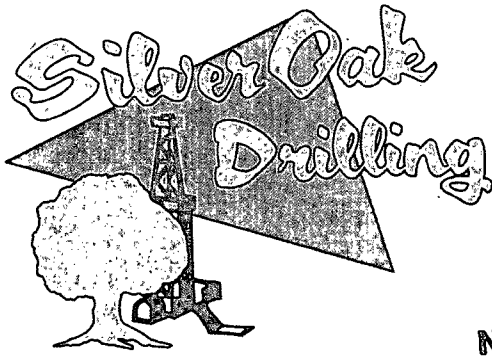




PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

NM OIL CONSERVATION
ARTESIA DISTRICT
MAY 26 2015

RECEIVED

15-41981

December 29, 2014

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Craig State #4H
190' FNL & 1870' FEL
Sec. 36, T25S, R26E
Eddy County, New Mexico

Dear Sir,

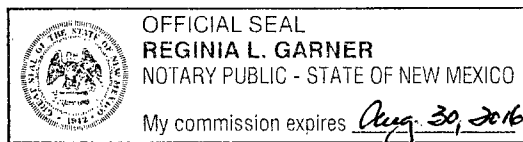
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 29th day of December, 2014.

Notary Public

Craig State #4H

Date	Depth	Deviation	Direction	TVD
12/10/2014	288	1.20	0.00	0.00
12/11/2014	334	0.60	287.80	333.00
12/11/2014	512	0.70	264.70	511.00
12/11/2014	603	0.50	238.90	0.00
12/11/2014	694	0.40	240.10	0.00
12/11/2014	786	0.70	225.40	0.00
12/11/2014	878	0.80	221.80	0.00
12/12/2014	970	0.90	226.50	0.00
12/12/2014	1245	0.30	224.30	0.00
12/12/2014	1519	1.10	129.20	1518.00
12/12/2014	1794	0.90	114.90	1793.00
12/12/2014	1885	0.90	114.80	0.00
12/14/2014	2015	0.70	72.69	0.00
12/14/2014	2353	0.48	112.66	0.00
12/14/2014	2769	1.72	106.70	0.00
12/14/2014	2954	1.81	112.90	0.00
12/14/2014	3198	1.72	122.48	0.00
12/14/2014	3453	1.50	137.72	0.00
12/15/2014	3899	1.02	145.83	0.00
12/15/2014	4059	0.88	161.87	0.00
12/15/2014	4304	0.80	158.30	0.00
12/15/2014	4748	1.10	161.30	0.00
12/15/2014	4868	1.02	151.65	0.00
12/15/2014	4997	1.02	162.09	0.00
12/15/2014	5099	0.88	157.60	0.00
12/15/2014	5198	0.80	156.76	0.00
12/15/2014	5289	0.80	150.55	0.00
12/16/2014	5420	0.62	146.23	0.00
12/16/2014	5658	0.80	168.00	0.00
12/16/2014	5873	0.20	233.10	0.00
12/16/2014	6044	0.60	128.50	0.00
12/16/2014	6186	3.54	169.01	0.00
12/16/2014	6218	3.14	169.63	0.00
12/16/2014	6281	2.21	164.38	0.00
12/16/2014	6313	2.30	169.41	0.00
12/16/2014	6344	2.30	176.70	0.00
12/17/2014	6505	1.50	145.40	0.00
12/17/2014	6634	0.60	165.70	0.00
12/18/2014	6721	0.70	253.90	6719.00
12/18/2014	6880	11.80	197.30	6877.00
12/18/2014	6944	17.80	195.80	6939.00
12/18/2014	7072	29.80	191.50	0.00
12/18/2014	7263	46.10	180.00	0.00

Date	Depth	Deviation	Direction	TVD
12/19/2014	7328	49.10	183.50	0.00
12/19/2014	7392	49.60	188.00	0.00
12/19/2014	7424	52.40	187.50	0.00
12/19/2014	7456	56.00	187.00	0.00
12/20/2014	7481	60.50	185.90	0.00
12/20/2014	7584	70.10	186.00	7386.00
12/20/2014	7616	74.40	186.10	7396.00
12/20/2014	7648	79.30	185.00	7403.00
12/20/2014	7673	83.80	184.70	0.00
12/21/2014	7774	93.60	183.20	0.00
12/21/2014	7838	94.20	182.30	7401.00
12/21/2014	8029	90.50	181.40	7397.00
12/21/2014	8317	90.20	181.30	7395.00
12/21/2014	8509	90.00	180.50	7394.00
12/21/2014	8893	92.00	178.90	7392.00
12/22/2014	9270	89.00	180.50	0.00
12/22/2014	9581	91.20	180.00	0.00
12/22/2014	9647	90.40	181.20	7381.00
12/22/2014	9927	89.80	180.80	7383.00
12/22/2014	10209	89.90	180.00	7383.00
12/22/2014	10303	89.70	179.60	0.00
12/22/2014	10396	90.30	179.30	0.00
12/22/2014	10490	91.30	179.10	0.00
12/22/2014	10584	91.90	181.40	0.00
12/22/2014	10678	91.00	181.30	0.00
12/22/2014	10771	90.10	182.20	0.00
12/23/2014	10865	89.50	182.00	7378.00
12/23/2014	11053	91.30	182.10	7377.00
12/23/2014	11240	89.30	184.90	7378.00
12/23/2014	11522	90.90	184.80	7378.00
12/23/2014	11708	89.90	185.30	7377.00



January 9, 2015

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

NM OIL CONSERVATION
ARTESTA DISTRICT

Attn: Kanicia Castillo

MAY 26 2015

RE: **Craig State 4H**

RECEIVED

Please find enclosed a copy of the survey from 0.00' to 6645.00' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

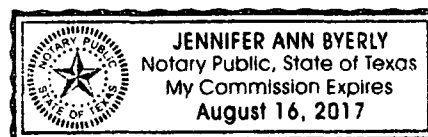
STATE OF TEXAS §

§

COUNTY OF NUECES §

This instrument was acknowledged before me on the 9 day of January
A.D., 2015, by Keith Havelka.

