

Results of Directional Survey

API number:	30-025-40875		
OGRID:		Operator:	COG OPERATING LLC
		Property:	AIRCOBRA 12 STATE # 1H

surface	ULSTR:	A	12	T 19S	R 34E
				330 FNL	510 FEL

BH Loc	ULSTR:	P	12	T 19S	R 34E
15130	MD	10754.8	TVD	339 FSL	620 FEL
				4941 FNL	

Top Perf/OH	ULSTR:	A	12	T 19S	R 34E
10880	MD	10675.5	TVD	696 FNL	513 FEL

Bot Perf/OH	ULSTR:	P	12	T 19S	R 34E
15030	MD	10755.8	TVD	439 FSL	619 FEL
				4841 FNL	

	MD	N/S	E/W	VD
	10848	-335.68	-1.60	10666.22
TOP PERFS/OH	10880	-366.27	-3.01	10675.49
	10880	-366.27	-3.01	10675.49
	14963	-4443.87	-108.11	10756.20
BOT PERFS/OH	15030	-4510.86	-108.89	10755.78
	15082	-4562.86	-109.50	10755.46

NEXT TO LAST	15082	-4562.86	-109.50	10755.46
LAST READING	15130	-4610.85	-109.77	10754.76
TD	15130	-4610.85	-109.77	10754.76

Surface Location	330	FN	510	FE
Projected BHL	4941	FN	620	FE
Location of				
Top Perfs/OH	696	FN	513	FE
Bottom Perfs/OH	4841	FN	619	FE

SUMMARY of Subsurface Locations

Surface Location	A-12-19S-34E	330	FN	510	FE	Vert. Depth
Top Perfs/OH	A-12-19S-34E	696	FN	513	FE	10675.49
Bottom Perfs/OH	P-12-19S-34E	4841	FN	619	FE	10755.78
Projected TD	P-12-19S-34E	4941	FN	620	FE	10754.76

JUL 25 2013



McVAY DRILLING COMPANY
P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

LOG OPERATING, LLC

RECEIVED

HOBBS OCD

MAY 23 2013

JUL 19 2013

ARTESIA WEST

Well Name and Num: Aircobra 12 State 1H
Location: Sec. 12, T19S, R34E
Operator: COG
Drilling Contractor: McVay Drilling Company

RECEIVED
30-025-40875

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

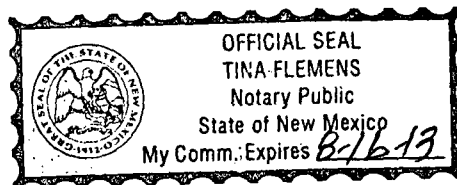
<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>	<u>Degrees @</u>	<u>Depth</u>
0.80	242	2.00	6511	87.32	12365		
1.40	744	1.00	7287	90.13	12828		
1.20	1062	0.80	7678	90.40	13201		
1.10	1504	2.00	8236	88.55	13386		
1.00	1780	1.10	8630	88.64	13941		
0.26	2080	1.10	9123	90.22	14219		
0.18	2365	1.50	9516	89.78	14583		
0.18	2650	0.88	10093	89.87	14963		
1.14	2935	13.89	10284	90.84	15087		
0.30	3220	36.58	10475				
0.60	3522	54.34	10666				
1.10	4184	59.27	10730				
2.90	4659	67.70	10784				
2.60	5038	88.70	11234				
2.70	5386	88.60	11427				
1.80	5512	90.30	11902				
1.40	5923	88.40	12087				

VENDOR #				
INVOICE #				
	CST CTR/	LS/WELL		
G/L ACCT	JIB CAT	ALL CTN	AFE	AMOUNT
APPROVAL				

By: [Signature]

Subscribed and sworn to before me this 21st day of May, 2013

Tina Flemens
Notary Public, Lea County, New Mexico





A GYRO TECHNOLOGIES INC. COMPANY

PO Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

KOBBS OCD

JUL 19 2013

RECEIVED

May 16, 2013

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: **Aircobra 12 State No. 001H**

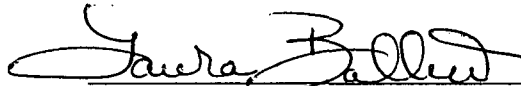
Please find enclosed a copy of the survey from 0.00' to 10015.00' ran on the above referenced well.

Sincerely,

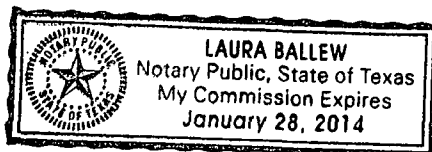

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 16th day of May, A.D., 2013, by Keith Havelka.



Laura Ballew
Notary Public, State of Texas



Company: COG Operating LLC (Concho)

Lease/Well: Aircobra 12 State / No. 001H



Rig Name: McVay #7

State/County: New Mexico/Lea

Latitude: 32.68, Longitude: -103.51

GRID North is 0.45 Degrees East of True North

VS-Azi: 0.00 Degrees



30-025-40875

RKB : 17.5 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: ...a 12 state #1h gyro survey.ut

Minimum Curvature Method

Report Date/Time: 5/16/2013 / 14:28

Vaughn Energy Services

Gardendale, Texas

432-563-5444

Survey Engineer: Dustin Wedel

Aircobra 12 State No. 001H / API 30-025-40875

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.20	50.19	100.00	0.11	0.13	0.17	50.19	0.20
200.00	0.40	100.37	200.00	0.16	0.61	0.63	75.28	0.31
300.00	0.28	88.00	300.00	0.11	1.20	1.20	84.95	0.13
400.00	0.17	75.63	400.00	0.15	1.59	1.60	84.56	0.12
500.00	0.18	59.64	500.00	0.27	1.87	1.89	81.86	0.05
600.00	0.20	47.64	599.99	0.46	2.13	2.18	77.75	0.04
700.00	0.14	55.10	699.99	0.65	2.36	2.45	74.65	0.07
800.00	0.09	75.57	799.99	0.73	2.53	2.64	73.82	0.06
900.00	0.16	105.07	899.99	0.72	2.74	2.84	75.33	0.09
1000.00	0.23	143.58	999.99	0.52	3.00	3.04	80.10	0.14
1100.00	0.24	180.95	1099.99	0.15	3.11	3.11	87.16	0.15
1200.00	0.25	218.32	1199.99	-0.23	2.97	2.98	94.39	0.16
1300.00	0.20	169.53	1299.99	-0.57	2.87	2.92	101.25	0.19
1400.00	0.14	120.75	1399.99	-0.80	3.00	3.11	104.96	0.15
1500.00	0.11	156.10	1499.99	-0.95	3.15	3.29	106.81	0.08
1600.00	0.07	191.44	1599.99	-1.10	3.17	3.36	109.08	0.06
1700.00	0.26	217.34	1699.99	-1.34	3.02	3.31	113.86	0.20
1800.00	0.44	243.25	1799.99	-1.69	2.54	3.05	123.62	0.24

