



NOV 19 2014

RECEIVED

Company: Aspen Operating

Lease/Well: State CA#2

Location: S9 T10S R36E

Rig Name: Precision 81

State/County: New Mexico/Lea

Latitude: 32.46, Longitude: -103.25

GRID North is 0.58 Degrees East of True North

VS-Azi: 0.00 Degrees

30-025-41750



FIELD COPY ONLY (NOT DEFINITIVE)

Depth Reference : R.K.B. = 30 Feet

DRILLOG MS GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 6/17/2014 / 13:07

Vaughn Energy Services

Midland, TX

432-563-5444

Andrew Askew

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	****
150.10	0.31	144.46	150.10	-0.33	0.24	-0.33	0.41	144.46	0.21
242.54	0.48	130.59	242.54	-0.79	0.68	-0.79	1.04	139.38	0.20
334.98	0.58	150.90	334.97	-1.45	1.20	-1.45	1.88	140.45	0.23
427.42	0.75	160.77	427.41	-2.44	1.63	-2.44	2.93	146.25	0.22
519.86	0.26	190.89	519.84	-3.21	1.79	-3.21	3.68	150.91	0.59
612.30	0.36	193.61	612.28	-3.71	1.68	-3.71	4.07	155.63	0.11
704.74	0.34	160.57	704.72	-4.25	1.70	-4.25	4.58	158.19	0.22
797.18	0.31	205.44	797.16	-4.73	1.68	-4.73	5.02	160.40	0.27
889.62	0.32	225.30	889.60	-5.13	1.40	-5.13	5.32	164.79	0.12
982.06	0.29	228.93	982.04	-5.47	1.04	-5.47	5.57	169.28	0.03
1074.50	0.44	230.67	1074.47	-5.85	0.58	-5.85	5.88	174.31	0.16
1166.94	0.21	219.30	1166.91	-6.21	0.20	-6.21	6.21	178.14	0.25
1259.38	0.19	280.52	1259.35	-6.31	-0.06	-6.31	6.31	180.51	0.22
1351.82	0.13	275.84	1351.79	-6.27	-0.31	-6.27	6.28	182.82	0.07
1444.26	0.17	251.37	1444.23	-6.31	-0.54	-6.31	6.33	184.90	0.08
1536.70	0.08	143.10	1536.67	-6.40	-0.63	-6.40	6.43	185.62	0.23
1629.14	0.11	94.73	1629.11	-6.46	-0.50	-6.46	6.48	184.46	0.09
1721.58	0.16	259.12	1721.55	-6.49	-0.54	-6.49	6.52	184.80	0.29
1814.02	0.13	267.65	1813.99	-6.52	-0.78	-6.52	6.57	186.78	0.04
1906.46	0.03	260.53	1906.43	-6.53	-0.90	-6.53	6.59	187.88	0.10
1998.90	0.07	276.24	1998.87	-6.53	-0.99	-6.53	6.60	188.59	0.04
2091.34	0.48	50.38	2091.31	-6.27	-0.74	-6.27	6.32	186.77	0.58
2183.78	0.48	86.59	2183.75	-6.00	-0.06	-6.00	6.00	180.56	0.32
2276.22	0.37	46.27	2276.18	-5.77	0.55	-5.77	5.80	174.59	0.34
2368.66	0.28	78.50	2368.62	-5.52	0.99	-5.52	5.61	169.87	0.22
2461.10	0.19	164.04	2461.06	-5.62	1.25	-5.62	5.76	167.46	0.35
2553.54	0.20	147.07	2553.50	-5.90	1.38	-5.90	6.06	166.84	0.06
2645.98	0.10	222.54	2645.94	-6.10	1.41	-6.10	6.26	166.97	0.22
2738.42	0.18	221.77	2738.38	-6.27	1.26	-6.27	6.39	168.67	0.09
2830.86	0.19	226.17	2830.82	-6.49	1.05	-6.49	6.57	170.85	0.02
2923.30	0.22	247.37	2923.26	-6.66	0.77	-6.66	6.71	173.39	0.09
3015.74	0.16	249.64	3015.70	-6.77	0.49	-6.77	6.79	175.88	0.06
3108.18	0.17	225.36	3108.14	-6.92	0.27	-6.92	6.92	177.77	0.08
3200.62	0.39	356.00	3200.58	-6.70	0.15	-6.70	6.70	178.72	0.56

