



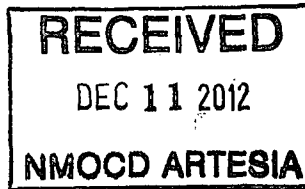
A GYRO TECHNOLOGIES INC. COMPANY

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

December 10, 2012

30-015-40586

Concho West  
2208 W. Main St.  
Artesia, New Mexico 88210



Attn: Stormi Davis

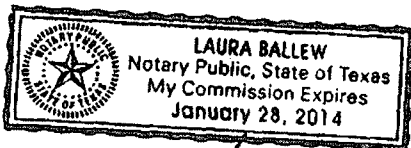
RE: Shoeless Joe 32 State Com 1H

Please find enclosed a copy of the survey from 0.00' to 9,000.00' ran on the above referenced well.

If I can be of any further service please do not hesitate to call me at 800-606-4976.

STATE OF TEXAS §  
  §  
COUNTY OF NUECES §

This instrument was acknowledged before me on the 10<sup>th</sup> day of December A.D., 2012, by Keith Havelka.



Laura Ballew  
Laura Ballew  
Notary Public, State of Texas

Sincerely,  
[Signature]  
Keith Havelka  
Operations

Company: COG Operating, LLC

Lease/Well: Shoeless Joe 32 State Com/1H



Rig Name: Patriot #6

State/County: New Mexico/Eddy

Latitude: 32.62, Longitude: -104.00

GRID North is 0.18 Degrees East of True North

VS-Azi: 0.00 Degrees



RKB : 17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 12/10/2012 / 10:36

Vaughn Energy Services

Gardendale, TX

(432) 563-6444

Surveyor: Dustin Wedel

Shoeless Joe 32 State Com 1H / API 30-015-40586

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	0.18	28.04	100.00	0.14	0.07	0.15	28.04	0.18
200.00	0.16	282.17	200.00	0.30	0.01	0.30	1.31	0.27
300.00	0.21	277.56	300.00	0.35	-0.31	0.47	318.46	0.05
400.00	0.26	292.95	400.00	0.47	-0.71	0.85	303.44	0.08
500.00	0.42	334.23	500.00	0.89	-1.08	1.40	309.44	0.28
600.00	0.58	55.50	599.99	1.50	-0.82	1.71	331.31	0.66
700.00	0.79	62.40	699.99	2.11	0.20	2.12	5.49	0.23
800.00	1.00	64.31	799.97	2.80	1.60	3.22	29.67	0.21
900.00	1.41	65.45	899.95	3.69	3.50	5.08	43.47	0.41
1000.00	1.81	66.59	999.91	4.83	6.08	7.75	51.48	0.41
1100.00	2.02	68.62	1099.86	6.10	9.16	11.00	56.34	0.22
1200.00	2.24	69.64	1199.79	7.42	12.63	14.65	59.57	0.22
1300.00	2.04	80.75	1299.72	8.39	16.22	18.26	62.66	0.46
1400.00	1.83	91.86	1399.66	8.82	19.57	21.39	66.23	0.42
1500.00	1.31	112.26	1499.62	8.14	22.23	23.67	89.90	0.76
1600.00	0.78	132.67	1599.61	7.24	23.79	24.87	73.08	0.64
1700.00	0.52	116.85	1699.60	6.57	24.70	25.56	75.10	0.32
1800.00	0.25	118.04	1799.60	6.26	25.29	26.05	76.09	0.27

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	0.58	124.93	1899.60	5.87	25.90	26.56	77.23	0.34
2000.00	0.92	168.82	1999.59	4.79	26.48	26.90	79.75	0.64
2100.00	1.82	177.71	2099.56	2.42	26.69	26.80	84.83	0.92
2200.00	2.72	186.60	2199.48	-1.53	26.49	26.53	93.30	0.96
2300.00	2.73	190.55	2299.37	-6.23	25.78	26.52	103.58	0.19
2400.00	2.75	194.51	2399.25	-10.89	24.74	27.03	113.76	0.19
2500.00	2.65	196.04	2499.14	-15.43	23.50	28.11	123.29	0.12
2600.00	2.55	197.57	2599.04	-19.77	22.19	29.72	131.70	0.12
2700.00	2.54	204.83	2698.94	-23.90	20.59	31.54	139.25	0.32
2800.00	2.52	212.10	2798.84	-27.77	18.49	33.36	146.34	0.32
2900.00	2.29	216.31	2898.75	-31.25	16.14	35.17	152.69	0.29
3000.00	2.06	220.52	2998.68	-34.23	13.78	36.90	158.06	0.28
3100.00	2.09	221.09	3098.62	-36.97	11.42	38.69	162.83	0.03
3200.00	2.11	221.66	3198.55	-39.71	9.00	40.72	167.23	0.03
3300.00	2.26	230.10	3298.48	-42.35	6.26	42.81	171.59	0.35
3400.00	2.41	235.53	3398.39	-44.81	3.02	44.91	176.15	0.27
3500.00	2.40	237.86	3498.31	-47.11	-0.49	47.11	180.59	0.10
3600.00	2.39	237.18	3598.22	-49.35	-4.01	49.52	184.65	0.03
3700.00	2.14	240.96	3698.14	-51.39	-7.39	51.92	188.19	0.29
3800.00	1.90	244.73	3798.08	-53.00	-10.53	54.04	191.23	0.28
3900.00	1.80	248.24	3898.03	-54.29	-13.48	55.94	193.94	0.15
4000.00	1.69	251.74	3997.98	-55.33	-16.33	57.69	196.45	0.15
4100.00	1.35	259.03	4097.95	-56.02	-18.89	59.12	198.63	0.39
4200.00	1.00	266.31	4197.92	-56.30	-20.92	60.06	200.38	0.38
4300.00	1.19	248.32	4297.91	-56.74	-22.75	61.13	201.85	0.39
4400.00	1.37	230.33	4397.88	-57.89	-24.63	62.91	203.05	0.44
4500.00	1.49	236.55	4497.85	-59.37	-26.64	65.07	204.17	0.19
4600.00	1.60	242.77	4597.81	-60.72	-28.97	67.28	205.50	0.20
4700.00	1.49	245.78	4697.78	-61.90	-31.40	69.41	206.90	0.14
4800.00	1.39	248.79	4797.75	-62.87	-33.72	71.34	208.21	0.13
4900.00	1.29	235.76	4897.72	-63.94	-35.78	73.27	209.23	0.32
5000.00	1.20	222.72	4997.70	-65.35	-37.42	75.30	209.80	0.30
5100.00	1.30	219.11	5097.67	-67.00	-38.85	77.44	210.11	0.13
5200.00	1.40	215.50	5197.64	-68.87	-40.27	79.78	210.32	0.13
5300.00	1.39	205.04	5297.61	-70.97	-41.50	82.21	210.32	0.26
5400.00	1.38	194.57	5397.59	-73.24	-42.32	84.58	210.02	0.25
5500.00	1.18	218.11	5497.56	-75.21	-43.25	86.76	209.90	0.56
5600.00	0.97	231.66	5597.54	-76.55	-44.55	88.57	210.20	0.32
5700.00	0.67	236.94	5697.53	-77.39	-45.71	89.88	210.57	0.31

