT		102	14	3937.75910	-0.001	-0.245
				0.004	0.002	0.09
GROUP: 042410.ASC ,obs#: 42						
DXCT		101	15	11687.24660	-0.002	-0.456
				0.008	0.004	0.16
DYCT		101	15	1416.86720	-0.002	-0.500
				0.008	0.004	0.18
DZCT		101	15	4697.36900	-0.005	-1.059
				0.008	0.004	0.37
GROUP: 042410.ASC ,obs#: 43						
DXCT		102	15	17698.96550	0.004	0.457
				0.011	0.009	0.23
DYCT		102	15	-1729.85820	0.004	0.492
				0.011	0.009	0.25
DZCT		102	15	2869.56400	0.010	1.054
				0.011	0.009	0.54
GROUP: 042410.ASC ,obs#: 44						
DXCT		101	8	-13299.09960	-0.002	-0.258
				0.010	0.009	0.14
DYCT		101	8	7931.61350	-0.008	-0.933
				0.010	0.009	0.50
DZCT		101	8	5088.11620	-0.004	-0.473
				0.010	0.009	0.25
GROUP: 042410.ASC ,obs#: 45						
DXCT		102	8	-7287.37750	0.001	0.255

Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
				0.006	0.003	0.08
DYCT		102	8	4784.88400	0.003	0.935
				0.006	0.003	0.28
DZCT		102	8	3260.32010	0.001	0.480
				0.006	0.003	0.15
GROUP: 042410.ASC ,obs#: 46						
DXCT		101	9	-28844.42050	0.004	0.262
				0.018	0.014	0.13
DYCT		101	9	4577.19900	0.005	0.343
				0.018	0.014	0.16
DZCT		101	9	-2595.94460	-0.005	-0.320
				0.018	0.014	0.15
GROUP: 042410.ASC ,obs#: 47						
DXCT		102	9	-22832.68940	-0.002	-0.263
				0.014	0.009	0.10
DYCT		102	9	1430.48820	-0.003	-0.343
				0.014	0.009	0.13
DZCT		102	9	-4423.74260	0.003	0.320
				0.014	0.009	0.12
GROUP: 042510.ASC ,obs#: 48						
DXCT		101	102	-6011.71840	-0.007	-1.642
				0.004	0.004	0.95
DYCT		101	102	3146.71690	0.002	0.442
				0.004	0.004	0.26
DZCT		101	102	1827.79110	-0.000	-0.114
				0.004	0.004	0.07
GROUP: 042510.ASC ,obs#: 49						
DXCT		101	16	-8120.35030	-0.006	-1.108
				0.008	0.005	0.47
DYCT		101	16	-5755.10190	-0.002	-0.339
				0.008	0.005	0.14
DZCT		101	16	-8341.26600	-0.001	-0.092
				0.008	0.005	0.04
GROUP: 042510.ASC ,obs#: 50						
DXCT		102	16	-2108.63800	0.007	1.108
				0.008	0.006	0.49
DYCT		102	16	-8901.82450	0.002	0.339
				0.008	0.006	0.15
DZCT		102	16	-10169.05770	0.001	0.092
				0.008	0.006	0.04
GROUP: 042510.ASC ,obs#: 51						
DXCT		101	17	-7502.09460	-0.002	-0.430
				0.006	0.004	0.18
DYCT		101	17	-3156.91440	0.004	0.952
				0.006	0.004	0.41
DZCT		101	17	-5285.98700	0.002	0.365
				0.006	0.004	0.16
GROUP: 042510.ASC ,obs#: 52						
DXCT		102	17	-1490.37310	0.002	0.430
				0.006	0.004	0.18
DYCT		102	17	-6303.62520	-0.004	-0.952
				0.006	0.004	0.41

Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DZCT		102	17	-7113.77460	-0.002	-0.366
				0.006	0.004	0.16
GROUP: 042510.ASC ,obs#: 53						
DXCT		101	18	1193.70090	-0.000	-0.089
				0.006	0.003	0.03
DYCT		101	18	-7095.44650	0.004	1.236
				0.006	0.003	0.42
DZCT		101	18	-7368.12390	-0.009	-2.521
				0.006	0.003	0.85
GROUP: 042510.ASC ,obs#: 54						
DXCT		102	18	7205.42500	0.001	0.082
				0.010	0.008	0.04
DYCT		102	18	-10242.15100	-0.010	-1.245
				0.010	0.008	0.64
DZCT		102	18	-9195.94340	0.020	2.526
				0.010	0.008	1.29
GROUP: 042510.ASC ,obs#: 55						
DXCT		101	19	5698.64400	-0.005	-0.879
				0.009	0.006	0.32
DYCT		101	19	-10369.42850	-0.000	-0.038
				0.009	0.006	0.01
DZCT		101	19	-9780.94940	0.000	0.090
				0.010	0.006	0.03
GROUP: 042510.ASC ,obs#: 56						
DXCT		102	19	11710.35490	0.009	0.879
				0.013	0.011	0.44
DYCT		102	19	-13516.14780	0.000	0.037
				0.013	0.011	0.02
DZCT		102	19	-11608.73860	-0.001	-0.088
				0.013	0.011	0.04
GROUP: 042510.ASC ,obs#: 57						
DXCT		101	20	8014.56880	-0.005	-1.137
				0.008	0.004	0.38
DYCT		101	20	-7523.07630	-0.002	-0.482
				0.008	0.004	0.16
DZCT		101	20	-6105.69250	-0.003	-0.628
				0.008	0.004	0.21
GROUP: 042510.ASC ,obs#: 58						
DXCT		102	20	14026.27780	0.011	1.137
				0.012	0.010	0.58
DYCT		102	20	-10669.80180	0.005	0.479
				0.012	0.010	0.25
DZCT		102	20	-7933.49200	0.006	0.625
				0.012	0.010	0.32
GROUP: 042510.ASC ,obs#: 59						
DXCT		101	21	7209.91500	-0.003	-1.235
				0.005	0.003	0.36
DYCT		101	21	-3990.33980	0.001	0.370
				0.005	0.003	0.11
DZCT		101	21	-2444.09610	-0.003	-1.177
				0.005	0.003	0.35
GROUP: 042510.ASC ,obs#: 60						

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Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT          FROM        TO                         STD DEV  STD DEV      PPM
---- ----------- ----------- ----------- ----------------- -------- --------
DXCT             102         21              13221.62660    0.010    1.234
                                                    0.010    0.008     0.66
DYCT             102         21              -7137.05440   -0.003   -0.372
                                                    0.010    0.008     0.20
DZCT             102         21              -4271.89960    0.010    1.178
                                                    0.010    0.008     0.63
GROUP: 042610.ASC  ,obs#:   61
DXCT             101         102             -6011.72810    0.003    0.750
                                                    0.004    0.004     0.43
DYCT             101         102              3146.72060   -0.002   -0.470
                                                    0.004    0.004     0.27
DZCT             101         102              1827.78690    0.004    0.921
                                                    0.004    0.004     0.53
GROUP: 042610.ASC  ,obs#:   62
DXCT             101         MUNDT           58890.42620   -0.029   -0.733
                                                    0.040    0.039     0.44
DYCT             101         MUNDT           10218.54730   -0.028   -0.714
                                                    0.040    0.039     0.43
DZCT             101         MUNDT           26164.99070   -0.021   -0.544
                                                    0.040    0.039     0.33
GROUP: 042610.ASC  ,obs#:   63
DXCT             102         MUNDT           64902.15930   -0.037   -0.876
                                                    0.043    0.042     0.53
DYCT             102         MUNDT            7071.82990   -0.029   -0.698
                                                    0.043    0.042     0.42
DZCT             102         MUNDT           24337.19730   -0.019   -0.442
                                                    0.043    0.042     0.27
GROUP: 042710.ASC  ,obs#:   64
DXCT             103         101             12832.82950   -0.004   -0.354
                                                    0.011    0.011     0.21
DYCT             103         101            -10321.48840   -0.005   -0.501
                                                    0.011    0.011     0.30
DZCT             103         101             -7812.49520   -0.001   -0.129
                                                    0.011    0.011     0.08
GROUP: 042710.ASC  ,obs#:   65
DXCT             104         101             -3220.28270   -0.003   -1.498
                                                    0.002    0.002     0.83
DYCT             104         101              1199.06770   -0.002   -0.804
                                                    0.002    0.002     0.45
DZCT             104         101               437.63410    0.003    1.495
                                                    0.002    0.002     0.84
GROUP: 042710.ASC  ,obs#:   66
DXCT             103         104             16053.10860    0.003    0.202
                                                    0.013    0.013     0.12
DYCT             103         104            -11520.56560    0.006    0.431
                                                    0.013    0.013     0.26
DZCT             103         104             -8250.13130   -0.002   -0.180
                                                    0.013    0.013     0.11
GROUP: 050110.ASC  ,obs#:   67
DXCT             103         104             16053.10080    0.010    0.806
                                                    0.013    0.013     0.49
DYCT             103         104            -11520.57300    0.013    1.005
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Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
				0.013	0.013	0.61
DZCT		103	104	-8250.13510	0.001	0.115
				0.013	0.013	0.07
GROUP: 050210.ASC ,obs#: 68						
DXCT		103	104	16053.11050	0.001	0.054
				0.013	0.013	0.03
DYCT		103	104	-11520.53750	-0.023	-1.742
				0.013	0.013	1.05
DZCT		103	104	-8250.14640	0.013	0.989
				0.013	0.013	0.60
GROUP: 050210.ASC ,obs#: 69						
DXCT		103	104	16053.11270	-0.001	-0.116
				0.013	0.013	0.07
DYCT		103	104	-11520.55000	-0.010	-0.778
				0.013	0.013	0.47
DZCT		103	104	-8250.13820	0.005	0.355
				0.013	0.013	0.21
GROUP: 050310.ASC ,obs#: 70						
DXCT		103	104	16053.11270	-0.001	-0.116
				0.013	0.013	0.07
DYCT		103	104	-11520.56680	0.007	0.524
				0.013	0.013	0.32
DZCT		103	104	-8250.14340	0.010	0.758
				0.013	0.013	0.46
GROUP: 072510.ASC ,obs#: 71						
DXCT		103	102	6821.10710	-0.007	-0.970
				0.007	0.007	0.57
DYCT		103	102	-7174.77960	0.004	0.653
				0.007	0.007	0.38
DZCT		103	102	-5984.69390	-0.012	-1.794
				0.007	0.007	1.04
GROUP: 072510.ASC ,obs#: 72						
DXCT		102	30	-9409.51010	0.003	0.364
				0.010	0.009	0.21
DYCT		102	30	10224.64740	0.013	1.327
				0.010	0.010	0.77
DZCT		102	30	8640.37020	-0.019	-2.025
				0.010	0.010	1.19
GROUP: 072510.ASC ,obs#: 73						
DXCT		103	30	-2588.40580	-0.000	-0.364
				0.003	0.001	0.06
DYCT		103	30	3049.88590	-0.001	-1.326
				0.003	0.001	0.23
DZCT		103	30	2655.64310	0.002	2.025
				0.003	0.001	0.35
GROUP: 072510.ASC ,obs#: 74						
DXCT		102	31	-15223.02200	0.010	0.784
				0.014	0.013	0.43
DYCT		102	31	13894.98560	0.010	0.804
				0.014	0.013	0.44
DZCT		102	31	11063.86890	-0.003	-0.264
				0.014	0.013	0.14

Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
GROUP: 072510.ASC ,obs#: 75						
DXCT		103	31	-8401.90890	-0.003	-0.783
				0.007	0.003	0.22
DYCT		103	31	6720.22330	-0.003	-0.803
				0.007	0.003	0.22
DZCT		103	31	5079.15870	0.001	0.263
				0.007	0.003	0.07
GROUP: 072510.ASC ,obs#: 76						
DXCT		102	32	-22410.85960	0.004	0.252
				0.020	0.016	0.13
DYCT		102	32	18024.73080	0.002	0.112
				0.020	0.016	0.06
DZCT		102	32	13581.15360	0.011	0.682
				0.020	0.016	0.35
GROUP: 072510.ASC ,obs#: 77						
DXCT		103	32	-15589.75320	-0.002	-0.252
				0.013	0.007	0.08
DYCT		103	32	10849.95820	-0.001	-0.111
				0.013	0.007	0.04
DZCT		103	32	7596.46350	-0.005	-0.682
				0.013	0.007	0.23
GROUP: 072510.ASC ,obs#: 78						
DXCT		102	33	-25178.06210	0.006	0.422
				0.018	0.015	0.22
DYCT		102	33	13330.75710	0.007	0.489
				0.018	0.015	0.25
DZCT		102	33	7734.19460	0.004	0.281
				0.018	0.015	0.14
GROUP: 072510.ASC ,obs#: 79						
DXCT		103	33	-18356.95240	-0.003	-0.422
				0.012	0.007	0.14
DYCT		103	33	6155.99250	-0.003	-0.488
				0.012	0.007	0.17
DZCT		103	33	1749.49470	-0.002	-0.278
				0.012	0.007	0.09
GROUP: 072510.ASC ,obs#: 80						
DXCT		102	34	-25711.51620	0.004	0.297
				0.016	0.012	0.14
DYCT		102	34	3275.57130	-0.008	-0.654
				0.016	0.012	0.31
DZCT		102	34	-3221.09290	0.006	0.462
				0.016	0.012	0.22
GROUP: 072510.ASC ,obs#: 81						
DXCT		103	34	-18890.40950	-0.002	-0.296
				0.013	0.008	0.11
DYCT		103	34	-3899.21760	0.006	0.655
				0.013	0.008	0.26
DZCT		103	34	-9205.78930	-0.004	-0.463
				0.013	0.008	0.18
GROUP: 072510.ASC ,obs#: 82						
DXCT		102	35	-17984.91470	0.006	0.665
				0.011	0.009	0.31

Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
DYCT		102	35	1393.42760	0.004	0.415
				0.011	0.009	0.19
DZCT		102	35	-3153.90440	0.009	1.044
				0.011	0.009	0.49
GROUP: 072510.ASC ,obs#: 83						
DXCT		103	35	-11163.80440	-0.004	-0.666
				0.010	0.006	0.26
DYCT		103	35	-5781.34150	-0.003	-0.413
				0.010	0.006	0.16
DZCT		103	35	-9138.59500	-0.006	-1.043
				0.010	0.006	0.42
GROUP: 072510.ASC ,obs#: 84						
DXCT		102	36	-15199.89160	0.000	0.011
				0.011	0.010	0.01
DYCT		102	36	8849.26620	-0.005	-0.515
				0.011	0.010	0.29
DZCT		102	36	5561.03800	0.005	0.446
				0.012	0.010	0.25
GROUP: 072510.ASC ,obs#: 85						
DXCT		103	36	-8378.79090	-0.000	-0.011
				0.005	0.002	0.00
DYCT		103	36	1674.48460	0.001	0.515
				0.005	0.002	0.13
DZCT		103	36	-423.66240	-0.001	-0.446
				0.005	0.002	0.12
GROUP: 072510.ASC ,obs#: 86						
DXCT		103	37	286.87390	-0.000	0.000*
				0.002	0.000	0.00
DYCT		103	37	-2161.49580	-0.000	0.000*
				0.002	0.000	0.00
DZCT		103	37	-2276.78440	0.000	0.000*
				0.002	0.000	0.00
GROUP: 072510.ASC ,obs#: 87						
DXCT		103	38	-1680.89970	0.000	0.000*
				0.007	0.000	0.00
DYCT		103	38	-7240.07290	-0.000	0.000*
				0.007	0.000	0.00
DZCT		103	38	-8209.43490	0.000	0.000*
				0.007	0.000	0.00
GROUP: 072510.ASC ,obs#: 88						
DXCT		103	39	10403.34400	-0.000	0.000*
				0.007	0.000	0.00
DYCT		103	39	-4444.35800	0.000	0.000*
				0.007	0.000	0.00
DZCT		103	39	-2034.08410	0.000	0.000*
				0.007	0.000	0.00
GROUP: 072510.ASC ,obs#: 89						
DXCT		103	40	3405.27040	-0.000	0.000*
				0.002	0.000	0.00
DYCT		103	40	520.36690	-0.000	0.000*
				0.002	0.000	0.00
DZCT		103	40	1523.14820	0.000	0.000*

