

Results of Directional Survey

API number:	30-025-41488		
OGRID:		Operator:	DEVON ENERGY PRODUCTION COMPANY, LP
		Property:	THISTLE UNIT # 55H

surface	ULSTR:	M	22	T	23S	R	33E
				150	FSL	660	FWL

BH Loc	ULSTR:	M	27	T	23S	R	33E
16142	MD	11291.9	TVD	329	FSL	717	FWL
				4951	FNL		

Top Perf/OH	ULSTR:	M	22	T	23S	R	33E
11565	MD	11240.8	TVD	377	FNL	698	FWL

Bot Perf/OH	ULSTR:	M	27	T	23S	R	33E
16067	MD	11294.1	TVD	404	FSL	718	FWL
				4876	FNL		

	MD	N/S	E/W	VD
	11523	-485.27	38.37	11240.19
TOP PERFS/OH	11565	-527.25	37.66	11240.82
	11617	-579.23	36.77	11241.59
	15980	-4938.98	60.14	11295.77
BOT PERFS/OH	16067	-5025.94	58.33	11294.11
	16074	-5032.94	58.18	11293.98

NEXT TO LAST	16074	-5032.94	58.18	11293.98
LAST READING	16142	-5100.89	56.75	11291.85
TD	16142	-5100.89	56.75	11291.85

Surface Location	150	FS	660	FW
Projected BHL	4951	FN	717	FW
Location of				
Top Perfs/OH	377	FN	698	FW
Bottom Perfs/OH	4876	FN	718	FW

SUMMARY of Subsurface Locations

Surface Location	M-22-23S-33E	150	FS	660	FW	Vert. Depth
Top Perfs/OH	M-22-23S-33E	377	FN	698	FW	11240.82
Bottom Perfs/OH	M-27-23S-33E	4876	FN	718	FW	11294.11
Projected TD	M-27-23S-33E	4951	FN	717	FW	11291.85

MAY 27 2014



A GYRO TECHNOLOGIES INC. COMPANY

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

March 3, 2014

HOBBS OCD

MAY 16 2014

RECEIVED

Devon Energy Production Co., L. P.
333 West Sheridan Ave
Oklahoma City, Oklahoma 73102-5010

Attn: David Cook

Re: Thistle Unit No. 055H

Please find enclosed a copy of the survey from 0.00' to 10740.00' 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.

Sincerely,


Keith Havelka
Operations

STATE OF TEXAS §

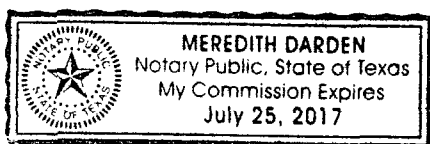
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COUNTY OF NUECES §

This instrument was acknowledged before me on the 3rd day of March, A.D., 2014, by Keith Havelka.



Meredith Darden
Notary Public, State of Texas





HOBBS OCD

MAY 16 2014
 GRID North is 0.41 Degrees East of True North
 VS-Azi: 179.57 Degrees

Company: Devon Energy
 Lease/Well: Thistle Unit /No. 055H
 Location: Sec22 T23S R33E
 Rig Name: H&P 394
 State/County: New Mexico/Lea
 Latitude: 32.28, Longitude: -103.57



RECEIVED

Depth Reference : RKB = 25 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: thistle unit #55h 2-de_01_mrg.ut
 Minimum Curvature Method
 Report Date/Time: 3/4/2014 / 16:22

Vaughn Energy Services
 West, Texas
 432-563-5444
 Surveyor: Chris Bankson
 Thistle Unit No. 055H / 30-025-41488

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	0.27	174.36	100.00	-0.23	0.02	0.23	0.24	174.36	0.27
200.00	0.23	167.26	200.00	-0.66	0.09	0.66	0.67	172.27	0.05
300.00	0.11	135.10	300.00	-0.92	0.20	0.92	0.94	167.79	0.15
400.00	0.24	118.01	400.00	-1.08	0.45	1.09	1.17	157.35	0.15
500.00	0.37	98.48	500.00	-1.23	0.96	1.24	1.56	142.18	0.16
600.00	0.14	76.58	600.00	-1.25	1.39	1.26	1.87	131.87	0.24
700.00	0.08	66.74	700.00	-1.19	1.58	1.20	1.98	126.93	0.06
800.00	0.12	57.34	799.99	-1.10	1.74	1.12	2.06	122.34	0.04
900.00	0.15	51.50	899.99	-0.96	1.94	0.98	2.16	116.37	0.03
1000.00	0.09	52.63	999.99	-0.83	2.11	0.84	2.27	111.43	0.06
1100.00	0.13	75.04	1099.99	-0.75	2.29	0.77	2.41	108.13	0.06
1200.00	0.13	90.75	1199.99	-0.72	2.52	0.74	2.62	105.97	0.04
1300.00	0.17	129.37	1299.99	-0.81	2.74	0.83	2.86	106.52	0.10
1400.00	0.17	177.41	1399.99	-1.05	2.86	1.08	3.05	110.21	0.14
1500.00	0.22	193.25	1499.99	-1.39	2.83	1.41	3.15	116.14	0.07
1600.00	0.27	203.07	1599.99	-1.79	2.69	1.81	3.23	123.58	0.07
1700.00	0.40	278.80	1699.99	-1.95	2.25	1.97	2.98	130.86	0.43
1800.00	0.24	286.84	1799.99	-1.83	1.71	1.85	2.50	137.09	0.17

