

Airborne Lidar Report



TASK ORDER NAME: AR Ouachita FEMA
R6 Lidar 2016 D17

Contract Number: G16PC00022
Task Number: G17PD00011

Contractor: Woolpert, Inc.
Woolpert Project # 77193

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Section 1: Overview

TASK ORDER NAME: AR Ouachita FEMA R6 Lidar 2016 D17

Project: # 77193

This report contains a comprehensive outline of the AR Ouachita FEMA R6 Lidar 2016 D17 Lidar task order. Processing task order for the United States Geological Survey (USGS). This task is issued under USGS Contract No. G16PC00022, Task Order No. G17PD00011. This task order requires lidar data to be acquired over approximately 20,386 square miles of lidar, for the area of interest (AOI) collected at a nominal pulse spacing (NPS) of 0.7 meters. The lidar data was acquired and processed in compliance with U.S. Geological Survey National Geospatial Program Lidar Base Specification version 1.2. The NPS assessment is made against single swath, first return data located within the geometrically usable center portion (typically ~90%) of each swath.

The data was collected using Leica ALS80, Leica ALS70, and Riegl Q1560:

Table 1.1: ALS80 Specifications – WOOLPERT

Post Spacing	0.70 m
AGL (Above Ground Level) average flying height	1,981 m
Average Ground Speed:	150 knots
Field of View (full)	40 degrees
Pulse Rate	272 kHz
Scan Rate	50 Hz
Side Lap	25%

Table 1.2: ALS70 Specifications – PAR

Post Spacing	0.70 m
AGL (Above Ground Level) average flying height	1,900 m
Average Ground Speed:	115 knots
Field of View (full)	40 degrees
Pulse Rate	136kHz
Scan Rate	46 Hz
Side Lap	30%

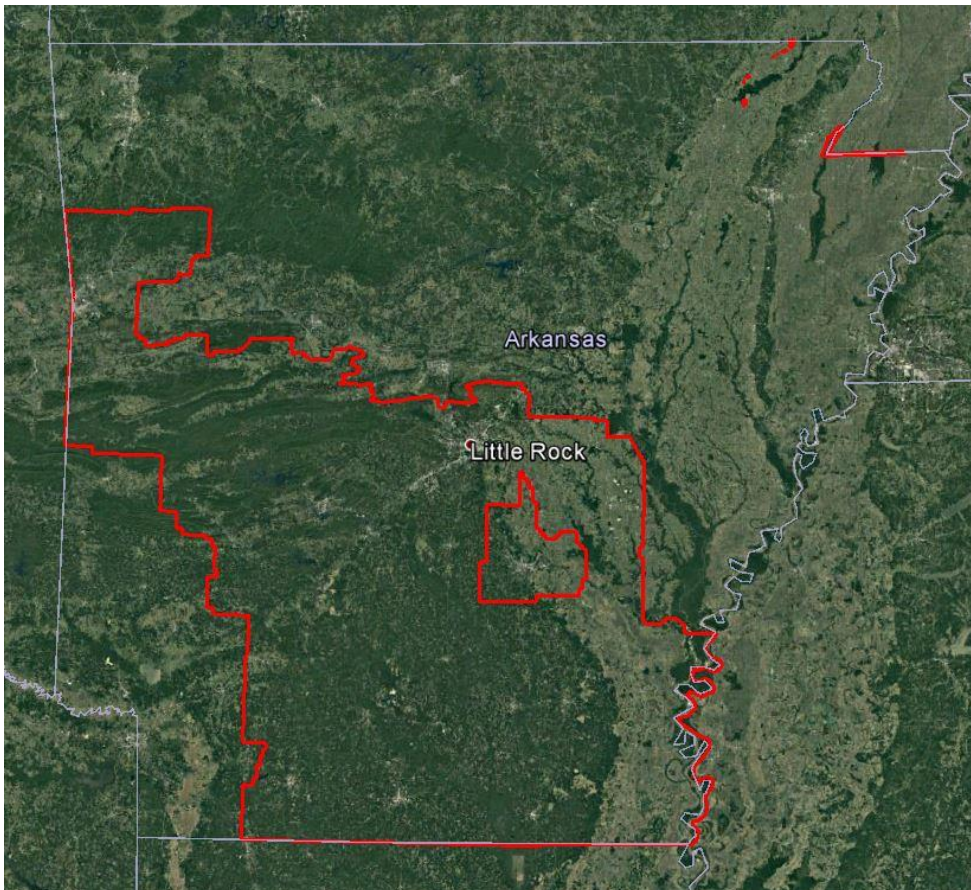
Table 1.3: ALS70 Specifications – ASI

Post Spacing	0.70 m
AGL (Above Ground Level) average flying height	1,524 m
Average Ground Speed:	150 knots
Field of View (full)	40 degrees
Pulse Rate	272 kHz
Scan Rate	50 Hz
Side Lap	30%

Table 1.4: Riegl Q1560 Specifications – Survtech	
Post Spacing	0.70 m
AGL (Above Ground Level) average flying height	1,900 m
Average Ground Speed:	150 knots
Field of View (full)	58 degrees
Pulse Rate	700 kHz
Scan Rate	50 Hz
Side Lap	30%

The horizontal datum used for the task order was referenced to NAD83 (2011), Zone 15, Meters. The vertical datum used for the task order was referenced to NAVD 1988, Meters, GEOID12B.

Figure 1.1: AR Ouachita FEMA R6 Lidar 2016 D17



Section 2: Acquisition

The lidar data was acquired with:

Leica ALS80HP 1000 kHz Multiple Pulses in Air (MPiA) Lidar Sensor Systems. The ALS80 HP lidar system, developed by Leica Geosystems of Heerbrugg, Switzerland, includes the simultaneous first, intermediate and last pulse data capture module, the extended altitude range module, and the target signal intensity capture module.

Table 2.1: ALS80 HP Lidar System Specifications	
Operating Altitude	100 – 7,620 meters
Scan Angle	0 to 72° (variable)
Swath Width	0 to 1.5 X altitude (variable)
Scan Frequency	0 – 200 Hz (variable based on scan angle)
Maximum Pulse Rate	1000 kHz (Effective)
Range Resolution	Better than 1 cm
Elevation Accuracy	6 - 19 cm single shot (one standard deviation)
Horizontal Accuracy	5 – 43 cm (one standard deviation)
Number of Returns per Pulse	Unlimited
Number of Intensities	3 (first, second, third)
Intensity Digitization	8 bit intensity + 8 bit AGC (Automatic Gain Control) level
MPiA (Multiple Pulses in Air)	8 bits @ 1nsec interval @ 50kHz
Laser Beam Divergence	0.22 mrad @ $1/e^2$ (~0.15 mrad @ $1/e$)
Laser Classification	Class IV laser product (FDA CFR 21)
Eye Safe Range	400m single shot depending on laser repetition rate
Roll Stabilization	Automatic adaptive, range = 75 degrees minus current FOV
Power Requirements	28 VDC @ 25A
Operating Temperature	0-40°C
Humidity	0-95% non-condensing
Supported GNSS Receivers	Ashtech Z12, Trimble 7400, Novatel Millenium

Leica ALS70 500 kHz Multiple Pulses in Air (MPiA) lidar sensors system. The ALS70 lidar system, developed by Leica Geosystems of Heerbrugg, Switzerland, includes the simultaneous first, intermediate and last pulse data capture module, the extended altitude range module, and the target signal intensity capture module.

Table 2.2: ALS 70 Lidar System Specifications

Operating Altitude	200 – 3,500 meters
Scan Angle	0 to 75° (variable)
Swath Width	0 to 1.5 X altitude (variable)
Scan Frequency	0 – 200 Hz (variable based on scan angle)
Maximum Pulse Rate	500 kHz (Effective)
Range Resolution	Better than 1 cm
Elevation Accuracy	7 - 16 cm single shot (one standard deviation)
Horizontal Accuracy	5 – 38 cm (one standard deviation)
Number of Returns per Pulse	7 (infinite)
Number of Intensities	3 (first, second, third)
Intensity Digitization	8 bit intensity + 8 bit AGC (Automatic Gain Control) level
MPiA (Multiple Pulses in Air)	8 bits @ 1nsec interval @ 50kHz
Laser Beam Divergence	0.22 mrad @ $1/e^2$ (~0.15 mrad @ $1/e$)
Laser Classification	Class IV laser product (FDA CFR 21)
Eye Safe Range	400m single shot depending on laser repetition rate
Roll Stabilization	Automatic adaptive, range = 75 degrees minus current FOV
Power Requirements	28 VDC @ 25A
Operating Temperature	0-40°C
Humidity	0-95% non-condensing
Supported GNSS Receivers	Ashtech Z12, Trimble 7400, Novatel Millenium

The RIEGL LMS-Q1560 can be operated at a maximum pulse repetition rate of 800 kHz providing an effective measurement rate of 530,000 measurements on the ground, and operates at an altitude of up to 15,500 ft.

Item	Parameter
Manufacturer	Riegl
Model	LMS Q1560
Platform	Fixed-wing
Scan Angle °	58
Field of view (°)	0 - 58
Maximum Pulse rate (kHz)	800
Maximum Flying height (m AGL)	3300
Pulse Rate (ns)	3
Pulse Wavelength (nM)	1064
Beam Divergence (mrad)	0.25
Number of returns	12
Number of intensity measurements	12
Roll stabilization (automatic adaptive, °)	58 - active FOV
Number of intensity measurements	12
Roll stabilization (automatic adaptive, °)	58 - active FOV
Storage media	removable 800 GB SSD
Storage capacity (hours @ max pulse rate)	5
Weight (kg)	62
Operating Temperature	0 - 40 °C
Flight Management	Ri-Acquire
Power Consumption	18.0v – 32.0v DC

Prior to mobilizing to the project site, flight crews coordinated with the necessary Air Traffic Control personnel to ensure airspace access.

Crews were onsite, operating a Global Navigation Satellite System (GNSS) Base Station for the airborne GPS support.

The Lidar data was collected in eighty-seven (87) missions, flown as close together as the weather permitted, to ensure consistent ground conditions across the project area. An initial quality control process was performed immediately on the Lidar data to review the data coverage, airborne GPS data, and trajectory solution. Collection of lidar data took place from January 20 through March 26 of 2016.

Figure 2.1: Lidar Flight Layout, AR Ouachita FEMA R6 Lidar 2016

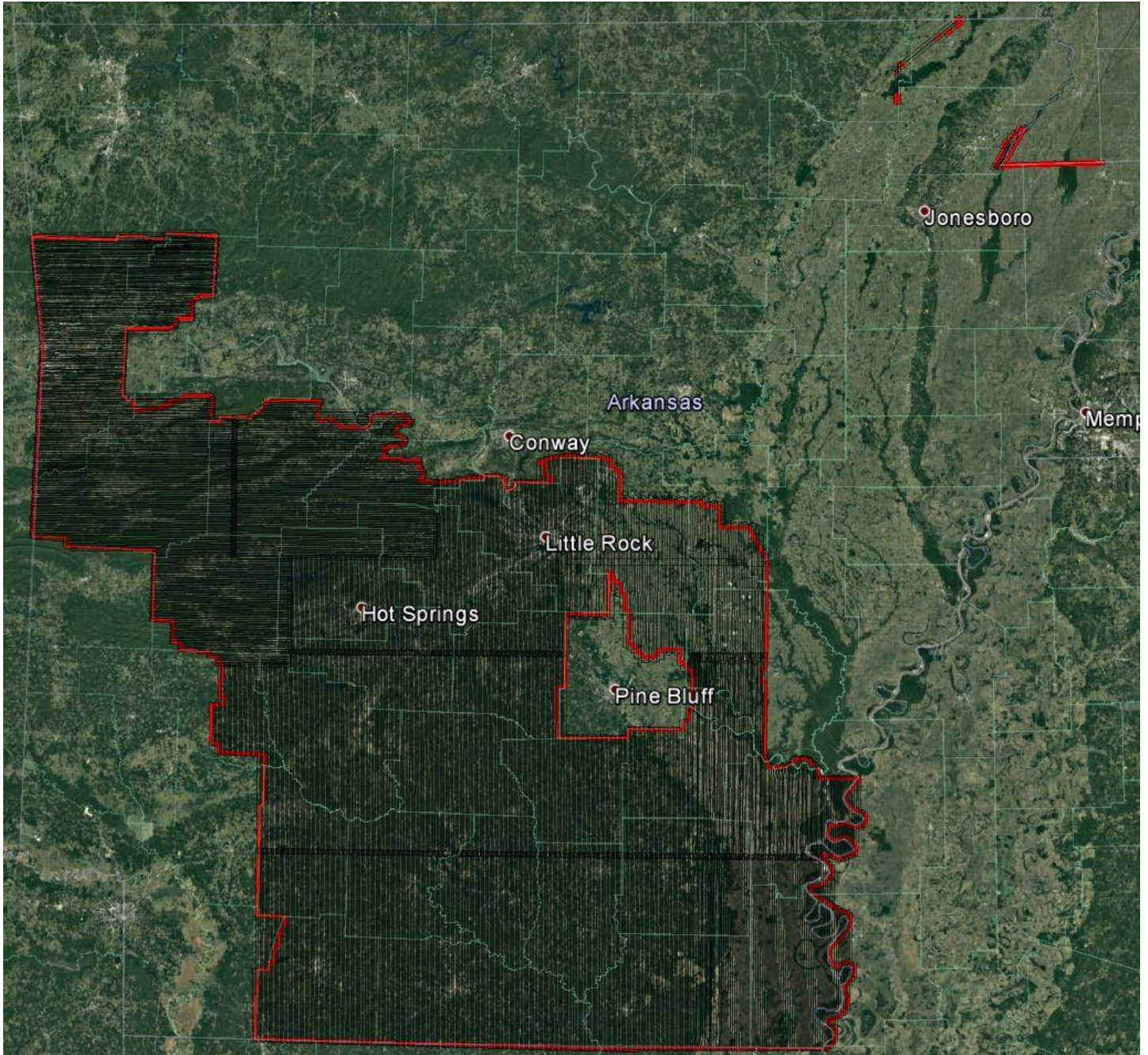


Table 2.4: Airborne Lidar Acquisition Flight Summary

Date of Mission	Lines Flown	Mission Time (UTC)
January 20, 2017_SH8170_A	01126-01140	22:35 – 2:10
January 21, 2017_SH8170_A	01141-01148	15:32 – 17:18
January 21, 2017_SH8170_B	01150-01157, 02149-02153	18:03 – 22:40
January 24, 2017_ASI	07249-07263	10:02 – 13:30
January 24, 2017_SH8170	01158, 01165, 02146-02148	20:14 – 0:33
January 25, 2017_SH8170	02124-02135	20:42 – 0:31
January 26, 2017_SH8170_A	02136-02145	15:03 – 18:13
January 26, 2017_SH8170_B	01120-01125	20:26 – 22:29
January 27, 2017_SH8170	02001-02009	21:56 – 0:44
January 28, 2017_SH8170_A	02050-02059	15:07 – 18:23
January 28, 2017_SH8170_B	02060-02069	20:54 – 0:10
January 29, 2017_SH8170_A	02070-02079	15:03 – 18:24
January 29, 2017_SH8170_B	02080-02087	21:10 – 23:52
January 30, 2017_SH8170_A	02088-02099	14:03 – 17:53
January 30, 2017_SH8170_B	02100-02109	19:51 – 23:00
January 30, 2017_SH8194	02032-02049	15:30 – 20:45
January 31, 2017_SH8170	01001-01017	19:00 – 21:50
January 31, 2017_SH8194	02010-02031	15:46 – 22:21
February 3, 2017_SH8170	01018-01029	20:09 – 23:51
February 3, 2017_SH8194	01114-01119	22:12 – 0:02
February 8, 2017_SH8194	01090-01097, 01108-01113	19:13 – 23:37
February 9, 2017_PAR	05045-05058	18:13 – 21:39
February 9, 2017_SH8170	01030-01039	19:06 – 22:26
February 9, 2017_SH8194_A	01088-01107	16:50 – 21:32
February 10, 2017_PAR	05001-05004	19:45 – 21:00
February 10, 2017_SH8170	01040-01049	15:29 – 18:53
February 10, 2017_SH8194	01072-01087	15:59 – 21:15
February 16, 2017_SH8170	02110-02123	17:33 – 21:57
February 17, 2017_ASI_A	07235-07248	15:46 – 21:55
February 17, 2017_SH8170_A	01050- 01060	15:16 – 18:51
February 17, 2017_SH8170_B	01046, 01061, 01062	21:16 – 22:17
February 19, 2017_ASI	07223-07234	19:42 – 23:28
February 19, 2017_SH8170	01064-01071	22:21 – 0:58
February 23, 2017_SH8170	01149-01169, 02154	0:05 – 3:14

February 23, 2017_ ASI_A	07213-07222	0:42 – 3:49
February 23, 2017_ ASI_B	07205-07212	19:48 – 22:18
February 24, 2017_ ASI	00560-00576	1:21 – 3:50
March 1, 2017_ PAR_A	05033-05044	17:34 – 21:13
March 1, 2017_ PAR_B	05025-05032	23:43 – 1:51
March 2, 2017_ PAR_A	05014- 05024	14:26 – 17:48
March 2, 2017_ PAR_B	04001-04011	22:21 – 1:15
March 2, 2017_ PAR_C	04012-04019	3:02 – 5:57
March 2, 2017_ SH8170_A	01063, 09001-09015	16:21 – 19:43
March 2, 2017_ SH8170_B	09016-09029	21:39 – 0:20
March 3, 2017_ PAR_A	05005-05013	15:01 – 17:47
March 3, 2017_ PAR_B	04020-04025	20:30 – 22:37
March 3, 2017_ SH8170	09030-09051	16:32 – 21:13
March 4, 2017_ PAR_A	04026-04033	14:17 – 17:13
March 4, 2017_ PAR_B	04034-04038	18:40 – 20:34
March 4, 2017_ SH8170_A	09054-09067	14:51 – 18:56
March 4, 2017_ SH8170_B	09068-09078	20:10 – 23:25
March 7, 2017_ PAR_A	04039-04044	15:22 – 18:01
March 7, 2017_ PAR_B	04045-04048	0:05 – 2:03
March 7, 2017_ SH8170	09079-09092	21:08 – 1:32
March 7, 2017_ SH8194	09165-09167	21:52 – 22:25
March 8, 2017_ PAR_A	04077-04080	4:55 – 6:43
March 8, 2017_ PAR_B	04068-04076	12:24 – 16:05
March 8, 2017_ PAR_C	04060-04067	18:24 – 21:57
March 8, 2017_ PAR_D	04049-04055	0:12 – 3:31
March 8, 2017_ SH8170	09093-09100	16:14 – 18:43
March 9, 2017_ PAR_A	04056-04059	5:07 – 6:55
March 10, 2017_ ASI_A	03042-03057	22:19 – 2:47
March 10, 2017_ PAR	03154-03161	21:02 – 0:05
March 12, 2017_ PAR	03147-03153	20:45 – 23:38
March 13, 2017_ PAR	03142-03146	1:50 – 4:04
March 15, 2017_ ASI_A	03058-03069, 03087-03092, 03164-03172	15:11 – 2:42
March 20, 2017_ ASI	00509-00521	21:53 – 2:21
March 20, 2017_ PAR_A	03137-03141, 00521, 00522	12:21 – 16:26
March 20, 2017_ PAR_B	03123-03129	17:21 – 20:25
March 20, 2017_ PAR_C	03130-03133, 03173-03177	22:48 – 5:21

March 21, 2017_ASI_A	00521-00532	16:01 – 20:34
March 21, 2017_ASI_B	00536-00559	22:30 – 3:05
March 21, 2017_PAR_A	03133-03136	4:56 – 6:39
March 21, 2017_PAR_B	03116-03121	12:32 – 14:57
March 21, 2017_PAR_C	03110-03115	16:41 – 19:04
March 21, 2017_PAR_D	03104-03109	22:23 – 0:26
March 22, 2017_ASI_A	00505-00508, 00533-00535, 07194-07204	16:38 – 0:34
March 23, 2017_PAR_A	03098-03103	1:45 – 4:13
March 23, 2017_A	39-49	3:12 – 6:05
March 23, 2017_B	32-38	16:48 – 18:52
March 24, 2017	29-31	2:20 – 2:38
March 26, 2017_PAR	06001-06011	23:32 – 1:32
March 26, 2017_A	14-27	13:44 – 14:02
March 26, 2017_B	02-13	20:56 – 0:12
March 27, 2017	28, 50	20:56 – 3:39

Section 3: LiDAR Data Processing

Applications and Work Flow Overview

1. Resolved kinematic corrections for three subsystems: inertial measurement unit (IMU), sensor orientation information and airborne GPS data. Developed a blending post-processed aircraft position with attitude data using Kalman filtering technology or the smoothed best estimate trajectory (SBET).

Software: POSPac Software v. 5.3, IPAS Pro v.1.35., Novatel Inertial Explorer v8.60.6129

2. Calculated laser point position by associating the SBET position to each laser point return time, scan angle, intensity, etc. Created raw laser point cloud data for the entire survey in LAS format. Automated line-to-line calibrations were then performed for system attitude parameters (pitch, roll, heading), mirror flex (scale) and GPS/IMU drift.

Software: ALS Post Processing Software v.2.75 build #25, Proprietary Software, TerraMatch v. 17., Add Leica Cloud Pro v1.2.3

3. Imported processed LAS point cloud data into the task order tiles. Resulting data were classified as ground and non-ground points with additional filters created to meet the task order classification specifications. Statistical absolute accuracy was assessed via direct comparisons of ground classified points to ground RTK survey data. Based on the statistical analysis, the lidar data was then adjusted to reduce the vertical bias when compared to the survey ground control.

Software: TerraScan v.17

4. The LAS files were evaluated through a series of manual QA/QC steps to eliminate remaining artifacts from the ground class.

Software: TerraScan v.17

Global Navigation Satellite System (GNSS)–Inertial Measurement Unit (IMU) Trajectory Processing

Equipment

The pilots are skilled at maintaining their planned trajectory, while holding the aircraft steady and level. If atmospheric conditions are such that the trajectory, ground speed, roll, pitch and/or heading cannot be properly maintained, the mission is aborted until suitable conditions occur.

Base stations were set by acquisition staff and were used to support the Lidar data acquisition. The GNSS base station operated during the Lidar acquisition missions is listed below:

Table 3.1: GNSS Base Station

Station (Name)	Latitude (DMS)	Longitude (DMS)	Ellipsoid Height (L1 Phase center) (Meters)
ARPG CORS	36°03'32.78726"	90°31'07.62492"	69.632
KHOT Airport-PAR	34°28'53.50648"	93°05'40.00332"	131.398
MSGN CORS	33°20'19.30470"	91°02'27.43770"	17.657
NGS PID DK2135	33°38'08.99825"	91°45'12.48965"	52.906
PAR Fort Smith	35°20'16.31237"	94°22'31.10389"	109.466
PAR Waldron	34°52'36.74099"	94°06'34.04541"	181.533

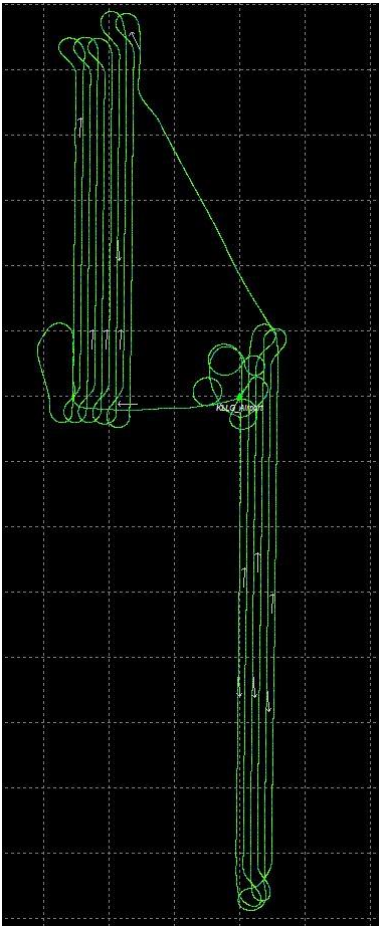
Data Processing

All airborne GNSS and IMU data was post-processed and quality controlled using Applanix MMS software. GNSS data was processed at a 1 and 2 Hz data capture rate and the IMU data was processed at 200 Hz.

Trajectory Quality

The GNSS Trajectory, along with high quality IMU data are key factors in determining the overall positional accuracy of the final sensor data. Within the trajectory processing, there are many factors that affect the overall quality, but the most indicative are the combined separation, the estimated positional accuracy, and the Positional Dilution of Precision (PDOP).

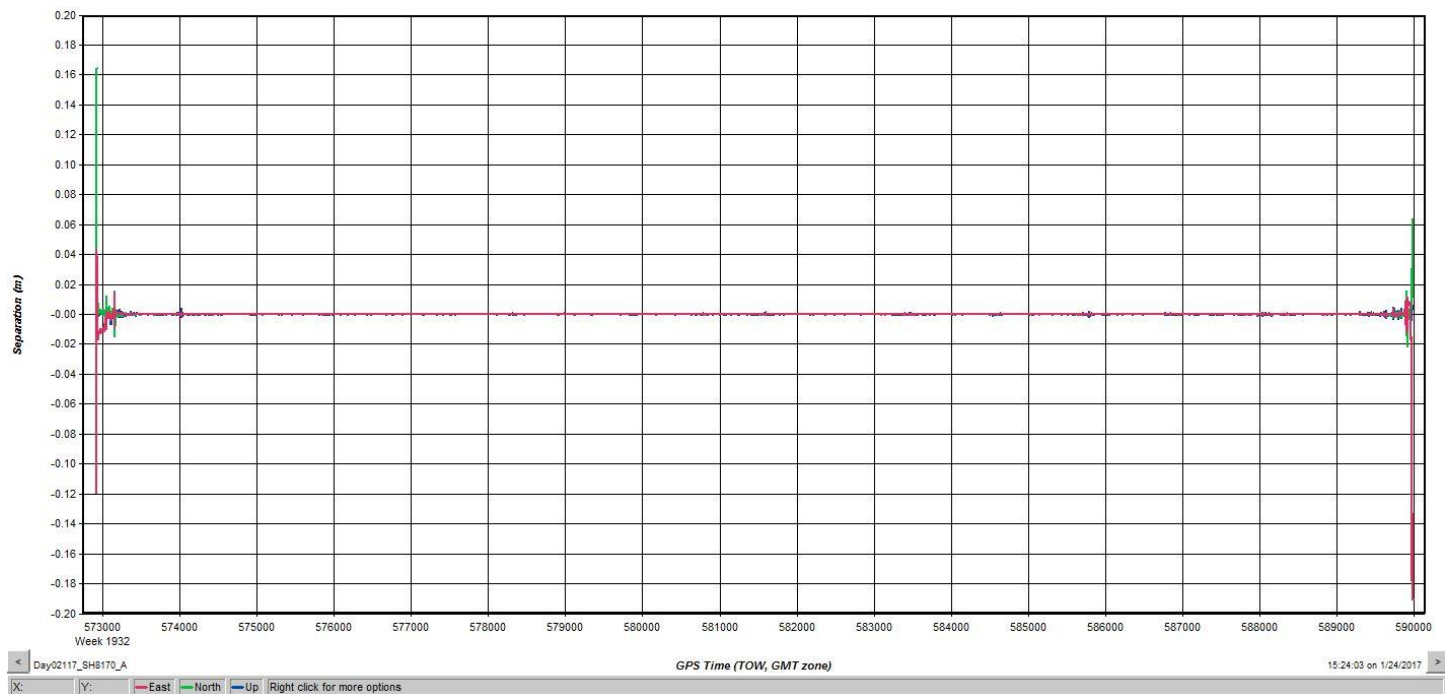
Figure 3.1: Trajectory, Day2117_SH8170_A



Combination Separation

The Combined Separation is a measure of the difference between the forward run and the backward run solution of the trajectory. The Kalman filter is processed in both directions to remove the combined directional anomalies. In general, when these two solutions match closely, an optimally accurate reliable solution is achieved. Woolpert's goal is to maintain a Combined Separation Difference of less than ten (10) centimeters. In most cases we achieve results below this threshold.

Figure 3.2: Combined Separation, Day2117_SH8170_A

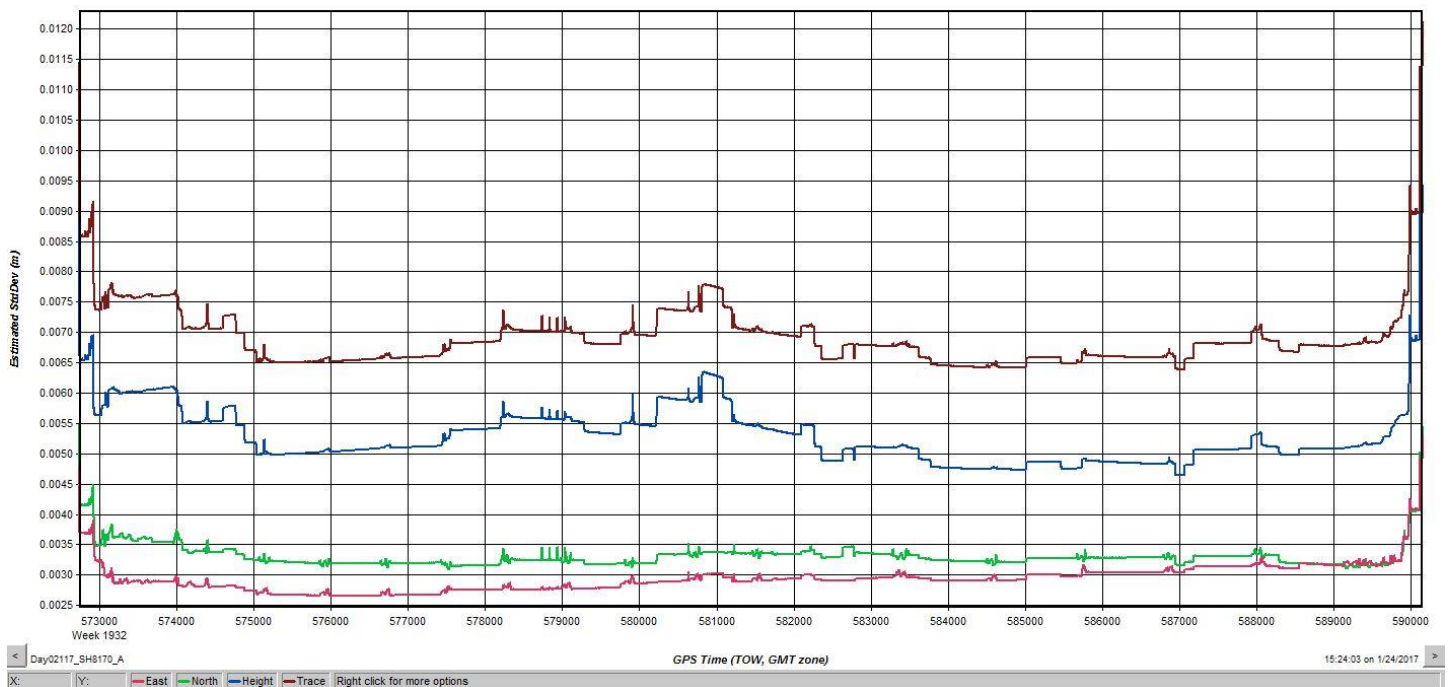


Estimated Positional Accuracy

The Estimated Positional Accuracy plots the standard deviations of the east, north, and vertical directions along a time scale of the trajectory. It illustrates loss of satellite lock issues, as well as issues arising from long baselines, noise, and/or other atmospheric interference.

Woolpert's goal is to maintain an Estimated Positional Accuracy of less than ten (10) centimeters, often achieving results well below this threshold.

Figure 3.3: Estimated Positional Accuracy, Day2117_SH8170_A

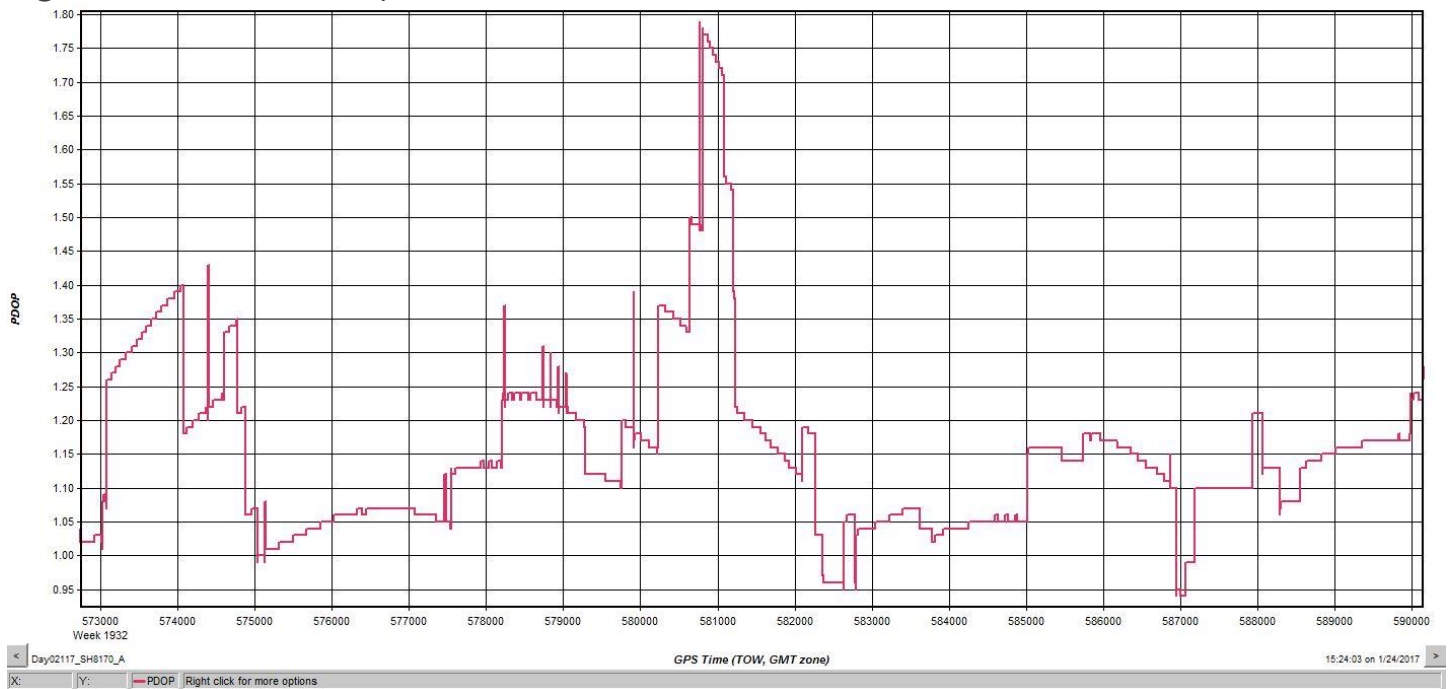


PDOP

The PDOP measures the precision of the GPS solution in regard to the geometry of the satellites acquired and used for the solution.

