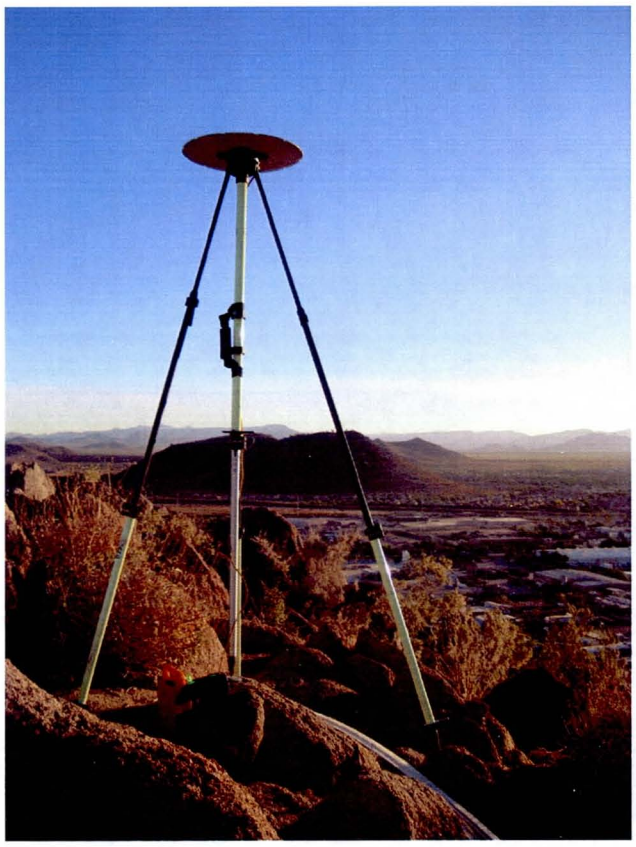
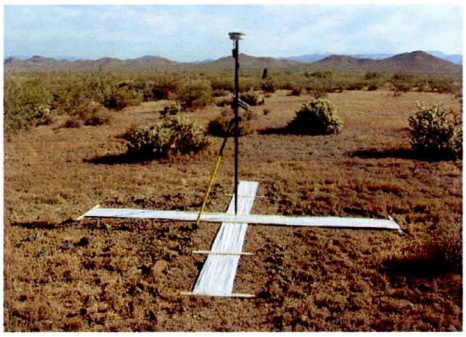
FINAL SURVEY REPORT

PINNACLE PEAK MAPPING ADMS/P





JANUARY, 2011

DEA PROJECT No. CPRA0000-0002

FLOOD CONTROL DISTRICT PROJECT No. FCD 2009C044

DAVID EVANS AND ASSOCIATES INC.

Flood Control District of Maricopa County

COOPER AERIAL

DAVID EVANS
AND ASSOCIATES INC.

TRANSMITTAL

DATE:	January 18, 2011	**PAGES:**	1
TO:	**John Stock**	**TELEPHONE NO:**	602-506-5460
	Flood Control District of Maricopa County	**FAX NO:**	
	2801 W Durango St		
	Phoenix, AZ 85009		
FROM:	Kelly Miller	**TELEPHONE NO:**	602-474-9220
		FAX NO:	602-678-5155
PROJECT:	**Pinnacle Peak ADMS/P**		
PROJECT NO:	CPRA0000-0002 / FCD 2009C044		

☒ AS YOU REQUESTED ☐ FOR YOUR APPROVAL ☐ RETURN REQUESTED
☐ FOR YOUR INFORMATION ☐ RECORDS MANAGEMENT ☐ FOR YOUR USE
☐ _____

ITEM	COPIES	DESCRIPTION
1	1	**Final Survey Report**

COMMENTS:
Please contact me know if you have any questions or comments.

Thank you-

Kelly L. Miller, R.P.L.S., E.I.T.

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REGISTERED LAND SURVEYOR
CERTIFICATE NO.
50011
KELLY L.
MILLER
Date Signed 1/18/2011
ARIZONA, U.S.A.

Expires 09/30/2012

SURVEY NARRATIVE

BACKGROUND

Cooper Aerial Surveys Co. teamed with David Evans and Associates, Inc. (DEA) and Geomatics Consulting Group to perform the Pinnacle Peak Area Drainage Master Study/Plan Mapping project, FCD Contract 2009C044. DEA was responsible for providing primary control, aerial control panels and mobile ground-based LiDAR of roadway surfaces that met two foot mapping needs over an area of approximately 60 square miles in and around northeastern Phoenix, Arizona for the Flood Control District of Maricopa County. All survey was executed in order to meet or exceed the more stringent of the requirements as specified in the contract scope of work or FEMA document, Flood Insurance Study: Guidelines and Specifications for Flood Hazard Mapping Partners, April 2003.

An optional task, mobile ground-based LiDAR covering roughly 70 miles in northwestern Scottsdale, was also completed and submitted to the Flood Control District of Maricopa County for its use in positioning imagery collected in 2007. A map of the LiDAR-collected roadways can be found in Section D-1, and a map of the LiDAR-collected roadways for the optional task can be found in Section D-2.

Control datum: Horizontal control is based upon NAD 83 (Epoch 2007). Coordinate values are expressed in Arizona State Plane Coordinates, Central Zone, in International Feet. Vertical control is based upon NAVD 88 relative to Geoid 09.

SURVEY SUMMARY

PRIMARY SURVEY CONTROL

DEA assumed early on that all primary survey control should satisfy one foot mapping needs. Research and reconnaissance efforts yielded 17 published NGS points originally constructed for the Maricopa County Geodetic Densification and Cadastral Survey. Ultimately, ten of these monuments were used for the primary control network.

DEA also included three new monuments constructed by Geomatics Consulting Group: GCG1, a 36" by ¾" drill bit approximately 1,375 feet south of Deer Valley Road, 215 feet east of the 32nd Street alignment and 800 feet west of Pinnacle High School; EBM1, a 3-1/4" Maricopa County DOT brass disk stamped EBM 1 just east of the Cave Buttes Dam; GCG2, a ½" rebar with GCG control cap located behind 4729 E Sleepy Ranch Road, approximately 1,200 feet northwest of Ashler Hills Drive and Cave Creek Road.

Exhibits, photos and go-to sheets for the Primary Survey Control can be found in Section B-3. Log sheets can be found in Section B-9 and datasheets for NGS points are located in Section B-8.

DEA occupied all of the 13 control points that formed the Primary Survey Control network over two sessions with dual frequency GPS receivers, with four of these points being occupied in both sessions. DEA then performed a minimally constrained least

squares adjustment and a weighted constrained adjustment. The Loops and Misclosures report can be found in Section B-5. The weighted constrained adjustment can be found in Section B-4.

Nine of the ten NGS control points were verified and published values were subsequently used for 1FJ1, 1HF5, 1HJ2, 1IG2, 1II1, 1JF2, 1JH3, 1KI3 and NR06. 1HH2, located southwest of Pinnacle Peak Road and Scottsdale Road, was found to be significantly lower in height than the published value. This point falls within a known subsidence area according to the Arizona Department of Water Resources Land Subsidence in Northeast Phoenix and Scottsdale Areas Map, found in Section B-10. The adjusted value was used for this point. A coordinate comparison between the weighted constrained adjustment and the published values can be found in Section B-7.

SECONDARY PHOTO CONTROL

DEA utilized Leica 1200 GPS static observations to position the Secondary Photo Control. One dual frequency GPS rover occupied a photo panel for at least ten minutes while at least two dual frequency GPS base stations occupied Primary Survey Control. Baselines were processed, loop closures performed and adjustments of the observations recorded. The Loops and Misclosures and adjustment reports can be found in Sections C-5 and C-4, respectively. An overall exhibit for the Secondary Photo Control can be found in Section C-1. Final coordinates are located in Section C-2.

TITAN MOBILE SCANNING

Extensive planning was needed to ensure satellite coverage (≥ 6) and PDOP minimization (< 4). It was determined that two separate missions could be collected each day between the times of 6am-9am and 12pm-3:30pm. Planning documentation can be found in Section D-3. Base stations used to control the post-processed kinematic adjustment of the scan data were from the original primary control network and were within six miles of the scanner at all times. The project, including the optional task, was collected over 8 days. Titan mission forms and base station information have been attached as supporting documents in Section D-5.

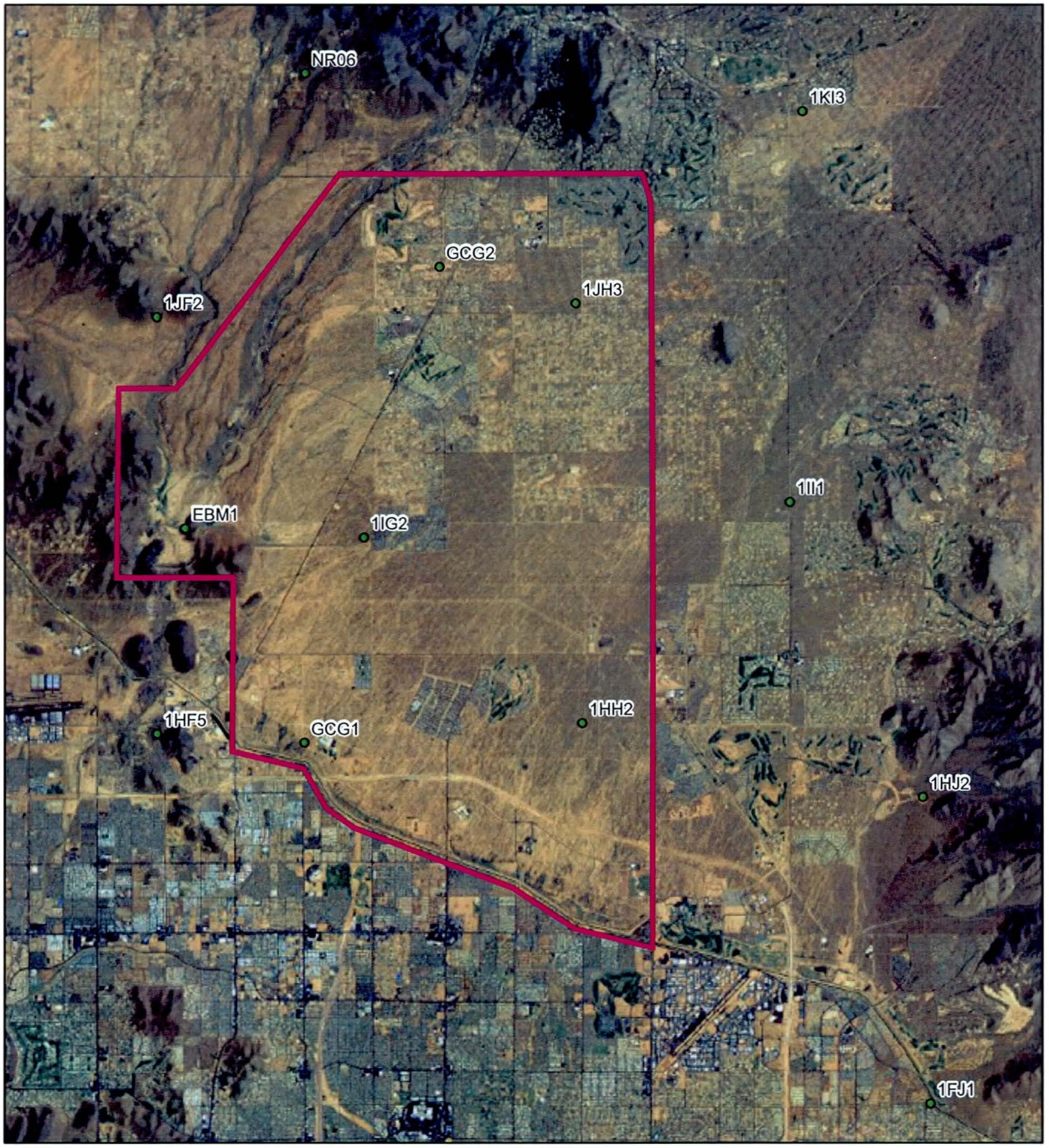
The scanner position is determined by post-processed kinematic GNSS processing using data collected by the antenna mounted on the mobile laser scanner and base stations occupying known primary control. Those solutions are combined with the IMU data to produce precise geospatial locations and orientations of the scanner throughout the missions. The IMU is used to calculate the change of XYZ position and orientation of the sensor array between the GNSS observations and during periods of reduced or no GNSS reception, such as bridge underpasses. By combining the laser range, scan angle, scanner position and orientation of the platform from GNSS and IMU data, highly accurate XYZ coordinates of the point scanned by each laser pulse can be calculated. Positions are calculated moving forward in GPS time as well as backwards, ultimately being combined to provide the best possible solution for the path of travel. To help with this process, the field operators took a series of random Zero Velocity Updates (ZUPT's) throughout the mission to assist in processing. These ZUPT events are also taken at planned locations prior to entering and after leaving areas of poor GPS, to provide a quality static position along the vehicle path.

A projection for the project can then be attached, in this case NAD 83 State Plane Zone 0202 Arizona Central and Geoid 2009. Points are created and exported as an .LAS file in a Northing, Easting, Orthometric Height, and Laser Intensity format and imported into Terrascan for QA/QC. Redundant drive lines are cross referenced and checked for positional accuracy. A preliminary confidence report is generated to again check for horizontal and vertical accuracy. The Terrascan confidence report shows the results of comparing points from the TITAN surface with points derived from dual static vectors collected using a Leica 1200 GPS while at least two dual frequency GPS base stations occupied Primary Survey Control. Points compared showed an average difference in elevation of -0.008 feet. Elevation differences ranged from -0.167 feet to +0.136 feet. These comparisons also resulted in an $RMSE_z$ of 0.057 feet, a Fundamental Vertical Accuracy (FVA) of 0.112 feet and a Standard Deviation of 0.057 feet. A spreadsheet detailing this data can be found in Section D-5.

The QC'd points are then exported from Terrascan and imported into Leica Cyclone software and modeled to extract mass points and breaklines for the roadway pavement surfaces and shoulders. The extracted data was imported into AutoCAD and a TIN, surface and contours were created. Hereafter standard QA/QC procedures were used to verify the base map and DTM prior to the final export to a .DXF format for delivery to Cooper Aerial Surveys Co.

The optional task data was delivered to the Flood Control District of Maricopa County and Stewart Geo Technologies in the same manner and format.

Pinnacle Peak ADMS/P
Primary Control Stations



Legend

- Primary_Control
- Pinnacle-Peak-Mapping-Limits

N
W E
S

DAVID EVANS AND ASSOCIATES INC.

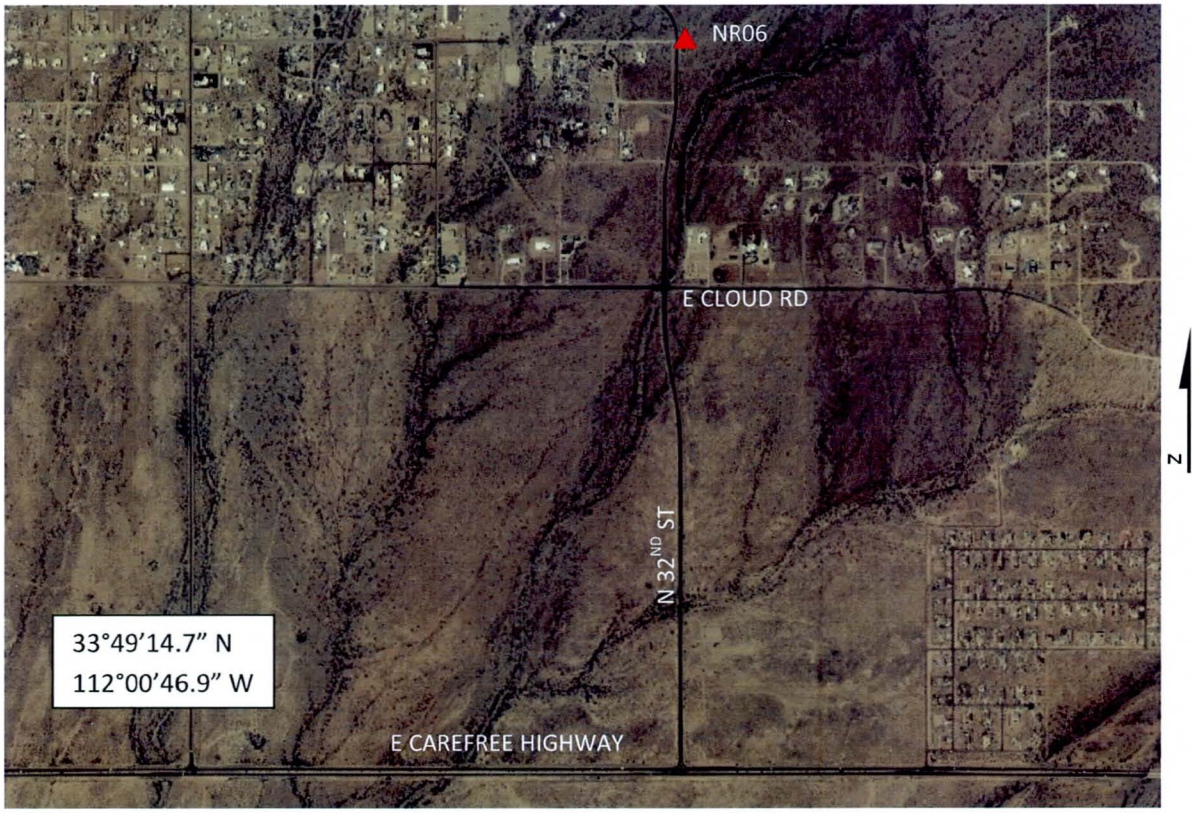
PROJECT METADATA
PINNACLE PEAK ADMP MAPPING
UNITS: INTERNATIONAL FEET
HORIZONTAL DATUM: NAD83 (2007)
VERTICAL DATUM: NAVD88 (GEOID 09)
COORDINATE SYSTEM: SPCS 0202

PRIMARY CONTROL FINAL COORDINATES

Point ID	Longitude	Latitude	Northing	Easting	Ellipsoid Ht	Ortho Ht	Coordinate Class
1FJ1	111° 51' 17.63008" W	33° 36' 15.63793" N	947422.040	718806.769	1408.124	1504.711	NGS CONTROL
1HF5	112° 03' 00.44314" W	33° 40' 55.03175" N	975681.690	659403.313	1688.888	1785.499	NGS CONTROL
1HH2	111° 56' 34.13010" W	33° 41' 03.58992" N	976521.477	692046.377	1606.510	1702.786	ADJUSTED
1HJ2	111° 51' 24.30489" W	33° 40' 07.54790" N	970861.416	718228.674	1826.690	1922.448	NGS CONTROL
1IG2	111° 59' 53.27543" W	33° 43' 23.67435" N	990689.074	675230.548	1616.775	1712.825	NGS CONTROL
1II1	111° 53' 25.05790" W	33° 43' 50.61666" N	993403.487	708017.922	2121.004	2216.345	NGS CONTROL
1JF2	112° 03' 01.22896" W	33° 46' 10.00849" N	1007517.732	659378.151	1631.713	1727.477	NGS CONTROL
1JH3	111° 56' 40.33337" W	33° 46' 20.69871" N	1008573.047	691530.882	2018.455	2113.681	NGS CONTROL
1KI3	111° 53' 13.40999" W	33° 48' 46.02810" N	1023262.360	708993.018	2486.782	2581.063	NGS CONTROL
EBM1	112° 02' 35.80901" W	33° 43' 30.38218" N	991380.899	661504.113	1632.036	1728.198	ADJUSTED
GCG1	112° 00' 46.95168" W	33° 40' 48.53877" N	975012.877	670682.523	1448.918	1545.450	ADJUSTED
GCG2	111° 58' 44.58288" W	33° 46' 48.22026" N	1011359.372	681044.690	1845.632	1940.957	ADJUSTED
NR06	112° 00' 46.85494" W	33° 49' 14.71137" N	1026173.933	670738.496	1862.618	1957.585	NGS CONTROL

ALL PUBLISHED NGS CONTROL VALUES WERE HELD EXCEPT FOR 1HH2. THIS POINT IS IN A KNOWN SUBSIDENCE AREA PER ADWR LAND SUBSIDENCE IN NORTHEAST PHOENIX AND SCOTTSDALE AREAS MAP (SEE SECTION 11) AND WAS FOUND TO BE 0.17 FEET LOWER THAN THE PUBLISHED VALUE (SEE SECTION 8 FOR COORDINATE DIFFERENCES). POINTS GCG1, GCG2 AND EBM1 ARE NEW POINTS PER THIS SURVEY AND HAVE NO PREVIOUSLY PUBLISHED VALUES.

PRIMARY SURVEY CONTROL
NR06



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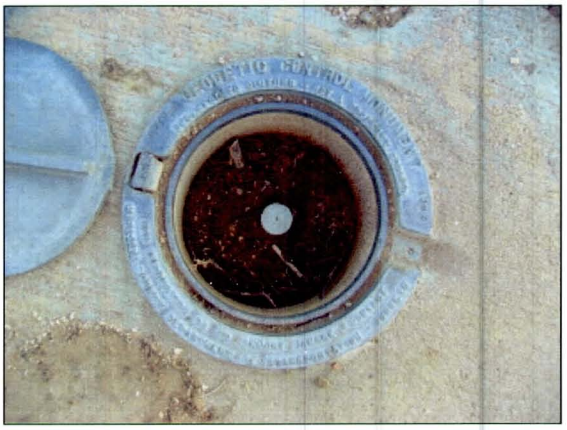
PRIMARY SURVEY CONTROL
1JH3



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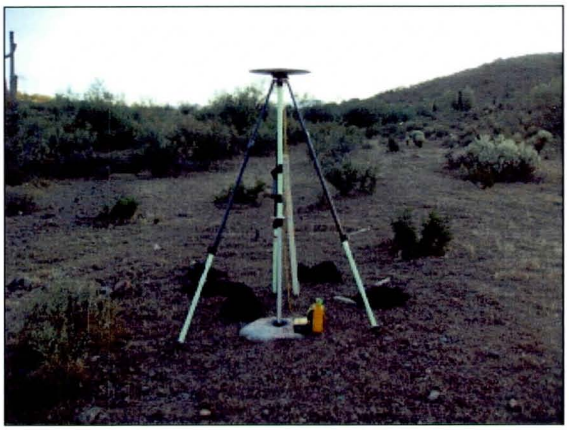
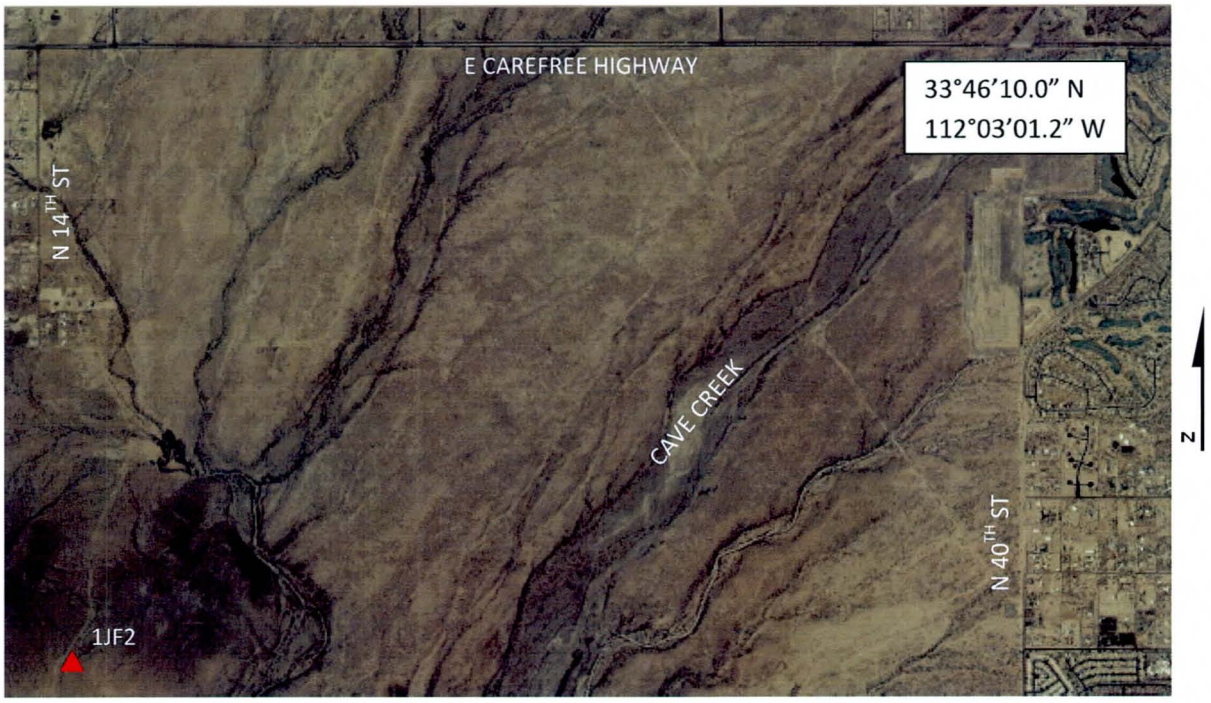
PRIMARY SURVEY CONTROL
1JF2





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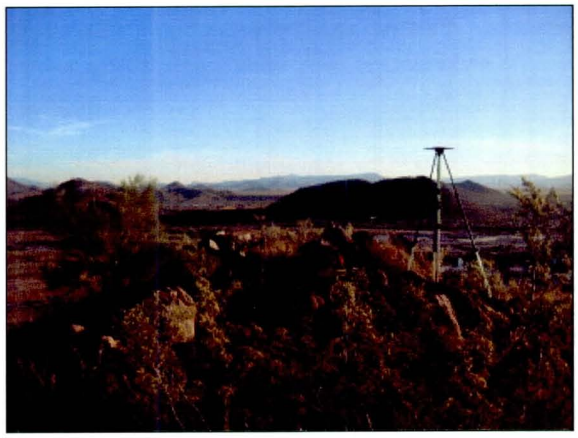
PRIMARY SURVEY CONTROL
1HF5



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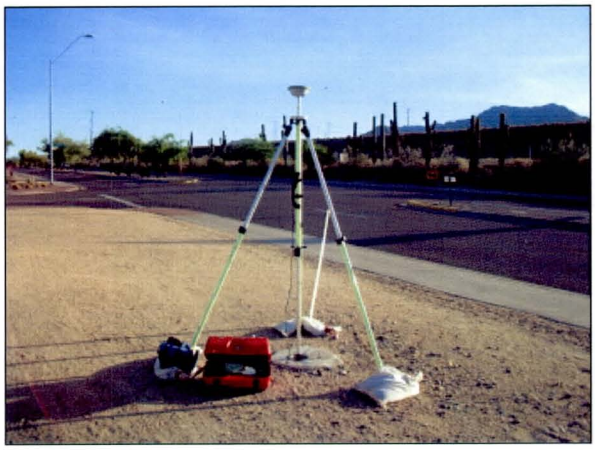
PRIMARY SURVEY CONTROL
1FJ1



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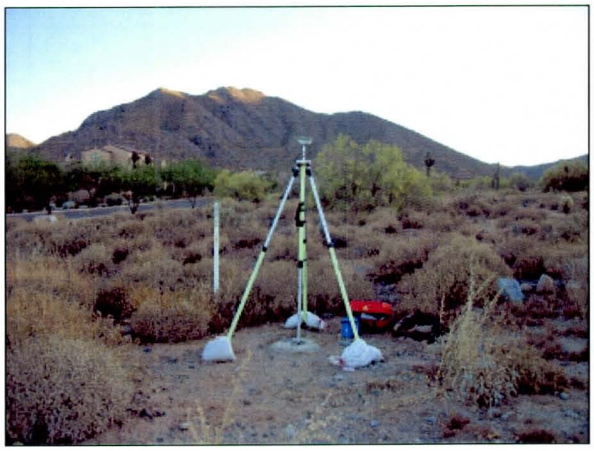
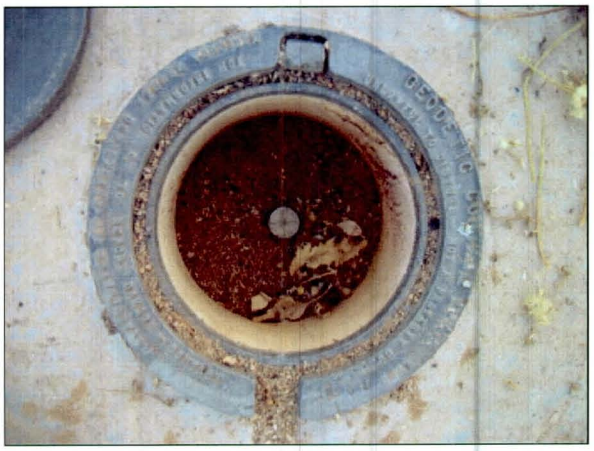
PRIMARY SURVEY CONTROL
1HJ2





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PRIMARY SURVEY CONTROL
1II1

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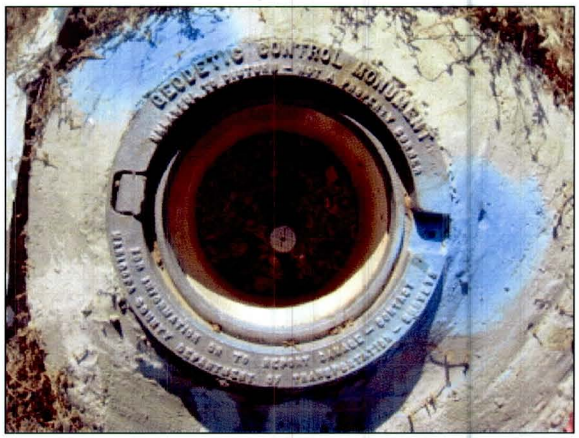
PRIMARY SURVEY CONTROL
1HH2