Jennifer Ann Byerly
Jennifer Ann Byerly
Notary Public, State of Texas





Company: CONCHO
Lease/Well: CRAIG STATE/4H

Rig Name: SILVEROAK 1
State/County: NEW MEXICO/EDDY
Latitude: 32.09, Longitude: -104.24
GRID North is 0.05 Degrees East of True North
VS-Azi: 181.41 Degrees



Depth Reference : RKB: 17 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut
Minimum Curvature Method
Report Date/Time: 1/9/2015 / 11:00

VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Craig State 4H / API 30-015-41981

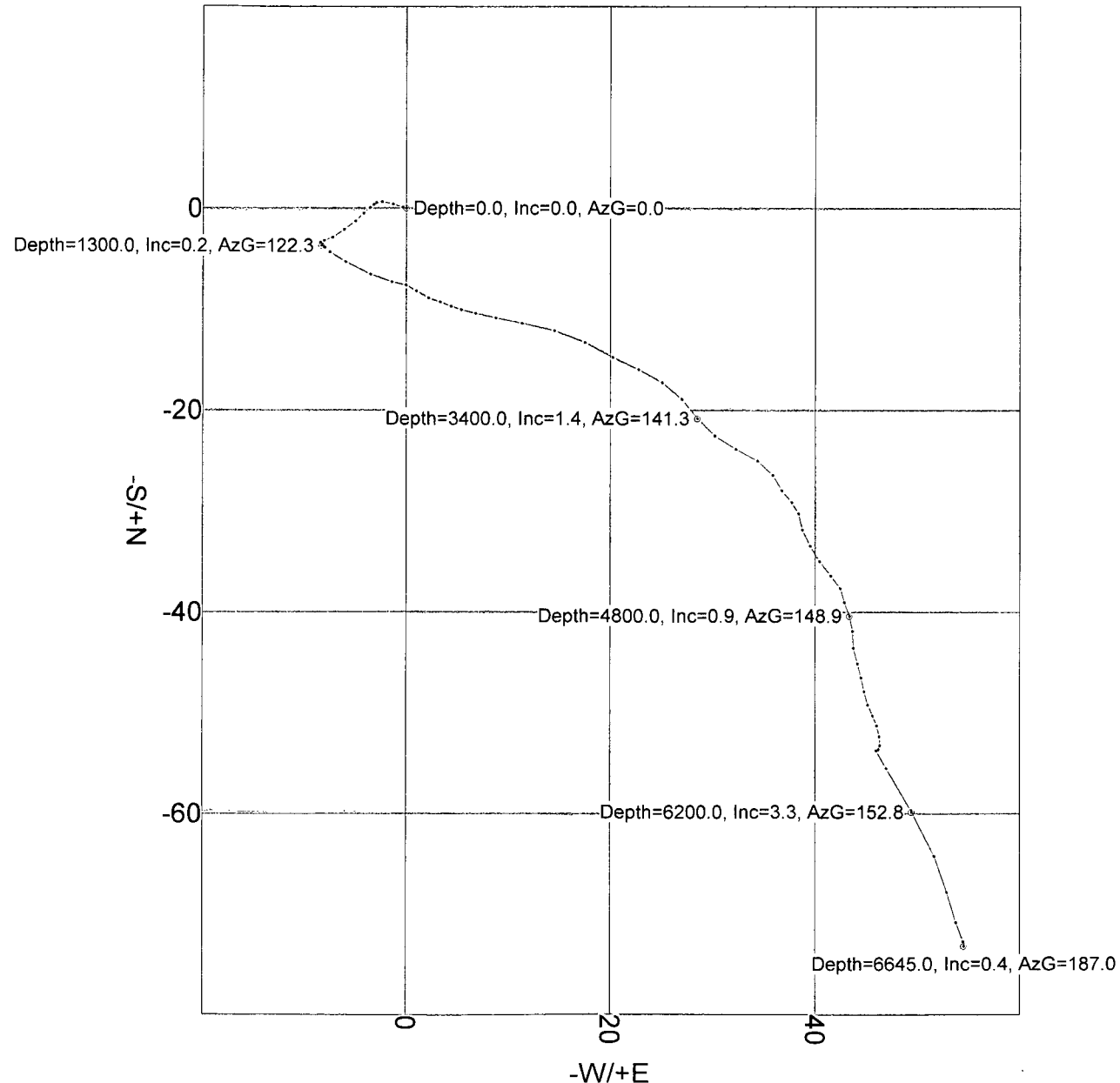
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.41	284.36	100.00	0.09	-0.34	-0.08	0.35	284.36	0.41
200.00	0.76	289.65	199.99	0.40	-1.32	-0.37	1.37	286.92	0.36
300.00	0.49	271.12	299.99	0.63	-2.37	-0.57	2.45	284.94	0.34
400.00	0.21	235.68	399.99	0.54	-2.95	-0.47	3.00	280.36	0.34
500.00	0.16	228.80	499.99	0.35	-3.20	-0.27	3.22	276.15	0.05
600.00	0.37	230.78	599.98	0.05	-3.56	0.04	3.56	270.81	0.21
700.00	0.59	225.22	699.98	-0.52	-4.17	0.62	4.20	262.94	0.23
800.00	0.67	226.83	799.97	-1.28	-4.97	1.40	5.13	255.52	0.08
900.00	0.92	237.22	899.96	-2.12	-6.07	2.27	6.43	250.75	0.29
1000.00	0.64	233.64	999.96	-2.89	-7.20	3.06	7.76	248.14	0.28
1100.00	0.41	274.68	1099.95	-3.19	-8.01	3.39	8.62	248.27	0.43
1200.00	0.26	187.53	1199.95	-3.39	-8.39	3.59	9.05	248.02	0.47
1300.00	0.21	122.26	1299.95	-3.71	-8.27	3.91	9.06	245.83	0.26
1400.00	0.19	117.74	1399.95	-3.89	-7.97	4.08	8.87	244.01	0.02
1500.00	0.62	137.94	1499.95	-4.36	-7.46	4.55	8.64	239.68	0.44
1600.00	1.50	115.06	1599.93	-5.32	-5.91	5.46	7.95	228.03	0.96
1700.00	1.59	119.08	1699.89	-6.55	-3.51	6.63	7.43	208.23	0.14
1800.00	1.01	94.58	1799.87	-7.29	-1.42	7.32	7.43	191.04	0.79