Woolpert's goal is to maintain an average PDOP value below 3.0. Brief periods of PDOP over 3.0 are acceptable due to the calibration and control process if other metrics are within specification.

Figure 3.4: PDOP, Day2117_SH8170_A



LiDAR Data Processing

When the sensor calibration, data acquisition, and GPS processing phases were complete, the formal data reduction processes by Woolpert lidar specialists included:

- Processed individual flight lines to derive a raw “Point Cloud” LAS file. Matched overlapping flight lines, generated statistics for evaluation comparisons, and made the necessary adjustments to remove any residual systematic error.
- Calibrated LAS files were imported into the task order tiles and initially filtered to create a ground and non-ground class. Then additional classes were filtered as necessary to meet client specified classes.
- Once all project data was imported and classified, survey ground control data was imported and calculated for an accuracy assessment. As a QC measure, Woolpert has developed a routine to generate accuracy statistical reports by comparisons against the TIN and the DEM using surveyed ground control of higher accuracy. The lidar is adjusted accordingly to meet or exceed the vertical accuracy requirements.
- The lidar tiles were reviewed using a series of proprietary QA/QC procedures to ensure it fulfills the task order requirements. A portion of this requires a manual step to ensure anomalies have been removed from the ground class.
- The lidar LAS files are classified into the Processed but not classified (Class 1), Bare-earth (Class 2), Low Noise (Class 7), Water (Class 9), Ignored ground (Class10), Bridge Decks (Class 17), High Noise (Class 18) classifications.
- FGDC Compliant metadata was developed for the task order in .xml format per product.
- The horizontal datum used for the task order was referenced to NAD83 (2011), Zone 15, Meters. The vertical datum used for the task order was referenced to NAVD 1988, Meters, GEOID12B

Section 4: Hydrologic Flattening

HYDROLOGIC FLATTENING OF LIDAR DEM DATA

AR Ouachita FEMA R6 Lidar 2016 processing task order required the compilation of breaklines defining water bodies and rivers. The breaklines were used to perform the hydrologic flattening of water bodies, and gradient hydrologic flattening of double line streams and rivers. Lakes, reservoirs and ponds, at a minimum size of 2-acre or greater, were compiled as closed polygons. The closed water bodies were collected at a constant elevation. Rivers and streams, at a nominal minimum width of 30 meters (100 feet), were compiled in the direction of flow with both sides of the stream maintaining an equal gradient elevation.

LIDAR DATA REVIEW AND PROCESSING

Woolpert utilized the following steps to hydrologically flatten the water bodies and for gradient hydrologic flattening of the double line streams within the existing lidar data.

1. Woolpert used the newly acquired lidar data to manually draw the hydrologic features in a 2D environment using the lidar intensity and bare earth surface. Open Source imagery was used as reference when necessary.
2. Woolpert utilizes an integrated software approach to combine the lidar data and 2D breaklines. This process “drapes” the 2D breaklines onto the 3D lidar surface model to assign an elevation. A monotonic process is performed to ensure the streams are consistently flowing in a gradient manner. A secondary step within the program verifies an equally matching elevation of both stream edges. The breaklines that characterize the closed water bodies are draped onto the 3D lidar surface and assigned a constant elevation at or just below ground elevation.
3. The lakes, reservoirs and ponds, at a minimum size of 2-acre or greater and streams at a minimum size of 30 meters (100 feet) nominal width, were compiled to meet task order requirements. **Figure 4.1** illustrates an example of 30 meters (100 feet) nominal streams identified and defined with hydrologic breaklines. The breaklines defining rivers and streams, at a nominal minimum width of 30 meters (100 feet), were draped with both sides of the stream maintaining an equal gradient elevation.
4. All ground points were reclassified from inside the hydrologic feature polygons to water, class nine (9).
5. All ground points were reclassified from within a buffer along the hydrologic feature breaklines to buffered ground, class ten (10).
6. The lidar ground points and hydrologic feature breaklines were used to generate a new digital elevation model (DEM).

Figure 4.1: Example Hydrologic Breaklines

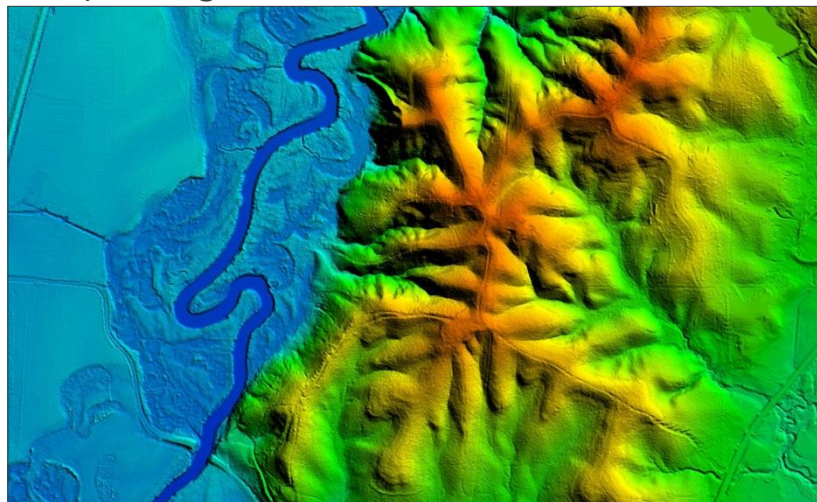


Figure 4.2 reflects a DEM generated from original lidar bare earth point data prior to the hydrologic flattening process. Note the “tinning” across the lake surface.

Figure 4.3 reflects a DEM generated from lidar with breaklines compiled to define the hydrologic features. This figure illustrates the results of adding the breaklines to hydrologically flatten the DEM data. Note the smooth appearance of the lake surface in the DEM.



Figure 4.2



Figure 4.3

Terrascan was used to add the hydrologic breakline vertices and export the lattice models. The hydrologically flattened DEM data was provided to USGS in ERDAS .IMG format.

The hydrologic breaklines compiled as part of the flattening process were provided to the USGS in ESRI shapefile format. The breaklines defining the water bodies greater than 2-acre and for the gradient flattening of all rivers and streams at a nominal minimum width of 30 meters (100 feet) were provided in geodatabase as a Polygon-Z and Polyline-Z shape file, respectively.

DATA QA/QC

Initial QA/QC for this task order was performed in Global Mapper v17, by reviewing the grids and hydrologic breakline features. Additionally, ESRI software and proprietary methods were used to review the overall connectivity of the hydrologic breaklines.

Edits and corrections were addressed individually by tile. If a water body breakline needed to be adjusted to improve the flattening of the DEM data, the area was cross referenced by tile number, corrected accordingly, a new DEM file was regenerated and reviewed.

Section 5: ACCURACY ASSESSMENT

Accuracy Assessment

The vertical accuracy statistics were calculated by comparison of all lidar points to the ground surveyed QC points.

Table 5.1: Overall Vertical Accuracy Statistics

Average error	0.019	Meter
Minimum error	-0.190	Meter
Maximum error	0.180	Meter
Average magnitude	0.044	Meter
Root mean square	0.058	Meter
Standard deviation	0.054	Meter

Table 5.2: RAW Swath Quality Check Point Analysis NVA

Point ID	Easting (Meter)	Northing (Meter)	Elevation (Meter)	TIN Elevation (Meter)	Dz (Meter)
2001	462214.550	3713243.830	108.020	108.030	0.010
2002	457231.420	3662446.730	75.100	75.050	-0.050
2003	464040.320	3674737.630	74.620	74.590	-0.030
2004	472300.010	3708756.230	108.770	108.740	-0.030
2005	480381.650	3689864.600	102.190	102.200	0.010
2006	481527.900	3662117.120	97.760	97.720	-0.040
2007	474344.500	3717007.090	117.710	117.770	0.060
2008	487950.410	3675112.910	99.260	99.290	0.030
2009	492853.730	3712148.700	92.680	92.720	0.040
2010	494811.960	3664716.440	70.650	70.540	-0.110
2011	508524.800	3657306.460	71.060	71.010	-0.050
2012	516060.570	3681507.360	65.580	65.620	0.040
2013	513683.810	3712410.530	40.900	40.910	0.010
2014	521546.410	3719635.490	38.780	38.800	0.020
2015	524928.640	3691752.700	37.420	37.440	0.020
2016	525740.540	3653791.250	58.490	58.420	-0.070
2017	539006.570	3675938.840	64.590	64.570	-0.020
2018	549593.630	3701426.500	37.540	37.600	0.060
2019	549266.580	3665957.990	64.440	64.450	0.010
2020	554077.910	3688149.590	28.060	28.000	-0.060
2021	559018.140	3714620.670	69.930	69.930	0.000
2022	564212.490	3659370.690	45.550	45.600	0.050

2023	535793.830	3733224.340	73.110	73.200	0.090
2024	587482.620	3721839.250	57.960	57.980	0.020
2025	573347.150	3688758.540	37.110	37.100	-0.010
2026	576363.170	3655892.490	30.270	30.290	0.020
2027	584928.950	3679599.640	27.440	27.480	0.040
2028	594305.030	3707701.490	32.670	32.650	-0.020
2029	610367.200	3719884.660	76.680	76.760	0.080
2030	599715.120	3652613.390	34.700	34.720	0.020
2031	610031.690	3666746.500	43.350	43.390	0.040
2032	606886.580	3691509.290	58.040	58.170	0.130
2033	617798.220	3706494.860	63.590	63.570	-0.020
2034	626189.070	3732105.290	53.700	53.700	0.000
2035	627840.950	3654036.440	34.270	34.290	0.020
2036	634821.050	3685785.610	39.660	39.630	-0.030
2037	646342.350	3711116.600	41.590	41.620	0.030
2038	649288.590	3722821.410	43.160	43.190	0.030
2039	654127.260	3704446.150	39.680	39.740	0.060
2040	662913.360	3665326.640	33.240	33.320	0.080
2041	651608.770	3675997.680	34.150	34.210	0.060
2042	666359.560	3720261.330	41.780	41.820	0.040
2044	674711.500	3677826.080	44.360	44.360	0.000
2045	670870.170	3659992.850	43.980	44.010	0.030
2046	441430.770	3777514.140	183.910	183.890	-0.020
2047	440836.630	3764166.460	116.040	115.960	-0.080
2048	446830.500	3774992.720	203.570	203.560	-0.010
2049	453379.050	3768795.710	151.150	151.170	0.020
2050	459154.860	3771549.230	87.120	87.180	0.060
2051	465211.990	3739007.470	96.400	96.420	0.020
2052	466605.550	3770656.160	116.700	116.720	0.020
2053	477781.980	3750636.020	71.570	71.560	-0.010
2054	475623.500	3773371.180	101.990	101.950	-0.040
2055	484008.620	3769661.100	109.020	108.920	-0.100
2056	490803.360	3786477.110	127.010	126.920	-0.090
2057	482272.480	3752015.960	81.250	81.240	-0.010
2058	492792.060	3769181.850	75.670	75.660	-0.010
2059	502753.940	3763400.020	50.340	50.350	0.010
2060	512852.860	3744500.830	43.660	43.680	0.020
2061	506748.220	3788217.350	68.380	68.350	-0.030
2062	519458.610	3785030.180	142.260	142.340	0.080
2063	527101.590	3776714.350	117.590	117.610	0.020
2064	527919.430	3754865.280	73.060	73.050	-0.010

2065	536967.270	3754035.950	133.280	133.390	0.110
2066	538085.570	3781097.110	82.950	82.940	-0.010
2067	542719.440	3788526.260	66.260	66.180	-0.080
2068	555829.080	3796084.450	73.210	73.140	-0.070
2069	558285.960	3734175.020	63.500	63.580	0.080
2070	562918.260	3743077.430	61.690	61.700	0.010
2071	554414.810	3772666.700	57.480	57.420	-0.060
2072	531499.840	3770291.070	137.490	137.500	0.010
2073	572219.990	3752593.850	64.390	64.460	0.070
2074	573996.580	3765194.160	69.020	69.010	-0.010
2075	580449.230	3762344.020	72.680	72.740	0.060
2076	584841.530	3755305.470	68.770	68.770	0.000
2077	588411.700	3759727.430	84.890	85.030	0.140
2078	593398.810	3768932.310	92.200	92.230	0.030
2079	598019.760	3763979.240	75.800	75.800	0.000
2080	607447.350	3756579.840	82.160	82.090	-0.070
2081	608786.250	3771208.040	57.430	57.410	-0.020
2082	610658.750	3747354.240	114.280	114.280	0.000
2083	623657.050	3743399.750	58.060	58.100	0.040
2084	627029.240	3758912.210	52.500	52.520	0.020
2085	635249.980	3758047.420	49.510	49.550	0.040
2086	640813.810	3746906.720	49.120	49.040	-0.080
2087	646517.070	3739151.490	46.860	46.820	-0.040
2088	649661.780	3752361.990	45.440	45.420	-0.020
2089	655891.640	3744776.450	45.430	45.440	0.010
2090	659975.880	3736991.110	42.970	42.940	-0.030
2091	669336.790	3744653.850	43.760	43.780	0.020
2092	669500.190	3741602.690	51.540	51.540	0.000
2093	669932.680	3754244.230	53.450	53.420	-0.030
2094	663070.910	3730899.260	43.270	43.360	0.090
2095	664069.930	3712208.400	43.960	43.960	0.000
2096	630439.630	3769030.750	53.530	53.560	0.030
2097	501403.220	3753812.890	87.230	87.200	-0.030
2098	512479.610	3695288.150	56.920	56.920	0.000
2099	370987.970	3957730.700	528.290	528.350	0.060
2100	399168.550	3957346.490	630.140	630.140	0.000
2101	396856.370	3950758.750	473.540	473.550	0.010
2102	373786.670	3945682.650	202.700	202.680	-0.020
2103	406289.050	3942954.850	417.320	417.320	0.000
2104	376605.600	3937519.020	256.370	256.430	0.060
2105	404525.650	3938203.350	233.910	233.890	-0.020

2106	370561.290	3932455.450	234.460	234.510	0.050
2107	392861.330	3935438.420	260.680	260.810	0.130
2108	378377.730	3924767.710	190.680	190.740	0.060
2109	380535.070	3922105.200	135.580	135.660	0.080
2110	372775.750	3915074.510	149.400	149.400	0.000
2111	371636.660	3909861.950	139.790	139.840	0.050
2112	394140.230	3922204.600	116.860	116.940	0.080
2113	397887.420	3912906.650	128.190	128.140	-0.050
2114	400133.210	3905693.480	159.210	159.260	0.050
2115	371907.570	3894664.080	162.680	162.770	0.090
2116	375029.270	3888425.940	221.460	221.490	0.030
2116A	375043.290	3888437.050	220.770	220.820	0.050
2117	394375.640	3889294.930	224.250	224.250	0.000
2118	393416.260	3882531.090	200.480	200.530	0.050
2119	404527.430	3883664.920	170.500	170.480	-0.020
2120	406571.690	3874830.790	222.070	222.110	0.040
2121	394026.060	3870424.010	483.950	484.070	0.120
2122	398083.710	3862456.770	207.520	207.510	-0.010
2123	400757.110	3858385.140	283.730	283.750	0.020
2124	738946.840	3992357.950	76.570	76.610	0.040
2125	404336.440	3850145.550	210.800	210.840	0.040
2126	399526.240	3843684.960	240.100	240.050	-0.050
2127	414093.880	3841528.240	304.980	305.030	0.050
2128	386610.660	3843141.190	339.590	339.600	0.010
2129	405217.150	3864261.870	242.730	242.810	0.080
2130	556332.020	3857655.570	80.320	80.310	-0.010
2131	426219.450	3956292.550	708.330	708.510	0.180
2132	407417.400	3954693.210	664.850	664.940	0.090
2133	427549.870	3951961.470	496.730	496.730	0.000
2134	422769.400	3946673.450	208.430	208.470	0.040
2135	417711.810	3958047.540	726.260	726.200	-0.060
2135A	417786.810	3957980.220	733.460	733.370	-0.090
2136	368943.320	3874001.630	185.400	185.360	-0.040
2137	382207.470	3875304.550	215.790	215.770	-0.020
2138	416971.150	3889589.120	156.550	156.720	0.170
2139	439009.990	3887692.850	175.920	175.990	0.070
2140	457004.020	3893817.560	310.400	310.470	0.070
2141	465650.740	3893987.550	142.780	142.830	0.050
2142	483798.350	3885036.940	106.220	106.310	0.090
2143	452167.290	3885379.990	115.120	115.210	0.090
2144	456392.330	3878887.460	126.090	126.090	0.000

2145	487149.630	3874659.070	109.090	109.120	0.030
2146	475384.620	3874271.620	146.040	146.080	0.040
2147	464029.530	3867322.490	120.580	120.660	0.080
2148	516756.920	3873518.630	109.150	109.210	0.060
2151	521852.590	3851283.010	210.230	210.290	0.060
2152	465641.560	3842099.500	238.670	238.690	0.020
2153	483904.780	3839894.440	219.950	219.900	-0.050
2154	500434.410	3837766.590	193.800	193.890	0.090
2155	465755.120	3857953.860	222.910	222.980	0.070
2156	629402.130	3849352.790	70.350	70.420	0.070
2157	453001.810	3839227.350	218.410	218.440	0.030
2158	427241.460	3854234.440	158.520	158.650	0.130
2159	415238.760	3827902.020	274.930	275.010	0.080
2160	438634.520	3838038.730	241.390	241.440	0.050
2161	426681.390	3823037.550	255.470	255.500	0.030
2162	449828.560	3831627.440	186.200	186.270	0.070
2163	427281.320	3818085.620	257.350	257.380	0.030
2164	439971.590	3821884.000	220.030	220.160	0.130
2165	422234.670	3806495.100	329.450	329.560	0.110
2166	435268.940	3802038.990	220.780	220.880	0.100
2167	451466.420	3806584.400	238.270	238.310	0.040
2168	439968.750	3796809.720	250.720	250.720	0.000
2169	449862.390	3793250.380	161.250	161.230	-0.020
2170	468295.220	3811253.940	170.940	170.980	0.040
2171	464750.270	3819446.330	205.310	205.330	0.020
2172	475244.970	3827083.730	204.050	204.070	0.020
2173	719277.260	4039968.700	92.660	92.700	0.040
2174	484111.500	3825846.230	147.920	147.910	-0.010
2175	489119.180	3817009.550	135.370	135.380	0.010
2176	495353.970	3816855.080	162.770	162.850	0.080
2177	494606.030	3812667.240	145.460	145.490	0.030
2178	500561.130	3814783.970	115.540	115.550	0.010
2179	507419.900	3814181.040	126.520	126.500	-0.020
2180	509398.890	3831392.230	164.090	164.100	0.010
2180A	509398.420	3831391.850	164.070	164.100	0.030
2181	518740.710	3824522.720	151.470	151.510	0.040
2181A	518740.360	3824524.630	151.490	151.540	0.050
2182	515865.780	3804322.210	91.720	91.690	-0.030
2183	520353.440	3801832.520	102.880	102.900	0.020
2184	525293.880	3811127.240	95.340	95.320	-0.020
2185	542348.920	3817854.750	114.270	114.280	0.010

2186	539774.460	3824542.660	108.450	108.450	0.000
2187	539084.390	3828835.890	161.740	161.740	0.000
2188	535232.980	3839412.220	124.680	124.670	-0.010
2189	539636.860	3857799.310	97.410	97.410	0.000
2190	557669.050	3847964.110	140.220	140.210	-0.010
2191	561455.580	3843189.280	86.460	86.470	0.010
2192	563809.330	3844006.750	93.850	93.830	-0.020
2193	569033.460	3845896.760	79.320	79.340	0.020
2194	569956.390	3851100.900	130.010	130.010	0.000
2195	574345.550	3854397.650	77.190	77.170	-0.020
2196	579695.380	3857618.340	73.490	73.420	-0.070
2197	588625.240	3832250.160	70.580	70.560	-0.020
2198	588479.500	3869869.110	87.050	87.110	0.060
2199	600192.700	3849059.330	74.070	74.110	0.040
2200	595878.170	3822990.490	68.930	68.990	0.060
2201	599276.000	3812944.800	66.140	66.100	-0.040
2202	607062.130	3834667.000	63.980	63.980	0.000
2203	603287.420	3802355.720	63.900	63.820	-0.080
2204	612860.740	3819712.990	61.590	61.660	0.070
2205	622422.020	3831333.690	60.760	60.780	0.020
2206	619305.100	3809502.210	57.320	57.370	0.050
2207	632283.900	3816165.330	64.470	64.430	-0.040
2208	631327.670	3820633.270	62.500	62.560	0.060
2209	631445.150	3829174.290	67.090	67.130	0.040
2210	640944.230	3848562.850	58.560	58.520	-0.040
2211	647188.190	3833193.370	61.450	61.430	-0.020
2212	645424.440	3802954.350	59.690	59.640	-0.050
2213	389157.630	3870411.140	552.570	552.670	0.100
2214	630593.690	3693389.750	49.110	49.090	-0.020
2215	547542.740	3848567.260	164.720	164.710	-0.010
2216	383207.450	3957310.290	404.150	404.090	-0.060
2217	380277.440	3952087.340	276.310	276.340	0.030
2218	383433.820	3945352.190	343.030	343.050	0.020
2219	407785.120	3951146.430	502.910	502.940	0.030
2220	422070.250	3928341.100	159.320	159.240	-0.080
2221	418729.470	3941227.110	274.550	274.710	0.160
2222	409844.920	3930285.820	220.610	220.620	0.010
2222A	409831.520	3930278.320	221.530	221.520	-0.010
2223	404714.840	3929805.410	131.760	131.780	0.020
2224	384617.640	3917163.720	128.520	128.330	-0.190
2225	381858.530	3909919.090	146.950	147.000	0.050

2226	376007.960	3903324.280	184.880	184.880	0.000
2227	369495.920	3862763.720	208.950	208.970	0.020
2228	375195.770	3856062.160	273.900	273.970	0.070
2229	366922.670	3848048.760	241.900	242.010	0.110
2230	376676.050	3848330.940	280.790	280.780	-0.010
2231	387973.520	3851525.970	275.860	275.910	0.050
2232	386178.930	3861182.170	231.130	231.160	0.030
2233	418470.380	3879021.950	164.720	164.710	-0.010
2234	418521.290	3869115.160	313.720	313.860	0.140
2235	418802.820	3862596.780	229.530	229.530	0.000
2236	442029.190	3870990.980	144.530	144.670	0.140
2237	444689.920	3858763.460	155.900	155.940	0.040
2238	444286.880	3848373.900	308.480	308.520	0.040
2239	422263.190	3844883.890	323.020	323.120	0.100
2240	435854.300	3847802.770	408.320	408.410	0.090
2241	509131.300	3889301.940	281.610	281.730	0.120
2243	510093.680	3853040.620	251.060	251.090	0.030
2244	563603.320	3873702.590	233.400	233.510	0.110
2245	573646.600	3871962.340	103.210	103.250	0.040
2246	570525.320	3863397.500	104.150	104.170	0.020
2247	582530.650	3816954.320	68.260	68.230	-0.030
2248	567822.800	3823204.730	80.700	80.700	0.000
2249	566209.170	3832510.900	99.780	99.790	0.010
2250	558276.550	3827187.790	102.040	102.020	-0.020
2251	553160.400	3822118.310	110.620	110.620	0.000
2252	562750.030	3809742.140	87.860	87.900	0.040
2253	542851.930	3808402.300	118.490	118.500	0.010
2254	495689.840	3803186.960	234.720	234.820	0.100
2255	476148.190	3803060.240	214.850	214.850	0.000
2256	467982.850	3793254.570	156.700	156.750	0.050
2257	456621.550	3784281.000	146.470	146.430	-0.040
2258	632887.570	3790722.690	54.700	54.680	-0.020
2259	646620.780	3776614.010	54.880	54.800	-0.080
2260	624667.320	3782715.450	57.460	57.600	0.140
2261	618749.100	3800971.480	55.780	55.720	-0.060
2262	612285.180	3813223.250	61.050	61.010	-0.040
2263	614603.070	3849974.260	70.840	70.910	0.070
2264	604230.440	3737382.250	71.120	71.240	0.120
2265	588455.390	3739346.230	50.490	50.390	-0.100
2266	576244.250	3738128.830	61.110	61.140	0.030
2267	567194.930	3727068.620	78.950	78.950	0.000

2268	470192.830	3653616.350	65.010	64.880	-0.130
2269	472544.290	3670608.750	100.210	100.250	0.040
2270	515690.270	3735973.630	43.580	43.670	0.090
2271	495091.950	3745754.220	78.010	77.990	-0.020
2272	486812.180	3753193.690	66.310	66.220	-0.090
2273	501632.580	3731390.480	82.470	82.500	0.030
2274	490219.040	3734674.520	58.520	58.560	0.040
2275	474999.510	3733519.970	70.000	70.070	0.070
2276	462080.300	3730653.950	72.520	72.680	0.160
2277	485904.240	3724267.540	115.800	115.850	0.050
2278	475104.710	3725688.880	81.830	81.840	0.010
2279	482615.020	3706141.190	115.570	115.600	0.030
2280	431574.360	3938224.630	485.200	485.180	-0.020
2281	388668.490	3903990.420	212.860	212.810	-0.050
2282	386157.540	3898391.470	156.610	156.710	0.100
2283	384562.030	3888159.220	193.530	193.550	0.020
2284	431125.930	3881537.290	133.270	133.340	0.070
2285	430389.980	3867235.540	172.260	172.350	0.090
2286	425805.160	3838489.130	283.980	284.060	0.080
2287	435057.440	3813508.370	236.370	236.400	0.030
2288	514653.160	3770339.750	120.290	120.260	-0.030
2289	517301.510	3757156.450	98.580	98.580	0.000
2290	552994.230	3759534.430	79.460	79.490	0.030
2291	553073.550	3741920.040	85.890	85.900	0.010
2292	550503.370	3712031.320	64.480	64.430	-0.050
2293	533370.270	3709197.630	45.500	45.540	0.040
2294	566341.410	3673333.720	48.840	48.840	0.000
2295	596305.720	3665210.030	47.340	47.310	-0.030
2296	576943.780	3701827.390	56.320	56.280	-0.040
2297	577143.790	3715600.260	75.030	75.040	0.010
2298	494165.820	3852063.360	436.200	436.300	0.100
2299	474167.890	3869185.150	112.080	112.260	0.180
2300	465482.140	3878443.880	108.460	108.540	0.080
2301	391993.930	3941886.340	229.140	229.210	0.070
2302	383662.780	3933751.880	215.520	215.520	0.000
2303	389109.060	3926301.800	124.890	124.970	0.080
2304	393246.470	3910341.510	132.250	132.230	-0.020
2305	385646.350	3880135.170	184.090	184.100	0.010
2306	612499.390	3676116.880	53.750	53.790	0.040
2307	458294.500	3758809.220	111.890	111.880	-0.010
2308	473196.160	3763837.450	119.430	119.490	0.060

2309	471959.760	3786037.680	210.430	210.450	0.020
2310	455638.900	3852588.070	279.810	279.840	0.030
2311	373582.930	3924599.260	130.100	130.060	-0.040
2312	396949.510	3898632.820	150.300	150.260	-0.040
2313	412496.040	3854111.240	213.080	213.170	0.090
2314	461833.560	3832741.900	204.540	204.570	0.030
2315	496086.920	3832136.070	214.690	214.710	0.020
2316	522396.200	3839677.570	184.000	184.050	0.050
2317	585966.910	3847323.720	74.340	74.320	-0.020
2318	568431.370	3788882.750	74.190	74.150	-0.040
2319	564279.570	3765954.420	73.900	73.910	0.010
2320	496238.950	3691463.500	60.990	61.010	0.020
2321	485693.120	3868192.060	132.590	132.720	0.130
2322	389407.330	3918998.920	130.180	130.200	0.020
2323	365829.830	3952455.700	269.830	269.800	-0.030
2324	415650.870	3924506.760	220.520	220.510	-0.010
2325	378117.770	3868171.880	567.550	567.630	0.080
2326	450699.430	3820955.040	195.850	195.960	0.110
2327	446343.320	3813546.890	296.390	296.480	0.090
2328	479611.050	3793506.490	148.960	148.970	0.010
2328A	479143.620	3792106.560	127.790	127.750	-0.040
2329	533130.720	3798157.200	70.820	70.820	0.000
2330	541937.880	3745101.020	89.690	89.550	-0.140
2331	652269.740	3659766.070	34.390	34.410	0.020
2332	637104.400	3670071.260	36.300	36.340	0.040
2333	625783.620	3677331.190	55.340	55.360	0.020
2334	524130.720	3669538.790	59.380	59.410	0.030
2335	504103.020	3678162.910	89.550	89.520	-0.030
2336	501151.800	3704301.660	90.200	90.210	0.010
2337	504189.550	3722007.730	74.090	74.110	0.020
2338	474373.110	3743778.570	66.510	66.610	0.100
2339	467515.080	3755860.060	66.110	66.070	-0.040
2340	461753.600	3766899.560	90.500	90.480	-0.020
2341	463276.120	3780634.240	181.460	181.530	0.070
2342	461530.350	3801899.250	188.520	188.600	0.080
2343	475527.270	3837946.830	201.180	201.240	0.060
2344	416714.850	3948446.620	443.280	443.260	-0.020
2345	430063.080	3897326.570	173.760	173.790	0.030
2346	391297.990	3895554.240	215.640	215.660	0.020
2347	535709.210	3850656.700	167.800	167.810	0.010
2348	579319.810	3837823.980	77.070	77.040	-0.030

2349	598612.610	3840354.620	69.020	69.000	-0.020
2350	631150.520	3839029.370	64.560	64.570	0.010
2351	534430.940	3666610.050	50.450	50.480	0.030
2352	658986.640	3689220.440	36.980	37.000	0.020
2353	414106.070	3937269.900	232.650	232.680	0.030
2354	436610.130	3948524.670	265.140	265.190	0.050
2355	455397.430	3701393.880	97.320	97.330	0.010
2356	463751.610	3690320.170	92.180	92.130	-0.050
2357	671341.060	3727098.520	52.050	52.050	0.000
2358	631817.090	3720127.440	53.970	53.970	0.000
2359	546374.470	3656189.630	65.610	65.630	0.020
2360	538403.270	3696495.540	28.860	28.870	0.010
2361	544458.500	3726691.380	83.110	83.170	0.060
2362	541290.590	3770561.980	89.720	89.760	0.040
2363	546992.420	3801707.270	81.670	81.650	-0.020
2364	512469.030	3844740.980	184.260	184.270	0.010
2365	527054.540	3742476.080	71.370	71.260	-0.110
2366	555392.960	3743631.480	76.910	76.950	0.040
2367	527082.540	3742206.480	72.260	72.270	0.010
2368	541948.320	3744407.600	83.100	83.000	-0.100
2369	441430.970	3777516.810	183.850	183.830	-0.020

VERTICAL ACCURACY CONCLUSIONS

Raw Swath Non-Vegetated Vertical Accuracy (NVA) Tested 0.131 Meters Non vegetated vertical accuracy at a 95 percent confidence level, derived according to NSSDA, in open terrain using (RMSEz) 0.067 x 1.96000 as defined by the National Standards for Spatial Data Accuracy (NSSDA); assessed and reported using National Digital Elevation Program (NDEP)/ASPRS Guidelines and tested against the TIN using all lidar points against 371 NVA points.

LAS Swath Non-Vegetated Vertical Accuracy (NVA) Tested 0.094 Meters Non vegetated vertical accuracy at a 95 percent confidence level, derived according to NSSDA, in open terrain using (RMSEz) 0.048 x 1.96000 as defined by the National Standards for Spatial Data Accuracy (NSSDA); assessed and reported using National Digital Elevation Program (NDEP)/ASPRS Guidelines and tested against the TIN using lidar ground points against 371 NVA points.