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Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT          FROM        TO                        STD DEV  STD DEV      PPM
---- ----------- ----------- ----------- ----------------------- -------- --------
                                                          0.002    0.000     0.00
GROUP: 072610.ASC  ,obs#:   90
DXCT             101         104                   3220.28610   -0.001   -0.271
                                                          0.002    0.002     0.15
DYCT             101         104                  -1199.06410   -0.002   -1.061
                                                          0.002    0.002     0.59
DZCT             101         104                   -437.63630   -0.001   -0.367
                                                          0.002    0.002     0.20
GROUP: 072610.ASC  ,obs#:   91
DXCT             101         104                   3220.28880   -0.003   -1.685
                                                          0.002    0.002     0.93
DYCT             101         104                  -1199.07120    0.005    2.654
                                                          0.002    0.002     1.46
DZCT             101         104                   -437.63510   -0.002   -1.002
                                                          0.002    0.002     0.55
GROUP: 072610.ASC  ,obs#:   92
DXCT             101         41                    2897.95980    0.002    1.088
                                                          0.002    0.002     0.58
DYCT             101         41                   -1030.35690   -0.005   -3.010
                                                          0.002    0.002     1.63
DZCT             101         41                    -337.63880    0.006    3.514
                                                          0.002    0.002     1.92
GROUP: 072610.ASC  ,obs#:   93
DXCT             104         41                    -322.32400    0.000    0.000*
                                                          0.000    0.000     0.05
DYCT             104         41                     168.70370    0.001    3.636
                                                          0.001    0.000     1.34
DZCT             104         41                     100.00500   -0.001   -3.996
                                                          0.001    0.000     2.23
                                                                ^^^^^^^^^^^^^^^^
GROUP: 072610.ASC  ,obs#:   94
DXCT             101         42                    3810.76750   -0.000   -0.065
                                                          0.004    0.003     0.03
DYCT             101         42                   -4131.13560    0.000    0.017
                                                          0.004    0.003     0.01
DZCT             101         42                   -3509.22320   -0.008   -2.503
                                                          0.004    0.003     1.28
GROUP: 072610.ASC  ,obs#:   95
DXCT             104         42                     590.48160    0.000    0.071
                                                          0.003    0.001     0.02
DYCT             104         42                   -2932.06940   -0.000   -0.005
                                                          0.003    0.001     0.00
DZCT             104         42                   -3071.59840    0.004    2.503
                                                          0.003    0.001     0.87
GROUP: 072610.ASC  ,obs#:   96
DXCT             101         43                   -7693.52820   -0.002   -0.520
                                                          0.007    0.005     0.21
DYCT             101         43                   -4551.19620    0.000    0.034
                                                          0.007    0.005     0.01
DZCT             101         43                   -6887.18350   -0.001   -0.245
                                                          0.007    0.005     0.10
GROUP: 072610.ASC  ,obs#:   97
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Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION STD DEV	RESIDUAL STD DEV	STD RES PPM
DXCT		104	43	-10913.81930	0.003	0.520
				0.008	0.006	0.24
DYCT		104	43	-3352.12970	-0.000	-0.034
				0.008	0.006	0.02
DZCT		104	43	-6449.54910	0.001	0.245
				0.008	0.006	0.11
GROUP: 072610.ASC ,obs#: 98						
DXCT		101	44	-128.71200	0.001	0.164
				0.006	0.004	0.07
DYCT		101	44	-6753.24100	-0.001	-0.192
				0.006	0.004	0.09
DZCT		101	44	-7353.22440	0.003	0.750
				0.006	0.004	0.34
GROUP: 072610.ASC ,obs#: 99						
DXCT		104	44	-3348.99620	-0.001	-0.164
				0.006	0.004	0.07
DYCT		104	44	-5554.17650	0.001	0.194
				0.006	0.004	0.08
DZCT		104	44	-6915.58100	-0.003	-0.750
				0.006	0.004	0.32
GROUP: 072610.ASC ,obs#: 100						
DXCT		101	45	7339.53370	-0.002	-0.267
				0.008	0.006	0.13
DYCT		101	45	-8481.61320	0.004	0.552
				0.008	0.006	0.26
DZCT		101	45	-7322.73130	-0.004	-0.649
				0.008	0.006	0.31
GROUP: 072610.ASC ,obs#: 101						
DXCT		104	45	4119.24530	0.001	0.266
				0.007	0.004	0.10
DYCT		104	45	-7282.54120	-0.002	-0.555
				0.007	0.004	0.22
DZCT		104	45	-6885.10120	0.003	0.651
				0.007	0.004	0.25
GROUP: 072610.ASC ,obs#: 102						
DXCT		101	46	8204.27600	-0.002	-0.270
				0.007	0.006	0.13
DYCT		101	46	-6648.80760	0.003	0.497
				0.007	0.006	0.24
DZCT		101	46	-5102.19690	-0.001	-0.200
				0.007	0.006	0.10
GROUP: 072610.ASC ,obs#: 103						
DXCT		104	46	4983.98800	0.001	0.269
				0.005	0.003	0.10
DYCT		104	46	-5449.73700	-0.002	-0.497
				0.005	0.003	0.18
DZCT		104	46	-4664.56170	0.001	0.203
				0.005	0.003	0.07
GROUP: 072610.ASC ,obs#: 104						
DXCT		101	47	9019.15790	-0.004	-0.838
				0.006	0.005	0.43
DYCT		101	47	-3272.22800	-0.007	-1.366

Residuals (critical value = 3.898):

TYPE	AT	FROM	TO	OBSERVATION / STD DEV	RESIDUAL / STD DEV	STD RES / PPM
				0.006	0.005	0.71
DZCT		101	47	-1161.25280	0.005	1.063
				0.006	0.005	0.55
GROUP: 072610.ASC ,obs#: 105						
DXCT		104	47	5798.86640	0.002	0.849
				0.004	0.002	0.28
DYCT		104	47	-2073.17160	0.003	1.378
				0.004	0.002	0.47
DZCT		104	47	-723.60830	-0.002	-1.074
				0.004	0.002	0.36
GROUP: 072610.ASC ,obs#: 106						
DXCT		101	48	9713.80190	-0.002	-0.310
				0.006	0.005	0.15
DYCT		101	48	-231.46900	0.004	0.798
				0.006	0.005	0.40
DZCT		101	48	2353.02770	-0.001	-0.159
				0.006	0.005	0.08
GROUP: 072610.ASC ,obs#: 107						
DXCT		104	48	6493.51400	0.001	0.305
				0.004	0.003	0.11
DYCT		104	48	967.60320	-0.002	-0.797
				0.004	0.003	0.29
DZCT		104	48	2790.66350	0.000	0.163
				0.004	0.003	0.06
GROUP: 072610.ASC ,obs#: 108						
DXCT		101	49	11689.94470	-0.001	-0.092
				0.008	0.006	0.04
DYCT		101	49	1394.11630	0.005	0.777
				0.008	0.006	0.37
DZCT		101	49	4672.93330	-0.000	-0.070
				0.008	0.006	0.03
GROUP: 072610.ASC ,obs#: 109						
DXCT		104	49	8469.65820	0.000	0.092
				0.006	0.004	0.04
DYCT		104	49	2593.19020	-0.003	-0.777
				0.006	0.004	0.30
DZCT		104	49	5110.56960	0.000	0.071
				0.006	0.004	0.03
GROUP: 072610.ASC ,obs#: 110						
DXCT		101	50	4026.67300	-0.001	-0.390
				0.004	0.003	0.17
DYCT		101	50	3475.51210	0.003	0.923
				0.004	0.003	0.40
DZCT		101	50	4906.14950	0.000	0.083
				0.005	0.003	0.04
GROUP: 072610.ASC ,obs#: 111						
DXCT		104	50	806.38500	0.001	0.389
				0.004	0.003	0.17
DYCT		104	50	4674.58400	-0.003	-0.921
				0.004	0.003	0.40
DZCT		104	50	5343.78700	-0.000	-0.074
				0.005	0.003	0.03

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Residuals (critical value = 3.898):
                                                    OBSERVATION RESIDUAL  STD RES
TYPE AT           FROM         TO                       STD DEV  STD DEV      PPM
---- ------------ ------------ ------------ ------------------ -------- --------
GROUP: 072610.ASC  ,obs#:  112
DXCT              101          51                  1373.61620   -0.002   -0.449
                                                        0.007    0.005     0.18
DYCT              101          51                  7180.70530    0.005    1.046
                                                        0.007    0.005     0.43
DZCT              101          51                  8235.53200   -0.002   -0.366
                                                        0.007    0.005     0.15
GROUP: 072610.ASC  ,obs#:  113
DXCT              104          51                 -1846.67390    0.002    0.448
                                                        0.008    0.006     0.20
DYCT              104          51                  8379.78200   -0.006   -1.046
                                                        0.008    0.006     0.48
DZCT              104          51                  8673.16530    0.002    0.367
                                                        0.008    0.006     0.17
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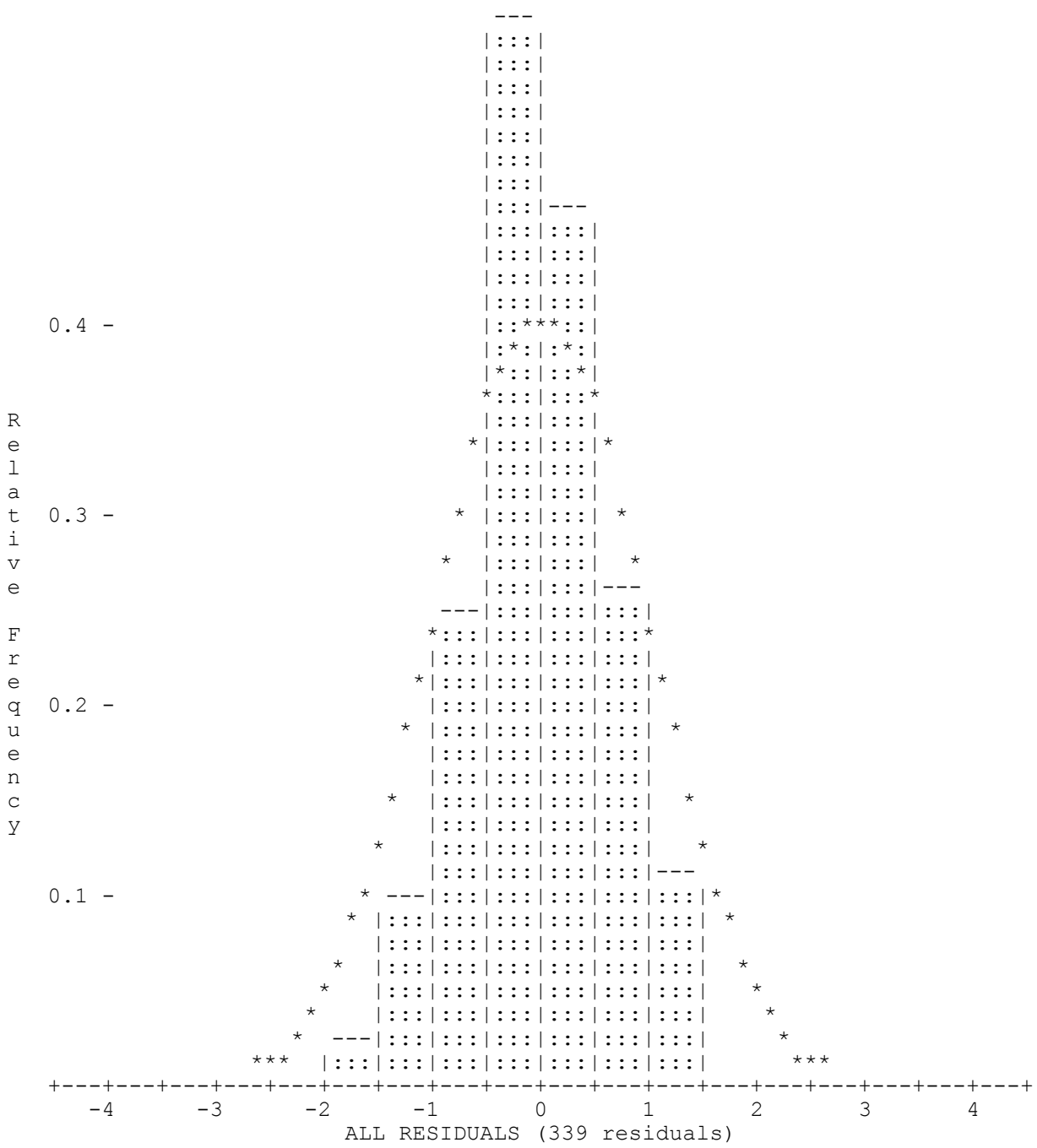


S T A T I S T I C S S U M M A R Y

Residual Critical Value Type	Tau Max
Residual Critical Value	3.8984
Number of Flagged Residuals	3
Convergence Criterion	0.0010
Final Iteration Counter Value	2
Confidence Level Used	95.0000
Estimated Variance Factor	0.9936
Number of Degrees of Freedom	191

Chi-Square Test on the Variance Factor:

8.2099e-01 < 1.0000 < 1.2274e+00 ?

THE TEST PASSES

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

Variance factor used	=	0.9936
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	0.027	(0, 0)	0.027	(90, 0)	0.023	(0, 90)
10	0.031	(0, 0)	0.031	(90, 0)	0.028	(0, 90)
101	0.026	(0, 0)	0.026	(90, 0)	0.022	(0, 90)
102	0.026	(0, 0)	0.026	(90, 0)	0.021	(0, 90)
103	0.027	(0, 0)	0.027	(90, 0)	0.022	(0, 90)
104	0.027	(0, 0)	0.026	(90, 0)	0.022	(0, 90)
11	0.027	(0, 0)	0.027	(90, 0)	0.023	(0, 90)
12	0.027	(0, 0)	0.027	(90, 0)	0.022	(0, 90)
13	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
14	0.028	(0, 0)	0.028	(90, 0)	0.023	(0, 90)
15	0.032	(0, 0)	0.032	(90, 0)	0.028	(0, 90)
16	0.031	(0, 0)	0.031	(90, 0)	0.027	(0, 90)
17	0.029	(0, 0)	0.029	(90, 0)	0.024	(0, 90)
18	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
19	0.034	(0, 0)	0.034	(90, 0)	0.030	(0, 90)
2	0.031	(0, 0)	0.031	(90, 0)	0.027	(0, 90)
20	0.032	(0, 0)	0.032	(90, 0)	0.028	(0, 90)
21	0.029	(0, 0)	0.029	(90, 0)	0.025	(0, 90)
3	0.043	(0, 0)	0.043	(90, 0)	0.040	(0, 90)
30	0.028	(0, 0)	0.028	(90, 0)	0.023	(0, 90)
31	0.032	(0, 0)	0.032	(90, 0)	0.028	(0, 90)
32	0.040	(0, 0)	0.040	(90, 0)	0.037	(0, 90)
33	0.038	(0, 0)	0.038	(90, 0)	0.036	(0, 90)
34	0.039	(180, 2)	0.039	(90, 0)	0.036	(0, 88)
35	0.033	(0, 0)	0.033	(90, 0)	0.030	(0, 90)
36	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
37	0.027	(0, 0)	0.027	(90, 0)	0.023	(0, 90)
38	0.033	(0, 0)	0.033	(90, 0)	0.029	(0, 90)
39	0.033	(0, 0)	0.033	(90, 0)	0.030	(0, 90)
4	0.039	(155, 7)	0.039	(64, 0)	0.036	(331, 83)
40	0.028	(0, 0)	0.028	(90, 0)	0.023	(0, 90)
41	0.027	(0, 0)	0.026	(90, 0)	0.022	(0, 90)
42	0.027	(0, 0)	0.027	(90, 0)	0.023	(0, 90)
43	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
44	0.029	(0, 0)	0.029	(90, 0)	0.025	(0, 90)
45	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
46	0.029	(0, 0)	0.029	(90, 0)	0.025	(0, 90)
47	0.028	(0, 0)	0.028	(90, 0)	0.024	(0, 90)
48	0.028	(0, 0)	0.028	(90, 0)	0.024	(0, 90)
49	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
5	0.038	(0, 0)	0.038	(90, 0)	0.035	(0, 90)
50	0.028	(0, 0)	0.028	(90, 0)	0.023	(0, 90)
51	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
6	0.034	(0, 0)	0.034	(90, 0)	0.030	(0, 90)
7	0.031	(0, 0)	0.031	(90, 0)	0.026	(0, 90)
8	0.030	(0, 0)	0.030	(90, 0)	0.026	(0, 90)
9	0.041	(0, 0)	0.041	(90, 0)	0.038	(0, 90)
A 51 RESET	0.056	(0, 0)	0.056	(90, 0)	0.000	(0, 90)
D 361 RESET	0.029	(0, 0)	0.029	(90, 0)	0.024	(0, 90)
Q 63	0.061	(0, 0)	0.061	(90, 0)	0.000	(0, 90)