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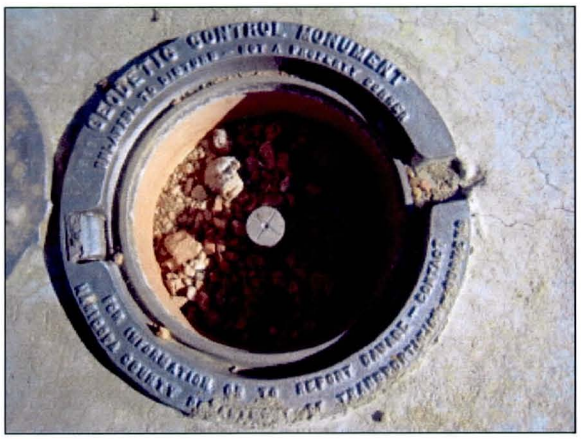
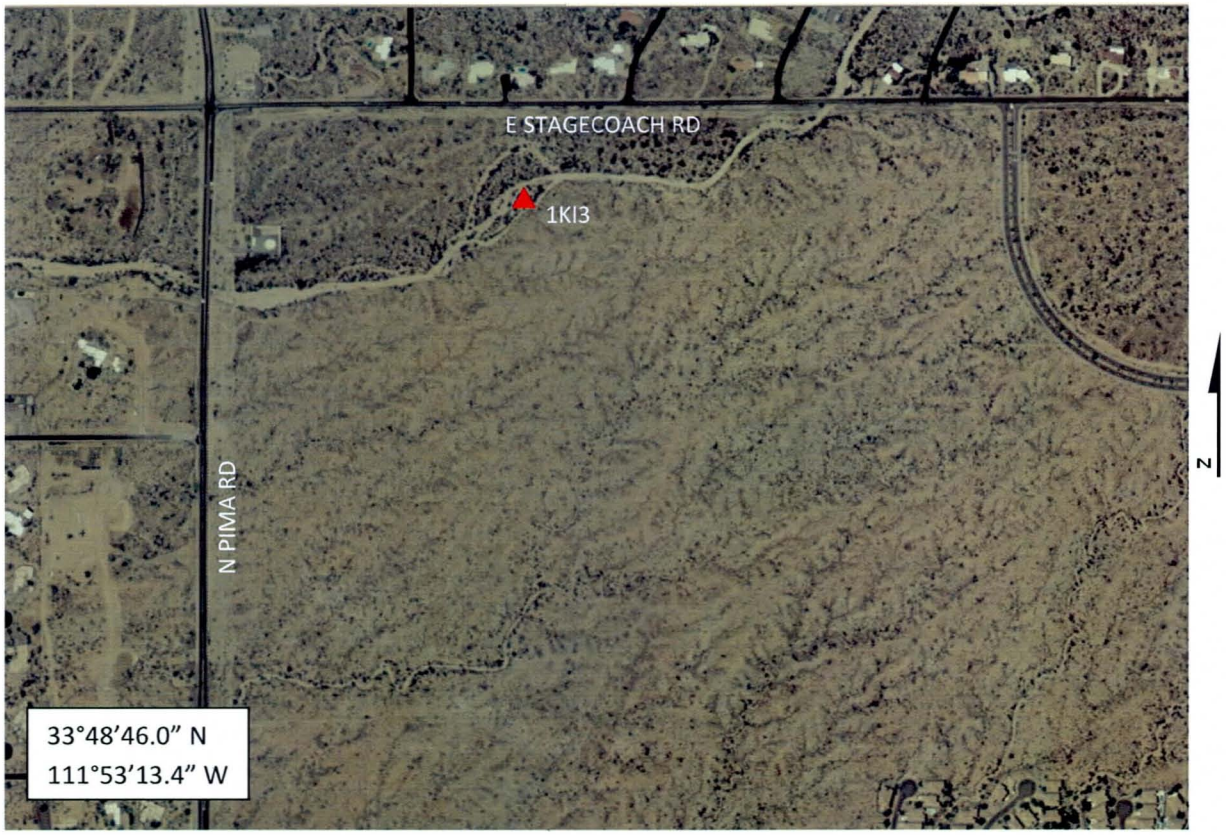
1KI3





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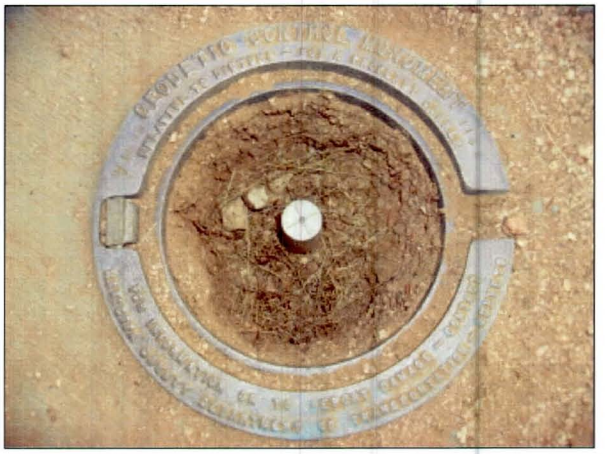
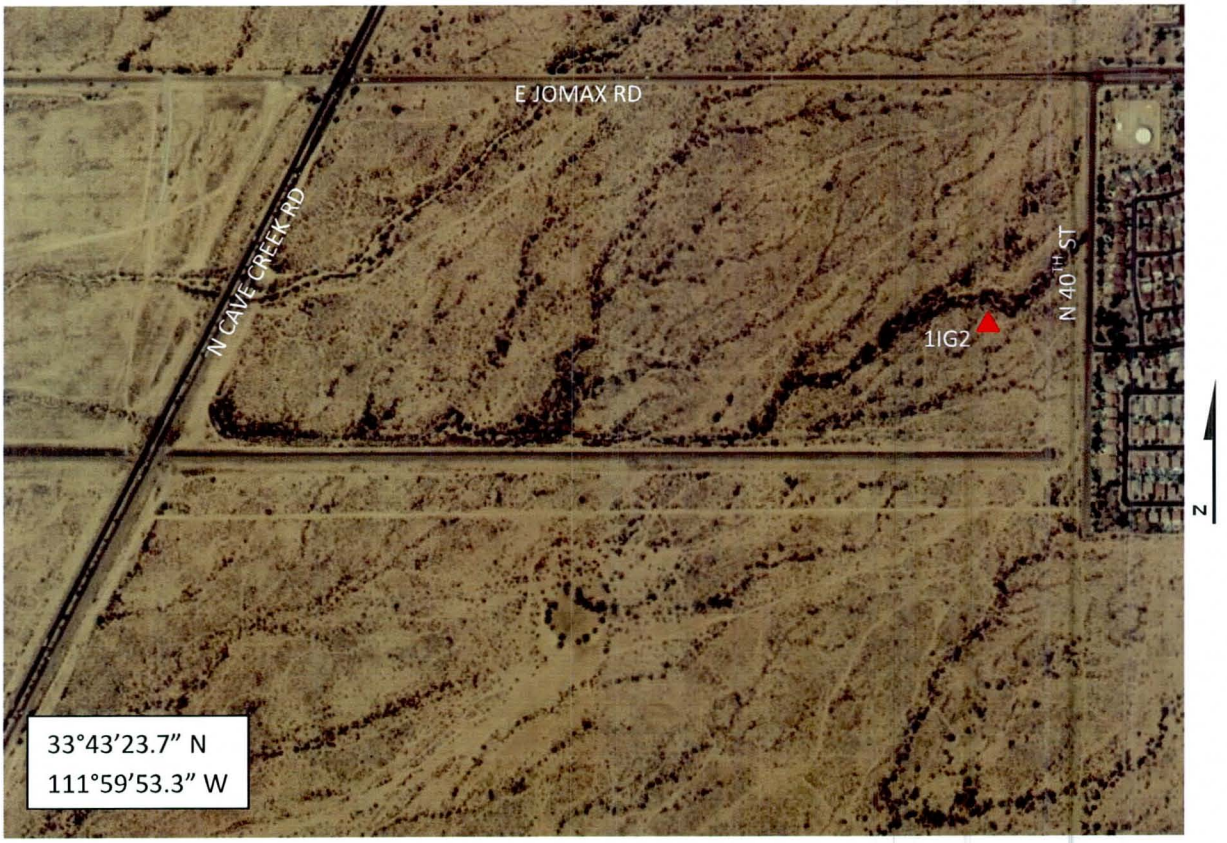
1IG2





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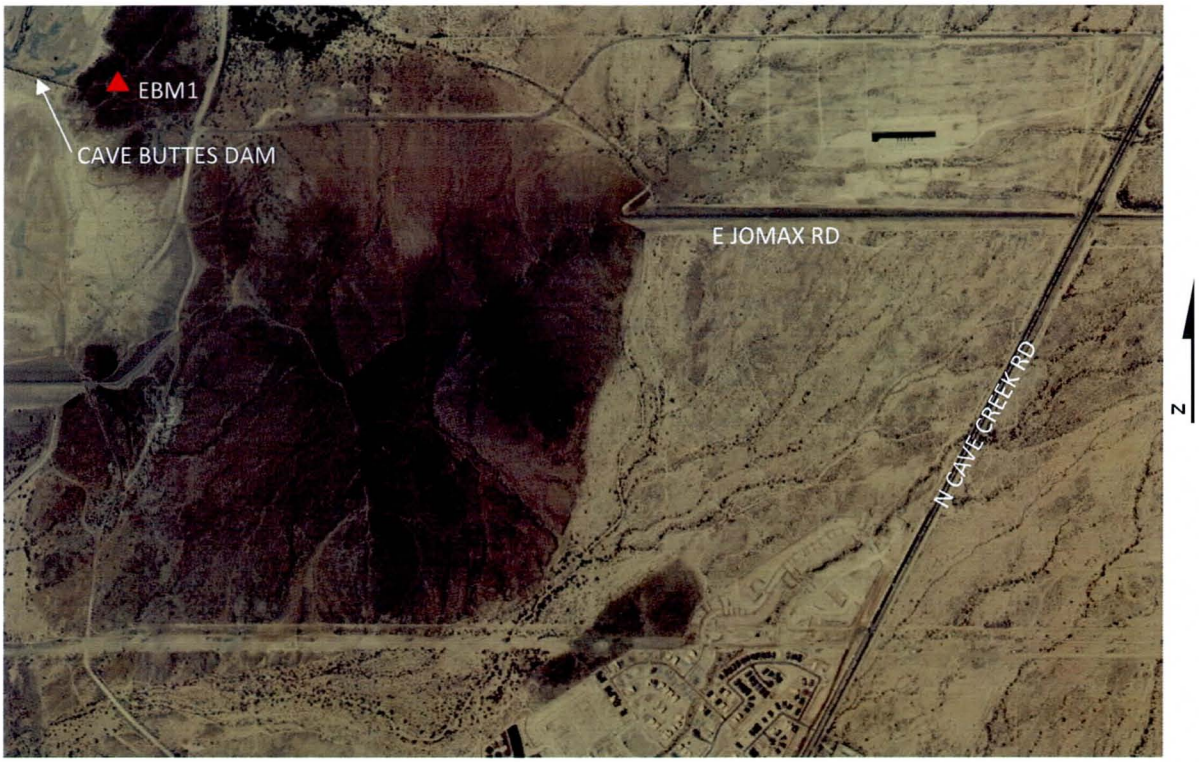
PRIMARY SURVEY CONTROL
EBM1



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PRIMARY SURVEY CONTROL
GCG1

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PRIMARY SURVEY CONTROL
GCG2

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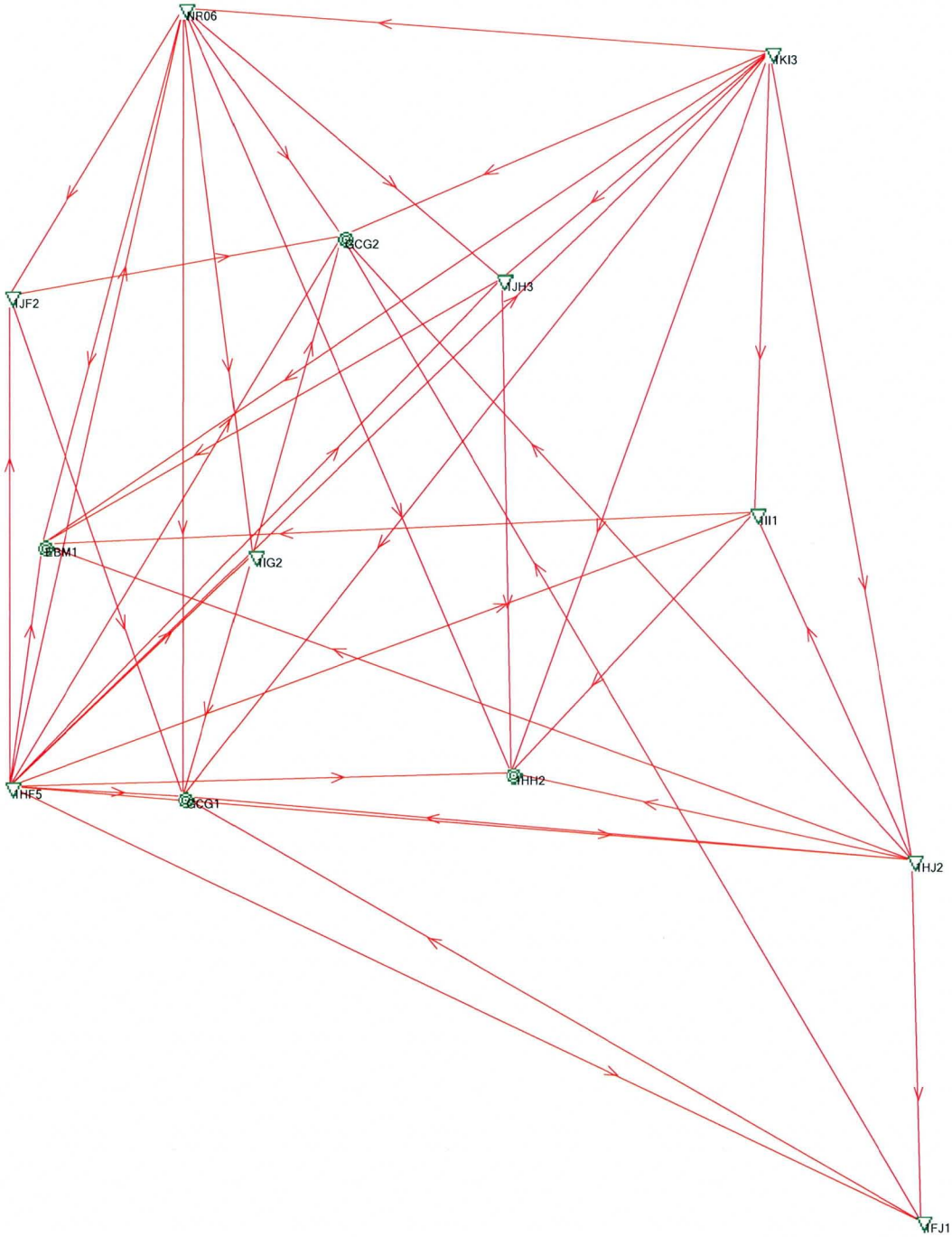
Weighted Constrained Network Adjustment Report-Primary Control

On CD in Section E

Network Loops and Misclosures Report-Primary Control

On CD in Section E



10000.0 m

Estimated
Navigated
SPP
Measured
Average
Reference
Adjusted
Control - 1D
Control - 2D
Control - 3D

06/08/2010 12:36:48

PROJECT METADATA
PINNACLE PEAK ADMP MAPPING
HORZONTAL DATUM: NAD83 (2007)
VERTICAL DATUM: NAVD88 (GEOID 09)
COORDINATE SYSTEM: SPCS 0202

NETWORK ADJUSTMENT COORDINATE COMPARISON
VS. NGS PUBLISHED VALUES

Point ID	Point Class	Longitude	Latitude	Northing (m)	Easting (m)	Ellipsoid Ht (m)	Ortho Ht (m)	Northing (iFt)	Easting (iFt)	Ellipsoid Ht (iFt)	Ortho Ht (iFt)	Δ Ortho Ht (iFt)
NR06	Adjusted	112° 00' 46.85508" W	33° 49' 14.71124" N	312777.8106	204441.0898	567.7351	596.6811	1026173.9194	670738.4836	1862.6481	1957.6153	
	Control	112° 00' 46.85494" W	33° 49' 14.71137" N	312777.8148	204441.0935	567.7260	596.6720	1026173.9329	670738.4956	1862.6182	1957.5854	-0.0299
1KI3	Adjusted	111° 53' 13.40998" W	33° 48' 46.02800" N	311890.3641	216101.0722	757.9787	786.7157	1023262.3495	708993.0190	2486.8069	2581.0884	
	Control	111° 53' 13.40999" W	33° 48' 46.02810" N	311890.3672	216101.0719	757.9710	786.7080	1023262.3597	708993.0181	2486.7816	2581.0631	-0.0253
1JH3	Adjusted	111° 56' 40.33355" W	33° 46' 20.69868" N	307413.0635	210778.6082	615.2165	644.2415	1008573.0430	691530.8668	2018.4269	2113.6533	
	Control	111° 56' 40.33337" W	33° 46' 20.69871" N	307413.0646	210778.6127	615.2250	644.2500	1008573.0465	691530.8817	2018.4548	2113.6812	0.0279
1JF2	Adjusted	112° 03' 01.22895" W	33° 46' 10.00844" N	307091.4030	200978.4609	497.3406	526.5296	1007517.7263	659378.1525	1631.6950	1727.4595	
	Control	112° 03' 01.22896" W	33° 46' 10.00849" N	307091.4046	200978.4605	497.3460	526.5350	1007517.7315	659378.1514	1631.7127	1727.4771	0.0176
1II1	Adjusted	111° 53' 25.05780" W	33° 43' 50.61666" N	302789.3829	215803.8650	646.4842	675.5442	993403.4872	708017.9299	2121.0113	2216.3525	
	Control	111° 53' 25.05790" W	33° 43' 50.61666" N	302789.3828	215803.8625	646.4820	675.5420	993403.4870	708017.9217	2121.0040	2216.3453	-0.0072
1IG2	Adjusted	111° 59' 53.27556" W	33° 43' 23.67424" N	301962.0264	205810.2676	492.7804	522.0564	990689.0629	675230.5366	1616.7336	1712.7835	
	Control	111° 59' 53.27543" W	33° 43' 23.67435" N	301962.0298	205810.2709	492.7930	522.0690	990689.0742	675230.5476	1616.7750	1712.8249	0.0414
1HJ2	Adjusted	111° 51' 24.30497" W	33° 40' 07.54803" N	295918.5635	218916.0977	556.7869	585.9739	970861.4288	718228.6670	1826.7287	1922.4865	
	Control	111° 51' 24.30489" W	33° 40' 07.54790" N	295918.5595	218916.0999	556.7750	585.9620	970861.4156	718228.6741	1826.6897	1922.4476	-0.0389
1HH2	Adjusted	111° 56' 34.13010" W	33° 41' 03.58992" N	297643.7463	210935.7357	489.6642	519.0092	976521.4774	692046.3768	1606.5099	1702.7862	
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1HF5	Adjusted	112° 03' 00.44289" W	33° 40' 55.03188" N	297387.7831	200986.1362	514.7682	544.2152	975681.7030	659403.3339	1688.8720	1785.4829	
	Control	112° 03' 00.44314" W	33° 40' 55.03175" N	297387.7792	200986.1298	514.7730	544.2200	975681.6902	659403.3130	1688.8879	1785.4988	0.0159
1FJ1	Adjusted	111° 51' 17.62999" W	33° 36' 15.63809" N	288774.2427	219092.3053	429.2000	458.6400	947422.0560	718806.7758	1408.1366	1504.7245	
	Control	111° 51' 17.63008" W	33° 36' 15.63793" N	288774.2378	219092.3031	429.1960	458.6360	947422.0400	718806.7686	1408.1235	1504.7114	-0.0131

National Geodetic Survey Data Sheets

On CD in Section E

DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA0000-0002

Observer Name: KELLY MILLER

Project Location: PINNACLE PEAK ADMP/S

Date: 6/2/2010 Julian Day: 153

Receiver S/N: 0220152147

GPS Method: ☒ Static ☐ PP Kinematic ☐ RTK Base

5 SEC

Antenna S/N: 0220175039

Observation Information

Station Name: 1HF5

Session Number: 1

File Name: 1HF5-21471530

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 5:59 AM

Stop Time: 7:40AM

Antenna Height: 6.562 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: _____ PDOP: _____

Antenna Height: 6.562 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: _____ PDOP: _____

Station Description

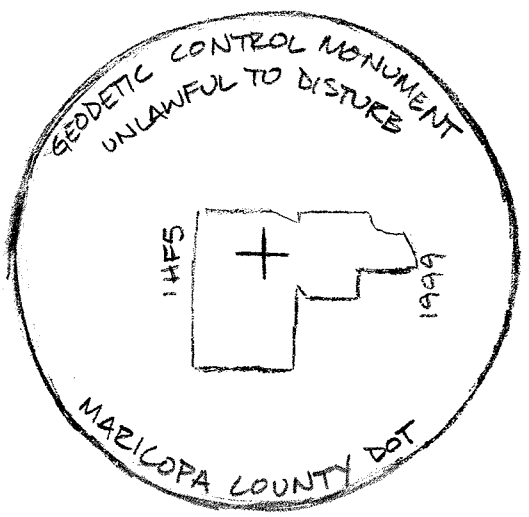
Type: MARICOPA COUNTY DOT BRASS CAP - 3 1/4"

Stamping: 1HF5 1999

Description: BRASS CAP IN BEDROCK, TOP OF HILL, SW OF DEER VALLEY + 16TH ST

Other: ☒ Monument is FLUSH up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments



Sheet 1 of 1

4600 East Washington Street, Suite 430 - Phone: 602.678.5151 - Fax: 602.678.5155

DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA0000-0002 **Observer Name:** DAVID HOLMAN

Project Location: PIMA ROAD / STAGECOACH PASS SCOTTSDALE, AZ **Date:** 6/2/10 **Julian Day:** 153

Receiver S/N: 0220242707 **GPS Method:** ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220085583

Observation Information

Station Name: 1KI3 **Session Number:** 1

File Name: 1KI3_27071530

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 6:22 AM **Stop Time:** 7:45 AM

Antenna Height: 6.562 ft 2.0 m **Antenna Height:** 6.562 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount **Measured To:** ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: _____ **PDOP:** _____ **Number of Satellites:** _____ **PDOP:** _____

Station Description

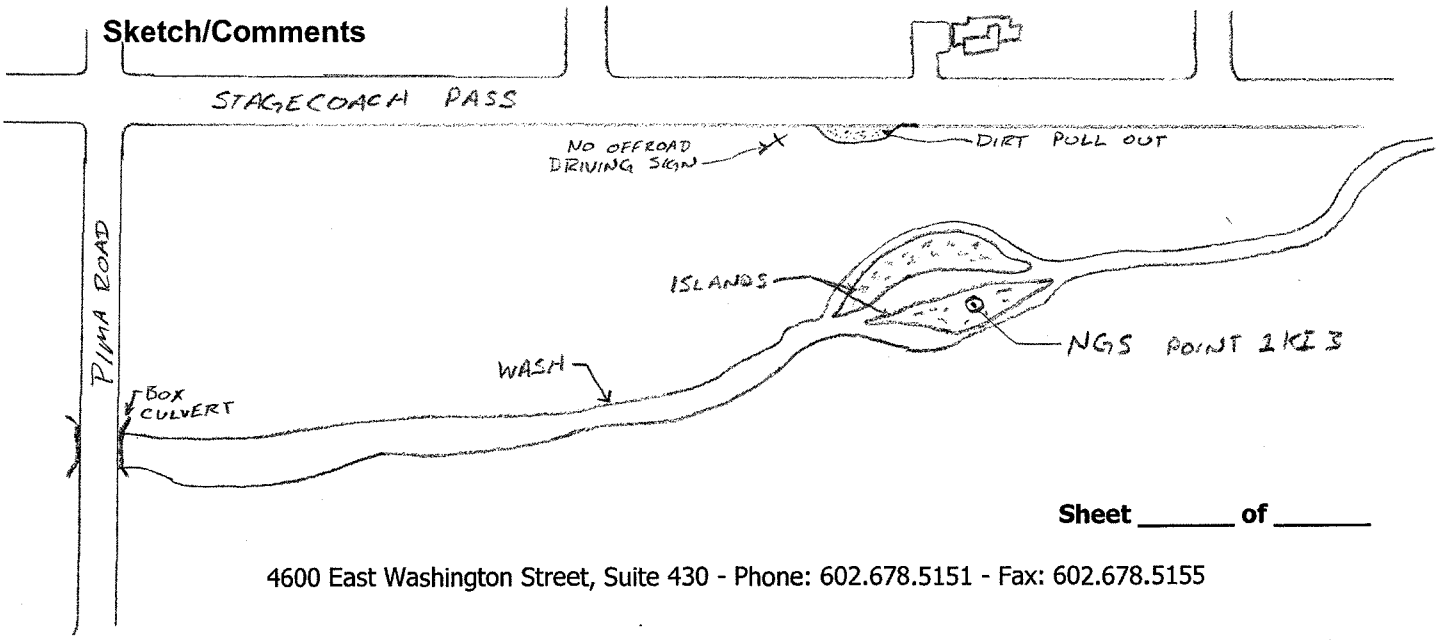
Type: NGS STEEL ROD

Stamping: 1KI3 1999

Description: STEEL ROD ENCASED IN PVC SLEEVE SURROUNDED WITH CONCRETE COLLAR FLUSH EAST OF PIMA RD & STAGECOACH PASS INT.