Table 5.3: NVA Check Point Analysis DEM

Point ID	Easting (Meter)	Northing (Meter)	Elevation (Meter)	DEM Elevation (Meter)	Dz (Meter)
2001	462214.550	3713243.830	108.020	108.010	-0.010
2002	457231.420	3662446.730	75.100	75.040	-0.060

2003	464040.320	3674737.630	74.620	74.600	-0.020
2004	472300.010	3708756.230	108.770	108.730	-0.040
2005	480381.650	3689864.600	102.190	102.180	-0.010
2006	481527.900	3662117.120	97.760	97.750	-0.010
2007	474344.500	3717007.090	117.710	117.730	0.020
2008	487950.410	3675112.910	99.260	99.310	0.050
2009	492853.730	3712148.700	92.680	92.700	0.020
2010	494811.960	3664716.440	70.650	70.560	-0.090
2011	508524.800	3657306.460	71.060	70.920	-0.140
2012	516060.570	3681507.360	65.580	65.600	0.020
2013	513683.810	3712410.530	40.900	40.920	0.020
2014	521546.410	3719635.490	38.780	38.760	-0.020
2015	524928.640	3691752.700	37.420	37.440	0.020
2016	525740.540	3653791.250	58.490	58.420	-0.070
2017	539006.570	3675938.840	64.590	64.580	-0.010
2018	549593.630	3701426.500	37.540	37.610	0.070
2019	549266.580	3665957.990	64.440	64.450	0.010
2020	554077.910	3688149.590	28.060	27.980	-0.080
2021	559018.140	3714620.670	69.930	69.940	0.010
2022	564212.490	3659370.690	45.550	45.620	0.070
2023	535793.830	3733224.340	73.110	73.130	0.020
2024	587482.620	3721839.250	57.960	57.990	0.030
2025	573347.150	3688758.540	37.110	37.110	0.000
2026	576363.170	3655892.490	30.270	30.300	0.030
2027	584928.950	3679599.640	27.440	27.430	-0.010
2028	594305.030	3707701.490	32.670	32.650	-0.020
2029	610367.200	3719884.660	76.680	76.750	0.070
2030	599715.120	3652613.390	34.700	34.760	0.060
2031	610031.690	3666746.500	43.350	43.340	-0.010
2032	606886.580	3691509.290	58.040	58.170	0.130
2033	617798.220	3706494.860	63.590	63.550	-0.040
2034	626189.070	3732105.290	53.700	53.710	0.010
2035	627840.950	3654036.440	34.270	34.240	-0.030
2036	634821.050	3685785.610	39.660	39.600	-0.060
2037	646342.350	3711116.600	41.590	41.620	0.030
2038	649288.590	3722821.410	43.160	43.190	0.030
2039	654127.260	3704446.150	39.680	39.720	0.040
2040	662913.360	3665326.640	33.240	33.280	0.040
2041	651608.770	3675997.680	34.150	34.200	0.050
2042	666359.560	3720261.330	41.780	41.790	0.010
2044	674711.500	3677826.080	44.360	44.320	-0.040

2045	670870.170	3659992.850	43.980	44.000	0.020
2046	441430.770	3777514.140	183.910	183.880	-0.030
2047	440836.630	3764166.460	116.040	115.950	-0.090
2048	446830.500	3774992.720	203.570	203.540	-0.030
2049	453379.050	3768795.710	151.150	151.180	0.030
2050	459154.860	3771549.230	87.120	87.180	0.060
2051	465211.990	3739007.470	96.400	96.420	0.020
2052	466605.550	3770656.160	116.700	116.710	0.010
2053	477781.980	3750636.020	71.570	71.570	0.000
2054	475623.500	3773371.180	101.990	101.960	-0.030
2055	484008.620	3769661.100	109.020	108.910	-0.110
2056	490803.360	3786477.110	127.010	126.920	-0.090
2057	482272.480	3752015.960	81.250	81.240	-0.010
2058	492792.060	3769181.850	75.670	75.620	-0.050
2059	502753.940	3763400.020	50.340	50.350	0.010
2060	512852.860	3744500.830	43.660	43.670	0.010
2061	506748.220	3788217.350	68.380	68.360	-0.020
2062	519458.610	3785030.180	142.260	142.320	0.060
2063	527101.590	3776714.350	117.590	117.610	0.020
2064	527919.430	3754865.280	73.060	73.040	-0.020
2065	536967.270	3754035.950	133.280	133.420	0.140
2066	538085.570	3781097.110	82.950	82.960	0.010
2067	542719.440	3788526.260	66.260	66.160	-0.100
2068	555829.080	3796084.450	73.210	73.140	-0.070
2069	558285.960	3734175.020	63.500	63.570	0.070
2070	562918.260	3743077.430	61.690	61.710	0.020
2071	554414.810	3772666.700	57.480	57.390	-0.090
2072	531499.840	3770291.070	137.490	137.500	0.010
2073	572219.990	3752593.850	64.390	64.390	0.000
2074	573996.580	3765194.160	69.020	69.000	-0.020
2075	580449.230	3762344.020	72.680	72.690	0.010
2076	584841.530	3755305.470	68.770	68.770	0.000
2077	588411.700	3759727.430	84.890	84.950	0.060
2078	593398.810	3768932.310	92.200	92.230	0.030
2079	598019.760	3763979.240	75.800	75.770	-0.030
2080	607447.350	3756579.840	82.160	82.080	-0.080
2081	608786.250	3771208.040	57.430	57.400	-0.030
2082	610658.750	3747354.240	114.280	114.270	-0.010
2083	623657.050	3743399.750	58.060	57.990	-0.070
2084	627029.240	3758912.210	52.500	52.500	0.000
2085	635249.980	3758047.420	49.510	49.550	0.040

2086	640813.810	3746906.720	49.120	49.030	-0.090
2087	646517.070	3739151.490	46.860	46.790	-0.070
2088	649661.780	3752361.990	45.440	45.420	-0.020
2089	655891.640	3744776.450	45.430	45.390	-0.040
2090	659975.880	3736991.110	42.970	42.930	-0.040
2091	669336.790	3744653.850	43.760	43.780	0.020
2092	669500.190	3741602.690	51.540	51.510	-0.030
2093	669932.680	3754244.230	53.450	53.430	-0.020
2094	663070.910	3730899.260	43.270	43.340	0.070
2095	664069.930	3712208.400	43.960	43.910	-0.050
2096	630439.630	3769030.750	53.530	53.570	0.040
2097	501403.220	3753812.890	87.230	87.250	0.020
2098	512479.610	3695288.150	56.920	56.930	0.010
2099	370987.970	3957730.700	528.290	528.300	0.010
2100	399168.550	3957346.490	630.140	630.080	-0.060
2101	396856.370	3950758.750	473.540	473.550	0.010
2102	373786.670	3945682.650	202.700	202.680	-0.020
2103	406289.050	3942954.850	417.320	417.270	-0.050
2104	376605.600	3937519.020	256.370	256.400	0.030
2105	404525.650	3938203.350	233.910	233.810	-0.100
2106	370561.290	3932455.450	234.460	234.480	0.020
2107	392861.330	3935438.420	260.680	260.730	0.050
2108	378377.730	3924767.710	190.680	190.670	-0.010
2109	380535.070	3922105.200	135.580	135.700	0.120
2110	372775.750	3915074.510	149.400	149.410	0.010
2111	371636.660	3909861.950	139.790	139.840	0.050
2112	394140.230	3922204.600	116.860	116.920	0.060
2113	397887.420	3912906.650	128.190	128.100	-0.090
2114	400133.210	3905693.480	159.210	159.250	0.040
2115	371907.570	3894664.080	162.680	162.750	0.070
2116	375029.270	3888425.940	221.460	221.430	-0.030
2116A	375043.290	3888437.050	220.770	220.800	0.030
2117	394375.640	3889294.930	224.250	224.260	0.010
2118	393416.260	3882531.090	200.480	200.490	0.010
2119	404527.430	3883664.920	170.500	170.430	-0.070
2120	406571.690	3874830.790	222.070	222.070	0.000
2121	394026.060	3870424.010	483.950	483.950	0.000
2122	398083.710	3862456.770	207.520	207.480	-0.040
2123	400757.110	3858385.140	283.730	283.730	0.000
2124	738946.840	3992357.950	76.570	76.580	0.010
2125	404336.440	3850145.550	210.800	210.840	0.040

2126	399526.240	3843684.960	240.100	240.020	-0.080
2127	414093.880	3841528.240	304.980	305.050	0.070
2128	386610.660	3843141.190	339.590	339.570	-0.020
2129	405217.150	3864261.870	242.730	242.710	-0.020
2130	556332.020	3857655.570	80.320	80.300	-0.020
2131	426219.450	3956292.550	708.330	708.420	0.090
2132	407417.400	3954693.210	664.850	664.930	0.080
2133	427549.870	3951961.470	496.730	496.730	0.000
2134	422769.400	3946673.450	208.430	208.460	0.030
2135	417711.810	3958047.540	726.260	726.150	-0.110
2135A	417786.810	3957980.220	733.460	733.390	-0.070
2136	368943.320	3874001.630	185.400	185.320	-0.080
2137	382207.470	3875304.550	215.790	215.770	-0.020
2138	416971.150	3889589.120	156.550	156.640	0.090
2139	439009.990	3887692.850	175.920	175.950	0.030
2140	457004.020	3893817.560	310.400	310.470	0.070
2141	465650.740	3893987.550	142.780	142.760	-0.020
2142	483798.350	3885036.940	106.220	106.260	0.040
2143	452167.290	3885379.990	115.120	115.200	0.080
2144	456392.330	3878887.460	126.090	126.080	-0.010
2145	487149.630	3874659.070	109.090	109.130	0.040
2146	475384.620	3874271.620	146.040	146.030	-0.010
2147	464029.530	3867322.490	120.580	120.590	0.010
2148	516756.920	3873518.630	109.150	109.210	0.060
2151	521852.590	3851283.010	210.230	210.220	-0.010
2152	465641.560	3842099.500	238.670	238.680	0.010
2153	483904.780	3839894.440	219.950	219.890	-0.060
2154	500434.410	3837766.590	193.800	193.810	0.010
2155	465755.120	3857953.860	222.910	222.920	0.010
2156	629402.130	3849352.790	70.350	70.430	0.080
2157	453001.810	3839227.350	218.410	218.450	0.040
2158	427241.460	3854234.440	158.520	158.540	0.020
2159	415238.760	3827902.020	274.930	274.980	0.050
2160	438634.520	3838038.730	241.390	241.410	0.020
2161	426681.390	3823037.550	255.470	255.480	0.010
2162	449828.560	3831627.440	186.200	186.240	0.040
2163	427281.320	3818085.620	257.350	257.340	-0.010
2164	439971.590	3821884.000	220.030	220.120	0.090
2165	422234.670	3806495.100	329.450	329.450	0.000
2166	435268.940	3802038.990	220.780	220.810	0.030
2167	451466.420	3806584.400	238.270	238.260	-0.010

2168	439968.750	3796809.720	250.720	250.700	-0.020
2169	449862.390	3793250.380	161.250	161.230	-0.020
2170	468295.220	3811253.940	170.940	170.950	0.010
2171	464750.270	3819446.330	205.310	205.310	0.000
2172	475244.970	3827083.730	204.050	204.060	0.010
2173	719277.260	4039968.700	92.660	92.710	0.050
2174	484111.500	3825846.230	147.920	147.910	-0.010
2175	489119.180	3817009.550	135.370	135.420	0.050
2176	495353.970	3816855.080	162.770	162.820	0.050
2177	494606.030	3812667.240	145.460	145.490	0.030
2178	500561.130	3814783.970	115.540	115.500	-0.040
2179	507419.900	3814181.040	126.520	126.510	-0.010
2180	509398.890	3831392.230	164.090	164.060	-0.030
2180A	509398.420	3831391.850	164.070	164.120	0.050
2181	518740.710	3824522.720	151.470	151.500	0.030
2181A	518740.360	3824524.630	151.490	151.540	0.050
2182	515865.780	3804322.210	91.720	91.670	-0.050
2183	520353.440	3801832.520	102.880	102.880	0.000
2184	525293.880	3811127.240	95.340	95.320	-0.020
2185	542348.920	3817854.750	114.270	114.260	-0.010
2186	539774.460	3824542.660	108.450	108.450	0.000
2187	539084.390	3828835.890	161.740	161.730	-0.010
2188	535232.980	3839412.220	124.680	124.630	-0.050
2189	539636.860	3857799.310	97.410	97.410	0.000
2190	557669.050	3847964.110	140.220	140.200	-0.020
2191	561455.580	3843189.280	86.460	86.460	0.000
2192	563809.330	3844006.750	93.850	93.820	-0.030
2193	569033.460	3845896.760	79.320	79.330	0.010
2194	569956.390	3851100.900	130.010	130.000	-0.010
2195	574345.550	3854397.650	77.190	77.160	-0.030
2196	579695.380	3857618.340	73.490	73.440	-0.050
2197	588625.240	3832250.160	70.580	70.570	-0.010
2198	588479.500	3869869.110	87.050	87.090	0.040
2199	600192.700	3849059.330	74.070	74.100	0.030
2200	595878.170	3822990.490	68.930	68.990	0.060
2201	599276.000	3812944.800	66.140	66.060	-0.080
2202	607062.130	3834667.000	63.980	63.970	-0.010
2203	603287.420	3802355.720	63.900	63.820	-0.080
2204	612860.740	3819712.990	61.590	61.640	0.050
2205	622422.020	3831333.690	60.760	60.770	0.010
2206	619305.100	3809502.210	57.320	57.370	0.050

2207	632283.900	3816165.330	64.470	64.420	-0.050
2208	631327.670	3820633.270	62.500	62.550	0.050
2209	631445.150	3829174.290	67.090	67.120	0.030
2210	640944.230	3848562.850	58.560	58.520	-0.040
2211	647188.190	3833193.370	61.450	61.490	0.040
2212	645424.440	3802954.350	59.690	59.650	-0.040
2213	389157.630	3870411.140	552.570	552.680	0.110
2214	630593.690	3693389.750	49.110	49.130	0.020
2215	547542.740	3848567.260	164.720	164.700	-0.020
2216	383207.450	3957310.290	404.150	404.130	-0.020
2217	380277.440	3952087.340	276.310	276.360	0.050
2218	383433.820	3945352.190	343.030	343.030	0.000
2219	407785.120	3951146.430	502.910	502.990	0.080
2220	422070.250	3928341.100	159.320	159.260	-0.060
2221	418729.470	3941227.110	274.550	274.630	0.080
2222	409844.920	3930285.820	220.610	220.600	-0.010
2222A	409831.520	3930278.320	221.530	221.540	0.010
2223	404714.840	3929805.410	131.760	131.760	0.000
2224	384617.640	3917163.720	128.520	128.320	-0.200
2225	381858.530	3909919.090	146.950	146.920	-0.030
2226	376007.960	3903324.280	184.880	184.900	0.020
2227	369495.920	3862763.720	208.950	208.940	-0.010
2228	375195.770	3856062.160	273.900	273.930	0.030
2229	366922.670	3848048.760	241.900	241.950	0.050
2230	376676.050	3848330.940	280.790	280.750	-0.040
2231	387973.520	3851525.970	275.860	275.890	0.030
2232	386178.930	3861182.170	231.130	231.150	0.020
2233	418470.380	3879021.950	164.720	164.730	0.010
2234	418521.290	3869115.160	313.720	313.850	0.130
2235	418802.820	3862596.780	229.530	229.540	0.010
2236	442029.190	3870990.980	144.530	144.670	0.140
2237	444689.920	3858763.460	155.900	155.910	0.010
2238	444286.880	3848373.900	308.480	308.470	-0.010
2239	422263.190	3844883.890	323.020	323.070	0.050
2240	435854.300	3847802.770	408.320	408.360	0.040
2241	509131.300	3889301.940	281.610	281.580	-0.030
2243	510093.680	3853040.620	251.060	251.070	0.010
2244	563603.320	3873702.590	233.400	233.530	0.130
2245	573646.600	3871962.340	103.210	103.250	0.040
2246	570525.320	3863397.500	104.150	104.180	0.030
2247	582530.650	3816954.320	68.260	68.220	-0.040

2248	567822.800	3823204.730	80.700	80.660	-0.040
2249	566209.170	3832510.900	99.780	99.800	0.020
2250	558276.550	3827187.790	102.040	102.030	-0.010
2251	553160.400	3822118.310	110.620	110.620	0.000
2252	562750.030	3809742.140	87.860	87.890	0.030
2253	542851.930	3808402.300	118.490	118.510	0.020
2254	495689.840	3803186.960	234.720	234.840	0.120
2255	476148.190	3803060.240	214.850	214.830	-0.020
2256	467982.850	3793254.570	156.700	156.750	0.050
2257	456621.550	3784281.000	146.470	146.440	-0.030
2258	632887.570	3790722.690	54.700	54.680	-0.020
2259	646620.780	3776614.010	54.880	54.810	-0.070
2260	624667.320	3782715.450	57.460	57.520	0.060
2261	618749.100	3800971.480	55.780	55.710	-0.070
2262	612285.180	3813223.250	61.050	61.000	-0.050
2263	614603.070	3849974.260	70.840	70.910	0.070
2264	604230.440	3737382.250	71.120	71.230	0.110
2265	588455.390	3739346.230	50.490	50.450	-0.040
2266	576244.250	3738128.830	61.110	61.130	0.020
2267	567194.930	3727068.620	78.950	78.960	0.010
2268	470192.830	3653616.350	65.010	64.900	-0.110
2269	472544.290	3670608.750	100.210	100.250	0.040
2270	515690.270	3735973.630	43.580	43.660	0.080
2271	495091.950	3745754.220	78.010	77.990	-0.020
2272	486812.180	3753193.690	66.310	66.220	-0.090
2273	501632.580	3731390.480	82.470	82.500	0.030
2274	490219.040	3734674.520	58.520	58.570	0.050
2275	474999.510	3733519.970	70.000	70.060	0.060
2276	462080.300	3730653.950	72.520	72.650	0.130
2277	485904.240	3724267.540	115.800	115.850	0.050
2278	475104.710	3725688.880	81.830	81.810	-0.020
2279	482615.020	3706141.190	115.570	115.580	0.010
2280	431574.360	3938224.630	485.200	485.180	-0.020
2281	388668.490	3903990.420	212.860	212.810	-0.050
2282	386157.540	3898391.470	156.610	156.660	0.050
2283	384562.030	3888159.220	193.530	193.550	0.020
2284	431125.930	3881537.290	133.270	133.330	0.060
2285	430389.980	3867235.540	172.260	172.270	0.010
2286	425805.160	3838489.130	283.980	284.020	0.040
2287	435057.440	3813508.370	236.370	236.330	-0.040
2288	514653.160	3770339.750	120.290	120.260	-0.030

2289	517301.510	3757156.450	98.580	98.580	0.000
2290	552994.230	3759534.430	79.460	79.490	0.030
2291	553073.550	3741920.040	85.890	85.890	0.000
2292	550503.370	3712031.320	64.480	64.430	-0.050
2293	533370.270	3709197.630	45.500	45.540	0.040
2294	566341.410	3673333.720	48.840	48.820	-0.020
2295	596305.720	3665210.030	47.340	47.330	-0.010
2296	576943.780	3701827.390	56.320	56.280	-0.040
2297	577143.790	3715600.260	75.030	75.030	0.000
2298	494165.820	3852063.360	436.200	436.220	0.020
2299	474167.890	3869185.150	112.080	112.240	0.160
2300	465482.140	3878443.880	108.460	108.470	0.010
2301	391993.930	3941886.340	229.140	229.180	0.040
2302	383662.780	3933751.880	215.520	215.370	-0.150
2303	389109.060	3926301.800	124.890	124.930	0.040
2304	393246.470	3910341.510	132.250	132.230	-0.020
2305	385646.350	3880135.170	184.090	184.070	-0.020
2306	612499.390	3676116.880	53.750	53.790	0.040
2307	458294.500	3758809.220	111.890	111.890	0.000
2308	473196.160	3763837.450	119.430	119.490	0.060
2309	471959.760	3786037.680	210.430	210.450	0.020
2310	455638.900	3852588.070	279.810	279.840	0.030
2311	373582.930	3924599.260	130.100	130.080	-0.020
2312	396949.510	3898632.820	150.300	150.260	-0.040
2313	412496.040	3854111.240	213.080	213.190	0.110
2314	461833.560	3832741.900	204.540	204.580	0.040
2315	496086.920	3832136.070	214.690	214.700	0.010
2316	522396.200	3839677.570	184.000	184.030	0.030
2317	585966.910	3847323.720	74.340	74.300	-0.040
2318	568431.370	3788882.750	74.190	74.130	-0.060
2319	564279.570	3765954.420	73.900	73.910	0.010
2320	496238.950	3691463.500	60.990	60.990	0.000
2321	485693.120	3868192.060	132.590	132.630	0.040
2322	389407.330	3918998.920	130.180	130.150	-0.030
2323	365829.830	3952455.700	269.830	269.780	-0.050
2324	415650.870	3924506.760	220.520	220.500	-0.020
2325	378117.770	3868171.880	567.550	567.510	-0.040
2326	450699.430	3820955.040	195.850	195.860	0.010
2327	446343.320	3813546.890	296.390	296.440	0.050
2328	479611.050	3793506.490	148.960	148.990	0.030
2328A	479143.620	3792106.560	127.790	127.750	-0.040

2329	533130.720	3798157.200	70.820	70.760	-0.060
2330	541937.880	3745101.020	89.690	89.540	-0.150
2331	652269.740	3659766.070	34.390	34.390	0.000
2332	637104.400	3670071.260	36.300	36.290	-0.010
2333	625783.620	3677331.190	55.340	55.360	0.020
2334	524130.720	3669538.790	59.380	59.420	0.040
2335	504103.020	3678162.910	89.550	89.570	0.020
2336	501151.800	3704301.660	90.200	90.160	-0.040
2337	504189.550	3722007.730	74.090	74.110	0.020
2338	474373.110	3743778.570	66.510	66.600	0.090
2339	467515.080	3755860.060	66.110	66.040	-0.070
2340	461753.600	3766899.560	90.500	90.470	-0.030
2341	463276.120	3780634.240	181.460	181.530	0.070
2342	461530.350	3801899.250	188.520	188.500	-0.020
2343	475527.270	3837946.830	201.180	201.240	0.060
2344	416714.850	3948446.620	443.280	443.250	-0.030
2345	430063.080	3897326.570	173.760	173.720	-0.040
2346	391297.990	3895554.240	215.640	215.560	-0.080
2347	535709.210	3850656.700	167.800	167.770	-0.030
2348	579319.810	3837823.980	77.070	77.050	-0.020
2349	598612.610	3840354.620	69.020	69.000	-0.020
2350	631150.520	3839029.370	64.560	64.570	0.010
2351	534430.940	3666610.050	50.450	50.470	0.020
2352	658986.640	3689220.440	36.980	36.960	-0.020
2353	414106.070	3937269.900	232.650	232.590	-0.060
2354	436610.130	3948524.670	265.140	265.170	0.030
2355	455397.430	3701393.880	97.320	97.310	-0.010
2356	463751.610	3690320.170	92.180	92.120	-0.060
2357	671341.060	3727098.520	52.050	52.020	-0.030
2358	631817.090	3720127.440	53.970	53.970	0.000
2359	546374.470	3656189.630	65.610	65.650	0.040
2360	538403.270	3696495.540	28.860	28.870	0.010
2361	544458.500	3726691.380	83.110	83.170	0.060
2362	541290.590	3770561.980	89.720	89.750	0.030
2363	546992.420	3801707.270	81.670	81.650	-0.020
2364	512469.030	3844740.980	184.260	184.280	0.020
2365	527054.540	3742476.080	71.370	71.280	-0.090
2366	555392.960	3743631.480	76.910	76.940	0.030
2367	527082.540	3742206.480	72.260	72.270	0.010
2368	541948.320	3744407.600	83.100	82.990	-0.110
2369	441430.970	3777516.810	183.850	183.830	-0.020

VERTICAL ACCURACY CONCLUSIONS

Bare-Earth DEM Non-Vegetated Vertical Accuracy (NVA) Tested 0.099 Meters Non-Vegetated vertical accuracy at a 95 percent confidence level, derived according to NSSDA, in open terrain using (RMSEz) 0.051 x 1.96000 as defined by the National Standards for Spatial Data Accuracy (NSSDA); assessed and reported using National Digital Elevation Program (NDEP)/ASPRS Guidelines and tested against the DEM against 371 NVA points.

Table 5.4: VVA Quality Check Point Analysis DEM

Point ID	Easting (Meter)	Northing (Meter)	Elevation (Meter)	DEM Elevation (Meter)	Dz (Meter)
3001	455064.730	3701374.330	96.840	96.870	0.030
3002	504202.930	3722030.960	77.610	77.730	0.120
3003	477727.590	3750595.650	70.240	70.270	0.030
3004	554020.130	3688228.640	27.560	27.830	0.270
3005	630582.690	3693237.870	52.870	52.960	0.090
3006	671355.630	3727070.620	46.660	46.660	0.000
3007	572246.490	3752588.650	64.310	64.400	0.090
3008	510104.740	3853053.500	253.270	253.350	0.080
3009	498810.770	3859764.180	163.830	163.840	0.010
3010	494184.900	3852057.140	438.140	438.100	-0.040
3012	465753.420	3857975.810	225.290	225.290	0.000
3013	455647.250	3852544.900	276.880	276.990	0.110
3014	465637.850	3842087.880	239.240	239.250	0.010
3015	461865.490	3832629.150	201.620	201.630	0.010
3016	449784.930	3831610.370	191.730	191.720	-0.010
3017	438619.450	3838039.230	241.620	241.770	0.150
3018	444307.280	3848373.080	308.050	308.110	0.060
3019	422260.410	3844849.980	322.250	322.310	0.060
3020	386629.440	3843121.100	340.660	340.680	0.020
3021	387934.280	3851558.840	277.220	277.220	0.000
3022	375175.610	3856074.290	275.400	275.490	0.090
3023	378122.910	3868162.490	567.030	567.100	0.070
3024	580449.910	3762327.550	72.580	72.600	0.020
3025	415630.050	3924479.540	221.080	221.090	0.010
3026	431603.710	3938215.250	488.080	488.020	-0.060
3027	564288.060	3765982.170	73.180	73.190	0.010
3028	370557.800	3932475.080	234.220	234.250	0.030
3029	371040.660	3957717.880	528.060	528.050	-0.010
3030	397019.290	3950692.560	472.340	472.410	0.070
3031	383452.770	3945411.350	347.200	347.200	0.000
3032	417794.700	3958016.800	733.600	733.480	-0.120

3033	426260.560	3956330.430	707.500	707.570	0.070
3034	436561.590	3948482.190	260.630	260.650	0.020
3035	422830.290	3946681.080	207.540	207.660	0.120
3036	416669.440	3948468.630	441.700	441.730	0.030
3037	407731.010	3951140.460	500.060	500.140	0.080
3038	406274.240	3942933.310	416.090	416.140	0.050
3039	412491.140	3938037.640	240.970	240.930	-0.040
3040	383683.370	3933706.320	213.620	213.640	0.020
3041	393920.660	3922225.010	125.440	125.510	0.070
3042	457132.790	3893742.210	305.770	305.880	0.110
3043	553065.150	3759563.640	78.870	78.900	0.030
3045	485596.720	3868294.980	132.860	133.040	0.180
3046	474206.170	3869182.600	112.450	112.570	0.120
3047	519306.940	3785255.490	123.890	123.950	0.060
3048	442471.740	3870986.360	147.300	147.400	0.100
3049	418534.460	3869123.510	312.450	312.540	0.090
3050	418823.240	3862611.080	228.760	228.870	0.110
3051	406634.660	3874844.700	222.440	222.410	-0.030
3052	376660.070	3848335.990	281.350	281.410	0.060
3053	366984.580	3848048.060	242.360	242.430	0.070
3054	413791.040	3841540.180	306.330	306.470	0.140
3055	495696.810	3803213.450	233.110	233.190	0.080
3056	449854.340	3793229.410	160.420	160.550	0.130
3057	696108.570	4011679.590	82.960	83.070	0.110
3058	463270.060	3780618.230	181.140	181.250	0.110
3059	471951.710	3786046.210	209.660	209.790	0.130
3060	467650.090	3793258.640	164.800	164.910	0.110
3061	518754.120	3824489.720	149.420	149.430	0.010
3061A	518747.880	3824475.250	147.620	147.650	0.030
3062	500312.380	3837765.580	194.610	194.590	-0.020
3063	512502.500	3844731.220	181.880	181.920	0.040
3064	568430.850	3788868.350	73.970	73.970	0.000
3065	554309.400	3772679.660	55.810	55.850	0.040
3066	490924.280	3786493.290	127.360	127.380	0.020
3067	484042.960	3769630.450	109.200	109.210	0.010
3068	467537.920	3755869.380	65.680	65.800	0.120
3069	458284.590	3758829.540	111.600	111.780	0.180
3070	440850.890	3763997.830	114.320	114.460	0.140
3071	610100.060	3666729.340	42.370	42.450	0.080
3072	475389.120	3874207.500	149.820	149.850	0.030
3073	564180.090	3659360.770	46.300	46.470	0.170
3074	504088.620	3678186.730	89.430	89.640	0.210
3075	494834.030	3664663.510	70.910	70.980	0.070
3077	463964.950	3674660.720	73.950	73.990	0.040
3078	482958.570	3706180.330	116.710	116.950	0.240

3079	475018.290	3733511.680	70.200	70.250	0.050
3080	490279.470	3734630.050	58.410	58.520	0.110
3081	501620.260	3731359.340	83.760	83.850	0.090
3082	515392.390	3736026.490	35.090	35.110	0.020
3083	512874.070	3744500.870	43.720	43.750	0.030
3084	374995.720	3888413.500	223.660	223.710	0.050
3084A	374951.980	3888406.760	226.020	226.050	0.030
3085	366685.950	3951142.540	259.490	259.550	0.060
3086	542742.980	3788529.260	66.060	66.050	-0.010
3087	383183.740	3957267.340	403.030	403.190	0.160
3088	670059.490	3754226.930	46.120	46.110	-0.010
3089	407957.120	3954371.070	655.980	656.070	0.090
3090	400106.280	3905654.480	156.670	156.660	-0.010
3091	430245.500	3897547.490	179.850	179.870	0.020
3092	465511.050	3878368.930	109.030	109.000	-0.030
3093	444741.740	3858563.070	158.970	159.240	0.270
3094	427572.010	3854420.770	167.940	168.000	0.060
3095	435870.510	3847791.000	409.770	409.740	-0.030
3096	425818.660	3838491.650	284.020	284.190	0.170
3097	426613.850	3823016.160	256.190	256.360	0.170
3098	446379.830	3813521.560	294.610	294.780	0.170
3099	464778.850	3819460.040	205.030	205.020	-0.010
3100	476130.460	3803095.810	213.830	213.890	0.060
3101	475632.680	3773341.250	100.470	100.500	0.030
3102	527890.800	3754844.960	74.750	74.830	0.080
3103	537092.470	3754045.020	129.780	129.910	0.130
3104	541983.160	3745076.330	90.710	90.640	-0.070
3105	576303.200	3738145.960	64.360	64.510	0.150
3106	593374.770	3768949.940	92.210	92.290	0.080
3107	607245.210	3691182.670	55.880	56.050	0.170
3108	576676.420	3701877.480	52.380	52.580	0.200
3109	550797.730	3711881.690	64.490	64.500	0.010
3110	610660.390	3720164.840	79.060	79.190	0.130
3111	610662.050	3747386.700	114.790	114.960	0.170
3112	547202.240	3801617.030	80.810	80.790	-0.020
3113	538999.190	3828700.150	163.390	163.380	-0.010
3114	509365.970	3831291.520	164.580	164.670	0.090
3114A	509363.520	3831285.720	164.750	164.720	-0.030
3115	489543.540	3817195.760	175.120	175.170	0.050
3116	566262.050	3832516.170	97.540	97.640	0.100
3117	520253.760	3801962.650	101.820	101.800	-0.020
3119	520454.390	3719206.180	29.310	29.390	0.080
3120	501165.100	3704234.350	90.550	90.690	0.140
3121	512500.980	3695337.730	57.860	58.010	0.150
3122	538602.590	3675782.480	73.810	73.890	0.080

3123	548401.490	3665998.170	64.210	64.420	0.210
3124	546388.560	3656192.100	64.850	65.070	0.220
3125	382303.570	3875464.510	223.130	223.080	-0.050
3126	557955.900	3826926.200	86.590	86.780	0.190
3127	480424.460	3839055.440	201.340	201.330	-0.010
3201	618759.800	3800962.030	55.360	55.400	0.040
3202	396968.540	3898642.360	150.190	150.160	-0.030
3203	388620.550	3904001.580	215.050	215.120	0.070
3204	463990.760	3867316.230	120.740	120.820	0.080
3205	570512.640	3863420.210	106.540	106.640	0.100
3206	399449.560	3843752.220	236.780	236.700	-0.080
3207	427207.450	3818098.600	255.200	255.410	0.210
3208	502777.910	3763376.850	50.280	50.260	-0.020
3209	624679.610	3782732.160	56.840	56.880	0.040
3210	669439.690	3744617.890	43.900	43.900	0.000
3211	770922.580	3987931.360	75.240	75.270	0.030
3212	650236.570	3724320.000	43.660	43.650	-0.010
3213	649691.670	3752355.750	45.470	45.460	-0.010
3214	635303.410	3758058.820	48.330	48.460	0.130
3215	645504.500	3802947.480	60.200	60.190	-0.010
3216	631401.940	3820425.580	63.250	63.290	0.040
3217	647167.740	3833221.950	60.540	60.590	0.050
3218	627653.970	3849670.940	68.980	69.120	0.140
3219	586817.020	3847354.820	73.650	73.620	-0.030
3220	607148.780	3834640.650	63.530	63.640	0.110
3221	631424.900	3829056.990	66.820	66.860	0.040
3222	599245.580	3848444.600	71.900	72.010	0.110
3223	612727.100	3813224.800	58.630	58.700	0.070
3224	632899.680	3790698.190	54.710	54.780	0.070
3225	641439.190	3846917.680	67.170	67.220	0.050
3226	646906.250	3776205.030	54.840	54.790	-0.050
3227	629981.880	3769077.370	53.050	53.020	-0.030
3228	608754.990	3771173.010	57.210	57.260	0.050
3229	628559.030	3653976.170	33.270	33.270	0.000
3230	627017.600	3678128.370	55.650	55.730	0.080
3231	637130.460	3670043.710	35.880	36.040	0.160
3232	634688.200	3685950.870	38.210	38.170	-0.040
3233	651590.270	3676019.370	35.380	35.380	0.000
3234	653608.570	3659780.660	35.060	35.070	0.010
3235	662744.450	3665063.440	33.100	33.070	-0.030
3236	670924.320	3659965.970	41.610	41.660	0.050
3237	674576.900	3677828.530	36.440	36.420	-0.020
3238	658996.070	3689487.030	36.630	36.630	0.000
3239	654294.020	3704433.210	40.570	40.560	-0.010
3240	646470.500	3711012.140	41.340	41.350	0.010

3241	664001.180	3712586.120	41.360	41.380	0.020
3242	665256.850	3721055.770	41.260	41.390	0.130
3243	662948.190	3730937.910	42.380	42.420	0.040
3244	646592.150	3739164.180	46.810	46.740	-0.070
3245	662810.900	3739425.610	43.750	43.750	0.000
3246	655898.090	3744838.620	46.810	46.730	-0.080
3247	640259.840	3746931.070	48.750	48.790	0.040
3248	627052.020	3758903.390	51.040	51.070	0.030
3249	603284.060	3802324.650	63.850	63.760	-0.090
3250	619277.250	3809491.590	57.400	57.320	-0.080
3251	632180.550	3815449.550	65.640	65.670	0.030
3252	612625.970	3819689.530	61.400	61.630	0.230
3253	599274.990	3813033.750	65.550	65.500	-0.050
3254	595885.300	3822413.100	69.410	69.450	0.040
3255	630753.320	3839026.000	64.380	64.460	0.080
3256	614831.710	3850994.770	71.730	71.930	0.200
3257	598638.680	3840382.710	68.530	68.550	0.020
3258	573629.700	3872098.690	107.260	107.310	0.050
3259	563666.300	3873739.770	232.590	232.750	0.160
3260	515746.160	3872929.140	91.990	92.060	0.070
3261	535287.210	3839475.910	119.440	119.470	0.030
3262	509692.850	3889310.450	285.850	286.000	0.150
3263	487449.790	3874762.130	110.740	110.760	0.020
3264	483750.070	3884895.470	102.310	102.350	0.040
3265	452152.820	3885338.700	114.820	114.850	0.030
3266	416903.380	3889518.340	153.320	153.440	0.120
3267	418712.080	3879290.370	176.190	176.220	0.030
3268	404483.610	3883696.160	172.440	172.550	0.110
3269	393503.990	3882661.160	196.220	196.290	0.070
3270	573283.730	3688587.910	36.820	36.830	0.010
3271	385565.750	3880183.600	182.180	182.220	0.040
3272	368716.020	3874034.640	194.230	194.200	-0.030
3273	397234.480	3862071.150	215.950	215.840	-0.110
3274	404479.910	3856090.550	326.370	326.480	0.110
3275	407265.610	3864691.210	228.550	228.590	0.040
3276	370402.660	3862963.560	207.190	207.270	0.080
3277	409668.820	3930348.710	227.650	227.540	-0.110
3278	422071.880	3928291.950	158.640	158.690	0.050
3279	389338.220	3926205.440	124.660	124.680	0.020
3280	376311.740	3937428.170	240.030	240.020	-0.010
3281	373825.360	3924859.500	124.060	124.090	0.030
3282	376284.050	3903106.160	186.280	186.310	0.030
3283	386222.230	3897270.990	148.080	148.260	0.180
3283A	386211.190	3897244.900	147.020	147.000	-0.020
3284	384594.270	3888041.490	190.090	190.070	-0.020

