

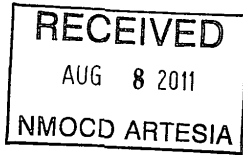
30-015-36044



Job Number: 201101
 Company: COG Operating LLC
 Lease/Well: Blitzen 35 Federal Com # 1H
 Location: Eddy County NM
 Rig Name: JW #2
 RKB: ☐
 G.L. or M.S.L.: ☐

State/Country: USA
 Declination: 7.81
 Grid: NORTH
 File name: F:\201101.SVY
 Date/Time: 24-Apr-11 / 13:02
 Curve Name: Blitzen 35 Federal Com # 1

WellPath Solutions Inc



WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 269.40
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

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
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	1.84	107.85	99.98	-.49	1.53	-1.52	1.61	107.85	1.84
200.00	1.29	122.50	199.95	-1.59	4.01	-3.99	4.31	111.64	.68
300.00	1.18	120.80	299.92	-2.72	5.84	-5.81	6.44	114.98	.12
400.00	1.29	111.01	399.90	-3.65	7.77	-7.74	8.59	115.16	.24
500.00	1.33	118.24	499.87	-4.60	9.85	-9.80	10.87	115.06	.17
600.00	1.01	120.68	599.85	-5.60	11.63	-11.57	12.91	115.73	.32
700.00	.82	115.87	699.84	-6.37	13.03	-12.96	14.50	116.04	.20
800.00	.64	101.95	799.83	-6.79	14.22	-14.15	15.76	115.53	.25
900.00	.61	102.63	899.83	-7.03	15.29	-15.21	16.82	114.68	.03
1000.00	.61	120.85	999.82	-7.41	16.26	-16.18	17.87	114.51	.19
1100.00	.66	117.61	1099.81	-7.95	17.23	-17.15	18.98	114.78	.06
1200.00	.64	107.25	1199.81	-8.39	18.27	-18.19	20.11	114.65	.12

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	
1300.00	.62	87.53	1299.80	-8.53	19.35	-19.26	21.14	113.79	.22
1400.00	.38	97.54	1399.80	-8.55	20.22	-20.13	21.95	112.92	.25
1500.00	.39	56.49	1499.80	-8.41	20.83	-20.74	22.46	111.98	.27
1600.00	.20	31.99	1599.79	-8.07	21.21	-21.12	22.69	110.83	.22
1700.00	.24	345.72	1699.79	-7.72	21.25	-21.16	22.61	109.96	.18
1800.00	.45	335.55	1799.79	-7.16	21.03	-20.96	22.22	108.79	.22
1900.00	.61	332.38	1899.79	-6.33	20.62	-20.56	21.57	107.06	.16
2000.00	.47	310.78	1999.78	-5.59	20.07	-20.01	20.83	105.56	.24
2100.00	.76	321.08	2099.78	-4.81	19.34	-19.29	19.93	103.95	.31
2200.00	.69	332.02	2199.77	-3.76	18.64	-18.60	19.01	101.40	.15
2300.00	.85	318.07	2299.76	-2.67	17.86	-17.83	18.06	98.51	.25
2400.00	.63	320.79	2399.75	-1.70	17.02	-17.00	17.10	95.69	.22
2500.00	.71	337.83	2499.74	-.70	16.44	-16.43	16.45	92.43	.21
2600.00	.63	332.76	2599.74	.37	15.95	-15.95	15.96	88.68	.10
2700.00	.55	357.31	2699.73	1.33	15.68	-15.69	15.73	85.13	.26
2800.00	.52	.23	2799.73	2.27	15.66	-15.68	15.82	81.76	.04
2900.00	.49	340.09	2899.72	3.12	15.51	-15.54	15.82	78.62	.18
3000.00	.19	19.52	2999.72	3.68	15.42	-15.46	15.86	76.57	.36
3100.00	.39	357.63	3099.72	4.18	15.46	-15.51	16.02	74.88	.23
3200.00	.38	330.87	3199.72	4.81	15.29	-15.34	16.03	72.54	.18
3300.00	.45	331.87	3299.72	5.44	14.94	-15.00	15.90	69.98	.07
3400.00	.45	302.67	3399.71	6.00	14.43	-14.49	15.62	67.41	.23
3500.00	.45	261.92	3499.71	6.16	13.71	-13.77	15.03	65.80	.31
3600.00	.45	259.86	3599.71	6.03	12.93	-12.99	14.27	64.98	.02
3700.00	.49	250.94	3699.70	5.83	12.14	-12.20	13.47	64.37	.08
3800.00	.37	241.13	3799.70	5.53	11.45	-11.51	12.72	64.23	.14
3900.00	.66	253.75	3899.70	5.21	10.62	-10.67	11.83	63.85	.31
4000.00	.61	238.40	3999.69	4.77	9.61	-9.66	10.73	63.59	.18
4100.00	.75	261.45	4099.68	4.40	8.51	-8.56	9.58	62.68	.30
4200.00	.64	244.58	4199.68	4.06	7.36	-7.40	8.40	61.12	.23
4300.00	.71	261.01	4299.67	3.72	6.24	-6.28	7.27	59.19	.20
4400.00	.68	254.77	4399.66	3.47	5.06	-5.09	6.13	55.55	.08
4500.00	.93	258.89	4499.65	3.16	3.69	-3.72	4.86	49.44	.26
4600.00	.74	257.29	4599.64	2.86	2.26	-2.29	3.65	38.36	.19