Other: ☒ Monument is -0.10 up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments



Sheet _____ of _____

4600 East Washington Street, Suite 430 - Phone: 602.678.5151 - Fax: 602.678.5155

GCG GPS STATIC SESSION SHEET

PROJECT NAME: PINNACLE PEAK WEST
PROJECT #: 101308

OBSERVER RIB **DATE** 6 / 02 / 10 **JULIAN DAY** 153
STATION NAME 1IGB **SESSION #** 0 (begins at 0 each day)
START 6:22 (am) / pm **STOP** 8:07 (am) / pm

RECEIVER TYPE 4000SSi / (4700) / 4800 / 5800 **SERIAL #** 6813
RECORDING DEVISE: (internal memory) / TSC1 / TSC2 / other
if other describe _____

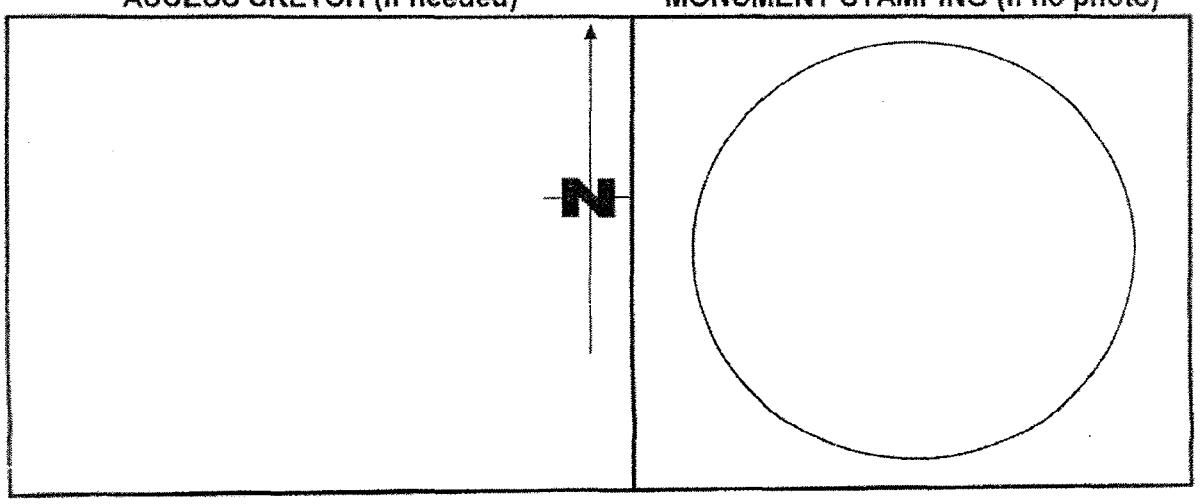
LOGGING RATE 1s / 5s / (15s) (default is 15s) **ELEVATION MASK** 13 **degrees**
TRIPOD TYPE (FIXED) / ADJUSTABLE **ANTENNA HT** 1.922m (true) / slope
GCG#5 **ANTENNA HT** __.____ft
measurement is to what? BOTTOM OF ANTENNA MOUNT
ANTENNA CONFIGURATION 6 1/2 MICRO W/ GP **SERIAL #** 4283
ANTENNA MODEL NUMBER 33429-00

APPROXIMATE POSITION **LAT:** __ ^ __ ' __ "N
HEIGHT: ____m **LONG:** __ ^ __ ' __ "W

Notes: _____

Station access info: _____

ACCESS SKETCH (if needed) **MONUMENT STAMPING (if no photo)**



DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002 **Observer Name:** JERRY SELVEY

Project Location: _____ **Date:** 6-2-2010 **Julian Day:** 153

Receiver S/N: 0220152149 **GPS Method:** ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220246613

Observation Information

Station Name: 1JF2 **Session Number:** 1

File Name: 1JF2-21491530.DAT

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 5:41 AM **Stop Time:** 8:10 AM

Antenna Height: 6.562 ft 2 m **Antenna Height:** 6.562 ft 2 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount **Measured To:** ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 10 **PDOP:** _____ **Number of Satellites:** _____ **PDOP:** _____

Station Description

Type: _____

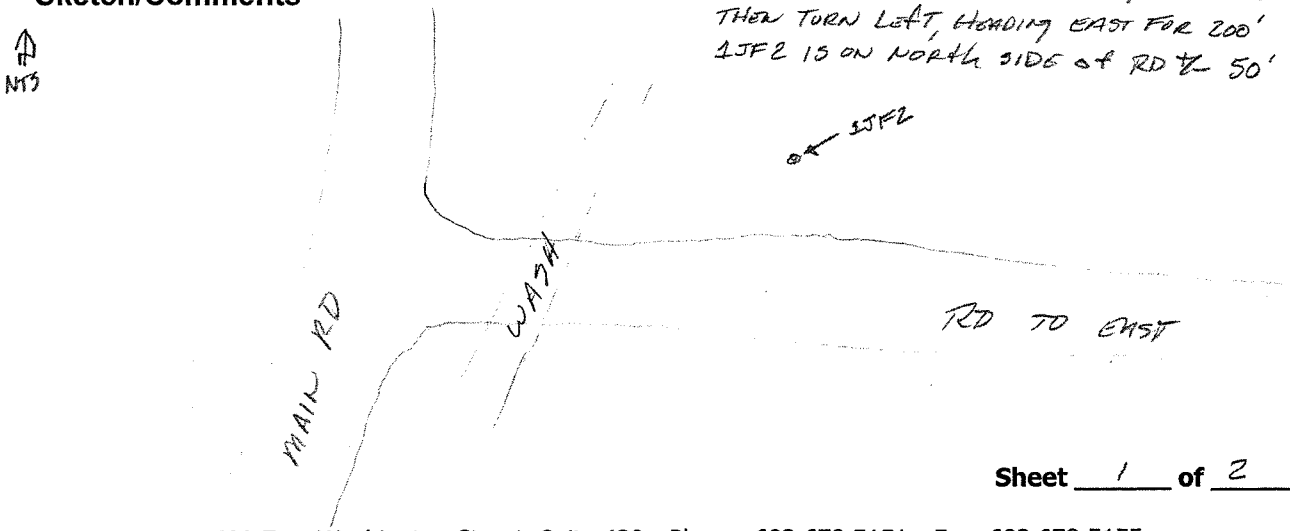
Stamping: 1JF2 on Rim

Description: STAINLESS STEEL ROD IN PVC PIPE W/AL. RIM

Other: ☑ Monument is 0.20 up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

STATION IS 1.2 miles Along Dirt Road
THEN TURN LEFT, HEADING EAST FOR 200'
1JF2 IS ON NORTH SIDE of RD ~ 50'



Sheet 1 of 2

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DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002 **Observer Name:** JERRY SELVEY

Project Location: _____ **Date:** 6-2-2010 **Julian Day:** 153

Receiver S/N: 0220227038 **GPS Method:** ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220177055

Observation Information

Station Name: NR06 **Session Number:** 1

File Name: NR06_70381530.DAT

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 6:15 AM **Stop Time:** 7:45 AM

Antenna Height: 6.562 ft 2 m **Antenna Height:** 6.562 ft 2 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount **Measured To:** ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 10 **PDOP:** _____ **Number of Satellites:** _____ **PDOP:** _____

Station Description

Type: _____

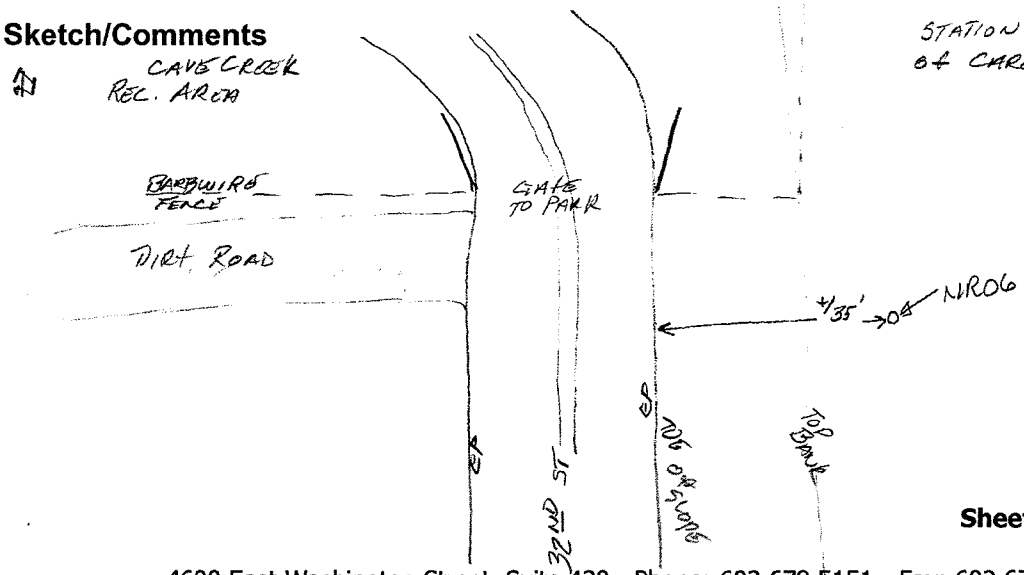
Stamping: NR06

Description: STAINLESS STEEL ROD IN PVC TUBE w/ AL RIM & CAP

Other: ☒ Monument is 020 up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

STATION IS 1.4 MILES NORTH OF CAREFREE HWY ON 32ND ST.



Sheet 2 of 2

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DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002 (SCOTTSDALE, AZ)

Observer Name: R.S. BOTT

Project Location: FRANK LLOYD WRIGHT + SWEET-WATER

Date: 2 JUN 2010 Julian Day: 153

Receiver S/N: 455823

GPS Method: ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 155130

Observation Information

Station Name: 1FJ1

Session Number: 1

File Name: 1FJ1

Antenna Type: ☐ 5800/R8 ☐ MicroCenter with Groundplane ☐ MicroCenter w/o Groundplane ☐ Zephyr Geodetic ☒ Leica 1230 ☐ Other _____

Start Time: 0618

Stop Time: 0741

Antenna Height: 6.5617 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 12 PDOP: 1.6

Antenna Height: 6.5617 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 11 PDOP: 1.4

Station Description

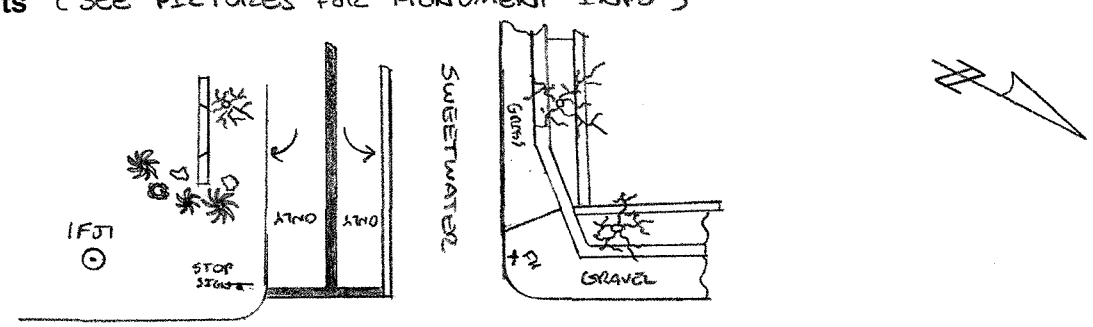
Type: NGS STEEL ROD

Stamping: 1FJ1 1999

Description: STEEL ROD ENCASED IN PVC PIPE ON SW CORNER OF FRANK LLOYD WRIGHT + SWEETWATER

Other: ☒ Monument is -0.10 up / down from ground ☐ Aerial Target ☐ Well Monument

Sketch/Comments (SEE PICTURES FOR MONUMENT INFO)



Sheet _____ of _____

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DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002 (SCOTTSDALE, AZ) **Observer Name:** R. S. BOTT

Project Location: MTN. SPRINGS RD + WINDGATE RD **Date:** 2 JUN 2010 **Julian Day:** 153

Receiver S/N: 455826 **GPS Method:** ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 155041

Observation Information

Station Name: 1HJ2 **Session Number:** 1

File Name: 1HJ2

Antenna Type:
- ☐ 5800/R8
- ☐ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☒ Leica 1230 ☐ Other _____

Start Time: 0547 **Stop Time:** 0825

Antenna Height: 6.5617 ft 2.0 m **Antenna Height:** 6.5617 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount **Measured To:** ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 12 **PDOP:** 1.6 **Number of Satellites:** 9 **PDOP:** 1.9

Station Description

Type: NGS STEEL ROD

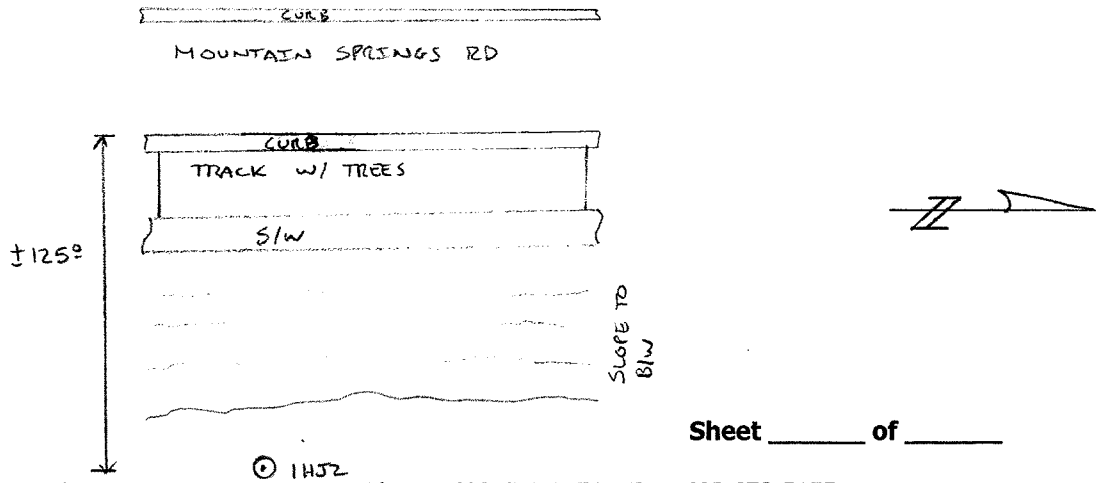
Stamping: 1HJ2

Description: STEEL ROD ENCASED IN PVC ± 125 FROM EAST SIDE OF MTN. SPRINGS RD.

Other: ☒ Monument is 0.20 up / (down) from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

(SEE PICTURES FOR MONUMENT SKETCHES & LOCATIONS)



Sheet _____ of _____

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GCG GPS STATIC SESSION SHEET

PROJECT NAME: PINNACLE PEAK WEST
PROJECT #: 101308

OBSERVER RTB **DATE** 6/02/10 **JULIAN DAY** 153
STATION NAME GCG2 **SESSION #** 0 (begins at 0 each day)
START 5:57 am / pm **STOP** 7:40 am / pm

RECEIVER TYPE 4000SSi / 4700 / 4800 / 5800 **SERIAL #** 6194
RECORDING DEVISE: internal memory / TSC1 / TSC2 / other
if other describe _____

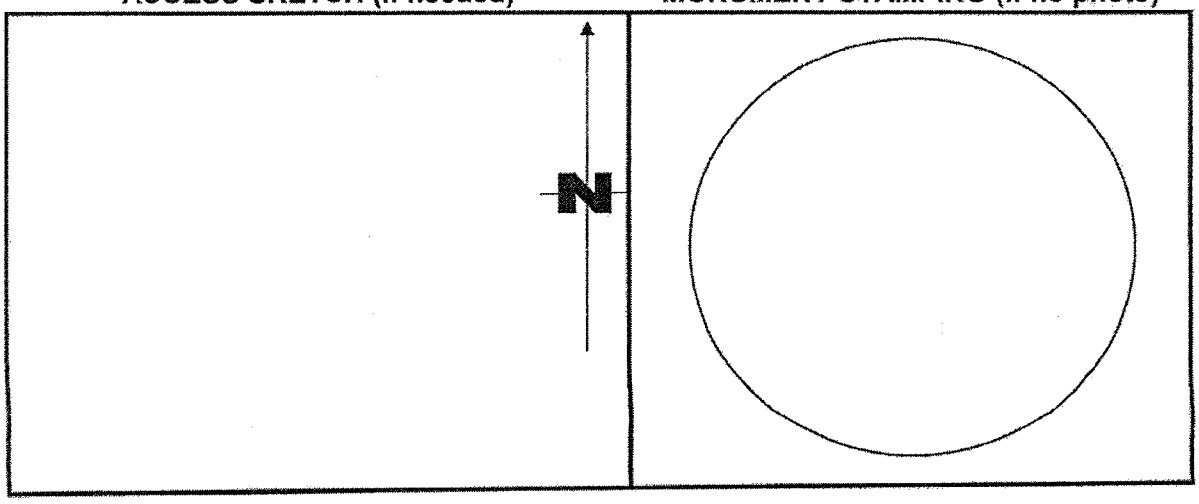
LOGGING RATE 1s / 5s / 15s (default is 15s) **ELEVATION MASK** __ __ **degrees**
TRIPOD TYPE FIXED / ADJUSTABLE **ANTENNA HT** 2.022m true / slope
GCG2 **ANTENNA HT** __.___ft
measurement is to what? BOTTOM OF ANTENNA MOUNT
ANTENNA CONFIGURATION L1/L2 W/G.P. **SERIAL #** 9583
ANTENNA MODEL NUMBER AAGA-00

APPROXIMATE POSITION **LAT:** 33 ^ 46 ' 48 "N
HEIGHT: ____m **LONG:** 111 ^ 58 ' 45 "W

Notes: _____

Station access info: _____

ACCESS SKETCH (if needed) **MONUMENT STAMPING (if no photo)**



GCG GPS STATIC SESSION SHEET

PROJECT NAME: PINNACLE PEAK WEST
PROJECT #: 1 0 1 3 0 8

OBSERVER I D H **DATE** 6 / 02 / 10 **JULIAN DAY** 153
STATION NAME GCG1 **SESSION #** 0 (begins at 0 each day)
START 06 : 13 (am) / pm **STOP** 07 : 40 (am) / pm

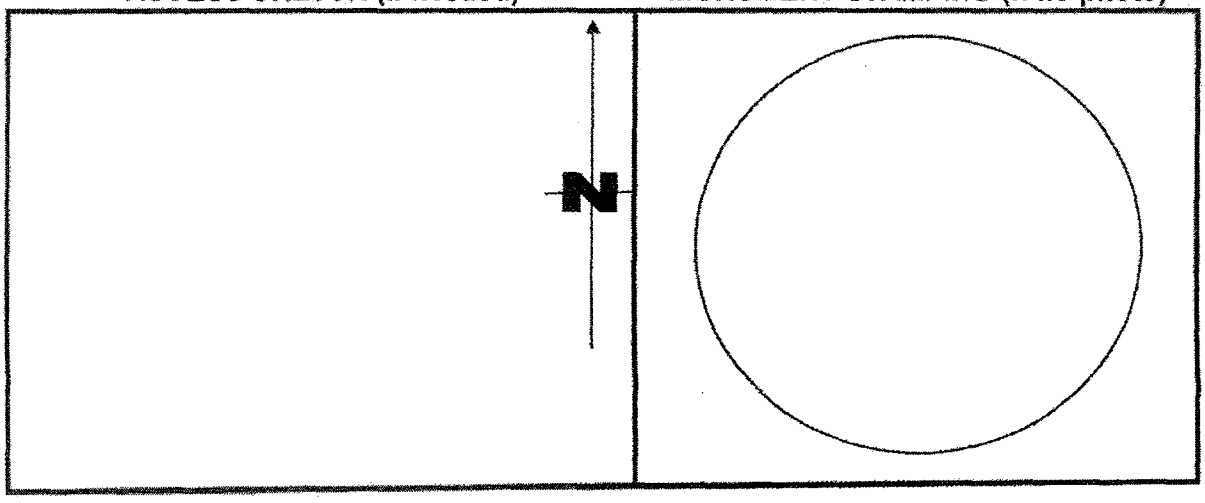
RECEIVER TYPE 4000SSi / (4700) / 4800 / 5800 **SERIAL #** 0220162666
RECORDING DEVISE: internal memory / (TSC1) / TSC2 / other
if other describe K-0975
LOGGING RATE 1s / 5s / (15s) (default is 15s) **ELEVATION MASK** 13 **degrees**
TRIPOD TYPE (FIXED) / ADJUSTABLE **ANTENNA HT** 2.001 m (true) / slope
GCG#4 **ANTENNA HT** __.____ ft
measurement is to what? BOTTOM OF ANTENNA MOUNT
ANTENNA CONFIGURATION L1/L2 w/ GP M/C **SERIAL #** 0220166749
ANTENNA MODEL NUMBER DM 33429-00

APPROXIMATE POSITION **LAT:** 33 ^ 40 ' 49 "N
HEIGHT: 1543 m **LONG:** 112 ^ 00 ' 47 "W

Notes:

Station access info:

ACCESS SKETCH (if needed) **MONUMENT STAMPING (if no photo)**



DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA0000-0002

Observer Name: KELLY MILLER

Project Location: PINNACLE PEAK ADMP/S

Date: 6/3/2010 Julian Day: 154

Receiver S/N: 0220152147

GPS Method: ☐ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220175039

Observation Information

Station Name: 1HF5

Session Number: 2

File Name: 1HF5_21471540.DAT

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 6:01 AM

Stop Time: 7:38 AM

Antenna Height: 6.562 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: _____ PDOP: _____

Antenna Height: 6.562 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: _____ PDOP: _____

Station Description

Type: MARICOPA COUNTY DOT 3 1/4" BRASS CAP

Stamping: 1999 1HF5

Description: BRASS CAP IN BEDROCK ON TOP OF W'LY HILL, SW OF DEER VALLEY & 16TH ST

Other: ☒ Monument is FLUSH up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

SEE SKETCH ON LOG SHEET FROM 6/2/2010

Sheet _____ of _____

4600 East Washington Street, Suite 430 - Phone: 602.678.5151 - Fax: 602.678.5155

DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA0000-0002 **Observer Name:** DAVID HOLMAN

Project Location: NW OF DEER VALLEY & 56th ST **Date:** 6/3/2010 **Julian Day:** 154

Receiver S/N: 0220242707 **GPS Method:** ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220085583

Observation Information

Station Name: 1HHZ **Session Number:** 1

File Name: 1HHZ_27071540

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 6:22 AM **Stop Time:** 7:45 AM

Antenna Height: 6.562 ft 2.0 m **Antenna Height:** 6.562 ft 2.0 m

Measured To: ☐ Bottom of Notch ☐ Bottom of Mount **Measured To:** ☐ Bottom of Notch ☐ Bottom of Mount

Number of Satellites: _____ **PDOP:** _____ **Number of Satellites:** _____ **PDOP:** _____

Station Description

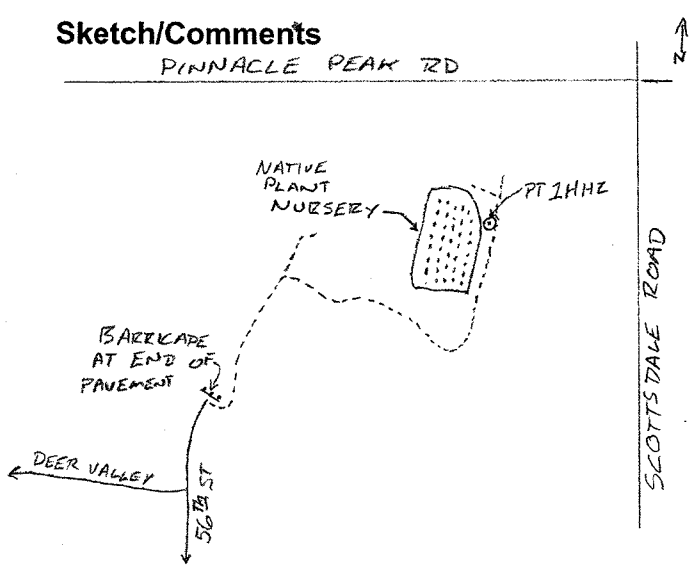
Type: NGS STEEL ROD

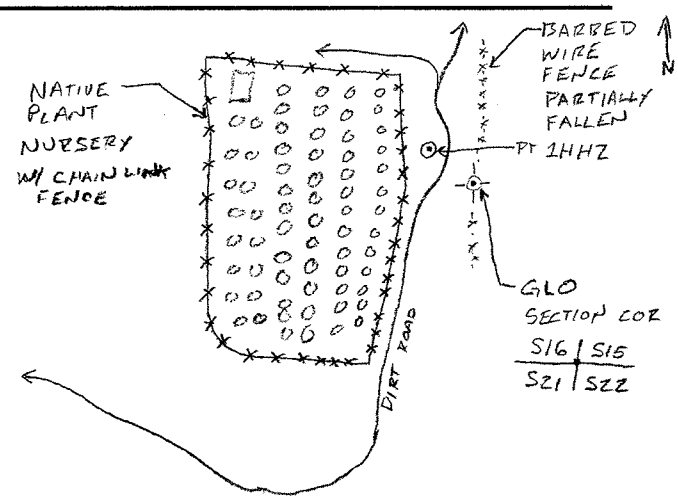
Stamping: 1HHZ

Description: STEEL ROD ENCASED IN PVC SLEEVE SURROUNDED BY CONCRETE COLLAR ± 1 MI SOUTH PINNACLE PEAK ROAD AND 1 MI WEST OF SCOTTSDALE RD.

Other: ☒ Monument is -0.30 up / (down) from ~~ground~~ CONCRETE COLLAR AND LID
☐ Aerial Target ☐ Well Monument

Sketch/Comments





Sheet 1 of 1

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DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002 Observer Name: Jerry Selvay

Project Location: _____ Date: 6-3-2010 Julian Day: 154

Receiver S/N: 0220152149 GPS Method: ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220246613

Observation Information

Station Name: 1JH3 Session Number: 2

File Name: 1JH3_21491540.DAT

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 6:05 AM Stop Time: 7:45 AM

Antenna Height: 6.562 ft 2 m Antenna Height: 6.562 ft 2 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount Measured To: ☐ Bottom of Notch ☐ Bottom of Mount

Number of Satellites: _____ PDOP: _____ Number of Satellites: _____ PDOP: _____

Station Description

Type: _____

Stamping: 1JH3

Description: STAINLESS STEEL ROD IN PVC W/ AL. RIM & CAP

Other: ☐ Monument is _____ up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

N
NTS

FROM LONE MTN RD AND 60th ST., TURN NORTH ONTO 60th ST. GO THOUGH ENTRANCE GATE, TURN RIGHT (EAST) AT FIRST RD. TO EAST (DIRT). FOLLOW DIRT RD. FOR 0.1 MILE TO FIRST DIRT RD TO RIGHT (SOUTH) 90 +/- 500'. MAKE LEFT TURN (EAST). ROAD WILL TAKE YOU INTO JOB SITE TREE FARM. PROCEED EAST PAST FIRST RD CROSSING TO END OF TREES ON RIGHT (SOUTH SIDE). LOOK SOUTH +/- 125' TO POINT 1JH3

Sheet 2 of 2

4600 East Washington Street, Suite 430 - Phone: 602.678.5151 - Fax: 602.678.5155

GCG GPS STATIC SESSION SHEET

PROJECT NAME: PINNACLE PEAK WEST
PROJECT #: 101308

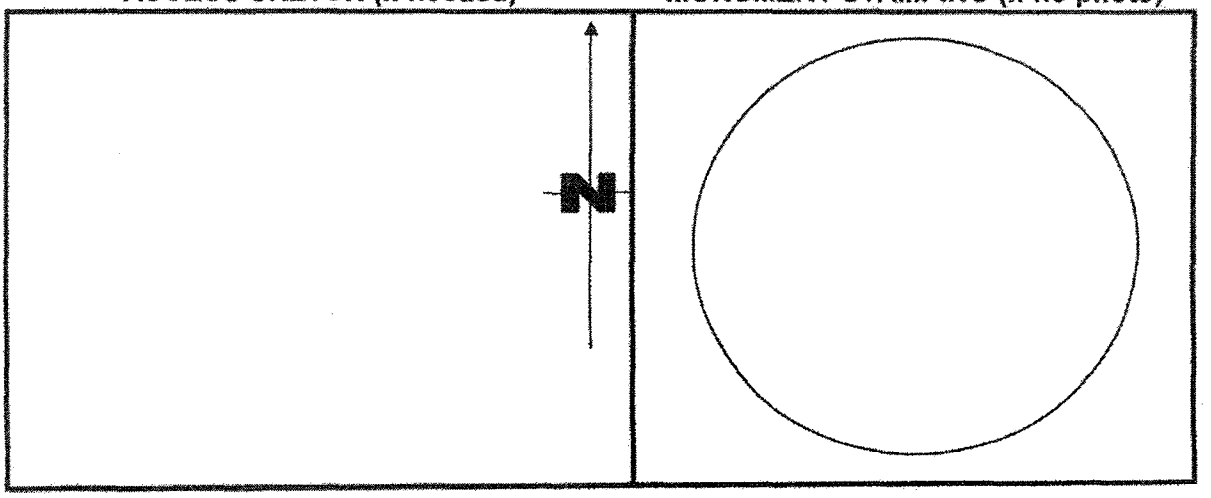
OBSERVER JDH **DATE** 6/03/10 **JULIAN DAY** 154
STATION NAME EBM 1 **SESSION #** 0 (begins at 0 each day)
START 06:14 (am) / pm **STOP** 07:40 (am) / pm

RECEIVER TYPE 4000SSi / (4700) / 4800 / 5800 **SERIAL #** 7666
RECORDING DEVISE: internal memory / (TSC1) / TSC2 / other
if other describe R0975
LOGGING RATE 1s / 5s / (15s) (default is 15s) **ELEVATION MASK** 12 **degrees**
TRIPOD TYPE (FIXED) / ADJUSTABLE **ANTENNA HT** 2.001m true / slope
GCG#4 **ANTENNA HT** __.___ft
measurement is to what? BOTTOM OF ANTENNA MOUNT
ANTENNA CONFIGURATION L1/L2 MICRO w/G.P. **SERIAL #** 6249
ANTENNA MODEL NUMBER 33429-00

APPROXIMATE POSITION **LAT:** 33^43'30.4"N
HEIGHT: 1632m/ft **LONG:** 112^02'35.8"W

Notes: PLANNED START TIME IS 6:30am TO RUN FOR 1HR. MON IS A BC IN BEDROCK - MCDOT CONTROL CAP
~~**Station access info:**~~ STAMPED "EBM1"

ACCESS SKETCH (if needed) **MONUMENT STAMPING (if no photo)**



GCG GPS STATIC SESSION SHEET

PROJECT NAME: PINNACLE PEAK WEST
PROJECT #: 101308

OBSERVER RJB **DATE** 6/03/10 **JULIAN DAY** 154
STATION NAME 1HI3 **SESSION #** 0 (begins at 0 each day)
START 6:30 am / pm **STOP** 7:40 am / pm

RECEIVER TYPE 4000SSi / 4700 / 4800 / 5800 **SERIAL #** 6813
RECORDING DEVISE: internal memory / TSC1 / TSC2 / other
if other describe _____

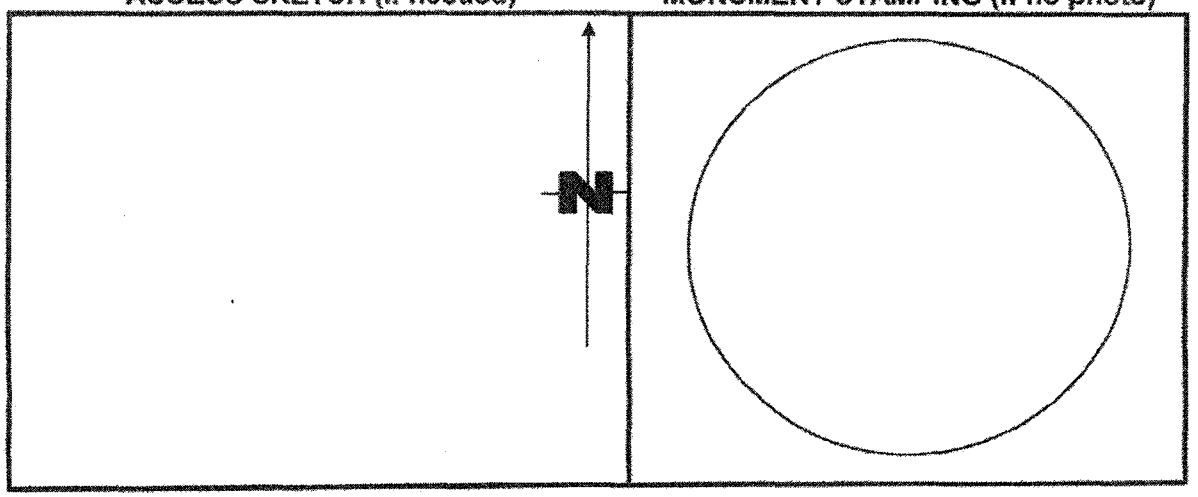
LOGGING RATE 1s / 5s / 15s (default is 15s) **ELEVATION MASK** 13 **degrees**
TRIPOD TYPE FIXED / ADJUSTABLE **ANTENNA HT** 2.002m true / slope
GCG#2 **ANTENNA HT** __.___ft
measurement is to what? BOTTOM OF ANTENNA MOUNT
ANTENNA CONFIGURATION L1-L2 MICRO W/G. **SERIAL #** 8983
ANTENNA MODEL NUMBER 33488-00

APPROXIMATE POSITION **LAT:** 33^48'46"N
HEIGHT: 2427m/ft **LONG:** 111^53'13"W

Notes: _____

Station access info: _____

ACCESS SKETCH (if needed) **MONUMENT STAMPING (if no photo)**



DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002

Observer Name: JERRY SELVAY

Project Location: _____

Date: 6-3-2010 Julian Day: 154

Receiver S/N: 0220227038

GPS Method: ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 0220177055

Observation Information

Station Name: NR 06

Session Number: 2

File Name: NR06_70381540.DAT

Antenna Type:
- ☐ 5800/R8
- ☒ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☐ Leica 1230 ☐ Other _____

Start Time: 5:25 AM

Stop Time: 8:12 AM

Antenna Height: 6.562 ft 2 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: _____ PDOP: _____

Antenna Height: 6.562 ft 2 m

Measured To: ☐ Bottom of Notch ☐ Bottom of Mount

Number of Satellites: _____ PDOP: _____

Station Description

Type: _____

Stamping: NR-06

Description: STAINLESS STEEL ROD IN PVC W/AL. RIM & CAP

Other: ☒ Monument is 020 up / (down) from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

SEE PREVIOUS SESSION 6-2-2010

Sheet 1 of 2

4600 East Washington Street, Suite 430 - Phone: 602.678.5151 - Fax: 602.678.5155

DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002 Observer Name: R.S. BOTT

Project Location: MTN SPRINGS + WINDGATE PS Date: 3 JUN 2010 Julian Day: 154

Receiver S/N: 455820 GPS Method: ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 155041

Observation Information

Station Name: 1HJ2 Session Number: 2

File Name: 1HJ2

Antenna Type:
- ☐ 5800/R8
- ☐ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☒ Leica 1230 ☐ Other _____

Start Time: 0553 Stop Time: 0809

Antenna Height: 6.5617 ft 2.0 m Antenna Height: 6.5617 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 12 PDOP: 1.6 Number of Satellites: 9 PDOP: 2.1

Station Description

Type: NGS STEEL ROD

Stamping: 1HJ2

Description: STEEL ROD ENCASED IN PVC PIPE 0.1 MILES SOUTH OF WINDGATE PASS ON MTN SPRINGS RD.