3285	392156.990	3942304.690	275.600	275.640	0.040
3286	398034.610	3913878.350	121.960	121.900	-0.060
3287	405090.720	3937794.080	209.160	209.060	-0.100
3288	390528.710	3919305.970	117.800	117.680	-0.120
3289	394505.210	3889668.490	261.830	261.890	0.060
3301	465615.970	3894019.390	145.290	145.240	-0.050
3302	422249.250	3806473.280	329.410	329.470	0.060
3303	562736.180	3809781.920	88.850	88.920	0.070
3304	599662.280	3652631.050	34.380	34.680	0.300
3305	514642.710	3770330.160	119.090	119.190	0.100
3306	527055.020	3776689.820	118.720	118.820	0.100
3307	623670.890	3743335.290	57.420	57.630	0.210
3308	631864.340	3720106.850	52.560	52.730	0.170
3309	617838.740	3706430.350	63.510	63.640	0.130
3310	567207.720	3727053.230	78.920	79.040	0.120
3311	558402.420	3734159.920	64.940	65.130	0.190
3312	562932.120	3743019.230	62.130	62.130	0.000
3313	531461.000	3770322.550	134.860	135.040	0.180
3314	439057.160	3887653.240	173.720	173.870	0.150
3315	456344.700	3878924.430	124.620	124.760	0.140
3316	527085.270	3742436.170	74.220	74.290	0.070
3317	517310.430	3757158.230	98.970	99.100	0.130
3318	626280.360	3732061.820	52.590	52.760	0.170
3319	535815.120	3850577.830	155.850	155.920	0.070
3320	622434.840	3831348.360	60.900	60.990	0.090
3321	555917.750	3857665.880	81.620	81.700	0.080
3322	496271.380	3691524.650	61.740	61.920	0.180
3323	516554.270	3681266.440	64.480	64.570	0.090
3324	527109.530	3653238.390	41.990	42.160	0.170
3325	512344.920	3662292.750	69.720	69.800	0.080
3326	584857.410	3680650.800	26.740	26.950	0.210
3327	588099.170	3739654.970	52.860	52.890	0.030
3328	604211.970	3735973.530	59.580	59.810	0.230
3329	587622.320	3721642.430	52.800	52.940	0.140
3330	553213.150	3822133.600	110.260	110.330	0.070
3331	537077.800	3817627.790	78.540	78.650	0.110
3332	568809.340	3670592.670	39.040	39.030	-0.010
3333	589946.960	3662110.860	25.850	26.290	0.440
3334	596218.340	3705763.440	31.830	31.990	0.160
3335	597481.490	3755113.540	76.490	76.590	0.100
3336	530434.640	3832961.700	151.100	151.110	0.010
3337	550823.120	3813540.860	112.790	112.850	0.060
3338	541149.700	3704984.520	39.310	39.530	0.220
3339	555403.140	3743657.410	77.350	77.510	0.160
3340	527359.870	3742209.380	75.300	75.440	0.140

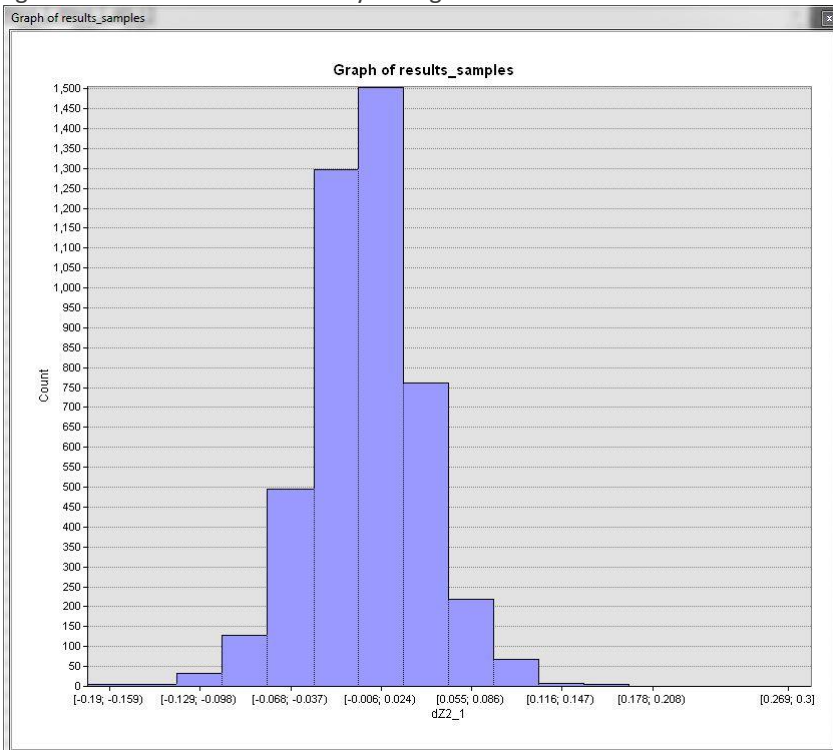
3341	471972.930	3786023.860	211.020	211.140	0.120
3342	541949.710	3744403.040	83.030	82.910	-0.120

VERTICAL ACCURACY CONCLUSIONS

Vegetated Vertical Accuracy (VVA) Tested 0.210 Meters at the 95th percentile reported using National Digital Elevation Program (NDEP)/ASPRS Guidelines and tested against the DEM against 258 VVA points. VVA Errors larger than 95th percentile include:


Point 3004, Easting 554020.13, Northing 3688228.64, Z-Error 0.27 Meters
Point 3078, Easting 482958.57, Northing 3706180.33, Z-Error 0.24 Meters
Point 3093, Easting 444741.74, Northing 3858563.07, Z-Error 0.27 Meters
Point 3124, Easting 546388.56, Northing 3656192.10, Z-Error 0.22 Meters
Point 3252, Easting 612625.97, Northing 3819689.53, Z-Error 0.23 Meters
Point 3304, Easting 599662.28, Northing 3652631.05, Z-Error 0.30 Meters
Point 3328, Easting 604211.97, Northing 3735973.53, Z-Error 0.23 Meters
Point 3333, Easting 589946.96, Northing 3662110.86, Z-Error 0.44 Meters
Point 3338, Easting 541149.70, Northing 3704984.52, Z-Error 0.22 Meters

Figure 5.1: Lidar Relative Accuracy Histogram



RELATIVE ACCURACY ASSESSMENT AND CONCLUSION

Relative accuracy also known as "between swath" accuracy was tested through a series of well distributed flight line overlap locations. The relative accuracy for the AR Ouachita FEMA R6 Lidar 2016 D17 measured at 0.037 Meters RMSDz.

Approved by:	Name	Signature	Date
Associate Member, Lidar Specialist Certified Photogrammetrist #1381	Qian Xiao		December 2017

Section 6: Flight Logs

Flight logs for the project are shown on the following pages:

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		5/25/2017	145	76922	2	NM Chama Jemez Block C, Block B						
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6043.3		9:40:00		15:40:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID		
GEBHART		ALS-8191		6046.5		1:34:00		19:34:00		KSAF1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
210 / 14					19	-5	29.89				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	15575	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:56:00	
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 9:55			
66	SW	16:34:00	16:35:00	0:00:00	20	1	117	15420				
90	S	16:43:00	16:44:00	0:00:00	20	1.1	144	15302				
89	N	16:48:00	16:49:00	0:00:00	20	1.1	137	15228				
88	S	16:55:00	16:57:00	0:00:00	19	1.2	145	15315				
91	N	17:00:00	17:01:00	0:00:00	19	1.2	153	12478				
92	S	17:06:00	17:08:00	0:00:00	18	1.3	136	15380				
93	N	17:11:00	17:13:00	0:00:00	18	1.3	144	15433				
94	S	17:16:00	17:18:00	0:00:00	18	1.3	154	15525				
95	N	17:21:00	17:23:00	0:00:00	19	1.3	137	15458				
96	S	17:26:00	17:28:00	0:00:00	19	1.3	147	15478				
97	N	17:31:00	17:33:00	0:00:00	19	1.3	154	15419				
98	S	17:36:00	17:40:00	0:00:00	20	1.2	143	15524				
99	N	17:43:00	17:47:00	0:00:00	23	1.1	144	15524				
100	S	17:50:00	17:56:00	0:00:00	22	1.1	130	15404				
101	N	17:58:00	18:04:00	0:00:00	21	1.1	156	15569				
102	S	18:08:00	18:14:00	0:00:00	21	1.1	145	15578				
110	N	18:18:00	18:27:00	0:00:00	20	1.2	133	15440				
				0:00:00								
140	W	18:48:00	19:05:00	0:00:00	20	1.2	95	13474	BLOCK B			
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK C and BLOCK B												

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		6/7/2017	158	76922	2	USGS NM Chama James Block C, Block B						
Operator		Aircraft		HOBSB Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6067.6		10:00:00		16:00:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBSB END		Local End Time		Zulu End Time		PID		
GEBHART		ALS-8191		6071.8		2:35:00		20:35:00		KSAF1		
Wind Dir/Speed	Visibility	Cloud Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSAF	
Variable/ 3				21	10	30.29				Arriving	KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	15575/13575	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		9:21:00	
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
										Take Off: 10:15		
109	S	16:40:00	16:49:00	0:00:00	20	1.3	147	15409	Block C			
111	N	16:51:00	16:59:00	0:00:00	24	1	135	15411	Block C			
112	S	17:03:00	17:14:00	0:00:00	21	1.1	151	15525	Block C			
113	N	17:16:00	17:26:00	0:00:00	19	1.3	144	15415	Block C Cloud 17:23			
135	S	17:32:00	17:33:00	0:00:00	20	1.2	146	15510	Block C			
134	N	17:35:00	17:37:00	0:00:00	20	1.2	149	15405	Block C			
133	S	17:39:00	17:41:00	0:00:00	21	1.1	155	15421	Block C			
132	N	17:44:00	17:46:00	0:00:00	22	1.1	140	15451	Block C			
131	S	17:48:00	17:52:00	0:00:00	22	1	140	15365	Block C Cloud 17:49			
				0:00:00								
185	W	17:59:00	18:12:00	0:00:00	21	1	150	13616	Block B			
184	E	18:15:00	18:29:00	0:00:00	20	1.1	146	13574	Block B			
183	W	18:31:00	18:45:00	0:00:00	20	1.3	155	13525	Block B			
182	E	18:47:00	19:01:00	0:00:00	18	1.5	143	13677	Block B			
140	W	19:11:00	19:24:00	0:00:00	17	1.3	147	13501	Block B			
141	E	19:26:00	19:39:00	0:00:00	18	1.1	145	13651	Block B			
142	W	19:42:00	19:56:00	0:00:00	19	1.1	150	13570	Block B			
143	E	19:58:00	20:11:00	0:00:00	19	1.1	147	13599	Block B			
				0:00:00								
				0:00:00								
				0:00:00								
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↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK C & BLOCK B												

Woolpert															
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name									
		6/13/2017	164	76922	2	USGS NM Chama Jemez Block C/Block B									
Operator		Aircraft		HOBBS Start		Local Start Time		ZULU Start Time		Base					
Denham		N404CP		6073.5		7:45:00		13:45:00		WOOLPERT PIN					
Pilot		Sensor Type		HOBBS END		Local End Time		Zulu End Time		PID					
ALBERS		ALS-8191		6077.6		12:01:00		18:01:00		KSAF1					
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSAF			
150 / 3		10			16	-8	30.07				Arriving	KSAF			
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values			
40		42.9		272		100		Gain - Course/Up		Single		A			
								Gain - Fine/Down		Multi		B			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts	6500	Ft	15575	Ft				@	NS		Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 7:23:00						
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
										Take Off: 7:56					
131	S	14:21:00	14:25:00	0:00:00	19	1.2	140	15519	Block C						
122	N	14:29:00	14:35:00	0:00:00	20	1.1	144	15567	Block C						
121	S	14:39:00	14:44:00	0:00:00	19	1.2	153	15541	Block C						
120	N	14:50:00	14:56:00	0:00:00	18	1.2	159	15571	Block C						
119	S	14:59:00	15:05:00	0:00:00	19	1.3	152	15529	Block C						
118	N	15:08:00	15:14:00	0:00:00	21	1.1	159	15565	Block C						
117	S	15:18:00	15:24:00	0:00:00	21	1.1	149	15533	Block C						
116	N	15:27:00	15:33:00	0:00:00	22	1.1	147	15541	Block C						
115	S	15:37:00	15:44:00	0:00:00	22	1.1	140	15451	Block C						
114	N	15:46:00	15:53:00	0:00:00	21	1.3	144	15327	Block C						
112	S	15:58:00	16:08:00	0:00:00	21	1.4	153	15399	Block C						
				0:00:00											
126	E	16:23:00	16:25:00	0:00:00	23	1.2	166	14074	Block B Tailwind. Unable to fly slower						
143	W	16:34:00	16:47:00	0:00:00	24	1.1	160	13607	Block B						
144	E	16:51:00	17:04:00	0:00:00	20	1.4	151	13557	Block B						
145	W	17:07:00	17:20:00	0:00:00	21	1.2	154	13475	Block B Down Draft						
146	E	17:23:00	17:36:00	0:00:00	23	1.1	159	13615	Block B						
				0:00:00											
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↑ Times entered are Zulu / GMT ↑										Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:										Drive #					
Block C and BLOCK B															

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		6/14/2017	165	76922	2	NM Chama Jemez Block B						
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6077.6		7:25:00		13:25:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		6083.6		1:45:00		19:45:00		KSAF1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
350 / 14				12		-10	30.15				Arriving	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13575	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		7:18:00	
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 7:41			
110	W	14:08:00	14:25:00	0:00:00	16	1.3	157	13532				
111	E	14:29:00	14:46:00	0:00:00	16	1.2	160	13538				
112	W	14:49:00	15:06:00	0:00:00	16	1.3	159	13464				
147	E	15:12:00	15:25:00	0:00:00	18	1.2	154	13480				
148	W	15:28:00	15:41:00	0:00:00	18	1.2	158	13536				
149	E	15:44:00	15:57:00	0:00:00	17	1.4	154	13574				
150	W	16:01:00	16:14:00	0:00:00	18	1.3	164	13497				
151	E	16:17:00	16:30:00	0:00:00	21	1.2	159	13603				
152	W	16:33:00	16:46:00	0:00:00	20	1.2	157	13522				
153	E	16:49:00	17:02:00	0:00:00	19	1.5	152	13585				
154	W	17:07:00	17:18:00	0:00:00	19	1.3	160	13492				
155	E	17:23:00	17:38:00	0:00:00	22	1.2	160	13532				
156	W	17:41:00	17:56:00	0:00:00	20	1.1	165	13579				
157	E	17:58:00	18:13:00	0:00:00	20	1.2	163	13651				
158	W	18:16:00	18:31:00	0:00:00	18	1.4	164	13560				
159	E	18:34:00	18:49:00	0:00:00	18	1.2	158	13628				
160	W	18:53:00	19:09:00	0:00:00	19	1.1	156	13641				
161	E	19:12:00	19:27:00	0:00:00	21	1	159	13672	19:34 Big Updraft			
				0:00:00								
				0:00:00								
				0:00:00								
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↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK B												

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		6/15/2017	166	76299	2	NM Chama Jemez Block B						
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6083.6		7:18:00		13:18:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		6090.4		2:16:00		20:16:00		KSAF1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
											KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13575	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 7:11:00			
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 7:22			
162	W	13:44:00	X	0:00:00	X	X	X	X	TDC Error			
									Refly Base Station			
162	W	14:15:00	X	0:00:00	X	X	X	X	TDC Error			
162	W	14:23:00	14:39:00	0:00:00	19	1.3	161	13448				
163	E	14:42:00	14:58:00	0:00:00	19	1.3	159	13512				
164	W	15:02:00	15:17:00	0:00:00	22	1.1	161	13567				
165	E	15:20:00	15:35:00	0:00:00	21	1.2	164	13557				
166	W	15:38:00	15:53:00	0:00:00	20	1.4	159	13546				
167	E	15:56:00	16:11:00	0:00:00	20	1.3	163	13558				
168	W	16:14:00	16:29:00	0:00:00	22	1.1	161	13578				
169	E	16:33:00	16:46:00	0:00:00	21	1.1	151	13538				
170	W	16:49:00	17:01:00	0:00:00	19	1.3	162	13502				
171	E	17:04:00	17:18:00	0:00:00	22	1.1	163	13573				
172	W	17:21:00	17:34:00	0:00:00	23	1	156	13427				
173	E	17:37:00	17:50:00	0:00:00	21	1	153	13547				
174	W	17:53:00	18:06:00	0:00:00	20	1.2	151	13516				
175	E	18:09:00	18:22:00	0:00:00	18	1.4	156	13536				
176	W	18:24:00	18:38:00	0:00:00	17	1.5	159	13562				
177	E	18:41:00	18:54:00	0:00:00	19	1.2	165	13646				
178	W	18:58:00	19:11:00	0:00:00	18	1.2	150	13519				
179	E	19:13:00	19:26:00	0:00:00	17	1.1	155	13585				
180	W	19:29:00	19:43:00	0:00:00	17	1.1	164	13595				
181	E	19:46:00	19:59:00	0:00:00	16	1.2	155	13534				
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK B												

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		6/16/2017	167	76922	2	NM Chama Jemez Block B						
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6090.4		9:08:00		15:08:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		6096.7		3:16:00		21:16:00		KSKX1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
CALM		10	12000		20	-7	30.27				KSKX	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13575	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 9:03:00			
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 9:15			
1	S	15:43:00	X	0:00:00	X	X	X	X	Aborted Line: Wildfire			
73	W	15:53:00	16:04:00	0:00:00	21	1.3	150	13574				
72	E	16:07:00	16:19:00	0:00:00	22	1.2	158	13576				
71	W	16:21:00	16:33:00	0:00:00	22	1.1	153	13543				
70	E	16:36:00	16:47:00	0:00:00	22	1.2	161	13528				
69	W	16:50:00	17:02:00	0:00:00	22	1.2	157	13498				
68	E	17:05:00	17:17:00	0:00:00	23	1.1	163	13554				
67	W	17:19:00	17:31	0:00:00	24	1	153	13509				
66	E	17:34:00	17:43:00	0:00:00	23	1.1	160	13578				
65	W	17:47:00	17:56:00	0:00:00	23	1	155	13535				
64	E	17:59:00	18:09:00	0:00:00	22	1.1	160	13564				
63	W	18:12:00	18:22:00	0:00:00	19	1.3	162	13547				
62	E	18:26:00	18:35:00	0:00:00	19	1.2	151	13547				
61	W	18:38:00	18:49:00	0:00:00	19	1.2	149	13447				
60	E	18:52:00	19:03:00	0:00:00	19	1.1	163	13542				
59	W	19:07:00	19:18:00	0:00:00	19	1	144	13524				
58	E	19:21:00	19:32:00	0:00:00	17	1.3	147	13574				
57	W	19:35:00	19:46:00	0:00:00	17	1.2	157	13495				
56	E	19:49:00	20:00:00	0:00:00	19	1.1	150	13479				
55	W	20:04:00	20:14:00	0:00:00	20	1	160	13443				
54	E	20:17:00	20:27:00	0:00:00	20	1	164	13491				
53	W	20:30:00	20:40:00	0:00:00	17	1.2	149	13457				
52	E	20:42:00	20:52:00	0:00:00	16	1.1	153	13563				
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK B												

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		6/17/2017	168	76922	2	USGS NM Chama Jemez Block B							
Operator	Aircraft	HOBBBS STATION		Local Start Time	ZULU Start Time	Base							
Denham	N404CP	6096.7		9:10:00	15:10:00	WOOLPERT PIN							
Pilot	Sensor Type	HOBBBS END		Local End Time	Zulu End Time	PID							
Albers	ALS-8191	6102.7		3:24:00	21:24:00	KSKX1							
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud	Departing	KSKX				
CALM	10	12000		23	-3	30.18			KSKX				
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %	Fixed Gain	Mode	Threshold Values							
40	42.9	272	100	255	Single	A	215						
				Gain - Course/Up	Multi	B	195						
				Gain - Fine/Down									
Air Speed	AGL	MSL	Waveform Used	Waveform Mode	Pre-Trigger Dist.								
150	Kts	6500	Ft	13575	Ft	Yes	No	X	@	NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 8:54:00				
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission	Yes	X	No
										Take Off: 9:21			
51	W	15:42:00	15:52:00	0:10:00	20	1.3	145	13536					
50	E	15:55:00	16:04:00	0:09:00	20	1.2	159	13590					
49	W	16:08:00	16:17:00	0:09:00	23	1.1	156	13522					
48	E	16:20:00	16:29:00	0:09:00	23	1	153	13487					
47	W	16:31:00	16:40:00	0:09:00	20	1.1	150	13530					
46	E	16:43:00	16:53:00	0:10:00	20	1.2	163	13570					
45	W	16:55:00	17:04:00	0:09:00	20	1.1	156	13497					
44	E	17:07:00	17:15:00	0:08:00	20	1.1	158	13600					
43	W	17:18:00	17:25:00	0:07:00	19	1.2	154	13494					
42	E	17:28:00	17:35:00	0:07:00	20	1.1	155	13624					
41	W	17:37:00	17:44:00	0:07:00	20	1.2	153	13526					
40	E	17:47:00	17:53:00	0:06:00	20	1.2	152	13534					
39	W	17:56:00	18:02:00	0:06:00	20	1.1	157	13537					
38	E	18:05:00	18:11:00	0:06:00	18	1.4	154	13570					
37	W	18:14:00	18:20:00	0:06:00	17	1.3	143	13486					
36	E	18:23:00	18:28:00	0:05:00	17	1.4	149	13562					
35	W	18:32:00	18:37:00	0:05:00	17	1.2	161	13551					
34	E	18:39:00	18:44:00	0:05:00	17	1.2	162	13638					
33	W	18:47:00	18:51:00	0:04:00	18	1.1	159	13542					
32	E	18:54:00	18:58:00	0:04:00	17	1.2	163	13554					
31	W	19:01:00	19:06:00	0:05:00	19	1.1	150	13543					
30	E	19:08:00	19:12:00	0:04:00	19	1.1	159	13570					
29	W	19:15:00	19:19:00	0:04:00	18	1.1	158	13485					
28	E	19:22:00	19:27:00	0:05:00	19	1	154	13520					
27	W	19:30:00	19:35:00	0:05:00	19	1	148	13586					
26	E	19:38:00	19:43:00	0:05:00	17	1.3	151	13539					
25	W	19:45:00	19:50:00	0:05:00	18	1.1	152	13367					
24	E	19:53:00	19:58:00	0:05:00	18	1.1	154	13537					
23	W	20:02:00	20:07:00	0:05:00	20	1	153	13441					
22	E	20:09:00	20:14:00	0:05:00	20	1	165	13451					
↑ Times entered are Zulu / GMT ↑		Page			1		Verify S-Turns After Mission		Yes	X	No		
Additional Comments:										Drive #			
BLOCK B, CONTINUED ON NEXT PAGE (2)													

Woolpert															
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name									
		6/18/2017	169	76922	2	USGS NM Chama Jemez Block A/Block B									
Operator		Aircraft		HOBSB Start		Local Start Time		ZULU Start Time		Base					
Denham		N404CP		6102.7		9:24:00		15:24:00		WOOLPERT PIN					
Pilot		Sensor Type		HOBSB END		Local End Time		Zulu End Time		PID					
ALBERS		ALS-8191		6108.2		3:07:00		21:07:00		KSKX1					
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSKX			
											Arriving	KSKX			
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values			
40		42.9		272		100		Gain - Course/Up		Single		A			
								Gain - Fine/Down		Multi		B			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts	6500	Ft	11575/13575	Ft	NS	@		Ft					
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		9:10:00				
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
										Take Off: 9:32					
22	S	16:01:00	16:07:00	0:00:00	23	1.2	163	11636	Block A						
23	N	16:11:00	16:18:00	0:00:00	23	1.1	154	11512	Block A						
24	S	16:21:00	16:28:00	0:00:00	21	1.1	160	11500	Block A						
25	N	16:32:00	16:37:00	0:00:00	20	1.2	161	11515	Block A						
26	S	16:39:00	16:44:00	0:00:00	20	1.2	159	11514	Block A						
27	N	16:47:00	16:51:00	0:00:00	20	1.2	162	11572	Block A						
28	S	16:54:00	16:57:00	0:00:00	22	1.2	155	11518	Block A						
29	N	17:00:00	17:03:00	0:00:00	22	1.1	147	11480	Block A						
30	S	17:06:00	17:09:00	0:00:00	22	1.1	147	11537	Block A						
31	N	17:12:00	17:15:00	0:00:00	20	1.1	152	11549	Block A						
32	S	17:18:00	17:20:00	0:00:00	21	1.1	149	11519	Block A						
33	N	17:24:00	17:26:00	0:00:00	20	1.1	161	11517	Block A						
34	S	17:29:00	17:32:00	0:00:00	19	1.2	156	11517	Block A						
				0:00:00											
108	E	17:44:00	18:02:00	0:00:00	20	1.2	149	13511	Block B						
107	W	18:05:00	18:22:00	0:00:00	18	1.3	149	13546	Block B						
106	E	18:25:00	18:43:00	0:00:00	17	1.2	157	13522	Block B						
105	W	18:47:00	19:05:00	0:00:00	18	1	152	13448	Block B						
104	E	19:08:00	19:26:00	0:00:00	17	1.1	157	13540	Block B						
103	W	19:29:00	19:47:00	0:00:00	17	1.4	159	13546	Block B						
102	E	19:50:00	20:08:00	0:00:00	18	1.1	150	13537	Block B						
101	W	20:12:00	20:30:00	0:00:00	16	1.1	145	13441	Block B						
100	E	20:33:00	20:50:00	0:00:00	14	1.3	158	13550	Block B						
				0:00:00											
				0:00:00											
				0:00:00											
				0:00:00											
				0:00:00											
				0:00:00											
↑ Times entered are Zulu / GMT ↑										Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:										BLOCK A, BLOCK B		Drive #			

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		6/19/2017	170	76922	2	NM Chama Jemez Block B						
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6108.2		8:01:00		14:01:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		6114.9		2:58:00		20:58:00		KSKX1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
CALM		10	12000		19	6	30.34				KSKX	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13575	Ft				@	NS	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 7:46:00			
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 8:09			
99	W	14:30:00	14:48:00	0:00:00	20	1.2	159	13485				
98	E	14:51:00	15:08:00	0:00:00	24	1	164	13476				
97	W	15:12:00	15:29:00	0:00:00	24	1.1	156	13480				
96	E	15:32:00	15:49:00	0:00:00	22	1.4	164	13463				
95	W	15:52:00	16:10:00	0:00:00	23	1.2	150	13458				
94	E	16:13:00	16:30:00	0:00:00	25	1	154	13574				
93	W	16:33:00	16:51:00	0:00:00	23	1.2	152	13593				
92	E	16:54:00	17:11:00	0:00:00	24	1.1	157	13462				
91	W	17:14:00	17:32:00	0:00:00	23	1.2	156	13565				
90	E	17:35:00	17:52:00	0:00:00	22	1.2	162	13549				
89	W	17:55:00	18:12:00	0:00:00	19	1.4	158	13509				
88	E	18:15:00	18:33:00	0:00:00	19	1.2	163	13521				
87	W	18:40:00	18:52:00	0:00:00	18	1.2	155	13527				
86	E	18:54:00	19:06:00	0:00:00	19	1.1	154	13571				
85	W	19:09:00	19:20:00	0:00:00	18	1.1	162	13627				
84	E	19:24:00	19:35:00	0:00:00	17	1.1	158	13471				
83	W	19:38:00	19:50:00	0:00:00	19	1.1	152	13530				
82	E	19:53:00	20:04:00	0:00:00	20	1.1	150	13472				
81	W	20:07:00	20:19:00	0:00:00	18	1.2	155	13542				
80	E	20:22:00	20:34:00	0:00:00	17	1.2	164	13538				
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK B												

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		6/20/2017	171	76922	2	USGS NM Chama Jemez						
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base		
Denham		N404CP		6114.9		8:24:00		14:24:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		6119.2		12:51:00		18:51:00		KSKX1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
340 / 5		10	12000		20	8	-				KSKX	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13575	Ft	NS	@		Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		7:54:00	
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
										Take Off: 8:30		
1	SE	14:54:00	14:58:00	0:00:00	21	1.1	158	13566				
2	NW	15:02:00	15:07:00	0:00:00	21	1.2	152	13522				
3	SE	15:10:00	15:15:00	0:00:00	21	1.2	160	13508				
4	NW	15:18:00	15:24:00	0:00:00	19	1.4	161	13504				
5	SE	15:27:00	15:32:00	0:00:00	20	1.4	162	13550				
6	NW	15:35:00	15:40:00	0:00:00	21	1.3	160	13619				
7	SE	15:43:00	15:48:00	0:00:00	21	1.3	150	13557				
8	NW	15:50:00	15:56:00	0:00:00	24	1.2	155	13581				
9	SE	15:58:00	16:03:00	0:00:00	24	1.1	156	13579				
10	NW	16:06:00	16:11:00	0:00:00	24	1.1	151	13542				
11	SE	16:16:00	16:19:00	0:00:00	21	1.2	155	13542				
12	NW	16:21:00	16:25:00	0:00:00	21	1.2	147	13452				
13	SE	16:27:00	16:30:00	0:00:00	21	1.2	156	13349				
14	NW	16:33:00	16:37:00	0:00:00	21	1.2	159	13535				
15	SE	16:39:00	16:43:00	0:00:00	21	1.2	156	13538				
16	NW	16:46:00	16:49:00	0:00:00	22	1.2	158	13628				
17	SE	16:51:00	16:54:00	0:00:00	22	1.1	166	13551				
18	NW	16:46:00	16:49:00	0:00:00	21	1.1	164	13546				
19	SE	17:03:00	17:04:00	0:00:00	19	1.2	165	13474				
79	W	17:08:00	17:20:00	0:00:00	20	1.1	155	13539				
78	E	17:23:00	17:35:00	0:00:00	19	1.3	160	13573				
77	W	17:37:00	17:49:00	0:00:00	20	1.2	161	13521				
76	E	17:51:00	18:03:00	0:00:00	18	1.5	151	13519				
75	W	18:06:00	18:17:00	0:00:00	18	1.4	165	13500				
74	E	18:20:00	18:32:00	0:00:00	18	1.2	158	13535				
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK B												

Woolpert														
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name								
		6/21/2017	172	76922	2	USGS NM Chama Jemez Block C								
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base				
Denham		N404CP		6119.2		8:34:00		14:34:00		WOOLPERT PIN				
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID				
ALBERS		ALS-8191		6124.0		1:33:00		19:33:00		KSKX1				
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSKX		
210 / 4		10	12000		21	7					Arriving	KSKX		
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values		
40		42.9		272		100		Gain - Course/Up		Single	A			
								Gain - Fine/Down		Multi	B			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.				
150		Kts	6500	Ft	15575	Ft	NS	@		Ft				
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		7:47:00			
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission		Yes	<input checked="" type="checkbox"/>	No
										Take Off: 8:40				
41	N	15:03:00	15:17:00	0:00:00	19	1.1	156	15471						
42	S	15:20:00	15:32:00	0:00:00	17	1.4	160	15562						
43	N	15:35:00	15:46:00	0:00:00	18	1.3	156	15500						
44	S	15:49:00	15:59:00	0:00:00	20	1.2	153	15451						
45	N	16:03:00	16:15:00	0:00:00	20	1.1	149	15455	Possible Smoke					
46	S	16:18:00	16:29:00	0:00:00	20	1.2	163	15462	Possible Smoke					
47	N	16:33:00	16:44:00	0:00:00	20	1.1	159	15505	Possible Smoke					
48	S	16:47:00	16:57:00	0:00:00	22	1.1	156	15492	Wildfire Smoke					
49	N	17:01:00	17:11:00	0:00:00	21	1.1	157	15519	Wildfire Smoke					
50	S	17:14:00	17:24:00	0:00:00	18	1.3	156	15503	Wildfire Smoke					
51	N	17:27:00	17:36:00	0:00:00	19	1.2	159	15575	Wildfire Smoke					
52	S	17:39:00	17:47:00	0:00:00	20	1.2	163	15533	Wildfire Smoke					
53	N	17:50:00	15:56:00	0:00:00	18	1.4	160	15463	Wildfire Smoke					
54	S	17:59:00	18:05:00	0:00:00	18	1.4	151	15618	Wildfire Smoke					
55	N	18:08:00	18:14:00	0:00:00	18	1.2	150	15455	Wildfire Smoke					
56	S	18:17:00	18:23:00	0:00:00	18	1.2	165	15588	Wildfire Smoke					
57	N	18:25:00	18:30:00	0:00:00	18	1.2	164	15507	Wildfire Smoke					
58	S	18:33:00	18:38:00	0:00:00	19	1.1	154	15503	Wildfire Smoke					
59	N	18:41:00	18:45:00	0:00:00	19	1.1	146	15532	Wildfire Smoke					
60	S	18:47:00	18:50:00	0:00:00	19	1.1	151	15485	Wildfire Smoke					
61	N	18:53:00	18:56:00	0:00:00	20	1.1	150	15383	Wildfire Smoke					
62	S	18:59:00	19:02:00	0:00:00	19	1.2	161	15478	Wildfire Smoke					
63	N	19:05:00	19:07:00	0:00:00	19	1.2	156	15381	Wildfire Smoke					
64	S	19:10:00	19:11:00	0:00:00	19	1.2	158	15508	Wildfire Smoke					
65	N	19:14:00	19:14:00	0:00:00	19	1.2	149	15445	Wildfire Smoke					
				0:00:00										
				0:00:00										
				0:00:00										
				0:00:00										
				0:00:00										
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission		Yes	<input checked="" type="checkbox"/>	No		
Additional Comments:										Drive #				
Block C. The further we went toward Line 65 the thicker the smoke.														