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ,VANG)	MED-SEMI (AZ,VANG)	MIN-SEMI (AZ,VANG)	DISTANCE	PPM
1	102	0.009 (0, 90)	0.009 (0, 0)	0.008 (90, 0)	14307.113	0.60
1	103	0.006 (0, 90)	0.006 (0, 0)	0.006 (90, 0)	3588.500	1.70
10	101	0.018 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	18098.652	0.97
10	102	0.017 (0, 90)	0.017 (0, 0)	0.017 (90, 0)	12044.309	1.44
101	102	0.004 (0, 90)	0.004 (0, 0)	0.004 (90, 0)	7027.339	0.60
101	103	0.007 (0, 90)	0.007 (0, 0)	0.007 (90, 0)	18227.719	0.39
101	104	0.003 (0, 90)	0.003 (0, 0)	0.003 (90, 0)	3464.033	0.79
101	11	0.008 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	10048.183	0.83
101	12	0.008 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	10960.283	0.71
101	13	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	15104.377	1.00
101	14	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	8521.052	1.07
101	15	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	12675.347	1.42
101	16	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	12986.075	1.26
101	17	0.012 (0, 90)	0.012 (0, 0)	0.012 (90, 0)	9705.111	1.23
101	18	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	10298.524	1.44
101	19	0.022 (0, 90)	0.021 (0, 0)	0.021 (90, 0)	15351.433	1.41
101	20	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	12574.158	1.45
101	21	0.013 (0, 90)	0.013 (0, 0)	0.013 (90, 0)	8595.304	1.52
101	41	0.003 (0, 90)	0.003 (0, 0)	0.003 (90, 0)	3094.160	0.99
101	42	0.007 (0, 0)	0.007 (0, 90)	0.006 (90, 0)	6625.929	1.00
101	43	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	11284.375	1.31
101	44	0.012 (0, 90)	0.012 (0, 0)	0.012 (90, 0)	9984.623	1.21
101	45	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	13395.107	1.10
101	46	0.012 (0, 90)	0.012 (90, 0)	0.012 (0, 0)	11728.135	1.04
101	47	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	9664.427	0.97
101	48	0.010 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	9997.411	1.03

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ,VANG)	MED-SEMI (AZ,VANG)	MIN-SEMI (AZ,VANG)	DISTANCE	PPM
101	49	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	12666.281	1.09
101	50	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	7236.269	1.25
101	51	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	11012.419	1.29
101	8	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	16299.244	0.88
101	9	0.031 (0, 90)	0.031 (0, 0)	0.031 (90, 0)	29320.473	1.07
101	D 50	0.026 (0, 0)	0.026 (90, 0)	0.022 (0, 90)	28858.650	0.91
101	MUNDT	0.026 (0, 0)	0.026 (90, 0)	0.022 (0, 90)	65246.476	0.40
101	Q 63	0.055 (0, 0)	0.055 (90, 0)	0.022 (0, 90)	49322.586	1.12
102	103	0.006 (0, 90)	0.006 (0, 0)	0.006 (90, 0)	11568.125	0.56
102	11	0.008 (0, 90)	0.008 (0, 0)	0.008 (90, 0)	4843.415	1.58
102	12	0.007 (0, 90)	0.007 (0, 0)	0.007 (90, 0)	4128.283	1.66
102	13	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	10195.841	1.45
102	14	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	6037.105	1.46
102	15	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	18013.339	1.01
102	16	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	13678.395	1.19
102	17	0.012 (0, 90)	0.012 (0, 0)	0.012 (90, 0)	9620.954	1.24
102	18	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	15536.571	0.97
102	19	0.022 (0, 90)	0.022 (0, 0)	0.022 (90, 0)	21320.922	1.02
102	2	0.016 (0, 90)	0.016 (0, 0)	0.016 (90, 0)	21100.511	0.76
102	20	0.018 (0, 90)	0.018 (0, 0)	0.018 (90, 0)	19326.706	0.95
102	21	0.013 (0, 90)	0.013 (0, 0)	0.013 (90, 0)	15620.445	0.86
102	3	0.034 (0, 90)	0.034 (0, 0)	0.034 (90, 0)	34868.764	0.96
102	30	0.010 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	16362.706	0.61
102	31	0.019 (0, 90)	0.019 (0, 0)	0.019 (90, 0)	23392.737	0.81
102	32	0.030 (0, 90)	0.030 (0, 0)	0.030 (90, 0)	31805.431	0.95
102	33	0.028 (0, 90)	0.028 (0, 0)	0.028 (90, 0)	29520.529	0.96

3D Relative Confidence Regions (95.000 percent):

FROM	TO	MAJ-SEMI (AZ,VANG)	MED-SEMI (AZ,VANG)	MIN-SEMI (AZ,VANG)	DISTANCE	PPM
102	34	0.029	0.029	0.029	26118.702	1.11
		(180, 67)	(0, 23)	(90, 0)		
102	35	0.021	0.021	0.021	18312.446	1.14
		(0, 90)	(0, 0)	(90, 0)		
102	36	0.015	0.014	0.014	18446.445	0.79
		(0, 90)	(0, 0)	(90, 0)		
102	4	0.030	0.029	0.029	29937.231	0.99
		(151, 58)	(0, 29)	(263, 13)		
102	5	0.028	0.028	0.028	27084.293	1.02
		(0, 90)	(0, 0)	(90, 0)		
102	6	0.021	0.021	0.021	19615.544	1.09
		(0, 90)	(0, 0)	(90, 0)		
102	7	0.016	0.016	0.016	19399.058	0.82
		(0, 90)	(0, 0)	(90, 0)		
102	8	0.014	0.014	0.014	9307.561	1.51
		(0, 90)	(0, 0)	(90, 0)		
102	9	0.031	0.031	0.031	23301.235	1.35
		(0, 90)	(0, 0)	(90, 0)		
102	A 51 RESET	0.049	0.049	0.021	36148.353	1.36
		(0, 0)	(90, 0)	(0, 90)		
102	D 361 RESET	0.012	0.012	0.011	6889.044	1.68
		(0, 90)	(0, 0)	(90, 0)		
102	D 50	0.026	0.026	0.021	21831.315	1.20
		(0, 0)	(90, 0)	(0, 90)		
102	H 8	0.026	0.026	0.021	61114.645	0.43
		(0, 0)	(90, 0)	(0, 90)		
102	MUNDT	0.026	0.026	0.021	69674.918	0.38
		(0, 0)	(90, 0)	(0, 90)		
102	Q 63	0.055	0.055	0.021	42300.964	1.30
		(0, 0)	(90, 0)	(0, 90)		
103	104	0.007	0.007	0.007	21412.389	0.35
		(0, 90)	(0, 0)	(90, 0)		
103	2	0.015	0.015	0.015	9632.462	1.57
		(0, 90)	(0, 0)	(90, 0)		
103	3	0.033	0.033	0.033	23324.823	1.43
		(0, 90)	(0, 0)	(90, 0)		
103	30	0.008	0.008	0.008	4801.468	1.67
		(0, 90)	(0, 0)	(90, 0)		
103	31	0.018	0.018	0.018	11897.535	1.54
		(0, 90)	(0, 0)	(90, 0)		
103	32	0.030	0.030	0.030	20456.496	1.46
		(0, 90)	(0, 0)	(90, 0)		
103	33	0.028	0.028	0.028	19440.544	1.45
		(0, 90)	(90, 0)	(0, 0)		
103	34	0.029	0.029	0.029	21372.837	1.36
		(180, 67)	(0, 23)	(90, 0)		
103	35	0.021	0.021	0.021	15542.477	1.34
		(0, 90)	(0, 0)	(90, 0)		
103	36	0.014	0.013	0.013	8554.971	1.59
		(0, 90)	(0, 0)	(90, 0)		
103	37	0.006	0.006	0.005	3152.476	1.90
		(0, 90)	(0, 0)	(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
103	38	0.019 (0, 90)	0.019 (0, 0)	0.019 (90, 0)	11074.245	1.74
103	39	0.020 (0, 90)	0.020 (0, 0)	0.020 (90, 0)	11494.320	1.73
103	4	0.029 (151, 58)	0.028 (0, 29)	0.028 (263, 13)	19638.568	1.49
103	40	0.007 (0, 90)	0.007 (0, 0)	0.007 (90, 0)	3766.514	1.87
103	5	0.027 (0, 90)	0.027 (0, 0)	0.027 (90, 0)	19534.915	1.40
103	6	0.021 (0, 90)	0.021 (0, 0)	0.021 (90, 0)	15469.350	1.37
103	7	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	9678.954	1.55
103	A 51 RESET	0.049 (0, 0)	0.049 (90, 0)	0.022 (0, 90)	47309.461	1.04
103	D 361 RESET	0.013 (0, 45)	0.013 (180, 45)	0.012 (90, 0)	18112.637	0.73
103	H 8	0.027 (0, 0)	0.027 (90, 0)	0.022 (0, 90)	60494.249	0.44
104	41	0.002 (0, 90)	0.002 (0, 0)	0.001 (90, 0)	377.299	5.00
104	42	0.006 (0, 0)	0.006 (0, 90)	0.006 (90, 0)	4287.236	1.50
104	43	0.015 (0, 90)	0.015 (0, 0)	0.015 (90, 0)	13112.773	1.13
104	44	0.012 (0, 90)	0.012 (0, 0)	0.012 (90, 0)	9481.031	1.27
104	45	0.015 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	10835.507	1.35
104	46	0.012 (0, 90)	0.012 (90, 0)	0.012 (0, 0)	8734.868	1.39
104	47	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	6200.686	1.48
104	48	0.010 (0, 90)	0.010 (0, 0)	0.010 (90, 0)	7133.708	1.43
104	49	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	10226.322	1.34
104	50	0.009 (0, 90)	0.009 (0, 0)	0.009 (90, 0)	7145.490	1.26
104	51	0.014 (0, 90)	0.014 (0, 0)	0.014 (90, 0)	12200.601	1.16

09:10:04, Mon Jul 26, 2010

Project Number: 1100327
Project Name: USGS-NORTH PLATTE, NE

Horizontal Datum: NAD83/07
Horizontal Coordinates: UTM13, meters
Vertical Datum: NAVD88

Station	Easting	Northing	Elevation
1	598202.137	4650552.811	1262.619
2	590105.372	4652056.233	1248.183
3	580049.530	4661500.661	1269.680
4	578896.849	4650074.813	1230.981
5	579713.498	4640918.147	1234.975
6	587352.466	4636026.594	1260.691
7	588644.540	4646081.136	1217.024
8	598446.489	4643318.798	1203.060
9	584303.458	4632753.832	1275.978
10	595312.207	4635226.061	1275.289
11	603361.487	4635581.640	1200.210
12	603645.089	4641817.174	1216.084
13	604616.322	4649038.364	1251.771
14	609601.846	4644369.568	1228.786
15	624259.211	4643144.644	1263.079
16	606987.975	4625397.436	1226.873
17	606911.978	4629452.668	1271.748
18	616329.297	4626866.046	1206.872
19	621527.282	4623737.884	1185.059
20	623027.648	4628707.774	1165.976
21	621336.009	4633571.079	1188.217
30	594989.272	4650461.967	1250.586
31	588426.273	4653626.843	1262.369
32	580417.863	4656920.156	1261.478
33	578960.887	4649065.974	1228.690
34	581046.742	4634340.811	1263.643
35	588993.669	4634512.082	1279.193
36	589754.658	4646283.872	1216.238
37	599114.626	4643929.187	1203.511
38	598527.648	4635901.014	1261.219
39	609473.524	4644385.738	1227.825
40	601431.046	4649024.144	1254.978
41	616405.759	4636301.988	1204.016
42	618090.152	4632100.568	1173.371
43	607088.276	4627329.285	1248.120
44	614963.837	4626869.348	1200.780
45	622623.761	4627067.573	1167.394
46	622984.581	4630050.929	1168.229
47	622897.008	4635301.175	1208.835
48	622780.540	4639996.599	1232.696
49	624267.710	4643112.268	1262.738
50	616329.004	4643303.757	1248.737
51	612808.106	4647711.427	1260.830
101	613340.885	4636716.887	1191.621
102	606721.434	4639067.086	1193.476
103	598278.194	4646967.124	1215.527
104	616760.693	4636174.490	1202.967
A 51 RESET	639306.716	4623450.507	1144.620
D 361 RESET	613185.495	4636693.573	1192.743
D 50	586152.852	4646353.380	1223.284
H 8	558845.145	4601134.994	1545.355
MUNDT	667573.079	4672953.365	1258.813
Q 63	567529.958	4654930.235	1244.646

Project Number: 1100327
Project Name: USGS-NORTH PLATTE, NE

Horizontal Datum: NAD83/07
Horizontal Coordinates: UTM13, meters
Vertical Datum: NAVD88

Station	Easting	Northing	Elevation
1	598202.137	4650552.811	1262.619
2	590105.372	4652056.233	1248.183
3	580049.530	4661500.661	1269.680
4	578896.849	4650074.813	1230.981
5	579713.498	4640918.147	1234.975
6	587352.466	4636026.594	1260.691
7	588644.540	4646081.136	1217.024
8	598446.489	4643318.798	1203.060
9	584303.458	4632753.832	1275.978
10	595312.207	4635226.061	1275.289
11	603361.487	4635581.640	1200.210
12	603645.089	4641817.174	1216.084
13	604616.322	4649038.364	1251.771
14	609601.846	4644369.568	1228.786
15	624259.211	4643144.644	1263.079
16	606987.975	4625397.436	1226.873
17	606911.978	4629452.668	1271.748
18	616329.297	4626866.046	1206.872
19	621527.282	4623737.884	1185.059
20	623027.648	4628707.774	1165.976
21	621336.009	4633571.079	1188.217

Fugro Horizons, Inc.