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	0.19	291.28	1899.99	-1.71	1.35	1.72	2.18	141.73	0.05
2000.00	0.37	291.67	1999.99	-1.54	0.90	1.54	1.78	149.58	0.18
2100.00	0.32	300.35	2099.99	-1.28	0.36	1.28	1.33	164.11	0.07
2200.00	0.29	296.26	2199.98	-1.02	-0.11	1.02	1.03	185.89	0.04
2300.00	0.36	305.79	2299.98	-0.73	-0.59	0.72	0.94	219.18	0.09
2400.00	0.24	301.13	2399.98	-0.43	-1.03	0.42	1.12	247.38	0.12
2500.00	0.25	297.01	2499.98	-0.22	-1.41	0.21	1.43	261.14	0.02
2600.00	0.33	316.25	2599.98	0.09	-1.80	-0.10	1.80	272.72	0.12
2700.00	0.27	308.22	2699.98	0.44	-2.18	-0.45	2.23	281.30	0.07
2800.00	0.33	299.38	2799.98	0.72	-2.61	-0.74	2.71	285.40	0.07
2900.00	0.45	295.76	2899.97	1.03	-3.21	-1.05	3.37	287.76	0.12
3000.00	0.19	291.56	2999.97	1.26	-3.72	-1.29	3.92	288.71	0.26
3100.00	0.26	336.08	3099.97	1.53	-3.96	-1.56	4.25	291.10	0.18
3200.00	0.36	342.65	3199.97	2.04	-4.15	-2.07	4.62	296.17	0.10
3300.00	0.22	351.61	3299.97	2.53	-4.27	-2.56	4.96	300.61	0.15
3400.00	0.35	341.96	3399.97	3.01	-4.39	-3.04	5.33	304.39	0.14
3500.00	0.45	329.82	3499.96	3.64	-4.68	-3.67	5.93	307.81	0.13
3600.00	0.46	318.80	3599.96	4.27	-5.14	-4.31	6.69	309.71	0.09
3700.00	0.24	307.80	3699.96	4.70	-5.57	-4.74	7.29	310.15	0.23
3800.00	0.27	305.69	3799.96	4.97	-5.93	-5.01	7.74	309.95	0.03
3900.00	0.44	306.13	3899.96	5.33	-6.43	-5.38	8.35	309.66	0.17
4000.00	0.28	301.27	3999.95	5.68	-6.95	-5.73	8.98	309.28	0.16
4100.00	0.37	298.02	4099.95	5.96	-7.44	-6.01	9.53	308.70	0.09
4200.00	0.27	301.09	4199.95	6.23	-7.92	-6.29	10.08	308.19	0.10
4300.00	0.25	296.40	4299.95	6.45	-8.33	-6.52	10.53	307.78	0.03
4310.00	0.17	257.44	4309.95	6.46	-8.36	-6.52	10.56	307.70	1.63
4320.00	0.15	244.44	4319.95	6.45	-8.39	-6.51	10.58	307.57	0.38
4330.00	0.18	239.55	4329.95	6.44	-8.41	-6.50	10.59	307.43	0.33
4340.00	0.16	235.03	4339.95	6.42	-8.44	-6.48	10.60	307.28	0.31
4350.00	0.14	252.12	4349.95	6.41	-8.46	-6.47	10.61	307.16	0.47
4360.00	0.01	272.75	4359.95	6.41	-8.47	-6.47	10.62	307.10	1.29
4370.00	0.07	356.62	4369.95	6.41	-8.47	-6.48	10.63	307.12	0.67
4380.00	0.10	59.78	4379.95	6.42	-8.47	-6.49	10.63	307.19	0.92
4390.00	0.08	105.88	4389.95	6.43	-8.45	-6.49	10.62	307.25	0.73
4400.00	0.16	107.89	4399.95	6.42	-8.43	-6.48	10.60	307.28	0.77
4410.00	0.18	108.88	4409.95	6.41	-8.40	-6.47	10.57	307.33	0.26
4420.00	0.22	105.93	4419.95	6.40	-8.37	-6.46	10.54	307.40	0.36
4430.00	0.26	102.77	4429.95	6.39	-8.33	-6.45	10.50	307.49	0.43
4440.00	0.29	109.01	4439.95	6.38	-8.28	-6.44	10.45	307.58	0.45