Woolpert													
Leica LIDAR		MM/DD/YYYY	Day of Year	Project #	Phase #	Project Name							
		7/17/2017	198	76922	2	chama jemez							
Operator		Aircraft		ROBBS Start		Local Start Time		ZULU Start Time		Base			
SMITH		N404CP		6127.1		8:29:00		14:29:00					
Pilot		Sensor Type		ROBBS END		Local End Time		Zulu End Time		PID			
GEBHART		OTHER		6130.0		11:17:00		17:17:00					
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	skx		
										Arriving	skx		
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values	
40		43		272		100		Gain - Course/Up		Single	A		
								Gain - Fine/Down		Multi	X	B	
Air Speed	AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.				
150	Kts	6500 Ft		15574 Ft		Yes	NO	@		NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:					
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission			
1	s	14:59:00	15:01:00		21	0.6	1.1						
2	n	15:04:00	15:06:00		22	0.6	1.1						
3	s	15:09:00	15:10:00		22	0.6	1.1						
4	n	15:14:00	15:16:00		21	0.6	1.1						
5	s	15:19:00	15:20:00		22	0.6	1						
6	n	15:23:00	15:24:00		21	0.6	1.1						
7	s	15:27:00	15:28:00		19	0.6	1.1						
8	n	15:32:00	15:33:00		20	0.6	1						
9	s	15:36:00	15:37:00		19	0.6	1.2						
10	n	15:41:00	15:42:00		20	0.6	1.2						
11	s	15:45:00	15:46:00		20	0.6	1.2						
12	n	15:49:00	15:50:00		20	0.6	1.2						
13	s	15:54:00	15:55:00		19	0.6	1.3						
14	n	15:58:00	16:02:00		18	0.6	1.4						
15	s	16:05:00	16:09:00		18	0.6	1.4						
16	n	16:11:00	16:16:00		18	0.6	1.4						
17	s	16:18:00	16:24:00		17	0.6	1.5	clds wp 16-18					
18	n	16:26:00	16:32:00		18	0.6	1.2						
19	s	16:34:00	16:42:00		17	0.6	1.2						
20	n	16:44:00	16:53:00		18	0.6	1.1	clds wp 17,11,10					
17	s	16:56:00	16:58:00		18	0.6	1.1	refit wp 16-18					
↑ Times entered are Zulu / GMT ↑										Page			
										1			
										Verify S-Turns After Mission			
										Yes	X	No	
Additional Comments:										Drive #			

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		7/19/2017	200	76922	2	chama jemez						
Operator		Aircraft		HOBS Start		Local Start Time		ZULU Start Time		Base		
SMITH		N404CP		6132.4		7:58:00		13:58:00				
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID		
GEBHART		OTHER		6135.4		10:53:00		16:53:00				
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
											skx	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		43		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		6500		15574		YES NO		@		NS		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:				
↑ Times entered are Zulu / GMT ↓ Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>												
29	n	14:18:00	14:29:00		23	0.6	1.2					
30	s	14:31:00	14:43:00		22	0.6	1.2					
31	n	14:45:00	14:57:00		22	0.6	1.1					
32	s	14:59:00	15:10:00		23	0.6	1.1					
33	n	15:12:00	15:23:00		21	0.6	1.2					
34	s	15:26:00	15:40:00		21	0.6	1.2					
35	n	15:42:00	15:56:00		22	0.6	1.2	clds wp 32,18,7				
36	s	15:59:00	16:14:00		19	0.6	1.4	clds wp 7,32-34,40,49,50,64,67				
28	n	16:23:00	16:29:00		17	0.6	1.2	refit 28-1, clds wp 19,13				
26	s	16:31:00	16:32:00		17	0.6	1.2	refit wp 5				
↑ Times entered are Zulu / GMT ↑ Page 1 Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>												
Additional Comments:											Drive #	

Woolpert

Leica LIDAR													
MM/DD/YEAR		Day of Year		Project #		Phase #		Project Name					
7/22/2017		203		76922		2		chama jemez					
Operator			Aircraft			ROBBS Start		Local Start Time		ZULU Start Time		Base	
SMITH			N404CP			6139.4		7:59:00		13:59:00			
Pilot			Sensor Type			HOBBS END		Local End Time		Zulu End Time		PID	
GEBHART			OTHER			6140.3		8:55:00		14:55:00			
Wind Dir/Speed		Visibility		Ceiling		Cloud Cover %		Temp		Dew Point		Pressure	
												Haze/Fire/Cloud	
Departing			Arriving						skx				
skx									skx				
Scan Angle (FOV)		Scan Frequency (Hz)			Pulse Rate (kHz)		Laser Power %			Fixed Gain		Mode	
40		43			272		100			Gain - Course/Up		Single	
										Gain - Fine/Down		Multi	
										X		A	
										X		B	
Air Speed		AGL		MSL		Waveform Used				Waveform Mode		Pre-Trigger Dist.	
150		6500		15574		Yes No				@		NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:					
		↑ Times entered are Zulu / GMT ↓						Verify S-Turns Before Mission Yes X No					
36	n	14:17:00	14:18:00		21	0.6	1.2	refit 50-46					
24	n	14:25:00	14:27:00		21	0.6	1.2	refit 8-4					
28	s	14:35:00	14:37:00		22	0.6	1.2	refit 33-37					
↑ Times entered are Zulu / GMT ↑						Page		1		Verify S-Turns After Mission Yes X No			
Additional Comments:											Drive #		

Woolpert																		
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name												
		10/2/2016	276	76922		Pecos Santa Fe_ F Block												
Operator		Aircraft		ROBBS Start		Local Start Time IMU		ZULU Start Time IMU		Base								
Linville		N111SD		136.9		8:23:15		14:23:15		WOOLPERT PIN								
Pilot		Sensor Type		ROBBS END		Local End Time IMU		PID										
LaROCQUE		OTHER		139.1		10:59:47		16:59:47										
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud	Departing	kskx							
calm		10	clr	0	9	-1	30.29			Arriving	kskx							
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		X	Mode	Threshold Values						
40		50		272		100		Gain - Course/Up		Single	A	PreSet						
								Gain - Fine/Down		Multi	B	PreSet						
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.								
150		6500		varies		varies		@		NS								
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments										
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:										
↓ Times entered are Zulu / GMT ↓										Figure 8-Turns Before Mission		Yes	X	No				
44	186.1	15:06:34	15:08:14		18	0.7	1.3											
43	006.1	15:12:31	15:13:35	0:00:00	18	0.7	1.2											
42	186.1	15:17:54	15:19:09	0:00:00	18	0.7	1.3											
45	155.5	15:22:34	15:27:48	0:00:00	17	0.7	1.5											
46	335.7	15:31:42	15:36:52	0:00:00	18	0.7	1.4											
47	155.6	15:40:12	15:45:07	0:00:00	19	0.6	1.1	potential cloud in line										
48	335.7	15:48:29	15:53:15	0:00:00	18	0.6	1.3											
49	155.5	15:56:49	16:01:42	0:00:00	18	0.7	1.3											
50	335.6	16:05:04	16:09:40	0:00:00	18	0.7	1.3											
51	108.9	16:18:24	16:19:37	0:00:00	20	0.7	1.4											
52	289.0	16:22:56	16:24:04	0:00:00	21	0.6	1.2											
53	116.8	16:28:46	16:30:27	0:00:00	21	0.6	1.1	potential cloud at very end										
54	296.9	16:34:11	16:35:11	0:00:00	21	0.6	1.1											
				0:00:00														
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				0:00:00														
				0:00:00														
				0:00:00														
				0:00:00														
↑ Times entered are Zulu / GMT ↑										Page		1		Figure 8-Turns After Mission		Yes	X	No
Additional Comments:										Drive #								
										134								

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/2/2016	27616	75926/76922	2	San Luis/Pecos Santa Fe, New Mexico							
Operator		Aircraft		ROBBS Start		Local Start Time		ZULU Start Time		Base			
GALAMBOS		N404CP		5585.9		9:08:00		15:08:00		WOOLPERT PIN			
Pilot		Sensor Type		ROBBS END		Local End Time		Zulu End Time		PID			
RADER		OTHER		5585.9		10:27:00		16:27:03		KSKX			
Wind Dir/Speed		Visibility	Cloud	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSKX	
330 4		10+	Clear		8	-1	30.29				Arriving	KSKX	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		255	Mode	Threshold Values	
40		51		272		100		Gain - Course/Up		Single	A		
								Gain - Fine/Down		Multi	X	B	
Air Speed		AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts	6500	Ft	Varies	Ft	Yes	No	X	@		NS	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		14:33:20			
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
2	SW	15:08:08	15:09:24	6:25:33	18	0.6	1.1	Sensor 8194/ takeoff: 1432z					
1	NE	15:12:23	15:13:10	0:00:00	18	0.7	1.2	Santa Fe Pecos "G" 19298 MSL					
				0:00:00				40/42.9/272 - SETTINGS					
3	S	15:19:03	15:21:14	0:00:00	17	0.7	1.4	San Luis, NM "G"					
4	N	15:24:07	15:25:33	0:00:00	17	0.7	1.4	GPS Altitude 18143					
5	S	15:28:18	15:29:00	0:00:00	17	0.7	1.4						
6	N	15:32:32	15:34:14	0:00:00	17	0.7	1.4						
7	S	15:37:38	15:39:27	0:00:00	17	0.7	1.4						
8	N	15:42:16	15:44:41	0:00:00	17	0.7	1.4						
9	S	15:47:53	15:50:50	0:00:00	17	0.7	1.4						
10	N	15:53:20	15:56:25	0:00:00	19	0.6	1.1						
11	S	15:59:31	16:02:28	0:00:00	19	0.6	1.1						
12	N	16:05:15	16:08:04	0:00:00	19	0.6	1.1						
13	S	16:11:16	16:13:34	0:00:00	19	0.6	1.1						
12	N	16:16:02	16:08:04	0:00:00	19	0.6	1.1						
13	S	16:11:16	16:13:34	0:00:00	19	0.6	1.1						
14	N	16:16:02	16:17:00	0:00:00	20	0.6	1.1						
2	NE	16:21:13	16:23:00	0:00:00	21	0.6	1.1						
1	SW	16:25:26	16:27:03	0:00:00	21	0.6	1.1						
				0:00:00				Landing 1646z					
				0:00:00				Static: 16:50:50					
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
↑ Times entered are Zulu / GMT ↑										Page		1	Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Additional Comments:											Drive #		

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/4/2016	278	76922		Pecos Santa Fe_ A Flights							
Operator		Aircraft		ROBBS Start		Local Start Time IMU		ZULU Start Time IMU		Base			
Linville		N111SD		139.5		9:15:00		15:15:00		WOOLPERT PIN			
Pilot		Sensor Type		ROBBS END		Local End Time IMU		PID					
LaROCQUE		OTHER		144.7		2:42:00		20:42:00					
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud	Departing	klvs		
360@11		10	clr	0	13	-12	29.9			Arriving	klvs		
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		X	Mode	Threshold Values	
40		50		272		100		Gain - Course/Up			Single	A	PreSet
								Gain - Fine/Down			Multi	B	PreSet
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.			
150		6500		varies		11939 Ft		@		NS		Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:					
↓ Times entered are Zulu / GMT ↓										Figure 8-Turns Before Mission Yes X No			
1	082.3	15:44:50	15:45:48		16	0.7	1.3						
2	262.3	15:49:58	15:51:22	0:00:00	16	0.7	1.3						
3	082.2	16:01:40	16:03:18	0:00:00	17	0.6	1.3						
4	262.4	16:07:32	16:10:40	0:00:00	17	0.7	1.4						
5	082.2	16:14:14	16:17:14	0:00:00	18	0.6	1.1						
6	262.4	16:22:37	16:28:27	0:00:00	17	0.6	1.2						
7	082.2	16:31:55	16:35:55	0:00:00	17	0.6	1.2						
8	262.5	16:41:34	16:48:11	0:00:00	17	0.6	1.2						
9	082.2	16:55:26	17:00:02	0:00:00	19	0.6	1						
10	262.4	17:04:56	17:12:05	0:00:00	17	0.6	1.2						
11	082.2	17:16:09	17:20:38	0:00:00	17	0.6	1.2						
12	262.4	17:25:12	17:31:34	0:00:00	17	0.6	1.2						
13	082.2	17:34:48	17:39:18	0:00:00	17	0.6	1.4						
14	262.4	17:43:57	17:50:18	0:00:00	17	0.6	1.3						
15	082.2	17:53:39	17:58:10	0:00:00	16	0.7	1.3						
16	262.5	18:01:36	18:08:24	0:00:00	17	0.7	1.3						
17	082.2	18:02:08	18:17:05	0:00:00	17	0.6	1.1						
18	262.5	18:21:30	18:28:04	0:00:00	18	0.6	1.2						
19	082.2	18:31:52	18:36:56	0:00:00	17	0.6	1.2						
20	262.5	18:41:48	18:48:26	0:00:00	16	0.7	1.3						
21	082.2	18:52:17	18:57:48	0:00:00	18	0.6	1.1						
22	262.5	19:01:28	19:08:11	0:00:00	19	0.6	1.1						
23	082.2	19:12:41	19:19:26	0:00:00	19	0.6	1.1						
24	262.5	19:24:11	19:32:24	0:00:00	17	0.6	1.2						
25	082.2	19:37:10	19:44:15	0:00:00	18	0.6	1.1						
26	262.6	19:49:18	19:57:46	0:00:00	16	0.7	1.3						
27	082.2	20:01:36	21:44:56	0:00:00	16	0.7	1.2						
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
↑ Times entered are Zulu / GMT ↑				Page		1		Figure 8-Turns After Mission Yes X No					
Additional Comments:											Drive #		
Base station was dead upon arrival back to the airport. Aircraft tail # is N6255Q											132		

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/4/2016	278	76922	2	Chama Chevez /Pecos Santa Fe, New Mexico							
Operator		Aircraft		HOBS Start		Local Start Time		ZULU Start Time		Base			
GALAMBOS		N404CP		5588.0		9:04:00		15:04:00		WOOLPERT PIN			
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID			
RADER		OTHER		5593.3		1:31:00		19:31:00		KSKX			
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSKX	
170 6		10=	Clear		6	-10	29.97				Arriving	KSKX	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain	255	Mode	Threshold Values		
40		42.9		272		100		Gain - Course/Up	Single		A		
								Gain - Fine/Down	Multi	X	B		
Air Speed		AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts	6500	Ft	17,300	Ft	Yes	No	@	NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:	14:26:36				
								Verify S-Turns Before Mission		Yes	X	No	
								Sensor 8194/Taleoff: 1437z "D"					
1	NW	15:04:40	15:06:27	6:24:28	17	0.7	1.3						
2	NW	15:11:20	15:13:08	0:00:00	15	0.7	1.4	Chama Chevez/17575 GPS MSL					
3	SE	15:30:21	15:32:15	0:00:00	17	0.6	1.2	Winds 287 at 55 knots					
4	NW	15:35:19	15:37:10	0:00:00	16	0.7	1.2	Snow on Mountain Tops NW of us					
5	SE	15:43:36	15:44:34	0:00:00	16	0.7	1.2	Hobbs: 5589.1					
				0:00:00									
1	SE	15:58:26	16:00:36	0:00:00	17	0.7	1.4	Pecos Santa Fe/Hobbs 5589.2					
2	N	16:05:06	16:07:35	0:00:00	17	0.7	1.4	GPS 17,300 MSL					
3	S	16:11:10	16:14:40	0:00:00	17	0.7	1.4						
4	N	16:18:07	16:22:02	0:00:00	17	0.7	1.4						
37	S	16:29:15	16:31:20\	0:00:00	17	0.7	1.4	exceeding 5 degrees pitch					
36	N	16:34:43	16:37:34	0:00:00	17	0.7	1.4	Mountain Wave/wind 286 55kt					
35	S	16:40:14	16:43:40	0:00:00	17	0.7	1.4						
34	N	16:46:38	16:50:30	0:00:00	17	0.7	1.4						
33	S	16:53:16	16:57:00	0:00:00	17	0.7	1.2						
32	N	17:00:26	17:04:23	0:00:00	17	0.7	1.2						
31	S	17:07:54	17:13:04	0:00:00	17	0.7	1.2						
30	N	17:16:17	17:23:00	0:00:00	17	0.7	1.2						
29	S	17:25:14	17:31:18	0:00:00	17	0.7	1.2						
28	N	17:33:49	17:40:17	0:00:00	17	0.7	1.2						
27	S	17:42:43	17:49:03	0:00:00	17	0.7	1.2						
41	N	17:51:25	17:52:36	0:00:00	17	0.7	1.2						
40	S	17:54:50	17:55:45	0:00:00	17	0.7	1.2						
39	N	17:58:04	17:59:06	0:00:00	17	0.7	1.2						
38	S	18:01:34	18:02:09	0:00:00	16	0.7	1.2						
26	N	18:04:46	18:11:30	0:00:00	17	0.7	1.3						
25	S	18:13:28	18:14:52	0:00:00	17	0.7	1.3						
24	N	18:16:35	18:18:02	0:00:00	17	0.7	1.3						
23	S	18:20:08	18:21:13	0:00:00	17	0.7	1.3						
22	N	18:23:07	18:24:08	0:00:00	17	0.7	1.3						
21	S	18:26:23	18:27:32	0:00:00	17	0.7	1.3	Go to page 2					
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission		Yes	X	No	
Additional Comments:											Drive #		

Woolpert																
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name										
		10/4/2016	278	76922	2	Chama Chevez /Pecos Santa Fe, New Mexico										
Operator		Aircraft		ROBBS Start		Local Start Time		ZULU Start Time		Base						
GALAMBOS		N404CP		5588.0		9:04:00		14:04:00		WOOLPERT PIN						
Pilot		Sensor Type		ROBBS END		Local End Time		Zulu End Time		PID						
RADER		OTHER		5593.3		1:31:00		19:31:00		KSKX						
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSKX				
170 4		10+	CLR		6	-10	29.97				Arriving	KSKX				
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		255	Mode		Threshold Values			
40		42.9		272		100		Gain - Course/Up		Single	A					
								Gain - Fine/Down		Multi	X		B			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.						
150		Kts 6500		Ft 17,300		Yes No X		@		NS		Ft				
Line #	Dir.	Line Start Time		Line End Time		Time On Line		SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a					n/a		n/a	n/a	n/a	GPS Began Logging At:		14:26:36			
↓ Times entered are Zulu / GMT ↓											Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
											8194					
20	N	18:30:24		18:32:45		0:00:00		19	0.6	1.1						
19	S	18:35:31		18:38:00		0:00:00		19	0.6	1.1						
18	N	18:39:51		18:42:34		0:00:00		19	0.6	1.1						
17	S	18:44:31		18:47:00		0:00:00		19	0.6	1.1						
16	N	18:48:43		18:51:21		0:00:00		19	0.6	1.1						
15	S	18:54:21		18:54:32		0:00:00		19	0.6	1.1						
14	N	18:57:27		18:58:38		0:00:00		19	0.6	1.1						
131	S	19:00:41		19:01:34		0:00:00		19	0.6	1.1						
12	N	19:03:49		19:05:00		0:00:00		19	0.6	1.1						
11	S	19:07:02		19:07:50		0:00:00		19	0.6	1.1						
10	N	19:09:41		19:10:34		0:00:00		19	0.6	1.1						
9	S	19:12:22		19:12:53		0:00:00		18	0.7	1.1						
8	N	19:15:07		19:15:41		0:00:00		18	0.7	1.1						
7	S	19:17:44		19:18:25		0:00:00		18	0.7	1.1						
6	N	19:22:42		19:25:28		0:00:00		18	0.7	1.1						
5	S	19:27:41		19:30:58		0:00:00		18	0.7	1.1						
						0:00:00					static: 19:57:15					
						0:00:00										
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						0:00:00										
↑ Times entered are Zulu / GMT ↑											Page		2		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:											Drive #					

Woolpert														
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name								
		10/5/2016	279	76922	2	Pecos Santa Fe_ A Flights								
Operator		Aircraft		ROBBS Start	Local Start Time IMU		ZULU Start Time IMU		Base					
Linville		N111SD		144.7	10:42:00		16:42:00		WOOLPERT PIN					
Pilot		Sensor Type		ROBBS END	Local End Time IMU		ZULU End Time IMU		PID					
LaROCQUE		OTHER		149.5	3:41:00		21:41:00							
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud	Departing	Arriving				
210@20 g24	10	clr	0	17	-8	30.05			klvs	klvs				
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)	Laser Power %			Fixed Gain	Mode	Threshold Values				
40		36		346	100			Gain - Course/Up	Single	A	PreSet			
								Gain - Fine/Down	Multi	B	PreSet			
Air Speed	AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.							
150	6500	varies	11939	Ft	Yes	No	@		NS	Ft				
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:						
		↓ Times entered are Zulu / GMT ↓						Figure 8-Turns Before Mission Yes X No						
28	082.2	17:30:39	17:38:15		19	0.6	1.2							
29	262.8	17:48:15	18:02:03	0:00:00	19	0.6	1.2							
30	082.2	18:05:43	18:19:14	0:00:00	18	0.6	1.1							
31	263.0	18:24:43	18:40:44	0:00:00	19	0.6	1.1							
32	082.2	18:44:37	18:59:45	0:00:00	20	0.6	1.1							
33	263.0	19:03:49	19:20:45	0:00:00	20	0.6	1.1							
34	082.2	19:24:47	19:39:49	0:00:00	19	0.6	1.1							
35	263.0	19:44:13	19:59:45	0:00:00	16	0.7	1.3							
36	082.2	20:03:22	20:17:57	0:00:00	17	0.7	1.1							
37	263.0	20:22:01	20:37:15	0:00:00	18	0.6	1.1							
38	082.2	20:40:59	20:55:10	0:00:00	16	0.7	1.2							
39	263	20:58:43	21:12:15	0:00:00	16	0.8	1.3							
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↑ Times entered are Zulu / GMT ↑				Page			1	Figure 8-Turns After Mission Yes X No						
Additional Comments:									Drive #					
Base station was dead upon arrival back to the airport. Aircraft tail # is N6255Q									156					

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/5/2016	279	76922	2	Pecos Santa Fe, New Mexico							
Operator		Aircraft		HOBS Start		Local Start Time		ZULU Start Time		Base			
GALAMBOS		N404CP		5593.3		10:34:00		16:34:00		NGS			
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID			
RADER		OTHER		5591.0		3:15:00		21:15:00		Rosair 1987			
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud	Departing	KSXU		
200 3		10+	Clear		20	-5	30.01			Arriving	KSXU		
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain	255	Mode	Threshold Values		
40		42.9		272		100		Gain - Course/Up		Single	A		
								Gain - Fine/Down		Multi	B		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.			
150		6500		11,939		Yes No X		@		NS			
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		16:12:46			
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No			
72	E	16:34:57	16:36:13	9:20:39	20	0.6	1.2	Sensor 8194/Taleoff: 16:18					
71	W	16:38:54	16:41:45	0:00:00	20	0.6	1.2	"A" Block					
70	E	16:44:29	16:46:40	0:00:00	20	0.6	1.2	Takeoff: KSXU 10:20 AM					
69	W	16:49:21	16:53:04	0:00:00	20	0.6	1.2						
68	E	16:56:24	17:00:02	0:00:00	20	0.6	1.2						
67	W	17:02:44	17:07:18	0:00:00	20	0.6	1.2						
65	W	17:11:56	17:15:26	0:00:00	17	0.7	1.3						
66	E	17:18:28	17:21:45	0:00:00	19	0.6	1.2						
64	E	17:29:13	17:40:12	0:00:00	17	0.7	1.4						
63	W	17:42:52	17:55:17	0:00:00	17	0.7	1.4						
62	E	17:57:35	18:08:34	0:00:00	17	0.7	1.4						
61	W	18:10:52	18:23:20	0:00:00	17	0.7	1.4						
60	E	18:25:39	18:36:50	0:00:00	17	0.7	1.4						
59	W	18:38:58	18:51:32	0:00:00	17	0.7	1.4						
58	E	18:53:49	19:05:25	0:00:00	17	0.7	1.2						
57	W	19:07:52	19:20:11	0:00:00	17	0.7	1.2						
56	E	19:22:29	19:49:23	0:00:00	19	0.6	1.1						
54	W	19:51:28	20:02:44	0:00:00	19	0.6	1.1						
53	E	20:04:58	20:16:59	0:00:00	19	0.6	1.1						
52	W	20:19:03	20:30:37	0:00:00	17	0.7	1.2						
51	E	20:32:52	20:44:25	0:00:00	17	0.7	1.2						
50	W	20:46:44	20:44:25\	0:00:00	17	0.7	1.2						
49	E	21_01:32	20:59:39	0:00:00	17	0.7	1.3						
				0:00:00				110 GB					
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
					Page		1	Verify S-Turns After Mission		Yes	<input checked="" type="checkbox"/>	No	
Additional Comments:										Drive #			
										162			

Woolpert																
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name										
		10/6/2016	280	76922	2	Pecos Santa Fe_ C Flights										
Operator		Aircraft		ROBBS Start		Local Start Time IMU		ZULU Start Time IMU		Base						
Linville		N111SD		149.5		10:25:00		16:25:00		WOOLPERT PIN						
Pilot		Sensor Type		ROBBS END		Local End Time IMU		PID								
LaROCQUE		OTHER		153.9		3:04:00		21:04:00								
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud	Departing	klvs					
260@19 @30		10	clr	0	16	-6	30.07			Arriving	klvs					
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		X	Mode	Threshold Values				
40		42.9		272		100		Gain - Course/Up			Single	A	PreSet			
								Gain - Fine/Down			Multi	B	PreSet			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.						
150		6500		varies		11300		@		NS		Ft				
Line #	Dir.	Line Start Time		Line End Time		Time On Line		SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a					n/a		n/a	n/a	n/a	Base GPS Began Logging At:					
↓ Times entered are Zulu / GMT ↓											Figure 8-Turns Before Mission Yes X No					
128	262.1	17:13:09		17:15:23				17	0.6	1.3						
127	081.8	17:19:25		17:22:59		0:00:00		17	0.6	1.3						
126	262.0	17:26:51		17:31:18		0:00:00		17	0.6	1.2						
125	081.8	17:34:35		17:40:40		0:00:00		17	0.6	1.2						
124	262.1	17:44:43		17:51:23		0:00:00		17	0.6	1.2						
123	081.8	17:54:45		18:01:23		0:00:00		18	0.6	1.1						
122	262.1	18:04:53		18:12:11		0:00:00		18	0.6	1.1						
121	081.8	18:15:40		18:22:11		0:00:00		18	0.6	1.1						
120	262.2	18:26:55		18:35:40		0:00:00		19	0.6	1.1						
119	081.8	18:38:59		18:46:47		0:00:00		19	0.6	1.1						
118	262.2	18:51:31		19:00:14		0:00:00		20	0.6	1.1						
117	081.9	19:03:35		19:11:54		0:00:00		20	0.6	1.1						
116	262.2	19:15:54		19:24:28		0:00:00		19	0.6	1.1						
115	081.8	19:28:43		19:37:16		0:00:00		19	0.6	1.1						
114	262.2	19:41:22		19:49:58		0:00:00		18	0.6	1.2						
113	081.8	19:53:55		20:02:25		0:00:00		17	0.7	1.2						
112	262.2	20:06:59		20:18:38		0:00:00		19	0.6	1						
111	081.6	20:22:28		20:33:45		0:00:00		18	0.7	1.1						
						0:00:00										
						0:00:00										
						0:00:00										
						0:00:00										
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						0:00:00										
						0:00:00										
↑ Times entered are Zulu / GMT ↑											Page		1		Figure 8-Turns After Mission Yes X No	
Additional Comments:											Aircraft tail # is N6255Q		Drive #		156	

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/6/2016	280	76922	2	Pecos Santa Fe, New Mexico							
Operator		Aircraft		ROBBS Start		Local Start Time		ZULU Start Time		Base			
GALAMBOS		N404CP		5600.5		9:56:00		15:56:00		NGS			
Pilot		Sensor Type		ROBBS END		Local End Time		Zulu End Time		PID			
RADER		OTHER		5605.1		1:58:00		19:58:00		Rosair 1987			
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSXU	
240 8		10+	Clear		18	0	30.02				Arriving	KSXU	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain	255	Mode	Threshold Values		
40		42.9		272		100		Gain - Course/Up		Single	A		
								Gain - Fine/Down		Multi	B		
Air Speed		AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts	6500	Ft	11,939	Ft	Yes	No	X	@		NS	Ft
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		15:31:02			
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
48	E	15:56:38	16:09:38	8:39:17	18	0.6	1.3	Sensor 8191/Taleoff: 15:36					
47	W	16:12:23	16:26:54	0:00:00	18	0.6	1.1	"A" Block					
46	E	16:29:15	16:41:45	0:00:00	18	0.6	1.3						
45	W	16:44:32	16:58:58	0:00:00	15	0.7	1.2						
44	E	17:01:40	17:13:04	0:00:00	15	0.7	1.2						
43	W	17:15:21	17:28:57	0:00:00	17	0.7	1.2						
42	E	17:30:41	17:41:18	0:00:00	17	0.7	1.3						
41	W	17:33:44	17:57:10	0:00:00	19	0.6	1.2						
40	E	17:59:23	18:11:12	0:00:00	17	0.7	1.4						
				0:00:00				Hobbs: 5603.1					
13	W	18:18:18	18:19:34	0:00:00	18	0.6	1.1	"B" Block GPS Altitude 13,140					
12	E	18:22:00	18:22:50	0:00:00	18	0.6	1.1						
11	W	18:25:21	18:26:30	0:00:00	18	0.6	1.1						
10	E	18:30:01	18:30:01	0:00:00	18	0.6	1.1						
9	W	18:35:58	18:39:04	0:00:00	20	0.6	1.1						
8	E	18:42:06	18:45:02	0:00:00	20	0.6	1.1						
7	W	18:47:57	18:52:33	0:00:00	20	0.6	1.1						
6	E	18:54:28	18:52:09	0:00:00	20	0.6	1.1						
5	W	19:01:16	19:05:08	0:00:00	20	0.6	1.1						
14	SW	19:21:45	19:22:42	0:00:00	17	0.7	1.2						
15	NE	19:26:55	19:28:15	0:00:00	17	0.7	1.2						
4	E	19:41:16	19:42:30	0:00:00	17	0.7	1.2						
3	W	19:45:38	19:47:15	0:00:00	17	0.7	1.3						
2	W	19:51:00	19:52:38	0:00:00	17	0.7	1.3						
1	W	19:56:30	19:58:11	0:00:00	17	0.7	1.3						
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
					Page	1	Verify S-Turns After Mission		Yes	X	No		
Additional Comments:											Drive #		
											162		

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		10/7/2016	281	76922	2	Pecos Santa Fe_ C Flights						
Operator		Aircraft		HOBBS Start	Local Start Time IMU	ZULU Start Time IMU	Base					
Linville		N111SD		153.9	7:06:00	13:06:00	WOOLPERT PIN					
Pilot		Sensor Type		HOBBS END	Local End Time IMU	PID						
LaROCQUE		OTHER		156.1	9:53:00	15:23:00						
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud	Departing	klvs			
170@8kt	10	clr	0	-1	-4	30.41		Arriving	klvs			
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %				Fixed Gain	X	Mode	Threshold Values		
40	42.9	272	100				Gain - Course/Up		Single	A	PreSet	
							Gain - Fine/Down		Multi	B	PreSet	
Air Speed	AGL	MSL	Waveform Used				Waveform Mode	Pre-Trigger Dist.				
150	6500	varies	11300	Ft	Yes	No	X	@	NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:				
		↓ Times entered are Zulu / GMT ↓						Figure 8-Turns Before Mission Yes <input checked="" type="checkbox"/> No				
110	081.6	13:42:00	13:53:17		18	0.6	1.1					
109	262.2	13:56:52	14:08:11	0:00:00	16	0.7	1.1					
108	081.5	15:00:09	15:11:35	0:00:00	16	0.7	1.4	ldh failed to communicate with laser at end of line 108.				
				0:00:00				start of 2nd flight				
107	262.2	16:39:41	16:50:18	0:00:00	19	0.6	1					
106	081.4	16:53:11	17:05:22	0:00:00	19	0.6	1.1					
105	262.2	17:08:51	17:20:08	0:00:00	19	0.6	1.1					
104	081.4	17:24:34	17:17:11	0:00:00	19	0.6	1.1					
103	262.2	17:40:12	17:52:46	0:00:00	18	0.6	1.1					
102	081.4	17:57:05	18:10:15	0:00:00	19	0.6	1.1					
101	262.2	18:14:36	18:27:10	0:00:00	19	0.6	1.1					
100	081.4	18:31:59	18:44:30	0:00:00	19	0.6	1.1					
99	262.2	18:48:00	19:00:54	0:00:00	21	0.6	1.1					
98	081.4	19:05:47	19:20:12	0:00:00	19	0.6	1.1					
97	262.2	19:23:56	19:38:09	0:00:00	19	0.6	1.1					
96	081.4	19:42:11	19:56:57	0:00:00	16	0.7	1.2					
95	262.2	20:00:23	20:15:37	0:00:00	17	0.7	1.1					
94	081.4	20:19:05	20:34:15	0:00:00	17	0.7	1.1					
				0:00:00								
73		20:47:34	20:56:12	0:00:00	17	0.8	1.3	A flight line 73				
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Figure 8-Turns After Mission Yes <input checked="" type="checkbox"/> No				
Additional Comments:							Drive #					
Aircraft tail # is N6255Q							2nd flight hobbs start:156.1 Hobbs end:161.2					
IMU start: 16:05:00 imu local start 10:05:00 imu stop: 21:29:00 imu stop local:3:29:00										158		

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/7/2016	281	76922	2	Pecos Santa Fe, New Mexico							
Operator		Aircraft		HOBS Start		Local Start Time		ZULU Start Time		Base			
GALAMBOS		N404CP		5605.9		9:51:00		15:51:00		WOOLPERT PIN			
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID			
RADER		OTHER		4612.4		3:21:00		21:21:00		KSKX			
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSKX	
180 3		10+	Clear		3	-12	30.43				Arriving	KSSX	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain	255	Mode	Threshold Values		
40		42.9		272		100		Gain - Course/Up		Single	A		
								Gain - Fine/Down		Multi	B		
Air Speed		AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts	6500	Ft	Vary per blk	Ft	Yes	No	X	@		NS	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		15:19:45			
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No			
										Sensor 8194/Takeoff: 9:30 local			
										"F" Block/17,300 GPS Altitude			
										0:00:00			
F53	NW	15:51:50	15:53:46	0:00:00	20	0.6	1.2	Reflight					
F46	NW	16:14:31	16:19:31	0:00:00	20	0.6	1.2	Reflight					
F47	SE	16:22:17	16:27:08	0:00:00	20	0.6	1.2	Reflight/ Hobbs: 5606.9					
D229	SE	16:43:58	16:44:46	0:00:00	20	0.6	1.2	GPS ALTITUDE 13,300					
D228	NW	16:47:11	16:48:08	0:00:00	20	0.6	1.2						
D227	SE	16:50:06	16:51:15	0:00:00	17	0.7	1.4						
D226	NW	16:53:09	16:54:07	0:00:00	17	0.7	1.4						
D225	SE	16:56:22	16:57:12	0:00:00	17	0.7	1.4						
D224	NW	16:59:32	17:01:50	0:00:00	17	0.7	1.4						
D223	SE	17:04:04	17:06:17	0:00:00	17	0.7	1.4						
D222	NW	17:08:32	17:10:57	0:00:00	17	0.7	1.4						
D221	SE	17:13:10	17:15:24	0:00:00	17	0.7	1.2						
D220	NW	17:17:38	17:20:04	0:00:00	17	0.7	1.2						
D219	SE	17:22:20	17:24:50	0:00:00	19	0.6	1.1						
D218	NW	17:26:45	17:29:26	0:00:00	19	0.6	1.1						
D107	SE	17:32:25	17:34:31	0:00:00	19	0.6	1.1						
D106	NW	17:36:31	17:38:56	0:00:00	17	0.7	1.2						
D105	SE	17:41:04	17:43:40	0:00:00	17	0.7	1.2						
104	NW	17:48:31	17:54:36	0:00:00	17	0.7	1.2						
103	SE	17:56:36	18:02:44	0:00:00	17	0.7	1.3						
102	NW	18:04:43	18:11:03	0:00:00	17	0.7	1.3						
101	SE	18:13:13	18:19:15	0:00:00	17	0.7	1.3						
100	NW	18:21:10	18:27:50	0:00:00	17	0.7	1.3						
99	SE	18:29:54	18:35:30	0:00:00	17	0.7	1.3						
98	NW	18:37:29	18:43:29	0:00:00	17	0.7	1.3						
97	SE	18:45:38	18:51:54	0:00:00	17	0.7	1.3						
96	NW	18:53:53	19:00:27	0:00:00	17	0.7	1.3						
D95	SE	19:02:36	19:08:55	0:00:00	17	0.7	1.3	Go to Page #2					
				Page	1			Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No					
Additional Comments:										Drive #			
										133			