ALS Flight Log

Lift Begin			Lift End			Flt	Flt	Hobbs	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	Actvity
KRAP	19:32		KBFF	20:29		0:57	1.0		Transit
KBFF	21:03		KBFF	1:48		4:45	4.8		Production

Horizons Job #	Project Name	Operator	Unit	IMU	PiA	Min Range'	Max Range'	Ground Temp°C		Shipping Track	Base 1 ID	Base 2 ID
H10-0150	NEBRASKA	T.J. Smith	036	76014357	2	5571	7244	20.0	16.0			

Flight Date	GPS Day	Lift	System	Pilot	Sun°	Solar Times (UTC)	Laser Power	Pulse Rate	Flying Temp °C		Data Logger	Ant Ht	Ant Ht
27-Apr-10	10-117	1	ALS50-II	Mike Beason			63%	99,500	2.0	2.0	LIDAR_13	1.800m	

Mission ID (DaySensorJobLift)	FMS	Aircraft	Airport ID	UTC	FOV	Altitude	Speed	Scan Hz	AR	SW1	SW2	mi / Wpt	Altm Setting		Download Drive	Rec ID	Rec ID
1173610015001	CCNS 1	N2636P	KBFF	-6	30	6,800	150	43.6		15	3	0.708	29.80	29.69		ZX-002	

Area	Flight #		Wpt		Distance		UTC		Flt	Altitude	Speed	Scan	Comments and Conditions	SVs	PDOP
	HZN	Client's	From	To	Begin	End	Start	End	Dir	(feet)	(knots)	Rate			
LIDAR	56		27	1	18.4	0	21:26:48	21:33:00	196	10,700	157	43.6	PROJECT CROSS LINE	7	1.9
LIDAR	55		1	30	0	20.5	21:42:55	21:50:00	017	10,700	150	43.6	PROJECT CROSS LINE	7	3.1
LIDAR	1		6	1	3.5	0	21:56:13	21:57:00	289	11,000	148	43.6	PDOP SPIKE(S) OVER 3.5 WHILE IN TURN FOR NEXT LINE	7	3.1
LIDAR	2		1	7	0	4.2	22:02:06	22:03:00	108	11,000	156	43.6	PDOP SPIKE(S) OVER 3.5 WHILE IN TURN FOR NEXT LINE	7	3.0
LIDAR	3		7	1	4.2	0	22:08:56	22:10:00	289	10,950	150	43.6	PDOP OVER 3.5 WHILE ON LINE & TURN FOR NEXT LINE	7	4.0
LIDAR	4		1	7	0	4.2	22:13:59	22:15:00	108	10,950	156	43.6		7	2.6
LIDAR	5		8	1	5	0	22:20:52	22:22:00	289	10,950	156	43.6	CLEAR BELOW w/ MODERATE HAZE	8	1.8
LIDAR	6		1	11	0	7.1	22:26:11	22:29:00	108	10,950	156	43.6	LOW HUMIDITY / GOOD VISABILITY	9	1.8
LIDAR	7		1	12	0	7.8	22:34:46	22:37:00	108	10,950	154	43.6	VERY STRONG WEST WIND w/ MOUNTAIN WAVE	9	1.5
LIDAR	9		18	1	12	0	22:42:55	22:47:00	289	10,900	153	43.6	SPEED "UP & DOWN"	9	1.6
LIDAR	8		15	1	9.9	0	22:50:36	22:54:00	289	10,900	156	43.6	A ROUGH & BUMPY RIDE	9	1.7
LIDAR	10		1	44	0	30.4	22:57:41	23:09:00	108	10,900	146-161	43.6	CLOUD MOVING IN FROM THE WEST	9	1.7
LIDAR	11		44	1	30.4	0	23:15:42	23:27:00	289	10,850	140-158	43.6	OFF TRACK w/p 11-6	9	1.8
LIDAR	11		7	12	4.2	7.8	23:32:55	23:33:00	108	10,850	153	43.6	CALIBRATION LINE	9	2.6
LIDAR	11		12	6	7.8	3.5	23:39:33	23:41:00	289	10,850	150	43.6	R/F FOR OFF TRACK	10	1.5
LIDAR	12		1	43	0	29.7	23:46:09	23:58:00	108	10,850	153	43.6		10	1.5
LIDAR	13		43	1	29.7	0	0:02:42	0:14:00	289	10,850	152	43.6		10	1.5
LIDAR	14		1	43	0	29.7	0:18:37	0:30:00	108	10,800	152	43.6		10	1.5
LIDAR	15		44	1	30.4	0	0:35:22	0:47:00	289	10,800	152	43.6		9	2.0
LIDAR	16		1	43	0	29.7	0:51:30	1:03:00	108	10,800	153	43.6		11	1.5
LIDAR	17		43	1	29.7	0	1:08:31	1:20:00	289	10,750	151	43.6		11	1.6
LIDAR	18		1	43	0	29.7	1:24:00	1:35:00	108	10,750	152	43.6		10	2.0

LINE ID	LINE NUMBER	ON/OFF	ATTENUATOR	SET FOV	ACTUAL FOV	SET SCAN RATE	PULSERATE	LASER CURRENT	LASER POWER	NOMINAL LASER POWER	MIN RANGE	MAX RANGE	NADIR RANGE	WEEK NUM
100427_212648	56	ON	OPEN	30	32.836	43.6	99500	14	3.82	3.08	1698	2568	6379	1581
100427_212648	56	OFF	OPEN	30	33.27	43.6	99500	14	3.9	3.08	1698	2568	6450	1581
100427_214255	55	ON	OPEN	30	31.842	43.6	99500	14	3.92	3.08	1698	2568	6534	1581
100427_214255	55	OFF	OPEN	30	31.739	43.6	99500	14	3.97	3.08	1698	2568	6592	1581
100427_215613	1	ON	OPEN	30	31.483	43.6	99500	14	3.97	3.08	1698	2568	6773	1581
100427_215613	1	OFF	OPEN	30	31.512	43.6	99500	14	3.99	3.08	1698	2568	6873	1581
100427_220206	2	ON	OPEN	30	31.736	43.6	99500	14	4.02	3.08	1698	2568	6915	1581
100427_220206	2	OFF	OPEN	30	32.299	43.6	99500	14	4	3.08	1698	2568	6822	1581
100427_220856	3	ON	OPEN	30	31.558	43.6	99500	14	4.01	3.08	1698	2568	6745	1581
100427_220856	3	OFF	OPEN	30	31.248	43.6	99500	14	4.01	3.08	1698	2568	6897	1581
100427_221359	4	ON	OPEN	30	31.341	43.6	99500	14	3.99	3.08	1698	2568	6837	1581
100427_221359	4	OFF	OPEN	30	31.568	43.6	99500	14	3.99	3.08	1698	2568	6751	1581
100427_222052	5	ON	OPEN	30	31.44	43.6	99500	14	4.01	3.08	1698	2568	6813	1581
100427_222052	5	OFF	OPEN	30	31.243	43.6	99500	14	4	3.08	1698	2568	6812	1581
100427_222611	6	ON	OPEN	30	32.439	43.6	99500	14	3.98	3.08	1698	2568	6851	1581
100427_222611	6	OFF	OPEN	30	31.138	43.6	99500	14	3.98	3.08	1698	2568	6732	1581
100427_223446	7	ON	OPEN	30	31.461	43.6	99500	14	3.99	3.08	1698	2568	6853	1581
100427_223446	7	OFF	OPEN	30	31.427	43.6	99500	14	3.98	3.08	1698	2568	6913	1581
100427_224255	9	ON	OPEN	30	31.441	43.6	99500	14	4.01	3.08	1698	2568	6890	1581
100427_224255	9	OFF	OPEN	30	31.499	43.6	99500	14	3.99	3.08	1698	2568	6834	1581
100427_225036	8	ON	OPEN	30	33.304	43.6	99500	14	3.95	3.08	1698	2568	6621	1581
100427_225036	8	OFF	OPEN	30	31.583	43.6	99500	14	3.97	3.08	1698	2568	6742	1581
100427_225741	10	ON	OPEN	30	32.51	43.6	99500	14	3.97	3.08	1698	2568	6802	1581
100427_225741	10	OFF	OPEN	30	31.176	43.6	99500	14	3.98	3.08	1698	2568	6934	1581
100427_231542	11	ON	OPEN	30	31.131	43.6	99500	14	3.99	3.08	1698	2568	6913	1581
100427_231542	11	OFF	OPEN	30	31.335	43.6	99500	14	3.99	3.08	1698	2568	6749	1581
100427_233225	11	ON	OPEN	30	32.093	43.6	99500	14	3.96	3.08	1698	2568	6786	1581
100427_233225	11	OFF	OPEN	30	31.395	43.6	99500	14	3.99	3.08	1698	2568	6689	1581
100427_233933	11	ON	OPEN	30	33.654	43.6	99500	14	3.96	3.08	1698	2568	6736	1581
100427_233933	11	OFF	OPEN	30	31.501	43.6	99500	14	3.97	3.08	1698	2568	6842	1581
100427_234609	12	ON	OPEN	30	31.78	43.6	99500	14	3.96	3.08	1698	2568	6829	1581
100427_234609	12	OFF	OPEN	30	31.178	43.6	99500	14	3.95	3.08	1698	2568	6949	1581
100428_000242	13	ON	OPEN	30	32.7	43.6	99500	14	3.98	3.08	1698	2568	6885	1581
100428_000242	13	OFF	OPEN	30	31.23	43.6	99500	14	3.98	3.08	1698	2568	6789	1581
100428_001837	14	ON	OPEN	30	31.476	43.6	99500	14	3.97	3.08	1698	2568	6715	1581
100428_001837	14	OFF	OPEN	30	31.436	43.6	99500	14	3.99	3.08	1698	2568	6843	1581
100428_003522	15	ON	OPEN	30	31.341	43.6	99500	14	3.96	3.08	1698	2568	6739	1581
100428_003522	15	OFF	OPEN	30	31.845	43.6	99500	14	3.97	3.08	1698	2568	6736	1581
100428_005130	16	ON	OPEN	30	31.442	43.6	99500	14	3.98	3.08	1698	2568	6784	1581
100428_005130	16	OFF	OPEN	30	31.733	43.6	99500	14	3.97	3.08	1698	2568	6827	1581
100428_010831	17	ON	OPEN	30	31.291	43.6	99500	14	3.98	3.08	1698	2568	6799	1581
100428_010831	17	OFF	OPEN	30	31.37	43.6	99500	14	3.97	3.08	1698	2568	6739	1581
100428_012400	18	ON	OPEN	30	34.308	43.6	99500	14	3.96	3.08	1698	2568	6766	1581
100428_012400	18	OFF	OPEN	30	31.146	43.6	99500	14	3.97	3.08	1698	2568	6860	1581

SECONDS OF WEEK	LAT	LON	ALT	HEADING	SPEED(knots)	POS SOLUTION STATUS	NUM SV	HDOP	VDOP	ROLL COMP	ROLL SF	ROLL SENSE	LASER DIODE TEMP	LASER HEAT SINK TEMP
250015	42.000996	-103.588284	3260.415	204.092	155.478	2	7	1.355	1.369	YES	0	UNKNOWN	-99	-99
250440	41.719591	-103.697781	3267.234	204.705	146.908	2	7	1.37	1.416	YES	0	UNKNOWN	-99	-99
250981	41.781815	-104.051832	3265.158	8.379	151.602	2	7	1.603	2.674	YES	0	UNKNOWN	-99	-99
251446	42.091122	-103.928676	3257.404	4.931	152.572	2	7	1.672	2.459	YES	0	UNKNOWN	-99	-99
251779	42.127052	-103.974049	3355.624	286.524	152.877	2	7	1.694	2.582	YES	0	UNKNOWN	-99	-99
251858	42.144809	-104.045046	3350.969	286.249	145.805	2	7	1.691	2.59	YES	0	UNKNOWN	-99	-99
252132	42.136758	-104.044704	3346.43	110.719	143.666	2	7	1.657	2.574	YES	0	UNKNOWN	-99	-99
252231	42.115421	-103.958677	3356.723	111.174	155.923	2	7	1.633	2.542	YES	0	UNKNOWN	-99	-99
252544	42.109776	-103.969067	3346.447	286.212	151.398	2	7	1.67	3.67	YES	0	UNKNOWN	-99	-99
252642	42.131555	-104.057104	3346.083	287.603	146.57	2	7	1.624	3.593	YES	0	UNKNOWN	-99	-99
252846	42.122658	-104.053018	3327.734	110.736	148.127	2	7	1.438	2.221	YES	0	UNKNOWN	-99	-99
252952	42.099317	-103.959273	3345.968	108.74	147.413	2	7	1.42	2.185	YES	0	UNKNOWN	-99	-99
253263	42.092091	-103.96262	3338.307	285.065	143.417	2	8	1.33	2.009	YES	0	UNKNOWN	-99	-99
253374	42.116789	-104.061434	3335.444	286.772	148.538	2	9	0.898	1.064	YES	0	UNKNOWN	-99	-99
253577	42.10856	-104.061219	3345.126	111.715	152.886	2	9	1.07	1.408	YES	0	UNKNOWN	-99	-99
253753	42.069943	-103.905426	3330.645	112.22	149.937	2	9	0.893	1.088	YES	0	UNKNOWN	-99	-99
254092	41.994664	-103.606774	3336.902	114.024	144.666	2	9	0.923	1.221	YES	0	UNKNOWN	-99	-99
254272	41.954203	-103.447332	3342.486	110.691	159.352	2	9	0.921	1.25	YES	0	UNKNOWN	-99	-99
254585	41.948975	-103.457063	3316.921	286.938	150.056	2	9	0.921	1.3	YES	0	UNKNOWN	-99	-99
254855	42.009889	-103.699737	3311.44	286.046	150.975	2	9	0.925	1.346	YES	0	UNKNOWN	-99	-99
255042	42.051952	-103.865703	3312.265	287.802	149.511	2	9	0.928	1.373	YES	0	UNKNOWN	-99	-99
255274	42.103126	-104.07084	3313.548	286.95	149.347	2	9	0.933	1.406	YES	0	UNKNOWN	-99	-99
255471	42.093146	-104.062654	3316.522	111.172	158.699	2	9	0.936	1.429	YES	0	UNKNOWN	-99	-99
256155	41.939515	-103.451272	3323.809	109.96	152.163	2	9	0.948	1.486	YES	0	UNKNOWN	-99	-99
256548	41.933213	-103.457624	3304.919	288.442	147.829	2	9	0.959	1.491	YES	0	UNKNOWN	-99	-99
257247	42.089502	-104.078494	3312.798	285.752	152.667	2	9	1.375	2.463	YES	0	UNKNOWN	-99	-99
257551	42.064571	-103.978901	3312.348	113.083	149.084	2	9	1.354	2.196	YES	0	UNKNOWN	-99	-99
257631	42.046857	-103.907767	3316.256	111.504	150.472	2	9	1.353	2.198	YES	0	UNKNOWN	-99	-99
257977	42.047625	-103.911118	3304.108	287.409	149.905	2	10	0.892	1.187	YES	0	UNKNOWN	-99	-99
258077	42.069335	-103.998697	3312.072	285.302	152.172	2	10	0.893	1.195	YES	0	UNKNOWN	-99	-99
258376	42.078472	-104.065888	3312.169	112.065	142.107	2	10	0.896	1.211	YES	0	UNKNOWN	-99	-99
259081	41.923748	-103.451364	3314.147	108.1	151.887	2	9	0.938	1.315	YES	0	UNKNOWN	-99	-99
259370	41.918135	-103.460632	3309.37	289.33	145.937	2	10	0.896	1.233	YES	0	UNKNOWN	-99	-99
260060	42.071781	-104.071172	3302.892	284.281	152.83	2	10	0.888	1.255	YES	0	UNKNOWN	-99	-99
260342	42.05792	-104.04784	3281.882	114.117	141.733	2	10	0.884	1.254	YES	0	UNKNOWN	-99	-99
261015	41.908927	-103.456529	3295.903	112.305	153.772	2	10	0.875	1.229	YES	0	UNKNOWN	-99	-99
261332	41.903861	-103.466452	3295.263	285.023	145.277	2	9	1.149	1.633	YES	0	UNKNOWN	-99	-99
262025	42.055719	-104.071164	3287.973	281.479	148.696	2	11	0.84	1.222	YES	0	UNKNOWN	-99	-99
262298	42.046156	-104.064477	3290.659	115.754	150.237	2	11	0.844	1.255	YES	0	UNKNOWN	-99	-99
262997	41.893648	-103.459716	3295.71	114.42	150.088	2	11	0.857	1.324	YES	0	UNKNOWN	-99	-99
263320	41.887706	-103.467332	3267.21	284.741	142.442	2	11	0.857	1.339	YES	0	UNKNOWN	-99	-99
264011	42.03982	-104.070751	3278.428	283.474	145.977	2	11	0.844	1.331	YES	0	UNKNOWN	-99	-99
264247	42.030384	-104.065004	3284.357	113.501	150.788	2	11	0.838	1.314	YES	0	UNKNOWN	-99	-99
264943	41.878662	-103.462678	3277.968	114.889	140.777	2	10	0.9	1.695	YES	0	UNKNOWN	-99	-99

LASER HEAD TEMP	% RETURN 1	% RETURN 2	% RETURN 3	INTENSITY	AGC	MULTI MODE	FIXED/AUTO GAIN	GAIN	SW1	SW2	LASER % POWER	LASER % CURRENT	LASER PW	IPAS LOGGING	MPiA
25.4	100	0	0	110	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
27.7	100	2	0	111	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
30.2	100	0	0	106	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
32.2	100	0	0	105	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
33.6	100	0	0	105	149	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
33.8	100	0	0	110	151	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.7	100	1.6	0.4	105	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.1	100	0	0	107	150	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.8	100	0	0	105	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36	99.6	0	0	107	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36.4	98.4	0.4	0	108	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36.7	100	0	0	106	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
37.5	100	0	0	113	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
37.5	100	0	0	105	150	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
38.1	100	0.4	0	107	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
38.4	100	0	0	110	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
38.7	70	3.2	1.2	107	162	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.2	100	0	0	106	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.6	100	0	0	107	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.8	97.2	0.4	0	104	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.8	100	0	0	105	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.1	100	0	0	108	138	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.1	97.6	0	0	112	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.4	100	0.4	0	114	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.8	100	0.8	0	106	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.9	99.2	0	0	107	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.9	98.8	0	0	114	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.8	100	0	0	111	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41	100	0	0	112	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.9	99.6	0.8	0.4	107	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41	100	0	0	108	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41.1	100	1.2	0	109	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41.2	100	0	0	107	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41	100	0	0	112	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41.1	100	0	0	113	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.5	99.6	0.4	0	105	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.6	100	0	0	105	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.4	100	0	0	115	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.4	100	0	0	111	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.2	100	0	0	100	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.1	99.6	0	0	103	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.9	100	0	0	106	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40	100	0	0	110	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.8	100	0	0	102	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB

Fugro Horizons, Inc.