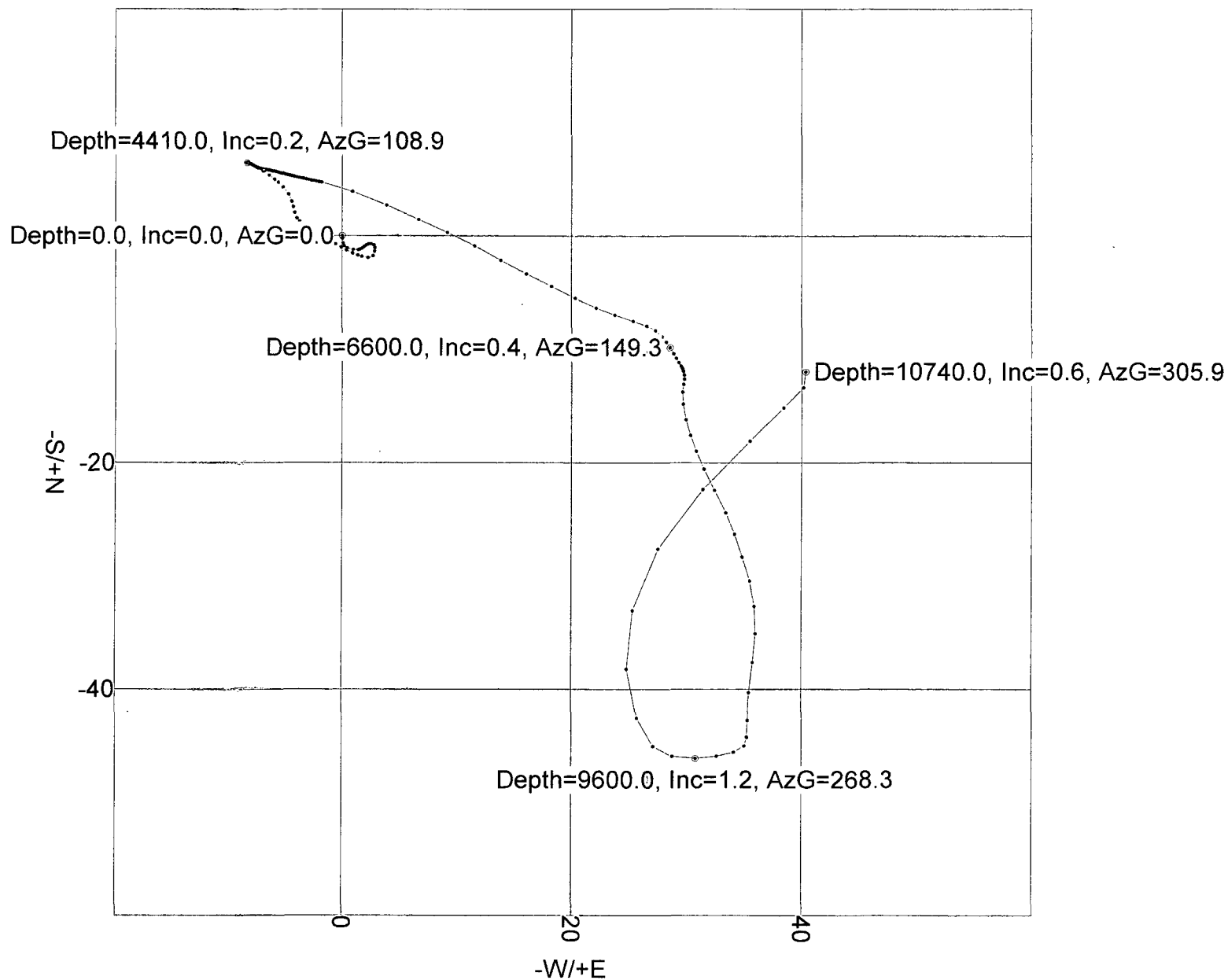
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
4450.00	0.30	106.72	4449.95	6.36	-8.24	-6.42	10.41	307.68	0.18
4460.00	0.34	103.90	4459.95	6.35	-8.18	-6.41	10.35	307.80	0.41
4470.00	0.47	106.80	4469.95	6.33	-8.11	-6.39	10.29	307.95	1.26
4480.00	0.37	112.26	4479.95	6.30	-8.04	-6.36	10.22	308.08	1.08
4490.00	0.44	112.17	4489.95	6.28	-7.98	-6.34	10.15	308.19	0.76
4500.00	0.40	118.25	4499.95	6.24	-7.91	-6.30	10.08	308.28	0.60
4510.00	0.41	120.76	4509.95	6.21	-7.85	-6.27	10.01	308.35	0.21
4520.00	0.41	121.34	4519.95	6.17	-7.79	-6.23	9.94	308.40	0.04
4530.00	0.51	120.54	4529.95	6.13	-7.72	-6.19	9.86	308.46	0.97
4540.00	0.51	118.90	4539.95	6.09	-7.64	-6.14	9.77	308.54	0.15
4550.00	0.50	116.13	4549.95	6.05	-7.56	-6.10	9.68	308.64	0.25
4560.00	0.50	108.00	4559.95	6.01	-7.48	-6.07	9.60	308.79	0.71
4570.00	0.56	105.63	4569.95	5.99	-7.39	-6.04	9.51	308.99	0.63
4580.00	0.51	108.09	4579.95	5.96	-7.31	-6.01	9.43	309.21	0.52
4590.00	0.52	107.71	4589.95	5.93	-7.22	-5.99	9.35	309.41	0.08
4600.00	0.55	104.26	4599.95	5.91	-7.13	-5.96	9.26	309.64	0.43
4610.00	0.46	104.72	4609.94	5.89	-7.05	-5.94	9.18	309.87	0.83
4620.00	0.74	103.34	4619.94	5.86	-6.94	-5.91	9.09	310.16	2.76
4630.00	0.70	99.46	4629.94	5.84	-6.82	-5.89	8.98	310.55	0.63
4640.00	0.84	95.57	4639.94	5.82	-6.69	-5.87	8.86	311.02	1.46
4650.00	0.75	101.24	4649.94	5.80	-6.55	-5.85	8.75	311.51	1.16
4660.00	0.76	101.00	4659.94	5.77	-6.42	-5.82	8.64	311.95	0.11
4670.00	0.85	100.91	4669.94	5.75	-6.28	-5.79	8.51	312.44	0.90
4680.00	0.92	100.27	4679.94	5.72	-6.13	-5.76	8.38	313.00	0.65
4690.00	0.94	100.61	4689.94	5.69	-5.97	-5.73	8.25	313.60	0.21
4700.00	0.93	100.43	4699.94	5.66	-5.81	-5.70	8.11	314.23	0.05
4710.00	1.03	105.81	4709.93	5.62	-5.65	-5.66	7.97	314.86	1.35
4720.00	1.09	104.69	4719.93	5.57	-5.47	-5.61	7.81	315.54	0.63
4730.00	1.04	106.57	4729.93	5.52	-5.29	-5.56	7.64	316.23	0.61
4740.00	1.08	110.15	4739.93	5.46	-5.11	-5.50	7.48	316.89	0.76
4750.00	1.09	106.01	4749.93	5.40	-4.93	-5.44	7.32	317.60	0.79
4760.00	1.09	105.23	4759.93	5.35	-4.75	-5.39	7.16	318.41	0.15
4770.00	1.09	103.13	4769.92	5.31	-4.57	-5.34	7.00	319.28	0.40
4780.00	1.12	105.79	4779.92	5.26	-4.38	-5.29	6.84	320.20	0.64
4790.00	1.18	103.54	4789.92	5.21	-4.19	-5.24	6.68	321.20	0.68
4800.00	1.22	102.82	4799.92	5.16	-3.98	-5.19	6.52	322.34	0.51
4810.00	1.16	101.30	4809.92	5.12	-3.78	-5.14	6.36	323.55	0.69
4820.00	1.21	102.85	4819.91	5.07	-3.58	-5.10	6.21	324.81	0.53
4830.00	1.18	102.72	4829.91	5.03	-3.37	-5.05	6.05	326.13	0.24