Woolpert

Leica LIDAR		MM/DD/YYYY	Day of Year	Project #	Phase #	Project Name					
		10/11/2016	285	76922	2	Pecos Santa Fe_ C Flights					
Operator		Aircraft		ROBBS Start	Local Start Time IMU	ZULU Start Time IMU	Base				
Linville		N111SD		166.6	9:16:00	15:16:00	WOOLPERT PIN				
Pilot		Sensor Type		ROBBS END	Local End Time IMU	PID					
LaROCQUE		OTHER		171.3	2:13:00	20:13:00					
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud	Departing	Arriving	klvs	
310@5kt	10	clr	0	18	2	30.27			klvs	klvs	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)	Laser Power %	Fixed Gain	Mode		Threshold Values		
40		42.9		272	100		X	Single	A	PreSet	
						Gain - Course/Up	Multi		B	PreSet	
Air Speed		AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.			
150		6500	varies	11300	Ft	Yes	No	X	@	NS	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:	9:00:00		
↓ Times entered are Zulu / GMT ↓								Figure 8-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
89	262.2	15:46:52	16:04:50		21	0.6	1.1				
90	081.3	16:08:31	16:25:04	0:00:00	20	0.6	1.1				
91	262.2	16:28:55	16:46:47	0:00:00	20	0.6	1.1				
92	081.3	16:50:08	17:05:56	0:00:00	17	0.6	1.3				
93	262.2	17:10:03	17:27:04	0:00:00	17	0.6	1.2				
73	081.4	17:32:32	17:45:22	0:00:00	16	0.7	1.3				
72	262.2	17:49:49	18:04:09	0:00:00	17	0.6	1.1				
71	081.5	18:07:36	18:20:49	0:00:00	18	0.6	1.1				
70	262.2	18:25:02	18:39:21	0:00:00	17	0.7	1.2				
69	081.4	18:42:41	18:56:25	0:00:00	19	0.6	1.1				
68	262.2	19:00:53	19:16:09	0:00:00	17	0.6	1.2				
67	081.4	19:20:10	19:34:02	0:00:00	16	0.7	1.3				
66	262.2	19:38:03	19:53:15	0:00:00	17	0.7	1.1				
				0:00:00							
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↑ Times entered are Zulu / GMT ↑				Page		1		Figure 8-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:										Drive #	
Aircraft tail # is N6255Q										132	

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/11/2016	285	76922	2	Pecos Santa Fe, New Mexico							
Operator		Aircraft		HOBS Start		Local Start Time		ZULU Start Time		Base			
GALAMBOS		N404CP		5613.6		9:40:00		15:40:00		NGS			
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID			
RADER		OTHER		5618.8		2:17:00		20:17:00		Vegasport 1987			
Wind Dir/Speed		Visibility		Ceiling		Cloud Cover %		Temp		Dew Point		Pressure	
Calm		10+		Clear				20		0		30.27	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values	
40		42.9		272		100		255		Single		A	
								Gain - Course/Up		Multi		B	
								Gain - Fine/Down		X			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.			
150		Kts		6500		Ft		11,300		Ft		Ft	
								Yes		NO		X	
										@		NS	
Line #		Dir.		Line Start Time		Line End Time		Time On Line		SV's		HDOP	
Test		n/a						n/a		n/a		n/a	
										PDOP		Line Notes/Comments	
												GPS Began Logging At: 15:19:48	
												Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No	
												Sensor 8194/Taleoff: 1527z	
171	E	15:40:30	15:41:19	7:30:17	21	0.6	1.1						
172	W	15:44:07	15:46:10	0:00:00	21	0.6	1.1						
173	E	15:48:59	15:50:46	0:00:00	21	0.6	1.1						
174	W	15:56:03	16:09:35	0:00:00	21	0.6	1.1						
175	E	16:11:49	16:22:55	0:00:00	20	0.6	1.1						Turbulence, wind west at 40 knots
176	W	16:25:28	16:39:04	0:00:00	19	0.6	1.2						
177	E	16:41:02	16:52:52	0:00:00	18	0.7	1.3						
178	W	16:55:20	17:09:20	0:00:00	17	0.6	1.2						
179	E	17:11:44	17:24:25	0:00:00	17	0.7	1.4						
180	W	17:26:29	17:39:26	0:00:00	17	0.7	1.4						
181	E	17:41:43	17:54:13	0:00:00	17	0.6	1.1						
182	W	17:56:34	18:10:10	0:00:00	17	0.6	1.1						
183	W	18:12:43	18:25:00	0:00:00	17	0.7	1.4						
184	E	18:27:22	18:40:14	0:00:00	17	0.7	1.4						
185	W	18:42:30	18:54:55	0:00:00	17	0.7	1.2						
186	E	18:57:27	19:10:38	0:00:00	17	0.7	1.2						
187	W	19:14:11	19:27:46	0:00:00	19	0.6	1.1						
188	E	19:29:41	19:44:07	0:00:00	19	0.6	1.1						
189	W	19:46:31	20:00:36	0:00:00	19	0.6	1.1						
190	E	20:02:33	20:17:02	0:00:00	17	0.7	1.2						
				0:00:00									96 GB
				0:00:00									Touchdown 20:26
				0:00:00									Static: 20:29:28
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
						Page		1		Verify S-Turns After Mission		Yes <input checked="" type="checkbox"/> No	
Additional Comments:												Drive #	
												162	

Woolpert														
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name								
		12/12/2016	286	76922	2	Pecos Santa Fe_ C Flights								
Operator		Aircraft		ROBBS Start	Local Start Time IMU	ZULU Start Time IMU	Base							
Linville		N111SD		171.3	7:51:00	13:51:00	WOOLPERT PIN							
Pilot		Sensor Type		ROBBS END	Local End Time IMU	PID								
LaROCQUE		OTHER		175.8	12:33:00	18:33:00								
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud	Departing	klvs					
040@06kt	10	clr	0	8	-2	30.27		Arriving	klvs					
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %			Fixed Gain		X		Mode	Threshold Values			
40	42.9	272	100			Gain - Course/Up		Single	A PreSet					
						Gain - Fine/Down		Multi	B PreSet					
Air Speed	AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.							
150	6500	varies	11300	Ft	Yes	No	X	@	NS		Ft			
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:	7:40:00					
↓ Times entered are Zulu / GMT ↓											Figure 8-Turns Before Mission	Yes	X	No
65	262.2	14:18:10	14:33:19		17	0.7	1.3							
64	081.4	14:36:20	14:50:58	0:00:00	17	0.7	1.4							
63	262.2	14:54:26	15:09:38	0:00:00	19	0.6	1.4							
62	081.4	15:13:53	15:28:23	0:00:00	18	0.7	1.3							
61	262.2	15:31:34	15:46:46	0:00:00	19	0.6	1.3							
60	081.4	15:50:01	16:04:09	0:00:00	20	0.6	1.2							
59	262.2	16:07:42	16:21:47	0:00:00	20	0.6	1.2							
58	081.4	16:24:58	16:38:19	0:00:00	17	0.6	1.4							
57	262.2	16:41:48	16:55:59	0:00:00	18	0.6	1.3							
56	081.4	16:59:27	17:12:50	0:00:00	19	0.6	1.2							
55	262.2	17:16:17	17:31:23	0:00:00	19	0.6	1.2							
54	081.4	17:35:12	17:48:25	0:00:00	18	0.6	1.1							
53	262.1	17:51:50	17:06:30	0:00:00	19	0.6	1.1	lhd failed to communicate with laser						
52	081.3	18:09:58	18:16:40	0:00:00	18	0.7	1.2	with 6-7mi left on line 53 and half way through line 52						
				0:00:00										
				0:00:00										
				0:00:00										
				0:00:00										
				0:00:00										
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				0:00:00										
				0:00:00										
↑ Times entered are Zulu / GMT ↑				Page		1		Figure 8-Turns After Mission		Yes	X	No		
Additional Comments:											Drive #			
Aircraft tail # is N6255Q											156			

Woolpert																				
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name														
		10/13/2016	287	76922	2	Pecos Santa Fe_ C Flights														
Operator		Aircraft		ROBBS Start		Local Start Time IMU		ZULU Start Time IMU		Base										
Linville		N111SD		175.8		10:13:00		16:13:00		WOOLPERT PIN										
Pilot		Sensor Type		Local End Time IMU						PID										
LaROCQUE		OTHER		180.8		3:28:00		21:28:00												
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	klvs								
190@8kt		10	clr	0	11	4	30.29				Arriving	klvs								
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		X	Mode		Threshold Values							
40		42.9		272		100		Gain - Course/Up			Single		A PreSet							
								Gain - Fine/Down			Multi		B PreSet							
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.										
150		6500		varies		11300		@		NS										
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments												
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:		10:00:00										
↑ Times entered are Zulu / GMT ↓												Figure 8-Turns Before Mission		Yes	X	No				
30	261.9	16:32:33	16:39:51		18	0.6	1.2													
29	081.5	16:43:45	15:50:47	0:00:00	17	0.6	1.3													
28	262	16:54:33	17:01:57	0:00:00	17	0.6	1.2													
27	081.5	17:05:23	17:12:19	0:00:00	17	0.6	1.3													
26	261.9	17:15:20	17:22:12	0:00:00	16	0.7	1.3													
25	081.5	17:25:39	17:32:21	0:00:00	17	0.6	1.2													
24	261.9	17:35:17	17:42:06	0:00:00	18	0.6	1.1													
23	081.6	17:47:27	17:52:21	0:00:00	18	0.6	1.1													
22	261.9	17:55:28	18:00:25	0:00:00	19	0.6	1.1													
21	081.6	18:03:32	18:08:14	0:00:00	19	0.6	1.1													
20	261.9	18:11:25	18:15:43	0:00:00	17	0.6	1.2													
19	081.6	18:18:51	18:23:58	0:00:00	20	0.6	1.1													
18	261.9	18:26:49	18:31:15	0:00:00	20	0.6	1.1													
17	081.7	18:35:10	18:40:12	0:00:00	20	0.6	1.1													
16	261.9	18:43:48	18:46:44	0:00:00	20	0.6	1.1													
31	081.6	18:52:07	18:58:42	0:00:00	19	0.6	1.1													
32	261.9	19:01:35	19:08:16	0:00:00	19	0.6	1.1													
33	081.6	19:11:01	19:17:40	0:00:00	17	0.7	1.3													
34	262.0	19:21:03	19:28:13	0:00:00	17	0.7	1.2													
35	081.6	19:31:38	19:39:06	0:00:00	18	0.7	1.1													
36	262.0	19:42:23	19:50:13	0:00:00	18	0.7	1.1													
37	081.5	19:53:33	20:01:29	0:00:00	18	0.7	1.1													
43	262.0	20:05:36	20:19:13	0:00:00	17	0.7	1.2													
44	081.2	20:22:43	20:36:26	0:00:00	18	0.7	1.1													
45	262.1	20:40:05	20:54:41	0:00:00	18	0.7	1.1													
46	081.3	20:57:56	21:12:30	0:00:00	18	0.7	1.1													
				0:00:00																
				0:00:00																
				0:00:00																
				0:00:00																
				0:00:00																
↑ Times entered are Zulu / GMT ↑												Page		1		Figure 8-Turns After Mission		Yes	X	No
Additional Comments:												Aircraft tail # is N6255Q		Drive #		158				

Woolpert														
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name								
		10/13/2016	267	76922	2	Pecos Santa Fe, New Mexico "C"								
Operator		Aircraft		HOBS Start	Local Start Time		ZULU Start Time		Base					
GALAMBOS		N404CP		5619.1	11:50:00		17:50:00		NGS					
Pilot		Sensor Type		HOBS END	Local End Time		Zulu End Time		PID					
RADER		OTHER		5623.9	3:54:00		21:54:00		Vegasport 1987					
Wind Dir/Speed	Visibility	Cloud	Cloud Cover %	Temp	Dew Point	Pressure			Haze/Fire/Cloud	Departing	KSKX			
210 9	10+	Clear		15	2	30.28				Arriving	KSKX			
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %		Fixed Gain	Mode		Threshold Values						
40	42.9	272	100		255	Single		A						
Gain - Course/Up		Gain - Fine/Down		Multi		X		B						
Air Speed	AGL	MSL		Waveform Used		Waveform Mode			Pre-Trigger Dist.					
150	Kts	6500	Ft	11,300	Ft	Yes	No	X	@		NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		17:22:26				
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
191	E	17:50:48	18:04:32	12:27:41	17	0.7	1.1	Sensor 8191/Takeoff: 1729z						
192	W	18:06:34	18:21:07	0:00:00	17	0.7	1.1							
193	E	18:23:23	18:36:42	0:00:00	17	0.7	1.1							
194	W	18:38:49	18:52:52	0:00:00	21	0.6	1.1							
195	E	18:55:03	19:08:48	0:00:00	20	0.6	1.1							
198	W	19:22:45	19:37:55	0:00:00	19	0.6	1.2	Manual Start/Stop UL001						
197	E	19:40:22	19:54:48	0:00:00	18	0.7	1.3	FCMS Glitch						
196	W	19:57:14	20:11:16	0:00:00	17	0.6	1.2							
199	E	20:13:41	20:28:33	0:00:00	17	0.7	1.4							
200	W	20:30:39	20:45:00	0:00:00	17	0.7	1.4							
1	E	20:49:00	21:03:55	0:00:00	17	0.6	1.1							
2	W	21:05:48	21:21:00	0:00:00	17	0.6	1.1							
3	W	21:23:16	21:37:18	0:00:00	17	0.7	1.4							
4	E	21:39:13	21:54:20	0:00:00	17	0.7	1.4	5623.5 Hoobs						
				0:00:00				87GB						
				0:00:00										
				0:00:00				Over base 22:17:44						
				0:00:00										
				0:00:00										
				0:00:00										
				0:00:00										
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				0:00:00										
Page					1		Verify S-Turns After Mission		Yes	<input checked="" type="checkbox"/>	No			
Additional Comments:											Drive #			
											162			

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		10/14/2016	288	76922	2	Pecos Santa Fe_ C Flights							
Operator		Aircraft		ROBBS Start	Local Start Time IMU	ZULU Start Time IMU	Base						
Linville		N111SD		180.8	7:47:00	13:47:00	WOOLPERT PIN						
Pilot		Sensor Type					PID						
LaROCQUE		OTHER		183.7	10:52:00	16:52:00							
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud	Departing	klvs				
240@12	10	clr	0	11	-1	30.23		Arriving	klvs				
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %	Fixed Gain	Gain - Course/Up	Gain - Fine/Down	Mode	Threshold Values					
40	42.9	272	100				X	A	PreSet				
Air Speed	AGL	MSL	Waveform Used	Waveform Mode		Pre-Trigger Dist.							
150	6500	varies	11300	Ft	YES	NO	X	@	NS	Ft			
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments					
Test	n/a			n/a	n/a	n/a	n/a	Base GPS Began Logging At:	7:40:00				
↓ Times entered are Zulu / GMT ↓									Figure 8-Turns Before Mission	Yes	X	No	
38	145.0	14:15:01	14:15:46		17	0.7	1.3						
39	325.0	14:19:04	14:20:30	0:00:00	16	0.7	1.3						
40	145.0	14:24:23	14:26:07	0:00:00	17	0.7	1.3						
41	325.0	14:29:37	14:31:50	0:00:00	16	0.7	1.4						
42	162.8	14:35:57	14:37:14	0:00:00	17	0.7	1.3						
47	081.3	14:43:16	14:57:39	0:00:00	17	0.7	1.4						
48	262.1	15:01:14	15:16:30	0:00:00	17	0.6	1.3						
49	081.3	15:19:47	15:33:33	0:00:00	18	0.6	1.3						
50	262.1	15:36:29	15:51:27	0:00:00	18	0.6	1.2						
51	081.3	15:54:33	16:08:35	0:00:00	19	0.6	1.1						
52	262.1	16:12:19	16:27:14	0:00:00	20	0.6	1.1						
53	081.3	16:30:30	16:35:38	0:00:00	19	0.6	1.2	caught the west end of line to fill in from Idh error					
				0:00:00									
				0:00:00									
				0:00:00									
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↑ Times entered are Zulu / GMT ↑		Page		1		Figure 8-Turns After Mission							
								Yes	X	No			
Additional Comments:										Drive #			
Aircraft tail # is N6255Q										158			

Woolpert														
Leica LIDAR	MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name									
	10/15/2016	289	76922	2	Pecos Santa Fe, New Mexico "C"									
	Operator	Aircraft	HOBBS Start	Local Start Time		Base								
GALAMBOS	N404CP	5630.2	10:18:00		NGS									
Pilot	Sensor Type	HOBBS END	Local End Time		PID									
RADER	OTHER	5634.8	2:06:00		Vegasport 1987									
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Departing	KLVS						
190 8	10+	Clear		18	7	30.14	Arriving	KLVS						
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %	Fixed Gain	Mode	Threshold Values								
40	42.9	272	100	Gain - Course/Up	A									
				Gain - Fine/Down	X	B								
Air Speed	AGL	MSL	Waveform Used		Waveform Mode	Pre-Trigger Dist.								
150	Kts	6500	Ft	11,300	Ft	Yes	No	X						
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	15:46:00						
↓ Times entered are Zulu / GMT ↓												Yes	X	No
A73	N	16:18:15	16:26:43	0:00:00	21	0.6	1.3	Sensor 8191/9:52 - T						
				0:00:00				Cross-Flight A Block -						
				0:00:00				11,939 GPS ALTITUDE						
C108	W	16:41:08	16:54:22	0:00:00	21	0.6	1.1	11,300GZPS Altitude						
C107	E	16:58:04	17:09:13	0:00:00	20	0.6	1.1	Reflight						
C103	W	17:11:50	17:26:20	0:00:00	19	0.6	1.2	Reflight						
C102	E	17:29:29	17:42:11	0:00:00	18	0.7	1.3	Reflight						
C94	W	17:45:03	18:02:48	0:00:00	17	0.6	1.2	Reflight						
C88	E	18:06:23	18:21:52	0:00:00	17	0.7	1.4	Reflight						
C87	W	18:24:41	18:43:00	0:00:00	17	0.7	1.4	Reflight						
B86	E	18:45:18	19:01:09	0:00:00	17	0.6	1.1	Reflight						
C85	W	19:04:03	19:22:24	0:00:00	17	0.6	1.1	Reflight						
C84	E	19:26:36	19:43:27	0:00:00	17	0.7	1.4	Reflight						
C83	W	19:45:50	20:05:33	0:00:00	17	0.7	1.1	Reflight						
				0:00:00				70 GB						
				0:00:00										
				0:00:00				overbase						
				0:00:00				20:21:53						
				0:00:00										
				0:00:00										
				0:00:00										
				0:00:00										
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Page								1						
Additional Comments:												Yes	X	No
												Drive #		
												162		

Woolpert																				
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name														
		10/28/2016	302	76922	2	pecos blk e														
Operator		Aircraft		ROBBS Start		Local Start Time		ZULU Start Time		Base										
SMITH		N404CP		5644.4		11:28:00		17:28:00												
Pilot		Sensor Type		ROBBS END		Local End Time		Zulu End Time		PID										
GEBHART		OTHER		5649.0		4:00:00		22:00:00												
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	skx								
250/5		10			16	0	3034				Arriving	skx								
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values								
40		43		272		100		Gain - Course/Up		Single		A								
								Gain - Fine/Down		Multi		B								
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.										
150		Kts		6500		Ft		15299		Ft		Ft								
						Yes		No		@		NS								
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments												
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:												
↑ Times entered are Zulu / GMT ↓												Verify S-Turns Before Mission		Yes	X	No				
108	n	17:47:00	17:48:00		19	0.6	1.1													
107	s	17:52:00	17:53:00		19	0.6	1.1													
106	n	17:59:00	18:03:00		19	0.6	1.1													
105	s	18:07:00	18:13:00		16	0.6	1.3													
104	n	18:16:00	18:22:00		16	0.6	1.2													
103	s	18:25:00	18:32:00		17	0.6	1.1													
102	n	18:34:00	18:41:00		18	0.6	1													
101	s	18:44:00	18:50:00		18	0.6	1													
100	n	18:52:00	18:58:00		18	0.6	1													
99	s	19:01:00	19:07:00		16	0.6	1.2													
98	n	19:11:00	19:17:00		17	0.6	1.1													
97	s	19:20:00	19:25:00		16	0.6	1.3													
96	n	19:27:00	19:41:00		16	0.6	1.3													
95	s	19:43:00	19:56:00		17	0.6	1.1													
94	n	20:00:00	20:13:00		17	0.6	1.1													
93	s	20:16:00	20:29:00		17	0.6	1.1													
92	n	20:32:00	20:45:00		18	0.6	1													
91	s	20:48:00	21:01:00		18	0.6	1.1													
90	n	21:04:00	21:15:00		18	0.6	1													
89	s	21:18:00	21:29:00		19	0.6	1.1													
88	n	21:31:00	21:42:00		20	0.6	1.1													
↑ Times entered are Zulu / GMT ↑												Page		1		Verify S-Turns After Mission		Yes	X	No
Additional Comments:												Drive #								

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		11/2/2016	314	76922	2	Pecos Santa Fe Blk E Flt #1							
Operator		Aircraft		HOBS Start		Local Start Time		ZULU Start Time		Base			
SWAIN, J.		N6255Q		232.6		9:47:00		15:47:00		WOOLPERT PIN			
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID			
SWAIN, D.		ALS-8170		236.0		13:23:00		19:23:00					
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KLVS		
340/08	10	Clr	30	13	-1	30.25				Arriving	KLVS		
Scan Angle (FOV)	Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain	255	Mode	Threshold Values			
40	42.9		272		100		Gain - Course/Up	Single		A	215		
							Gain - Fine/Down	Multi	X	B	195		
Air Speed	AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.				
150	Kts	6,500	Ft	15,300	Ft	Yes	2	X	@	NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOF	Kts	Alt.	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:	9:18:00			
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission	Yes	X	No
1	171	16:23:19	16:25:51	0:02:32	16	1.2	153	15259	Take Off @ 15:55				
2	351	16:28:50	16:31:24	0:02:34	16	1.2	153	15252					
3	171	16:34:53	16:37:38	0:02:45	17	1.2	154	15212					
4	351	16:40:32	16:43:10	0:02:38	16	1.2	153	15234					
5	171	16:47:30	16:52:32	0:05:02	16	1.3	159	15186					
6	351	16:55:41	17:00:35	0:04:54	19	1.1	159	15210					
7	171	17:03:21	17:07:44	0:04:23	19	1.1	157	15187					
8	351	17:10:30	17:16:15	0:05:45	19	1.2	154	15221					
9	171	17:19:14	17:22:34	0:03:20	20	1.2	155	15183					
10	351	17:25:08	17:30:33	0:05:25	19	1.1	157	15255					
11	171	17:32:49	17:37:43	0:04:54	18	1.2	158	15215					
12	351	17:46:10	17:52:50	0:06:40	18	1.2	152	15214					
13	171	17:47:35	17:52:50	0:05:15	17	1.3	165	15214					
14	351	17:54:54	18:00:03	0:05:09	17	1.2	150	15226					
15	171	18:02:30	18:07:25	0:04:55	18	1.1	160	15265					
16	351	18:09:57	18:14:50	0:04:53	18	1.1	157	15207					
17	171	18:17:10	18:23:14	0:06:04	17	1.1	163	15242					
18	351	18:25:08	18:31:15	0:06:07	19	1	150	15260					
19	171	18:33:54	18:40:05	0:06:11	18	1.1	148	15231					
20	351	18:43:16	18:50:12	0:06:56	17	1.1	152	15195					
21	171	18:53:16	18:59:16	0:06:00	17	1.1	150	15230	cloud @ 17.66 nmi				
				0:00:00									
				0:00:00									
				0:00:00									
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				0:00:00									
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission		Yes	X	No	
Additional Comments:										Drive #			

Woolpert																	
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name											
		11/2/2016	307	76922	2	pecos blk e											
Operator		Aircraft		HOBBS Start		Local Start Time		ZULU Start Time		Base							
SMITH		N404CP		5652.6		9:20:00		15:20:00									
Pilot		Sensor Type		HOBBS END		Local End Time		Zulu End Time		PID							
GEBHART		OTHER		5656.5		12:56:00		18:56:00									
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	skx					
350/8		10			7	-3	3029				Arriving	skx					
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values					
40		43		272		100		Gain - Course/Up		Single		A					
								Gain - Fine/Down		Multi		B					
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.							
150		Kts 6500		Ft 15299		Yes No		@		NS Ft							
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments									
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:									
↑ Times entered are Zulu / GMT ↓												Verify S-Turns Before Mission	Yes	X	No		
87	n	15:40:00	15:53:00		15	0.7	1.3										
86	s	15:57:00	16:10:00		15	0.7	1.4										
85	n	16:46:00	17:00:00		16	0.7	1.5	clouds wp 53-38									
65	s	17:08:00	17:14:00		19	0.7	1.2										
66	n	17:16:00	17:24:00		20	0.7	1.2										
67	s	17:27:00	17:34:00		18	0.7	1.2										
68	n	17:37:00	17:50:00		18	0.7	1.2	clouds wp 41									
69	s	17:52:00	18:05:00		17	0.7	1.2	clouds wp 41, 6									
109	s	18:20:00	18:23:00		19	0.7	1	clouds wp 10-end									
↑ Times entered are Zulu / GMT ↑												Page	1	Verify S-Turns After Mission	Yes	X	No
Additional Comments:											Drive #						

Woolpert											
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name					
		11/10/2016	315	76922		USGS_NM_Pecos_SantaFe_Lidar_2016					
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base	
DENHAM		N404CP		5677.2		9:29:00		16:29:00		WOOLPERT PIN	
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID	
GEBHART		ALS-8191		5683.3		3:56:00		22:56:00		KSKX	
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing
CALM		10	12000	CLEAR		-8	30.4				KSKX
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode	
40		42.9		272		100		Gain - Course/Up		Single	
								Gain - Fine/Down		Multi	
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.	
150		Kts	6500	Ft	15300	Ft			@	NS	Ft
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments		
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:50:00
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
									Take Off: 9:47		
63	N	18:12:00	18:16:00	0:00:00		1.1			All lines BLOCK E		
64	S	18:20:00	18:25:00	0:00:00		1.1					
68	N	18:28:00	18:40:00	0:00:00		1.3					
87	S	18:53:00	19:07:00	0:00:00		1.1					
85	N	19:09:00	19:24:00	0:00:00		1.1					
84	S	19:26:00	19:39:00	0:00:00		1.1					
83	N	19:43:00	19:57:00	0:00:00		1.1					
82	S	20:00:00	20:14:00	0:00:00		1					
81	N	20:17:00	20:28:00	0:00:00		1.1					
80	S	20:31:00	20:41:00	0:00:00		1.1					
79	N	20:43:00	21:00:00	0:00:00		1.1					
78	S	20:56:00	21:05:00	0:00:00		1.2					
77	N	21:08:00	21:17:00	0:00:00		1.2					
76	S	21:22:00	21:33:00	0:00:00		1.4					
75	N	21:36:00	21:48:00	0:00:00		1.4					
74	S	21:50:00	22:03:00	0:00:00		1.1					
69	N	22:05:00	22:17:00	0:00:00		1.1					
109	S	22:32:00	22:35:00	0:00:00		1.1					
				0:00:00							
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↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:										Drive #	

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/11/2016		Day of Year 316		Mission Name / Job # 76922 New Mexico					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 237.6		Local Start Time 13:00		Zulu Start Time 20:00	
Pilot Larocque						Hobbs End 241		Local End Time 16:45		Zulu End Time 23:45	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 350/8		Visibility 10		Ceiling 15,800		Cloud Cover % 40		Temp 14		Dew Point 12	
						Pressure 30.35		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⇅ Times entered are Zulu / GMT ⇅								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
A229	N	20:35:00	20:45:00		18	0.7	1.2	Working 500' high due to restricted airspace, Los Alamos. North end of the lines.			
A228	S	20:47:00	21:04:00								
A227	N	21:07:00	21:24:00								
A226	S	21:27:00	21:43:00								
A225	N	21:46:00	22:03:00								
A224	S	22:06:00	22:23:00								
A223	N	22:26:00	22:40:00								
A222	S	22:43:00	22:58:00								
A221	N	23:00:00	23:14:00								
A220	S	23:17:00	23:31:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: <p style="text-align: center;">The system worked well, no issues.</p>										Drive #	

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/12/2016		Day of Year 317		Mission Name / Job # 76922 ChamaJemez					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 241		Local Start Time 8:25		Zulu Start Time 15:25	
Pilot Larocque						Hobbs End 246.5		Local End Time 14:10		Zulu End Time 21:10	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1		GPS Base #2 Operator	
Wind Dir/Speed 360/4		Visibility 10	Ceiling 0	Cloud Cover % 0	Temp 3	Dew Point 0	Pressure 30.43		Haze/Fire/Cloud Departing ICAO KSAF Arriving ICAO KSAF		
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @ NS		Pre-Trigger Dist. Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test		n/a		n/a		n/a		n/a		GPS Began Logging At:	
↓ Times entered are Zulu / GMT ↓						Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
A219	N	16:10:00	16:07:00		20	0.7	1.1	TDC Buffer error			
A218	S	16:10:00	16:23:00								
A217	N	16:26:00	16:38:00								
A216	S	16:41:00	16:53:00								
A215	N	16:56:00	17:08:00								
A214	S	17:11:00	17:23:00								
A213	N	17:26:00	17:38:00								
A212	S	17:41:00	17:51:00								
A211	N	17:53:00	18:04:00								
A210	S	18:07:00	18:17:00								
A209	N	18:20:00	18:30:00								
A208	S	18:33:00	18:43:00								
A207	N	18:46:00	18:56:00								
A206	S	18:59:00	19:11:00								
A205	N	19:14:00	19:23:00								
A204	S	19:26:00	19:36:00								
A203	N	19:39:00	19:50:00								
A202	S	19:53:00	20:03:00								
A201	N	20:05:00	20:15:00								
A200	S	20:18:00	20:28:00								
A199	N	20:31:00	20:41:00								
A198	S	20:44:00	20:53:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:										Drive #	
TDC Buffer Error on the first line, we will refly that line.											

WOOLPERT FLIGHT LOG SHEET #1										
Leica ALS-80		MM/DD/YYYY		Day of Year		Mission Name / Job #				
Operator Annen		11/13/2016		318		76922 ChamaJemez Flt A				
Pilot Larocque		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 246.5		Local Start Time 7:00		Zulu Start Time 14:00
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		GPS Base #1		Operator Annen		PID KSF1		
Wind Dir/Speed 0100/7		Visibility 10		Ceiling CLR		Cloud Cover % 0		Temp -2		
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Pressure 30.26		
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Haze/Fire/Cloud @ NS		
Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>		Waveform Mode		Pre-Trigger Dist. Ft		Departing ICAO KSAF		
Arriving ICAO KSAF		Line #		Dir.		Line Start Time		Line End Time		
Test		n/a				Time On Line		SV's		
GPS Began Logging At:						HDOP		PDOP		
Line Notes/Comments										
Verify S-Turns Before Mission		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>								
Re-flight, yesterday had TDC Buffer fail										
A219R		S		14:30:00		14:41:00		18		
A197		N		14:47:00		14:57:00				
A196		S		15:00:00		15:09:00				
A195		N		15:13:00		15:22:00				
A194		S		15:25:00		15:33:00				
A193		N		15:36:00		15:45:00				
A193		S		15:49:00		15:57:00				
A191		N		16:01:00		16:10:00				
A190		S		16:13:00		16:21:00				
A189		N		16:24:00		16:33:00				
A188		S		16:36:00		16:45:00				
A187		N		16:48:00		16:57:00				
A186		S		17:01:00		17:09:00				
A185		N		17:13:00		17:21:00				
A184		S		17:25:00		17:34:00				
A183		N		17:37:00		17:46:00				
A182		S		17:50:00		17:57:00				
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission		
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										
Additional Comments:								Drive #		

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/13/2016		Day of Year 318		Mission Name / Job # 76922 ChamaJemez Flt B					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 250.5		Local Start Time 12:18		Zulu Start Time 19:18	
Pilot Larocque						Hobbs End 254.3		Local End Time 16:15		Zulu End Time 23:15	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1		Operator Annen		PID KSAF1	
						GPS Base #2		Operator		PID	
Wind Dir/Speed 330/9		Visibility 10		Ceiling CLR		Cloud Cover % 0		Temp 14		Dew Point -2	
						Pressure 30.24		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⇅ Times entered are Zulu / GMT ⇅								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
A181R	N	19:56:00	20:03:00		15	0.8	1.4	First run had TDC Buffer Error, Re-flew it.			
A180	S	20:06:00	20:13:00								
A179	N	20:16:00	20:24:00								
A178	S	20:28:00	20:35:00								
A177	N	20:38:00	20:46:00								
A176	S	20:50:00	20:57:00								
A175	N	21:00:00	21:09:00								
A174	S	21:12:00	21:20:00								
A173	N	21:23:00	21:31:00								
A172	S	21:34:00	21:41:00								
A171	N	21:43:00	21:53:00								
A170	S	21:56:00	22:03:00								
A169	N	22:07:00	22:16:00								
A168	S	22:19:00	22:28:00								
A167	N	22:32:00	22:42:00								
A166	S	22:45:00	22:54:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:								Drive #			

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/14/2016		Day of Year 319		Mission Name / Job # 76922 ChamaJemez Flt A					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP N7079F N475CP N1107Q		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 SH-7108		Hobbs Start 254.3		Local Start Time 7:25		Zulu Start Time 14:25	
Pilot Larocque						Hobbs End 258.6		Local End Time 11:48		Zulu End Time 18:48	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 350/7	Visibility 10	Ceiling CLR	Cloud Cover % 0	Temp -1	Dew Point -5	Pressure 30.33	Haze/Fire/Cloud		Departing ICAO KSAF	Arriving ICAO KSAF	
Scan Angle (FOV) 40	Scan Frequency (Hz) 43	Pulse Rate (kHz) 272	Laser Power % 100	Gain Course/Up = Fine/Down =	Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	Waveform Mode @ NS		Pre-Trigger Dist. Ft			
Air Speed 150 Kts	AGL 6,500 Ft	MSL 11,572 Ft	Threshold /	Waveform Mode @ NS		Pre-Trigger Dist. Ft					
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⏏ Times entered are Zulu / GMT ⏏								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
A165	N	14:55:00	15:04:00		18	0.7	1.3				
A164	S	15:07:00	15:16:00								
A163	N	15:19:00	15:30:00								
A162	S	15:33:00	15:43:00								
A161	N	15:47:00	15:57:00								
A160	S	16:00:00	16:10:00								
A159	N	16:13:00	16:20:00								
A158	S	16:24:00	16:31:00								
A157	N	16:34:00	16:41:00								
A156	S	16:43:00	16:50:00								
A155	N	16:54:00	17:00:00								
A154	S	17:03:00	17:09:00								
A153	N	17:13:00	17:20:00								
A152	S	17:23:00	17:31:00								
A151	N	17:34:00	17:42:00								
A150	S	17:45:00	17:54:00								
A149	N	17:58:00	18:07:00								
A148	S	18:14:00	18:27:00								
⏏ Times entered are Zulu / GMT ⏏				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: System worked well, no issues.								Drive #			

WOOLPERT FLIGHT LOG SHEET #1												
Leica ALS-80			MM/DD/YYYY 11/14/2016		Day of Year 319		Mission Name / Job # 76922 ChamaJemez Flt B					
Operator Annen			<small>Aircraft</small> N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		<small>Sensor</small> SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 258.6		Local Start Time 13:25		Zulu Start Time 20:25	
Pilot Larocque							Hobbs End 2:24		Local End Time 17:15		Zulu End Time 0:15	
Passengers			<small>Using or Relying on CORS</small> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1	Operator Annen		PID KSAF		
							GPS Base #2	Operator		PID		
Wind Dir/Speed 210/9		Visibility 10	Ceiling CLR	Cloud Cover % 0	Temp 17	Dew Point -4	Pressure 30.3		Haze/Fire/Cloud		Departing ICAO KSAF	Arriving ICAO KSAF
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		<small>Gain</small> Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		<small>Mode</small> Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>		
Air Speed 150 <small>Kts</small>		AGL 6,500 <small>Ft</small>		MSL 11,572 <small>Ft</small>		Threshold /		Waveform Mode @		NS		Pre-Trigger Dist. Ft
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:				
⇅ Times entered are Zulu / GMT ⇅						Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						
A147	N	20:58:00	21:12:00		21	0.6	1.1					
A146	S	21:16:00	21:29:00									
A145	N	21:33:00	21:47:00									
A144	S	21:50:00	22:03:00									
A143	N	22:06:00	22:16:00									
A142	S	22:19:00	22:29:00									
A141	N	22:32:00	22:42:00									
A140	S	22:45:00	22:55:00									
A139	N	22:58:00	23:08:00									
A138	S	23:12:00	23:21:00									
A137	N	23:24:00	23:34:00									
A136	S	23:37:00	23:46:00									
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
System worked well, no issues.												