ALS Flight Log

Lift Begin			Lift End			Flt	Flt	Hobbs	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	Actvity
KBFF	13:06		KBFF	17:38		4:32	4.6		Production

Horizons Job #	Project Name	Operator	Unit	IMU	PiA	Min Range'	Max Range'	Ground Temp°C		Shipping Track	Base 1 ID	Base 2 ID
H10-0150	NEBRASKA	T.J. Smith	036	76014357	2	5571	7244	7.0	21.0			

Flight Date	GPS Day	Lift	System	Pilot	Sun°	Solar Times (UTC)	Laser Power	Pulse Rate	Flying Temp °C		Data Logger	Ant Ht	Ant Ht
28-Apr-10	10-118	2	ALS50-II	Mike Beason			63%	99,500	5.0	5.0	LIDAR_12		

Mission ID (DaySensorJobLift)	FMS	Aircraft	Airport ID	UTC	FOV	Altitude	Speed	Scan Hz	AR	SW1	SW2	mi / Wpt	Altm Setting		Download Drive	Rec ID	Rec ID
1183610015002	CCNS 1	N2636P	KBFF	-6	30	6,800	150	43.6		15	3	0.708	29.45	29.34	WP160-19		

Area	Flight #		Wpt		Distance		UTC		Flt	Altitude	Speed	Scan	Comments and Conditions	SVs	PDOP
	HZN	Client's	From	To	Begin	End	Start	End	Dir	(feet)	(knots)	Rate			
LIDAR	19		43	1	29.7	0	13:34:25	13:46:00	289	10,750	152	43.6		10	1.6
LIDAR	8		3	11	1.4	7.1	13:57:39	13:59:00	108	10,900	148	43.6	R/F FOR INTENSITY GAP (BANDING) ON LIFT 1	11	1.5
LIDAR	1		6	1	3.5	0	14:03:55	14:05:00	289	11,000	151	43.6	R/F FOR HIGH PDOP ON LIFT 1	12	1.3
LIDAR	2		1	7	0	4.2	14:08:57	14:10:00	108	11,000	145-178	43.6	R/F FOR HIGH PDOP ON LIFT 1	12	1.4
LIDAR	3		7	1	4.2	0	14:16:15	14:17:00	289	10,950	148	43.6	R/F FOR HIGH PDOP ON LIFT 1	12	1.3
LIDAR	4		1	7	0	4.2	14:22:03	14:23:00	108	10,950	153	43.6	R/F FOR HIGH PDOP ON LIFT 1	12	1.3
LIDAR	55		23	10	15.6	6.4	14:30:07	14:33:00	197	10,700	157	43.6	CCNS - ALT. ONLY WORKING "PART TIME" ON ALL LINES	12	1.3
LIDAR	20		1	42	0	29	14:41:40	14:53:00	108	10,750	152	43.6		12	1.4
LIDAR	21		42	1	29	0	14:58:28	15:10:00	289	10,700	151	43.6		12	1.5
LIDAR	22		1	43	0	29.7	15:13:52	15:26:00	108	10,700	139-157	43.6	VERY ROUGH RIDE ON EAST END OF ALL LINES	12	1.5
LIDAR	23		43	1	29.7	0	15:30:36	15:42:00	289	10,700	151	43.6		12	1.5
LIDAR	23		5	10	2.8	6.4	15:47:44	15:49:00	108	10,700	154	43.6	CALIBRATION LINE	12	1.7
LIDAR	24		1	43	0	29.7	15:57:24	16:08:00	108	10,650	133-158	43.6		12	1.7
LIDAR	25		42	1	29	0	16:14:13	16:25:00	289	10,600	152	43.6	GETTING BUMPY EVERYWHERE / WX. MOVING IN FROM WEST	12	1.8
LIDAR	26		1	42	0	29	16:29:55	16:41:00	109	10,600	144-159	43.6	CCNS - LOCKUP w/p 34-25 / TRACK OK	11	2.1
LIDAR	27		42	1	29	0	16:45:49	16:57:00	289	10,600	153	43.6		11	1.9
LIDAR	28		1	42	0	29	17:02:02	17:13:00	108	10,600	140-165	43.6	STRONG MOUNTAIN WAVE / UP & DOWN AND ALL AROUND !!!	11	1.6
LIDAR	56		20	11	13.5	7.1	17:23:20	17:25:00	196	10,700	154	43.6	CROSS LINE	12	1.4
													TOO %&#$%! ROUGH / END MISSION		

LINE ID	LINE NUMBER	ON/OFF	ATTENUATOR	SET FOV	ACTUAL FOV	SET SCAN RATE	PULSERATE	LASER CURRENT	LASER POWER	NOMINAL LASER POWER	MIN RANGE	MAX RANGE	NADIR RANGE	WEEK NUM
100428_133425	19	ON	OPEN	30	31.124	43.6	99500	14	3.91	3.08	1698	2568	6862	1581
100428_133425	19	OFF	OPEN	30	31.045	43.6	99500	14	3.89	3.08	1698	2568	6703	1581
100428_135739	8R	ON	OPEN	30	32.244	43.6	99500	14	3.94	3.08	1698	2568	6868	1581
100428_135739	8R	OFF	OPEN	30	31.079	43.6	99500	14	3.95	3.08	1698	2568	6657	1581
100428_140355	1R	ON	OPEN	30	31.02	43.6	99500	14	3.96	3.08	1698	2568	6792	1581
100428_140355	1R	OFF	OPEN	30	31.023	43.6	99500	14	3.97	3.08	1698	2568	6829	1581
100428_140857	2R	ON	OPEN	30	31.435	43.6	99500	14	3.97	3.08	1698	2568	6878	1581
100428_140857	2R	OFF	OPEN	30	32.192	43.6	99500	14	3.98	3.08	1698	2568	6739	1581
100428_141615	3R	ON	OPEN	30	31.26	43.6	99500	14	4.03	3.08	1698	2568	6667	1581
100428_141615	3R	OFF	OPEN	30	31.194	43.6	99500	14	4.04	3.08	1698	2568	6862	1581
100428_142203	4R	ON	OPEN	30	31.167	43.6	99500	14	4.06	3.08	1698	2568	6877	1581
100428_142203	4R	OFF	OPEN	30	32.085	43.6	99500	14	4.03	3.08	1698	2568	6599	1581
100428_143007	55	ON	OPEN	30	31.188	43.6	99500	14	4.04	3.08	1698	2568	6737	1581
100428_143007	55	OFF	OPEN	30	31.612	43.6	99500	14	4.03	3.08	1698	2568	6785	1581
100428_144140	20	ON	OPEN	30	33.054	43.6	99500	14	4.03	3.08	1698	2568	6820	1581
100428_144140	20	OFF	OPEN	30	31.304	43.6	99500	14	4.01	3.08	1698	2568	7021	1581
100428_145828	21	ON	OPEN	30	31.309	43.6	99500	14	4.01	3.08	1698	2568	6956	1581
100428_145828	21	OFF	OPEN	30	31.257	43.6	99500	14	4.01	3.08	1698	2568	6821	1581
100428_151352	22	ON	OPEN	30	31.37	43.6	99500	14	3.96	3.08	1698	2568	6836	1581
100428_151352	22	OFF	OPEN	30	31.314	43.6	99500	14	4.02	3.08	1698	2568	6937	1581
100428_153036	23	ON	OPEN	30	31.487	43.6	99500	14	3.98	3.08	1698	2568	7024	1581
100428_153036	23	OFF	OPEN	30	31.353	43.6	99500	14	3.98	3.08	1698	2568	6850	1581
100428_154744	23	ON	OPEN	30	31.555	43.6	99500	14	4	3.08	1698	2568	6786	1581
100428_154744	23	OFF	OPEN	30	32.388	43.6	99500	14	4.01	3.08	1698	2568	6872	1581
100428_155724	24	ON	OPEN	30	31.574	43.6	99500	14	3.98	3.08	1698	2568	6727	1581
100428_155724	24	OFF	OPEN	30	33.13	43.6	99500	14	3.97	3.08	1698	2568	6936	1581
100428_161413	25	ON	OPEN	30	32.118	43.6	99500	14	3.97	3.08	1698	2568	6869	1581
100428_161413	25	OFF	OPEN	30	31.683	43.6	99500	14	3.96	3.08	1698	2568	6691	1581
100428_162955	26	ON	OPEN	30	32.006	43.6	99500	14	3.98	3.08	1698	2568	6689	1581
100428_162955	26	OFF	OPEN	30	31.409	43.6	99500	14	3.97	3.08	1698	2568	6911	1581
100428_164549	27	ON	OPEN	30	31.801	43.6	99500	14	3.96	3.08	1698	2568	6937	1581
100428_164549	27	OFF	OPEN	30	32.182	43.6	99500	14	3.99	3.08	1698	2568	6659	1581
100428_170202	28	ON	OPEN	30	32.107	43.6	99500	14	3.99	3.08	1698	2568	6704	1581
100428_170202	28	OFF	OPEN	30	32.411	43.6	99500	14	3.98	3.08	1698	2568	6995	1581
100428_172320	56	ON	OPEN	30	31.578	43.6	99500	14	3.98	3.08	1698	2568	6790	1581
100428_172320	56	OFF	OPEN	30	32.051	43.6	99500	14	3.99	3.08	1698	2568	6975	1581

SECONDS OF WEEK	LAT	LON	ALT	HEADING	SPEED(knots)	POS SOLUTION STATUS	NUM SV	HDOP	VDOP	ROLL COMP	ROLL SF	ROLL SENSE	LASER DIODE TEMP	LASER HEAT SINK TEMP
308071	41.872311	-103.470035	3263.166	280.307	140.109	2	10	0.895	1.353	YES	0	UNKNOWN	-99	-99
308768	42.023813	-104.06992	3267.047	282.724	153.411	2	10	0.907	1.329	YES	0	UNKNOWN	-99	-99
309468	42.09341	-104.032365	3308.653	122.193	151.652	2	11	0.889	1.173	YES	0	UNKNOWN	-99	-99
309599	42.065464	-103.91935	3309.39	119.689	146.118	2	11	0.888	1.159	YES	0	UNKNOWN	-99	-99
309841	42.127563	-103.975973	3355.317	280.44	148.782	2	12	0.81	0.97	YES	0	UNKNOWN	-99	-99
309917	42.144511	-104.043789	3346.105	279.532	149.331	2	12	0.811	0.968	YES	0	UNKNOWN	-99	-99
310143	42.135779	-104.039394	3346.282	123.054	159.158	2	12	0.813	0.96	YES	0	UNKNOWN	-99	-99
310230	42.115819	-103.960654	3346.075	122.085	152.859	2	11	1.12	1.452	YES	0	UNKNOWN	-99	-99
310582	42.109901	-103.969604	3330.473	279.752	148.346	2	12	0.911	0.938	YES	0	UNKNOWN	-99	-99
310677	42.130349	-104.052127	3328.729	280.139	148.704	2	12	0.911	0.941	YES	0	UNKNOWN	-99	-99
310929	42.122292	-104.051268	3327.969	120.887	155.765	2	12	0.913	0.954	YES	0	UNKNOWN	-99	-99
311022	42.101616	-103.967848	3319.682	121.375	148.934	2	12	0.945	1.062	YES	0	UNKNOWN	-99	-99
311415	42.014318	-103.959488	3257.49	210.707	150.771	2	12	0.92	0.973	YES	0	UNKNOWN	-99	-99
311626	41.875523	-104.01473	3262.057	208.81	145.939	2	12	0.924	0.984	YES	0	UNKNOWN	-99	-99
312115	42.011557	-104.053331	3283.524	124.14	144.477	2	12	0.938	1.002	YES	0	UNKNOWN	-99	-99
312795	41.863441	-103.465957	3291.955	117.868	138.368	2	12	0.888	1.121	YES	0	UNKNOWN	-99	-99
313113	41.85737	-103.472631	3269.954	280.089	153.785	2	12	0.893	1.148	YES	0	UNKNOWN	-99	-99
313802	42.007257	-104.068984	3260.325	280.594	150.392	2	12	0.898	1.17	YES	0	UNKNOWN	-99	-99
314038	41.998309	-104.062485	3259.432	120.459	157.304	2	12	0.898	1.17	YES	0	UNKNOWN	-99	-99
314726	41.847327	-103.465143	3254.277	118.724	144.827	2	12	0.893	1.145	YES	0	UNKNOWN	-99	-99
315047	41.842907	-103.479452	3283.5	282.477	138.999	2	12	0.904	1.204	YES	0	UNKNOWN	-99	-99
315725	41.991968	-104.070843	3265.377	279.718	148.937	2	12	0.929	1.32	YES	0	UNKNOWN	-99	-99
316067	41.976177	-104.006669	3260.19	119.456	153.932	2	12	0.946	1.383	YES	0	UNKNOWN	-99	-99
316147	41.95877	-103.935943	3261.886	122.74	146.692	2	12	0.949	1.393	YES	0	UNKNOWN	-99	-99
316649	41.982795	-104.064842	3244.957	119.335	149.218	2	12	0.971	1.463	YES	0	UNKNOWN	-99	-99
317326	41.833545	-103.471369	3256.978	117.556	133.23	2	12	0.991	1.501	YES	0	UNKNOWN	-99	-99
317659	41.82736	-103.480758	3233.073	281.169	148.582	2	12	0.987	1.486	YES	0	UNKNOWN	-99	-99
318336	41.976054	-104.069867	3232.95	280.414	148.21	2	11	0.979	1.943	YES	0	UNKNOWN	-99	-99
318600	41.967108	-104.064446	3232.168	120.345	143.758	2	11	0.963	1.9	YES	0	UNKNOWN	-99	-99
319268	41.818487	-103.475712	3233.226	118.564	151.87	2	11	0.921	1.729	YES	0	UNKNOWN	-99	-99
319556	41.812764	-103.484376	3227.707	280.51	144.138	2	11	0.9	1.643	YES	0	UNKNOWN	-99	-99
320233	41.960213	-104.069624	3222.592	280.527	151.172	2	11	0.859	1.468	YES	0	UNKNOWN	-99	-99
320528	41.95083	-104.062964	3240.15	116.683	150.104	2	11	0.845	1.397	YES	0	UNKNOWN	-99	-99
321204	41.803839	-103.47875	3240.908	118.589	135.34	2	12	0.761	1.178	YES	0	UNKNOWN	-99	-99
321813	41.919944	-103.620165	3266.408	202.547	155.554	2	12	0.751	1.133	YES	0	UNKNOWN	-99	-99
321948	41.828646	-103.655321	3263.333	203.95	151.18	2	12	0.749	1.122	YES	0	UNKNOWN	-99	-99

LASER HEAD TEMP	% RETURN 1	% RETURN 2	% RETURN 3	INTENSITY	AGC	MULTI MODE	FIXED/AUTO GAIN	GAIN	SW1	SW2	LASER % POWER	LASER % CURRENT	LASER PW	IPAS LOGGING	MPiA
15.5	100	0	0	103	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
20.1	100	1.6	0	106	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
24.2	99.6	1.6	0	109	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
25.1	100	0	0	110	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
26.4	100	0	0	104	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
27	100	0	0	112	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
28.3	99.2	0.4	0	107	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
28.7	100	0	0	106	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
30.4	100	0	0	107	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
31	100	1.6	0.4	109	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
32.3	97.6	0	0	108	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
32.8	100	0	0	108	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.6	100	0	0	105	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.3	99.6	0	0	104	138	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36.8	99.6	3.2	0	102	139	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
38.6	100	0.8	0.4	111	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
39.2	100	1.2	0	105	139	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.1	98.8	0	0	109	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
40.2	98.8	0	0	109	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41	100	4	1.2	104	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
41.4	100	0	0	106	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
42	93.2	4.8	0.4	103	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
42.3	98.4	0.8	0	106	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
42.1	99.6	0	0	107	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
42.5	96.4	9.6	1.6	96	150	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
42.9	100	0	0	107	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.1	100	0.4	0	114	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.1	100	0	0	104	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43	100	0	0	110	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.3	100	0	0	104	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.3	99.6	0	0	115	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.5	100	0.4	0	107	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.5	100	0	0	104	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.5	100	0	0	109	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.7	100	0	0	101	152	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
43.7	98.8	3.2	0	92	158	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB

Fugro Horizons, Inc.