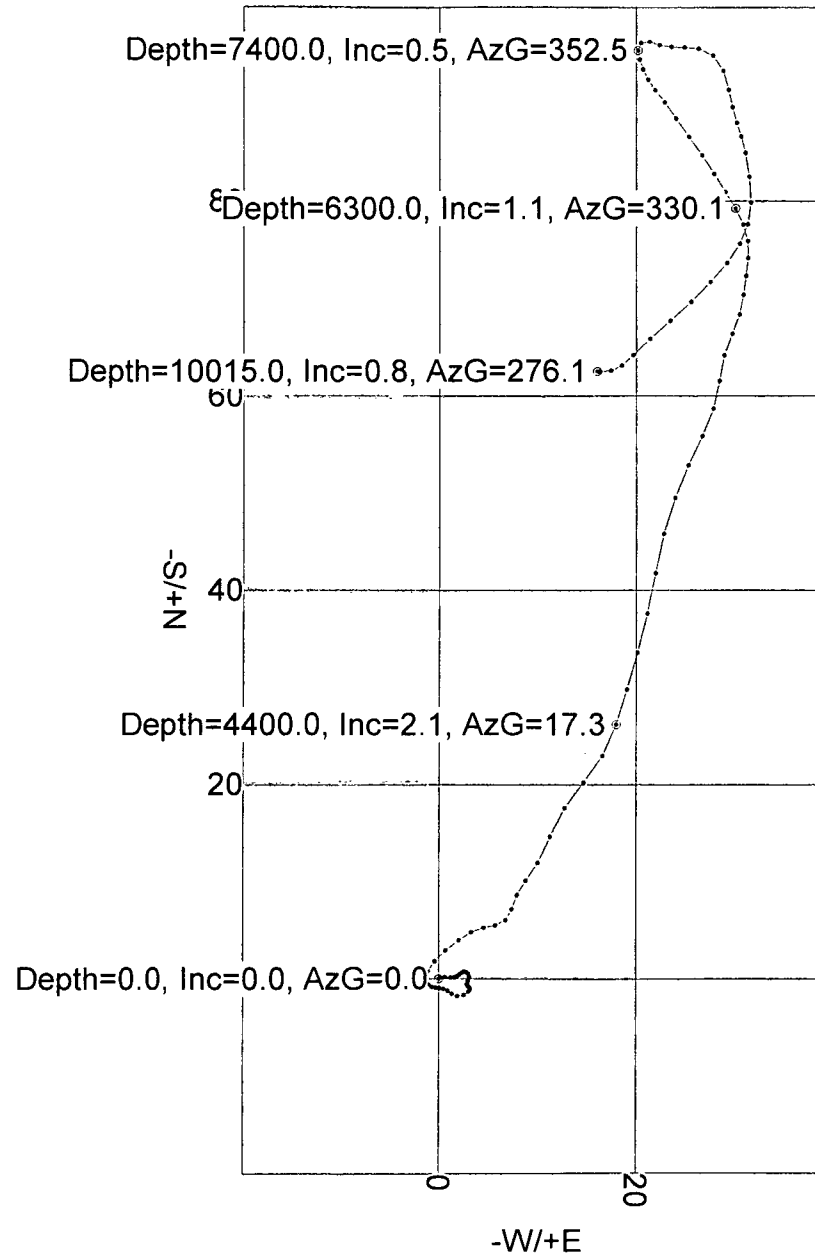
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.38	279.16	1899.99	-1.81	1.87	2.60	134.14	0.26
2000.00	0.33	313.08	1999.98	-1.56	1.33	2.05	139.67	0.21
2100.00	0.29	299.40	2099.98	-1.24	0.90	1.53	144.17	0.08
2200.00	0.25	285.72	2199.98	-1.06	0.46	1.16	156.36	0.07
2300.00	0.24	278.26	2299.98	-0.97	0.04	0.97	177.40	0.04
2400.00	0.22	270.80	2399.98	-0.94	-0.35	1.00	200.74	0.03
2500.00	0.24	294.74	2499.98	-0.85	-0.74	1.12	220.94	0.10
2600.00	0.25	312.69	2599.98	-0.61	-1.08	1.24	240.52	0.08
2700.00	0.44	350.39	2699.98	-0.09	-1.31	1.31	266.14	0.28
2800.00	0.62	28.09	2799.97	0.77	-1.12	1.35	304.47	0.38
2900.00	0.82	39.02	2899.96	1.80	-0.41	1.85	347.08	0.24
3000.00	1.01	49.95	2999.95	2.92	0.71	3.00	13.66	0.26
3100.00	0.92	52.19	3099.94	3.97	2.01	4.46	26.88	0.10
3200.00	0.82	62.43	3199.93	4.80	3.28	5.81	34.38	0.18
3300.00	0.74	77.33	3299.92	5.27	4.55	6.96	40.79	0.22
3400.00	0.65	80.23	3399.91	5.51	5.74	7.95	46.17	0.09
3500.00	0.74	46.64	3499.90	6.05	6.77	9.07	48.22	0.41
3600.00	0.82	13.05	3599.89	7.19	7.40	10.31	45.82	0.46
3700.00	0.94	25.10	3699.88	8.64	7.91	11.71	42.49	0.22
3800.00	1.06	37.15	3799.87	10.12	8.82	13.42	41.07	0.24
3900.00	1.49	29.52	3899.84	11.99	10.02	15.63	39.88	0.46
4000.00	1.91	21.89	3999.80	14.67	11.28	18.51	37.56	0.48
4100.00	1.89	31.45	4099.74	17.62	12.76	21.76	35.91	0.32
4200.00	1.86	41.02	4199.69	20.25	14.69	25.02	35.95	0.31
4300.00	1.97	29.17	4299.63	22.97	16.59	28.34	35.83	0.41
4400.00	2.08	17.32	4399.57	26.20	17.96	31.77	34.43	0.43
4500.00	2.21	16.64	4499.50	29.78	19.05	35.35	32.61	0.14
4600.00	2.35	14.95	4599.42	33.61	20.14	39.18	30.93	0.15
4700.00	2.39	12.74	4699.34	37.62	21.12	43.15	29.31	0.10
4800.00	2.44	9.53	4799.25	41.75	21.94	47.17	27.72	0.14
4900.00	2.30	14.56	4899.16	45.79	22.79	51.15	26.46	0.25
5000.00	2.16	19.60	4999.09	49.51	23.93	54.99	25.80	0.24
5100.00	1.98	23.50	5099.02	52.88	25.25	58.60	25.53	0.23
5200.00	1.81	27.40	5198.97	55.86	26.67	61.90	25.52	0.22
5300.00	1.72	16.01	5298.92	58.70	27.81	64.95	25.35	0.36
5400.00	1.63	7.62	5398.88	61.56	28.41	67.80	24.77	0.26
5500.00	1.44	14.98	5498.84	64.19	28.92	70.40	24.26	0.27
5600.00	1.25	25.34	5598.81	66.39	29.72	72.74	24.11	0.31
5700.00	1.20	15.94	5698.79	68.39	30.47	74.87	24.02	0.21