NOV 24 2014

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
3293.06	0.13	68.48	3293.02	-6.35	0.22	-6.35	6.36	177.99	0.40
3385.50	0.15	79.44	3385.46	-6.29	0.44	-6.29	6.31	176.04	0.04
3477.94	0.19	89.99	3477.90	-6.27	0.71	-6.27	6.31	173.56	0.06
3570.38	0.29	145.55	3570.34	-6.47	0.99	-6.47	6.54	171.26	0.26
3662.82	0.37	181.51	3662.77	-6.95	1.12	-6.95	7.04	170.86	0.23
3755.26	0.32	7.52	3755.21	-6.99	1.14	-6.99	7.08	170.70	0.75
3847.70	0.28	17.18	3847.65	-6.51	1.25	-6.51	6.63	169.17	0.07
3940.14	0.46	39.74	3940.09	-6.01	1.55	-6.01	6.21	165.53	0.25
4032.58	0.15	43.48	4032.53	-5.63	1.87	-5.63	5.94	161.60	0.33
4125.02	0.09	90.22	4124.97	-5.54	2.03	-5.54	5.90	159.85	0.12
4217.46	0.16	29.71	4217.41	-5.43	2.17	-5.43	5.85	158.18	0.16
4309.90	0.08	1.35	4309.85	-5.25	2.24	-5.25	5.71	156.89	0.11
4402.34	0.10	12.24	4402.29	-5.11	2.26	-5.11	5.59	156.16	0.03
4494.78	0.08	39.52	4494.73	-4.99	2.31	-4.99	5.50	155.12	0.05
4587.22	0.19	263.15	4587.17	-4.96	2.20	-4.96	5.43	156.06	0.27
4679.66	0.13	215.13	4679.61	-5.07	1.99	-5.07	5.44	158.56	0.15
4772.10	0.18	341.64	4772.05	-5.02	1.88	-5.02	5.36	159.45	0.31
4864.54	0.18	29.54	4864.49	-4.75	1.91	-4.75	5.12	158.11	0.16
4956.98	0.26	100.03	4956.93	-4.66	2.19	-4.66	5.15	154.82	0.29
5049.42	0.28	113.84	5049.37	-4.78	2.60	-4.78	5.45	151.46	0.07
5141.86	0.09	94.58	5141.81	-4.88	2.88	-4.88	5.67	149.46	0.21
5234.30	0.16	199.37	5234.25	-5.01	2.91	-5.01	5.79	149.84	0.22
5326.74	0.50	99.93	5326.68	-5.19	3.26	-5.19	6.13	147.87	0.59
5419.18	0.49	106.58	5419.12	-5.38	4.04	-5.38	6.73	143.09	0.06
5511.62	0.32	110.67	5511.56	-5.58	4.66	-5.58	7.27	140.14	0.19
5604.06	0.36	96.88	5604.00	-5.71	5.19	-5.71	7.72	137.70	0.10
5696.50	0.54	90.83	5696.43	-5.75	5.92	-5.75	8.25	134.17	0.20
5788.94	0.61	87.93	5788.87	-5.74	6.84	-5.74	8.93	129.99	0.08
5881.38	0.69	81.43	5881.30	-5.64	7.88	-5.64	9.69	125.59	0.12
5973.82	0.52	81.08	5973.74	-5.49	8.84	-5.49	10.40	121.85	0.18
6066.26	0.53	77.13	6066.17	-5.33	9.67	-5.33	11.04	118.87	0.04
6158.70	0.75	55.22	6158.61	-4.89	10.59	-4.89	11.66	114.80	0.35
6251.14	0.68	60.96	6251.04	-4.28	11.56	-4.28	12.32	110.34	0.11
6343.58	0.66	67.47	6343.48	-3.81	12.53	-3.81	13.10	106.93	0.08
6436.02	0.59	71.10	6435.91	-3.45	13.47	-3.45	13.91	104.38	0.09
6528.46	0.36	85.40	6528.35	-3.28	14.21	-3.28	14.58	102.98	0.28
6620.90	0.08	45.81	6620.79	-3.21	14.55	-3.21	14.90	102.43	0.32
6713.34	0.52	38.54	6713.22	-2.83	14.86	-2.83	15.12	100.79	0.48
6805.78	0.42	51.15	6805.66	-2.29	15.38	-2.29	15.55	98.47	0.16
6898.22	0.39	45.07	6898.10	-1.86	15.87	-1.86	15.98	96.68	0.06
6990.66	0.46	26.26	6990.54	-1.30	16.25	-1.30	16.31	94.57	0.17
7083.10	0.73	3.08	7082.97	-0.38	16.45	-0.38	16.46	91.31	0.38
7175.54	0.82	20.22	7175.40	0.83	16.71	0.83	16.73	87.14	0.27
7267.98	0.61	26.07	7267.84	1.90	17.16	1.90	17.26	83.69	0.24
7360.42	0.54	18.00	7360.27	2.76	17.51	2.76	17.73	81.05	0.11
7452.86	0.78	7.86	7452.71	3.79	17.73	3.79	18.13	77.92	0.28
7545.30	0.85	12.19	7545.14	5.09	17.96	5.09	18.67	74.19	0.10
7637.74	0.57	14.15	7637.57	6.20	18.22	6.20	19.24	71.20	0.30
7730.18	0.39	336.72	7730.01	6.94	18.21	6.94	19.48	69.15	0.38
7822.62	0.41	27.70	7822.44	7.52	18.24	7.52	19.73	67.60	0.37
7915.06	0.40	21.04	7914.88	8.11	18.51	8.11	20.21	66.33	0.05
8007.50	0.38	23.35	8007.32	8.70	18.75	8.70	20.67	65.11	0.03
8099.94	0.22	14.68	8099.76	9.16	18.92	9.16	21.02	64.17	0.18
8192.38	0.51	310.14	8192.20	9.59	18.65	9.59	20.97	62.79	0.49
8284.82	0.54	318.19	8284.63	10.18	18.05	10.18	20.72	60.59	0.09