ALS Flight Log

Lift Begin			Lift End			Flt	Flt	Hobbs	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	Actvity
KBFF	13:10		KBFF	15:50		2:40	2.7		Production

Horizons Job #	Project Name	Operator	Unit	IMU	PiA	Min Range'	Max Range'	Ground Temp°C		Shipping Track	Base 1 ID	Base 2 ID
H10-0150	NEBRASKA	T.J. Smith	036	76014357	2	5571	7244	5.0	11.0			

Flight Date	GPS Day	Lift	System	Pilot	Sun°	Solar Times (UTC)	Laser Power	Pulse Rate	Flying Temp °C		Data Logger	Ant Ht	Ant Ht
1-May-10	10-121	3	ALS50-II	Mike Beason			63%	99,500	-9.0	-10.0	LIDAR_12		

Mission ID (DaySensorJobLift)	FMS	Aircraft	Airport ID	UTC	FOV	Altitude	Speed	Scan Hz	AR	SW1	SW2	mi / Wpt	Altm Setting		Download Drive	Rec ID	Rec ID
1213610015003	CCNS 1	N2636P	KBFF	-6	30	6,800	150	43.6		15	3	0.708	29.61	29.61			

Area	Flight #		Wpt		Distance		UTC		Flt	Altitude	Speed	Scan	Comments and Conditions	SVs	PDOP
	HZN	Client's	From	To	Begin	End	Start	End	Dir	(feet)	(knots)	Rate			
LIDAR	29		41	1	28.3	0	13:37:57	13:50:00	289	10,600	150	43.6	CLEAR w/ LOW HAZE	10	1.6
LIDAR	30		1	41	0	28.3	13:54:14	14:05:00	108	10850V	152	43.6	LOW HUMIDITY / GOOD VISABILITY	12	1.4
LIDAR	31		41	1	28.3	0	14:10:32	14:21:00	289	10850V	150	43.6	STRONG N.W. WINDS	12	1.3
LIDAR	32		1	41	0	28.3	14:26:39	14:37:00	108	10850V	152	43.6	A FEW SMALL BUMPS / MOSTLY SMOOTH	12	1.4
LIDAR	33		42	1	29	0	14:43:01	14:54:00	289	10850V	150	43.6	LOW CLOUD MOVING IN FAST FROM N.W.	12	1.5
LIDAR	33		3	7	1.4	4.2	14:59:00	15:00:00	108	10850V	150	43.6	CALIBRATION LINE	12	1.5
LIDAR	55		16	8	10.6	5	15:05:03	15:07:00	197	10,700	150	43.6	CROSS LINE	12	1.5
LIDAR	34		1	41	0	28.3	15:12:48	15:23:00	108	10850V	151	43.6		12	1.5
LIDAR	56		13	1	8.5	0	15:31:44	15:35:00	196	10,700	150	43.6	CROSS LINE	12	1.6
													CLOUD THROUGHOUT PROJECT AREA		
													END MISSION		

LINE ID	LINE NUMBER	ON/OFF	ATTENUATOR	SET FOV	ACTUAL FOV	SET SCAN RATE	PULSERATE	LASER CURRENT	LASER POWER	NOMINAL LASER POWER	MIN RANGE	MAX RANGE	NADIR RANGE	WEEK NUM
100501_133757	29	ON	OPEN	30	32.604	43.6	99500	14	3.92	3.08	1698	2568	6984	1581
100501_133757	29	OFF	OPEN	30	31.327	43.6	99500	14	3.85	3.08	1698	2568	6716	1581
100501_135414	30	ON	OPEN	30	31.069	43.6	99500	14	3.85	3.08	1698	2568	6931	1581
100501_135414	30	OFF	OPEN	30	30.976	43.6	99500	14	3.91	3.08	1698	2568	6899	1581
100501_141032	31	ON	OPEN	30	31.106	43.6	99500	14	3.94	3.08	1698	2568	6944	1581
100501_141032	31	OFF	OPEN	30	31.077	43.6	99500	14	3.96	3.08	1698	2568	6846	1581
100501_142639	32	ON	OPEN	30	31.455	43.6	99500	14	3.93	3.08	1698	2568	6919	1581
100501_142639	32	OFF	OPEN	30	31.373	43.6	99500	14	3.94	3.08	1698	2568	6960	1581
100501_144301	33	ON	OPEN	30	31.42	43.6	99500	14	3.94	3.08	1698	2568	6894	1581
100501_144301	33	OFF	OPEN	30	30.994	43.6	99500	14	3.97	3.08	1698	2568	6884	1581
100501_145900	33	ON	OPEN	30	31.49	43.6	99500	14	4	3.08	1698	2568	6966	1581
100501_145900	33	OFF	OPEN	30	31.282	43.6	99500	14	3.99	3.08	1698	2568	6828	1581
100501_150503	55	ON	OPEN	30	33.159	43.6	99500	14	4.01	3.08	1698	2568	6795	1581
100501_150503	55	OFF	OPEN	30	31.757	43.6	99500	14	4.01	3.08	1698	2568	6723	1581
100501_151248	34	ON	OPEN	30	31.656	43.6	99500	14	4.04	3.08	1698	2568	6906	1581
100501_151248	34	OFF	OPEN	30	31.527	43.6	99500	14	4.02	3.08	1698	2568	6890	1581
100501_153144	56	ON	OPEN	30	31.593	43.6	99500	14	4.01	3.08	1698	2568	6928	1581
100501_153144	56	OFF	OPEN	30	31.265	43.6	99500	14	4.01	3.08	1698	2568	6375	1581

SECONDS OF WEEK	LAT	LON	ALT	HEADING	SPEED(knots)	POS SOLUTION STATUS	NUM SV	HDOP	VDOP	ROLL COMP	ROLL SF	ROLL SENSE	LASER DIODE TEMP	LASER HEAT SINK TEMP
567487	41.797834	-103.486863	3235.906	291.436	146.049	2	10	0.921	1.316	YES	0	UNKNOWN	-99	-99
568156	41.94482	-104.070531	3240.953	294.172	144.724	2	12	0.813	0.976	YES	0	UNKNOWN	-99	-99
568464	41.935602	-104.063015	3314.065	101.222	150.389	2	12	0.89	1.116	YES	0	UNKNOWN	-99	-99
569134	41.789561	-103.484461	3225.959	106.824	148.188	2	12	0.914	0.944	YES	0	UNKNOWN	-99	-99
569442	41.783525	-103.489924	3225.811	290.56	147.989	2	12	0.916	0.957	YES	0	UNKNOWN	-99	-99
570113	41.929676	-104.070492	3303.149	294.14	153.063	2	12	0.929	0.99	YES	0	UNKNOWN	-99	-99
570408	41.921157	-104.064874	3317.064	101.071	148.267	2	12	0.936	1.002	YES	0	UNKNOWN	-99	-99
571071	41.775221	-103.486498	3227.112	104.689	152.341	2	12	0.887	1.117	YES	0	UNKNOWN	-99	-99
571391	41.769404	-103.494632	3229.963	291.546	151.174	2	12	0.893	1.147	YES	0	UNKNOWN	-99	-99
572050	41.914537	-104.06925	3302.653	292.635	148.042	2	12	0.9	1.181	YES	0	UNKNOWN	-99	-99
572346	41.906469	-104.036122	3309.742	101.322	148.461	2	12	0.9	1.185	YES	0	UNKNOWN	-99	-99
572416	41.891034	-103.974756	3286.517	102.929	149.124	2	12	0.9	1.185	YES	0	UNKNOWN	-99	-99
572712	41.937683	-103.989819	3256.923	204.55	151.888	2	12	0.899	1.181	YES	0	UNKNOWN	-99	-99
572846	41.851716	-104.02394	3268.813	205.5	147.006	2	12	0.988	1.275	YES	0	UNKNOWN	-99	-99
573184	41.904087	-104.057842	3305.04	103.01	151.969	2	12	0.89	1.15	YES	0	UNKNOWN	-99	-99
573837	41.761018	-103.490426	3222.183	104.333	148.365	2	12	0.913	1.257	YES	0	UNKNOWN	-99	-99
574314	41.849511	-103.647494	3257.537	207.527	144.564	2	12	0.934	1.342	YES	0	UNKNOWN	-99	-99
574512	41.718237	-103.698473	3264.037	205.003	153.068	2	12	0.944	1.372	YES	0	UNKNOWN	-99	-99

LASER HEAD TEMP	% RETURN 1	% RETURN 2	% RETURN 3	INTENSITY	AGC	MULTI MODE	FIXED/AUTO GAIN	GAIN	SW1	SW2	LASER % POWER	LASER % CURRENT	LASER PW	IPAS LOGGING	MPiA
13.2	100	0	0	108	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
15.9	100	0	0	106	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
17.1	100	0	0	110	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
19.9	100	0	0	101	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
21.3	100	2.8	0	98	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
23.8	100	0	0	108	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
24.7	100	0	0	108	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
27	99.6	4.8	0.4	100	149	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
28.1	99.6	0	0	103	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
29.2	99.6	0	0	104	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
29.7	100	0	0	102	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
29.8	99.6	0.4	0	104	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
30.4	100	2	0	99	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
30.8	100	0.4	0	109	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
31.9	85.6	0.4	0	109	150	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
33.6	99.2	0	0	110	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.7	100	1.2	0	94	149	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.2	100	6	0	108	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB

Fugro Horizons, Inc.

ALS Flight Log

Lift Begin			Lift End			Flt	Flt	Hobbs	
Airport	Chocks	Hobbs	Airport	Chocks	Hobbs	Duration	Hrs	Hrs	Actvity
KBFF	12:37		KBFF	16:33		3:56	4.0		Production
KBFF	17:11		KRAP	18:05		0:54	0.9		Transit

Horizons Job #	Project Name	Operator	Unit	IMU	PiA	Min Range'	Max Range'	Ground Temp°C		Shipping Track	Base 1 ID	Base 2 ID
H10-0150	NEBRASKA	T.J. Smith	036	76014357	2	5571	7244	2.0	14.0			

Flight Date	GPS Day	Lift	System	Pilot	Sun°	Solar Times (UTC)	Laser Power	Pulse Rate	Flying Temp °C		Data Logger	Ant Ht	Ant Ht
3-May-10	10-123	4	ALS50-II	Mike Beason			63%	99,500	-8.0	-4.0	LIDAR_12		

Mission ID (DaySensorJobLift)	FMS	Aircraft	Airport ID	UTC	FOV	Altitude	Speed	Scan Hz	AR	SW1	SW2	mi / Wpt	Altm Setting		Download Drive	Rec ID	Rec ID
1233610015004	CCNS 1	N2636P	KBFF	-6	30	6,800	150	43.6		15	3	0.708	29.92	29.89	WP160-20		

	Flight #		Wpt		Distance		UTC		Flt	Altitude	Speed	Scan			
Area	HZN	Client's	From	To	Begin	End	Start	End	Dir	(feet)	(knots)	Rate	Comments and Conditions	SVs	PDOP
LIDAR	35		41	1	28.3	0	13:03:32	13:14:00	289	10850V	152	43.6	CLEAR w/ LOW HAZE	8	1.9
LIDAR	36		1	41	0	28.3	13:18:43	13:29:00	108	10850V	153	43.6	LOW HUMIDITY / GOOD VISABILITY	9	1.7
LIDAR	37		41	1	28.3	0	13:35:13	13:46:00	289	10850V	153	43.6	MOSTLY SMOOTH RIDE	9	1.7
LIDAR	38		1	40	0	27.6	13:50:24	14:01:00	108	10700V	153	43.6	STRONG WEST WINDS	10	1.5
LIDAR	40		21	1	14.2	0	14:07:21	14:13:00	289	10,700	152	43.6		11	1.5
LIDAR	39		12	1	7.8	0	14:15:02	14:18:00	289	10,700	150	43.6	A FEW BUMPS STARTING	11	1.5
LIDAR	55		1	12	0	7.8	14:22:45	14:25:00	017	10,700	155	43.6	CROSS LINE	11	1.5
LIDAR	41		6	1	3.5	0	14:30:42	14:32:00	289	10,750	150	43.6	CALIBRATION LINE	12	1.4
LIDAR	41		1	11	0	7.1	14:36:07	14:38:00	108	10,750	150	43.6		12	1.5
LIDAR	42		1	20	0	13.5	14:41:30	14:46:00	108	10,750	150	43.6		12	1.5
LIDAR	44		14	1	9.2	0	14:52:23	14:56:00	289	10,800	150	43.6		12	1.5
LIDAR	43		11	1	7.1	0	14:58:47	15:01:00	289	10,800	152	43.6		12	1.6
LIDAR	45		1	10	0	6.4	15:05:22	15:07:00	108	10,800	153	43.6		12	1.5
LIDAR	47		8	1	5	0	15:12:48	15:14:00	289	10,850	152	43.6	CLOUD STARTING TO FORM IN AREA	12	1.5
LIDAR	49		1	7	0	4.2	15:18:57	15:20:00	108	10,950	151	43.6		12	1.6
LIDAR	51		6	1	3.5	0	15:25:17	15:26:00	289	10,950	153	43.6		12	1.6
LIDAR	52		1	6	0	3.5	15:30:27	15:31:00	108	10,950	150	43.6		12	1.7
LIDAR	53		4	1	2.1	0	15:36:13	15:37:00	288	11,050	151	43.6		12	1.7
LIDAR	54		1	3	0	1.4	15:41:05	15:41:00	108	11,050	148	43.6		12	1.8
LIDAR	46		1	13	0	8.5	15:46:18	15:49:00	109	10,800	150	43.6		12	1.8
LIDAR	48		9	1	5.7	0	15:55:09	15:57:00	289	10,850	150	43.6		12	1.8
LIDAR	50		1	4	0	2.1	16:02:44	16:03:00	109	10,950	152	43.6		11	2.2
LIDAR	56		1	12	0	7.8	16:07:37	16:10:00	016	10,700	155	43.6	CROSS LINE	11	2.1
LIDAR	31		38	28	26.2	19.1	16:16:55	16:19:00	289	10850V	151	43.6	R/F FOR INTENSITY BANDING (GAPS) ON LIFT 3	11	2.0