Other: ☒ Monument is _____ up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments *SEE PREVIOUS SESSION ON 2 JUN 2010 *

Sheet _____ of _____

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DAVID EVANS AND ASSOCIATES INC.

GPS Observation Log Sheet

FB _____ PG _____

Job Number: CPRA 0000-0002

Observer Name: R.S. BOTT

Project Location: 0.3 MILES NORTH OF JOMAX AND PIMA RD.

Date: 3 JUN 2010 Julian Day: 154

Receiver S/N: 455823

GPS Method: ☒ Static ☐ PP Kinematic ☐ RTK Base

Antenna S/N: 155130

Observation Information

Station Name: 1II1

Session Number: 2

File Name: 1II1

Antenna Type:
- ☐ 5800/R8
- ☐ MicroCenter with Groundplane
- ☐ MicroCenter w/o Groundplane
- ☐ Zephyr Geodetic
- ☒ Leica 1230 ☐ Other _____

Start Time: 0526

Stop Time: 0746

Antenna Height: 6.5617 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 12 PDOP: 1.6

Antenna Height: 6.5617 ft 2.0 m

Measured To: ☐ Bottom of Notch ☒ Bottom of Mount

Number of Satellites: 10 PDOP: 1.6

Station Description

Type: NGS STEEL ROD

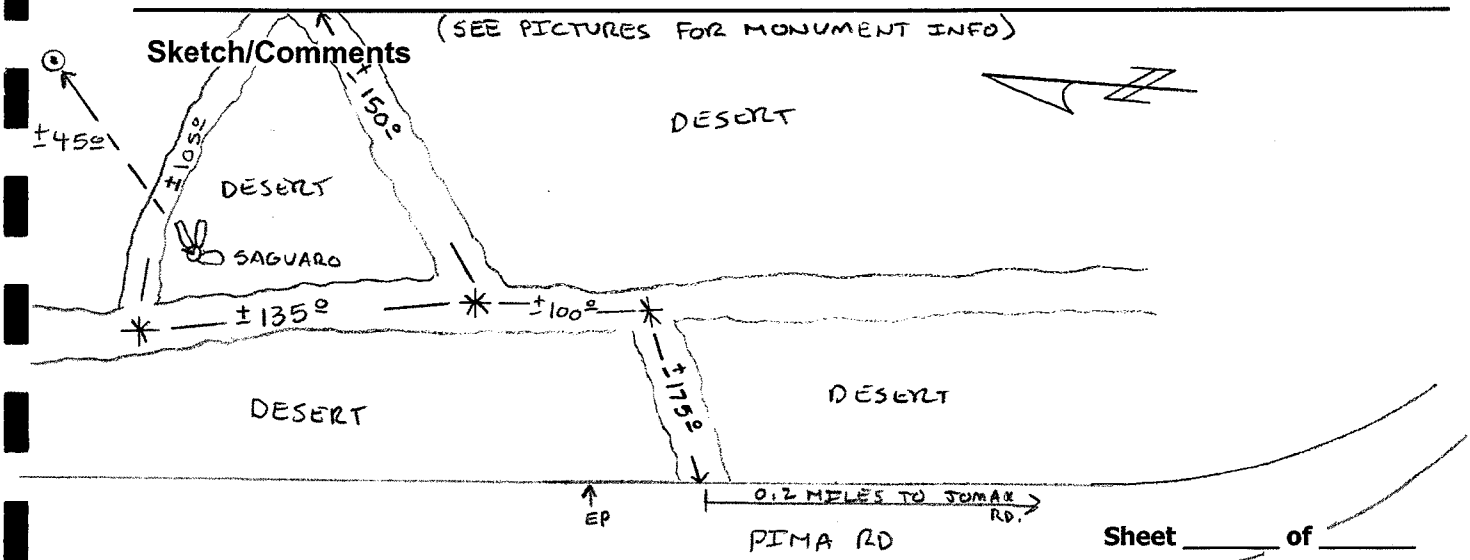
Stamping: 1II1

Description: STEEL ROD ENCASED IN PVC PIPE ± 0.3 MILES NORTH OF JOMAX RD AND ± 200° FT EAST OF PIMA RD.

Other: ☒ Monument is -0.25 up / down from ground
☐ Aerial Target ☐ Well Monument

Sketch/Comments

(SEE PICTURES FOR MONUMENT INFO)



Sheet _____ of _____

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Pinnacle Peak ADMS
ADWR Land Subsidence Area

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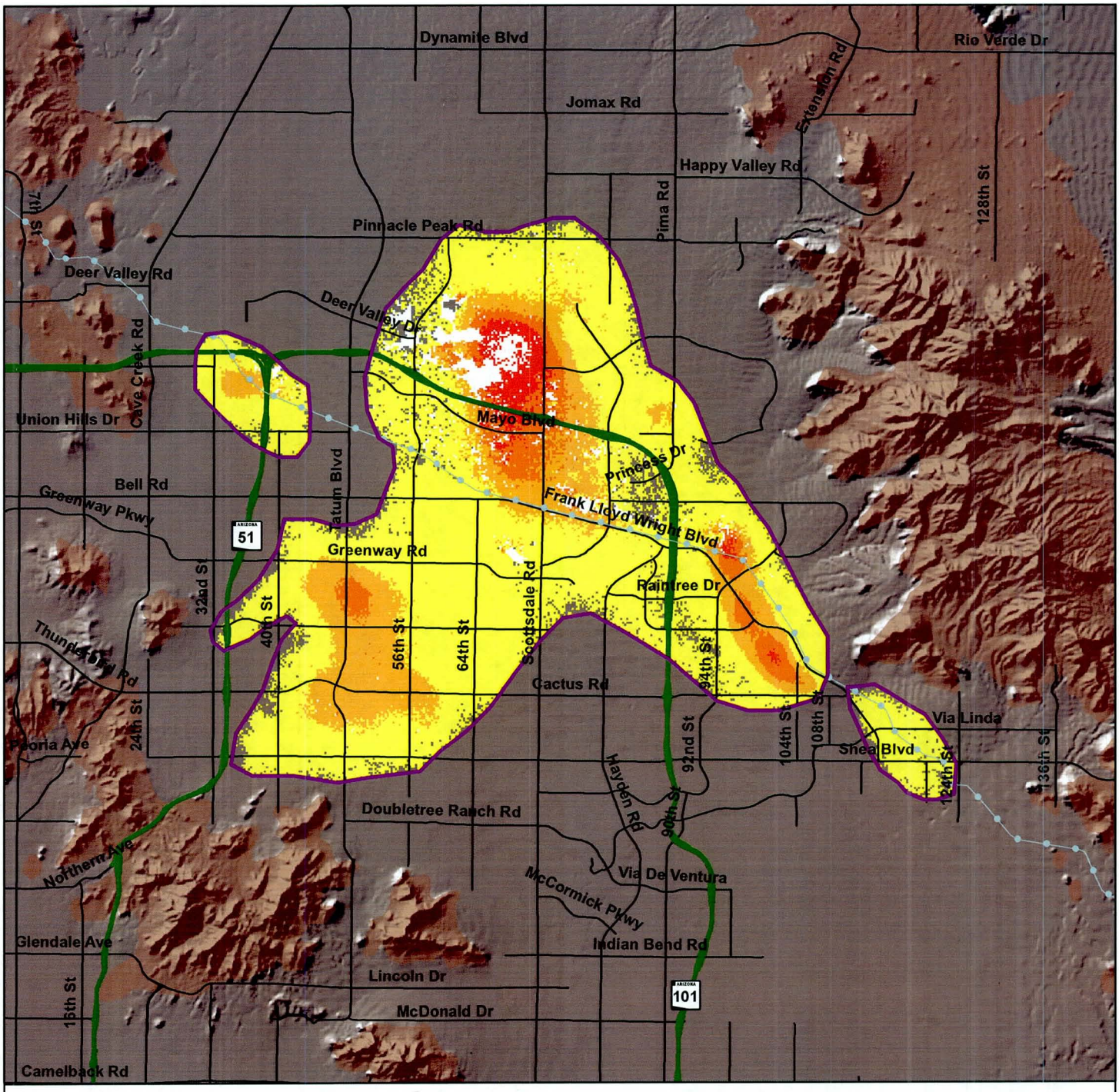
Legend

- Primary_Control
- ArizonaActiveLandSubsidenceAreas_2010

DAVID EVANS
AND ASSOCIATES INC.



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Land Subsidence in Northeast Phoenix and Scottsdale Areas
Based on ADWR EnviSat Time-Series InSAR Data

Time Period of Analysis: 6.0 Years 03/08/2004 To 02/15/2010

03/08/2004 To 02/15/2010

Subsidence

- Decorrelation/No Data
- 6 To 9 cm
- 4 To 6 cm
- 2 To 4 cm
- 0 To 2 cm

- Subsidence Feature
- Hardrock
- CAP Canal

Arizona Highways and Interstates

- Interstate
- US
- State
- Roads

1:138,037

0 0.5 1 2 3 4 Miles

Decorrelation (white areas) are areas where the phase of the received satellite signal changed between satellite passes, causing the data to be unusable. This occurs in areas where the land surface has been disturbed (i.e. bodies of water, snow, agriculture areas, areas of development, etc).

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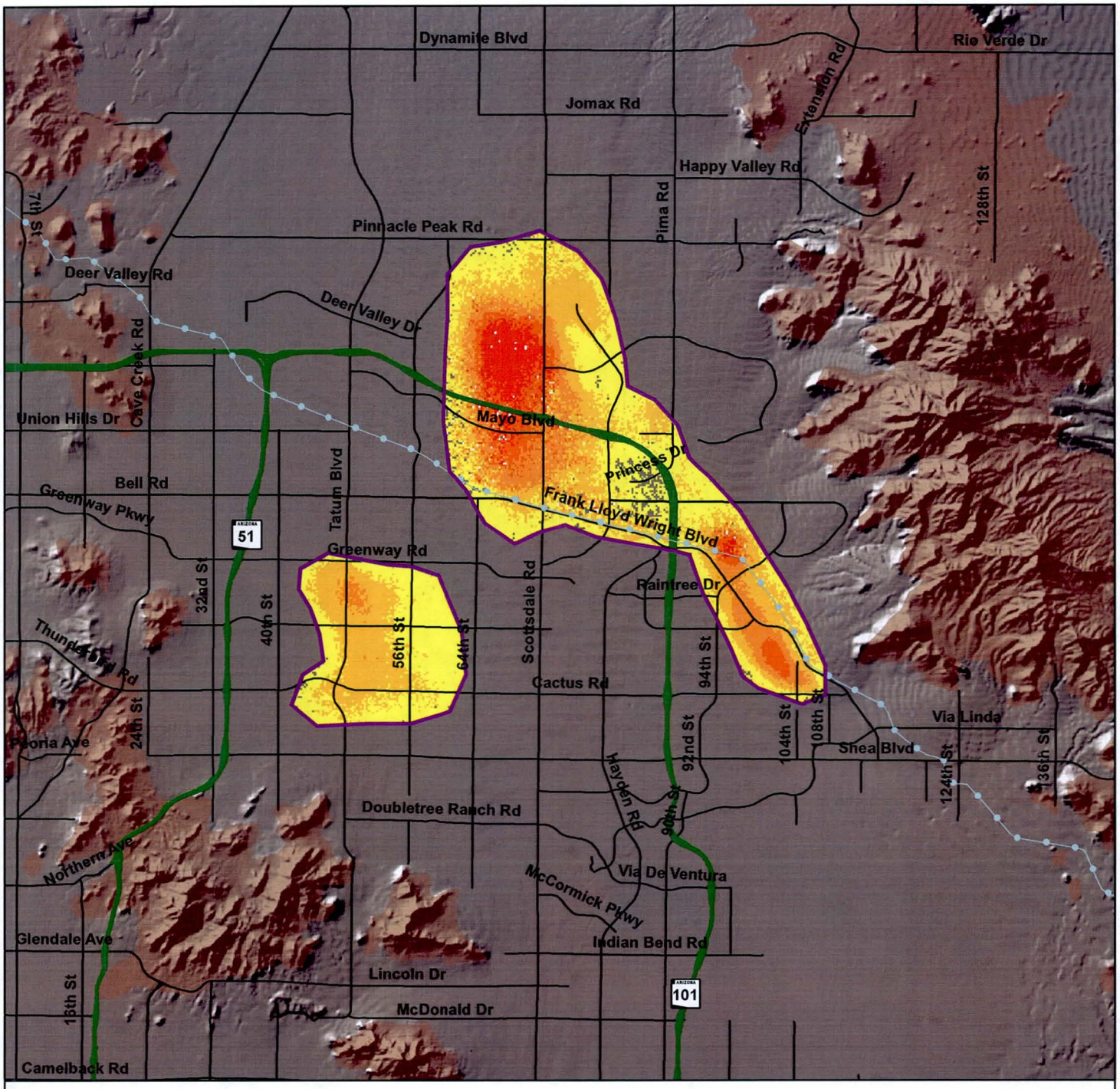

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Land Subsidence in Northeast Phoenix and Scottsdale Areas
Based on ADWR EnviSat Time-Series InSAR Data

Time Period of Analysis: 2.0 Years 02/11/2008 To 02/15/2010

02/11/2008 To 02/15/2010

Subsidence

- Decorrelation/No Data
- 2.0 To 2.5 cm
- 1.5 To 2.0 cm
- 1.0 To 1.5 cm
- 0.5 To 1.0 cm
- 0 To 0.5 cm

- Subsidence Feature
- Hardrock
- CAP Canal

Arizona Highways and Interstates

- Interstate
- US
- State
- Roads

1:138,037

0 0.5 1 2 3 4 Miles

Decorrelation (white areas) are areas where the phase of the received satellite signal changed between satellite passes, causing the data to be unusable. This occurs in areas where the land surface has been disturbed (i.e. bodies of water, snow, agriculture areas, areas of development, etc).

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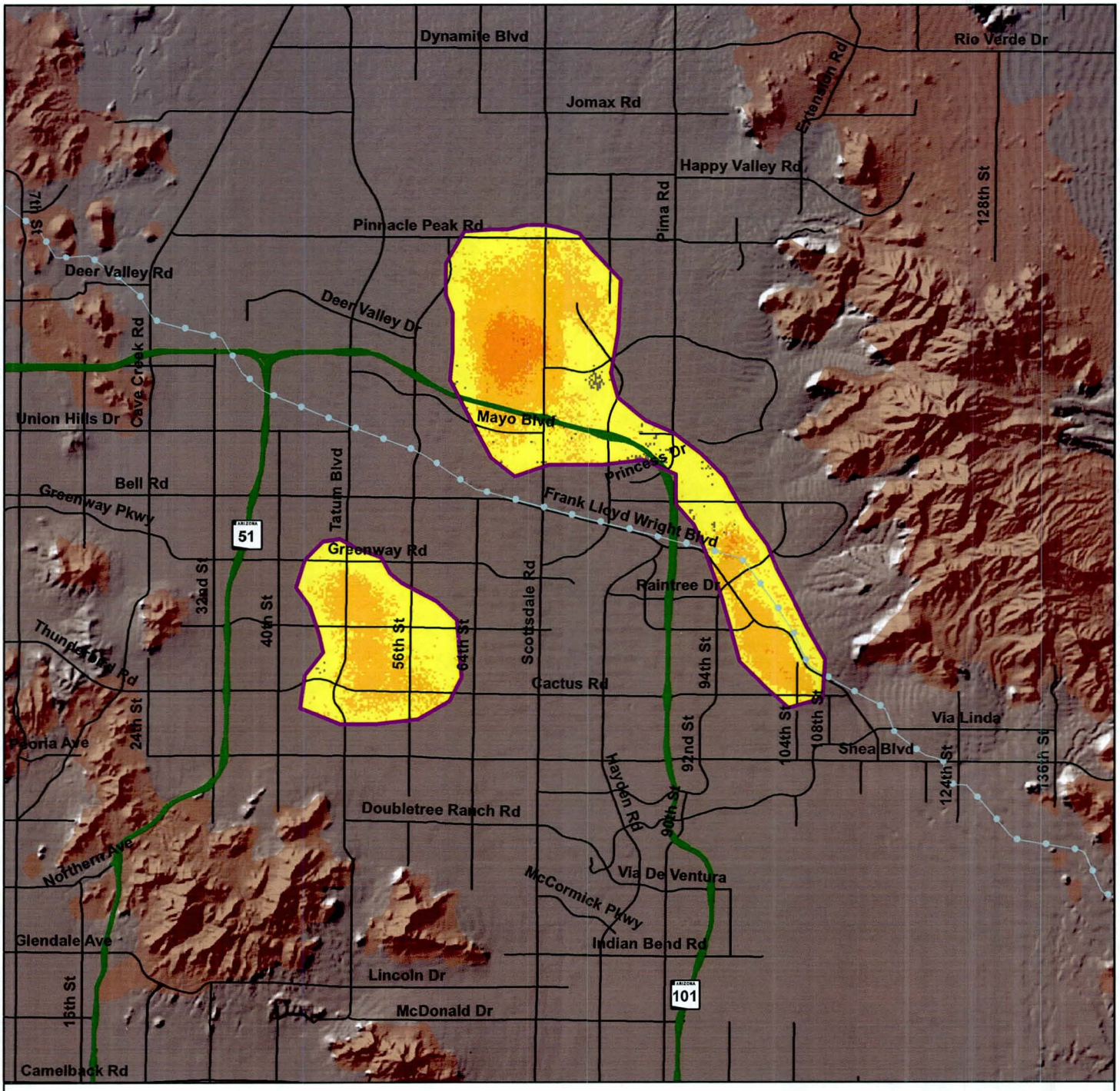

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Land Subsidence in Northeast Phoenix and Scottsdale Areas
Based on ADWR EnviSat Time-Series InSAR Data

Time Period of Analysis: 0.9 Years 03/02/2009 To 02/15/2010

03/02/2009 To 02/15/2010

Subsidence

- Decorrelation/No Data
- 2.0 To 2.5 cm
- 1.5 To 2.0 cm
- 1.0 To 1.5 cm
- 0.5 To 1.0 cm
- 0 To 0.5 cm

- Subsidence Feature
- Hardrock
- CAP Canal

Arizona Highways and Interstates

- Interstate
- US
- State
- Roads

1:138,037

0 0.5 1 2 3 4 Miles

Decorrelation (white areas) are areas where the phase of the received satellite signal changed between satellite passes, causing the data to be unusable. This occurs in areas where the land surface has been disturbed (i.e. bodies of water, snow, agriculture areas, areas of development, etc).

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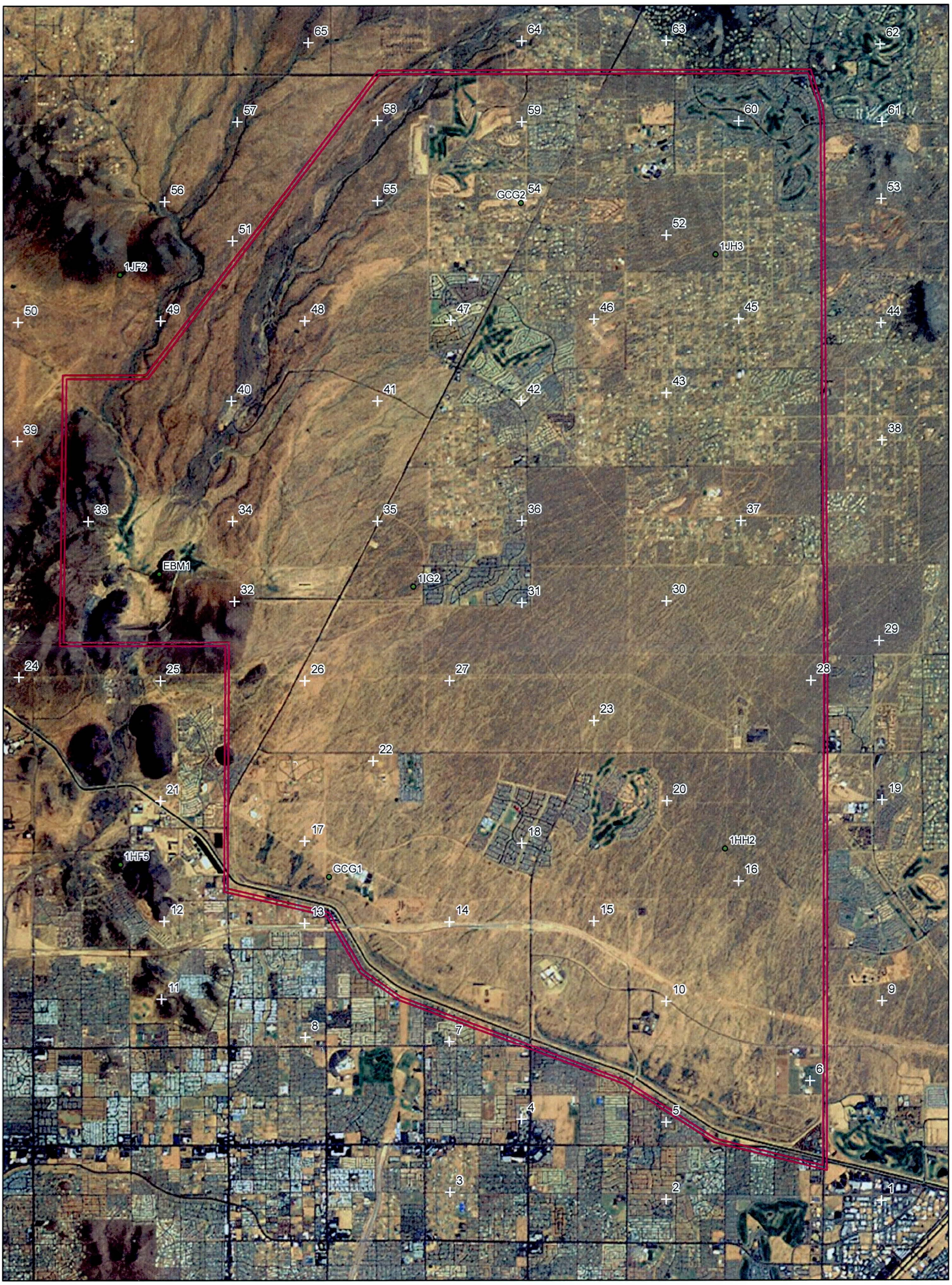
Pinnacle Peak ADMS/P
Secondary Photo Control



Legend

- Primary_Control
- Pinnacle-Peak-Aerial-Panels
- Pinnacle-Peak-Mapping-Limits

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DAVID EVANS AND ASSOCIATES INC.

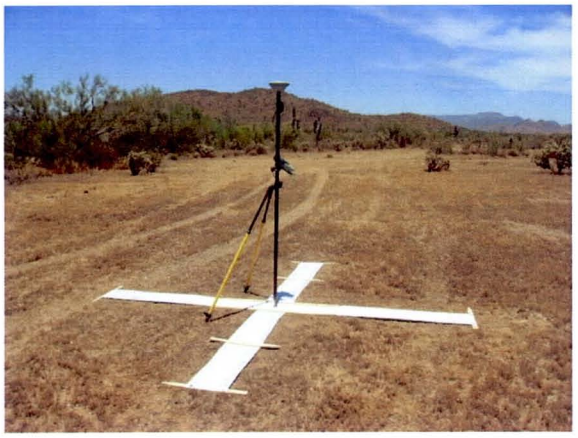
PROJECT METADATA
PINNACLE PEAK ADMP MAPPING
UNITS: INTERNATIONAL FEET
HORIZONTAL DATUM: NAD83 (2007)
VERTICAL DATUM: NAVD88 (GEOID 09)
COORDINATE SYSTEM: SPCS 0202

PANEL	LONGITUDE	LATITUDE	ELL. HT.	NORTHING	EASTING	CAP ORTH. HT.	PANEL ORTH. HT.	DESCRIPTION	NOTE
200	111° 54' 51.81541" W	33° 45' 34.46058" N	2136.161	1003898.4111	700690.9629	2231.335	2231.335	N/W COR WHITE STRIPE, SOUTH OF GATE	
201	111° 54' 51.60504" W	33° 45' 34.41616" N	2135.973	1003893.9215	700708.7228	2231.147	2231.147	N/E COR WHITE STRIPE, SOUTH OF GATE	
901	111° 54' 54.23739" W	33° 37' 55.88431" N	1402.824	957548.5467	700487.2117	1499.487	1499.487	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP901	
902	111° 57' 11.43942" W	33° 37' 56.65734" N	1376.951	957628.6368	688887.2129	1473.768	1473.768	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP902	
903	111° 59' 29.34691" W	33° 38' 00.32206" N	1358.356	958005.3122	677227.8365	1455.209	1455.209	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP903	
904	111° 58' 47.93935" W	33° 38' 38.58509" N	1393.139	961870.3142	680731.0422	1489.924	1489.924	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP904	
905	111° 57' 10.81125" W	33° 38' 40.67662" N	1416.118	962077.7549	688941.8858	1512.847	1512.847	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP905	
906	111° 55' 40.90394" W	33° 38' 51.56989" N	1455.151	963177.0127	696542.3109	1551.739	1551.739	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP906	
907	111° 59' 30.28988" W	33° 39' 20.64562" N	1414.334	966123.8806	677154.0069	1511.050	1511.050	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP907	
908	112° 01' 02.44074" W	33° 39' 23.03581" N	1384.589	966372.0840	669365.2761	1481.321	1481.321	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP908	
909	111° 54' 53.99771" W	33° 39' 41.51551" N	1537.030	968224.9661	700507.3041	1633.375	1633.375	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP909	
910	111° 57' 11.22515" W	33° 39' 43.52732" N	1485.090	968430.2573	688909.1365	1581.664	1581.664	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP910	
911	112° 02' 34.68662" W	33° 39' 47.30311" N	1436.876	968833.4101	661571.3333	1533.612	1533.612	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP911	
912	112° 02' 31.35417" W	33° 40' 25.78759" N	1469.460	972722.8102	661857.7003	1566.110	1565.780	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP912	CAP IS 0.33 ABOVE PANEL
913	112° 01' 03.48725" W	33° 40' 23.95208" N	1419.501	972529.1573	669282.8363	1516.098	1516.098	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP913	
914	111° 59' 28.93175" W	33° 40' 24.70865" N	1465.286	972598.8340	677273.4811	1561.854	1561.854	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP914	
915	111° 57' 56.05544" W	33° 40' 28.88599" N	1515.225	973016.3565	685122.3470	1611.714	1611.714	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP915	
916	111° 56' 25.93582" W	33° 40' 45.82535" N	1586.173	974725.7880	692738.3462	1682.495	1682.495	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP916	
917	112° 01' 04.05168" W	33° 41' 07.65224" N	1453.279	976946.1182	669239.4612	1549.765	1549.765	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP917	
918	111° 58' 44.11876" W	33° 41' 06.46988" N	1528.467	976817.2634	681063.0207	1624.888	1624.888	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP918	
919	111° 54' 54.03957" W	33° 41' 29.76555" N	1736.346	979166.1315	700503.5903	1832.346	1832.346	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP919	
920	111° 57' 10.42956" W	33° 41' 28.64143" N	1616.035	979054.4409	688980.1027	1712.285	1712.285	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP920	
921	112° 02' 35.71993" W	33° 41' 29.65848" N	1430.578	979178.8999	661496.6754	1527.071	1527.071	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP921	
922	112° 00' 19.14100" W	33° 41' 54.31908" N	1520.475	981659.4075	673038.2372	1616.810	1616.810	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP922	
923	111° 57' 57.89733" W	33° 42' 11.90683" N	1642.509	983429.0862	684971.6787	1738.677	1738.677	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP923	
924	112° 04' 05.25437" W	33° 42' 34.74514" N	1453.445	985767.6256	653941.6425	1549.882	1549.732	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP924	CAP IS 0.15 ABOVE PANEL
925	112° 02' 36.15545" W	33° 42' 32.97893" N	1471.091	985578.9683	661467.7318	1567.409	1566.989	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP925	CAP IS 0.42 ABOVE PANEL
926	112° 01' 02.35609" W	33° 42' 32.82079" N	1520.069	985554.2603	669391.1195	1616.316	1616.316	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP926	
927	111° 59' 29.67248" W	33° 42' 32.43836" N	1588.864	985508.9499	677220.2479	1685.055	1685.055	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP927	
928	111° 55' 40.22471" W	33° 42' 33.54844" N	1802.954	985613.0693	696602.1543	1898.840	1898.840	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP928	
929	111° 54' 56.25470" W	33° 42' 54.80575" N	1893.139	987761.4409	700316.3497	1988.871	1988.871	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP929	
930	111° 57' 43.33775" W	33° 43' 16.00918" N	1748.088	989907.5823	686204.4827	1844.033	1844.033	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP930	
931	111° 58' 44.03562" W	33° 43' 15.15444" N	1677.832	989823.8620	681077.8843	1773.849	1773.849	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP931	
932	112° 01' 48.52582" W	33° 43' 16.05396" N	1608.129	989928.0448	665495.8802	1704.284	1704.284	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP932	
933	112° 03' 22.07289" W	33° 43' 58.19092" N	1567.809	994196.6787	657600.6393	1663.957	1663.957	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP933	
934	112° 01' 47.98694" W	33° 43' 58.28027" N	1561.191	994195.9757	665546.0816	1657.227	1657.097	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP934	CAP IS 0.13 ABOVE PANEL