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	0.63	116.97	1899.86	-7.61	-0.05	7.61	7.61	180.35	0.49
2000.00	0.71	123.37	1999.85	-8.20	0.97	8.18	8.26	173.29	0.11
2100.00	0.86	116.02	2099.84	-8.87	2.16	8.82	9.13	166.34	0.18
2200.00	0.55	96.58	2199.83	-9.26	3.31	9.17	9.83	160.34	0.38
2300.00	0.81	122.69	2299.83	-9.69	4.38	9.58	10.64	155.68	0.40
2400.00	0.49	86.45	2399.82	-10.05	5.41	9.91	11.41	151.72	0.50
2500.00	1.17	111.32	2499.81	-10.39	6.79	10.22	12.41	146.85	0.75
2600.00	1.19	94.86	2599.79	-10.85	8.78	10.63	13.96	141.03	0.34
2700.00	1.82	106.23	2699.75	-11.38	11.34	11.10	16.07	135.12	0.69
2800.00	1.94	99.69	2799.70	-12.11	14.52	11.75	18.91	129.82	0.25
2900.00	1.82	124.03	2899.65	-13.28	17.50	12.85	21.97	127.19	0.80
3000.00	1.76	113.05	2999.60	-14.77	20.23	14.27	25.05	126.13	0.35
3100.00	1.42	118.80	3099.56	-15.97	22.73	15.40	27.78	125.09	0.37
3200.00	1.57	120.29	3199.53	-17.26	25.00	16.64	30.38	124.62	0.16
3300.00	1.40	142.43	3299.49	-18.92	26.93	18.25	32.91	125.09	0.60
3400.00	1.39	141.34	3399.46	-20.83	28.43	20.13	35.25	126.23	0.03
3500.00	1.40	128.16	3499.43	-22.54	30.16	21.79	37.65	126.77	0.32
3600.00	1.41	116.42	3599.40	-23.85	32.22	23.05	40.09	126.50	0.29
3700.00	1.37	121.31	3699.37	-25.01	34.35	24.16	42.49	126.06	0.12
3800.00	1.08	148.46	3799.35	-26.44	35.86	25.55	44.55	126.40	0.64
3900.00	0.93	152.22	3899.34	-27.96	36.73	27.05	46.16	127.28	0.16
4000.00	0.85	126.79	3999.33	-29.12	37.71	28.19	47.65	127.68	0.40
4100.00	0.79	175.83	4099.32	-30.26	38.35	29.30	48.85	128.27	0.68
4200.00	1.12	160.96	4199.30	-31.87	38.72	30.90	50.15	129.45	0.41
4300.00	0.93	145.32	4299.29	-33.46	39.50	32.47	51.76	130.26	0.34
4400.00	1.15	151.16	4399.27	-35.00	40.44	33.99	53.48	130.87	0.25
4500.00	0.94	132.27	4499.25	-36.42	41.53	35.39	55.24	131.25	0.40
4600.00	0.87	154.77	4599.24	-37.66	42.46	36.61	56.76	131.57	0.36
4700.00	0.80	172.10	4699.23	-39.05	42.88	37.98	58.00	132.32	0.26
4800.00	0.87	148.94	4799.22	-40.39	43.37	39.31	59.27	132.96	0.34
4900.00	0.98	185.96	4899.21	-41.90	43.67	40.81	60.52	133.81	0.60
5000.00	0.96	166.70	4999.19	-43.57	43.78	42.48	61.76	134.86	0.33
5100.00	0.86	163.73	5099.18	-45.10	44.18	44.00	63.14	135.59	0.11
5200.00	0.80	168.50	5199.17	-46.51	44.53	45.40	64.39	136.24	0.09
5300.00	0.81	166.63	5299.16	-47.88	44.84	46.76	65.60	136.88	0.03
5400.00	0.74	160.79	5399.15	-49.19	45.21	48.06	66.81	137.41	0.11
5500.00	0.62	151.96	5499.15	-50.27	45.68	49.14	67.93	137.74	0.16
5600.00	0.60	163.32	5599.14	-51.25	46.08	50.10	68.92	138.04	0.12
5700.00	0.69	169.74	5699.13	-52.34	46.34	51.19	69.91	138.48	0.12