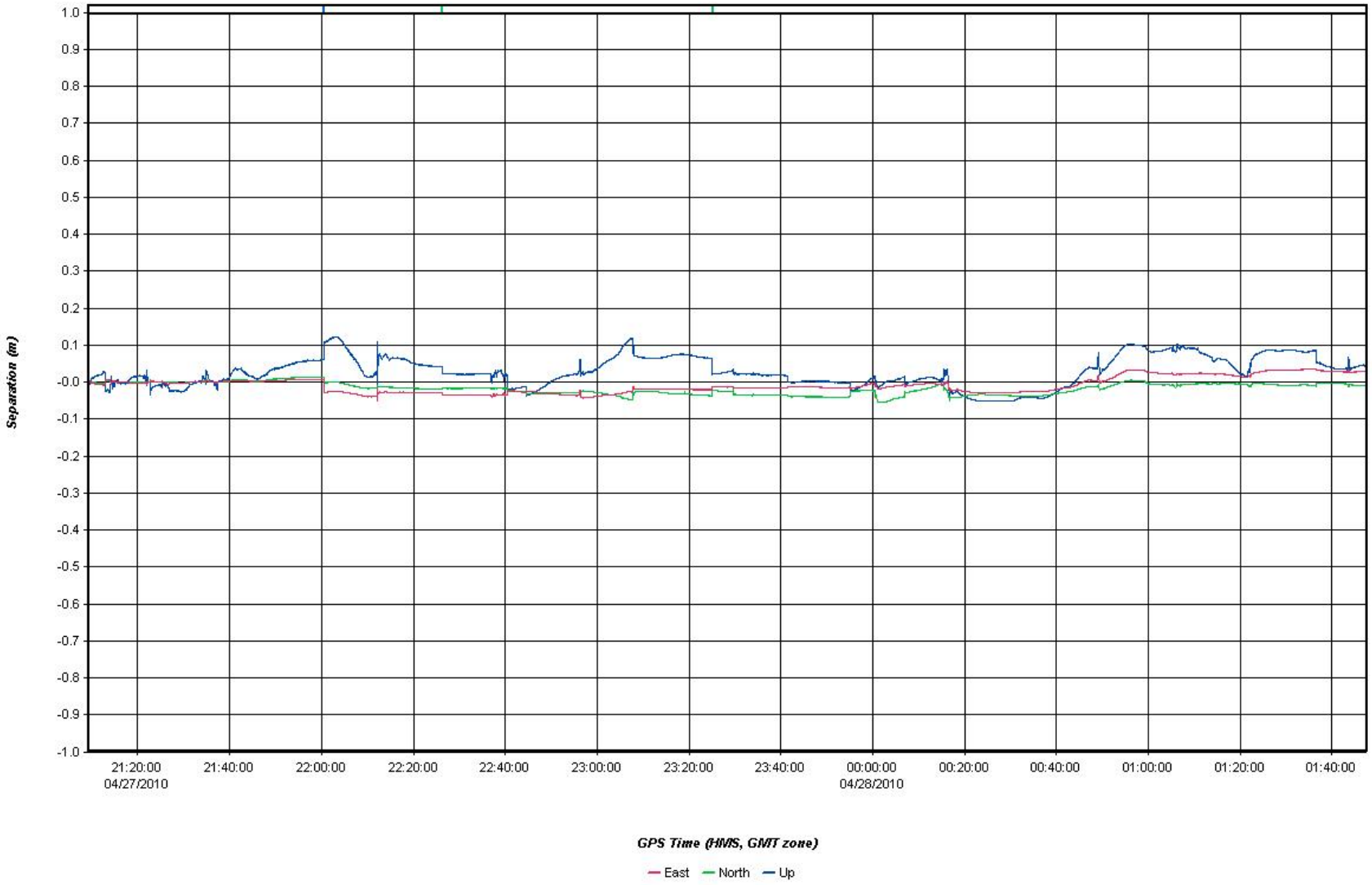
LINE ID	LINE NUMBER	ON/OFF	ATTENUATOR	SET FOV	ACTUAL FOV	SET SCAN RATE	PULSERATE	LASER CURRENT	LASER POWER	NOMINAL LASER POWER	MIN RANGE	MAX RANGE	NADIR RANGE	WEEK NUM
100503_130332	35	ON	OPEN	30	30.873	43.6	99500	14	3.86	3.08	1697	2568	6875	1582
100503_130332	35	OFF	OPEN	30	31.128	43.6	99500	14	3.86	3.08	1697	2568	7017	1582
100503_131843	36	ON	OPEN	30	33.068	43.6	99500	14	3.88	3.08	1697	2568	6923	1582
100503_131843	36	OFF	OPEN	30	29.386	43.6	99500	14	3.89	3.08	1697	2568	6891	1582
100503_133513	37	ON	OPEN	30	31.124	43.6	99500	14	3.9	3.08	1697	2568	6849	1582
100503_133513	37	OFF	OPEN	30	31.341	43.6	99500	14	3.9	3.08	1697	2568	6815	1582
100503_135024	38	ON	OPEN	30	29.461	43.6	99500	14	3.94	3.08	1697	2568	6698	1582
100503_135024	38	OFF	OPEN	30	31.371	43.6	99500	14	3.95	3.08	1697	2568	6715	1582
100503_140721	40	ON	OPEN	30	31.65	43.6	99500	14	3.95	3.08	1697	2568	6815	1582
100503_140721	40	OFF	OPEN	30	31.251	43.6	99500	14	3.97	3.08	1697	2568	6673	1582
100503_141502	39	ON	OPEN	30	31.18	43.6	99500	14	3.96	3.08	1697	2568	6547	1582
100503_141502	39	OFF	OPEN	30	31.121	43.6	99500	14	3.97	3.08	1697	2568	6598	1582
100503_142245	55	ON	OPEN	30	31.146	43.6	99500	14	4	3.08	1697	2568	6495	1582
100503_142245	55	OFF	OPEN	30	29.653	43.6	99500	14	3.99	3.08	1697	2568	6820	1582
100503_143042	41	ON	OPEN	30	30.37	43.6	99500	14	3.98	3.08	1697	2568	6823	1582
100503_143042	41	OFF	OPEN	30	31.099	43.6	99500	14	4.01	3.08	1697	2568	6740	1582
100503_143607	41	ON	OPEN	30	31.172	43.6	99500	14	3.98	3.08	1697	2568	6739	1582
100503_143607	41	OFF	OPEN	30	31.841	43.6	99500	14	4	3.08	1697	2568	6649	1582
100503_144130	42	ON	OPEN	30	31.719	43.6	99500	14	3.99	3.08	1697	2568	6781	1582
100503_144130	42	OFF	OPEN	30	29.127	43.6	99500	14	3.99	3.08	1697	2568	6897	1582
100503_145223	44	ON	OPEN	30	31.427	43.6	99500	14	4.01	3.08	1697	2568	6801	1582
100503_145223	44	OFF	OPEN	30	31.225	43.6	99500	14	4.01	3.08	1697	2568	6668	1582
100503_145847	43	ON	OPEN	30	31.95	43.6	99500	14	4.03	3.08	1697	2568	6669	1582
100503_145847	43	OFF	OPEN	30	30.071	43.6	99500	14	4.03	3.08	1697	2568	6772	1582
100503_150522	45	ON	OPEN	30	31.785	43.6	99500	14	4	3.08	1697	2568	6731	1582
100503_150522	45	OFF	OPEN	30	31.852	43.6	99500	14	3.99	3.08	1697	2568	6690	1582
100503_151248	47	ON	OPEN	30	31.221	43.6	99500	14	4.01	3.08	1697	2568	6868	1582
100503_151248	47	OFF	OPEN	30	31.779	43.6	99500	14	4.02	3.08	1697	2568	6824	1582
100503_151857	49	ON	OPEN	30	31.009	43.6	99500	14	4.01	3.08	1697	2568	6936	1582
100503_151857	49	OFF	OPEN	30	31.625	43.6	99500	14	3.98	3.08	1697	2568	6827	1582
100503_152517	51	ON	OPEN	30	32.091	43.6	99500	14	3.98	3.08	1697	2568	6801	1582
100503_152517	51	OFF	OPEN	30	31.391	43.6	99500	14	4.01	3.08	1697	2568	6807	1582
100503_153027	52	ON	OPEN	30	31.379	43.6	99500	14	3.97	3.08	1697	2568	6850	1582
100503_153027	52	OFF	OPEN	30	31.916	43.6	99500	14	3.98	3.08	1697	2568	6753	1582
100503_153613	53	ON	OPEN	30	30.513	43.6	99500	14	4	3.08	1697	2568	6884	1582
100503_153613	53	OFF	OPEN	30	30.484	43.6	99500	14	4.01	3.08	1697	2568	7039	1582
100503_154105	54	ON	OPEN	30	32.658	43.6	99500	14	4	3.08	1697	2568	6881	1582
100503_154105	54	OFF	OPEN	30	30.321	43.6	99500	14	4.01	3.08	1697	2568	6965	1582
100503_154618	46	ON	OPEN	30	31.042	43.6	99500	14	3.98	3.08	1697	2568	6644	1582
100503_154618	46	OFF	OPEN	30	31.502	43.6	99500	14	3.98	3.08	1697	2568	6647	1582
100503_155509	48	ON	OPEN	30	31.741	43.6	99500	14	3.96	3.08	1697	2568	6751	1582
100503_155509	48	OFF	OPEN	30	33.827	43.6	99500	14	3.97	3.08	1697	2568	6713	1582
100503_160244	50	ON	OPEN	30	31.404	43.6	99500	14	4	3.08	1697	2568	6910	1582
100503_160244	50	OFF	OPEN	30	31.13	43.6	99500	14	3.98	3.08	1697	2568	6879	1582
100503_160737	56	ON	OPEN	30	32.124	43.6	99500	14	3.97	3.08	1697	2568	6389	1582
100503_160737	56	OFF	OPEN	30	31.256	43.6	99500	14	3.97	3.08	1697	2568	6914	1582
100503_161655	31	ON	OPEN	30	29.45	43.6	99500	14	3.98	3.08	1697	2568	7017	1582
100503_161655	31	OFF	OPEN	30	32.625	43.6	99500	14	3.98	3.08	1697	2568	6880	1582

SECONDS OF WEEK	LAT	LON	ALT	HEADING	SPEED(knots)	POS SOLUTION STATUS	NUM SV	HDOP	VDOP	ROLL COMP	ROLL SF	ROLL SENSE	LASER DIODE TEMP	LASER HEAT SINK TEMP
133419	41.755462	-103.498348	3245.79	291.647	148.479	2	8	0.992	1.645	YES	0	UNKNOWN	-99	-99
134077	41.901481	-104.077711	3316.581	289.744	154.381	2	9	0.931	1.42	YES	0	UNKNOWN	-99	-99
134330	41.890412	-104.062964	3317.549	109.16	149.544	2	9	0.937	1.428	YES	0	UNKNOWN	-99	-99
134995	41.746425	-103.492879	3246.75	102.323	149.748	2	9	0.956	1.413	YES	0	UNKNOWN	-99	-99
135322	41.742101	-103.505959	3254.641	291.043	153.049	2	9	0.963	1.385	YES	0	UNKNOWN	-99	-99
135963	41.884735	-104.070617	3300.743	287.669	151.804	2	11	0.867	1.042	YES	0	UNKNOWN	-99	-99
136233	41.874953	-104.061466	3253.047	108.377	143.745	2	10	0.999	1.114	YES	0	UNKNOWN	-99	-99
136883	41.732538	-103.497176	3262.971	108.704	150.299	2	11	0.978	1.04	YES	0	UNKNOWN	-99	-99
137248	41.727087	-103.506601	3257.764	288.41	154.428	2	11	0.981	1.067	YES	0	UNKNOWN	-99	-99
137577	41.799819	-103.794005	3263.544	288.465	148.672	2	11	0.986	1.096	YES	0	UNKNOWN	-99	-99
137712	41.828361	-103.90799	3265.431	287.074	145.744	2	11	0.988	1.106	YES	0	UNKNOWN	-99	-99
137897	41.86845	-104.06796	3265.555	290.256	144.649	2	11	0.992	1.12	YES	0	UNKNOWN	-99	-99
138172	41.783629	-104.051223	3264.855	5.274	157.546	2	11	0.996	1.142	YES	0	UNKNOWN	-99	-99
138341	41.898396	-104.005584	3262.708	4.832	148.462	2	12	0.885	1.1	YES	0	UNKNOWN	-99	-99
138650	41.842994	-103.997092	3287.784	289.442	138.42	2	12	0.891	1.134	YES	0	UNKNOWN	-99	-99
138735	41.860899	-104.067988	3287.013	290.079	144.724	2	12	0.892	1.14	YES	0	UNKNOWN	-99	-99
138973	41.860007	-104.06348	3280.995	109.115	150.895	2	12	0.896	1.16	YES	0	UNKNOWN	-99	-99
139142	41.823026	-103.916359	3285.007	104.446	143.645	2	12	0.898	1.173	YES	0	UNKNOWN	-99	-99
139295	41.788305	-103.778852	3290.13	105.298	144.178	2	12	0.899	1.18	YES	0	UNKNOWN	-99	-99
139615	41.717878	-103.501798	3289.315	107.053	151.759	2	12	0.9	1.194	YES	0	UNKNOWN	-99	-99
139949	41.734437	-103.596816	3291.119	289.428	143.345	2	12	0.899	1.196	YES	0	UNKNOWN	-99	-99
140171	41.782518	-103.786725	3289.867	288.806	145.252	2	12	0.899	1.193	YES	0	UNKNOWN	-99	-99
140332	41.816792	-103.924153	3296.147	287.914	146.951	2	12	0.897	1.187	YES	0	UNKNOWN	-99	-99
140496	41.853204	-104.068608	3296.577	288.868	149.848	2	12	0.884	1.117	YES	0	UNKNOWN	-99	-99
140730	41.843224	-104.0592	3293.403	106.16	152.893	2	12	0.889	1.154	YES	0	UNKNOWN	-99	-99
140869	41.812505	-103.936747	3297.716	105.73	148.452	2	12	0.894	1.182	YES	0	UNKNOWN	-99	-99
141176	41.810395	-103.96061	3317.357	289.234	148.328	2	12	0.904	1.231	YES	0	UNKNOWN	-99	-99
141298	41.837236	-104.068773	3315.195	289.391	152.588	2	12	0.908	1.251	YES	0	UNKNOWN	-99	-99
141543	41.827816	-104.063315	3345.069	107.419	157.098	2	12	0.918	1.293	YES	0	UNKNOWN	-99	-99
141645	41.805228	-103.972318	3337.25	105.597	148.382	2	12	0.921	1.303	YES	0	UNKNOWN	-99	-99
141923	41.802623	-103.994593	3339.433	289.407	152.961	2	12	0.936	1.355	YES	0	UNKNOWN	-99	-99
142006	41.821348	-104.068974	3337.613	289.436	150.462	2	12	0.939	1.365	YES	0	UNKNOWN	-99	-99
142232	41.812014	-104.064187	3337.367	106.246	147.002	2	12	0.952	1.405	YES	0	UNKNOWN	-99	-99
142315	41.793874	-103.99121	3340.848	106.826	151.231	2	12	0.959	1.423	YES	0	UNKNOWN	-99	-99
142579	41.791615	-104.015571	3370.994	289.095	149.364	2	12	0.971	1.455	YES	0	UNKNOWN	-99	-99
142639	41.804999	-104.068505	3371.175	288.535	150.754	2	12	0.974	1.463	YES	0	UNKNOWN	-99	-99
142871	41.795474	-104.062659	3367.916	108.828	142.601	2	12	0.984	1.486	YES	0	UNKNOWN	-99	-99
142913	41.78651	-104.027148	3374.986	107.434	146.812	2	12	0.987	1.49	YES	0	UNKNOWN	-99	-99
143187	41.773422	-103.782762	3291.29	107.015	149.66	2	12	0.994	1.5	YES	0	UNKNOWN	-99	-99
143381	41.72956	-103.609838	3279.62	107.454	150.533	2	12	0.998	1.501	YES	0	UNKNOWN	-99	-99
143718	41.731428	-103.647701	3311.154	288.555	113.972	2	12	0.996	1.484	YES	0	UNKNOWN	-99	-99
143868	41.7632	-103.771431	3308.409	286.656	148.014	2	12	0.991	1.466	YES	0	UNKNOWN	-99	-99
144170	41.741852	-103.720465	3345.127	107.753	153.385	2	11	1.004	1.926	YES	0	UNKNOWN	-99	-99
144226	41.7294	-103.670801	3346.295	107.725	148.534	2	11	1.001	1.919	YES	0	UNKNOWN	-99	-99
144467	41.727918	-103.694648	3263.916	4.598	151.147	2	11	0.987	1.882	YES	0	UNKNOWN	-99	-99
144637	41.843192	-103.649849	3267.866	3.976	148.575	2	11	0.974	1.845	YES	0	UNKNOWN	-99	-99
145022	41.79557	-103.537017	3238.989	289.267	147.619	2	11	0.95	1.754	YES	0	UNKNOWN	-99	-99
145183	41.831532	-103.678045	3266.087	288.028	147.222	2	11	0.935	1.705	YES	0	UNKNOWN	-99	-99