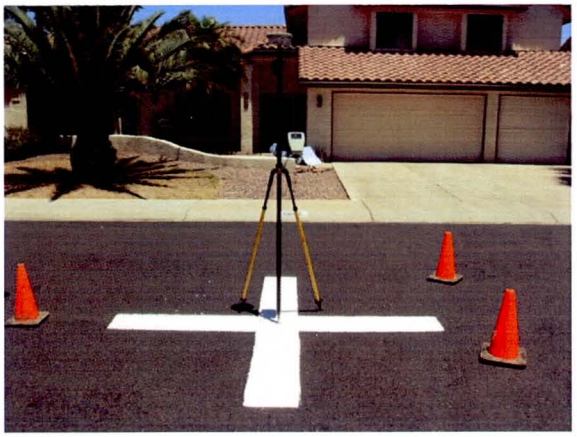
935	112° 00' 16.74439" W	33° 43' 57.06774" N	1620.934	994065.9038	673251.2840	1716.898	1716.898	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP935	
936	111° 58' 43.93487" W	33° 43' 58.84888" N	1721.617	994240.2256	681089.0561	1817.493	1817.493	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP936	
937	111° 56' 23.98223" W	33° 43' 59.25454" N	1901.404	994276.3283	692907.8438	1997.090	1997.090	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP937	
938	111° 54' 55.05085" W	33° 44' 41.73109" N	2074.420	998568.8085	700417.8902	2169.785	2169.785	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP938	
939	112° 04' 06.59693" W	33° 44' 41.07130" N	1611.494	998536.0882	653847.0216	1707.603	1707.603	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP939	
940	112° 01' 48.95685" W	33° 45' 03.38598" N	1587.241	1000776.5755	665471.4214	1683.101	1682.911	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP940	CAP IS 0.19 ABOVE PANEL
941	112° 00' 18.41843" W	33° 45' 03.75737" N	1670.403	1000806.6249	673115.6927	1766.167	1766.167	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP941	
942	111° 58' 45.52233" W	33° 45' 02.50097" N	1774.026	1000673.8896	680958.9045	1869.699	1869.699	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP942	
943	111° 57' 10.43482" W	33° 45' 07.54328" N	1913.202	1001179.6884	688987.4258	2008.733	2008.733	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP943	
945	111° 56' 24.66244" W	33° 45' 46.31904" N	2024.390	1005097.8056	692852.8686	2119.711	2119.711	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP945	
946	111° 57' 57.77896" W	33° 45' 46.33484" N	1881.405	1005102.1818	684992.0517	1976.877	1976.877	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP946	
947	111° 59' 29.41104" W	33° 45' 45.68984" N	1753.846	1005041.6496	677256.5008	1849.430	1849.430	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP947	
948	112° 01' 02.90812" W	33° 45' 45.43995" N	1658.964	1005023.1158	669363.5127	1754.653	1754.653	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP948	
949	112° 02' 35.04032" W	33° 45' 45.36494" N	1601.518	1005024.1044	661585.7530	1697.312	1697.312	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP949	
950	112° 04' 06.64733" W	33° 45' 45.49636" N	1569.077	1005047.8240	653852.3544	1665.029	1665.029	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP950	
951	112° 01' 49.47842" W	33° 46' 28.34490" N	1668.718	1009363.8102	665436.8587	1764.332	1764.332	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP951	
952	111° 57' 09.03248" W	33° 46' 30.68639" N	1979.569	1009583.2962	689108.7469	2074.812	2074.592	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP952	CAP IS 0.22 ABOVE PANEL
953	111° 54' 54.23021" W	33° 46' 50.53603" N	2237.094	1011587.7035	700486.9796	2331.996	2331.996	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP953	
954	111° 58' 41.67541" W	33° 46' 51.54161" N	1850.162	1011694.9284	681290.2876	1945.470	1945.470	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP954	
955	112° 00' 16.30742" W	33° 46' 49.74956" N	1729.455	1011519.5895	673303.0579	1824.891	1824.341	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP955	CAP IS 0.55 ABOVE PANEL
956	112° 02' 31.99072" W	33° 46' 49.64380" N	1658.478	1011520.7579	661851.1130	1754.088	1754.088	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP956	
957	112° 01' 46.24541" W	33° 47' 32.10100" N	1691.060	1015807.6513	665716.8070	1786.473	1786.473	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP957	
958	112° 00' 17.40002" W	33° 47' 32.73526" N	1744.726	1015864.4444	673214.5582	1840.018	1840.018	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP958	
959	111° 58' 41.37620" W	33° 47' 30.89759" N	1857.299	1015672.8158	681317.9152	1952.463	1952.463	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP959	
960	111° 56' 24.22213" W	33° 47' 38.79136" N	2085.976	1016465.9090	692892.6199	2180.871	2180.871	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP960	
961	111° 54' 54.32493" W	33° 47' 31.11582" N	2247.427	1015689.3010	700478.9222	2342.178	2342.178	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP962	
962	111° 54' 53.12652" W	33° 48' 14.51293" N	2277.713	1020075.6688	700579.9761	2372.293	2372.293	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP962	
963	111° 57' 01.80240" W	33° 48' 12.50110" N	2017.698	1019874.0057	689722.3966	2112.530	2112.530	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP963	
964	111° 58' 44.29597" W	33° 48' 14.95795" N	1841.420	1020126.3683	681074.2078	1936.423	1936.423	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP964	
965	112° 01' 00.77463" W	33° 48' 13.94641" N	1752.498	1020033.2139	669558.2189	1847.711	1847.711	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP965	

TYPICAL AERIAL PANELS

Paper panels: 5/8" rebar, 18" long with 2" aluminum cap stamped FCD 2009C044, PP##



Painted panels: 3" mag spike with 2" washer stamped FCD 2009C044, PP##

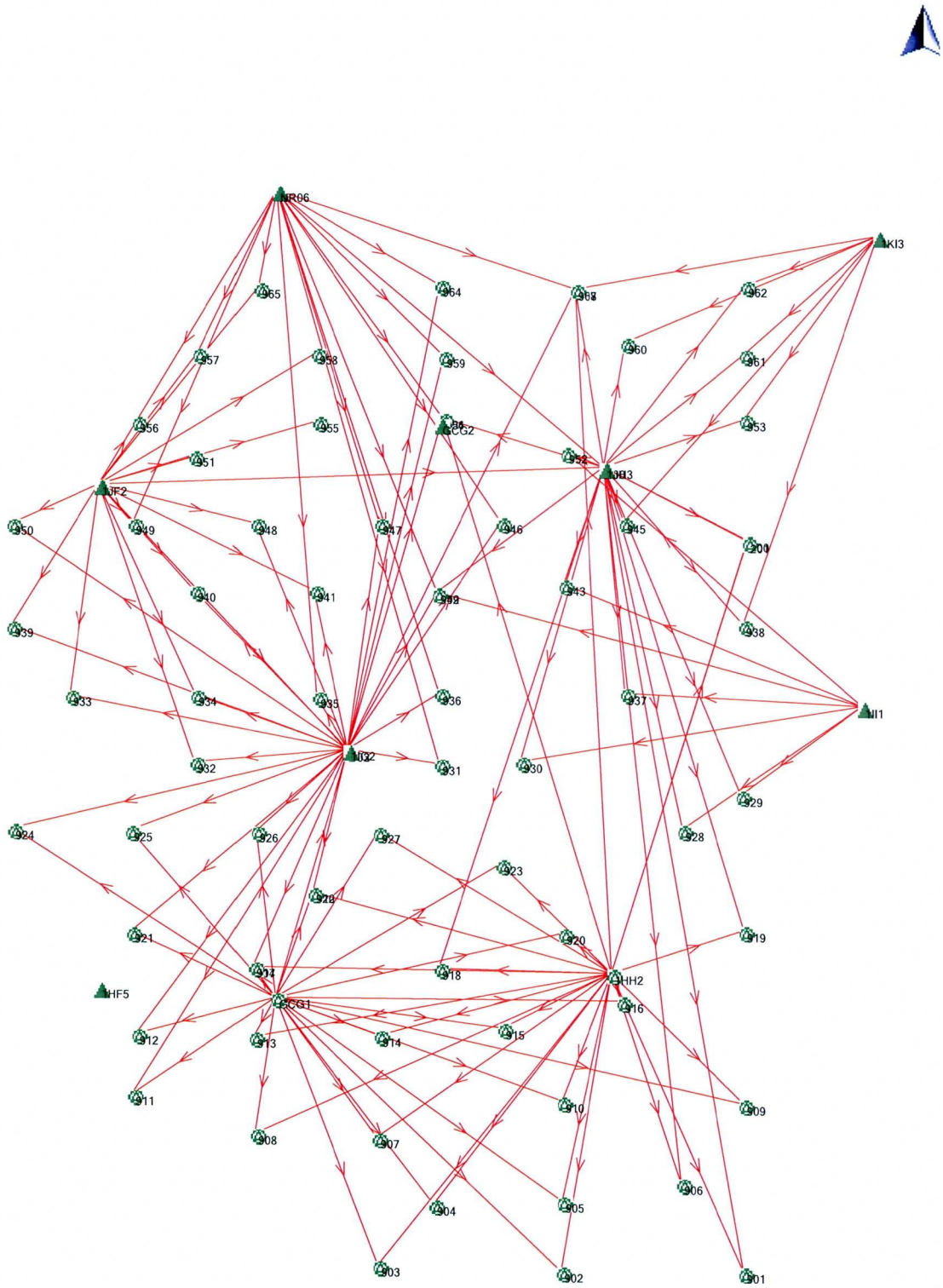


Weighted Constrained Network Adjustment Report- Aerial Control

On CD in Section E

Network Loops and Misclosures Report- Aerial Control

On CD in Section E



32808.333333 fts

Estimated
Navigated
SPP
Measured
Average
Reference
Adjusted
Control - 1D
Control - 2D
Control - 3D

01/10/2011 14:15:26

Aerial Control Photographs

On CD in Section E

MARK: 1=ALUMINUM CAP
2=MAG NAIL W/WASHER
3=SEE NOTES

ARP: TRIPOD HI + OFFSET BTM OF ANT. MOUNT ON POLE(ROVER)

BASE INFO

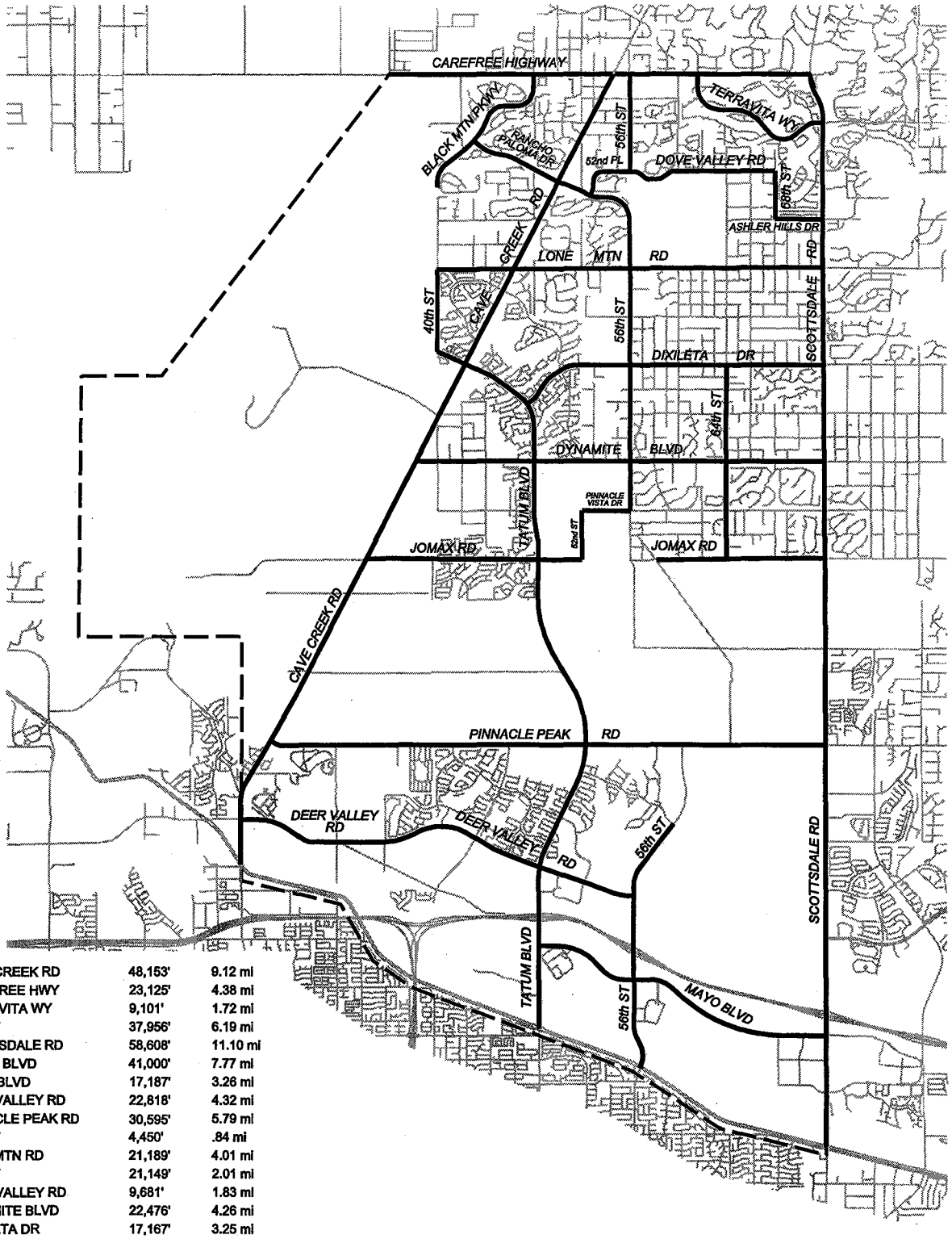
PT_ID	DATE	TIME	MARK (1,2,3)	ANTENNA MODEL	S/N	RECEIVER MODEL	S/N	ARP	NOTES
1JF2	6/9/10	6:06	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
NRO6	6/9/10	6:33	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
NRO6	6/10/10	5:35	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
1JF2	6/10/10	6:04	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
1IG2	6/11/10	5:34	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
1JF2	6/11/10	6:24	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
GCG1	6/14/10	5:59	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	3/4" HEXAGON STEEL ROD SET BY OTHERS
1IG2	6/14/10	6:21	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
1HH2	6/15/10	6:10	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
GCG1	6/15/10	6:34	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	3/4" HEXAGON STEEL ROD SET BY OTHERS
1HH2	6/17/10	5:33	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
1JH3	6/17/10	6:06	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
1II1	6/17/10	5:39	3	ATX 1230	5130	GTX 1230	5823	2M + 152MM	IRON ROD ENCASED IN PVC
NR06	6/18/10	5:05	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
1IG2	6/18/10	5:34	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
1KI3	6/21/10	6:49	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
1JH3	6/21/10	7:12	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
1II1	6/22/10	5:11	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
1JH3	6/22/10	5:34	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC
1HH2	6/24/10	5:01	3	ATX 1230	5268	GTX 1230	6018	2M + 152MM	IRON ROD ENCASED IN PVC
GCG1	6/24/10	5:24	3	ATX 1230	5041	GTX 1230	5820	2M + 152MM	IRON ROD ENCASED IN PVC

ROVER INFO

PT_ID	DATE	TIME	MARK (1,2,3)	ANTENNA MODEL	S/N	RECEIVER MODEL	S/N	ARP	NOTES
100	6/9/2010	7:17	3	ATX 1230 GG	2749	RX 1250 TC	4063	2M	IRON ROD ENCASED IN PVC / CHECK PT 1JH3
965	6/9/2010	8:35	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP965
957	6/9/2010	10:06	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP957
956	6/9/2010	11:02	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP956
949	6/9/2010	12:23	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP949
951	6/10/2010	7:17	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP951
958	6/10/2010	8:33	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP958
955	6/10/2010	9:44	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP955 NOTE: CAP IS 0.55 ABOVE PANEL
101	6/10/2010	10:17	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT 965
950	6/11/2010	6:57	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP950
939	6/11/2010	7:46	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP939
933	6/11/2010	8:47	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP933
932	6/11/2010	10:07	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP932
934	6/11/2010	10:51	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP934 NOTE: CAP IS 0.13 ABOVE PANEL

940	6/11/2010	12:22	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP940 NOTE: CAP IS 0.19 ABOVE PANEL
948	6/11/2010	1:21	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP948
941	6/11/2010	2:09	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP941
102	6/11/2010	2:25	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT 1IG2 CHECK SET BY OTHERS
921	6/14/2010	7:34	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP921
912	6/14/2010	8:43	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP912 NOTE: CAP IS 0.33 ABOVE PANEL
911	6/14/2010	9:51	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP911
924	6/14/2010	10:46	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP924 NOTE: CAP IS 0.15 ABOVE PANEL
925	6/14/2010	11:31	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP925 NOTE: CAP IS 0.42 ABOVE PANEL
926	6/14/2010	12:23	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP926
922	6/14/2010	12:59	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP922
917	6/14/2010	1:53	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP917
103	6/14/2010	2:23	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT 1IG2 CHECK SET BY OTHERS
104	6/15/2010	6:46	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT PP917
913	6/15/2010	7:30	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP913
908	6/15/2010	8:06	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP908
907	6/15/2010	8:56	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP907
903	6/15/2010	9:29	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP903
904	6/15/2010	10:20	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP904
905	6/15/2010	11:15	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP905
902	6/15/2010	11:52	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP902
910	6/15/2010	12:46	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP910
106	6/17/2010	6:39	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT PP954
963	6/17/2010	7:02	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP963
200	6/17/2010	7:46	3	ATX 1230 GG	2749	RX 1250 TC	4063	2M	N/W COR WHITE STRIPE, SOUTH OF GATE
201	6/17/2010	7:59	3	ATX 1230 GG	2749	RX 1250 TC	4063	2M	N/E COR WHITE STRIPE, SOUTH OF GATE
919	6/17/2010	8:26	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP919
906	6/17/2010	8:53	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP906
901	6/17/2010	9:22	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP901
918	6/17/2010	9:54	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP918
931	6/18/2010	5:47	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP931
935	6/18/2010	6:09	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP935
936	6/18/2010	6:31	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP936
942	6/18/2010	6:57	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP942
946	6/18/2010	7:17	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP946
947	6/18/2010	7:45	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP947
954	6/18/2010	8:09	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP954
959	6/18/2010	8:41	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP959
107	6/18/2010	9:02	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT PP963
964	6/18/2010	9:22	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP964
108	6/21/2010	7:29	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT PP963
960	6/21/2010	8:36	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP960
962	6/21/2010	9:25	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP962
961	6/21/2010	10:05	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP961
953	6/21/2010	11:25	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP953
938	6/21/2010	12:14	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP938
945	6/21/2010	1:02	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP945

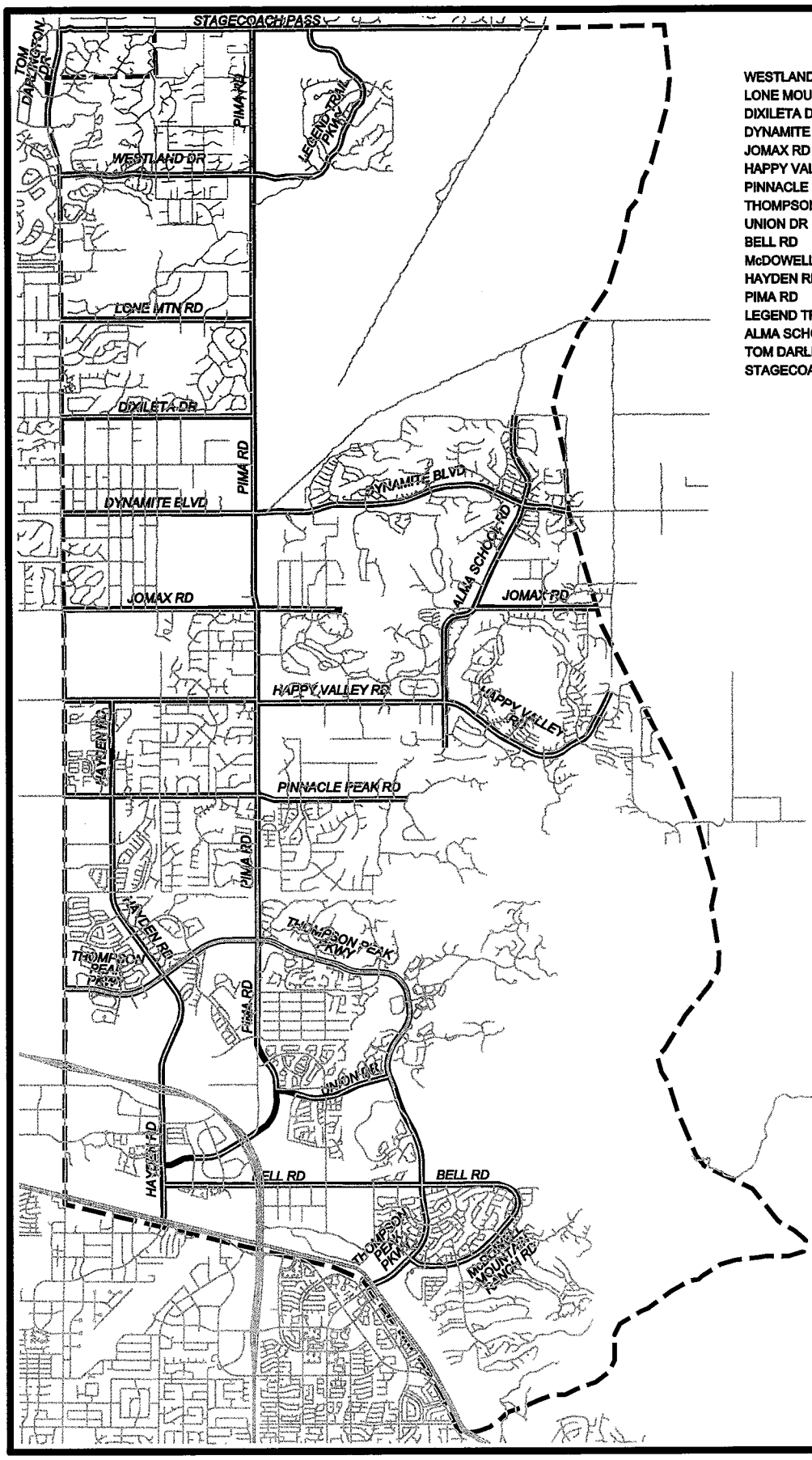
952	6/22/2010	6:14	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP952 NOTE: CAP IS 0.22 ABOVE PANEL
109	6/22/2010	6:49	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT PP942
943	6/22/2010	7:27	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP943
937	6/22/2010	8:02	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP937
930	6/22/2010	9:33	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP930
929	6/22/2010	10:56	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP929
928	6/22/2010	12:10	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP928
110	6/24/2010	5:39	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	CHECK PT PP922
927	6/24/2010	6:15	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP927
923	6/24/2010	7:20	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP923
920	6/24/2010	8:02	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP920
914	6/24/2010	9:20	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP914
915	6/24/2010	9:52	2	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET LARGE MAG NAIL W/ WASHER STAMPED FCD 2009C044 PP915
909	6/24/2010	10:39	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP909
916	6/24/2010	11:35	1	ATX 1230 GG	2749	RX 1250 TC	4063	2M	SET 5/8" REBAR W/ 2" AL CAP STAMPED FCD 2009C044 PP916



CAVE CREEK RD	48,153'	9.12 mi
CAREFREE HWY	23,125'	4.38 mi
TERRAVITA WY	9,101'	1.72 mi
56th ST	37,956'	6.19 mi
SCOTTSDALE RD	58,608'	11.10 mi
TATUM BLVD	41,000'	7.77 mi
MAYO BLVD	17,187'	3.26 mi
DEER VALLEY RD	22,818'	4.32 mi
PINNACLE PEAK RD	30,595'	5.79 mi
40th ST	4,450'	.84 mi
LONE MTN RD	21,189'	4.01 mi
64th ST	21,149'	2.01 mi
DOVE VALLEY RD	9,681'	1.83 mi
DYNAMITE BLVD	22,476'	4.26 mi
DIXELETA DR	17,167'	3.25 mi
JOMAX RD	21,122'	4.00 mi
52nd ST	2,680'	.51 mi
PINNACLE VISTA DR	2,683'	.51 mi
BLACK MTN PKWY	8,940'	1.69 mi
RANCHO PALOMA DR	10,020'	1.89 mi
52nd PL	1,600'	.30 mi
68th ST		.50 mi
ASHLER HILLS DR		.50 mi

Total Road Miles: 79.75

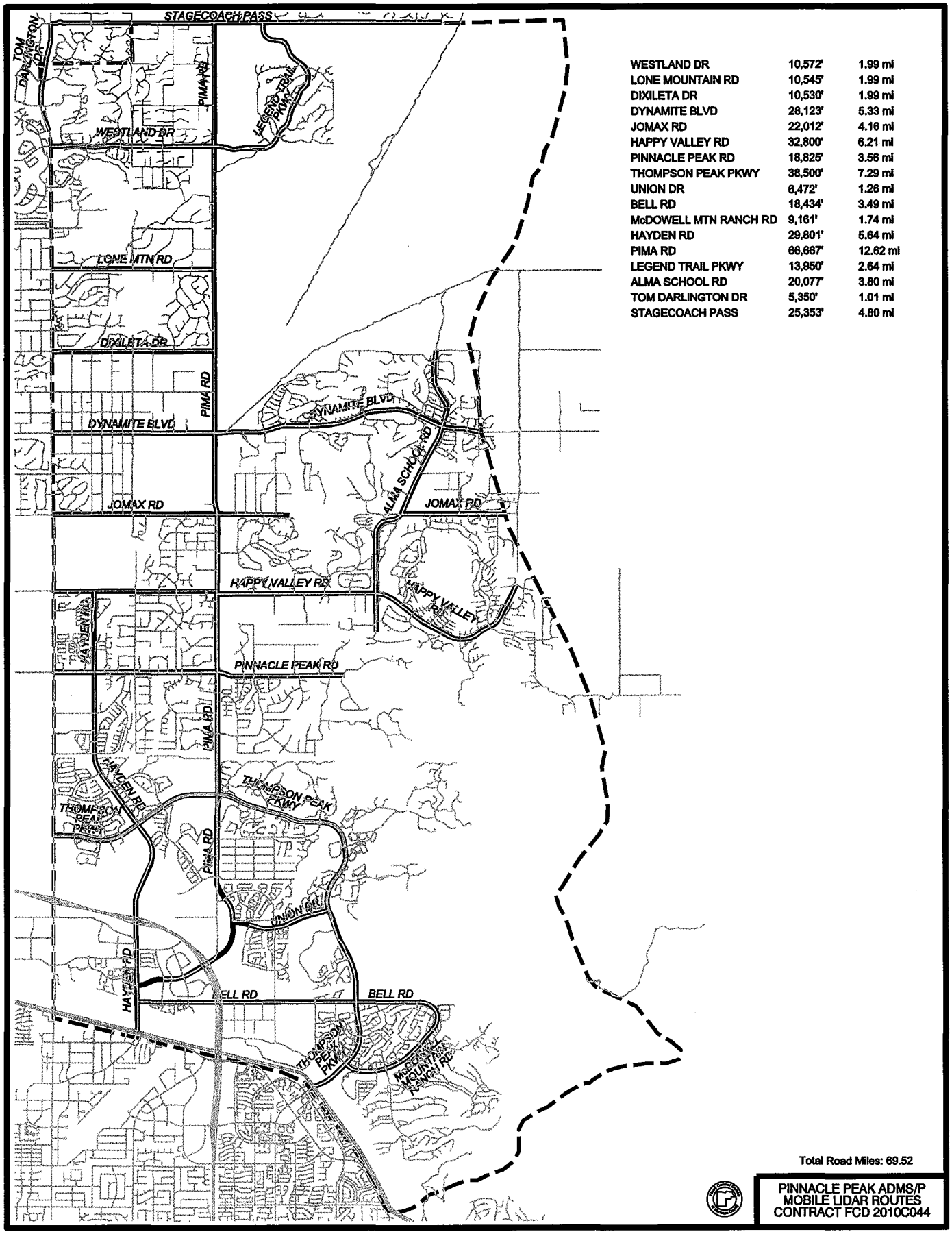
PINNACLE PEAK ADMS/P
MOBILE LIDAR ROUTES
CONTRACT FCD 2010C044