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
4840.00	1.27	102.99	4839.91	4.98	-3.16	-5.00	5.90	327.56	0.93
4850.00	1.27	101.77	4849.91	4.93	-2.95	-4.95	5.74	329.13	0.27
4860.00	1.30	103.90	4859.90	4.88	-2.73	-4.90	5.59	330.79	0.53
4870.00	1.32	101.73	4869.90	4.83	-2.51	-4.85	5.44	332.58	0.53
4880.00	1.43	100.68	4879.90	4.78	-2.27	-4.80	5.30	334.60	1.13
4890.00	1.40	99.05	4889.90	4.74	-2.03	-4.76	5.16	336.84	0.47
4900.00	1.39	102.97	4899.89	4.70	-1.79	-4.71	5.02	339.15	0.96
5000.00	1.83	109.76	4999.85	3.88	0.90	-3.88	3.99	13.04	0.48
5100.00	1.85	114.16	5099.80	2.68	3.88	-2.65	4.71	55.35	0.14
5200.00	1.67	114.27	5199.75	1.42	6.68	-1.37	6.83	78.01	0.18
5300.00	1.46	114.72	5299.72	0.29	9.17	-0.22	9.17	88.20	0.22
5400.00	1.55	118.25	5399.68	-0.88	11.51	0.97	11.55	94.39	0.13
5500.00	1.45	120.09	5499.65	-2.16	13.80	2.26	13.97	98.89	0.11
5600.00	1.46	115.36	5599.62	-3.34	16.05	3.46	16.39	101.75	0.12
5700.00	1.35	118.08	5699.59	-4.44	18.24	4.58	18.77	103.68	0.14
5800.00	1.32	115.73	5799.56	-5.49	20.31	5.64	21.04	105.13	0.06
5900.00	1.00	113.34	5899.54	-6.34	22.15	6.50	23.04	105.97	0.33
6000.00	0.99	108.98	5999.52	-6.96	23.76	7.14	24.76	106.33	0.08
6100.00	0.97	109.13	6099.51	-7.52	25.37	7.71	26.46	106.51	0.02
6200.00	0.46	109.36	6199.50	-7.93	26.55	8.13	27.71	106.63	0.51
6300.00	0.49	129.78	6299.50	-8.33	27.26	8.54	28.51	107.00	0.17
6400.00	0.42	137.30	6399.49	-8.88	27.84	9.09	29.22	107.69	0.09
6500.00	0.27	147.00	6499.49	-9.35	28.21	9.56	29.72	108.33	0.16
6600.00	0.41	149.28	6599.49	-9.85	28.53	10.06	30.18	109.05	0.14
6700.00	0.30	149.31	6699.49	-10.38	28.84	10.60	30.65	109.80	0.11
6800.00	0.24	149.66	6799.49	-10.78	29.08	11.00	31.01	110.35	0.06
6900.00	0.28	149.66	6899.49	-11.17	29.30	11.39	31.36	110.87	0.04
7000.00	0.13	146.44	6999.49	-11.47	29.49	11.69	31.64	111.26	0.14
7100.00	0.15	155.63	7099.48	-11.69	29.61	11.91	31.83	111.54	0.03
7200.00	0.16	160.70	7199.48	-11.94	29.71	12.16	32.01	111.89	0.02
7300.00	0.22	173.66	7299.48	-12.25	29.77	12.48	32.20	112.37	0.07
7400.00	0.21	183.80	7399.48	-12.63	29.78	12.85	32.35	112.97	0.04
7500.00	0.34	190.01	7499.48	-13.10	29.72	13.32	32.48	113.79	0.13
7600.00	0.43	184.92	7599.48	-13.77	29.63	13.99	32.68	114.92	0.10
7700.00	0.78	173.17	7699.47	-14.82	29.68	15.04	33.17	116.53	0.37
7800.00	0.84	167.56	7799.46	-16.20	29.92	16.43	34.03	118.44	0.10
7900.00	0.82	159.95	7899.45	-17.59	30.32	17.81	35.05	120.11	0.11
8000.00	0.87	159.52	7999.44	-18.97	30.83	19.20	36.20	121.60	0.05
8100.00	1.09	155.35	8099.43	-20.54	31.49	20.78	37.60	123.12	0.23

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
8200.00	1.31	153.29	8199.41	-22.43	32.40	22.67	39.41	124.69	0.22
8300.00	1.22	153.87	8299.38	-24.40	33.39	24.65	41.35	126.17	0.09
8400.00	1.11	161.99	8399.36	-26.28	34.15	26.53	43.09	127.58	0.20
8500.00	1.32	161.83	8499.34	-28.30	34.81	28.56	44.86	129.11	0.21
8600.00	1.24	163.66	8599.31	-30.43	35.48	30.69	46.74	130.62	0.10
8700.00	1.37	174.39	8699.29	-32.65	35.90	32.92	48.53	132.29	0.28
8800.00	1.41	180.76	8799.26	-35.07	36.00	35.34	50.26	134.26	0.16
8900.00	1.52	189.95	8899.23	-37.61	35.75	37.87	51.89	136.45	0.26
9000.00	1.57	184.39	8999.19	-40.28	35.42	40.54	53.64	138.68	0.16
9100.00	1.25	182.25	9099.16	-42.74	35.27	43.00	55.41	140.47	0.33
9200.00	0.47	182.67	9199.15	-44.23	35.21	44.50	56.54	141.48	0.78
9300.00	0.49	208.80	9299.14	-45.01	34.99	45.27	57.01	142.14	0.22
9400.00	0.81	254.00	9399.14	-45.58	34.10	45.83	56.92	143.19	0.58
9500.00	0.96	259.06	9499.13	-45.93	32.60	46.17	56.33	144.63	0.17
9600.00	1.16	268.28	9599.11	-46.12	30.77	46.35	55.44	146.29	0.26
9700.00	1.15	283.38	9699.09	-45.92	28.78	46.13	54.19	147.92	0.30
9800.00	1.09	312.52	9799.07	-45.04	27.10	45.24	52.56	148.97	0.57
9900.00	2.26	339.27	9899.03	-42.55	25.70	42.74	49.71	148.87	1.37
10000.00	2.87	356.19	9998.93	-38.21	24.83	38.39	45.57	146.98	0.97
10100.00	3.16	14.09	10098.79	-33.03	25.34	33.22	41.63	142.51	0.98
10200.00	3.64	28.88	10198.62	-27.58	27.54	27.79	38.98	135.04	0.99
10300.00	3.89	43.54	10298.40	-22.34	31.41	22.58	38.55	125.43	0.99
10400.00	2.86	43.74	10398.23	-18.08	35.47	18.35	39.81	117.01	1.03
10500.00	1.88	47.55	10498.14	-15.17	38.41	15.46	41.30	111.55	0.99
10600.00	1.00	37.48	10598.11	-13.37	40.15	13.67	42.32	108.41	0.91
10740.00	0.58	305.90	10738.10	-11.98	40.33	12.29	42.07	106.55	0.84