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.35	188.99	5799.13	-53.23	46.40	52.08	70.62	138.92	0.38
5900.00	0.17	225.91	5899.13	-53.63	46.25	52.48	70.82	139.23	0.24
6000.00	0.15	269.42	5999.13	-53.74	46.02	52.59	70.75	139.42	0.12
6100.00	2.40	146.94	6099.10	-55.49	47.03	54.31	72.74	139.72	2.48
6200.00	3.34	152.81	6198.97	-59.83	49.50	58.60	77.66	140.40	0.99
6300.00	2.27	154.85	6298.85	-64.22	51.68	62.93	82.43	141.18	1.07
6400.00	2.10	167.83	6398.78	-67.81	52.91	66.49	86.01	142.04	0.52
6500.00	1.50	157.71	6498.73	-70.82	53.79	69.47	88.93	142.78	0.68
6600.00	0.80	164.49	6598.71	-72.70	54.47	71.34	90.85	143.16	0.71
6645.00	0.42	186.96	6643.71	-73.17	54.54	71.80	91.26	143.30	0.99



VES Survey International
West Texas
(432) 563-5444
Surveyor: Jordan Shelleby
Craig State 4H / API 30-015-41981



V.E.S. Survey Date: 12/17/2014



COG Operating LLC

Eddy County, NM

Craig State #4H

SL: 190' FNL, 1870' FEL, Sec 36, T25S, R26E, Unit B

EOC: 7701.1' MD, 7400.0' TVD, -597.9' +N/-S, 34.8 +E/-W, 596.8' VS

BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O

Design: BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O

Survey Report - Geographic

24 December, 2014

NM OIL CONSERVATION
ARTESIA DISTRICT

MAY 26 2015

RECEIVED





TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Craig State #4H
Project:	Eddy County, NM	TVD Reference:	KB @ 3275.4usft
Site:	Craig State #4H	MD Reference:	KB @ 3275.4usft
Well:	SL: 190' FNL, 1870' FEL, Sec 36, T25S, R26E, Unit B	North Reference:	Grid
Wellbore:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Database:	EDM 5000.1 Single User Db

Project	Eddy County, NM		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Craig State #4H		
Site Position:	Map	Northing:	397,529.40 usft
From:		Easting:	527,816.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 5' 34.413 N
		Longitude:	104° 14' 36.644 W
		Grid Convergence:	0.05 °

Well	SL: 190' FNL, 1870' FEL, Sec 36, T25S, R26E, Unit B		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 5' 34.413 N
		Longitude:	104° 14' 36.644 W
		Ground Level:	3,258.4 usft

Wellbore	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/4/2014	7.46	59.87	48,119

Design	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	181.41

Survey Program	Date 12/24/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	6,645.0	GYRO #1 (BHL: 330' FSL, 1980' FEL, Sec	MWD	MWD - Standard
6,721.0	11,800.0	MWD #1 (BHL: 330' FSL, 1980' FEL, Sec 3	MWD	MWD - Standard

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	397,529.40	527,816.00	32° 5' 34.413 N	104° 14' 36.644 W	
100.0	0.41	284.36	100.0	0.1	-0.3	397,529.49	527,815.66	32° 5' 34.414 N	104° 14' 36.648 W	
200.0	0.76	289.65	200.0	0.4	-1.3	397,529.80	527,814.68	32° 5' 34.417 N	104° 14' 36.659 W	
300.0	0.49	271.12	300.0	0.6	-2.4	397,530.03	527,813.63	32° 5' 34.419 N	104° 14' 36.671 W	
400.0	0.21	235.68	400.0	0.5	-2.9	397,529.94	527,813.05	32° 5' 34.418 N	104° 14' 36.678 W	
500.0	0.16	228.80	500.0	0.3	-3.2	397,529.74	527,812.80	32° 5' 34.416 N	104° 14' 36.681 W	
600.0	0.37	230.78	600.0	0.0	-3.6	397,529.44	527,812.44	32° 5' 34.413 N	104° 14' 36.685 W	
700.0	0.59	225.22	700.0	-0.5	-4.2	397,528.88	527,811.83	32° 5' 34.408 N	104° 14' 36.692 W	
800.0	0.67	226.83	800.0	-1.3	-5.0	397,528.11	527,811.03	32° 5' 34.400 N	104° 14' 36.701 W	



