

30-015-37423



Job Number: 700002137 WT-WT
 Company: COG OPERATING LLC
 Lease/Well: SRO STATE UNIT #15H
 Location: EDDY COUNTY, NM
 Rig Name: JW 3
 RKB: 19
 G.L. or M.S.L.: GL

State/Country: NM/ USA
 Declination: 7.72
 Grid: -0.12
 File name: C:\DOCUME~1\PDS\DESKTOP\SROSTA-1\002137.SVY
 Date/Time: 13-Apr-11 / 17:17
 Curve Name: WORK CURVE

Pathfinder Drilling

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 179.27
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

RECEIVED

JUL 08 2011

NMOCD ARTESIA

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
TIE-IN FROM GYRO SURVEY									
6136.00	.90	211.89	6133.63	-44.60	92.21	45.77	102.43	115.81	.00
6156.00	.88	185.98	6153.63	-44.89	92.11	46.06	102.47	115.98	2.00
6184.00	.79	189.73	6181.62	-45.29	92.06	46.46	102.59	116.20	.38
6216.00	3.34	181.12	6213.60	-46.44	92.00	47.61	103.06	116.78	8.01
6247.00	7.74	175.60	6244.45	-49.43	92.14	50.60	104.56	118.21	14.28
6278.00	12.31	175.34	6274.97	-54.80	92.57	55.98	107.58	120.63	14.74
6310.00	16.88	178.74	6305.93	-62.85	92.95	64.03	112.21	124.07	14.52
6340.00	20.93	182.20	6334.30	-72.57	92.84	73.74	117.84	128.01	14.00
6372.00	24.27	183.17	6363.84	-84.85	92.26	86.02	125.34	132.60	10.50
6403.00	27.17	184.45	6391.77	-98.27	91.36	99.42	134.17	137.09	9.52
6435.00	30.16	185.35	6419.84	-113.56	90.04	114.70	144.92	141.59	9.44

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6466.00	33.24	185.40	6446.22	-129.78	88.51	130.89	157.09	145.70	9.94
6497.00	36.05	184.95	6471.72	-147.33	86.93	148.42	171.06	149.46	9.10
6528.00	38.51	183.93	6496.38	-166.04	85.48	167.12	186.75	152.76	8.18
6558.00	41.24	183.02	6519.40	-185.24	84.32	186.30	203.53	155.53	9.31
6589.00	44.23	182.55	6542.17	-206.25	83.30	207.29	222.44	158.01	9.70
6621.00	47.66	181.30	6564.42	-229.23	82.53	230.26	243.64	160.20	11.08
6652.00	50.91	180.75	6584.64	-252.72	82.11	253.75	265.73	162.00	10.57
6683.00	54.61	180.31	6603.39	-277.39	81.89	278.41	289.23	163.55	11.99
6715.00	58.30	180.50	6621.07	-304.06	81.70	305.08	314.84	164.96	11.54
6746.00	61.91	180.63	6636.52	-330.93	81.43	331.94	340.80	166.18	11.65
6777.00	65.69	180.82	6650.21	-358.74	81.08	359.74	367.79	167.26	12.21
6809.00	68.24	181.50	6662.73	-388.18	80.48	389.17	396.43	168.29	8.21
6840.00	70.52	182.29	6673.64	-417.17	79.52	418.15	424.68	169.21	7.73
6871.00	73.34	182.80	6683.26	-446.61	78.21	447.57	453.41	170.07	9.23
6901.00	77.56	182.82	6690.79	-475.61	76.79	476.55	481.77	170.83	14.07
6932.00	81.07	182.80	6696.54	-506.03	75.30	506.95	511.60	171.54	11.32
6963.00	83.19	181.91	6700.78	-536.71	74.04	537.61	541.79	172.15	7.41
6995.00	85.38	181.27	6703.97	-568.53	73.15	569.42	573.22	172.67	7.13
7026.00	87.58	180.58	6705.87	-599.47	72.65	600.35	603.86	173.09	7.44
7053.00	87.76	180.26	6706.97	-626.45	72.46	627.32	630.62	173.40	1.36
EOC- 3.29' ABOVE, 20.98' LEFT									
7084.00	89.52	180.35	6707.71	-657.44	72.29	658.30	661.40	173.73	5.68
7179.00	90.31	179.73	6707.85	-752.44	72.22	753.29	755.89	174.52	1.06
7271.00	90.48	177.97	6707.21	-844.41	74.07	845.29	847.65	174.99	1.92
7366.00	89.43	177.97	6707.29	-939.35	77.44	940.26	942.54	175.29	1.11
7460.00	89.34	177.45	6708.30	-1033.27	81.19	1034.22	1036.45	175.51	.56
7553.00	89.69	178.94	6709.08	-1126.22	84.12	1127.20	1129.35	175.73	1.65
7647.00	89.87	178.41	6709.44	-1220.19	86.29	1221.19	1223.24	175.95	.60
7740.00	90.48	177.45	6709.16	-1313.13	89.65	1314.16	1316.19	176.09	1.22
7833.00	90.40	179.73	6708.45	-1406.09	91.94	1407.15	1409.09	176.26	2.45
7926.00	90.40	181.14	6707.80	-1499.08	91.24	1500.12	1501.86	176.52	1.52
8021.00	91.19	180.79	6706.48	-1594.06	89.64	1595.07	1596.58	176.78	.91