WESTLAND DR	10,572'	1.99 mi
LONE MOUNTAIN RD	10,545'	1.99 mi
DIXILETA DR	10,530'	1.99 mi
DYNAMITE BLVD	28,123'	5.33 mi
JOMAX RD	22,012'	4.16 mi
HAPPY VALLEY RD	32,800'	6.21 mi
PINNACLE PEAK RD	18,825'	3.56 mi
THOMPSON PEAK PKWY	38,500'	7.29 mi
UNION DR	6,472'	1.26 mi
BELL RD	18,434'	3.49 mi
McDOWELL MTN RANCH RD	9,161'	1.74 mi
HAYDEN RD	29,801'	5.64 mi
PIMA RD	66,667'	12.62 mi
LEGEND TRAIL PKWY	13,950'	2.64 mi
ALMA SCHOOL RD	20,077'	3.80 mi
TOM DARLINGTON DR	5,350'	1.01 mi
STAGECOACH PASS	25,353'	4.80 mi

Total Road Miles: 69.52

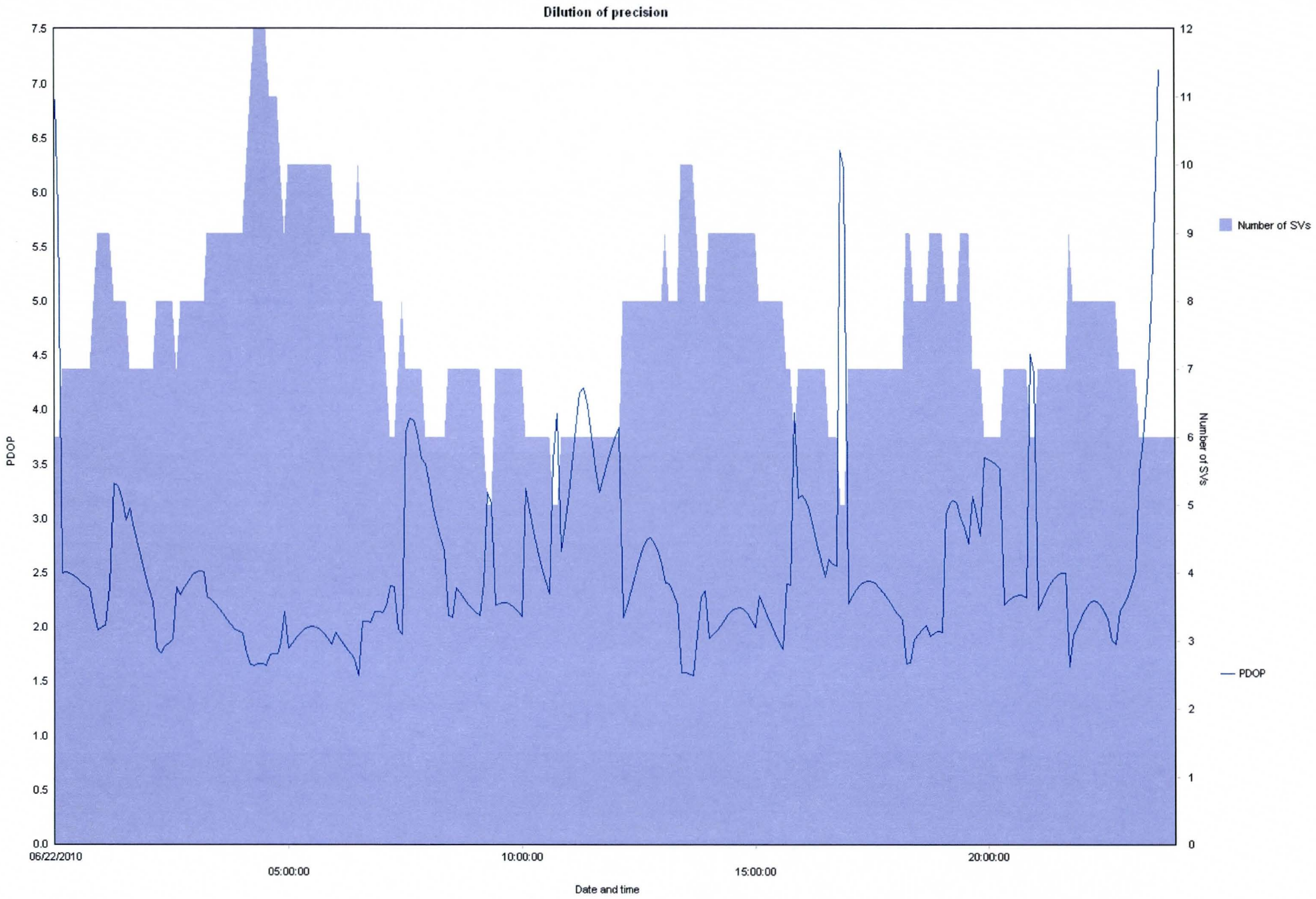
PINNACLE PEAK ADMS/P
MOBILE LIDAR ROUTES
CONTRACT FCD 2010C044

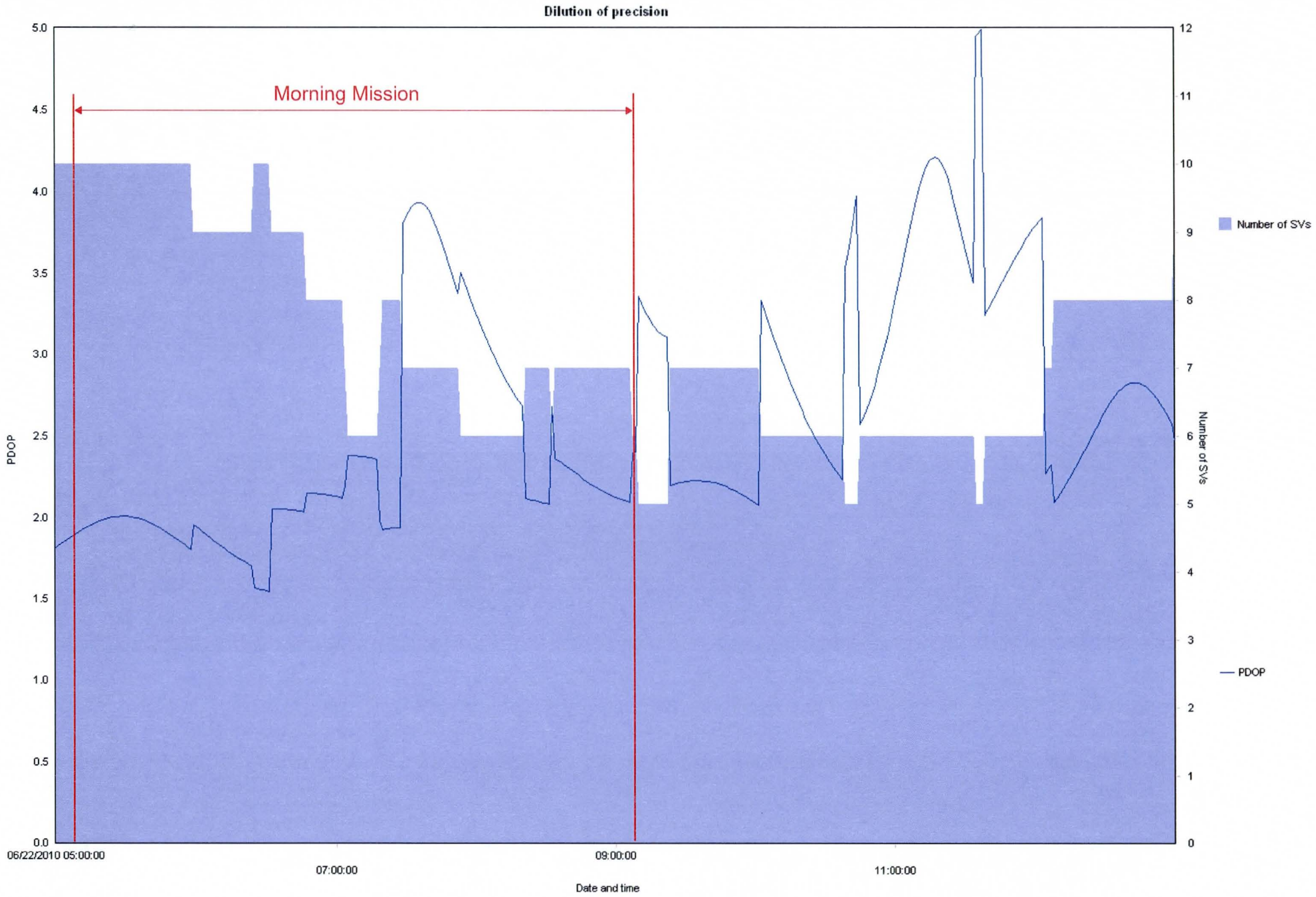


WESTLAND DR	10,572'	1.99 mi
LONE MOUNTAIN RD	10,545'	1.99 mi
DIXILETA DR	10,530'	1.99 mi
DYNAMITE BLVD	28,123'	5.33 mi
JOMAX RD	22,012'	4.16 mi
HAPPY VALLEY RD	32,800'	6.21 mi
PINNACLE PEAK RD	18,825'	3.56 mi
THOMPSON PEAK PKWY	38,500'	7.29 mi
UNION DR	6,472'	1.26 mi
BELL RD	18,434'	3.49 mi
McDOWELL MTN RANCH RD	9,161'	1.74 mi
HAYDEN RD	29,801'	5.64 mi
PIMA RD	66,667'	12.62 mi
LEGEND TRAIL PKWY	13,950'	2.64 mi
ALMA SCHOOL RD	20,077'	3.80 mi
TOM DARLINGTON DR	5,350'	1.01 mi
STAGECOACH PASS	25,353'	4.80 mi

Total Road Miles: 69.52

PINNACLE PEAK ADMS/P
MOBILE LIDAR ROUTES
CONTRACT FCD 2010C044


Dilution of precision
PDOP
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
12
11
10
9
8
7
6
5
4
3
2
1
0
Number of SVs
06/22/2010
05:00:00
10:00:00
15:00:00
20:00:00
Date and time
Number of SVs
PDOP


Dilution of precision
Morning Mission
PDOP
Number of SVs
Date and time
06/22/2010 05:00:00
07:00:00
09:00:00
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12
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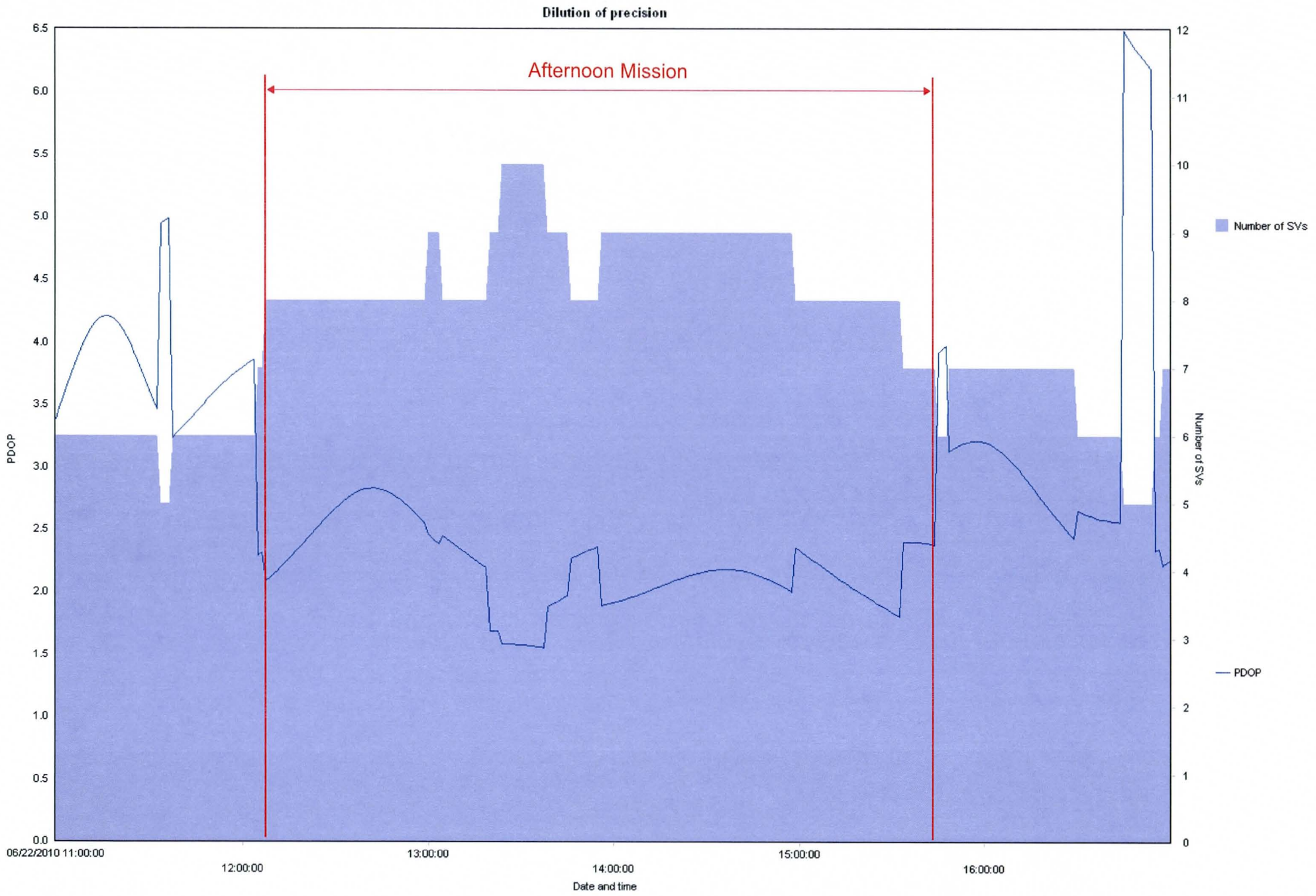
1
0
Number of SVs
PDOP


Dilution of precision
Afternoon Mission
PDOP
Number of SVs
Date and time
06/22/2010 11:00:00
12:00:00
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12
Number of SVs
PDOP

TITAN COLLECTION SCHEDULE

JULY 2010

Mission	Date	DOW	GPS DOW	Roads Collected	Additional Roads	Job
173A	6/22/2010	Tuesday	2	Cave Creek, Jomax, 52nd St, Pinnacle Vista	-	W
173B	6/22/2010	Tuesday	2	Pinnacle Peak, Deer Valley, 56th St (S), Mayo, Scottsdale	Jomax, Cave Creek	W
174A	6/23/2010	Wednesday	3	Scottsdale, Jomax, 64th St, Dynamite	Jomax, Tatum	W
174B	6/23/2010	Wednesday	3	56th St, Rancho Paloma, Lone Mtn, 40th St, Tatum, Dixileta	Jomax, Cave Creek, Dynamite	W
175B	6/24/2010	Thursday	4	Thompson Peak	-	E
175H	6/24/2010	Thursday	4	Thompson Peak, Bell, McDowell Mtn	Thompson Peak	E
176A	6/25/2010	Friday	5	Pima, Union	Hayden, Thompson Peak	E
176B	6/25/2010	Friday	5	Hayden, Pinnacle Peak, Happy Valley	Pima, Thompson Peak	E
177A	6/26/2010	Saturday	6	56th St, Dove Valley, 52nd Pl, 68th St, Ashler Hills, Tatum	Cave Creek, Jomax, Dixileta, Scottsdale	W
177B	6/26/2010	Saturday	6	Carefree, Black Mtn, Terravita, Scottsdale	Cave Creek, Jomax, Dynamite, Scottsdale, Lone Mtn	W
179A	6/28/2010	Monday	1	Stagecoach, Tom Darlington, Legend Trail, Pima, Jomax, Westland, Lone Mtn	-	E
179B	6/28/2010	Monday	1	Dixileta, Dynamite, Jomax, Alma School	Stagecoach, Pima, Legend Trail	E
180A	6/29/2010	Tuesday	2	Happy Valley, Jomax, Alma School	Pima, Thompson Peak	E
206A	7/25/2010	Sunday	7	Miller, Hayden	Thompson Peak, Pima	E

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

Mission #	T210173A	Project #	TITN-0001/CPRA-0002

Project	PINNACLE PEAK	System #	T2	Driver	KLMI	
Location	PHOENIX	Vehicle:	091 EDY	Operator	CXGE	
Mission Objective: SAN SURFACE RDS				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	N 33 43 17.83	AGL	12'	Mileage	25,370	25,421
Initial Longitude:	W 111 59 47.860	Data Drive	DEA1	Engine	0600	
Initial Height (m):	522.810	Speed	± 40 mph	System	0615	

Mission Notes:

GPS / INS Alignment		
Time: ☑GPS ☐Local	Start	End
Pre Mission Static	221167	221918
Pre Mission Figure 8	221918	222223
Survey	222223	229318
Post Mission Figure 8	229318	229564
Post Mission Static	229564	230238

230164

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17301	222223	☑Y ☐N	11	486.10	.418	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17302	222802	☑Y ☐N	12	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17303	223376	☑Y ☐N	11	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17304	224039	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17305	224655	☑Y ☐N	11	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17306	224914	☐Y ☐N	11	54.43	.511	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17307	225124	☐Y ☐N	11	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17308	225613	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17309	226288	☒Y ☐N	9	83.64	.697	☒Y ☐N	☐Y ☐N	☒Y ☐N	
17310	227115	☒Y ☐N	9	—	—	☐Y ☐N	☒Y ☐N	☒Y ☐N	~~NOTICED~~ 287668 ~~[illegible]~~
17311	227934	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17312	228029	☒Y ☐N	9	—	—	☐Y ☐N	☒Y ☐N	☐Y ☐N	
17313	228572	☒Y ☐N	9	—	—	☐Y ☐N	☒Y ☐N	☐Y ☐N	
17314	228570	☐Y ☐N	9	82.46	1.007	☒Y ☐N	☐Y ☐N	☐Y ☐N	
17315	228842	☐Y ☐N	8	—	—	☒Y ☐N	☐Y ☐N	☐Y ☐N	
17316	229086	☐Y ☐N	8	—	—	☒Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

Mission:	T210173A	Project #	LPRA0000-0002		
Project Name:	PINNACLE PEAK ADMP	**Date:**	6/22/10	**Julian:**	173

Station ID:	1162			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455392		
Ant Make/Model	AX1202			Ant Serial #:	04480126		
Approx. Coords:	Lat:	33 43 23.687	Long:	111 59 53.315		Elev:	491.731

Description:				Sketch:
Start:	5:51	Vertical O/S:	0.8600 m	
End:	0905	ARP to L1:	0.0648 m	
HI Before:	A: 1.190 M	B: 3.91 FT		
HI After:	A: 1.190 m	B: "		
Data File:	173A			

Station ID:	1162 CHECK			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	~~AX1202~~ GX1230			Rx Serial #:	455390		
Ant Make/Model	AX1202			Ant Serial #:	04510055		
Approx. Coords:	Lat:	33 43 23.21	Long:	111 59 58.29		Elev:	491.619

Description:				Sketch:
Start:	5:47	Vertical O/S:	0.8600 m	
End:	0910	ARP to L1:	0.0648 m	
HI Before:	A: 1.152 M	B: 3.78 FT		
HI After:	A: 1.152 m	B: "		
Data File:	173B			

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: TZ10173A	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 6/22/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
CARL GERING	CXGE
KELLY MILLER	KLMI

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

Mission #	T210173B	Project #	TITN-0001 / CPRA-0002

Project	PINNACLE PEAK	System #	T2	Driver	KLMI	
Location	PHOENIX AZ	Vehicle: 091 EDY		Operator	CXGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	N 33 42 25.28	AGL	12'	Mileage	25,435	25499
Initial Longitude:	W 112 1 48.24	Data Drive	DEA1	Engine	1150	
Initial Height (m):	483.671	Speed	± 40mph	System	1155	

Mission Notes:

GPS / INS Alignment		
Time: ☒GPS ☐Local	Start	End
Pre Mission Static	241409	242166
Pre Mission Figure 8	242166	242495
Survey	242495	252500
Post Mission Figure 8	252500	252817
Post Mission Static	252817	253417

3600

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17317	242495	☒Y ☐N	8	81.12	.150	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17318	242818	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17319	243432	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17320	243682	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17321	244048	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17322	244218	☒Y ☐N	11	80.04	.386	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17323	244675	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17324	244852	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17325	244998	☒Y ☐N	11	79.45	.492	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17326	245128	☒Y ☐N	11	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17327	245632	☒Y ☐N	11	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17328	246118	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17329	246270	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17330	246403	☒Y ☐N	11	78.43	.685	☒Y ☐N	☒Y ☐N	☐Y ☐N	
17331	246461	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☐Y ☐N	
17332	246725	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17333	246882	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17334	246919	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17335	247111	☒Y ☐N	11	77.97	.781	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17336	247303	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17337	247366	☒Y ☐N	11	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17338	247641	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17339	247747	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17340	247968	☒Y ☐N	11	77.38	.899	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17341	248494	☒Y ☐N	11	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17342	249126	☒Y ☐N	10	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17343	249612	☒Y ☐N	10	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17344	250044	☒Y ☐N	10	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17345	250236	☒Y ☐N	10	75.87	1.210	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17346	250834	☒Y ☐N	10	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17347	251052	☒Y ☐N	10	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17348	251448	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17349	251683	☒Y ☐N	11	—	-	☒Y ☐N	☒Y ☐N	☒Y ☐N	
		☒Y ☐N				☒Y ☐N	☒Y ☐N	☒Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

Mission:	T210173B	Project #	TITN-0001 / CPRA-0002		
Project Name:	PINNACLE PEAK	Date:	06/22/10	Julian:	173

Station ID:	1IG2			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455392		
Ant Make/Model	AX 1202			Ant Serial #:	04480126		
Approx. Coords:	Lat:	33 43 28.701	Long:	111 59 53.315		Elev:	490.913

Description:				Sketch:
Start:	1133	Vertical O/S:	0 3600 m	
End:	1529	ARP to L1:	0 0648 m	
HI Before:	A: 1 170 m	B: 3 84 FT		
HI After:	A: 1 170 m	B: "		
Data File:	173 - C			

Station ID:	1IG2CHK			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455390		
Ant Make/Model	AX 1202			Ant Serial #:	04510055		
Approx. Coords:	Lat:	33 43 28.28	Long:	111 59 53.29		Elev:	490.799

Description:				Sketch:
Start:	1130	Vertical O/S:	0 3600 m	
End:	1531	ARP to L1:	0 0648 m	
HI Before:	A: 1 195 m	B: 3 92 FT		
HI After:	A: 1 195 m	B: "		
Data File:	173 - D			

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210173B	PROJECT#: TITN0001 / DFA 0002
PROJECT NAME: PINNACLE PEAK	DATE: 6/22/10
PROJECT MANAGER: KELLY MILLER	LOCATION:

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
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- Driver's primary responsibility is the safe operation of the vehicle
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- Operate with extra braking room for traffic
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- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
CARL GERIG	CXGE
KELLY MILLER	KLMI

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

Mission #	TZ10174A	Project #	TITN0001 / APRA0002

Project	PINNACLE PEAK	System #	T2	Driver	KLMI	
Location	PHOENIX, AZ	Vehicle:	091 EDH	Operator	OXGE	
Mission Objective:				Observer		
		Upper Camera	10mm	Observer		
		Side Camera	5mm		Start	End
Initial Latitude:	N 33 48 19.49	AGL	12'	Mileage	25,552	25,614
Initial Longitude:	W 111 59 47.81	Data Drive	DEA1	Engine	0500	
Initial Height (m):	518.998	Speed	±40 mph	System	0532	

Mission Notes:

GPS / INS Alignment		
Time: □GPS □Local	Start	End
Pre Mission Static	305060	305808
Pre Mission Figure 8	305808	306108
Survey	306108	315740
Post Mission Figure 8	315740	315961
Post Mission Static	315961	316565

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17401	306108	☑Y □N	10	73.12	.149	☑Y □N	☑Y □N	☑Y □N	
17402	306661	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17403	307291	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17404	307500	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17405	307587	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17406	307762	☑Y □N	11	71.97	.372	☑Y □N	☑Y □N	☑Y □N	
17407	307921	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17408	308554	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: TZ10174A	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 6/25/10
PROJECT MANAGER: Kelly Miller	LOCATION: PHOENIX

Local Hospital_____ **Mission Contact List**_____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☐ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gering	CXGE
Kelly M. Miller	KLMIL

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

Mission #	T210174A	Project #	TITN0001 / APRA0002

Project	PINNACLE PEAK	System #	T2	Driver	KLMI		
Location	PHOENIX, AZ	Vehicle: 091 EDH		Operator	OXGE		
Mission Objective:				Observer			
		Upper Camera	10m	Observer			
		Side Camera	5m		Start	End	
Initial Latitude:	N 33 48 19.49	AGL	12'	Mileage	25,552	25,614	
Initial Longitude:	W 111 59 47.81	Data Drive	DEA1	Engine	0500		
Initial Height (m):	518.998	Speed	± 40 mph	System	0532		

Mission Notes:

GPS / INS Alignment		
Time: □GPS □Local	Start	End
Pre Mission Static	305060	305808
Pre Mission Figure 8	305808	306108
Survey	306108	315740
Post Mission Figure 8	315740	315961
Post Mission Static	315961	316565

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17401	306108	☑Y □N	10	73.12	.149	☑Y □N	☑Y □N	☑Y □N	
17402	306661	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17403	307291	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17404	307500	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17405	307587	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17406	307762	☑Y □N	11	71.97	.372	☑Y □N	☑Y □N	☑Y □N	
17407	307921	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	
17408	308554	☑Y □N	11	—	—	☑Y □N	☑Y □N	☑Y □N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17409	309178	☒Y ☐N	12	70.96	.567	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17410	309393	☒Y ☐N	12	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17411	309387	☒Y ☐N	12	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17412	309570	☒Y ☐N	11	—	—	☒Y ☐N	☐Y ☐N	☐Y ☐N	
17413	309675	☒Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17414	310005	☒Y ☐N	11	70.40	.680	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17415	310169	☒Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☒Y ☐N	
17416	310485	☐Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17417	310491	☐Y ☐N	10	—	—	☐Y ☐N	☒Y ☐N	☒Y ☐N	
17418	310688	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17419	311251	☒Y ☐N	11	69.55	.850	☒Y ☐N	☐Y ☐N	☒Y ☐N	
17420	311637	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☐Y ☐N	
17421	312087	☐Y ☐N	9	—	—	☐Y ☐N	☒Y ☐N	☒Y ☐N	
17422	312453	☒Y ☐N	9	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17423	312863	☒Y ☐N	9	—	—	☒Y ☐N	☐Y ☐N	☒Y ☐N	
17424	313187	☒Y ☐N	9	68.34	1.116	☐Y ☐N	☒Y ☐N	☒Y ☐N	
17425	313567	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17426	314059	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17427	314417	☒Y ☐N	9	—	—	☐Y ☐N	☒Y ☐N	☒Y ☐N	
17428	314499	☐Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17429	314643	☒Y ☐N	9	67.45	1.319	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17430	314839	☐Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17431	315015	☒Y ☐N	8	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17432	315439	☒Y ☐N	8	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	TZ10174A	Project #	CFRA0002 / TITN0001		
Project Name:	PINNACLE PEAK ADMP	**Date:**	6/23/10	**Julian:**	174

Station ID:	1162			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX 1230			Rx Serial #:	455392		
Ant Make/Model	AX 1202			Ant Serial #:	04480126		
Approx. Coords:	Lat:	33 48 23.7	Long:	111 59 53.3		Elev:	490.9

Description:				Sketch:
Start:	5:20	Vertical O/S:	0.3600 m	
End:	0900	ARP to L1:	0.0648 m	
HI Before:	A: 1.119 M	B: 3.68		
HI After:	A: "	B: "		
Data File:	174-A			

Station ID:	1162 CHECK			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX 1230			Rx Serial #:	455390		
Ant Make/Model	AX 1202			Ant Serial #:	04510055		
Approx. Coords:	Lat:	33 43 23.2	Long:	111 59 53.3		Elev:	490.8

Description:				Sketch:
Start:	5:24	Vertical O/S:	0.3600 m	
End:	0901	ARP to L1:	0.0648 m	
HI Before:	A: 1.165 M	B:		
HI After:	A: "	B:		
Data File:	174-B			

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210194A	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 6/25/10
PROJECT MANAGER: Kelly Miller	LOCATION: PHOENIX

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
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- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
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- Absolutely no personnel within truck bed during operation
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- What to do in case of accident
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- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☐ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gering	CXGE
Kelly Miller	KLME

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

Mission #	T210174B	Project #	TITN0001 / CPRA0002

Project	PINNACLE PEAK	System #	T2	Driver	KLMI	
Location	PHOENIX AZ	Vehicle:	091 EAY	Operator	CXGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	N 33 48 18.93	AGL	12'	Mileage	25,636	25,696
Initial Longitude:	W 111 59 47.85	Data Drive	DEA 1	Engine	1130	
Initial Height (m):	524.589	Speed	± 40 mph	System	1157	