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	1.15	6.53	5798.77	70.39	30.87	76.86	23.68	0.20
5900.00	1.08	8.02	5898.75	72.32	31.12	78.73	23.28	0.07
6000.00	1.01	5.51	5998.74	74.14	31.34	80.49	22.91	0.08
6100.00	1.01	351.98	6098.72	75.89	31.30	82.09	22.41	0.24
6200.00	1.01	338.45	6198.70	77.58	30.85	83.49	21.69	0.24
6300.00	1.10	330.13	6298.69	79.23	30.05	84.74	20.77	0.18
6400.00	1.20	327.82	6398.67	80.95	29.01	85.99	19.72	0.10
6500.00	1.28	329.55	6498.64	82.79	27.89	87.37	18.62	0.09
6600.00	1.36	325.27	6598.62	84.73	26.65	88.82	17.46	0.13
6700.00	1.32	324.29	6698.59	86.64	25.31	90.26	16.28	0.04
6800.00	1.28	326.32	6798.56	88.51	24.01	91.71	15.18	0.06
6900.00	1.04	324.48	6898.54	90.18	22.87	93.03	14.23	0.25
7000.00	0.79	319.64	6998.53	91.44	21.89	94.02	13.46	0.26
7100.00	0.72	332.68	7098.52	92.52	21.15	94.91	12.88	0.19
7200.00	0.64	339.72	7198.52	93.60	20.67	95.86	12.46	0.11
7300.00	0.58	344.12	7298.51	94.61	20.34	96.78	12.13	0.07
7400.00	0.53	352.51	7398.51	95.56	20.14	97.66	11.90	0.10
7500.00	0.56	50.50	7498.50	96.33	20.46	98.48	11.99	0.53
7600.00	0.59	112.49	7598.50	96.44	21.32	98.77	12.46	0.59
7700.00	0.66	103.63	7698.49	96.11	22.35	98.67	13.09	0.12
7800.00	0.72	94.76	7798.48	95.92	23.54	98.77	13.79	0.13
7900.00	0.80	90.11	7898.48	95.87	24.87	99.04	14.54	0.10
8000.00	0.87	99.46	7998.46	95.74	26.31	99.29	15.37	0.15
8100.00	1.04	130.02	8098.45	95.03	27.75	99.00	16.28	0.53
8200.00	1.22	160.59	8198.43	93.44	28.80	97.78	17.13	0.62
8300.00	1.11	168.55	8298.41	91.49	29.35	96.08	17.79	0.19
8400.00	1.01	166.52	8398.40	89.68	29.75	94.49	18.35	0.11
8500.00	0.90	161.98	8498.38	88.07	30.20	93.11	18.93	0.13
8600.00	0.79	163.45	8598.37	86.66	30.64	91.92	19.47	0.11
8700.00	1.22	167.63	8698.35	84.96	31.06	90.46	20.08	0.43
8800.00	1.64	172.82	8798.32	82.50	31.47	88.30	20.88	0.44
8900.00	1.41	180.96	8898.29	79.85	31.63	85.89	21.61	0.31
9000.00	1.19	196.11	8998.26	77.62	31.32	83.70	21.97	0.41
9100.00	1.30	207.59	9098.24	75.62	30.51	81.54	21.97	0.27
9200.00	1.41	219.08	9198.21	73.66	29.21	79.24	21.63	0.29
9300.00	1.55	223.01	9298.18	71.72	27.51	76.82	20.99	0.17
9400.00	1.69	224.94	9398.14	69.69	25.55	74.23	20.14	0.15
9500.00	1.62	229.21	9498.10	67.73	23.44	71.67	19.09	0.14
9600.00	1.56	227.47	9598.06	65.88	21.36	69.26	17.97	0.08

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	1.14	222.81	9698.03	64.23	19.69	67.18	17.04	0.44
9800.00	0.71	234.14	9798.02	63.14	18.51	65.80	16.34	0.46
9900.00	0.70	255.10	9898.01	62.62	17.41	64.99	15.54	0.26
10000.00	0.68	276.05	9998.00	62.52	16.23	64.60	14.55	0.25
10015.00	0.76	276.08	10013.00	62.54	16.04	64.57	14.39	0.50



Vaughn Energy Services
Gardendale, Texas
432-563-5444
Survey Engineer: Dustin Wedel
Aircobra 12 State No. 001H / API 30-025-40875



VES Survey Date: 05/09/2013

30-025-40875



COG Aircobra 12 State #1H Gyro + MWD 10015ft - 15130ft Survey Geodetic Report (Non-Def Survey)