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Craig State #4H
Project:	Eddy County, NM	TVD Reference:	KB @ 3275.4usft
Site:	Craig State #4H	MD Reference:	KB @ 3275.4usft
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Wellbore:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Database:	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
900.0	0.92	237.22	900.0	-2.1	-6.1	397,527.28	527,809.93	32° 5' 34.392 N	104° 14' 36.714 W
1,000.0	0.64	233.64	1,000.0	-2.9	-7.2	397,526.51	527,808.81	32° 5' 34.384 N	104° 14' 36.727 W
1,100.0	0.41	274.68	1,100.0	-3.2	-8.0	397,526.21	527,808.00	32° 5' 34.381 N	104° 14' 36.737 W
1,200.0	0.26	187.53	1,200.0	-3.4	-8.4	397,526.02	527,807.62	32° 5' 34.379 N	104° 14' 36.741 W
1,300.0	0.21	122.26	1,299.9	-3.7	-8.3	397,525.69	527,807.74	32° 5' 34.376 N	104° 14' 36.740 W
1,400.0	0.19	117.74	1,399.9	-3.9	-8.0	397,525.52	527,808.04	32° 5' 34.374 N	104° 14' 36.736 W
1,500.0	0.62	137.94	1,499.9	-4.4	-7.5	397,525.04	527,808.55	32° 5' 34.370 N	104° 14' 36.730 W
1,600.0	1.50	115.06	1,599.9	-5.3	-5.9	397,524.08	527,810.10	32° 5' 34.360 N	104° 14' 36.712 W
1,700.0	1.59	119.08	1,699.9	-6.5	-3.5	397,522.86	527,812.50	32° 5' 34.348 N	104° 14' 36.684 W
1,800.0	1.01	94.58	1,799.9	-7.3	-1.4	397,522.11	527,814.59	32° 5' 34.341 N	104° 14' 36.660 W
1,900.0	0.63	116.97	1,899.9	-7.6	0.0	397,521.79	527,815.96	32° 5' 34.337 N	104° 14' 36.644 W
2,000.0	0.71	123.37	1,999.9	-8.2	1.0	397,521.20	527,816.96	32° 5' 34.332 N	104° 14' 36.632 W
2,100.0	0.86	116.02	2,099.8	-8.9	2.2	397,520.53	527,818.16	32° 5' 34.325 N	104° 14' 36.619 W
2,200.0	0.55	96.58	2,199.8	-9.3	3.3	397,520.15	527,819.31	32° 5' 34.321 N	104° 14' 36.605 W
2,300.0	0.81	122.69	2,299.8	-9.7	4.4	397,519.71	527,820.38	32° 5' 34.317 N	104° 14' 36.593 W
2,400.0	0.49	86.45	2,399.8	-10.0	5.4	397,519.35	527,821.40	32° 5' 34.313 N	104° 14' 36.581 W
2,500.0	1.17	111.32	2,499.8	-10.4	6.8	397,519.01	527,822.78	32° 5' 34.310 N	104° 14' 36.565 W
2,600.0	1.19	94.86	2,599.8	-10.8	8.8	397,518.55	527,824.76	32° 5' 34.305 N	104° 14' 36.542 W
2,700.0	1.82	106.23	2,699.8	-11.4	11.3	397,518.02	527,827.32	32° 5' 34.300 N	104° 14' 36.512 W
2,800.0	1.94	99.69	2,799.7	-12.1	14.5	397,517.29	527,830.52	32° 5' 34.293 N	104° 14' 36.475 W
2,900.0	1.82	124.03	2,899.6	-13.3	17.5	397,516.12	527,833.50	32° 5' 34.281 N	104° 14' 36.440 W
3,000.0	1.76	113.05	2,999.6	-14.8	20.2	397,514.63	527,836.23	32° 5' 34.266 N	104° 14' 36.409 W
3,100.0	1.42	118.80	3,099.6	-16.0	22.7	397,513.43	527,838.73	32° 5' 34.254 N	104° 14' 36.380 W
3,200.0	1.57	120.29	3,199.5	-17.3	25.0	397,512.14	527,841.00	32° 5' 34.242 N	104° 14' 36.353 W
3,300.0	1.40	142.43	3,299.5	-18.9	26.9	397,510.48	527,842.93	32° 5' 34.225 N	104° 14' 36.331 W
3,400.0	1.39	141.34	3,399.5	-20.8	28.4	397,508.57	527,844.43	32° 5' 34.206 N	104° 14' 36.313 W
3,500.0	1.40	128.16	3,499.4	-22.5	30.1	397,506.86	527,846.15	32° 5' 34.189 N	104° 14' 36.293 W
3,600.0	1.41	116.42	3,599.4	-23.8	32.2	397,505.56	527,848.21	32° 5' 34.177 N	104° 14' 36.269 W
3,700.0	1.37	121.31	3,699.4	-25.0	34.3	397,504.39	527,850.33	32° 5' 34.165 N	104° 14' 36.245 W
3,800.0	1.08	148.46	3,799.4	-26.4	35.8	397,502.97	527,851.85	32° 5' 34.151 N	104° 14' 36.227 W
3,900.0	0.93	152.22	3,899.3	-28.0	36.7	397,501.45	527,852.72	32° 5' 34.136 N	104° 14' 36.217 W
4,000.0	0.85	126.79	3,999.3	-29.1	37.7	397,500.29	527,853.69	32° 5' 34.124 N	104° 14' 36.206 W
4,100.0	0.79	175.83	4,099.3	-30.2	38.3	397,499.15	527,854.33	32° 5' 34.113 N	104° 14' 36.198 W
4,200.0	1.12	160.96	4,199.3	-31.9	38.7	397,497.54	527,854.70	32° 5' 34.097 N	104° 14' 36.194 W