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	
4700.00	.84	265.54	4699.63	2.66	.90	-.93	2.81	18.74	.15
4800.00	.70	283.04	4799.62	2.74	-.42	.39	2.77	351.22	.27
4900.00	.65	279.75	4899.62	2.98	-1.58	1.55	3.37	332.07	.06
5000.00	.81	276.25	4999.61	3.15	-2.84	2.81	4.24	317.96	.17
5100.00	.64	282.56	5099.60	3.35	-4.09	4.05	5.28	309.31	.19
5200.00	.65	287.88	5199.59	3.64	-5.17	5.13	6.33	305.16	.06
5300.00	.71	287.17	5299.59	4.00	-6.30	6.26	7.47	302.39	.06
5400.00	.67	290.82	5399.58	4.39	-7.44	7.40	8.64	300.54	.06
5500.00	.47	303.54	5499.58	4.82	-8.33	8.28	9.63	300.08	.24
5600.00	.60	315.74	5599.57	5.43	-9.04	8.98	10.54	300.98	.17
5700.00	.57	315.30	5699.57	6.15	-9.75	9.69	11.53	302.25	.03
5800.00	.42	318.33	5799.56	6.78	-10.35	10.27	12.37	303.24	.15
5900.00	.48	308.87	5899.56	7.32	-10.92	10.84	13.14	303.84	.10
6000.00	.48	330.20	5999.56	7.95	-11.45	11.37	13.94	304.76	.18
6100.00	.46	345.99	6099.55	8.70	-11.76	11.66	14.62	306.50	.13
6200.00	.85	347.72	6199.55	9.81	-12.01	11.91	15.51	309.25	.39
6238.00	3.80	288.40	6237.51	10.49	-13.27	13.16	16.91	308.32	9.06
6270.00	9.00	280.20	6269.30	11.26	-16.74	16.62	20.18	303.94	16.46
6302.00	13.70	276.50	6300.67	12.14	-22.97	22.84	25.98	297.85	14.86
6334.00	16.90	272.90	6331.53	12.80	-31.38	31.25	33.89	292.19	10.43
6366.00	19.10	269.80	6361.96	13.02	-41.27	41.13	43.27	287.51	7.50
6398.00	21.60	267.30	6391.97	12.72	-52.39	52.25	53.91	283.65	8.27
6430.00	24.20	265.90	6421.44	11.98	-64.81	64.68	65.91	280.47	8.30
6462.00	26.70	263.50	6450.33	10.69	-78.50	78.38	79.23	277.76	8.45
6493.00	29.50	260.20	6477.68	8.60	-92.95	92.85	93.34	275.29	10.33
6525.00	32.60	259.30	6505.09	5.66	-109.18	109.12	109.33	272.97	9.80
6557.00	36.20	259.60	6531.49	2.36	-126.95	126.92	126.98	271.06	11.26
6589.00	40.00	259.60	6556.67	-1.21	-146.37	146.38	146.38	269.53	11.87
6621.00	43.60	258.70	6580.52	-5.23	-167.31	167.36	167.40	268.21	11.40
6653.00	47.20	258.40	6602.98	-9.75	-189.64	189.73	189.89	267.06	11.27
6685.00	50.60	258.60	6624.02	-14.56	-213.27	213.41	213.76	266.09	10.64
6717.00	54.00	259.50	6643.58	-19.36	-238.12	238.31	238.91	265.35	10.86
6749.00	57.20	260.60	6661.66	-23.92	-264.13	264.36	265.21	264.83	10.39
6781.00	60.70	261.30	6678.16	-28.23	-291.20	291.48	292.56	264.46	11.10