PATHFINDER
A Schlumberger Company

Report Date: May 20, 2013 - 09:12 AM
Client: COG
Field: NM Lea County (NAD 27)
Structure / Slot: COG Aircobra 12 State #1H / COG Aircobra 12 State #1H
Well: COG Aircobra 12 State #1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: COG Aircobra 12 State #1H Gyro + MWD 10015ft - 15130ft
Survey Date: May 09, 2013
Tort / AHD / DDI / ERD Ratio: 180.841 ° / 4849.060 ft / 6.040 / 0.451
Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 40' 52.00388", W 103° 30' 22.97400"
Location Grid N/E Y/X: N 612491.200 ftUS, E 754441.300 ftUS
CRS Grid Convergence Angle: 0.4465 °
Grid Scale Factor: 0.99998323

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 181.423 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3935.000 ft above
Seabed / Ground Elevation: 3918.000 ft above
Magnetic Declination: 7.462 °
Total Gravity Field Strength: 998.4756mgn (9.80665 Based)
Total Magnetic Field Strength: 48681.200 nT
Magnetic Dip Angle: 60.537 °
Declination Date: May 09, 2013
Magnetic Declination Model: BGM 2012
North Reference: Grid North
Grid Convergence Used: 0.4465 °
Total Corr Mag North->Grid North: 7.0159 °
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Tie-In	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	612491.20	754441.30	N 32 40 52.00	W 103 30 22.97
	100.00	0.20	50.19	100.00	-0.12	0.11	0.13	0.20	612491.31	754441.43	N 32 40 52.00	W 103 30 22.97
	200.00	0.40	100.37	200.00	-0.18	0.16	0.61	0.31	612491.36	754441.91	N 32 40 52.01	W 103 30 22.97
	300.00	0.28	88.00	300.00	-0.14	0.11	1.20	0.14	612491.31	754442.50	N 32 40 52.00	W 103 30 22.96
	400.00	0.17	75.63	400.00	-0.19	0.15	1.59	0.12	612491.35	754442.89	N 32 40 52.01	W 103 30 22.96
	500.00	0.18	59.64	500.00	-0.31	0.27	1.87	0.05	612491.47	754443.17	N 32 40 52.01	W 103 30 22.95
	600.00	0.20	47.64	599.99	-0.52	0.46	2.13	0.04	612491.66	754443.43	N 32 40 52.01	W 103 30 22.95
	700.00	0.14	55.10	699.99	-0.71	0.85	2.36	0.06	612491.85	754443.66	N 32 40 52.01	W 103 30 22.95
	800.00	0.09	75.57	799.99	-0.80	0.74	2.54	0.06	612491.94	754443.84	N 32 40 52.01	W 103 30 22.94
	900.00	0.16	105.07	899.99	-0.79	0.73	2.75	0.09	612491.93	754444.05	N 32 40 52.01	W 103 30 22.94
	1000.00	0.23	143.58	999.99	-0.80	0.53	3.00	0.14	612491.73	754444.30	N 32 40 52.01	W 103 30 22.94
	1100.00	0.24	180.95	1099.99	-0.23	0.16	3.12	0.15	612491.36	754444.42	N 32 40 52.01	W 103 30 22.94
	1200.00	0.25	218.32	1199.99	0.15	-0.22	2.98	0.16	612490.98	754444.28	N 32 40 52.00	W 103 30 22.94
	1300.00	0.20	169.53	1299.99	0.50	-0.57	2.87	0.19	612490.63	754444.17	N 32 40 52.00	W 103 30 22.94
	1400.00	0.14	120.75	1399.99	0.73	-0.80	3.01	0.15	612490.40	754444.31	N 32 40 52.00	W 103 30 22.94
	1500.00	0.11	156.10	1499.99	0.87	-0.95	3.16	0.08	612490.25	754444.45	N 32 40 51.99	W 103 30 22.94
	1600.00	0.07	191.44	1599.99	1.02	-1.10	3.18	0.07	612490.10	754444.48	N 32 40 51.99	W 103 30 22.94
	1700.00	0.26	217.34	1699.99	1.26	-1.34	3.03	0.20	612489.86	754444.33	N 32 40 51.99	W 103 30 22.94
	1800.00	0.44	243.25	1799.99	1.63	-1.69	2.55	0.24	612489.51	754443.85	N 32 40 51.99	W 103 30 22.94
	1900.00	0.38	279.16	1899.99	1.77	-1.81	1.88	0.26	612489.39	754443.18	N 32 40 51.99	W 103 30 22.95
	2000.00	0.33	313.08	1999.98	1.53	-1.56	1.34	0.21	612489.64	754442.64	N 32 40 51.99	W 103 30 22.96
	2100.00	0.29	299.40	2099.98	1.22	-1.24	0.91	0.08	612489.96	754442.21	N 32 40 51.99	W 103 30 22.96
	2200.00	0.25	285.72	2199.98	1.05	-1.08	0.48	0.08	612490.14	754441.78	N 32 40 51.99	W 103 30 22.97
	2300.00	0.24	278.26	2299.98	0.97	-0.97	0.07	0.03	612490.23	754441.36	N 32 40 51.99	W 103 30 22.97