4,300.0	0.93	145.32	4,299.3	-33.4	39.5	397,495.95	527,855.48	32° 5' 34.081 N	104° 14' 36.185 W
4,400.0	1.15	151.16	4,399.3	-35.0	40.4	397,494.40	527,856.43	32° 5' 34.066 N	104° 14' 36.174 W
4,500.0	0.94	132.27	4,499.3	-36.4	41.5	397,492.97	527,857.52	32° 5' 34.052 N	104° 14' 36.161 W
4,600.0	0.87	154.77	4,599.2	-37.7	42.4	397,491.74	527,858.45	32° 5' 34.040 N	104° 14' 36.150 W
4,700.0	0.80	172.10	4,699.2	-39.0	42.9	397,490.36	527,858.87	32° 5' 34.026 N	104° 14' 36.146 W
4,800.0	0.87	148.94	4,799.2	-40.4	43.4	397,489.02	527,859.36	32° 5' 34.013 N	104° 14' 36.140 W
4,900.0	0.98	185.96	4,899.2	-41.9	43.7	397,487.51	527,859.66	32° 5' 33.998 N	104° 14' 36.136 W
5,000.0	0.96	166.70	4,999.2	-43.6	43.8	397,485.85	527,859.77	32° 5' 33.981 N	104° 14' 36.135 W
5,100.0	0.86	163.73	5,099.2	-45.1	44.2	397,484.31	527,860.17	32° 5' 33.966 N	104° 14' 36.131 W
5,200.0	0.80	168.50	5,199.2	-46.5	44.5	397,482.91	527,860.52	32° 5' 33.952 N	104° 14' 36.127 W
5,300.0	0.81	166.63	5,299.2	-47.9	44.8	397,481.54	527,860.82	32° 5' 33.939 N	104° 14' 36.123 W
5,400.0	0.74	160.79	5,399.2	-49.2	45.2	397,480.24	527,861.20	32° 5' 33.926 N	104° 14' 36.119 W
5,500.0	0.62	151.96	5,499.1	-50.2	45.7	397,479.15	527,861.66	32° 5' 33.915 N	104° 14' 36.113 W
5,600.0	0.60	163.32	5,599.1	-51.2	46.1	397,478.17	527,862.07	32° 5' 33.905 N	104° 14' 36.109 W
5,700.0	0.69	169.74	5,699.1	-52.3	46.3	397,477.08	527,862.33	32° 5' 33.894 N	104° 14' 36.106 W
5,800.0	0.35	188.99	5,799.1	-53.2	46.4	397,476.18	527,862.38	32° 5' 33.886 N	104° 14' 36.105 W
5,900.0	0.17	225.91	5,899.1	-53.6	46.2	397,475.78	527,862.23	32° 5' 33.882 N	104° 14' 36.107 W
6,000.0	0.15	269.42	5,999.1	-53.7	46.0	397,475.67	527,861.99	32° 5' 33.881 N	104° 14' 36.109 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Craig State #4H
Project:	Eddy County, NM	TVD Reference:	KB @ 3275.4usft
Site:	Craig State #4H	MD Reference:	KB @ 3275.4usft
Well:	SL: 190' FNL, 1870' FEL, Sec 36, T25S, R26E, Unit B	North Reference:	Grid
Wellbore:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,100.0	2.40	146.94	6,099.1	-55.5	47.0	397,473.92	527,863.00	32° 5' 33.863 N	104° 14' 36.098 W
6,200.0	3.34	152.81	6,199.0	-59.8	49.5	397,469.57	527,865.48	32° 5' 33.820 N	104° 14' 36.069 W
6,300.0	2.27	154.85	6,298.9	-64.2	51.6	397,465.19	527,867.65	32° 5' 33.777 N	104° 14' 36.044 W
6,400.0	2.10	167.83	6,398.8	-67.8	52.9	397,461.60	527,868.88	32° 5' 33.741 N	104° 14' 36.030 W
6,500.0	1.50	157.71	6,498.7	-70.8	53.8	397,458.60	527,869.76	32° 5' 33.712 N	104° 14' 36.019 W
6,600.0	0.80	164.49	6,598.7	-72.7	54.4	397,456.72	527,870.44	32° 5' 33.693 N	104° 14' 36.011 W
6,645.0	0.42	186.96	6,643.7	-73.1	54.5	397,456.25	527,870.51	32° 5' 33.688 N	104° 14' 36.011 W
6,721.0	0.70	253.90	6,719.7	-73.6	54.0	397,455.85	527,870.03	32° 5' 33.684 N	104° 14' 36.016 W
6,753.0	1.10	258.90	6,751.7	-73.7	53.5	397,455.73	527,869.54	32° 5' 33.683 N	104° 14' 36.022 W
6,784.0	2.50	219.00	6,782.7	-74.2	52.8	397,455.15	527,868.82	32° 5' 33.677 N	104° 14' 36.030 W
6,816.0	5.50	205.50	6,814.6	-76.2	51.7	397,453.22	527,867.72	32° 5' 33.658 N	104° 14' 36.043 W
6,848.0	8.50	198.90	6,846.4	-79.8	50.3	397,449.60	527,866.30	32° 5' 33.623 N	104° 14' 36.060 W
6,880.0	11.80	197.30	6,877.9	-85.2	48.6	397,444.24	527,864.56	32° 5' 33.569 N	104° 14' 36.080 W
6,912.0	14.80	195.80	6,909.0	-92.2	46.5	397,437.18	527,862.47	32° 5' 33.500 N	104° 14' 36.104 W
6,944.0	17.80	195.80	6,939.7	-100.9	44.0	397,428.54	527,860.02	32° 5' 33.414 N	104° 14' 36.133 W
6,976.0	20.70	195.30	6,969.9	-111.0	41.2	397,418.38	527,857.20	32° 5' 33.314 N	104° 14' 36.166 W