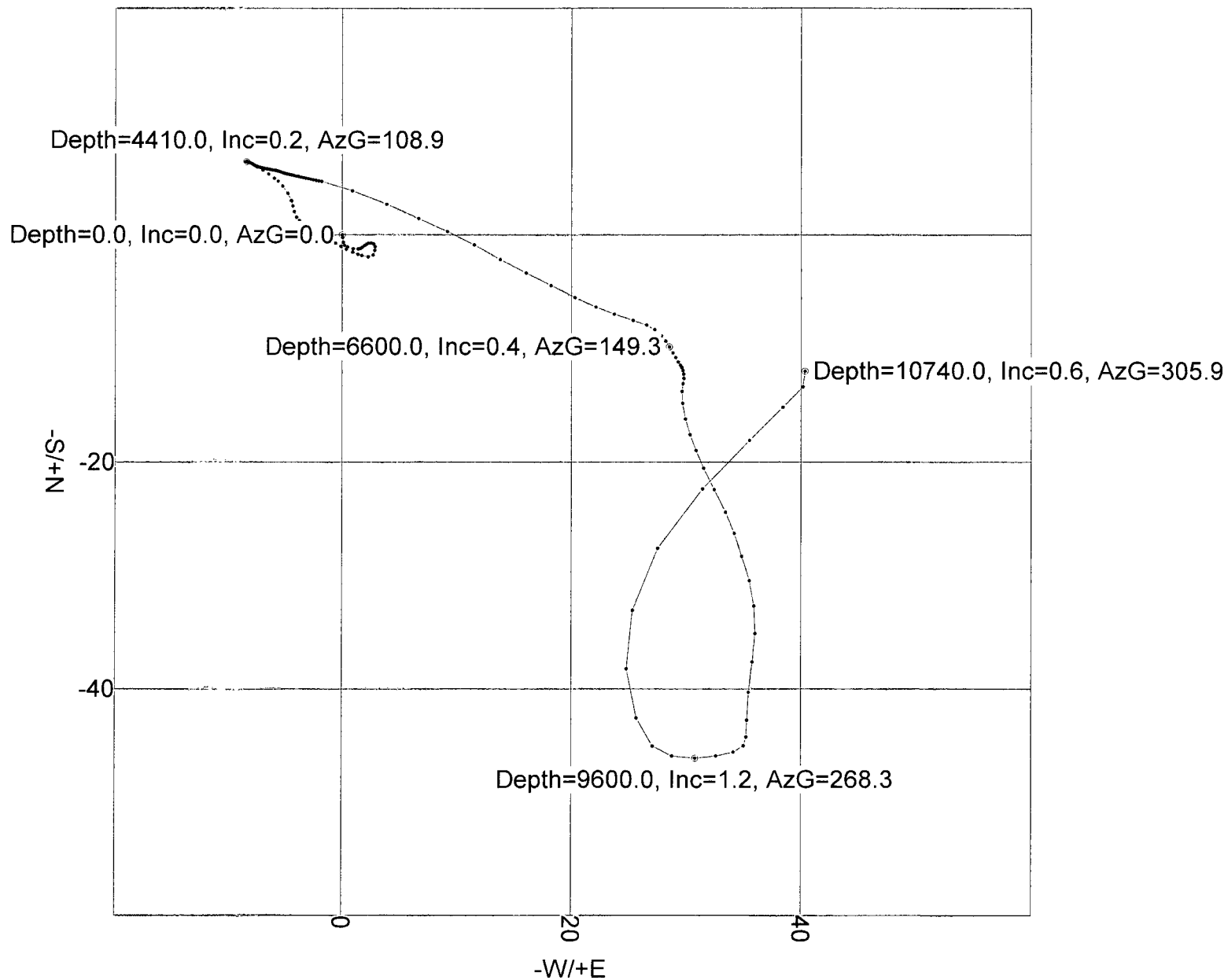
Vaughn Energy Services
West, Texas
432-563-5444
Surveyor: Chris Bankson
Thistle Unit No. 055H / 30-0258-41488



VES Survey Date: 02/07/2014



Vaughn Energy Services
West, Texas
432-563-5444
Surveyor: Chris Bankson
Thistle Unit No. 055H / 30-025-41488



VES Survey Date: 02/07/2014



THISTLE UNIT 55H

WEST UNRESTRICTED

Directional Survey

District PERMIAN BASIN	County LEA	Field Name JOHNSON RANCH	Project Group DELAWARE BASIN	State/Province NM
Surface Legal Location SEC22 T23S R33E	API/UWI 3002541488	Latitude (°) 32° 16' 58.623" N	Longitude (°) 103° 34' 7.528" W	Ground Elev... 3,701.20
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,726.20
				Tubing Head Elevation (ft)

Wellbores

Wellbore Name OH	Parent Wellbore	SAP Well ID 34390	Kick Off Depth (ftKB)	Vertical Section Direction (°) 179.57
Actual Deviation Survey GYRO/MWD, Proposed? No	Definitive? Yes	Proposed? No	Proposed Deviation Survey	