	2400.00	0.22	270.80	2399.98	0.94	-0.94	-0.33	0.04	612490.26	754440.97	N 32 40 51.99	W 103 30 22.98
	2500.00	0.24	294.74	2499.98	0.86	-0.85	-0.72	0.10	612490.35	754440.58	N 32 40 52.00	W 103 30 22.98
	2600.00	0.25	312.69	2599.98	0.64	-0.61	-1.07	0.08	612490.59	754440.23	N 32 40 52.00	W 103 30 22.99
	2700.00	0.44	350.39	2699.98	0.12	-0.08	-1.29	0.29	612491.12	754440.01	N 32 40 52.00	W 103 30 22.99
	2800.00	0.62	28.09	2799.97	-0.74	0.77	-1.10	0.38	612491.97	754440.20	N 32 40 52.01	W 103 30 22.99
	2900.00	0.82	39.02	2899.96	-1.79	1.80	-0.40	0.24	612493.00	754440.90	N 32 40 52.02	W 103 30 22.98
	3000.00	1.01	49.95	2999.95	-2.95	2.93	0.73	0.26	612494.13	754442.03	N 32 40 52.03	W 103 30 22.97
	3100.00	0.92	52.19	3099.94	-4.04	3.99	2.04	0.10	612495.19	754443.34	N 32 40 52.04	W 103 30 22.95
	3200.00	0.82	62.43	3199.93	-4.89	4.81	3.31	0.18	612496.01	754444.61	N 32 40 52.05	W 103 30 22.93
	3300.00	0.74	77.33	3299.92	-5.40	5.28	4.57	0.22	612496.48	754445.87	N 32 40 52.06	W 103 30 22.92
	3400.00	0.65	80.23	3399.91	-5.66	5.52	5.76	0.10	612496.72	754447.06	N 32 40 52.06	W 103 30 22.91
	3500.00	0.74	46.64	3499.90	-6.23	6.06	8.79	0.41	612497.26	754448.09	N 32 40 52.06	W 103 30 22.89
	3600.00	0.82	13.05	3599.89	-7.38	7.20	7.42	0.46	612498.40	754448.72	N 32 40 52.07	W 103 30 22.89
	3700.00	0.94	25.10	3699.88	-8.84	8.64	7.93	0.22	612499.84	754449.23	N 32 40 52.09	W 103 30 22.88
	3800.00	1.06	37.15	3799.87	-10.34	10.12	8.84	0.24	612501.32	754450.14	N 32 40 52.10	W 103 30 22.87
	3900.00	1.49	29.52	3899.84	-12.24	11.99	10.04	0.46	612503.19	754451.34	N 32 40 52.12	W 103 30 22.86
	4000.00	1.91	21.89	3999.80	-14.84	14.67	11.30	0.48	612505.87	754452.60	N 32 40 52.15	W 103 30 22.84
	4100.00	1.89	31.45	4099.74	-17.93	17.62	12.78	0.32	612508.82	754454.08	N 32 40 52.18	W 103 30 22.82
	4200.00	1.86	41.02	4199.69	-20.81	20.25	14.70	0.31	612511.45	754456.00	N 32 40 52.20	W 103 30 22.80
	4300.00	1.97	29.17	4299.63	-23.38	22.98	16.61	0.41	612514.18	754457.91	N 32 40 52.23	W 103 30 22.78
	4400.00	2.08	17.32	4399.57	-26.65	26.21	17.99	0.43	612517.41	754459.29	N 32 40 52.26	W 103 30 22.76
	4500.00	2.21	16.64	4499.50	-30.25	29.79	19.08	0.13	612520.99	754460.38	N 32 40 52.30	W 103 30 22.75
	4600.00	2.35	14.95	4599.42	-34.11	33.62	20.16	0.16	612524.82	754461.46	N 32 40 52.33	W 103 30 22.74
	4700.00	2.39	12.74	4699.34	-38.15	37.63	21.15	0.10	612528.83	754462.45	N 32 40 52.37	W 103 30 22.72
	4800.00	2.44	9.53	4799.25	-42.30	41.77	21.96	0.14	612532.97	754463.26	N 32 40 52.42	W 103 30 22.71
	4900.00	2.30	14.56	4899.16	-46.36	45.81	22.82	0.25	612537.01	754464.12	N 32 40 52.46	W 103 30 22.70
	5000.00	2.16	19.60	4999.09	-50.10	49.52	23.95	0.24	612540.72	754465.25	N 32 40 52.49	W 103 30 22.69
	5100.00	1.98	23.50	5099.02	-53.50	52.88	25.27	0.23	612544.08	754466.57	N 32 40 52.53	W 103 30 22.67
	5200.00	1.81	27.40	5198.97	-56.52	55.87	26.69	0.21	612547.07	754467.99	N 32 40 52.55	W 103 30 22.66
	5300.00	1.72	16.01	5298.92	-59.39	58.72	27.83	0.36	612549.91	754469.13	N 32 40 52.58	W 103 30 22.64
	5400.00	1.63	7.62	5398.88	-62.25	61.57	28.43	0.26	612552.77	754469.73	N 32 40 52.61	W 103 30 22.64
	5500.00	1.44	14.98	5498.84	-64.89	64.19	28.95	0.27	612555.39	754470.25	N 32 40 52.64	W 103 30 22.63
	5600.00	1.25	25.34	5598.81	-67.11	66.39	29.74	0.31	612557.59	754471.04	N 32 40 52.66	W 103 30 22.62
	5700.00	1.20	15.94	5698.79	-69.12	68.38	30.49	0.21	612559.58	754471.79	N 32 40 52.68	W 103 30 22.61
	5800.00	1.15	6.53	5798.77	-71.13	70.39	30.89	0.20	612561.59	754472.19	N 32 40 52.70	W 103 30 22.61