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
8113.00	90.57	181.67	6705.07	-1686.03	87.66	1687.01	1688.30	177.02	1.17
8207.00	89.60	181.93	6704.93	-1779.98	84.71	1780.91	1781.99	177.28	1.07
8300.00	89.78	182.19	6705.43	-1872.92	81.37	1873.80	1874.68	177.51	.34
8395.00	88.72	180.44	6706.67	-1967.88	79.19	1968.73	1969.47	177.70	2.15
8489.00	88.64	180.96	6708.84	-2061.85	78.04	2062.67	2063.32	177.83	.56
8583.00	88.37	180.88	6711.29	-2155.80	76.53	2156.60	2157.16	177.97	.30
8676.00	88.64	181.75	6713.72	-2248.75	74.39	2249.51	2249.98	178.11	.98
8769.00	89.60	181.23	6715.15	-2341.70	71.98	2342.43	2342.81	178.24	1.17
8864.00	89.34	180.61	6716.02	-2436.69	70.45	2437.39	2437.70	178.34	.71
8958.00	91.28	180.26	6715.52	-2530.68	69.74	2531.36	2531.64	178.42	2.10
9050.00	89.43	179.91	6714.95	-2622.67	69.60	2623.34	2623.59	178.48	2.05
9144.00	89.08	179.64	6716.17	-2716.66	69.97	2717.33	2717.56	178.52	.47
9238.00	89.60	179.64	6717.25	-2810.65	70.56	2811.32	2811.54	178.56	.55
9330.00	90.31	180.17	6717.32	-2902.65	70.71	2903.32	2903.51	178.60	.96
9425.00	90.75	180.00	6716.44	-2997.65	70.57	2998.30	2998.48	178.65	.50
9519.00	91.54	180.08	6714.57	-3091.63	70.51	3092.28	3092.43	178.69	.84
9611.00	90.66	180.35	6712.80	-3183.61	70.16	3184.25	3184.38	178.74	1.00
9705.00	90.92	180.17	6711.50	-3277.60	69.74	3278.22	3278.34	178.78	.34
9799.00	90.57	179.21	6710.28	-3371.59	70.24	3372.21	3372.32	178.81	1.09
9893.00	90.04	179.91	6709.78	-3465.58	70.97	3466.21	3466.31	178.83	.93
9986.00	91.54	180.70	6708.50	-3558.57	70.47	3559.18	3559.27	178.87	1.82
10080.00	89.60	180.00	6707.56	-3652.56	69.90	3653.15	3653.23	178.90	2.19
10174.00	89.08	178.94	6708.65	-3746.55	70.77	3747.14	3747.22	178.92	1.26
10268.00	89.16	179.29	6710.09	-3840.52	72.22	3841.13	3841.20	178.92	.38
10363.00	88.55	178.94	6711.99	-3935.49	73.68	3936.11	3936.18	178.93	.74
10456.00	87.93	179.91	6714.85	-4028.44	74.62	4029.07	4029.13	178.94	1.24
10550.00	88.55	179.91	6717.73	-4122.40	74.77	4123.02	4123.08	178.96	.66
10644.00	89.69	179.12	6719.18	-4216.38	75.56	4217.00	4217.06	178.97	1.48
10693.00	90.13	179.12	6719.25	-4265.38	76.31	4266.00	4266.06	178.98	.90
STRAIGHT-LINE PROJECTION TO BIT @ TD									
10750.00	90.13	179.12	6719.12	-4322.37	77.19	4323.00	4323.06	178.98	.00