Mission Notes:

GPS / INS Alignment		
Time: ☒GPS ☐Local	Start	End
Pre Mission Static	328034	328772
Pre Mission Figure 8	328772	329097
Survey	329097	338827
Post Mission Figure 8	338827	339052
Post Mission Static	339052	339691

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17433	329097	☒Y ☐N	9	65.85	.152	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17434	329221	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17435	329581	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17436	329821	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17437	329995	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17438	330211	☒Y ☐N	11	65.22	.302	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17439	330520	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17440	330756	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17441	330755	☒Y ☐N	11	64.77	.403	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17442	331108	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17443	331800	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17444	331791	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17445	332289	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17446	332578	☒Y ☐N	11	63.72	.626	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17447	332873	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17448	333045	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17449	333373	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17450	333846	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17451	334363	☒Y ☐N	11	62.57	.805	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17452	334717	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17453	334831	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17454	335367	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17455	335499	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17456	335811	☒Y ☐N	10	61.68	1.064	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17457	336035	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17458	336317	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17459	336651	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17460	336765	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17461	336975	☒Y ☐N	10	61.00	1.29	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17462	337177	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17463	337461	☒Y ☐N	10	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17464	337725	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17465	338044	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17466	338136	☒Y ☐N	11	60.28	1.377	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17467	338410	☒Y ☐N	11	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

Mission:	T210174B	Project #	CPRA0002 / TITN0001		
Project Name:	PINNACLE PEAK ADMP	Date:	6/23/10	Julian:	174

Station ID:	1162			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX 1230			Rx Serial #:	455392		
Ant Make/Model	AX 1202			Ant Serial #:	04480126		
Approx. Coords:	Lat:	33 48 23.7	Long:	111 59 53.3		Elev:	490.9
Description:				Sketch:			
Start:	1139	Vertical O/S:	0.3600 m				
End:	1526	ARP to L1:	0.0648 m				
HI Before:	A: 1.118 m	B:					
HI After:	A: "	B:					
Data File:	174-C						

Station ID:	1162 CHK			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX 1230			Rx Serial #:	455390		
Ant Make/Model	AX 1202			Ant Serial #:	04510055		
Approx. Coords:	Lat:	33 43 23.2	Long:	111 59 53.3		Elev:	490.8
Description:				Sketch:			
Start:	1137	Vertical O/S:	0.3600 m				
End:	1526	ARP to L1:	0.0648 m				
HI Before:	A: 1.149 m	B:					
HI After:	A: "	B:					
Data File:	174-D						

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210 174B	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 06/25/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator [illegible] environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
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- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gerig	CXGE
Kelly Miller	KLMI

DAVID EVANS AND ASSOCIATES

DEA TITAN LOG

Mission #	T210175B	Project #	TITP-0001 / LEAP-0002

Project	PINNACLE PEAK	System #	T2	Driver	KLINE	
Location	PHOENIX AZ	Vehicle:	091 EDY	Operator	CXGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	N 32 39 28.38	AGL	12'	Mileage	25764	25802
Initial Longitude:	W 111 51 56.64	Data Drive	DEA 1	Engine	5:30	
Initial Height (m):	525.860	Speed	± 40 mph	System	6:00	

Mission Notes:

GPS / INS Alignment		
Time: ☑GPS ☐Local	Start	End
Pre Mission Static	394520 ~~395856~~	395259
Pre Mission Figure 8	395259	395458
Survey	395458	401834
Post Mission Figure 8	401834	402007
Post Mission Static	402007	402667

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17501	395506	☑Y ☐N	10	58.47	.138	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17502	395800	☑Y ☐N	11	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17503	396315	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17504	396612	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17505	396966	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17506	397501	☑Y ☐N	10	57.10	.411	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17507	397866	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17508	398034	☑Y ☐N	10	—	—	☑Y ☐N	☑Y ☐N	☑Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17509	398112	☒Y ☐N	7	56.70	.495	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17510	398174	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17511	398264	☒Y ☐N	7	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17512	398366	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17513	398414	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17514	398564	☒Y ☐N	9	56.44	.557	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17515	398644	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17516	398788	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17517	398892	☒Y ☐N	8	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17518	399056	☒Y ☐N	7	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17519	399194	☒Y ☐N	9	56.05	.649	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17520	399316	☒Y ☐N	8	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17521	399390	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17522	399644	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17523	399790	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17524	399998	☒Y ☐N	8	55.56	.762	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17525	400046	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17526	400108	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17527	400220	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17528	400266	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17529	400386	☒Y ☐N	7	55.73	.846	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17530	400422	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17531	400584	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17532	400662	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17533	400698	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17534	400740	☒Y ☐N	9	55.13	.854	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17535	400814	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17536	400904	☒Y ☐N	9	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17537	401004	☒Y ☐N	8	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17538	401092	☒Y ☐N	8	—	—	☒Y ☐N	☒Y ☐N	☒Y ☐N	
17539	401182	☒Y ☐N	8	54.87	.916	☒Y ☐N	☒Y ☐N	☒Y ☐N	
~~17540~~		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
~~17541~~		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

Mission:	T210175B	Project #	CFRA0002-TITN0001		
Project Name:	PINNACLE PEAK ADMP	**Date:**	6/24/10	**Julian:**	175

Station ID:	1HJ2	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455392
Ant Make/Model	AX1202	Ant Serial #:	04480126

Approx. Coords:	Lat:	33 40 07.60	Long:	111 51 24.36	Elev:	556.499

Description:

Sketch:

Start:	5:47	Vertical O/S:	0.3600 m
End:	9:00	ARP to L1:	0.0648 m
HI Before:	A: 1.197 m	B:	
HI After:	A: 1.197 m	B:	
Data File:	175 A		

Station ID:	1HJ2 CHECK	Base Configuration:	AX 1202 TRIPOD
Rx Make/Model	GX 1230	Rx Serial #:	455390
Ant Make/Model	AX 1202	Ant Serial #:	04510055

Approx. Coords:	Lat:	33 40 07.46	Long:	111 51 24.11	Elev:	556.965

Description:

Sketch:

Start:	5:47	Vertical O/S:	0.3600 m
End:	9:00	ARP to L1:	0.0648 m
HI Before:	A: 1.094 m	B:	
HI After:	A: 1.094 m	B:	
Data File:	175 B		

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T2 10175 B	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 6/24/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX

Local Hospital _____ **Mission Contact List** KELLY MILLER

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gering	CXGE
KELLY MILLER	KLMI

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

Mission #	T210175H	Project #	TITN 0001 DRA 0002

Project	PINNACLE PEAK	System #	T2	Driver	OXGE	
Location	PHOENIX AZ	Vehicle:	091 EDH	Operator	KLMNE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	N 33 40 1.88	AGL	12'	Mileage	25,820	25,861
Initial Longitude:	W 111 52 1.33	Data Drive	DEA 2	Engine		
Initial Height (m):	553.670	Speed	± 40mph	System		

Mission Notes:

GPS / INS Alignment		
Time: □GPS □Local	Start	End
Pre Mission Static	418520 ~~413461~~	419317
Pre Mission Figure 8	419317	419508
Survey	419508	425127
Post Mission Figure 8	425127	425285
Post Mission Static	425285	425922

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17540	419508	☒Y □N	10	52.67	.130	□Y □N	☒Y □N	☒Y □N	
17541	419660	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17542	419786	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17543	419892	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17544	419952	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17545	420054	□Y □N	10	52.51	.206	□Y □N	□Y □N	□Y □N	
17546	420126	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17547	420186	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17548	420220	□Y □N	10	52.22	.227	□Y □N	□Y □N	□Y □N	
17549	420386	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17550	420649	□Y □N	10	—	-	□Y □N	□Y □N	□Y □N	
17551	420797	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17552	421887	□Y □N	9	—	-	□Y □N	□Y □N	□Y □N	
17553	421743	□Y □N	10	51.23	.486	□Y □N	□Y □N	□Y □N	
17554	421987	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17555	422061	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17556	422265	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17557	422387	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17558	422571	□Y □N	10	50.71	.599	□Y □N	□Y □N	□Y □N	
17559	422843	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17560	423291	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17561	423663	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17562	423859	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17563	423915	□Y □N	11	49.82	.734	□Y □N	□Y □N	□Y □N	
17564	424132	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17565	424247	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17566	424381	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17567	424623	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	T210175#	Project #	TITN0001 / CPRA 0002		
Project Name:	PINNACLE PEAK	Date:	6/24/10	Julian:	175

Station ID:	1HJ2			Base Configuration:	AX1202 TRIPOD	
Rx Make/Model	GX1230			Rx Serial #:	455392	
Ant Make/Model	AX1202			Ant Serial #:	04480126	
Approx. Coords: Lat:	33 40 07.60	Long:		111 51 24.36	Elev:	556.499

Description:				Sketch:
Start:	1106	Vertical O/S:	0.3600 m	
End:	1528	ARP to L1:	0.0648 m	
HI Before:	A: 1.197 m	B:		
HI After:	A: "	B:		
Data File:	175C			

Station ID:	1HJ2CHK			Base Configuration:	AX 1202 TRIPOD	
Rx Make/Model	GX 1230			Rx Serial #:	455390	
Ant Make/Model	AX 1202			Ant Serial #:	04510055	
Approx. Coords: Lat:	33 40 07.46	Long:		111 51 24.11	Elev:	556.965

Description:				Sketch:
Start:	1106	Vertical O/S:	0.3680 m	
End:	1528	ARP to L1:	0.0648 m	
HI Before:	A: 1.044 m	B:		
HI After:	A: "	B:		
Data File:	175A			

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210175H	PROJECT#: TITN0001/CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 6/24/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe and environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

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- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gering	CXGE
Kelly Miller	KLME

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

Mission #	T210176A	Project #	TITN0001 / OPRA0002

Project	PINNACLE PEAK	System #	T2	Driver	UCSE	
Location	PHOENIX AZ	Vehicle:	091 EDY	Operator	CXGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	33 40 2.40	AGL	12'	Mileage	25928	25977
Initial Longitude:	111 52 1.86	Data Drive	DEA 2	Engine	0500	
Initial Height (m):	554.044	Speed	≈ 40mph	System	0549	

Mission Notes:

GPS / INS Alignment		
Time: ☒GPS ☐Local	Start	End
Pre Mission Static	478806	479560
Pre Mission Figure 8	479560	479740
Survey	479740	487847
Post Mission Figure 8	487847	488081
Post Mission Static	488081	488714

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
176 01	479817	☒Y ☐N	11	47.83	.140	☒Y ☐N	☒Y ☐N	☒Y ☐N	
176 02	480208	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
176 03	480420	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
176 04	480638	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
176 05	480829	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
176 06	481417	☒Y ☐N	12	46.74	.359	☒Y ☐N	☒Y ☐N	☐Y ☐N	
176 07	481602	☐Y ☐N	12	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
176 08	481756	☐Y ☐N	12	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page_____of_____
		Logging?	# Sats	CF Card					Comments
17607	481984	□Y □N	11	46.35	.457	□Y □N	□Y □N	□Y □N	
17610	482044	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17611	482209	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17612	482478	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17613	482958	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17614	483282	□Y □N	11	45.24	.589	□Y □N	□Y □N	□Y □N	
17615	483391	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17616	483955	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17617	484181	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17618	484327	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17619	484459	□Y □N	9	44.68	.776	□Y □N	□Y □N	□Y □N	
17620	484568	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17621	484625	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17622	484811	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17623	484869	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17624	484975	□Y □N	9	44.45	.846	□Y □N	□Y □N	□Y □N	
17625	485055	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17626	485109	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17627	485169	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17628	485227	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17629	485271	□Y □N	8	44.25	.886	□Y □N	□Y □N	□Y □N	
17630	485335	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17631	485381	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17632	485443	□Y □N	8	—	—	□Y □N	□Y □N	□Y □N	
17633	485485	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17634	485663	□Y □N	9	44.02	.941	□Y □N	□Y □N	□Y □N	
17635	485989	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17636	486035	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17637	486165	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17638	486285	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17639	486599	□Y □N	8	43.47	1.067	□Y □N	□Y □N	□Y □N	
17640	486785	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17641	487141	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17642	487323	□Y □N	8	—	—	□Y □N	□Y □N	□Y □N	
17643	487497	□Y □N	8	—	—	□Y □N	□Y □N	□Y □N	
17644	487533	□Y □N	8	42.97	1.197	□Y □N	□Y □N	□Y □N	
17645	487569	□Y □N	8	—	—	□Y □N	□Y □N	□Y □N	
17646	487605	□Y □N	8	—	—	□Y □N	□Y □N	□Y □N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

Mission:	T210176A	Project #	TITN0001 / CPRA0002		
Project Name:	PINNACLE PEAK	Date:	6/25/10	Julian:	176

Station ID:	1HJ2			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455392		
Ant Make/Model	AX1202			Ant Serial #:	0448 0126 ~~0451 0055~~		
Approx. Coords:	Lat:	33 40 07.60	Long:	111 51 24.36		Elev:	556.499

Description:				Sketch:
Start:	0539	Vertical O/S:	0.8600 m	
End:	0702	ARP to L1:	0.0648 m	
HI Before:	A: 1.218 m	B:		
HI After:	A: //	B:		
Data File:	176A			

Station ID:	1HJ2CHK			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455390		
Ant Make/Model	AX1202			Ant Serial #:	0451 0055 ~~0448 0126~~		
Approx. Coords:	Lat:	33 40 07.46	Long:	111 51 24.11		Elev:	556.965

Description:				Sketch:
Start:	0541	Vertical O/S:	0.8600 m	
End:	0702	ARP to L1:	0.0648 m	
HI Before:	A: 1.221 m	B:		
HI After:	A: //	B:		
Data File:	176B			

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210176A	PROJECT#: TTN0001/ CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 06/25/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX AZ

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☐ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☐ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☐ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☐ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☐ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Caring	CVGE
Jerry	JLSE

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

Mission #	T210176B	Project #	TITN0001 / CPRF 0002

Project	PINNACLE PEAK	System #	T2	Driver	ULSE	
Location	PHOENIX AZ	Vehicle: 091 EDY		Operator	CXLE	
Mission Objective:				Observer		
		Upper Camera	10 m	Observer		
		Side Camera	5 m		Start	End
Initial Latitude:	33 40 1.40	AGL	12'	Mileage	25987	
Initial Longitude:	111 52 1.40	Data Drive	DEA 2	Engine	1130	
Initial Height (m):	554.643	Speed	140 mph	System	1155	

Mission Notes:

GPS / INS Alignment		
Time: ☒GPS ☐Local	Start	End
Pre Mission Static	500714	501459
Pre Mission Figure 8	501459	501779
Survey	501779	511130
Post Mission Figure 8	511130	511288
Post Mission Static	511288	511923

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17647	501779	☐Y ☐N	9	41.76	.147	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17648	502065	☐Y ☐N	9	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17649	502547	☐Y ☐N	9	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17650	502471	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17651	502489	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17652	502868	☐Y ☐N	11	41.04	.296	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17653	508289	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17654	508742	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17655	503880	□Y □N	11	40.35	.975	□Y □N	□Y □N	□Y □N	
17656	504048	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17657	504172	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17658	504604	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17659	504886	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17660	505072	□Y □N	11	37.59	.979	□Y □N	□Y □N	□Y □N	
17661	505305	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17662	505566	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17663	505647	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17664	506152	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17665	506288	□Y □N	10	38.75	.765	□Y □N	□Y □N	□Y □N	
17666	506444	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17667	506858	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17668	507076	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17669	507396	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17670	507647	□Y □N	10	37.89	.951	□Y □N	□Y □N	□Y □N	
17671	508059	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17672	508379	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17673	508753	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17674	509131	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17675	509353	□Y □N	10	36.72	1.185	□Y □N	□Y □N	□Y □N	
17676	509491	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17677	509765	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17678	510100	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17679	510444	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	T210176B	Project #	TITN0001/CPRA0002		
Project Name:	PINNACLE PEAK	**Date:**	6/25/10	**Julian:**	176

Station ID:	1HJ2			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455992		
Ant Make/Model	AX1202			Ant Serial #:	04480126		
Approx. Coords:	Lat:	33 40 07.60	Long:	111 51 24.36		Elev:	556.499

Description:				Sketch:
Start:	1133	Vertical O/S:	0.3600 m	
End:	1519	ARP to L1:	0.0648 m	
HI Before:	A: 1.218 m	B:		
HI After:	A: //	B:		
Data File:	176C			

Station ID:	1HJ2 CHK			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455390		
Ant Make/Model	AX1202			Ant Serial #:	04510055		
Approx. Coords:	Lat:	33 40 07.46	Long:	111 51 24.11		Elev:	556.965

Description:				Sketch:
Start:	1134	Vertical O/S:	0.3600 m	
End:	1519	ARP to L1:	0.0648 m	
HI Before:	A: 1.221	B:		
HI After:	A: //	B:		
Data File:	176D			

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T2 10 M6 B	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 06/25/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX AZ

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☐ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gerig	CXGE
Scott Bott	RSBO

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

DUST
GUST GUEST

Mission #	T210177A	Project #	TITN0001 / CPRA0002

Project	PINNACLE PEAK	System #	T2	Driver	RSBO	
Location	PHOENIX	Vehicle: 091 EDY		Operator	OGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	33 43 18.85	AGL	12'	Mileage	264090	
Initial Longitude:	111 59 47.82	Data Drive	DEA 2	Engine	0500	
Initial Height (m):	523.841	Speed	± 40 mph	System	0525	

Mission Notes:

FLASH.DMP HAD TO BE DOWNLOADED FROM \\192.168.1.199\dmp
File name is SYS241_S.001

GPS / INS Alignment		
Time: ☐GPS ☐Local	Start	End
Pre Mission Static	563837	564585
Pre Mission Figure 8	564585	564840
Survey	564901	572950
Post Mission Figure 8	572950	573134
Post Mission Static	573134	573856

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17701	564901	☑Y ☐N	11	34.39	.147	☑Y ☐N	☑Y ☐N	☑Y ☐N	
17702	565219	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17703	565479	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17704	565666	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17705	565840	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17706	565959	☐Y ☐N	11	53.64	.291	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17707	566510	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17708	566698	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17709	566979	□Y □N	11	32.91	.431	□Y □N	□Y □N	□Y □N	
17710	567054	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17711	567228	□Y □N	12	—	—	□Y □N	□Y □N	□Y □N	
17712	567402	□Y □N	12	—	—	□Y □N	□Y □N	□Y □N	
17713	567477	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17714	567729	□Y □N	12	32.39	.586	□Y □N	□Y □N	□Y □N	
17715	567934	□Y □N	12	—	—	□Y □N	□Y □N	□Y □N	
17716	568068	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17717	568261	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17718	568465	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17719	568744	□Y □N	10	31.70	.673	□Y □N	□Y □N	□Y □N	
17720	569026	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17721	569236	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17722	569536	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17723	569892	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17724	570215	□Y □N	10	30.69	.874	□Y □N	□Y □N	□Y □N	
17725	570427	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17726	570750	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17727	570961	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17728	571155	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
17729	571295	□Y □N	9	30.03	1.023	□Y □N	□Y □N	□Y □N	
17730	571543	□Y □N	8	—	—	□Y □N	□Y □N	□Y □N	
17731	571985	□Y □N	9	—	—	□Y □N	□Y □N	□Y □N	
		□Y □N		—	—	□Y □N	□Y □N	□Y □N	
		□Y □N		—	—	□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	T210177A	Project #	TTN0001 / CPRA 0002		
Project Name:	PINNACLE PEAK	Date:	6/26/10	Julian:	177

Station ID:	1162		Base Configuration:	AX 1202 TRIPOD	
Rx Make/Model	GX 1230		Rx Serial #:	455392	
Ant Make/Model	AX1202		Ant Serial #:	0448 0126	
Approx. Coords: Lat:	33 43 23.70	Long:	111 59 53.31	Elev:	490.713

Description:

Sketch:

Start:	0517	Vertical O/S:	0.3600 m
End:	0840	ARP to L1:	0.0648 m
HI Before:	A: 1.151 m	B:	
HI After:	A: 11	B:	
Data File:	177A		

Station ID:	1162 CHK		Base Configuration:	AX1202 TRIPOD	
Rx Make/Model	GX 1230		Rx Serial #:	455390	
Ant Make/Model	AX1202		Ant Serial #:	04510055	
Approx. Coords: Lat:	33 43 23.23	Long:	111 59 53.29	Elev:	490.799

Description:

Sketch:

Start:	0518	Vertical O/S:	0.3600 m
End:	0840	ARP to L1:	0.0648 m
HI Before:	A: 1.256	B:	
HI After:	A: 11	B:	
Data File:	177B		

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

4/4

MISSION #: T2 10177A	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 06/26/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX AZ

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gerig	CXGE
Scott Batt	RSBO

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

Mission #	T210177B	Project #	TITN0001 / CPRA0002

Project	PINNACLE PEAK	System #	T2	Driver	RSBO	
Location	PHOENIX AZ	Vehicle:	091 EDY	Operator	CXGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	33 43 19.51	AGL	12'	Mileage	26155	26219
Initial Longitude:	111 59 47.89	Data Drive	DEA 2	Engine	1130	
Initial Height (m):	521.389	Speed	±40mph	System	1148	

Mission Notes:

GPS / INS Alignment		
Time: ☒GPS ☐Local	Start	End
Pre Mission Static	586616	587361
Pre Mission Figure 8	587361	587564
Survey	587654	596940
Post Mission Figure 8	596950	597190
Post Mission Static	597190	597831

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17732	587654	☐Y ☐N	9	28.00	.144	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17733	588140	☐Y ☐N	9	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17734	588384	☐Y ☐N	9	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17735	588778	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17736	588810	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17737	589222	☐Y ☐N	11	26.98	.358	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17738	589528	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
17739	589858	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page 2 of 4
		Logging?	# Sats	CF Card					Comments
17740	590158	□Y □N	10	26.50	.489	□Y □N	□Y □N	□Y □N	
17741	590645	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17742	590854	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17743	591531	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17744	591790	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17745	592212	□Y □N	11	24.85	.767	□Y □N	□Y □N	□Y □N	
17746	592468	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17747	592764	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17748	593061	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17749	593328	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17750	593540	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17751	593880	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17752	594058	□Y □N	9	23.58	1.021	□Y □N	□Y □N	□Y □N	
17753	594326	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17754	594610	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17755	594948	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17756	595312	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
17757	595844	□Y □N	10	22.43	1.260	□Y □N	□Y □N	□Y □N	
17758	596180	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17759	596473	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
17760	"	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
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		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	T2101778	Project #	TITN0001 / LPRA 0002		
Project Name:	PINNACLE PEAK	Date:	06/26/10	Julian:	177

Station ID:	1IG2	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455392
Ant Make/Model	AX1202	Ant Serial #:	0448 0126

Approx. Coords:	Lat:	33 43 25.76	Long:	111 59 33.31	Elev:	490.913

Description:

Sketch:

Start:	1135	Vertical O/S:	0.8600 m
End:	1508	ARP to L1:	0.0648 m
HI Before:	A: 1.151 m	B:	
HI After:	A: "	B:	
Data File:	177C		

Station ID:	1IG2CHK	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455390
Ant Make/Model	AX1202	Ant Serial #:	0451 0255

Approx. Coords:	Lat:	33 43 23.23	Long:	111 59 53.29	Elev:	490.799

Description:

Sketch:

Start:	1135	Vertical O/S:	0.8600 m
End:	1509	ARP to L1:	0.0648 m
HI Before:	A: 1.256 m	B:	
HI After:	A: "	B:	
Data File:	177D		

Base_Log_DEA_v1.1

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210177B	PROJECT#: TITN0001 / CPRA0002
PROJECT NAME: PINNACLE PEAK	DATE: 06/26/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX AZ

Local Hospital _____ **Mission Contact List** _____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

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- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gering	CKGE
Scott Bott	RSBO

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

6/28/10 MON

Mission #	T210179A	Project #	CPRA0002

Project	PINNACLE PEAK ADMP	System #	T2	Driver	CXGE	
Location	NORTH PHX	Vehicle:		Operator	KLMI	
Mission Objective:		091 EDY		Observer		
		Upper Camera	10M	Observer		
		Side Camera	5 M		Start	End
Initial Latitude:	33 48 49.62	AGL	12'	Mileage	26297	26252
Initial Longitude:	111 53 15.52	Data Drive	DEA 2	Engine	5:30	
Initial Height (m):	793.91	Speed	40	System	5:55	

Mission Notes:

GPS / INS Alignment		
Time: □GPS □Local	Start	End
Pre Mission Static	133445	134184
Pre Mission Figure 8	134214	134412
Survey	134419	142586
Post Mission Figure 8	142624	142833
Post Mission Static	142851	143451

143451

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17901 ~~17902~~	134419	☒Y □N	11	20.56	136	☒Y □N	☒Y □N	☒Y □N	PIMA
17902	135240	☒Y □N	12	19.98	219	☒Y □N	☒Y □N	☒Y □N	" "
17903	135414	☒Y □N	12			☒Y □N	☒Y □N	☒Y □N	PIMA + JONAX
17904	135856	□Y □N	11			☒Y □N	☒Y □N	☒Y □N	JONAX ~~[illegible]~~
17905	136047	□Y □N	10	19.41	359	☒Y □N	☒Y □N	☒Y □N	PIMA
17906	136741	□Y □N	11	18.92	453	☒Y □N	☒Y □N	☒Y □N	STAGECOACH
17907	137115	□Y □N	11	18.63	505	☒Y □N	☒Y □N	☒Y □N	" "
17908	137816	□Y □N	10	18.14	600	☒Y □N	☒Y □N	☒Y □N	TOM DARLINGTON

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page_____of_____
		Logging?	# Sats	CF Card					Comments
17909	135222	☒Y ☐N	9	17.91	656	☒Y ☐N	☒Y ☐N	☒Y ☐N	TOM DARLINGTON
17910	138460	☒Y ☐N	9	17.78	688	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17911	138636	☒Y ☐N	9	17.68	711	☒Y ☐N	☒Y ☐N	☒Y ☐N	STEVE LOACH
17912	139030	☒Y ☐N	9	17.42	767	☒Y ☐N	☒Y ☐N	☒Y ☐N	LEGEND TRAIL WESTLAND
17913	139720	☒Y ☐N	9	16.99	860	☒Y ☐N	☒Y ☐N	☒Y ☐N	WESTLAND
17914	139961	☒Y ☐N	9	16.83	893	☒Y ☐N	☒Y ☐N	☒Y ☐N	WESTLAND
17915	140237	☒Y ☐N	9	16.69	930	☒Y ☐N	☒Y ☐N	☒Y ☐N	WESTLAND + LEGEND TRAIL
17916	140931	☒Y ☐N	8	16.27	1027	☒Y ☐N	☒Y ☐N	☒Y ☐N	LEGEND TRAIL
17917	141337	☒Y ☐N	8	16.04	1082	☒Y ☐N	☒Y ☐N	☒Y ☐N	PIMA + LONE MTN
17918	141843	☒Y ☐N	9	15.74	1152	☒Y ☐N	☒Y ☐N	☒Y ☐N	LONE MTN
17919	142083	☒Y ☐N	9	15.58	1185	☒Y ☐N	☒Y ☐N	☒Y ☐N	PIMA + LEGEND
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	T210179A	Project #	TITN0001 / OPRA0002		
Project Name:	PINNACLE PEAK	Date:	6/28/10	Julian:	179

Station ID:	1KI3			Base Configuration:	AX1202 TRIPOD		
Rx Make/Model	GX1230			Rx Serial #:	455392		
Ant Make/Model	AX 1202			Ant Serial #:	0448 0126		
Approx. Coords:	Lat:		Long:			Elev:	
Description:				Sketch:			
Start:	0544	Vertical O/S:	3600 m				
End:	0858	ARP to L1:	0.018 m				
HI Before:	A: 1.000 m	B:					
HI After:	A: "	B:					
Data File:	179A						

Station ID:	1KI3CHK			Base Configuration:	AX1202		
Rx Make/Model	GX1230			Rx Serial #:	455390		
Ant Make/Model	AX 1202			Ant Serial #:	0451 0055		
Approx. Coords:	Lat:		Long:			Elev:	
Description:				Sketch:			
Start:	0543	Vertical O/S:	3600 m				
End:	0858	ARP to L1:	0.018 m				
HI Before:	A: 1.165	B:					
HI After:	A: "	B:					
Data File:							

Base_Log_DEA_v1.1

DAVID EVANS AND ASSOCIATES INC.