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	
6813.00	64.60	262.10	6692.86	-32.33	-319.32	319.64	320.95	264.22	12.39
6845.00	68.10	262.70	6705.70	-36.20	-348.37	348.73	350.24	264.07	11.07
6877.00	71.50	262.80	6716.74	-39.99	-378.15	378.55	380.26	263.96	10.63
6909.00	75.30	262.70	6725.89	-43.86	-408.57	409.01	410.92	263.87	11.88
6941.00	78.50	263.00	6733.14	-47.74	-439.49	439.97	442.08	263.80	10.04
6972.00	81.00	263.30	6738.65	-51.38	-469.78	470.29	472.58	263.76	8.12
7004.00	83.60	263.60	6742.94	-54.99	-501.28	501.83	504.29	263.74	8.18
7036.00	87.30	264.10	6745.48	-58.41	-532.99	533.57	536.18	263.75	11.67
7068.00	89.60	265.10	6746.34	-61.42	-564.83	565.44	568.16	263.79	7.84
7100.00	90.00	265.60	6746.46	-64.01	-596.73	597.36	600.15	263.88	2.00
7134.00	89.80	267.80	6746.51	-65.97	-630.67	631.32	634.11	264.03	6.50
7166.00	90.90	267.20	6746.32	-67.37	-662.64	663.30	666.05	264.20	3.92
7198.00	92.60	267.00	6745.34	-68.98	-694.58	695.26	698.00	264.33	5.35
7230.00	93.10	266.50	6743.75	-70.80	-726.49	727.19	729.93	264.43	2.21
7262.00	92.40	265.40	6742.22	-73.05	-758.37	759.09	761.88	264.50	4.07
7294.00	91.80	264.50	6741.04	-75.87	-790.22	790.97	793.86	264.52	3.38
7326.00	90.70	264.10	6740.35	-79.05	-822.06	822.84	825.85	264.51	3.66
7357.00	91.00	263.00	6739.89	-82.53	-852.86	853.67	856.84	264.47	3.68
7389.00	91.10	262.60	6739.30	-86.54	-884.60	885.46	888.82	264.41	1.29
7421.00	91.40	263.20	6738.60	-90.49	-916.35	917.24	920.80	264.36	2.10
7453.00	91.60	263.80	6737.76	-94.11	-948.13	949.06	952.79	264.33	1.98
7485.00	91.70	264.70	6736.84	-97.32	-979.96	980.92	984.78	264.33	2.83
7517.00	92.40	265.60	6735.70	-100.02	-1011.82	1012.81	1016.75	264.35	3.56
7580.00	93.00	267.60	6732.73	-103.75	-1074.64	1075.66	1079.63	264.49	3.31
7644.00	92.10	267.10	6729.88	-106.71	-1138.50	1139.56	1143.49	264.65	1.61
7708.00	92.00	268.00	6727.59	-109.44	-1202.40	1203.48	1207.37	264.80	1.41
7771.00	93.60	269.90	6724.51	-110.60	-1265.31	1266.40	1270.14	265.00	3.94
7835.00	94.40	271.60	6720.05	-109.76	-1329.15	1330.22	1333.67	265.28	2.93
7898.00	93.80	274.10	6715.54	-106.64	-1391.90	1392.94	1395.98	265.62	4.07
7962.00	93.80	275.30	6711.30	-101.41	-1455.55	1456.53	1459.07	266.01	1.87
8026.00	93.20	273.20	6707.40	-96.67	-1519.25	1520.18	1522.32	266.36	3.41
8089.00	93.10	273.70	6703.93	-92.89	-1582.04	1582.92	1584.76	266.64	.81
8153.00	93.90	275.30	6700.03	-87.88	-1645.72	1646.55	1648.06	266.94	2.79
8217.00	91.90	274.80	6696.79	-82.25	-1709.39	1710.15	1711.36	267.25	3.22