LASER HEAD TEMP	% RETURN 1	% RETURN 2	% RETURN 3	INTENSITY	AGC	MULTI MODE	FIXED/AUTO GAIN	GAIN	SW1	SW2	LASER % POWER	LASER % CURRENT	LASER PW	IPAS LOGGING	MPiA
15.1	100	0	0	107	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
18.1	97.6	2	1.2	106	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
19	100	0.4	0	110	142	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
21.9	100	0	0	109	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
23.3	100	0	0	105	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
25	100	0.4	0	111	139	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
25.9	100	0	0	107	138	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
27.8	100	0	0	106	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
28.6	100	0	0	107	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
29.5	100	0	0	109	138	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
29.6	100	0	0	106	141	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
30.2	100	0	0	111	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
30.7	100	0.4	0	107	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
31.2	100	0	0	99	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
31.8	100	0.4	0.4	110	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
32.1	100	0	0	109	143	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
32.6	100	0	0	106	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
33.1	100	0	0	108	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
33.5	100	0.4	0	113	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
33.9	100	0	0	108	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.4	100	0	0	107	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.5	100	0.4	0	109	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.6	99.6	0.8	0	108	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.6	99.6	0.4	0	113	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.6	100	0	0	107	140	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.7	100	0.4	0	111	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.9	100	0	0	108	151	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
34.8	100	0	0	109	139	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35	100	0	0	107	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.2	100	0	0	114	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	106	144	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	103	145	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.7	100	0	0	105	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	105	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	112	149	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	108	149	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.5	100	0.4	0	107	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	110	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.5	100	0	0	109	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.6	100	0	0	113	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.8	100	0	0	105	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36	100	0.8	0	108	148	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.9	100	0	0	113	152	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.9	100	0.8	0	107	155	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36	100	1.2	0	112	146	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36.1	99.6	5.2	0.8	99	155	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
35.9	99.6	4.8	0.4	100	152	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB
36	100	5.6	0	87	147	43	AUTO	226	15	3	-1	63	9 nsec	UNKNOWN	MPiA AB

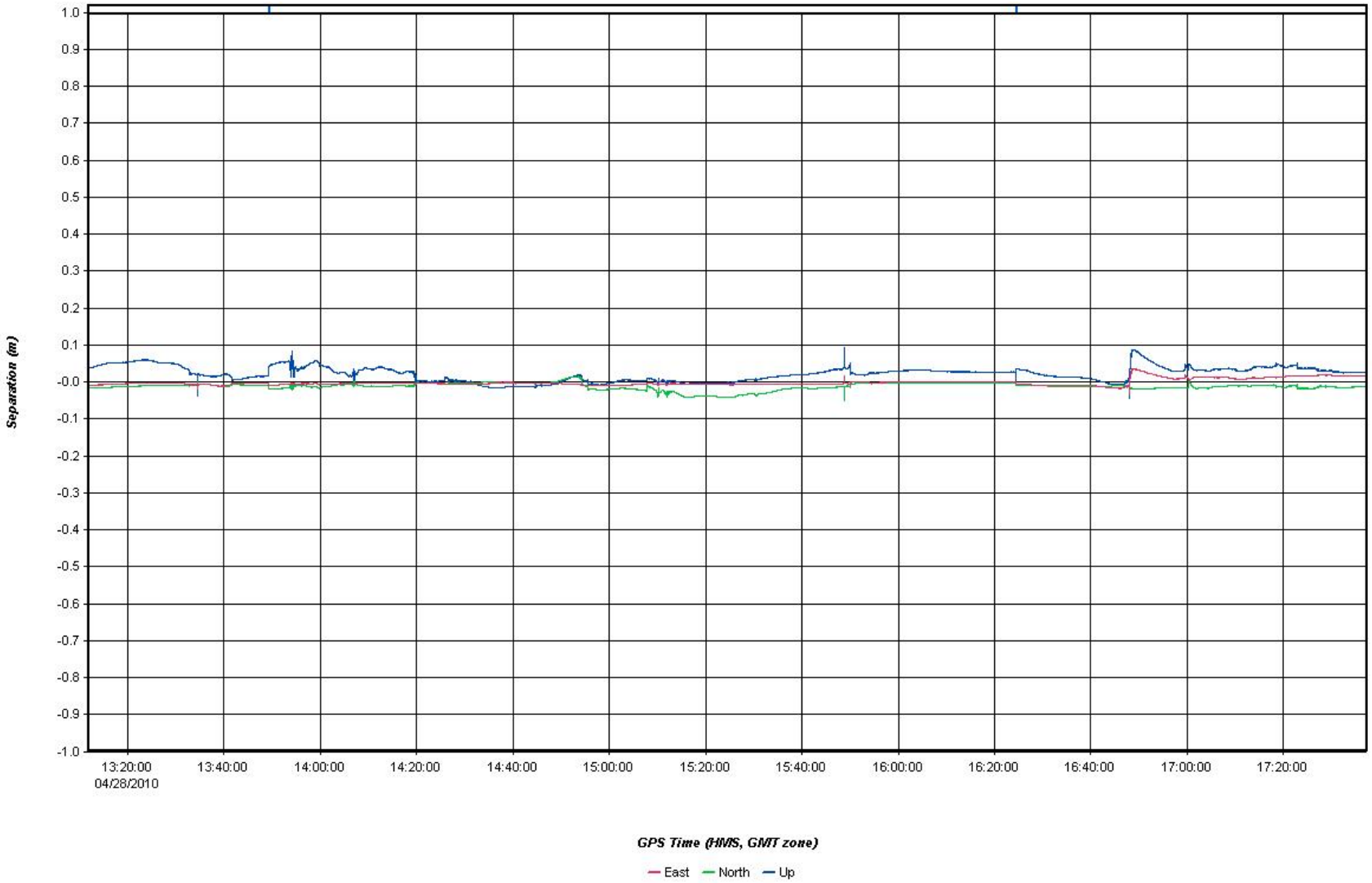
Separation Plot

04-27-10



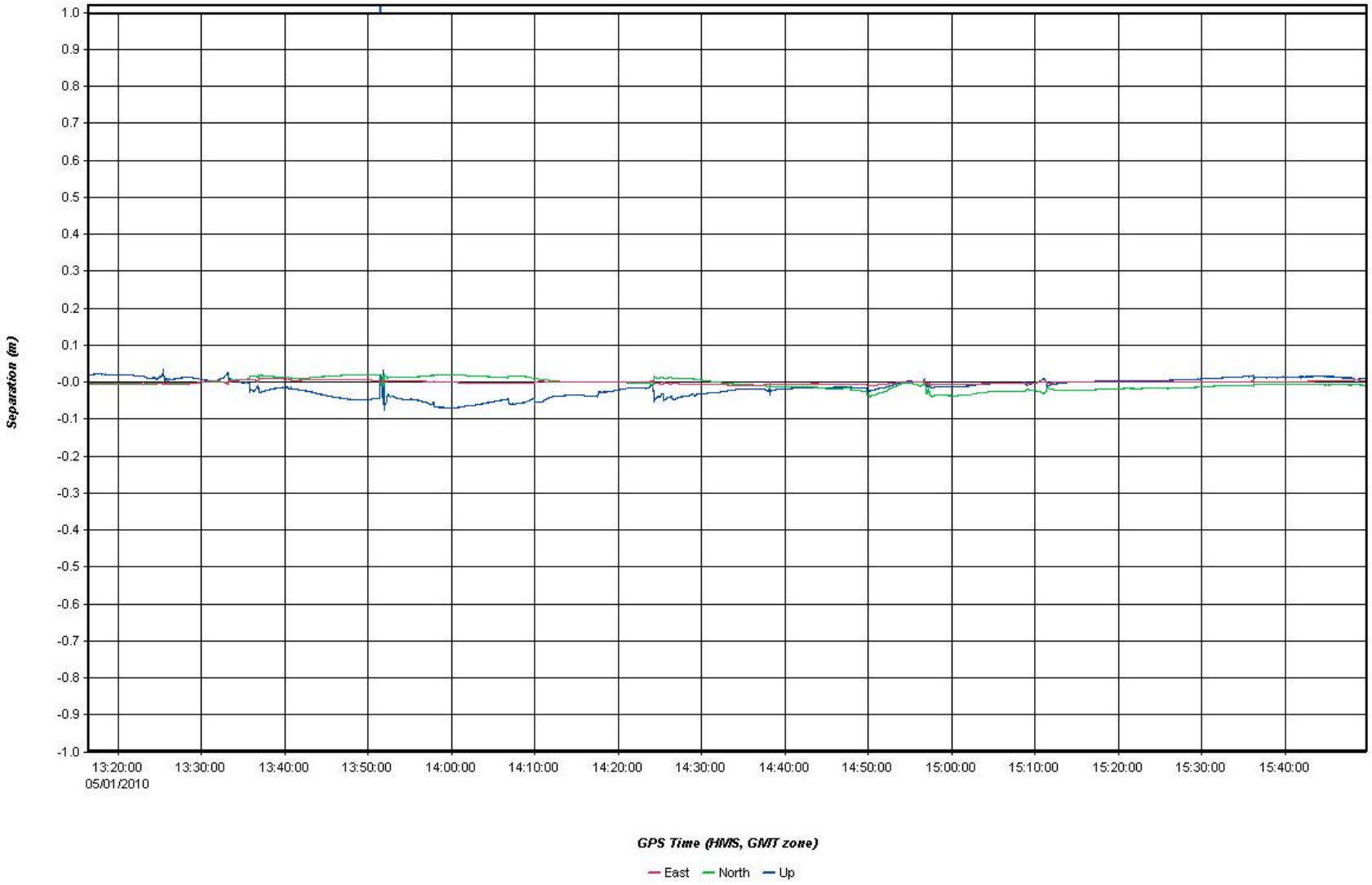
Separation Plot

04-28-10



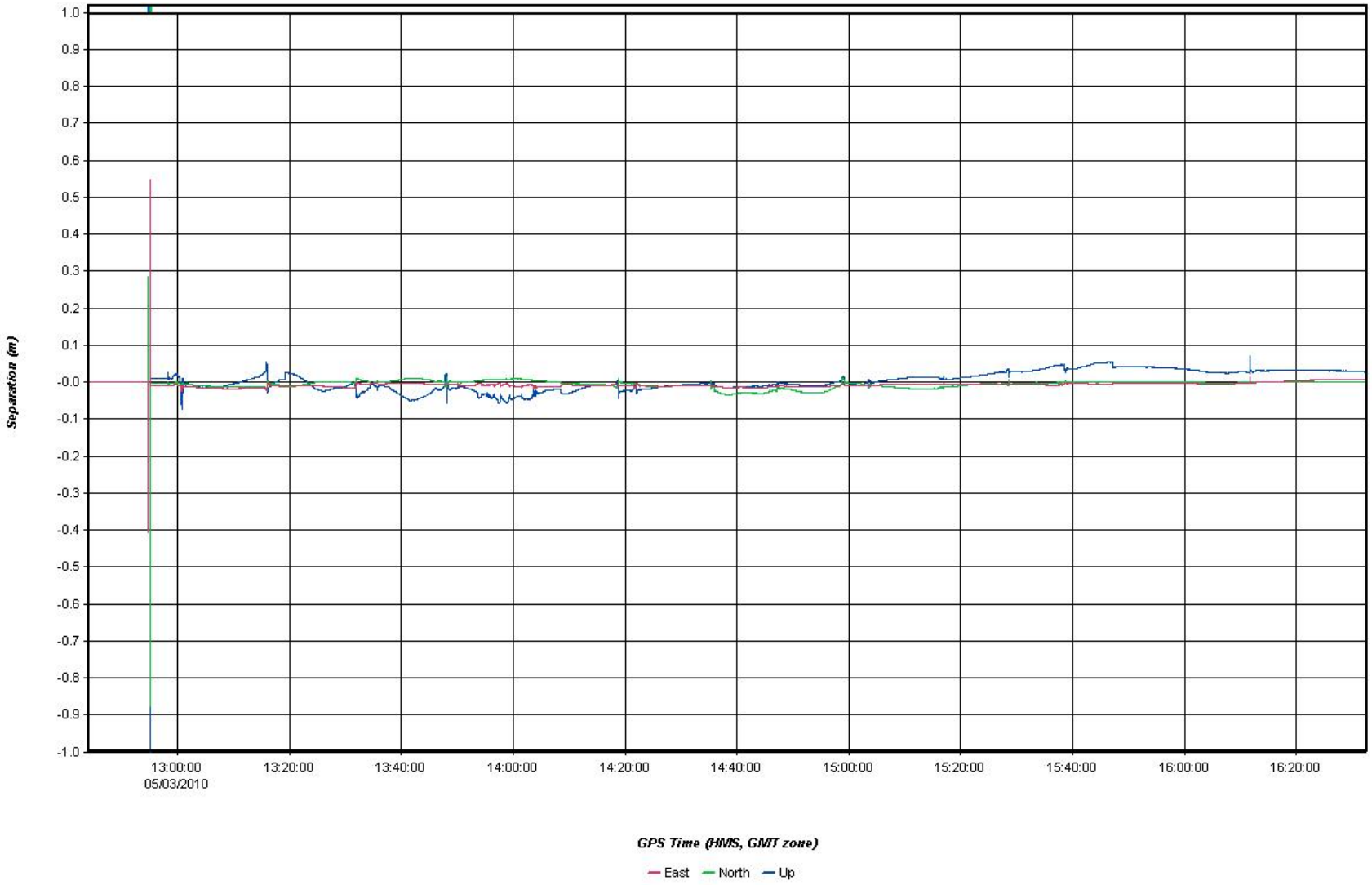
Separation Plot

05-01-10



Separation Plot

05-03-10



R:\1100327\Lidar\QAQC\1100327gnd_ALL.txt

Number	Easting	Northing	Known Z	Laser Z	Dz
30	594989.272	4650461.967	1250.586	1250.560	-0.026
31	588426.273	4653626.843	1262.369	1262.350	-0.019
32	580417.863	4656920.156	1261.478	1261.480	+0.002
33	578960.887	4649065.974	1228.690	1228.770	+0.080
34	581046.742	4634340.811	1263.643	1263.530	-0.113
35	588993.669	4634512.082	1279.193	1279.150	-0.043
36	589754.658	4646283.872	1216.238	1216.320	+0.082
37	599114.626	4643929.187	1203.511	1203.550	+0.039
38	598527.648	4635901.014	1261.219	1261.300	+0.081
39	609473.524	4644385.738	1227.825	1227.780	-0.045
40	601431.046	4649024.144	1254.978	1254.970	-0.008
41	616405.759	4636301.988	1204.016	1204.090	+0.074
42	618090.152	4632100.568	1173.371	1173.440	+0.069
43	607088.276	4627329.285	1248.120	1248.130	+0.010
44	614963.837	4626869.348	1200.780	1200.730	-0.050
45	622623.761	4627067.573	1167.394	1167.390	-0.004
46	622984.581	4630050.929	1168.229	1168.310	+0.081
47	622897.008	4635301.175	1208.835	1208.970	+0.135
48	622780.540	4639996.599	1232.696	1232.700	+0.004
49	624267.710	4643112.268	1262.738	1262.680	-0.058
50	616329.004	4643303.757	1248.737	1248.680	-0.057
51	612808.106	4647711.427	1260.830	1260.680	-0.150

Average dz	+0.004
Minimum dz	-0.150
Maximum dz	+0.135
Average magnitude	0.056
Root mean square	0.069
Std deviation	0.071