Deviation Survey

Date 2/7/2014	Description GYRO/MWD				
MD Tie In (ftKB)	TVD Tie In (ftKB)	Inclination Tie In (°)	Azimuth Tie In (°)	NSTie In (ft)	EW Tie In (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
2/7/2014	100.00	0.27	174.36	100.00	0.23	-0.23	0.02	0.27	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	200.00	0.23	167.26	200.00	0.67	-0.66	0.09	0.05	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	300.00	0.11	135.10	300.00	0.93	-0.93	0.20	0.15	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	400.00	0.24	118.01	400.00	1.10	-1.09	0.46	0.14	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	500.00	0.37	98.48	500.00	1.25	-1.24	0.96	0.16	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	600.00	0.14	76.58	600.00	1.27	-1.26	1.40	0.25	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	700.00	0.08	66.74	700.00	1.22	-1.20	1.58	0.06	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	800.00	0.12	57.34	799.99	1.13	-1.12	1.73	0.04	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	900.00	0.15	51.50	899.99	1.00	-0.98	1.92	0.03	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,000.00	0.09	52.63	999.99	0.87	-0.85	2.09	0.06	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,100.00	0.13	75.04	1,099.99	0.79	-0.78	2.26	0.06	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,200.00	0.13	90.75	1,199.99	0.77	-0.75	2.48	0.04	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,300.00	0.17	129.37	1,299.99	0.86	-0.84	2.71	0.11	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,400.00	0.17	177.41	1,399.99	1.11	-1.09	2.83	0.14	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,500.00	0.22	193.25	1,499.99	1.44	-1.42	2.80	0.07	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,600.00	0.27	203.07	1,599.99	1.84	-1.82	2.66	0.07	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,700.00	0.40	278.80	1,699.99	2.00	-1.99	2.22	0.42	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,800.00	0.24	286.84	1,799.99	1.89	-1.87	1.68	0.17	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	1,900.00	0.19	291.28	1,899.99	1.76	-1.75	1.32	0.05	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,000.00	0.37	291.67	1,999.99	1.58	-1.57	0.87	0.18	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,100.00	0.32	300.35	2,099.99	1.32	-1.31	0.33	0.07	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,200.00	0.29	296.26	2,199.98	1.06	-1.06	-0.14	0.04	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,300.00	0.36	305.79	2,299.98	0.76	-0.76	-0.62	0.09	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,400.00	0.24	301.13	2,399.98	0.46	-0.47	-1.06	0.12	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,500.00	0.25	297.01	2,499.98	0.25	-0.27	-1.43	0.02	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,600.00	0.33	316.25	2,599.98	-0.06	0.04	-1.82	0.12	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,700.00	0.27	308.22	2,699.98	-0.41	0.40	-2.21	0.07	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,800.00	0.33	299.38	2,799.98	-0.70	0.68	-2.65	0.08	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	2,900.00	0.45	295.76	2,899.97	-1.02	0.99	-3.25	0.12	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,000.00	0.19	291.56	2,999.97	-1.25	1.23	-3.76	0.26	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,100.00	0.26	336.08	3,099.97	-1.52	1.49	-4.00	0.18	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,200.00	0.36	342.65	3,199.97	-2.03	2.00	-4.19	0.11	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,300.00	0.22	351.61	3,299.97	-2.52	2.49	-4.31	0.15	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,400.00	0.35	341.96	3,399.97	-3.01	2.97	-4.43	0.14	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,500.00	0.45	329.82	3,499.96	-3.64	3.60	-4.73	0.13	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,600.00	0.46	318.80	3,599.96	-4.28	4.24	-5.19	0.09	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,700.00	0.24	307.80	3,699.96	-4.72	4.67	-5.62	0.23	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,800.00	0.27	305.69	3,799.96	-4.98	4.94	-5.97	0.03	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	3,900.00	0.44	306.13	3,899.96	-5.35	5.30	-6.48	0.17	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,000.00	0.28	301.27	3,999.95	-5.71	5.66	-6.99	0.16	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,100.00	0.37	298.02	4,099.95	-5.99	5.94	-7.49	0.09	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,200.00	0.27	301.09	4,199.95	-6.27	6.21	-7.98	0.10	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,300.00	0.25	296.40	4,299.95	-6.49	6.43	-8.37	0.03	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,310.00	0.17	257.44	4,309.95	-6.50	6.43	-8.41	1.59	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,320.00	0.15	244.44	4,319.95	-6.49	6.42	-8.43	0.41	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,330.00	0.18	239.55	4,329.95	-6.47	6.41	-8.46	0.33	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,340.00	0.16	235.03	4,339.95	-6.46	6.40	-8.48	0.24	GYRO	VAUHG N ENERGY SERVICES



Directional Survey

District PERMIAN BASIN	County LEA	Field Name JOHNSON RANCH	Project Group DELAWARE BASIN	State/Province NM
Surface Legal Location SEC22 T23S R33E	API/UWI 3002541488	Latitude (°) 32° 16' 58.623" N	Longitude (°) 103° 34' 7.528" W	Ground Elev... 3,701.20
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,726.20
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm.(°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
2/7/2014	4,350.00	0.14	252.12	4,349.95	-6.45	6.38	-8.51	0.49	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,360.00	0.01	272.75	4,359.95	-6.44	6.38	-8.52	1.31	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,370.00	0.07	356.62	4,369.95	-6.45	6.39	-8.52	0.70	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,380.00	0.10	59.78	4,379.95	-6.46	6.40	-8.51	0.93	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,390.00	0.08	105.88	4,389.95	-6.46	6.40	-8.50	0.73	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,400.00	0.16	107.89	4,399.95	-6.46	6.39	-8.48	0.80	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,410.00	0.18	108.88	4,409.95	-6.45	6.38	-8.45	0.20	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,420.00	0.22	105.93	4,419.95	-6.44	6.37	-8.42	0.41	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,430.00	0.26	102.77	4,429.95	-6.43	6.36	-8.38	0.42	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,440.00	0.29	109.01	4,439.95	-6.41	6.35	-8.33	0.42	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,450.00	0.30	106.72	4,449.95	-6.40	6.33	-8.28	0.15	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,460.00	0.34	103.90	4,459.95	-6.38	6.32	-8.23	0.43	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,470.00	0.47	106.80	4,469.95	-6.36	6.30	-8.16	1.32	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,480.00	0.37	112.26	4,479.95	-6.34	6.28	-8.09	1.08	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,490.00	0.44	112.17	4,489.95	-6.31	6.25	-8.03	0.70	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,500.00	0.40	118.25	4,499.95	-6.28	6.22	-7.96	0.60	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,510.00	0.41	120.76	4,509.95	-6.24	6.18	-7.90	0.20	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,520.00	0.41	121.34	4,519.95	-6.20	6.15	-7.84	0.04	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,530.00	0.51	120.54	4,529.95	-6.16	6.11	-7.77	1.00	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,540.00	0.51	118.90	4,539.95	-6.12	6.06	-7.69	0.15	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,550.00	0.50	116.13	4,549.95	-6.08	6.02	-7.61	0.26	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,560.00	0.50	108.00	4,559.95	-6.04	5.99	-7.53	0.71	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,570.00	0.56	105.63	4,569.95	-6.02	5.96	-7.44	0.64	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,580.00	0.51	108.09	4,579.95	-5.99	5.93	-7.35	0.55	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,590.00	0.52	107.71	4,589.95	-5.96	5.91	-7.27	0.11	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,600.00	0.55	104.26	4,599.94	-5.93	5.88	-7.18	0.44	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,610.00	0.46	104.72	4,609.94	-5.91	5.86	-7.09	0.90	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,620.00	0.74	103.34	4,619.94	-5.89	5.83	-6.99	2.80	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,630.00	0.70	99.46	4,629.94	-5.86	5.81	-6.87	0.63	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,640.00	0.84	95.57	4,639.94	-5.84	5.79	-6.73	1.49	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,650.00	0.75	101.24	4,649.94	-5.82	5.77	-6.60	1.19	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,660.00	0.76	101.00	4,659.94	-5.79	5.75	-6.47	0.10	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,670.00	0.85	100.91	4,669.94	-5.77	5.72	-6.33	0.90	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,680.00	0.92	100.27	4,679.94	-5.74	5.69	-6.18	0.71	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,690.00	0.94	100.61	4,689.94	-5.71	5.66	-6.02	0.21	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,700.00	0.93	100.43	4,699.94	-5.68	5.63	-5.86	0.10	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,710.00	1.03	105.81	4,709.93	-5.64	5.59	-5.69	1.36	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,720.00	1.09	104.69	4,719.93	-5.59	5.54	-5.51	0.63	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,730.00	1.04	106.57	4,729.93	-5.53	5.49	-5.33	0.61	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,740.00	1.08	110.15	4,739.93	-5.47	5.44	-5.16	0.77	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,750.00	1.09	106.01	4,749.93	-5.41	5.38	-4.98	0.79	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,760.00	1.09	105.23	4,759.93	-5.36	5.33	-4.80	0.15	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,770.00	1.09	103.13	4,769.92	-5.31	5.28	-4.61	0.40	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,780.00	1.12	105.79	4,779.92	-5.26	5.23	-4.42	0.59	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,790.00	1.18	103.54	4,789.92	-5.21	5.18	-4.23	0.75	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,800.00	1.22	102.82	4,799.92	-5.16	5.13	-4.03	0.43	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,810.00	1.16	101.30	4,809.92	-5.12	5.09	-3.82	0.68	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,820.00	1.21	102.85	4,819.91	-5.07	5.05	-3.62	0.59	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,830.00	1.18	102.72	4,829.91	-5.03	5.00	-3.42	0.30	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,840.00	1.27	102.99	4,839.91	-4.98	4.95	-3.21	0.90	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,850.00	1.27	101.77	4,849.91	-4.93	4.90	-2.99	0.27	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,860.00	1.30	103.90	4,859.90	-4.88	4.85	-2.77	0.56	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,870.00	1.32	101.73	4,869.90	-4.82	4.80	-2.55	0.53	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,880.00	1.43	100.68	4,879.90	-4.77	4.76	-2.32	1.13	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	4,890.00	1.40	99.05	4,889.90	-4.73	4.72	-2.07	0.50	GYRO	VAUHG N ENERGY SERVICES