WOOLPERT FLIGHT LOG SHEET #1										
Leica ALS-80		MM/DD/YYYY		Day of Year		Mission Name / Job #				
Operator Annen		11/15/2016		320		76922 ChamaJemez				
Pilot Larocque		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 262.1		Local Start Time 8:30		Zulu Start Time 15:30
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		GPS Base #1		Operator Annen		PID KSAF		
Wind Dir/Speed 350/15		Visibility 10		Ceiling CLR		Cloud Cover % 0		Temp 4		
Dew Point -6		Pressure 30.33		Haze/Fire/Cloud		Departing ICAO KSAF		Arriving ICAO KSAF		
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @ NS		
Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>		Pre-Trigger Dist. Ft								
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments		
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		
↓ Times entered are Zulu / GMT ↓ Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										
A135	N	16:09:00	16:18:00		19	0.7	1.1			
A134	S	16:22:00	16:28:00							
A133	N	16:32:00	16:37:00							
A132	S	16:40:00	16:45:00							
A131	N	16:48:00	16:53:00							
A130	S	16:56:00	17:01:00							
A129	N	17:05:00	17:09:00							
A128	S	17:13:00	17:18:00							
A127	E	17:32:00	17:35:00							
A126	W	17:38:00	17:40:00							
A125	E	17:43:00	17:46:00							
A124	W	17:49:00	17:52:00							
A123	E	17:55:00	17:58:00							
A122	W	18:01:00	18:03:00							
A121	E	18:07:00	18:08:00							
A120	W	18:11:00	18:12:00							
A119	E	18:15:00	18:16:00							
A118	W	18:19:00	18:21:00							
A117	E	18:23:00	18:24:00							
A116	W	18:27:00	18:28:00							
A115	E	18:31:00	18:32:00							
A114	W	18:35:00	18:36:00							
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Additional Comments:								Drive #		

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/16/2016		Day of Year 321		Mission Name / Job # 76922 ChamaJemez Flt A					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 265.4		Local Start Time 7:20		Zulu Start Time 14:20	
Pilot Larocque						Hobbs End 270.8		Local End Time 13:00		Zulu End Time 20:00	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 360/6		Visibility 10		Ceiling 25K		Cloud Cover % 70		Temp 2		Dew Point -4	
						Pressure 30.12		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
↓ Times entered are Zulu / GMT ↓								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
A113	W	14:48:00	14:53:00		16	0.7	1.3				
A112	E	14:55:00	14:59:00								
A111	W	15:03:00	15:06:00								
A110	E	15:09:00	15:12:00								
A109	W	15:16:00	15:19:00								
A108	E	15:23:00	15:27:00								
A107	W	15:31:00	15:35:00								
A106	E	15:38:00	15:42:00								
A105	W	15:46:00	15:50:00								
A104	E	15:53:00	15:57:00								
A103	W	16:00:00	16:05:00								
A102	E	16:08:00	16:11:00								
A101	W	16:15:00	16:19:00								
A100	E	16:22:00	16:26:00								
A99	W	16:30:00	16:34:00								
A98	E	16:37:00	16:41:00								
A97	W	16:44:00	16:49:00								
A96	E	16:52:00	16:57:00								
A95	W	17:00:00	17:05:00								
A94	E	17:16:00	17:27:00								
A93	W	17:31:00	17:44:00								
A92	E	17:48:00	17:58:00								
A91	W	18:01:00	18:14:00								
A90	E	18:17:00	18:30:00								
A89	W	18:33:00	18:47:00								
A88	E	18:50:00	19:03:00								
PG 2								see page 2			
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: <p style="text-align: center;">SYSTEM WORKED WELL, NO ISSUES.</p>										Drive #	

WOOLPERT FLIGHT LOG SHEET #1

<h3>Leica ALS-80</h3>		MM/DD/YYYY 11/18/2016	Day of Year 323	Mission Name / Job # 76922 ChamaJemez Flt A				
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>	Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>	Hobbs Start 270.8	Local Start Time 7:40	Zulu Start Time 14:40		
Pilot Larocque				Hobbs End 275.3	Local End Time 12:20	Zulu End Time 19:20		
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		GPS Base #1 Operator Annen	PID KSAF1			
				GPS Base #2 Operator	PID			
Wind Dir/Speed 340/8	Visibility 10	Ceiling 0	Cloud Cover % 0	Temp -4	Dew Point -12	Pressure 30.26		
				Haze/Fire/Cloud		Departing ICAO KSAF		
						Arriving ICAO KSAF		
Scan Angle (FOV) 40	Scan Frequency (Hz) 43	Pulse Rate (kHz) 272	Laser Power % 100	Gain Course/Up — Fine/Down —	Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>			
Air Speed 150 Kts	AGL 6,500 Ft	MSL 11,572 Ft	Threshold /	Waveform Mode @	NS	Pre-Trigger Dist. Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:
↑ Times entered are Zulu / GMT ↓				Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
A85	W	15:12:00	12:25:00		19	0.6	1.1	
A84	E	15:28:00	15:42:00					
A83	W	15:04:00	15:59:00					
A82	E	15:02:00	16:16:00					
A81	W	16:19:00	16:33:00					
A80	E	16:36:00	16:51:00					
A79	W	16:53:00	17:07:00					
A78	E	17:10:00	17:24:00					
A77	W	17:27:00	17:40:00					
A76	E	17:43:00	17:55:00					
A75	W	17:58:00	18:10:00					
A74	E	18:13:00	18:24:00					
A73	W	18:28:00	18:40:00					
A72	E	18:43:00	18:56:00					
↑ Times entered are Zulu / GMT ↑				0:00:00	Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:								Drive #
SYSTEM WORKED WELL, NO ISSUES.								

WOOLPERT FLIGHT LOG SHEET #1										
Leica ALS-80		MM/DD/YYYY		Day of Year		Mission Name / Job #				
Operator Annen		11/18/2016		323		76922 ChamaJemez Flt B				
Pilot Larocque		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP N7079F N475CP N1107Q		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 SH-7108		Hobbs Start 275.3		Local Start Time 13:30		Zulu Start Time 20:30
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		GPS Base #1		Operator Annen		PID KSAF1		
Wind Dir/Speed 200/10		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp 7		
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Pressure 30.35		
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Haze/Fire/Cloud @ NS		
Gain Course/Up Fine/Down		Mode Single Multi		2 + 2 4 + 3		Departing ICAO KSAF				
Waveform Mode		Pre-Trigger Dist.		Arriving ICAO KSAF						
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments		
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		
⚡ Times entered are Zulu / GMT ⚡										
								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
A71	W	21:04:00	21:16:00		19	0.6	1.1			
A70	E	21:19:00	21:31:00							
A69	W	21:35:00	21:47:00							
A68	E	21:50:00	22:02:00							
A67	W	22:04:00	22:08:00							
A66	E	22:11:00	22:14:00							
A65	W	22:17:00	22:21:00							
A64	E	22:24:00	22:27:00							
A63	W	22:30:00	22:33:00							
A62	E	22:36:00	22:40:00							
A61	W	22:43:00	22:46:00							
A60	W	22:49:00	22:55:00							
A59	E	22:59:00	23:04:00							
A58	W	23:07:00	23:15:00							
A57	E	23:18:00	23:24:00							
A56	W	23:27:00	23:34:00							
				↑ Times entered are Zulu / GMT ↑		0:00:00		Total Time On Line		
Additional Comments:								Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
								Drive #		

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/18/2016	323	76922	2	USGS Pecos Santa Fe						
Operator		Aircraft	HOBBS Start	Local Start Time	ZULU Start Time	Base						
DENHAM		N404CP	5683.6	2:10:00	21:10:00	WOOLPERT PIN						
Pilot		Sensor Type	HOBBS END	Local End Time	Zulu End Time	PID						
ALBERS		ALS-8191	5686.6	5:20:00	0:20:00	KSAF1						
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud	Departing	KSAF			
CALM	10	12000	CLEAR	12	-13	30.35		Arriving	KSAF			
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %	Fixed Gain	Mode							
40	49.2	272	100		Single							
				Gain - Course/Up	Multi							
				Gain - Fine/Down	A							
								B				
Air Speed	AGL	MSL	Waveform Used			Waveform Mode			Pre-Trigger Dist.			
150	Kts	6500	Ft	15300	Ft	@			NS			
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 			
↓ Times entered are Zulu / GMT ↓								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
								Take Off: 2:18				
111	N	21:43:00	21:46:00	0:00:00		1.1						
110	S	21:49:00	21:51:00	0:00:00		1.1						
55	S	21:55:00	21:55:00	0:00:00		1.1						
54	N	21:58:00	21:59:00	0:00:00		1.1						
53	S	22:02:00	22:03:00	0:00:00		1.1						
52	N	22:05:00	22:07:00	0:00:00		1.1						
51	S	22:09:00	22:10:00	0:00:00		1.1						
50	N	22:15:00	22:20:00	0:00:00		1						
49	S	22:27:00	22:37:00	0:00:00		1.1						
48	N	22:39:00	22:49:00	0:00:00		1.2						
47	S	22:52:00	23:01:00	0:00:00		1.2						
46	N	23:04:00	23:12:00	0:00:00		1.1						
45	S	23:15:00	23:24:00	0:00:00		1.1						
44	N	23:26:00	23:35:00	0:00:00		1						
43	S	23:38:00	23:49:00	0:00:00		1						
42	N	23:51:00	0:03:00	0:00:00		1.1						
				0:00:00								
				0:00:00								
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↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:								Drive #				

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/19/2016		Day of Year 324		Mission Name / Job # 76922 ChamaJemez Flt A					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 278.6		Local Start Time 7:45		Zulu Start Time 14:45	
Pilot Larocque						Hobbs End 283.2		Local End Time 12:40		Zulu End Time 19:40	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 340/4		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp -2		Dew Point -10	
						Pressure 30.51		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⇕ Times entered are Zulu / GMT ⇕										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
A264	S	15:13:00	15:23:00		18	0.6	1.6				
A263	N	15:25:00	15:34:00								
A262	S	15:37:00	15:46:00								
A261	N	15:48:00	15:57:00								
A260	S	16:00:00	16:08:00								
A259	N	16:11:00	16:19:00								
A258	S	16:22:00	16:29:00								
A257	N	16:32:00	16:40:00								
A256	S	16:42:00	16:49:00								
A255	N	16:52:00	16:58:00								
A254	S	17:01:00	17:08:00								
A253	N	17:11:00	17:18:00								
A252	S	17:21:00	17:28:00								
A251	N	17:31:00	17:39:00								
A250	S	17:42:00	17:50:00								
A249	N	17:54:00	18:04:00								
A248	S	18:07:00	18:17:00								
A247	N	18:20:00	18:30:00								
A246	S	18:33:00	18:43:00								
		Break in sequence									
A274	N	18:47:00	18:50:00								
A273	S	18:53:00	18:56:00								
A272	N	19:00:00	19:04:00								
A271	S	19:07:00	19:11:00								
A270	N	19:13:00	19:17:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: SYSTEM WORKED WELL										Drive #	

WOOLPERT FLIGHT LOG SHEET #1												
Leica ALS-80			MM/DD/YYYY 11/19/2016		Day of Year 324		Mission Name / Job # 76922 ChamaJemez Flt B					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 283.2		Local Start Time 13:50		Zulu Start Time 20:50		
Pilot Larocque						Hobbs End 286.3		Local End Time 17:05		Zulu End Time 0:05		
Passengers			Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			GPS Base #1 Operator Annen		PID KSAF1				
						GPS Base #2 Operator		PID				
Wind Dir/Speed 230/8		Visibility 10	Ceiling 0	Cloud Cover % 0	Temp 11	Dew Point -10	Pressure 30.41		Haze/Fire/Cloud	Departing ICAO KSAF		
										Arriving ICAO KSAF		
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>		
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:				
⇅ Times entered are Zulu / GMT ⇅										Verify S-Turns Before Mission	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
A245	S	21:13:00	21:16:00		20	0.6	1.1					
A244	N	21:19:00	21:21:00									
A243	S	21:25:00	21:27:00									
A242	N	21:30:00	21:32:00									
A241	S	21:35:00	21:37:00									
A240	N	21:40:00	21:42:00									
A239	S	21:45:00	21:48:00									
A238	N	21:50:00	21:53:00									
A237	S	21:56:00	21:58:00									
A236	N	22:01:00	22:03:00									
A235	S	22:06:00	22:16:00									
A234	N	22:19:00	22:29:00									
A233	S	22:32:00	22:42:00									
A265	N	22:45:00	22:51:00					Break in sequence				
A266	S	22:54:00	23:00:00					Working around the mountain				
A267	N	23:04:00	23:09:00									
A269	S	22:13:00	22:17:00									
A268	N	23:20:00	23:26:00									
A232	N	23:30:00	23:33:00									
A231	S	23:36:00	9:21:36									
A230	N	23:42:00	23:46:00									
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission		Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Additional Comments: <p style="text-align: center;">System worked well, no issues</p>										Drive #		

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/19/2016	324	76922	2	USGS Pecos Santa Fe						
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5686.6		10:04:00		17:04:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5693.5		5:05:00		0:05:00		KSAF1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
340/6		10		CLEAR	6	-10	30.5				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		6500 Ft		15300 Ft		2		@		NS Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		7:30:00	
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
											Take Off:	
41	S	17:37:00	17:48:00	0:00:00								
40	N	17:51:00	18:01:00	0:00:00								
39	S	18:04:00	18:14:00	0:00:00								
38	N	18:17:00	18:29:00	0:00:00								
37	S	18:33:00	18:42:00	0:00:00								
36	N	18:44:00	18:52:00	0:00:00								
35	S	18:55:00	19:03:00	0:00:00								
34	N	19:05:00	19:14:00	0:00:00								
33	S	19:16:00	19:24:00	0:00:00								
32	N	19:26:00	19:34:00	0:00:00								
31	S	19:36:00	19:44:00	0:00:00								
30	N	19:47:00	19:54:00	0:00:00								
29	S	19:57:00	20:05:00	0:00:00								
28	N	20:07:00	20:15:00	0:00:00								
27	S	20:17:00	20:24:00	0:00:00								
26	N	20:26:00	20:33:00	0:00:00								
25	S	20:35:00	20:43:00	0:00:00								
24	N	20:45:00	20:52:00	0:00:00								
23	S	20:55:00	21:01:00	0:00:00								
22	N	21:04:00	21:10:00	0:00:00								
6	S	21:15:00	21:20:00	0:00:00					REFLIGHT			
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑										Page 2		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Additional Comments:											Drive #	
BLOCK E												

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/19/2016	324	76922	2	USGS Pecos Santa Fe						
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5686.6		10:04:00		17:04:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5693.5		5:05:00		0:05:00		KSAF1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
340/6		10		CLEAR	6	-10	30.5				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		6500		Ft		15300		Ft		NS		
Line #		Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments		
Test		n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 7:30:00		
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
										Take Off:		
41	S	17:37:00	17:48:00	0:00:00								
40	N	17:51:00	18:01:00	0:00:00								
39	S	18:04:00	18:14:00	0:00:00								
38	N	18:17:00	18:29:00	0:00:00								
37	S	18:33:00	18:42:00	0:00:00								
36	N	18:44:00	18:52:00	0:00:00								
35	S	18:55:00	19:03:00	0:00:00								
34	N	19:05:00	19:14:00	0:00:00								
33	S	19:16:00	19:24:00	0:00:00								
32	N	19:26:00	19:34:00	0:00:00								
31	S	19:36:00	19:44:00	0:00:00								
30	N	19:47:00	19:54:00	0:00:00								
29	S	19:57:00	20:05:00	0:00:00								
28	N	20:07:00	20:15:00	0:00:00								
27	S	20:17:00	20:24:00	0:00:00								
26	N	20:26:00	20:33:00	0:00:00								
25	S	20:35:00	20:43:00	0:00:00								
24	N	20:45:00	20:52:00	0:00:00								
23	S	20:55:00	21:01:00	0:00:00								
22	N	21:04:00	21:10:00	0:00:00								
6	S	21:15:00	21:20:00	0:00:00							REFLIGHT	
				0:00:00								
				0:00:00								
				0:00:00								
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↑ Times entered are Zulu / GMT ↑										Page 2		
										Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Additional Comments:										Drive #		
BLOCK E												

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/20/2016		Day of Year 325		Mission Name / Job # 76922 ChamaJemez					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP N7079F N475CP N1107Q		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 SH-7108		Hobbs Start 286.3		Local Start Time 7:55		Zulu Start Time 14:55	
Pilot Larocque						Hobbs End 291.6		Local End Time 13:35		Zulu End Time 20:35	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 360/11		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp 3		Dew Point -9	
						Pressure 30.35		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @ NS		Pre-Trigger Dist. Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test		n/a		n/a		n/a		GPS Began Logging At:			
↓ Times entered are Zulu / GMT ↓								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
B288	S	15:27:00	15:29:00		21	0.6	1.1				
B287	N	15:31:00	15:33:00								
B286	S	15:36:00	15:37:00								
B285	N	15:50:00	15:41:00								
B284	S	15:43:00	15:45:00								
B283	N	15:47:00	15:48:00								
B282	S	15:51:00	15:57:00								
B281	N	15:59:00	16:04:00								
B280	S	16:07:00	16:12:00								
B279	N	16:15:00	16:19:00								
B278	S	16:22:00	16:25:00								
B277	N	16:28:00	16:32:00								
B276	S	16:35:00	16:40:00					ATC line interruption			
B276	S	16:44:00	16:46:00					Airline traffic conflict.			
B275	N	16:49:00	16:56:00								
B274	S	16:59:00	17:05:00								
B273	N	17:07:00	17:14:00								
B272	S	17:17:00	17:25:00								
B271	N	17:29:00	17:51:00								
B270	S	17:40:00	17:48:00								
B269	N	17:51:00	17:59:00								
B268	S	18:02:00	18:11:00								
B267	N	18:14:00	18:22:00								
B266	S	18:25:00	18:33:00								
B265	N	18:36:00	18:44:00								
B264	S	18:48:00	18:55:00								
	SEE	PAGE 2									
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: <p style="text-align: center;">SYSTEM WORKED WELL, NO ISSUES.</p>										Drive #	

WOOLPERT FLIGHT LOG SHEET #2								
Leica ALS-70		DD/MM/YYYY 11/20/2016		Day of Year 325		Mission Name / Job # ChamaJemez		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments
B263	N	15:58:00	19:07:00					
B262	S	19:09:00	19:17:00					
B261	N	19:20:00	19:28:00					
B260	S	19:31:00	19:39:00					
B259	N	19:42:00	19:50:00					
B258	S	19:53:00	20:01:00					
B257	N	20:04:00	20:09:00					
↑ Times entered are Zulu / GMT ↑				0:00:00	Total Time On Line		Verify S-Turns After Mission Yes <input type="checkbox"/> No <input type="checkbox"/>	
Additional Comments: System worked well, no issues							Drive #	

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/20/2016	325	7622	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBSS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5693.5		7:55:00		14:55:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBSS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5701.1		3:44:00		22:44:00		KSAF1		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
360/11		10		CLEAR	2	-10	30.35				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13300	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		7:45:00	
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
										Take Off: 8:05		
31	N	15:28:00	15:41:00	0:00:00								
30	S	15:43:00	15:57:00	0:00:00								
29	N	16:00:00	16:13:00	0:00:00								
28	S	16:16:00	16:29:00	0:00:00								
27	N	16:31:00	16:44:00	0:00:00								
26	S	16:50:00	17:06:00	0:00:00								
25	N	17:08:00	17:26:00	0:00:00								
24	S	17:29:00	17:46:00	0:00:00								
23	N	17:48:00	18:06:00	0:00:00								
22	S	18:08:00	18:25:00	0:00:00								
21	N	18:28:00	18:46:00	0:00:00								
20	S	18:48:00	19:06:00	0:00:00								
19	N	19:08:00	19:26:00	0:00:00								
18	S	19:28:00	19:45:00	0:00:00								
17	N	19:48:00	20:05:00	0:00:00								
16	S	20:07:00	20:22:00	0:00:00								
92	N	20:25:00	20:30:00	0:00:00								
15	N	20:32:00	20:40:00	0:00:00								
14	S	20:42:00	20:50:00	0:00:00								
91	S	20:53:00	20:57:00	0:00:00								
90	N	20:59:00	21:03:00	0:00:00								
89	S	21:06:00	21:09:00	0:00:00								
88	N	21:11:00	21:15:00	0:00:00								
87	S	21:17:00	21:20:00	0:00:00								
86	N	21:22:00	21:24:00	0:00:00								
85	S	21:27:00	21:29:00	0:00:00								
84	N	21:31:00	21:34:00	0:00:00								
83	S	21:37:00	21:38:00	0:00:00								
82	N	21:41:00	21:42:00	0:00:00								
81	S	21:46:00	21:46:00	0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK D												

Woolpert											
Leica LIDAR	MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
	11/20/2016	325	76922	2	USGS PECOS SANTA FE						
Operator	Aircraft	HOBBS Start	Local Start Time	ZULU Start Time	Base						
DENHAM	N404CP	5693.5	7:55:00	14:55:00	WOOLPERT PIN						
Pilot	Sensor Type	HOBBS END	Local End Time	Zulu End Time	PID						
ALBERS	ALS-8191	5701.1	3:44:00	22:44:00	KSAF1						
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure	Haze/Fire/Cloud		Departing	KSAF	
360/11	10		CLEAR	2	-10	30.35			Arriving	KSAF	
Scan Angle (FOV)	Scan Frequency (Hz)	Pulse Rate (kHz)	Laser Power %		Fixed Gain	Mode		Threshold Values			
40	42.9	272	100			Gain - Course/Up	Single	A			
						Gain - Fine/Down	Multi	B			
Air Speed	AGL	MSL	Waveform Used		Waveform Mode		Pre-Trigger Dist.				
150	Kts	6500	Ft	13300	Ft	NS	@	Ft			
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments		
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 7:45:00		
↓ Times entered are Zulu / GMT ↓								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No			
								Take Off: 8:05			
13	N	21:52:00	22:00:00	0:00:00							
12	S	22:02:00	22:07:00	0:00:00							
11	N	22:10:00	22:15:00	0:00:00							
10	S	22:18:00	22:23:00	0:00:00							
9	N	22:25:00	22:30:00	0:00:00							
				0:00:00							
				0:00:00							
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↑ Times entered are Zulu / GMT ↑				Page		2		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No			
Additional Comments:									Drive #		
BLOCK D											

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY		Day of Year		Mission Name / Job #					
		11/23/2016		328		76922 ChamaJemez					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP N7079F N475CP N1107Q		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 SH-7108		Hobbs Start 291.6		Local Start Time 8:00		Zulu Start Time 15:00	
Pilot Larocque						Hobbs End 294.2		Local End Time 10:55		Zulu End Time 17:55	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 360/4		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp -1		Dew Point -2	
						Pressure 30.26		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up Fine/Down		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 13,575 Ft		Threshold /		Waveform Mode @ NS		Pre-Trigger Dist. Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⇅ Times entered are Zulu / GMT ⇅								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
B227	W	15:30:00	15:36:00		19	0.6	1.1				
B226	E	15:35:00	15:36:00								
B225	W	15:40:00	15:41:00								
B224	E	15:46:00	15:47:00								
B223	W	15:50:00	15:52:00								
B222	E	15:55:00	15:58:00								
B221	W	16:01:00	16:03:00								
B220	E	16:07:00	16:09:00								
B219	W	16:12:00	16:14:00								
B218	E	16:18:00	16:21:00								
B217	W	16:24:00	16:27:00								
B216	E	16:30:00	16:33:00								
B215	W	16:36:00	16:40:00								
B214	E	16:43:00	16:45:00								
B213	W	16:48:00	16:51:00								
								Moved due to snow			
B256	S	17:01:00	17:02:00								
B255	N	17:05:00	17:07:00								
B254	S	17:09:00	17:11:00								
B253	N	17:14:00	17:16:00								
B252	S	17:19:00	17:20:00								
B251	N	17:23:00	17:24:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:								Drive #			
SYSTEM WORKED WELL, NO ISSUES											

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/23/2016		Day of Year 328		Mission Name / Job # 76922 Pecos Santa Fe					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP N7079F N475CP N1107Q		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 SH-7108		Hobbs Start 294.2		Local Start Time 12:10		Zulu Start Time 19:10	
Pilot Larocque						Hobbs End 298.9		Local End Time 17:05		Zulu End Time 0:05	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator Denham		PID Las Vegas NM			
Wind Dir/Speed 210/7		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp 9		Dew Point -1	
						Pressure 30.23		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Pulse Rate (kHz) 43		Laser Power % 272		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>			
Air Speed 150 Kts		AGL 6,500 Ft		MSL 13,300 Ft		Threshold /		Waveform Mode @ NS		Pre-Trigger Dist. Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⇅ Times entered are Zulu / GMT ⇅								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
D178	N	19:51:00	20:02:00		19	0.6	1.1				
D179	S	20:05:00	20:06:00								
D180	S	20:08:00	20:16:00								
D181	N	20:19:00	20:28:00								
D182	S	20:31:00	20:40:00								
D183	N	20:42:00	20:49:00								
D184	S	20:51:00	21:00:00								
D185	N	21:06:00	21:13:00								
D186	S	21:16:00	21:24:00								
D187	N	21:28:00	21:35:00								
D188	S	21:38:00	21:45:00								
D189	N	21:48:00	21:54:00								
D190	S	21:57:00	22:03:00								
D191	N	22:11:00	22:17:00								
D192	S	22:20:00	22:27:00								
D193	N	22:31:00	22:37:00								
D194	S	22:40:00	22:46:00								
D195	N	22:49:00	22:54:00								
D196	S	22:57:00	23:01:00								
D197	N	23:04:00	23:07:00								
D198	S	23:10:00	23:14:00								
D199	N	23:17:00	23:20:00								
D200	S	23:23:00	23:27:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: System worked well, no issues										Drive #	

Woolpert																			
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name													
		11/23/2016	328	76922	2	USGS PECOS SANTA FE													
Operator	Aircraft	HOBBS Start			Local Start Time			ZULU Start Time			Base								
DENHAM	N404CP	5701.1			7:53:00			14:53:00			WOOLPERT PIN								
Pilot	Sensor Type	HOBBS END			Local End Time			Zulu End Time			PID								
ALBERS	ALS-8191	5705.4			12:25:00			19:25:00			KSAF1								
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure			Haze/Fire/Cloud			Departing	KSAF						
150	10	12000	CLEAR	1	-2	30.26						Arriving	KSAF						
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values							
40		42.9		272		100		Gain - Course/Up		Single		A							
								Gain - Fine/Down		Multi		B							
Air Speed	AGL	MSL		Waveform Used			Waveform Mode			Pre-Trigger Dist.									
150	Kts	6500	Ft	13300	Ft				@		NS		Ft						
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments										
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 7:45:00										
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>									
Take Off: 8:04																			
8	S	15:25:00	15:30:00	0:00:00															
7	N	15:33:00	15:38:00	0:00:00															
6	S	15:40:00	15:44:00	0:00:00															
5	N	15:47:00	15:51:00	0:00:00															
4	S	15:54:00	15:56:00	0:00:00															
3	N	15:58:00	16:03:00	0:00:00															
2	S	16:05:00	16:08:00	0:00:00															
1	N	16:10:00	16:13:00	0:00:00															
64	N	16:25:00	16:43:00	0:00:00															
63	S	16:45:00	17:03:00	0:00:00															
62	N	17:05:00	17:23:00	0:00:00															
61	S	17:25:00	17:42:00	0:00:00															
59	N	17:46:00	17:46:00	0:00:00															
60	N	17:50:00	18:07:00	0:00:00															
58	S	18:09:00	18:27:00	0:00:00															
57	N	18:31:00	18:51:00	0:00:00															
56	S	18:55:00	18:13:00	0:00:00															
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↑ Times entered are Zulu / GMT ↑										Page 2					Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:																			
BLOCK D FLIGHT 4																			
Drive #																			

Woolpert																				
Leica LIDAR		MM/DD/YEAR		Day of Year		Project #		Phase #		Project Name										
		11/23/2016		328		76922		2		USGS PECOS SANTA FE										
Operator		Aircraft		HOBBES Start		Local Start Time		ZULU Start Time		Base										
DENHAM		N404CP		5705.4		12:43:00		19:43:00		WOOLPERT PIN										
Pilot		Sensor Type		HOBBES END		Local End Time		Zulu End Time		PID										
ALBERS		ALS-8191		5709.2		4:39:00		23:39:00		KLV51										
Wind Dir/Speed		Visibility		Ceiling		Cloud Cover %		Temp		Dew Point		Pressure		Haze/Fire/Cloud		Departing		KSAF		
220/5		10		12000		CLEAR		1		-2		30.17				Arriving		KSAF		
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Gain - Course/Up		Gain - Fine/Down		Mode		Threshold Values				
40		42.9		272		100				Single		Multi		A		B				
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.										
150		Kts		6500		Ft		13300		Ft		NS		Ft						
Line #		Dir.		Line Start Time		Line End Time		Time On Line		SV's		PDOP		Kts		Alt.		Line Notes/Comments		
Test		n/a						n/a		n/a		n/a		n/a		n/a		GPS Began Logging At: 12:39:00		
↓ Times entered are Zulu / GMT ↓													Verify S-Turns Before Mission		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
													Take Off: 12:46							
55	N	20:02:00	20:21:00	0:00:00																
54	S	20:23:00	20:43:00	0:00:00																
53	N	20:46:00	21:05:00	0:00:00																
52	S	21:07:00	21:27:00	0:00:00																
51	N	21:29:00	21:48:00	0:00:00																
217	S	21:58:00	21:59:00	0:00:00																
216	N	22:01:00	22:02:00	0:00:00																
215	S	22:05:00	22:07:00	0:00:00																
214	N	22:09:00	22:11:00	0:00:00																
213	S	22:14:00	22:17:00	0:00:00																
212	N	22:19:00	22:22:00	0:00:00																
211	S	22:25:00	22:28:00	0:00:00																
210	N	22:30:00	22:33:00	0:00:00																
209	S	22:35:00	22:38:00	0:00:00																
208	N	22:41:00	22:44:00	0:00:00																
207	S	22:46:00	22:49:00	0:00:00																
206	N	22:51:00	22:55:00	0:00:00																
205	S	22:57:00	23:01:00	0:00:00																
204	N	23:03:00	23:06:00	0:00:00																
203	S	23:09:00	23:12:00	0:00:00																
202	N	23:13:00	21:17:00	0:00:00																
201	S	23:19:00	23:23:00	0:00:00																
				0:00:00																
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↑ Times entered are Zulu / GMT ↑													Page		2		Verify S-Turns After Mission		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:													Drive #							
BLOCK D FLIGHT 5																				

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/24/2016		Day of Year 329		Mission Name / Job # 76922 ChamaJemez					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP N7079F N475CP N1107Q		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 SH-7108		Hobbs Start 298.9		Local Start Time 7:50		Zulu Start Time 14:50	
Pilot Larocque						Hobbs End 304.1		Local End Time 13:25		Zulu End Time 20:25	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KSAF1			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 340/10		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp 2		Dew Point -3	
						Pressure 30.26		Haze/Fire/Cloud		Departing ICAO KSAF	
										Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 13,575 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
↓ Times entered are Zulu / GMT ↓								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
B212	W	15:19:00	15:21:00		22	0.6	1.1				
B211	E	15:24:00	15:27:00								
B210	W	15:30:00	15:43:00								
B209	E	15:37:00	15:41:00								
B208	W	15:44:00	15:49:00								
B207	E	15:29:00	15:56:00								
B206	W	15:59:00	16:03:00								
B205	E	16:07:00	16:12:00								
B204	W	16:14:00	16:18:00								
B203	E	16:22:00	16:26:00								
B202	W	16:29:00	16:33:00								
B201	E	16:37:00	16:41:00								
B200	W	16:44:00	16:48:00								
B199	E	16:51:00	16:56:00								
B198	W	16:59:00	17:03:00								
B197	E	17:06:00	17:11:00								
B196	W	17:14:00	17:17:00								
B195	E	17:21:00	17:25:00								
B194	W	17:28:00	17:32:00								
B250	S	17:38:00	17:39:00					Moved to different area			
B249	N	17:42:00	17:43:00								
B248	S	17:47:00	17:48:00								
B247	N	17:51:00	17:56:00								
B246	S	17:59:00	18:03:00								
B245	N	18:07:00	18:11:00								
B244	S	18:14:00	18:18:00								
See Page 2											
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: <div style="text-align: center;">System worked well, no issues</div>										Drive #	