DEA TITAN LOG

6/28/10 MGH

Mission #	T2101798	Project #	CPRA0002

Project	PINNACLE PEAK ADMP	System #	T2	Driver	CXGE	
Location	NORTH PHX	Vehicle: 091 EDY		Operator	KLMI	
Mission Objective:				Observer		
		Upper Camera	10M	Observer		
		Side Camera	5M		Start	End
Initial Latitude:	33 48 49.97	AGL	12'	Mileage	26402	26452
Initial Longitude:	111 52 23.36	Data Drive	DEA2	Engine		
Initial Height (m):	813.35	Speed	40	System		

Mission Notes:
POST MISSION HAD DIFFERT STATIC/FIGURE 8 LOCATION.
~ 33 48 23.15
111 52 20.30

GPS / INS Alignment		
Time: ☐GPS ☐Local	Start	End
Pre Mission Static	145682	155451
Pre Mission Figure 8	155451	155638
Survey	155638	162351
Post Mission Figure 8	162459 ~~163351~~	162651
Post Mission Static	162651	163251

163251

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
17920	155638	☒Y ☐N	9	14.24	136	☒Y ☐N	☒Y ☐N	☒Y ☐N	PIMA
17921	156060	☒Y ☐N	11	13.94	193	☒Y ☐N	☒Y ☐N	☒Y ☐N	DIXILETA
17922	156333	☒Y ☐N	11	13.78	230	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17923	156619	☒Y ☐N	11	13.55	269	☒Y ☐N	☒Y ☐N	☒Y ☐N	PIMA
17924	156727	☒Y ☐N	11	13.48	283	☒Y ☐N	☒Y ☐N	☒Y ☐N	DYNAMITE
17925	156985	☒Y ☐N	11	13.29	319	☒Y ☐N	☒Y ☐N	☒Y ☐N	" " + PIMA
17926	157422	☐Y ☐N	11	12.99	379	☒Y ☐N	☒Y ☐N	☒Y ☐N	JOMAX
17927	157680	☐Y ☐N	11	12.80	413	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page_____of_____
		Logging?	# Sats	CF Card					Comments
17928	158005	☒Y ☐N	11	12.57	458	☒Y ☐N	☒Y ☐N	☒Y ☐N	PINA + DYNAMITE
17929	158488	☒Y ☐N	11	12.24	525	☒Y ☐N	☒Y ☐N	☒Y ☐N	ALMA SCHOOL
17930	158677	☒Y ☐N	11	12.11	562	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17931	159052	☒Y ☐N	11	11.84	602	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17932	159469	☒Y ☐N	11	11.58	650	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17933	159772	☒Y ☐N	11	11.32	700	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17934	159951	☒Y ☐N	11	11.19	726	☒Y ☐N	☒Y ☐N	☒Y ☐N	DYNAMITE
17935	160177	☒Y ☐N	11	11.06	756	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17936	160484	☒Y ☐N	11	10.70	825	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17937	161145	☒Y ☐N	10	10.37	888	☒Y ☐N	☒Y ☐N	☒Y ☐N	" "
17938	161677	☒Y ☐N	10	10.01	961	☒Y ☐N	☒Y ☐N	☒Y ☐N	PINA - SOMEBODY
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
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		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
		☐Y ☐N				☐Y ☐N	☐Y ☐N	☐Y ☐N	
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DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC

Mission:	T210179B	Project #	TITN0001 / CPRA0007		
Project Name:	PINNACLE PEAK	Date:	6/28/10	Julian:	179

Station ID:	1KES	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455392
Ant Make/Model	AX1202	Ant Serial #:	04480126
Approx. Coords: Lat:		Long:	Elev:

Description:			Sketch:
Start:	1136	Vertical O/S:	3600 m
End:		ARP to L1:	0648 m
HI Before:	A: 999	B:	
HI After:	A:	B:	
Data File:	179C		

Station ID:	1KESCHK	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455390
Ant Make/Model	AX1202	Ant Serial #:	04510055
Approx. Coords: Lat:		Long:	Elev:

Description:			Sketch:
Start:	1136	Vertical O/S:	
End:		ARP to L1:	
HI Before:	A: 165	B:	
HI After:	A:	B:	
Data File:	179D		

Base_Log_DEA_v1.1

6/29/10 TUES

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

Mission #	T210180A	Project #	TITN0001 / CPRA0002

Project	PINNACLE PEAK	System #	T2	Driver	RSBO	
Location	PHOENIX AZ	Vehicle: 091 EDY		Operator	CXGE	
Mission Objective:				Observer		
		Upper Camera	10m	Observer		
		Side Camera	5m		Start	End
Initial Latitude:	33 40 2.03	AGL	12'	Mileage	26517	26565
Initial Longitude:	111 51 0.92	Data Drive	DEA2	Engine	1130	
Initial Height (m):	551.412	Speed	±40 mph	System	1151	

Mission Notes:

GPS / INS Alignment		
Time: ☑GPS ☐Local	Start	End
Pre Mission Static	241521	242257
Pre Mission Figure 8	242257	243325
Survey	243325	249694
Post Mission Figure 8	249694	249880
Post Mission Static	249880	250549

6
250480

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
18001	243325	☑Y ☐N	11	7.91	.247	☑Y ☐N	☑Y ☐N	☑Y ☐N	
18002	243898	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
18003	244150	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
18004	244275	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
18005	244495	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
18006	244726	☐Y ☐N	11	7.00	.487	☐Y ☐N	☐Y ☐N	☐Y ☐N	
18007	245001	☐Y ☐N	10	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	
18008	245218	☐Y ☐N	11	—	—	☐Y ☐N	☐Y ☐N	☐Y ☐N	

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Page_____of_____
		Logging?	# Sats	CF Card					Comments
18009	245347	□Y □N	11	6.68	.522	□Y □N	□Y □N	□Y □N	
18010	245707	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
18011	246193	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
18012	246307	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
18013	246355	□Y □N	11	—	—	□Y □N	□Y □N	□Y □N	
18014	246841	□Y □N	11	5.65	.726	□Y □N	□Y □N	□Y □N	
18015	247110	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
18016	247597	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
18017	248095	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
18018	248540	□Y □N	10	—	—	□Y □N	□Y □N	□Y □N	
18019	248996	□Y □N	10	4.41	1.016	□Y □N	□Y □N	□Y □N	
		□Y □N				□Y □N	□Y □N	□Y □N	
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		□Y □N				□Y □N	□Y □N	□Y □N	

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

Mission:	T210180A	Project #	TITN0001 / CPRA0002		
Project Name:	PINNACLE PEAK	Date:	6/29/10	Julian:	180

Station ID:	1HJ2	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455392
Ant Make/Model	AX1202	Ant Serial #:	0448 0126
Approx. Coords: Lat:		Long:	Elev:

Description:

Sketch:

Start:	1115	Vertical O/S:	3600 m
End:	1448	ARP to L1:	0648 m
HI Before:	A: 2.262 m	B:	
HI After:	A: //	B:	
Data File:	180A		

Station ID:	1HJ2C4K	Base Configuration:	AX1202 TRIPOD
Rx Make/Model	GX1230	Rx Serial #:	455390
Ant Make/Model	AX1202	Ant Serial #:	04510055
Approx. Coords: Lat:		Long:	Elev:

Description:

Sketch:

Start:	1117	Vertical O/S:	3600 m
End:	1448	ARP to L1:	0648 m
HI Before:	A: 3.666	B:	
HI After:	A: //	B:	
Data File:	180B		

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4/4

DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210180A	PROJECT#: T210180A
PROJECT NAME: PINNACLE PEAK	DATE: 6/29/10
PROJECT MANAGER: KELLY MILLER	LOCATION: PHOENIX AZ

Local Hospital_____ **Mission Contact List**_____

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
- With elevator in 'down' position check that all hitch pins have lynch pins
- Check that the four threaded 'top links' are tight
- Check hydraulic oil level
- Check hydraulic lines for leaks
- Ensure that interior equipment is secure with straps where necessary
- Perform standard vehicle checks (fluids, tires, etc.)

☑ **Elevator Operation**
- Check first for any possible obstructions before engaging hydraulics
- Absolutely no personnel within truck bed during operation
- Operate from a safe area that provides a good view of elevator
- No personnel within truck bed when elevator is in 'up' position

☑ **Vehicle Operation**
- Driver's primary responsibility is the safe operation of the vehicle
- Scout mission route prior to data collection to determine maximum safe elevator height
- Note any obstructions or safety hazards
- Operator should assist driver by helping to identify hazards during data collection.
- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other: _____

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Carl Gerig	CXGE
Scott Batt	ZSDO

DAVID EVANS AND ASSOCIATES INC

DEA TITAN LOG

Mission #	T210206A	Project #	CPRA-0000-0002

Project	PINNACLE PEAK	System #	T2	Driver	KLMI	
Location	PHOENIX AZ (NE)	Vehicle: 2009 CHEVY SILVERADO		Operator	KRA	
Mission Objective:	ROAD DTM			Observer	—	
		Upper Camera	10 m	Observer	—	
		Side Camera	5 m		Start	End
Initial Latitude:	N 33-40-01.70	AGL	12 FT	Mileage	26660	26677
Initial Longitude:	W 111-52-00.90	Data Drive	DEA 02	Engine	11:30	14:00
Initial Height (m):	(ORTHO) 555.102 m	Speed	40 MPH	System	11:40	13:55

Mission Notes:

CLEAN MISSION!

GPS / INS Alignment		
Time: ☑GPS ☐Local	Start	End
Pre Mission Static	68220?	69040
Pre Mission Figure 8	69048	69250
Survey 12:12 / 12:53	69280	71794
Post Mission Figure 8	71800	71990
Post Mission Static	72000	72678

Line #	GPS TIME (e.g.) 599446	GPS Status			PC1 IMU (GB)	4 Green Lights	Log/IMU Status Acceptable?	Video Recording?	Comments
		Logging?	# Sats	CF Card					
20601	69290	☑Y ☐N	10	1902.83	135	☑Y ☐N	☑Y ☐N	☑Y ☐N	To Site
02	70120	☑Y ☐N	10	.28	257	☑Y ☐N	☑Y ☐N	☑Y ☐N	Miller
03	70270	☑Y ☐N	10	.18	278	☑Y ☐N	☑Y ☐N	☑Y ☐N	"
04	70446	☑Y ☐N	10	.08	301	☑Y ☐N	☑Y ☐N	☑Y ☐N	"
05	70516	☑Y ☐N	10	.01	310	☑Y ☐N	☑Y ☐N	☑Y ☐N	"
06	70642	☑Y ☐N	10	1901.92	330	☑Y ☐N	☑Y ☐N	☑Y ☐N	Hamden
07	70900	☑Y ☐N	11	.75	363	☑Y ☐N	☑Y ☐N	☑Y ☐N	"
08	71040	☑Y ☐N	11	.66	385	☑Y ☐N	☑Y ☐N	☑Y ☐N	To Base

END

DEA TITAN - GPS Base Log

DAVID EVANS AND ASSOCIATES INC.

07/25/10

Mission:	T210206A	Project #	CPRA0000-0002		
Project Name:	PINNACLE PEAK ADLIP	**Date:**	7/25/10	**Julian:**	206

Station ID:	1HJ2			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX 1230			Rx Serial #:	455392		
Ant Make/Model	AX 1202			Ant Serial #:	04480126		
Approx. Coords:	Lat:	33 40 07.60	Long:	111 51 24.36		Elev:	556.499

Description: STEEL ROD IN MON BOX

Sketch: SEE PREVIOUS

Start:	11:36	Vertical O/S:	0.3600
End:	13:19	ARP to L1:	0.0648
HI Before:	A: 1.265	B: (PHOTO TAKEN)	
HI After:	A: 1.265	B: —	
Data File:	CPRA0002 0725 (DBX)		

Station ID:	1HJ2			Base Configuration:	AX 1202 TRIPOD		
Rx Make/Model	GX 1230			Rx Serial #:	455390		
Ant Make/Model	AX 1202			Ant Serial #:	04510055		
Approx. Coords:	Lat:	33 40 07.46	Long:	111 51 24.11		Elev:	556.965

Description: 2" ALU CAP ON 5/8" IR

Sketch: SEE PREVIOUS

Start:	11:36	Vertical O/S:	0.3600
End:	13:19	ARP to L1:	0.0648
HI Before:	A: 1.228	B: (PHOTO TAKEN)	
HI After:	A: 1.228	B: —	
Data File:	CPRA0002 0725 (DBX)		

Page 1 of 1

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DEA SAFETY BRIEFING

DAVID EVANS AND ASSOCIATES INC.

MISSION #: T210 206A	PROJECT#: CPRA-0000-0007
PROJECT NAME: Pinnacle Peak	DATE: 07-25-10
PROJECT MANAGER: Kelly Miller	LOCATION: Phoenix, AZ (NE)

Local Hospital Mayo Clinic **Mission Contact List** D. Lute

The following people have been briefed on this date by the project manager on the proper safety procedures while working under or around the TITAN vehicle, operating the hydraulic elevator and with any additional information that the project manager may deem necessary for a safe work environment.

TOPICS DISCUSSED

☑ **Pre Mission Safety Procedures**
- Remove any cargo or equipment that is not part of TITAN system from truck bed
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- Maintain safe vertical distance between sensor unit and any obstructions
- Use extra caution over rough terrain
- Operate with extra braking room for traffic
- Vehicle has high centre of gravity with elevator extended – maintain low cornering speeds
- Use seat belts
- No smoking inside and around vehicle

☑ **Emergency procedures**
- What to do in case of accident
- Emergency safety kit
- Location and use of extinguisher
- Location of first aid kit
- Location and use of survival kit (*if applicable*)

☑ **Other briefing (if necessary)**
- Winter hazards
- Personal security briefing
- Clothing
- Other:
  - Hydrate - Shade
  - Hydraulic Pinch Point

PRINT NAMES OF THOSE IN ATTENDANCE AND HAVE THEM INITIAL

NAME	INIT.
Kelly Miller	KM
Kurt R Anderson	KRA

PROJECT METADATA
PINNACLE PEAK ADMP MAPPING
UNITS: INTERNATIONAL FEET
HORIZONTAL DATUM: NAD83 (2007)
VERTICAL DATUM: NAVD88 (GEOID 09)
COORDINATE SYSTEM: SPCS 0202

Point No.	Easting	Northing	Known Z	Laser Z	Dz
5179	681231.864	1018319.919	1950.134	1950.270	0.136
5131	697420.358	962734.597	1548.286	1548.420	0.134
6055	718228.045	984854.332	2309.015	2309.140	0.125
5197	695169.696	991924.942	1992.830	1992.950	0.120
5158	686883.991	969004.108	1578.983	1579.090	0.107
5165	682714.949	977774.699	1645.814	1645.920	0.106
5187	697159.004	1015763.641	2271.548	2271.650	0.102
6088	715353.750	1023682.835	2716.143	2716.240	0.097
5137	697354.329	979060.657	1790.204	1790.300	0.096
6089	713000.860	1023684.878	2673.614	2673.710	0.096
6000	714373.207	955001.369	1534.539	1534.630	0.091
5139	697404.013	983792.188	1878.359	1878.450	0.091
5194	697138.728	997257.412	2102.290	2102.380	0.090
6036	704853.123	961946.665	1564.783	1564.870	0.087
6091	707768.330	1023669.395	2562.545	2562.630	0.085
5174	681601.693	1010352.952	1950.108	1950.190	0.082
5138	697408.495	981658.938	1838.812	1838.890	0.078
6086	720795.375	1023695.330	2803.186	2803.260	0.074
5220	690557.736	1013064.540	2119.809	2119.880	0.071
5173	680242.127	1007697.561	1910.209	1910.280	0.071
5157	694583.034	965974.715	1576.953	1577.020	0.067
5233	676030.898	1007665.255	1843.864	1843.930	0.066
5235	676046.104	1003946.180	1825.286	1825.350	0.065
5250	691852.308	997168.085	2018.336	2018.400	0.064
6099	699373.637	1015697.437	2315.886	2315.950	0.064
5140	697396.929	987041.676	1932.267	1932.330	0.063
5146	665255.648	979261.079	1553.178	1553.240	0.062
5222	694547.841	1010548.566	2179.259	2179.320	0.061
5216	686627.495	1014360.613	2056.260	2056.320	0.060
5134	697397.299	971049.790	1661.792	1661.850	0.059
6069	713994.031	997710.987	2449.307	2449.360	0.053
5193	697153.266	999924.527	2134.859	2134.910	0.051
5190	697158.503	1007820.240	2219.939	2219.990	0.051
5258	685394.335	1002514.313	1958.219	1958.270	0.051
6024	702784.035	961433.163	1550.040	1550.090	0.050
5191	697239.929	1005419.133	2202.390	2202.440	0.050
5135	697376.916	973702.631	1702.611	1702.660	0.049
5196	697207.197	991983.227	2018.332	2018.380	0.048

Point No.	Easting	Northing	Known Z	Laser Z	Dz
5210	686383.397	1011131.413	2034.255	2034.300	0.045
5177	673462.022	1018317.024	1879.746	1879.790	0.044
5136	697381.750	976422.232	1746.057	1746.100	0.043
5132	697225.947	965914.642	1588.009	1588.050	0.041
6026	703162.429	968344.645	1653.400	1653.440	0.040
5195	697199.110	995946.794	2083.101	2083.140	0.039
5254	694559.650	1002482.407	2123.703	2123.740	0.037
5176	683986.722	1014987.970	2003.803	2003.840	0.037
6007	716290.697	970395.591	1846.623	1846.660	0.037
5247	683824.034	997207.626	1885.024	1885.060	0.036
6087	717897.935	1023688.097	2766.884	2766.920	0.036
5205	672010.585	991843.082	1684.895	1684.930	0.035
5229	689375.518	1007801.250	2068.486	2068.520	0.034
5145	666785.973	982080.131	1574.486	1574.520	0.034
5221	694535.176	1013049.509	2200.197	2200.230	0.033
5218	686589.639	1013016.353	2051.858	2051.890	0.032
6028	700044.723	976495.251	1778.178	1778.210	0.032
6054	714979.522	986847.018	2294.919	2294.950	0.031
5171	677517.649	1002464.448	1837.030	1837.060	0.030
5164	682053.670	976468.266	1625.960	1625.990	0.030
5161	681578.253	970737.210	1567.970	1568.000	0.030
6059	726668.161	985982.719	2610.412	2610.440	0.028
5148	669583.231	976485.544	1552.243	1552.270	0.027
6033	702642.187	984380.346	1961.164	1961.190	0.026
5199	683983.316	994523.092	1869.935	1869.960	0.025
5260	680992.356	1000464.915	1870.886	1870.910	0.024
5151	681434.975	975178.412	1612.636	1612.660	0.024
5175	682684.602	1012419.155	1972.017	1972.040	0.024
6066	722024.034	1001603.895	2705.427	2705.450	0.023
6077	707739.245	999896.395	2307.748	2307.770	0.022
5213	676057.222	1012124.518	1860.209	1860.230	0.021
5168	672026.420	991844.831	1685.230	1685.250	0.020
6095	702475.300	1023613.871	2459.311	2459.330	0.019
6104	707692.272	1021124.605	2543.271	2543.290	0.019
6041	707933.722	968471.733	1690.532	1690.550	0.018
5228	691810.299	1007791.459	2114.412	2114.430	0.018
5204	673251.291	994065.924	1716.913	1716.930	0.017
6017	720960.094	960441.997	1791.505	1791.520	0.015

Point No.	Easting	Northing	Known Z	Laser Z	Dz
6074	707915.759	991823.470	2179.005	2179.020	0.015
5248	686552.539	997158.339	1930.035	1930.050	0.015
5147	665206.664	977626.264	1539.157	1539.170	0.013
6039	711488.803	965202.143	1655.387	1655.400	0.013
6061	727415.962	991945.418	2748.907	2748.920	0.013
6105	707691.030	1018593.458	2507.547	2507.560	0.013
5201	681581.218	991908.690	1802.238	1802.250	0.012
5230	686708.205	1007782.363	2024.418	2024.430	0.012
5186	696476.343	1018306.064	2261.889	2261.900	0.011
6023	702710.367	958617.147	1521.339	1521.350	0.011
6051	705237.528	987009.690	2035.999	2036.010	0.011
6075	707919.001	989505.448	2124.480	2124.490	0.010
5189	697154.999	1010465.188	2234.271	2234.280	0.009
5234	676031.897	1006231.579	1839.701	1839.710	0.009
6064	719817.741	991857.294	2516.813	2516.820	0.007
5217	685196.153	1013047.836	2023.484	2023.490	0.006
6044	716129.673	981536.432	2185.124	2185.130	0.006
6011	704442.269	973142.432	1751.854	1751.860	0.006
5255	691878.426	1002498.054	2076.436	2076.440	0.004
5160	681519.964	968143.248	1555.796	1555.800	0.004
6025	702698.024	965535.646	1606.666	1606.670	0.004
5227	694612.960	1007788.069	2172.496	2172.500	0.004
5251	694412.650	997209.465	2060.986	2060.990	0.004
6045	713288.204	981538.487	2122.778	2122.780	0.002
5154	686790.083	973669.370	1627.168	1627.170	0.002
5214	678095.868	1014685.067	1896.908	1896.910	0.002
5178	677199.592	1018263.295	1886.519	1886.520	0.001
5142	679824.565	981755.260	1669.460	1669.460	0.000
5188	697163.461	1013124.029	2252.761	2252.760	-0.001
6106	707699.667	1015890.532	2483.141	2483.140	-0.001
5246	678699.267	997180.040	1808.362	1808.360	-0.002
5259	682930.436	1002287.337	1916.452	1916.450	-0.002
5133	697425.832	969232.646	1632.623	1632.620	-0.003
5223	695482.476	1014926.454	2234.943	2234.940	-0.003
5130	697397.647	960097.905	1518.784	1518.780	-0.004
6008	714696.541	972107.997	1862.814	1862.810	-0.004
6032	702436.507	981749.001	1904.584	1904.580	-0.004
5180	683890.186	1018321.966	2000.854	2000.850	-0.004

Point No.	Easting	Northing	Known Z	Laser Z	Dz
5245	675996.680	997152.238	1775.545	1775.540	-0.005
6063	718222.621	989641.870	2441.495	2441.490	-0.005
6102	711823.740	1016238.297	2557.735	2557.730	-0.005
6003	716932.779	960328.418	1637.356	1637.350	-0.006
5200	683973.681	992002.794	1842.446	1842.440	-0.006
6019	711799.570	960426.138	1569.837	1569.830	-0.007
5242	681213.037	997152.912	1846.628	1846.620	-0.008
5232	681274.413	1007736.479	1927.208	1927.200	-0.008
5144	668965.555	985814.592	1615.239	1615.230	-0.009
5153	687072.090	975080.331	1643.829	1643.820	-0.009
5202	679586.562	991834.125	1773.399	1773.390	-0.009
5166	683892.400	980262.332	1686.200	1686.190	-0.010
6062	724348.692	991980.013	2681.870	2681.860	-0.010
5156	687216.679	964356.213	1545.570	1545.560	-0.010
6107	707683.359	1012188.673	2438.300	2438.290	-0.010
5206	686543.380	994539.509	1909.372	1909.360	-0.012
5243	681306.316	994595.137	1827.213	1827.200	-0.013
6015	720669.985	957302.828	1676.973	1676.960	-0.013
6097	697177.067	1023557.208	2372.343	2372.330	-0.013
5198	691881.501	991895.990	1945.553	1945.540	-0.013
5149	673010.362	976481.743	1570.874	1570.860	-0.014
6035	705299.653	981744.933	1943.506	1943.490	-0.016
5155	686743.095	967559.993	1560.708	1560.690	-0.018
304	700478.848	1015689.287	2342.229	2342.210	-0.019
6056	718233.946	986790.649	2374.089	2374.070	-0.019
6065	721161.312	994762.332	2598.149	2598.130	-0.019
5203	675795.233	991916.479	1730.930	1730.910	-0.019
5238	677277.961	1002674.905	1833.560	1833.540	-0.020
6076	707751.611	997098.441	2274.540	2274.520	-0.020
6004	715688.078	964957.437	1673.783	1673.760	-0.023
5208	686616.116	1005091.261	2002.074	2002.050	-0.024
5150	677951.639	976716.403	1604.934	1604.910	-0.024
6053	712982.599	986831.989	2225.234	2225.210	-0.024
5219	687982.905	1012651.161	2068.604	2068.580	-0.024
6094	704153.525	1023606.295	2489.685	2489.660	-0.025
5256	689213.833	1002488.384	2025.706	2025.680	-0.026
5249	689334.724	997215.516	1978.647	1978.620	-0.026
6100	702332.491	1015703.831	2372.447	2372.420	-0.027
5181	685609.124	1018323.172	2038.988	2038.960	-0.028
5163	681575.797	973655.983	1595.018	1594.990	-0.028
6012	702851.578	971993.889	1712.518	1712.490	-0.028
5244	681483.416	989883.959	1783.329	1783.300	-0.029
5239	679843.221	1001267.856	1862.342	1862.310	-0.032
6058	723533.006	983887.516	2487.752	2487.720	-0.032
6067	722575.650	997773.753	2663.893	2663.860	-0.033

Point No.	Easting	Northing	Known Z	Laser Z	Dz
6096	699860.397	1023641.132	2401.293	2401.260	-0.033
6002	717241.320	958156.144	1611.495	1611.460	-0.035
6029	700005.108	979007.011	1825.875	1825.840	-0.035
6027	701181.309	974131.616	1742.845	1742.810	-0.035
5184	690292.001	1018289.124	2137.325	2137.290	-0.035
6031	700001.130	981843.892	1880.546	1880.510	-0.036
5212	680432.398	1013640.199	1934.917	1934.880	-0.037
6079	705186.392	1002548.392	2296.437	2296.400	-0.037
5172	679361.046	1005991.709	1887.998	1887.960	-0.038
5183	689201.659	1018304.072	2116.079	2116.040	-0.039
5143	670406.098	981776.671	1596.030	1595.990	-0.040
306	700478.852	1015689.303	2342.250	2342.210	-0.040
6010	708039.102	973890.056	1809.990	1809.950	-0.040
6016	721820.598	958631.622	1751.670	1751.630	-0.040
6073	705912.709	991933.311	2156.150	2156.110	-0.040
6090	710945.494	1023638.758	2631.880	2631.840	-0.040
5185	693264.365	1018320.565	2207.371	2207.330	-0.041
5224	692815.951	1016332.046	2182.651	2182.610	-0.041
5253	691908.016	999773.644	2045.051	2045.010	-0.041
5170	676202.296	999813.439	1797.561	1797.520	-0.041
6085	707687.844	1007749.117	2400.092	2400.050	-0.042
6034	699921.436	985090.018	1940.214	1940.170	-0.044
6050	702610.775	987003.814	2016.165	2016.120	-0.045
6038	708935.687	965520.913	1643.375	1643.330	-0.045
6020	708292.361	960420.722	1558.506	1558.460	-0.046
6098	696775.035	1020720.894	2309.827	2309.780	-0.047
6060	727453.681	988093.400	2668.068	2668.020	-0.048
6018	718276.480	960445.422	1689.609	1689.560	-0.049
5241	681320.086	998774.632	1860.209	1860.160	-0.049
6084	705074.185	1007771.801	2352.070	2352.020	-0.050
5252	691871.784	994785.398	1987.433	1987.380	-0.053
5209	686612.700	1009754.462	2032.433	2032.380	-0.053
5162	681577.155	972096.896	1578.704	1578.650	-0.053
6006	715765.310	968536.030	1786.024	1785.970	-0.054
5211	684562.066	1011677.006	2007.405	2007.350	-0.055
6040	708526.028	967010.256	1665.857	1665.800	-0.057
6080	702459.966	1002517.858	2254.717	2254.660	-0.057
5169	674814.556	997109.671	1758.659	1758.600	-0.059
5236	676107.998	1003237.643	1821.474	1821.410	-0.064
5167	684188.794	981691.814	1705.364	1705.300	-0.064
5215	680001.499	1016606.704	1930.814	1930.750	-0.064
6042	707987.569	970886.874	1744.375	1744.310	-0.065
6052	710270.513	986797.888	2124.066	2124.000	-0.066
6021	704396.773	960444.686	1545.400	1545.330	-0.070
5207	686616.357	999860.180	1953.862	1953.790	-0.072

Point No.	Easting	Northing	Known Z	Laser Z	Dz
5152	684007.769	974276.580	1620.342	1620.270	-0.072
6046	708072.420	981779.639	1984.563	1984.490	-0.073
6103	713841.977	1020220.855	2642.424	2642.350	-0.074
5231	684480.904	1007767.004	1980.654	1980.580	-0.074
5182	686573.406	1018315.072	2059.855	2059.780	-0.075
5226	690354.613	1017606.045	2143.077	2143.000	-0.077
6092	706215.617	1023615.171	2531.918	2531.840	-0.078
6022	702873.344	960489.942	1541.482	1541.400	-0.082
6093	705137.546	1023609.220	2508.526	2508.440	-0.086
5237	676746.282	1002922.281	1827.889	1827.800	-0.089
5159	681550.896	966383.279	1529.200	1529.110	-0.090
6078	707738.885	1002405.056	2321.453	2321.360	-0.093
5225	692892.558	1016465.849	2180.716	2180.620	-0.096
6049	699911.447	986979.940	1971.607	1971.510	-0.097
6037	707430.997	962980.879	1593.002	1592.900	-0.102
6070	702529.858	997235.036	2184.592	2184.490	-0.102
6101	705056.173	1015713.096	2435.074	2434.970	-0.104
6030	700058.446	983649.417	1916.967	1916.860	-0.107
6043	707962.560	977734.821	1900.638	1900.530	-0.108
6048	707958.044	986841.657	2074.199	2074.090	-0.109
5141	688192.559	981759.305	1743.899	1743.790	-0.109
6001	716230.061	956360.408	1552.850	1552.740	-0.110
6082	699660.639	1007755.237	2262.132	2262.020	-0.112
6068	724775.245	997312.898	2686.780	2686.660	-0.120
6057	720513.202	985572.799	2407.091	2406.970	-0.121
6081	699790.252	1002517.475	2203.121	2203.000	-0.121
6083	702257.020	1007781.666	2299.278	2299.150	-0.128
6047	707922.981	984906.623	2039.459	2039.330	-0.129
6009	711174.845	972861.395	1837.906	1837.770	-0.136
6013	700456.198	970895.742	1679.760	1679.600	-0.160
6071	699845.263	991945.875	2056.117	2055.950	-0.167

Average dz	-0.008
Minimum dz	-0.167
Maximum dz	0.136
Average magnitude	0.045
RMSEz	0.057
FVA	0.112
Standard deviation	0.057