Directional Survey

District PERMIAN BASIN	County LEA	Field Name JOHNSON RANCH	Project Group DELAWARE BASIN	State/Province NM
Surface Legal Location SEC22 T23S R33E	API/UWI 3002541488	Latitude (°) 32° 16' 58.623" N	Longitude (°) 103° 34' 7.528" W	Ground Elev... 3,701.20
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,726.20
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
2/7/2014	4,900.00	1.39	102.97	4,899.89	-4.68	4.67	-1.83	0.96	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,000.00	1.83	109.76	4,999.85	-3.85	3.86	0.85	0.48	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,100.00	1.85	114.16	5,099.80	-2.63	2.66	3.83	0.14	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,200.00	1.67	114.27	5,199.75	-1.35	1.40	6.63	0.18	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,300.00	1.46	114.72	5,299.72	-0.20	0.27	9.11	0.21	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,400.00	1.55	118.25	5,399.68	0.99	-0.91	11.46	0.13	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,500.00	1.45	120.09	5,499.65	2.29	-2.18	13.75	0.11	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,600.00	1.46	115.36	5,599.62	3.48	-3.36	15.99	0.12	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,700.00	1.35	118.08	5,699.59	4.60	-4.46	18.18	0.13	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,800.00	1.32	115.73	5,799.56	5.67	-5.52	20.26	0.06	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	5,900.00	1.00	113.34	5,899.54	6.53	-6.36	22.10	0.32	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,000.00	0.99	108.98	5,999.52	7.17	-6.99	23.72	0.08	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,100.00	0.97	109.13	6,099.51	7.74	-7.55	25.33	0.02	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,200.00	0.46	109.36	6,199.50	8.16	-7.96	26.51	0.51	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,300.00	0.49	129.78	6,299.50	8.57	-8.36	27.22	0.17	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,400.00	0.42	137.30	6,399.49	9.12	-8.91	27.80	0.09	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,500.00	0.27	147.00	6,499.49	9.59	-9.37	28.17	0.16	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,600.00	0.41	149.28	6,599.49	10.09	-9.88	28.49	0.14	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,700.00	0.30	149.31	6,699.49	10.63	-10.41	28.80	0.11	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,800.00	0.24	149.66	6,799.49	11.04	-10.82	29.04	0.06	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	6,900.00	0.28	149.66	6,899.49	11.43	-11.21	29.27	0.04	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,000.00	0.13	146.44	6,999.49	11.74	-11.52	29.46	0.15	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,100.00	0.15	155.63	7,099.48	11.95	-11.73	29.57	0.03	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,200.00	0.16	160.70	7,199.48	12.20	-11.98	29.67	0.02	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,300.00	0.22	173.66	7,299.48	12.53	-12.30	29.74	0.07	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,400.00	0.21	183.80	7,399.48	12.90	-12.68	29.75	0.04	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,500.00	0.34	190.01	7,499.48	13.37	-13.15	29.69	0.13	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,600.00	0.43	184.92	7,599.48	14.04	-13.82	29.60	0.10	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,700.00	0.78	173.17	7,699.47	15.09	-14.87	29.65	0.37	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,800.00	0.84	167.56	7,799.46	16.48	-16.26	29.89	0.10	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	7,900.00	0.82	159.95	7,899.45	17.87	-17.65	30.29	0.11	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,000.00	0.87	159.52	7,999.44	19.26	-19.03	30.80	0.05	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,100.00	1.09	155.35	8,099.43	20.84	-20.61	31.47	0.23	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,200.00	1.31	153.29	8,199.41	22.73	-22.49	32.38	0.22	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,300.00	1.22	153.87	8,299.38	24.72	-24.47	33.36	0.09	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,400.00	1.11	161.99	8,399.36	26.60	-26.35	34.13	0.20	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,500.00	1.32	161.83	8,499.34	28.62	-28.36	34.79	0.21	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,600.00	1.24	163.66	8,599.31	30.76	-30.49	35.45	0.09	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,700.00	1.37	174.39	8,699.29	32.99	-32.72	35.87	0.28	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,800.00	1.41	180.76	8,799.26	35.41	-35.14	35.97	0.16	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	8,900.00	1.52	189.95	8,899.23	37.95	-37.68	35.73	0.26	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,000.00	1.57	184.39	8,999.19	40.62	-40.35	35.39	0.16	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,100.00	1.25	182.25	9,099.16	43.07	-42.81	35.24	0.32	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,200.00	0.47	182.67	9,199.15	44.57	-44.31	35.18	0.78	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,300.00	0.49	208.80	9,299.14	45.35	-45.09	34.96	0.22	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,400.00	0.81	254.00	9,399.14	45.91	-45.66	34.07	0.58	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,500.00	0.96	259.06	9,499.13	46.26	-46.01	32.57	0.17	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,600.00	1.16	268.28	9,599.11	46.43	-46.20	30.74	0.26	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,700.00	1.15	283.38	9,699.09	46.22	-46.00	28.75	0.30	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,800.00	1.09	312.52	9,799.07	45.33	-45.13	27.07	0.57	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	9,900.00	2.26	339.27	9,899.03	42.83	-42.64	25.67	1.38	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	10,000.00	2.87	356.19	9,998.93	38.48	-38.30	24.81	0.97	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	10,100.00	3.16	14.09	10,098.79	33.31	-33.13	25.31	0.98	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	10,200.00	3.64	28.88	10,198.62	27.88	-27.67	27.52	1.00	GYRO	VAUHG N ENERGY SERVICES
2/7/2014	10,300.00	3.89	43.54	10,298.40	22.67	-22.43	31.39	0.99	GYRO	VAUHG N ENERGY SERVICES