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	
8281.00	91.20	274.10	6695.06	-77.29	-1773.17	1773.88	1774.85	267.50	1.55
8345.00	91.60	272.60	6693.49	-73.55	-1837.04	1837.71	1838.51	267.71	2.42
8409.00	91.20	270.60	6691.93	-71.76	-1900.99	1901.64	1902.35	267.84	3.19
8473.00	90.60	268.70	6690.92	-72.15	-1964.98	1965.63	1966.30	267.90	3.11
8536.00	92.70	270.70	6689.11	-72.48	-2027.95	2028.59	2029.24	267.95	4.60
8600.00	93.00	272.20	6685.93	-70.86	-2091.84	2092.47	2093.04	268.06	2.39
8664.00	92.50	272.10	6682.86	-68.47	-2155.72	2156.32	2156.81	268.18	.80
8728.00	91.60	270.00	6680.57	-67.29	-2219.67	2220.25	2220.69	268.26	3.57
8791.00	91.00	270.00	6679.14	-67.29	-2282.65	2283.23	2283.64	268.31	.95
8855.00	92.60	272.30	6677.13	-66.01	-2346.60	2347.16	2347.53	268.39	4.38
8919.00	91.90	272.00	6674.62	-63.61	-2410.51	2411.04	2411.35	268.49	1.19
8982.00	91.20	269.40	6672.91	-62.84	-2473.47	2474.00	2474.27	268.54	4.27
9045.00	90.70	269.60	6671.87	-63.39	-2536.46	2536.99	2537.25	268.57	.85
9109.00	91.20	271.50	6670.81	-62.78	-2600.45	2600.96	2601.20	268.62	3.07
9205.00	91.90	271.40	6668.21	-60.35	-2696.38	2696.86	2697.06	268.72	.74
9300.00	91.90	270.90	6665.06	-58.44	-2791.31	2791.77	2791.92	268.80	.53
9396.00	92.50	271.60	6661.37	-56.35	-2887.21	2887.65	2887.76	268.88	.96
9492.00	92.70	271.00	6657.02	-54.18	-2983.09	2983.49	2983.58	268.96	.66
9587.00	92.80	271.10	6652.46	-52.44	-3077.96	3078.35	3078.41	269.02	.15
9683.00	94.10	270.00	6646.68	-51.52	-3173.78	3174.15	3174.20	269.07	1.77
9779.00	94.20	272.40	6639.74	-49.51	-3269.50	3269.84	3269.88	269.13	2.50
9874.00	92.20	272.20	6634.43	-45.71	-3364.27	3364.57	3364.58	269.22	2.12
9969.00	90.20	274.00	6632.44	-40.57	-3459.11	3459.34	3459.34	269.33	2.83
10065.00	87.30	274.00	6634.54	-33.88	-3554.84	3555.00	3555.00	269.45	3.02
10161.00	85.50	272.70	6640.56	-28.28	-3650.48	3650.58	3650.59	269.56	2.31
10257.00	84.60	270.70	6648.85	-25.44	-3746.07	3746.13	3746.16	269.61	2.28
10352.00	86.70	269.40	6656.05	-25.36	-3840.79	3840.85	3840.88	269.62	2.60
project to bit									
10409.00	87.00	268.00	6659.19	-26.65	-3897.69	3897.76	3897.78	269.61	2.51

COG Operating, LLC

Blitzen 35 Federal Com #1

SHL: Sec 35-T16S-R28E

330' FNL, 990' FEL

Eddy County, NM

KB 3610' MSL

GL 3592' MSL

April 26, 2011



Completion Drawing