Comments	MD	Incl	Azim Grid	TVD	VSEC	NS	EW	DLS	Northing	Eastng	Latitude	Longitude
	5900.00	1.08	8.02	5888.75	-73.07	72.32	31.14	0.08	612663.52	754472.44	N 32 40 52.72	W 103 30 22.60
	6000.00	1.01	5.51	5988.74	-74.88	74.13	31.36	0.08	612665.33	754472.66	N 32 40 52.73	W 103 30 22.60
	6100.00	1.01	351.98	6088.72	-76.63	75.88	31.32	0.24	612667.08	754472.62	N 32 40 52.75	W 103 30 22.60
	6200.00	1.01	338.45	6188.70	-78.31	77.57	30.87	0.24	612668.77	754472.17	N 32 40 52.77	W 103 30 22.61
	6300.00	1.10	330.13	6288.69	-79.94	79.22	30.07	0.18	612670.42	754471.37	N 32 40 52.79	W 103 30 22.61
	6400.00	1.20	327.82	6388.67	-81.64	80.94	29.03	0.11	612672.14	754470.33	N 32 40 52.80	W 103 30 22.63
	6500.00	1.26	329.55	6488.64	-83.46	82.79	28.91	0.09	612673.99	754469.27	N 32 40 52.82	W 103 30 22.64
	6600.00	1.36	325.27	6588.62	-85.36	84.73	28.67	0.13	612675.93	754468.97	N 32 40 52.84	W 103 30 22.65
	6700.00	1.32	324.29	6688.59	-87.24	86.64	28.32	0.05	612677.84	754468.62	N 32 40 52.86	W 103 30 22.67
	6800.00	1.28	326.32	6788.56	-89.07	88.50	24.03	0.06	612679.70	754468.33	N 32 40 52.88	W 103 30 22.68
	6900.00	1.04	324.48	6888.54	-90.71	90.17	22.88	0.24	612681.37	754464.18	N 32 40 52.89	W 103 30 22.70
	7000.00	0.79	319.64	6988.53	-91.95	91.44	21.91	0.26	612682.63	754463.21	N 32 40 52.91	W 103 30 22.71
	7100.00	0.72	332.68	7088.52	-93.62	92.52	21.17	0.19	612683.72	754462.47	N 32 40 52.92	W 103 30 22.72
	7200.00	0.64	339.72	7188.52	-94.09	93.60	20.69	0.12	612684.80	754461.99	N 32 40 52.93	W 103 30 22.72
	7300.00	0.58	344.12	7288.51	-95.09	94.61	20.36	0.10	612685.81	754461.66	N 32 40 52.94	W 103 30 22.73
	7400.00	0.53	352.51	7388.51	-96.03	95.56	20.16	0.10	612686.76	754461.46	N 32 40 52.95	W 103 30 22.73
	7500.00	0.56	50.50	7488.50	-96.81	96.33	20.48	0.53	612687.53	754461.78	N 32 40 52.96	W 103 30 22.73
	7600.00	0.59	112.49	7588.50	-96.94	96.44	21.33	0.59	612687.64	754462.63	N 32 40 52.98	W 103 30 22.72
	7700.00	0.66	103.63	7688.49	-96.63	96.11	22.36	0.12	612687.31	754463.66	N 32 40 52.95	W 103 30 22.70
	7800.00	0.72	94.76	7788.48	-96.48	95.92	23.55	0.12	612687.12	754464.85	N 32 40 52.95	W 103 30 22.69
	7900.00	0.80	90.11	7888.48	-96.45	95.87	24.87	0.10	612687.06	754466.17	N 32 40 52.95	W 103 30 22.67
	8000.00	0.87	99.46	7988.46	-96.36	95.74	26.32	0.15	612688.94	754467.62	N 32 40 52.95	W 103 30 22.66
	8100.00	1.04	130.02	8088.45	-95.69	95.03	27.77	0.53	612686.23	754469.06	N 32 40 52.94	W 103 30 22.64
	8200.00	1.22	160.59	8188.43	-94.13	93.44	28.81	0.62	612684.64	754470.11	N 32 40 52.93	W 103 30 22.63
	8300.00	1.11	168.55	8288.41	-92.19	91.49	29.36	0.20	612682.69	754470.66	N 32 40 52.91	W 103 30 22.62
	8400.00	1.01	166.52	8388.40	-90.40	89.68	29.76	0.11	612680.88	754471.06	N 32 40 52.89	W 103 30 22.62
	8500.00	0.90	161.98	8488.38	-88.80	88.08	30.21	0.13	612679.28	754471.51	N 32 40 52.87	W 103 30 22.61
	8600.00	0.79	163.45	8588.37	-87.41	86.67	30.65	0.11	612677.87	754471.95	N 32 40 52.86	W 103 30 22.61
	8700.00	0.76	167.63	8688.35	-85.72	84.97	31.07	0.44	612676.17	754472.37	N 32 40 52.84	W 103 30 22.60
	8800.00	1.64	172.82	8788.32	-83.27	82.51	31.46	0.44	612673.71	754472.76	N 32 40 52.82	W 103 30 22.60
	8900.00	1.41	180.96	8888.29	-80.62	79.86	31.64	0.32	612671.06	754472.93	N 32 40 52.79	W 103 30 22.60
	9000.00	1.19	196.11	8988.26	-78.39	77.64	31.33	0.41	612668.83	754472.63	N 32 40 52.77	W 103 30 22.60
	9100.00	1.30	207.59	9088.24	-76.37	75.63	30.51	0.27	612666.83	754471.81	N 32 40 52.75	W 103 30 22.61
	9200.00	1.41	218.08	9188.21	-74.37	73.67	29.21	0.29	612664.87	754470.51	N 32 40 52.73	W 103 30 22.63
	9300.00	1.55	223.01	9288.18	-72.39	71.73	27.51	0.17	612662.93	754468.81	N 32 40 52.71	W 103 30 22.65
	9400.00	1.69	224.94	9388.14	-70.31	69.69	25.55	0.15	612660.89	754466.85	N 32 40 52.69	W 103 30 22.67
	9500.00	1.62	229.21	9488.10	-68.29	67.73	23.44	0.14	612658.93	754464.74	N 32 40 52.67	W 103 30 22.69
	9600.00	1.56	227.47	9588.06	-66.39	65.88	21.36	0.08	612657.08	754462.66	N 32 40 52.65	W 103 30 22.72
	9700.00	1.14	222.81	9688.03	-64.70	64.23	19.69	0.43	612655.43	754460.99	N 32 40 52.64	W 103 30 22.74