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80			MM/DD/YYYY		Day of Year		Mission Name / Job #				
Operator Annen			11/25/2016		330		76922 ChamaJemez				
Pilot Larocque			Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 308.9 Hobbs End 311.6		Local Start Time 13:45 Local End Time 16:48		Zulu Start Time 20:45 Zulu End Time 23:48
Passengers			Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			GPS Base #1 Operator Annen GPS Base #2 Operator		PID KSAF1		PID	
Wind Dir/Speed 125/7		Visibility 10	Ceiling 0	Cloud Cover % 0	Temp 9	Dew Point -14	Pressure 30.39		Haze/Fire/Cloud	Departing ICAO KSAF Arriving ICAO KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 13,575 Ft		Threshold /		Waveform Mode @ NS		Pre-Trigger Dist. Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
↓ Times entered are Zulu / GMT ↓						Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
B193	W	21:12:00						Buffer failure, restart line			
B193	W	21:20:00	21:27:00		22	0.6	1.1				
B192	E	21:30:00	21:37:00								
B191	W	21:04:00	21:53:00								
B230	S	21:56:00	21:57:00					Break in sequence			
B229	N	22:00:00	22:01:00								
B228	S	22:04:00	22:05:00								
B190	E	22:08:00	22:22:00					Break in sequence			
B189	W	22:24:00	22:37:00								
B188	E	22:40:00	22:53:00								
B187	W	22:56:00	2:10:00								
B186	E	23:13:00	23:25:00								
				↑ Times entered are Zulu / GMT ↑		0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:									Drive #		

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/25/2016	330	76922	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5711.7		7:45:00		14:45:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5720.1		4:50:00		4:50:00		KLVS		
Wind Dir/Speed	Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSAF	
010/6	10	4800	BKN	-6	-9	30:49:00				Arriving	KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13300	Ft	2	@	NS	Ft		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:25:00	
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 7:51			
80	S	15:51:00	16:02:00	0:00:00								
79	N	16:05:00	16:17:00	0:00:00								
78	S	16:20:00	16:31:00	0:00:00								
77	N	16:33:00	16:45:00	0:00:00								
76	S	16:48:00	17:00:00	0:00:00								
75	N	17:02:00	17:14:00	0:00:00								
74	S	17:17:00	17:29:00	0:00:00								
73	N	17:32:00	17:44:00	0:00:00								
72	S	17:47:00	18:00:00	0:00:00								
71	N	18:06:00	18:22:00	0:00:00								
70	S	18:25:00	18:41:00	0:00:00								
69	N	18:43:00	19:00:00	0:00:00								
68	S	19:02:00	19:17:00	0:00:00								
67	N	19:19:00	19:34:00	0:00:00								
66	S	19:36:00	19:50:00	0:00:00								
65	N	19:54:00	20:08:00	0:00:00								
50	S	20:12:00	20:31:00	0:00:00								
49	N	20:35:00	20:50:00	0:00:00								
48	S	20:52:00	21:07:00	0:00:00								
47	N	21:10:00	21:25:00	0:00:00								
46	S	21:27:00	21:41:00	0:00:00								
45	N	21:43:00	21:56:00	0:00:00								
44	S	21:59:00	22:12:00	0:00:00								
43	N	22:14:00	22:25:00	0:00:00								
42	S	22:27:00	22:42:00	0:00:00								
41	N	22:45:00	23:00:00	0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		2		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK D												

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/26/2016		Day of Year 331		Mission Name / Job # 76922 ChamaJemez					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 311.8		Local Start Time 9:00		Zulu Start Time 16:00	
Pilot Larocque						Hobbs End 317.2		Local End Time 14:40		Zulu End Time 21:40	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID KLAM			
						GPS Base #2 Operator		PID			
Wind Dir/Speed calm		Visibility 10		Ceiling 25,000		Cloud Cover % 70		Temp 0		Dew Point -9	
						Pressure 30.37		Haze/Fire/Cloud		Departing ICAO KLAM	
										Arriving ICAO KLAM	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 11,572 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
⇅ Times entered are Zulu / GMT ⇅								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
A55	N	16:24:00	16:26:00		17	0.7	1.1				
A54	S	16:29:00	16:30:00					Buffer error, refly			
A54R	S	16:35:00	16:37:00								
A53	N	16:40:00	16:42:00								
A52	S	16:45:00	16:48:00								
A51	W	16:51:00	16:53:00								
A50	E	16:56:00	17:00:00								
A49	W	17:03:00	17:06:00								
A48	E	17:09:00	17:13:00								
A47	W	17:16:00	17:19:00								
A46	E	17:22:00	17:25:00								
A45	N	17:31:00	17:34:00								
A44	S	17:37:00	17:40:00								
A43	N	17:43:00	17:47:00								
A42	S	17:50:00	17:53:00								
A41	N	17:57:00	17:59:00								
A40	S	18:03:00	18:06:00								
A39	N	18:09:00	18:12:00								
A38	S	18:15:00	18:18:00								
A37	N	18:21:00	18:23:00								
A36	S	18:26:00	18:29:00								
A35	N	18:32:00	18:34:00								
A01	N	18:37:00	18:38:00								
A02	S	18:41:00	18:43:00								
A03	N	18:46:00	18:48:00								
A04	S	18:52:00	18:54:00								
See Page 2											
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:										Drive #	

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/26/2016	331	76922	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5720.1		7:30:00		14:30:00		WOOLPERT PIN		
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5727.1		3:30:00		22:28:00		KSKX		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
330/15		10		CLEAR	-4	-9	30.35				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	13300	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:25:00	
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
										Take Off: 7:49		
121	N	15:50:00	15:52:00	0:00:00								
120	S	15:53:00	15:55:00	0:00:00								
119	N	15:59:00	16:03:00	0:00:00								
118	S	16:07:00	16:16:00	0:00:00								
117	N	16:20:00	16:32:00	0:00:00								
116	S	16:34:00	16:45:00	0:00:00								
115	N	16:47:00	16:59:00	0:00:00								
114	S	17:01:00	17:12:00	0:00:00								
113	N	17:14:00	17:25:00	0:00:00								
112	S	17:28:00	17:38:00	0:00:00								
111	N	17:40:00	17:50:00	0:00:00								
110	S	17:53:00	18:00:00	0:00:00								
109	N	18:03:00	18:08:00	0:00:00								
108	S	18:11:00	18:13:00	0:00:00								
122	E	18:19:00	18:21:00	0:00:00								
123	W	18:23:00	18:25:00	0:00:00								
124	E	18:28:00	18:29:00	0:00:00								
125	W	18:32:00	18:34:00	0:00:00								
126	E	18:27:00	18:39:00	0:00:00								
127	W	18:41:00	18:43:00	0:00:00								
128	E	18:46:00	18:47:00	0:00:00								
129	W	18:50:00	18:50:00	0:00:00								
140	N	18:58:00	19:11:00	0:00:00								
139	S	19:14:00	19:26:00	0:00:00								
138	N	19:28:00	19:40:00	0:00:00								
137	S	19:43:00	19:55:00	0:00:00								
136	N	19:58:00	20:09:00	0:00:00								
135	S	20:11:00	20:22:00	0:00:00								
134	N	20:24:00	20:34:00	0:00:00								
133	S	20:36:00	20:46:00	0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Additional Comments:										Drive #		
BLOCK D												

WOOLPERT FLIGHT LOG SHEET #1											
Leica ALS-80		MM/DD/YYYY 11/30/2016		Day of Year 335		Mission Name / Job # 76922 Pecos Santa Fe					
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 317.8		Local Start Time 8:50		Zulu Start Time 15:50	
Pilot Larocque						Hobbs End 323.6		Local End Time 14:55		Zulu End Time 21:55	
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1 Operator Annen		PID EP0642/KSXU			
						GPS Base #2 Operator		PID			
Wind Dir/Speed 240/15		Visibility 10		Ceiling 0		Cloud Cover % 0		Temp -2		Dew Point -9	
						Pressure 30.02		Haze/Fire/Cloud		Departing ICAO KSAF/KSXU	
										Arriving ICAO KSXU/KSAF	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>		Mode Single <input type="checkbox"/> 2+2 <input type="checkbox"/> Multi <input type="checkbox"/> 4+3 <input type="checkbox"/>	
Air Speed 150 Kts		AGL 6,500 Ft		MSL 10,663 Ft		Threshold /		Waveform Mode @ NS		Pre-Trigger Dist. Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:			
↓ Times entered are Zulu / GMT ↓								Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
H29	E	16:23:00	16:35:00		17	0.7	1.2	Set a base station at Santa Rosa			
H30	W	16:38:00	16:51:00								
H31	E	16:54:00	17:07:00								
H32	W	17:10:00	17:24:00								
H33	E	17:27:00	17:40:00								
H34	W	17:43:00	17:58:00								
H35	E	18:01:00	18:15:00								
H36	W	18:18:00	18:31:00								
H37	E	18:34:00	18:46:00								
H38	W	18:49:00	19:03:00								
H39	E	19:07:00	19:19:00								
H40	W	19:22:00	19:35:00								
H41	E	19:38:00	19:49:00								
H42	W	19:52:00	20:05:00								
H43	E	20:08:00	20:20:00								
H44	W	20:22:00	20:34:00								
H45	E	20:38:00	20:49:00								
H46	W	20:52:00	21:03:00								
H47	E	21:06:00	21:17:00								
H48	W	21:20:00	21:31:00								
↑ Times entered are Zulu / GMT ↑				0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments: System worked well, no issues.								Drive #			

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		11/30/16	335	76922	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBSS Start		Local Start Time		Zulu Start Time		Base		
DENHAM		N404CP		5727.1		7:45:00		14:45:00		NGS		
Pilot		Sensor Type		HOBBSS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5734.7		3:33:00		22:33:00		EP0642-KXSU		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
240/12		10	12000	CLEAR	1	-9	30.02				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	12663	Ft	2	2	@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:55:00	
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
											Take Off:7:57	
23	E	16:14:00	16:17:00	0:00:00		1.1						
22	W	16:19:00	16:24:00	0:00:00		1						
21	E	16:27:00	16:32:00	0:00:00		1						
20	W	16:35:00	16:40:00	0:00:00		1.1						
19	E	16:43:00	16:51:00	0:00:00		1.1						
18	W	16:54:00	17:01:00	0:00:00		1.1						
17	E	17:04:00	17:12:00	0:00:00		1.1						
16	W	17:15:00	17:23:00	0:00:00		1.6						
15	E	17:26:00	17:34:00	0:00:00		1.1						
14	W	17:38:00	17:45:00	0:00:00		1.2						
13	E	17:48:00	17:56:00	0:00:00		1.1						
12	W	17:58:00	18:06:00	0:00:00		1.1						
11	E	18:09:00	18:17:00	0:00:00		1.1						
10	W	18:20:00	18:28:00	0:00:00		1.1						
9	E	18:30:00	18:38:00	0:00:00		1.1						
8	W	18:43:00	18:48:00	0:00:00		1.1						
7	E	18:51:00	18:55:00	0:00:00		1						
6	W	18:58:00	19:02:00	0:00:00		1.1						
5	E	19:05:00	19:09:00	0:00:00		1.1						
4	W	19:12:00	19:15:00	0:00:00		1.1						
3	E	19:17:00	19:21:00	0:00:00		1.2						
2	W	19:24:00	19:27:00	0:00:00		1.2						
1	E	19:29:00	19:33:00	0:00:00		1.3						
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page			1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
Additional Comments:										Drive #		
BLOCK J. Started in flight. Overflow base station.												

Woolpert															
Leica LIDAR		MM/DD/YEAR		Day of Year		Project #		Phase #		Project Name					
		11/30/2016		335		76922		2		USGS PECOS SANTA FE					
Operator		Aircraft		HOBS Start		Local Start Time		Zulu Start Time		Base					
DENHAM		N404CP		5727.1		7:45:00		14:45:00		NGS					
Pilot		Sensor Type		HOBS END		Local End Time		Zulu End Time		PID					
ALBERS		ALS-8191		5734.7		3:33:00		22:33:00		EP0642-KXSU					
Wind Dir/Speed		Visibility		Ceiling		Cloud Cover %		Temp		Dew Point		Pressure			
240/12		10		12000		CLEAR		1		-9		30.02			
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values			
40		42.9		272		100		Gain - Course/Up		Single		A			
								Gain - Fine/Down		Multi		B			
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.					
150		Kts		6500		Ft		10663		Ft		@ NS		Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments						
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 8:55:00						
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					
										Take Off: 7:57					
94	E	19:47:00	19:48:00	0:00:00		1.2									
93	W	19:52:00	19:54:00	0:00:00		1.3									
92	E	19:56:00	19:58:00	0:00:00		1.4									
91	W	20:00:00	20:02:00	0:00:00		1.4									
90	E	20:05:00	20:07:00	0:00:00		1.3									
89	W	20:09:00	20:12:00	0:00:00		1.3									
88	E	20:14:00	20:17:00	0:00:00		1.2									
87	W	20:20:00	20:23:00	0:00:00		1.1									
86	E	20:26:00	20:30:00	0:00:00		1.1									
85	W	20:32:00	20:36:00	0:00:00		1.1									
84	E	20:39:00	20:43:00	0:00:00		1.2									
83	W	20:45:00	20:49:00	0:00:00		1.1									
82	E	20:52:00	20:56:00	0:00:00		1.1									
81	W	20:59:00	21:04:00	0:00:00		1.1									
80	E	21:06:00	21:11:00	0:00:00		1.2									
79	W	21:14:00	21:19:00	0:00:00		1.1									
78	E	21:21:00	21:26:00	0:00:00		1									
77	W	21:29:00	21:34:00	0:00:00		1.1									
76	E	21:37:00	21:43:00	0:00:00		1.1									
75	W	21:45:00	21:52:00	0:00:00		1.1									
				0:00:00											
				0:00:00											
				0:00:00											
				0:00:00											
				0:00:00											
				0:00:00											
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				0:00:00											
				0:00:00											
				0:00:00											
↑ Times entered are Zulu / GMT ↑										Page		1		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Additional Comments:										Drive #					
BLOCK H. In flight start. Flew over base station.															

WOOLPERT FLIGHT LOG SHEET #1										
Leica ALS-80		MM/DD/YYYY 12/1/2016		Day of Year 336		Mission Name / Job # 76922 Pecos Santa Fe Flt A				
Operator Annen		Aircraft N6255Q <input checked="" type="checkbox"/> N404CP <input type="checkbox"/> N7079F <input type="checkbox"/> N475CP <input type="checkbox"/> N1107Q <input type="checkbox"/>		Sensor SH-8170 <input checked="" type="checkbox"/> SH_6157 <input type="checkbox"/> SH-7108 <input type="checkbox"/>		Hobbs Start 324.7		Local Start Time 8:40		Zulu Start Time 15:40
Pilot Larocque						Hobbs End 329.2		Local End Time 13:20		Zulu End Time 20:20
Passengers		Using or Relying on CORS Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				GPS Base #1	Operator Annen		PID EP0642	
						GPS Base #2	Operator		PID	
Wind Dir/Speed 030/5	Visibility 10	Ceiling 0	Cloud Cover % 0	Temp -6	Dew Point -12	Pressure 29.94	Haze/Fire/Cloud		Departing ICAO KSAF/KSXU	
Scan Angle (FOV) 40		Scan Frequency (Hz) 43		Pulse Rate (kHz) 272		Laser Power % 100		Gain Course/Up <input type="checkbox"/> Fine/Down <input type="checkbox"/>	Mode Single <input type="checkbox"/> 2 + 2 <input type="checkbox"/> Multi <input type="checkbox"/> 4 + 3 <input type="checkbox"/>	
Air Speed 150 Kts	AGL 6,500 Ft	MSL 10,659 Ft		Threshold /		Waveform Mode @		Pre-Trigger Dist. NS		Ft
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	HDOP	PDOP	Line Notes/Comments		
Test	n/a			n/a	n/a	n/a	n/a	GPS Began Logging At:		
⇕ Times entered are Zulu / GMT ⇕						Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
H49	E	16:04:00	Buffer	Error				Will re-fly line		
H50	E	16:14:00	16:24:00							
H51	W	16:27:00	16:37:00							
H52	E	16:41:00	16:50:00							
H49	W	16:53:00	17:03:00					Line re-fly completed		
H53	E	17:05:00	17:16:00							
H54	W	17:18:00	17:29:00							
H55	E	17:32:00	17:42:00							
H56	W	17:45:00	17:56:00							
H57	E	17:59:00	18:10:00							
H58	W	18:12:00	18:23:00							
H59	E	18:26:00	18:35:00							
H60	W	18:38:00	18:45:00							
H61	E	18:48:00	18:56:00							
H62	W	18:59:00	19:06:00							
H63	E	19:10:00	19:17:00							
H64	W	19:19:00	19:26:00							
H65	E	19:29:00	19:36:00							
H66	W	19:39:00	19:46:00							
H67	E	19:49:00	19:56:00							
				↑ Times entered are Zulu / GMT ↑		0:00:00		Total Time On Line		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Additional Comments: We had a Buffer error on the first line and then a software crash. Restarted and then everything operated normally.									Drive #	

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		12/1/2016	336	76922	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBSS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5734.7		7:40:00		14:40:00		NGS		
Pilot		Sensor Type		HOBBSS END		Local End Time		Zulu End Time		PID		
ALBERS		ALS-8191		5742.4		4:34:00		23:34:00		KRTN-AC7060		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
040/3		10		CLEAR	-4	-11	29.96				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	Ft	13300		Ft	2	@		NS		
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:45:00	
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
										Take Off: 7:45		
170	S	16:15:00	16:17:00	0:00:00		1.1						
169	N	16:20:00	16:21:00	0:00:00		1.1						
168	S	16:24:00	16:25:00	0:00:00		1						
167	N	16:28:00	16:30:00	0:00:00		1						
166	S	16:32:00	16:35:00	0:00:00		1.1						
165	N	16:38:00	16:41:00	0:00:00		1.1						
164	S	16:44:00	16:48:00	0:00:00		1.1						
163	N	16:51:00	16:55:00	0:00:00		1.1						
162	S	16:58:00	17:03:00	0:00:00		1.1						
161	N	17:05:00	17:10:00	0:00:00		1.1						
160	S	17:13:00	17:18:00	0:00:00		1.4						
159	N	17:21:00	17:26:00	0:00:00		1.1						
158	S	17:29:00	17:34:00	0:00:00		1.1						
157	N	17:37:00	17:43:00	0:00:00		1.1						
156	S	17:45:00	17:52:00	0:00:00		1.1						
155	N	17:54:00	18:01:00	0:00:00		1.1						
154	S	18:03:00	18:10:00	0:00:00		1.1						
153	N	18:15:00	18:24:00	0:00:00		1.2						
152	S	18:27:00	18:36:00	0:00:00		1.1						
151	N	18:39:00	18:49:00	0:00:00		1.1						
150	S	18:51:00	19:03:00	0:00:00		1.2						
149	N	19:06:00	19:19:00	0:00:00		1.2						
148	S	19:22:00	19:34:00	0:00:00		1.4						
147	N	19:37:00	19:50:00	0:00:00		1.4						
146	S	19:53:00	20:06:00	0:00:00		1.8						
145	N	20:09:00	20:22:00	0:00:00		1.7						
144	S	20:25:00	20:37:00	0:00:00		1.2						
143	N	20:40:00	20:53:00	0:00:00		1.2						
142	S	20:55:00	21:08:00	0:00:00		1.1						
177	N	21:09:00	21:13:00			1						
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Additional Comments:										Drive #		
BLOCK D												

Woolpert													
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name							
		12/1/2016	336	76922	2	USGS PECOS SANTA FE							
Operator		Aircraft		HOBBSS Start		Local Start Time		ZULU Start Time		Base			
DENHAM		N404CP		5734.7		7:40:00		14:40:00		NGS			
Pilot		Sensor Type		HOBBSS END		Local End Time		Zulu End Time		PID			
ALBERS		ALS-8191		5742.4		4:34:00		23:34:00		KRTN-AC7060			
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	KSAF	
040/3		10		CLEAR	-4	-11	29.96				Arriving	KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		Threshold Values	
40		42.9		272		100		Gain - Course/Up		Single		A	
								Gain - Fine/Down		Multi		B	
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.			
150		Kts		Ft	13300	Ft				@	NS		Ft
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments				
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:		8:45:00		
↓ Times entered are Zulu / GMT ↓										Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
										Take Off: 7:45			
176	W	21:16:00	21:20:00	0:00:00		1							
175	E	21:22:00	21:26:00	0:00:00		1							
174	W	21:29:00	21:32:00	0:00:00		1.1							
173	E	21:35:00	21:38:00	0:00:00		1.2							
172	W	21:42:00	21:44:00	0:00:00		1.2							
171	E	21:47:00	21:49:00	0:00:00		1.2							
141	N	21:55:00	22:07:00	0:00:00		1.2							
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
				0:00:00									
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				0:00:00									
				0:00:00									
				0:00:00									
↑ Times entered are Zulu / GMT ↑				Page			2		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:											Drive #		
BLOCK D													

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		12/4/2016	339	76922	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBSS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5742.4		8:38:00		15:38:00		NGS		
Pilot		Sensor Type		HOBBSS END		Local End Time		Zulu End Time		PID		
RADER		ALS-8191		5751.3		7:51:00		2:52:00		KTRN-A7060		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
350/17		10		CLEAR	-4	-11	30.12				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
40		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	11300	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At:			
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 8:53			
129	SE	17:24:00	17:26:00	0:00:00		1.2						
130	NW	17:29:00	17:31:00	0:00:00		1.1						
131	SE	17:34:00	17:39:00	0:00:00		1.1						
132	NW	17:42:00	17:47:00	0:00:00		1.1						
133	SE	17:54:00	18:04:00	0:00:00		1.1						
134	NW	18:06:00	18:16:00	0:00:00		1.1						
135	SE	18:18:00	18:28:00	0:00:00		1.1						
136	NW	18:30:00	18:40:00	0:00:00		1						
137	SE	18:42:00	18:52:00	0:00:00		1.1						
138	NW	18:54:00	19:03:00	0:00:00		1.1						
139	SE	19:05:00	19:14:00	0:00:00		1.1						
140	NW	19:16:00	19:25:00	0:00:00		1.2						
141	SE	19:29:00	19:40:00	0:00:00		1.2						
142	NW	19:42:00	19:53:00	0:00:00		1.3						
143	SE	19:56:00	20:07:00	0:00:00		1.3						
144	NW	20:09:00	20:19:00	0:00:00		1.1						
145	SE	20:21:00	20:30:00	0:00:00		1						
146	NW	20:33:00	20:43:00	0:00:00		1.1						
147	SE	20:45:00	20:54:00	0:00:00		1.1						
148	NW	20:56:00	21:05:00	0:00:00		1						
149	SE	21:08:00	21:16:00	0:00:00		0.9						
150	NW	21:18:00	21:28:00	0:00:00		1.1						
151	SE	21:30:00	21:39:00	0:00:00		1.1						
152	NW	21:41:00	21:51:00	0:00:00		1.2						
153	SE	21:53:00	22:01:00	0:00:00		1.1						
154	NW	22:03:00	22:10:00	0:00:00		1.1						
155	SE	22:12:00	22:19:00	0:00:00		1						
156	NW	22:22:00	22:27:00	0:00:00		1						
157	SE	22:29:00	22:34:00	0:00:00		1						
158	NW	22:37:00	22:41:00	0:00:00		1.1						
↑ Times entered are Zulu / GMT ↑				Page		1		Verify S-Turns After Mission		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Additional Comments:										Drive #		
BLOCK C												

Woolpert												
Leica LIDAR		MM/DD/YEAR	Day of Year	Project #	Phase #	Project Name						
		12/4/2016	339	76922	2	USGS PECOS SANTA FE						
Operator		Aircraft		HOBBBS Start		Local Start Time		ZULU Start Time		Base		
DENHAM		N404CP		5742.4		8:38:00		15:38:00		NGS		
Pilot		Sensor Type		HOBBBS END		Local End Time		Zulu End Time		PID		
RADER		ALS-8191		5751.3		7:51:00		2:52:00		KRTN-A7060/KLVS-FN0737		
Wind Dir/Speed		Visibility	Ceiling	Cloud Cover %	Temp	Dew Point	Pressure		Haze/Fire/Cloud		Departing	
350/17		10		CLEAR	-4	-11	30.12				KSAF	
Scan Angle (FOV)		Scan Frequency (Hz)		Pulse Rate (kHz)		Laser Power %		Fixed Gain		Mode		
20		42.9		272		100		Gain - Course/Up		Single		
								Gain - Fine/Down		Multi		
Air Speed		AGL		MSL		Waveform Used		Waveform Mode		Pre-Trigger Dist.		
150		Kts	6500	Ft	11300	Ft			@	NS	Ft	
Line #	Dir.	Line Start Time	Line End Time	Time On Line	SV's	PDOP	Kts	Alt.	Line Notes/Comments			
Test	n/a			n/a	n/a	n/a	n/a	n/a	GPS Began Logging At: 			
↓ Times entered are Zulu / GMT ↓									Verify S-Turns Before Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
									Take Off: 8:53			
159	SE	22:43:00	22:47:00	0:00:00		1.1						
160	NW	22:50:00	22:53:00	0:00:00		1.1						
161	SE	22:55:00	22:57:00	0:00:00		1.1						
162	NW	22:59:00	23:03:00	0:00:00		1.2						
163	SE	23:03:00	23:05:00	0:00:00		1.2						
164	NW	23:07:00	23:09:00	0:00:00		1.2						
165	SE	23:12:00	23:14:00	0:00:00		1.1						
166	NW	23:16:00	23:18:00	0:00:00		1.1						
167	SE	23:20:00	23:22:00	0:00:00		1.1						
168	NW	23:24:00	23:26:00	0:00:00		1.1						
169	SE	23:28:00	23:29:00	0:00:00		1.1						
170	NW	23:31:00	23:32:00	0:00:00		1.1						
				0:00:00								
53	W	1:22:00	1:36:00	0:00:00		1.3			REFLIGHT			
				0:00:00								
				0:00:00								
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				0:00:00								
				0:00:00								
↑ Times entered are Zulu / GMT ↑				Page		2		Verify S-Turns After Mission Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Additional Comments:										Drive #		
BLOCK C												

			Field Crew		Flight Log					GPS Information		Meteorological Conditions							
			Jonathan Justin		Project #	20170065-1				Base 1	STUTPORT	Elevation	222.5ft		Temp		Pressure		
					Project Description					Base 2		Base 3		@ Altitude		@ Altitude			
					Woolpert- Ark LiDAR					Aero 2		@ Altitude		#REF!					
					Location					IMU Information		GPS Base Station Information							
					Stuttgart,AR					Start Time		File Name	log0323q.17o	RNX File		Ant Hgt	1.8	Ant Type	GR3
					Aircraft					Stop Time		Base 1		Base 2		Base 3			
					N1107Q														
Flight Date	Pilot	Operator	Total Time	Altitude	First Photo #	Last Photo #	Invalidated Photos	# of Photos	Speed	Miles (Calc)	Miles (Actual)	Void "Y"	Conditions/Comments						
3/23/2017	Justin	Jonathan		6,200					150 kts 173 mph	37.26									
				6,200					150 kts 173 mph	37.98									
				6,200					150 kts 173 mph	36.68									
				6,200					150 kts 173 mph	38.55									
				6,200					150 kts 173 mph	37.54									
				6,200					150 kts 173 mph	42.00									
				6,200					150 kts 173 mph	41.57									
				6,200					150 kts 173 mph	40.80			couple of clouds, reflew on M3						
				6,200					150 kts 173 mph	3.98			clouds interruption, void						

DMC FLIGHT SUMMARY				Data Collection		Comments		Weather	
Approximate Aircraft Flight Time:	0:00:00	Total # of Photo's	0	Percent Complete	18.0%			<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Fair <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Cloudy	
DMC Data Collection Time:	1:49:58	Miles Flown on Flights:		Total Flight Lines	50				
Hobbs Start Time	1000			Lines Complete	9				
Hobbs Stop Time	1003.3	Hobbs Total Time		Lines Completed Today	9				

			Field Crew Jonathan Justin Justin	Flight Log					GPS Information		Meteorological Conditions					
				Project #	20170065-1				Base 1	STUTPORT	Elevation	Temp		Pressure		
				Project Description					Base 2		Airport	222.5ft				
				Location					Base 3		@ Altitude					
			Stuttgart,AR					Aero 2		@ Altitude			#REF!			
			Aircraft					IMU Information		GPS Base Station Information						
			N1107Q					Start Time		File Name	RNX File	Ant Hgt	Ant Type			
								Stop Time		Base 1		1.8	GR3			
										Base 2						
										Base 3						
Flight Date	Pilot	Operator														
3/26/2017	Justin	Jonathan														
Line/Dir	Start	Stop	Total Time	Altitude	First Photo #	Last Photo #	Invalidated Photos	# of Photos	Speed		Miles (Calc)	Miles (Actual)	Void "Y"	Conditions/Comments		
28	13:30:16	13:42:58	0:12:42	6,200					150 kts	173 mph	36.54			Channel issue, refly		
27	13:47:15	14:00:03	0:12:48	6,200					150 kts	173 mph	36.82					
26	14:03:53	14:16:35	0:12:42	6,200					150 kts	173 mph	36.54					
25	14:20:33	14:33:13	0:12:40	6,200					150 kts	173 mph	36.44					
24	14:37:22	14:50:18	0:12:56	6,200					150 kts	173 mph	37.21					
23	14:54:20	15:07:39	0:13:19	6,200					150 kts	173 mph	38.31					
22	15:11:32	15:24:40	0:13:08	6,200					150 kts	173 mph	37.78					
21	15:28:34	15:41:46	0:13:12	6,200					150 kts	173 mph	37.98					
20	15:45:05	15:58:18	0:13:13	6,200					150 kts	173 mph	38.02					
19	16:02:19	16:15:25	0:13:06	6,200					150 kts	173 mph	37.69					
18	16:18:47	16:31:44	0:12:57	6,200					150 kts	173 mph	37.26					
17	16:36:04	16:48:27	0:12:23	6,200					150 kts	173 mph	35.63					
16	16:52:07	17:04:17	0:12:10	6,200					150 kts	173 mph	35.00					
15	17:07:48	17:19:55	0:12:07	6,200					150 kts	173 mph	34.86					
14	17:25:01	17:34:22	0:09:21	6,200					150 kts	173 mph	26.90					
13	17:40:25	17:47:40	0:07:15	6,200					150 kts	173 mph	20.86			abort clouds		

DMC FLIGHT SUMMARY				Data Collection		Comments	Weather
Approximate Aircraft Flight Time:	0:00:00	Total # of Photo's	0	Percent Complete	32.0%		<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Fair <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Cloudy
DMC Data Collection Time:	3:15:59	Miles Flown on Flights:	563.83	Total Flight Lines	50		
Hobbs Start Time	1000			Lines Complete	16		
Hobbs Stop Time	1003.3	Hobbs Total Time	3.3	Lines Completed Today	16		

Field Crew Jonathan Justin				Flight Log					GPS Information		Meteorological Conditions				
				Project #	20170065-1				Base 1	STUTPORT	Elevation	Temp		Pressure	
				Project Description					Base 2		Airport	222.5ft			
Location				Stuttgart,AR				Aero 2		@ Altitude		#REF!			
Aircraft				N1107Q				IMU Information		GPS Base Station Information					
Flight Date	Pilot	Operator					Start Time		File Name	RNX File	Ant Hgt	Ant Type			
3/26/2017	Justin	Jonathan					Stop Time		Base 1		1.8	GR3			
									Base 2						
									Base 3						
Line/Dir	Start	Stop	Total Time	Altitude	First Photo #	Last Photo #	Invalidated Photos	# of Photos	Speed		Miles (Calc)	Miles (Actual)	Void "Y"	Conditions/Comments	
13	20:57:35	21:08:15	0:10:40	6,200					150 kts	173 mph	30.69				
12	21:12:01	21:22:31	0:10:30	6,200					150 kts	173 mph	30.21				
11	21:26:48	21:40:28	0:13:40	6,200					150 kts	173 mph	39.32				
10	21:43:44	21:57:02	0:13:18	6,200					150 kts	173 mph	38.26				
9	22:00:32	22:14:00	0:13:28	6,200					150 kts	173 mph	38.74				
8	22:17:00	22:30:09	0:13:09	6,200					150 kts	173 mph	37.83				
7	22:33:56	22:47:23	0:13:27	6,200					150 kts	173 mph	38.69				
6	22:50:16	23:03:42	0:13:26	6,200					150 kts	173 mph	38.65				
5	23:06:43	23:20:18	0:13:35	6,200					150 kts	173 mph	39.08				
4	23:23:53	23:37:17	0:13:24	6,200					150 kts	173 mph	38.55				
3	23:40:22	23:53:58	0:13:36	6,200					150 kts	173 mph	39.13				
2	23:57:05	0:10:28	0:13:23	6,200					150 kts	173 mph	38.50				
1	0:13:31	0:27:11	0:13:40	6,200					150 kts	173 mph	39.32				

DMC FLIGHT SUMMARY				Data Collection		Comments		Weather	
Approximate Aircraft Flight Time:	0:00:00	Total # of Photo's	0	Percent Complete	100.0%			<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Fair <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Cloudy	
DMC Data Collection Time:	2:49:16	Miles Flown on Flights:	486.97	Total Flight Lines	50				
Hobbs Start Time	1000			Lines Complete	50				
Hobbs Stop Time	1003.3	Hobbs Total Time	3.3	Lines Completed Today	13				

				Flight Log						GPS Information		Meteorological Conditions								
			Field Crew								Base 1	STUTPORT	Elevation	Temp		Pressure				
			Jonathan Justin		Project #	20170065-1						Base 2		Airport	222.5ft					
					Project Description						Base 3		@ Altitude							
											Aero 2		@ Altitude			#REF!				
					Location						IMU Information		GPS Base Station Information							
					Stuttgart,AR						Start Time		File Name	RNX File	Ant Hgt	Ant Type				
					Aircraft						Stop Time		Base 1		Base 2		Base 3			
					N1107Q															
Flight Date	Pilot	Operator										Speed		Miles (Calc)	Miles (Actual)	Void "Y"	Conditions/Comments			
3/26/2017	Justin	Jonathan										150 kts	173 mph	36.68				Reflight from M4		
												150 kts	173 mph	10.93				Reflight from M4		
												150 kts	173 mph	46.03						

DMC FLIGHT SUMMARY				Data Collection			Comments		Weather	
Approximate Aircraft Flight Time:	0:00:00	Total # of Photo's	0	Percent Complete	100.0%				<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Fair <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Cloudy	
DMC Data Collection Time:	0:32:33	Miles Flown on Flights:	93.64	Total Flight Lines	1491					
Hobbs Start Time	1000			Lines Complete	1491					
Hobbs Stop Time	1003.3	Hobbs Total Time	3.3	Lines Completed Today	1112					

Section 7: Final Deliverables

The final lidar deliverables are listed below.

- LAS v1.4 classified point cloud
- Hydro Breaklines as ESRI GDB
- Bridge Breaklines as ESRI GDB
- Digital Elevation Model in ERDAS .IMG format
- 8-bit gray scale intensity images in .TIF format
- Tile layout and Project boundary provided as ESRI shapefile
- Control Points provided as ESRI shapefile
- Flight Line provided as ESRI shapefile
- FGDC compliant metadata per product in XML format
- Lidar processing report in pdf format
- Survey report in pdf format