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
8377.26	0.58	339.86	8377.07	10.94	17.60	10.94	20.72	58.14	0.23
8469.70	0.54	348.71	8469.50	11.81	17.35	11.81	20.99	55.76	0.10
8562.14	0.37	340.20	8561.94	12.52	17.16	12.52	21.25	53.88	0.20
8654.58	0.52	318.10	8654.38	13.12	16.78	13.12	21.30	51.98	0.24
8747.02	0.36	337.88	8746.82	13.70	16.39	13.70	21.36	50.11	0.24
8839.46	0.43	325.93	8839.25	14.26	16.09	14.26	21.50	48.45	0.12
8931.90	0.27	4.93	8931.69	14.77	15.91	14.77	21.71	47.13	0.30
9024.34	0.48	264.03	9024.13	14.95	15.54	14.95	21.56	46.12	0.65
9116.78	0.25	207.63	9116.57	14.73	15.06	14.73	21.07	45.63	0.44
9209.22	0.30	237.48	9209.01	14.42	14.76	14.42	20.64	45.67	0.16
9301.66	0.19	136.58	9301.45	14.18	14.66	14.18	20.40	45.96	0.42
9394.10	0.35	31.94	9393.89	14.31	14.92	14.31	20.67	46.20	0.48
9486.54	0.27	119.96	9486.33	14.44	15.26	14.44	21.01	46.57	0.47
9578.98	0.21	114.47	9578.76	14.26	15.60	14.26	21.14	47.55	0.07
9671.42	0.38	94.50	9671.20	14.17	16.06	14.17	21.42	48.57	0.22
9763.86	0.51	127.18	9763.64	13.90	16.69	13.90	21.72	50.22	0.30
9856.30	0.42	130.83	9856.08	13.43	17.27	13.43	21.88	52.13	0.10
9879.00	0.40	124.20	9878.78	13.33	17.40	13.33	21.92	52.54	0.22

HORIZONTAL DISPLACEMENT IS
21.92 FEET AT 52.54 DEGREES

Co: Coker Energy Services Drillers: Scott Dean Well Name: State CA # 2 Location: Lea County NM			Units: Feet, °, °/100ft Elevation: Northing: Easting:		VS Az: 0.00 Map System: NAD83, St. Plane, North Dakota North Latitude: Longitude:			Method: Minimum Curvature				
: : State CA # 2: Survey (0)												
No.	MD	CL	Inc.	Azi.	TVD	VS	+N/S-	+E/W-	BR	WR	DLS	Comments
1	9879.00	0.00	0.40	124.20	9878.78	13.33	13.33	17.40				Tie-In VES GYRO
2	9892.00	13.00	0.60	134.10	9891.78	13.26	13.26	17.49	1.54	76.15	1.67	KES Surveys
3	10169.00	277.00	0.70	143.20	10168.76	10.89	10.89	19.54	0.04	3.29	0.05	
4	10446.00	277.00	0.70	154.70	10445.74	8.01	8.01	21.28	0.00	4.15	0.05	
5	10723.00	277.00	1.90	217.90	10722.68	2.85	2.85	19.18	0.43	22.82	0.61	
6	11000.00	277.00	1.60	230.20	10999.55	-3.24	-3.24	13.39	-0.11	4.44	0.17	
7	11308.00	308.00	2.60	262.60	11307.35	-6.90	-6.90	3.16	0.32	10.52	0.49	
8	11400.00	92.00	2.80	246.20	11399.25	-8.07	-8.07	-0.97	0.22	-17.83	0.86	
9	11492.00	92.00	3.80	240.40	11491.09	-10.49	-10.49	-5.68	1.09	-6.30	1.14	
10	11585.00	93.00	4.10	241.30	11583.87	-13.60	-13.60	-11.27	0.32	0.97	0.33	