	9800.00	0.71	234.14	9788.02	-63.58	63.14	18.51	0.47	612654.34	754458.81	N 32 40 52.63	W 103 30 22.75
	9900.00	0.70	255.10	9888.01	-63.03	62.62	17.42	0.26	612653.82	754458.71	N 32 40 52.62	W 103 30 22.76
	10000.00	0.66	276.05	9988.00	-62.91	62.53	16.23	0.25	612653.73	754457.53	N 32 40 52.62	W 103 30 22.78
	10100.00	0.76	276.08	10013.00	-62.93	62.55	16.05	0.53	612653.75	754457.35	N 32 40 52.62	W 103 30 22.78
	10200.00	0.70	275.53	10060.00	-62.97	62.61	15.05	0.13	612653.81	754456.75	N 32 40 52.62	W 103 30 22.79
	10300.00	0.88	243.96	10090.99	-62.88	62.52	14.49	0.13	612653.72	754456.35	N 32 40 52.62	W 103 30 22.79
	10400.00	2.11	217.89	10122.98	-62.29	61.95	14.47	0.30	612653.15	754455.77	N 32 40 52.62	W 103 30 22.80
	10500.00	4.31	218.27	10154.93	-60.85	60.54	13.36	0.88	612651.74	754454.66	N 32 40 52.60	W 103 30 22.81
	10600.00	6.33	224.32	10186.79	-58.65	58.33	11.36	0.54	612649.53	754452.88	N 32 40 52.58	W 103 30 22.84
	10700.00	8.44	209.81	10218.53	-55.24	55.03	8.98	0.75	612646.23	754450.28	N 32 40 52.55	W 103 30 22.86
	10800.00	13.89	201.85	10249.12	-50.66	50.51	6.83	7.02	612641.71	754448.13	N 32 40 52.50	W 103 30 22.89
	10900.00	13.29	197.90	10280.41	-44.32	44.22	4.59	11.81	612635.42	754445.89	N 32 40 52.44	W 103 30 22.92
	11000.00	18.99	185.00	10310.13	-35.55	35.80	2.14	16.66	612627.00	754443.44	N 32 40 52.36	W 103 30 22.95
	11100.00	24.71	192.45	10339.82	-24.21	24.23	18.12	18.12	612615.43	754440.65	N 32 40 52.24	W 103 30 22.98
	11200.00	27.87	186.76	10368.51	-10.22	10.31	-3.23	11.11	612601.51	754438.07	N 32 40 52.11	W 103 30 23.01
	11300.00	29.61	184.01	10398.54	5.14	-5.02	-8.98	9.98	612586.18	754436.37	N 32 40 51.95	W 103 30 23.03
	11400.00	33.06	177.42	10423.85	-21.81	-21.69	-5.09	14.77	612469.51	754436.21	N 32 40 51.79	W 103 30 23.04
	11500.00	38.34	174.25	10450.12	-39.80	-37.34	-13.74	13.74	612451.30	754437.56	N 32 40 51.61	W 103 30 23.02
	11600.00	38.34	173.55	10474.73	-58.65	-58.65	-17.42	9.75	612432.55	754439.56	N 32 40 51.42	W 103 30 23.00
	11700.00	41.75	174.34	10499.28	-79.05	-79.05	-10.42	11.06	612412.15	754441.72	N 32 40 51.22	W 103 30 22.98
	11800.00	44.75	176.10	10522.65	-100.83	-100.83	-2.23	11.06	612390.38	754443.53	N 32 40 51.01	W 103 30 22.96
	11900.00	48.45	177.77	10544.63	-123.91	-124.04	3.47	12.17	612367.16	754444.77	N 32 40 50.78	W 103 30 22.94
	12000.00	52.06	179.09	10565.09	-148.48	-148.83	4.13	11.72	612342.57	754445.43	N 32 40 50.53	W 103 30 22.94
	12100.00	56.54	180.58	10584.26	-174.09	-174.25	8.04	8.04	612316.95	754445.50	N 32 40 50.28	W 103 30 22.94
	12200.00	59.27	181.02	10602.43	-200.58	-200.58	3.83	6.69	612290.62	754446.13	N 32 40 50.02	W 103 30 22.95
	12300.00	64.19	181.72	10619.45	-227.67	-227.67	3.18	9.00	612263.53	754444.48	N 32 40 49.75	W 103 30 22.96
	12400.00	67.71	182.78	10634.50	-254.81	-254.92	1.24	15.37	612215.28	754442.54	N 32 40 49.27	W 103 30 22.98
	12500.00	68.85	182.69	10655.34	-305.62	-305.62	-0.16	3.57	612185.59	754441.12	N 32 40 48.98	W 103 30 23.00
	12600.00	71.40	182.69	10666.22	-335.88	-335.88	-1.60	7.97	612155.53	754439.70	N 32 40 48.68	W 103 30 23.02
	12700.00	74.92	182.60	10675.49	-366.23	-366.23	-3.01	11.00	612124.94	754438.29	N 32 40 48.38	W 103 30 23.04
	12800.00	78.44	182.60	10682.86	-397.37	-397.37	-4.42	11.00	612093.84	754436.88	N 32 40 48.07	W 103 30 23.06
	12900.00	80.81	183.13	10688.44	-427.82	-427.82	-5.95	7.83	612063.39	754435.36	N 32 40 47.77	W 103 30 23.08
	13000.00	81.87	182.87	10693.56	-461.44	-461.39	-7.70	3.21	612029.82	754433.60	N 32 40 47.44	W 103 30 23.11
	13100.00	83.63	181.81	10697.73	-494.17	-494.09	-9.04	6.21	611997.12	754432.26	N 32 40 47.12	W 103 30 23.12
	13200.00	85.22	180.93	10700.87	-526.05	-526.98	-8.80	12.37	611965.23	754431.50	N 32 40 46.80	W 103 30 23.14
	13300.00	86.46	180.77	10706.05	-557.97	-557.97	-10.16	8.41	611933.24	754431.12	N 32 40 46.48	W 103 30 23.14
	13400.00	87.49	180.41	10708.34	-588.82	-588.82	-4.93	0.90	611464.40	754430.37	N 32 40 42.04	W 103 30 23.12
	13500.00	88.81	178.09	10708.34	-610.87	-610.87	-7.11	0.81	611580.35	754431.19	N 32 40 42.99	W 103 30 23.14
	13600.00	88.46	178.30	10706.05	-633.93	-633.93	-9.25	0.87	611677.29</			