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	0.38	232.23	5797.53	-77.92	-46.46	90.72	210.81	0.30
5900.00	0.59	182.07	5897.53	-78.83	-46.74	91.48	210.73	0.45
6000.00	0.81	131.92	5997.52	-79.62	-46.24	92.07	210.15	0.62
6100.00	0.76	130.45	6097.51	-80.52	-45.21	92.34	209.31	0.05
6200.00	0.72	128.98	6197.50	-81.34	-44.21	92.58	208.53	0.05
6300.00	0.91	131.96	6297.49	-82.27	-43.13	92.89	207.67	0.20
6400.00	1.10	134.94	6397.48	-83.48	-41.86	93.39	206.83	0.20
6500.00	1.49	131.60	6497.45	-85.02	-40.21	94.05	205.31	0.39
6600.00	1.87	128.25	6597.41	-86.89	-37.96	94.82	203.60	0.40
6700.00	1.68	125.28	6697.36	-88.75	-35.48	95.58	201.79	0.21
6800.00	1.49	122.32	6797.32	-90.29	-33.19	96.20	200.18	0.21
6900.00	1.56	139.14	6897.29	-92.01	-31.21	97.16	198.73	0.45
7000.00	1.63	155.96	6997.25	-94.34	-29.74	98.92	197.49	0.47
7100.00	1.81	142.99	7097.20	-96.90	-28.20	100.92	196.23	0.43
7200.00	1.99	130.02	7197.15	-99.29	-25.92	102.61	194.63	0.47
7300.00	1.52	140.07	7297.10	-101.42	-23.73	104.16	193.17	0.56
7400.00	1.05	150.12	7397.08	-103.24	-22.42	105.65	192.25	0.52
7500.00	1.02	143.24	7497.06	-104.75	-21.43	106.92	191.56	0.13
7600.00	0.99	136.35	7597.04	-106.08	-20.31	108.01	190.84	0.12
7700.00	0.82	122.98	7697.03	-107.10	-19.11	108.79	190.12	0.27
7800.00	0.65	119.60	7797.02	-107.76	-18.02	109.26	189.49	0.17
7900.00	0.86	170.79	7897.02	-108.79	-17.41	110.17	189.09	0.68
8000.00	1.08	221.98	7997.00	-110.23	-17.92	111.68	189.23	0.86
8100.00	1.51	223.13	8096.98	-111.89	-19.45	113.57	189.86	0.44
8200.00	1.95	214.29	8196.93	-114.26	-21.31	116.23	190.56	0.51
8300.00	1.67	214.37	8296.88	-116.87	-23.09	119.13	191.18	0.28
8400.00	1.39	224.46	8396.85	-118.94	-24.76	121.49	191.76	0.39
8500.00	1.16	239.41	8496.82	-120.32	-26.48	123.20	192.41	0.40
8600.00	0.94	244.37	8596.80	-121.19	-28.09	124.40	193.05	0.24
8700.00	0.76	254.81	8696.79	-121.71	-29.47	125.23	193.61	0.23
8800.00	0.58	265.26	8796.79	-121.93	-30.61	125.71	194.09	0.21
8900.00	0.43	274.90	8896.78	-121.94	-31.49	125.94	194.48	0.18
9000.00	0.27	284.55	8996.78	-121.85	-32.10	126.00	194.76	0.16



Vaughn Energy Services  
Gardendale, TX  
(432) 563-5444  
Surveyor: Dustin Wedel  
Shoeless Joe 32 State Com 1H / API 30-015-40586