7,008.0	23.90	193.90	6,999.5	-122.8	38.1	397,406.63	527,854.15	32° 5' 33.197 N	104° 14' 36.201 W
7,040.0	26.80	192.60	7,028.4	-136.1	35.0	397,393.29	527,851.02	32° 5' 33.065 N	104° 14' 36.238 W
7,072.0	29.80	191.50	7,056.6	-150.9	31.9	397,378.45	527,847.86	32° 5' 32.919 N	104° 14' 36.275 W
7,104.0	33.10	190.80	7,083.9	-167.3	28.6	397,362.07	527,844.63	32° 5' 32.756 N	104° 14' 36.312 W
7,136.0	36.20	189.50	7,110.2	-185.2	25.4	397,344.17	527,841.44	32° 5' 32.579 N	104° 14' 36.350 W
7,168.0	38.50	186.60	7,135.7	-204.5	22.7	397,324.95	527,838.73	32° 5' 32.389 N	104° 14' 36.381 W
7,200.0	40.70	184.20	7,160.3	-224.8	20.8	397,304.64	527,836.82	32° 5' 32.188 N	104° 14' 36.404 W
7,232.0	43.20	182.10	7,184.1	-246.1	19.7	397,283.29	527,835.66	32° 5' 31.977 N	104° 14' 36.417 W
7,263.0	46.10	180.00	7,206.2	-267.9	19.3	397,261.51	527,835.27	32° 5' 31.761 N	104° 14' 36.422 W
7,295.0	48.40	181.00	7,227.9	-291.4	19.1	397,238.02	527,835.06	32° 5' 31.529 N	104° 14' 36.425 W
7,328.0	49.10	183.50	7,249.6	-316.2	18.1	397,213.23	527,834.08	32° 5' 31.284 N	104° 14' 36.436 W
7,360.0	48.60	186.70	7,270.7	-340.2	15.9	397,189.23	527,831.94	32° 5' 31.046 N	104° 14' 36.462 W
7,392.0	49.60	188.00	7,291.7	-364.2	12.8	397,165.25	527,828.85	32° 5' 30.809 N	104° 14' 36.498 W
7,424.0	52.40	187.50	7,311.8	-388.8	9.5	397,140.61	527,825.50	32° 5' 30.565 N	104° 14' 36.537 W
7,456.0	56.00	187.00	7,330.5	-414.5	6.2	397,114.87	527,822.22	32° 5' 30.310 N	104° 14' 36.575 W
7,488.0	60.50	185.90	7,347.3	-441.6	3.2	397,087.83	527,819.17	32° 5' 30.043 N	104° 14' 36.611 W
7,520.0	64.80	184.20	7,362.0	-469.9	0.7	397,059.53	527,816.68	32° 5' 29.763 N	104° 14' 36.640 W
7,552.0	68.00	185.30	7,374.9	-499.1	-1.8	397,030.31	527,814.25	32° 5' 29.473 N	104° 14' 36.669 W
7,584.0	70.10	186.00	7,386.3	-528.8	-4.7	397,000.57	527,811.31	32° 5' 29.179 N	104° 14' 36.703 W
7,616.0	74.40	186.10	7,396.1	-559.1	-7.9	396,970.27	527,808.09	32° 5' 28.879 N	104° 14' 36.741 W
7,648.0	79.30	185.00	7,403.3	-590.1	-10.9	396,939.27	527,805.09	32° 5' 28.572 N	104° 14' 36.776 W
7,673.0	83.80	184.70	7,407.0	-614.8	-13.0	396,914.63	527,803.00	32° 5' 28.329 N	104° 14' 36.801 W
7,709.0	90.30	184.00	7,408.9	-650.6	-15.7	396,878.80	527,800.27	32° 5' 27.974 N	104° 14' 36.833 W
7,742.0	92.70	183.50	7,408.0	-683.5	-17.9	396,845.89	527,798.11	32° 5' 27.648 N	104° 14' 36.858 W
7,774.0	93.60	183.20	7,406.2	-715.4	-19.8	396,813.99	527,796.25	32° 5' 27.333 N	104° 14' 36.880 W
7,806.0	94.00	182.80	7,404.1	-747.3	-21.4	396,782.11	527,794.57	32° 5' 27.017 N	104° 14' 36.900 W
7,838.0	94.20	182.30	7,401.8	-779.2	-22.8	396,750.22	527,793.15	32° 5' 26.702 N	104° 14' 36.917 W
7,870.0	92.70	182.20	7,399.9	-811.1	-24.1	396,718.30	527,791.90	32° 5' 26.386 N	104° 14' 36.932 W
7,902.0	91.20	182.40	7,398.8	-843.0	-25.4	396,686.35	527,790.62	32° 5' 26.070 N	104° 14' 36.947 W
7,934.0	90.90	182.20	7,398.2	-875.0	-26.7	396,654.38	527,789.33	32° 5' 25.753 N	104° 14' 36.962 W
8,029.0	90.50	181.40	7,397.1	-970.0	-29.7	396,559.44	527,786.35	32° 5' 24.814 N	104° 14' 36.998 W
8,125.0	90.40	181.80	7,396.3	-1,065.9	-32.3	396,463.48	527,783.67	32° 5' 23.864 N	104° 14' 37.030 W
8,221.0	90.30	181.30	7,395.7	-1,161.9	-34.9	396,367.51	527,781.07	32° 5' 22.914 N	104° 14' 37.061 W
8,317.0	90.20	181.30	7,395.3	-1,257.9	-37.1	396,271.54	527,778.89	32° 5' 22.164 N	104° 14' 37.087 W
8,413.0	90.20	180.90	7,395.0	-1,353.8	-39.0	396,175.56	527,777.05	32° 5' 21.015 N	104° 14' 37.109 W
8,509.0	90.00	180.50	7,394.8	-1,449.8	-40.1	396,079.56	527,775.88	32° 5' 20.065 N	104° 14' 37.124 W