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	11716.00	89.60	180.49	10709.74	1199.55	-1199.80	-4.53	0.65	611291.42	754436.77	N 32 40 40.13	W 103 30 23.14
	11810.00	90.13	181.72	10709.97	1293.54	-1293.78	-6.34	1.42	611197.44	754434.96	N 32 40 39.20	W 103 30 23.17
	11902.00	90.31	181.11	10709.61	1385.54	-1385.75	-8.61	0.69	611105.47	754432.69	N 32 40 38.29	W 103 30 23.20
	11995.00	88.90	182.08	10710.25	1478.53	-1478.71	-11.20	1.84	611012.51	754430.10	N 32 40 37.37	W 103 30 23.24
	12087.00	88.46	181.55	10712.37	1570.51	-1570.64	-14.12	0.75	610920.59	754427.18	N 32 40 36.46	W 103 30 23.28
	12180.00	88.20	180.93	10715.08	1663.47	-1663.58	-16.13	0.72	610827.65	754425.17	N 32 40 35.54	W 103 30 23.31
	12272.00	88.20	180.49	10717.97	1755.41	-1755.53	-17.27	0.48	610735.71	754424.03	N 32 40 34.64	W 103 30 23.34
	12365.00	87.32	182.96	10721.61	1848.33	-1848.41	-20.06	2.62	610642.63	754421.24	N 32 40 33.72	W 103 30 23.38
	12458.00	86.88	182.08	10726.31	1941.20	-1941.20	-24.15	1.06	610550.04	754417.15	N 32 40 32.80	W 103 30 23.43
	12551.00	88.90	183.04	10729.74	2034.11	-2034.03	-28.30	2.40	610457.20	754413.00	N 32 40 31.88	W 103 30 23.49
	12642.00	90.04	183.48	10730.58	2125.06	-2124.88	-33.47	1.34	610366.36	754407.83	N 32 40 30.98	W 103 30 23.56
	12736.00	90.22	183.31	10730.37	2219.00	-2218.72	-39.04	0.26	610272.53	754402.26	N 32 40 30.05	W 103 30 23.63
	12828.00	90.13	183.48	10730.09	2310.95	-2310.55	-44.49	0.21	610180.69	754396.81	N 32 40 29.15	W 103 30 23.71
	12922.00	90.48	183.13	10729.59	2404.89	-2404.40	-49.91	0.53	610086.85	754391.39	N 32 40 28.22	W 103 30 23.78
	13015.00	90.40	182.69	10728.87	2497.86	-2497.27	-54.63	0.48	609993.97	754386.67	N 32 40 27.30	W 103 30 23.84
	13108.00	90.40	181.99	10728.22	2590.84	-2590.19	-58.43	0.75	609901.06	754382.88	N 32 40 26.38	W 103 30 23.89
	13201.00	90.40	181.64	10727.57	2683.84	-2683.14	-61.37	0.38	609808.11	754379.93	N 32 40 25.46	W 103 30 23.94
	13293.00	88.37	182.34	10728.56	2775.83	-2775.08	-64.56	2.33	609716.17	754376.74	N 32 40 24.55	W 103 30 23.98
	13386.00	88.55	181.90	10731.06	2868.78	-2867.98	-68.00	0.51	609623.27	754373.30	N 32 40 23.63	W 103 30 24.03
	13478.00	88.46	181.55	10733.46	2960.75	-2959.91	-70.77	0.39	609531.35	754370.53	N 32 40 22.72	W 103 30 24.07
	13570.00	88.29	180.76	10736.07	3052.71	-3051.85	-72.63	0.88	609439.41	754368.68	N 32 40 21.81	W 103 30 24.10
	13663.00	88.11	180.32	10738.99	3145.66	-3144.80	-73.50	0.51	609346.46	754367.80	N 32 40 20.89	W 103 30 24.12
	13756.00	86.44	178.74	10743.41	3238.49	-3237.69	-72.74	2.47	609253.58	754368.56	N 32 40 19.97	W 103 30 24.12
	13848.00	88.29	180.23	10747.64	3330.34	-3329.58	-71.92	2.58	609161.68	754369.39	N 32 40 19.07	W 103 30 24.12
	13941.00	88.64	181.29	10750.13	3423.30	-3422.54	-73.15	1.20	609068.73	754368.15	N 32 40 18.15	W 103 30 24.14
	14033.00	89.60	182.96	10751.55	3515.27	-3514.46	-76.56	2.09	608976.81	754364.74	N 32 40 17.24	W 103 30 24.19
	14125.00	89.25	182.25	10752.47	3607.25	-3606.36	-80.74	0.86	608884.91	754360.56	N 32 40 16.33	W 103 30 24.25
	14219.00	90.22	182.60	10752.90	3701.23	-3700.27	-84.72	1.10	608791.00	754356.58	N 32 40 15.40	W 103 30 24.30
	14312.00	89.69	181.99	10752.98	3794.22	-3793.19	-88.44	0.87	608698.08	754352.86	N 32 40 14.48	W 103 30 24.35
	14407.00	89.43	181.55	10753.71	3889.22	-3888.15	-91.38	0.54	608603.13	754349.92	N 32 40 13.54	W 103 30 24.40
	14500.00	89.08	181.46	10754.92	3982.21	-3981.11	-93.82	0.39	608510.17	754347.48	N 32 40 12.62	W 103 30 24.43
	14593.00	89.78	182.08	10755.84	4075.20	-4074.06	-96.69	1.01	608417.22	754344.61	N 32 40 11.70	W 103 30 24.48
	14685.00	90.22	181.99	10755.84	4167.20	-4166.00	-99.96	0.49	608325.28	754341.34	N 32 40 10.79	W 103 30 24.52
	14778.00	90.48	181.81	10755.27	4260.19	-4258.94	-103.04	0.34	608232.34	754338.26	N 32 40 9.87	W 103 30 24.57
	14871.00	89.25	181.72	10755.49	4353.19	-4351.90	-105.91	1.33	608139.38	754335.40	N 32 40 8.95	W 103 30 24.61
	14963.00	89.87	181.02	10756.20	4445.18	-4443.87	-108.11	1.02	608047.42	754333.20	N 32 40 8.04	W 103 30 24.64
Final Survey	15082.00	90.84	180.32	10755.46	4564.17	-4562.86	-109.50	1.01	607928.43	754331.80	N 32 40 6.87	W 103 30 24.67
Projection to Bit	15130.00	90.84	180.32	10754.76	4612.15	-4610.85	-109.77	0.00	607880.44	754331.54	N 32 40 6.39	W 103 30 24.68

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	17.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / COG Aircobra 12 State #1H Gyro + MWD 10015ft - 15130ft
	17.000	10015.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / COG Aircobra 12 State #1H Gyro + MWD
	10015.000	15082.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / COG Aircobra 12 State #1H Gyro + MWD
	15082.000	15130.000	Act Stns	30.000	30.000	SLB_BLIND+TREND	Original Borehole / COG Aircobra 12 State #1H Gyro + MWD