TDS
Survey Report - Geographic



Company:	COG Operating LLC	Local Co-ordinate Reference:	Site Craig State #4H
Project:	Eddy County, NM	TVD Reference:	KB @ 3275.4usft
Site:	Craig State #4H	MD Reference:	KB @ 3275.4usft
Well:	SL: 190' FNL, 1870' FEL, Sec 36, T25S, R26E, Unit B	North Reference:	Grid
Wellbore:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Survey Calculation Method:	Minimum Curvature
Design:	BHL: 330' FSL, 1980' FEL, Sec 36, T25S, R26E, Unit O	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,605.0	89.80	180.20	7,395.0	-1,545.8	-40.7	395,983.57	527,775.29	32° 5' 19.115 N	104° 14' 37.132 W
8,701.0	89.80	179.90	7,395.3	-1,641.8	-40.8	395,887.57	527,775.21	32° 5' 18.164 N	104° 14' 37.134 W
8,797.0	91.00	179.60	7,394.6	-1,737.8	-40.4	395,791.57	527,775.63	32° 5' 17.214 N	104° 14' 37.130 W
8,893.0	92.00	178.90	7,392.1	-1,833.8	-39.1	395,695.62	527,776.88	32° 5' 16.265 N	104° 14' 37.116 W
8,989.0	92.70	178.30	7,388.2	-1,929.7	-36.8	395,599.73	527,779.23	32° 5' 15.316 N	104° 14' 37.090 W
9,083.0	91.80	179.10	7,384.5	-2,023.6	-34.6	395,505.82	527,781.36	32° 5' 14.386 N	104° 14' 37.066 W
9,177.0	90.00	179.30	7,383.0	-2,117.5	-33.3	395,411.85	527,782.67	32° 5' 13.456 N	104° 14' 37.052 W
9,270.0	89.00	180.50	7,383.8	-2,210.5	-33.2	395,318.86	527,782.83	32° 5' 12.536 N	104° 14' 37.051 W
9,365.0	89.80	180.30	7,384.8	-2,305.5	-33.8	395,223.86	527,782.17	32° 5' 11.596 N	104° 14' 37.059 W
9,458.0	90.50	179.80	7,384.6	-2,398.5	-33.9	395,130.86	527,782.09	32° 5' 10.676 N	104° 14' 37.061 W
9,553.0	91.50	179.90	7,382.9	-2,493.5	-33.7	395,035.88	527,782.34	32° 5' 9.736 N	104° 14' 37.059 W
9,647.0	90.40	181.20	7,381.4	-2,587.5	-34.6	394,941.90	527,781.43	32° 5' 8.806 N	104° 14' 37.070 W
9,740.0	89.30	181.70	7,381.6	-2,680.5	-36.9	394,848.93	527,779.08	32° 5' 7.886 N	104° 14' 37.099 W
9,834.0	89.40	181.10	7,382.7	-2,774.4	-39.2	394,754.97	527,776.78	32° 5' 6.956 N	104° 14' 37.126 W
9,927.0	89.80	180.80	7,383.3	-2,867.4	-40.8	394,661.98	527,775.24	32° 5' 6.035 N	104° 14' 37.145 W
10,022.0	89.90	180.60	7,383.6	-2,962.4	-41.9	394,566.99	527,774.08	32° 5' 5.095 N	104° 14' 37.160 W
10,116.0	89.90	180.60	7,383.7	-3,056.4	-42.9	394,473.00	527,773.10	32° 5' 4.165 N	104° 14' 37.172 W
10,209.0	89.90	180.00	7,383.9	-3,149.4	-43.4	394,380.00	527,772.61	32° 5' 3.245 N	104° 14' 37.178 W
10,303.0	89.70	179.60	7,384.2	-3,243.4	-43.1	394,286.00	527,772.94	32° 5' 2.314 N	104° 14' 37.176 W
10,396.0	90.30	179.30	7,384.2	-3,336.4	-42.2	394,193.00	527,773.83	32° 5' 1.394 N	104° 14' 37.166 W
10,490.0	91.30	179.10	7,382.9	-3,430.4	-40.9	394,099.02	527,775.14	32° 5' 0.464 N	104° 14' 37.152 W
10,584.0	90.90	180.40	7,381.1	-3,524.4	-40.4	394,005.04	527,775.55	32° 4' 59.534 N	104° 14' 37.148 W
10,678.0	91.00	181.30	7,379.5	-3,618.3	-41.8	393,911.07	527,774.16	32° 4' 58.604 N	104° 14' 37.165 W
10,771.0	90.10	182.20	7,378.7	-3,711.3	-44.7	393,818.12	527,771.32	32° 4' 57.684 N	104° 14' 37.199 W
10,865.0	89.50	182.00	7,379.0	-3,805.2	-48.1	393,724.18	527,767.88	32° 4' 56.754 N	104° 14' 37.240 W
10,959.0	90.10	181.60	7,379.3	-3,899.2	-51.1	393,630.23	527,764.92	32° 4' 55.825 N	104° 14' 37.275 W
11,053.0	91.30	182.10	7,378.2	-3,993.1	-54.1	393,536.29	527,761.89	32° 4' 54.895 N	104° 14' 37.311 W
11,147.0	89.50	183.60	7,377.5	-4,087.0	-58.8	393,442.41	527,757.21	32° 4' 53.966 N	104° 14' 37.366 W
11,240.0	89.30	184.90	7,378.5	-4,179.7	-65.7	393,349.68	527,750.32	32° 4' 53.048 N	104° 14' 37.447 W
11,334.0	89.80	184.80	7,379.2	-4,273.4	-73.6	393,256.02	527,742.38	32° 4' 52.121 N	104° 14' 37.541 W
11,428.0	90.10	184.50	7,379.3	-4,367.1	-81.2	393,162.33	527,734.76	32° 4' 51.194 N	104° 14' 37.630 W
11,522.0	90.90	184.80	7,378.5	-4,460.8	-88.9	393,068.64	527,727.14	32° 4' 50.267 N	104° 14' 37.720 W
11,615.0	90.20	185.00	7,377.6	-4,553.4	-96.8	392,975.98	527,719.19	32° 4' 49.350 N	104° 14' 37.813 W
11,708.0	89.90	185.30	7,377.5	-4,646.0	-105.2	392,883.36	527,710.84	32° 4' 48.434 N	104° 14' 37.911 W
Final MWD Survey									
11,800.0	89.90	185.30	7,377.7	-4,737.6	-113.7	392,791.75	527,702.35	32° 4' 47.527 N	104° 14' 38.010 W
Projection to Bit									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,708.0	7,377.5	-4,646.0	-105.2	Final MWD Survey
11,800.0	7,377.7	-4,737.6	-113.7	Projection to Bit

Checked By: _____	Approved By: _____	Date: _____
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