THISTLE UNIT 55H

WEST UNRESTRICTED

Directional Survey

District PERMIAN BASIN	County LEA	Field Name JOHNSON RANCH	Project Group DELAWARE BASIN	State/Province NM
Surface Legal Location SEC22 T2S R33E	API/UWI 3002541488	Latitude (") 32° 16' 58.623" N	Longitude (") 103° 34' 7.528" W	Ground Elev... 3,701.20
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,726.20
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
2/7/2014	10,400.00	2.86	43.74	10,398.23	18.44	-18.17	35.45	1.03	GYRO	VAUHGN ENERGY SERVICES
2/7/2014	10,500.00	1.88	47.55	10,498.14	15.55	-15.26	38.38	0.99	GYRO	VAUHGN ENERGY SERVICES
2/7/2014	10,600.00	1.00	37.48	10,598.11	13.76	-13.46	40.12	0.91	GYRO	VAUHGN ENERGY SERVICES
2/7/2014	10,740.00	0.58	305.90	10,738.10	12.38	-12.08	40.29	0.84	GYRO	VAUHGN ENERGY SERVICES
2/7/2014	10,790.00	2.60	86.58	10,788.09	12.17	-11.86	41.22	6.14	MWD	BAKER HUGHES INTEQ
2/7/2014	10,821.00	4.08	139.11	10,819.04	12.97	-12.65	42.64	10.45	MWD	BAKER HUGHES INTEQ
2/7/2014	10,853.00	8.30	158.01	10,850.85	15.99	-15.66	44.26	14.47	MWD	BAKER HUGHES INTEQ
2/7/2014	10,884.00	13.72	158.29	10,881.27	21.50	-21.15	46.46	17.48	MWD	BAKER HUGHES INTEQ
2/7/2014	10,916.00	17.07	164.72	10,912.12	29.58	-29.21	49.10	11.73	MWD	BAKER HUGHES INTEQ
2/7/2014	10,948.00	20.51	173.44	10,942.41	39.70	-39.32	50.98	13.85	MWD	BAKER HUGHES INTEQ
2/7/2014	10,979.00	23.75	179.63	10,971.13	51.34	-50.96	51.64	12.86	MWD	BAKER HUGHES INTEQ
2/7/2014	11,010.00	27.57	181.48	10,999.07	64.76	-64.38	51.49	12.59	MWD	BAKER HUGHES INTEQ
2/7/2014	11,042.00	31.83	183.27	11,026.86	80.59	-80.21	50.82	13.60	MWD	BAKER HUGHES INTEQ
2/7/2014	11,074.00	35.98	184.86	11,053.41	98.38	-98.01	49.54	13.26	MWD	BAKER HUGHES INTEQ
2/7/2014	11,105.00	40.57	184.47	11,077.74	117.50	-117.15	47.98	14.83	MWD	BAKER HUGHES INTEQ
2/7/2014	11,136.00	44.44	182.04	11,100.59	138.40	-138.05	46.81	13.56	MWD	BAKER HUGHES INTEQ
2/7/2014	11,168.00	47.85	180.45	11,122.76	161.46	-161.12	46.32	11.24	MWD	BAKER HUGHES INTEQ
2/7/2014	11,200.00	50.82	180.07	11,143.61	185.73	-185.39	46.21	9.32	MWD	BAKER HUGHES INTEQ
2/7/2014	11,231.00	54.06	180.04	11,162.50	210.30	-209.96	46.19	10.45	MWD	BAKER HUGHES INTEQ
2/7/2014	11,263.00	57.24	180.91	11,180.56	236.71	-236.37	45.96	10.19	MWD	BAKER HUGHES INTEQ
2/7/2014	11,294.00	62.12	181.48	11,196.20	263.45	-263.12	45.40	15.82	MWD	BAKER HUGHES INTEQ
2/7/2014	11,326.00	67.73	182.64	11,209.76	292.40	-292.07	44.35	17.84	MWD	BAKER HUGHES INTEQ
2/7/2014	11,358.00	72.89	182.78	11,220.54	322.47	-322.16	42.93	16.13	MWD	BAKER HUGHES INTEQ
2/7/2014	11,428.00	82.76	181.70	11,235.28	390.73	-390.44	40.27	14.18	MWD	BAKER HUGHES INTEQ
2/7/2014	11,459.00	87.78	181.16	11,237.84	421.60	-421.32	39.50	16.29	MWD	BAKER HUGHES INTEQ
2/7/2014	11,491.00	87.99	181.03	11,239.02	453.57	-453.29	38.89	0.77	MWD	BAKER HUGHES INTEQ
2/7/2014	11,523.00	87.81	180.82	11,240.19	485.54	-485.27	38.37	0.86	MWD	BAKER HUGHES INTEQ
2/7/2014	11,617.00	90.49	181.14	11,241.59	579.49	-579.23	36.77	2.87	MWD	BAKER HUGHES INTEQ
2/7/2014	11,712.00	90.92	181.27	11,240.42	674.45	-674.20	34.77	0.47	MWD	BAKER HUGHES INTEQ
2/7/2014	11,807.00	89.98	181.17	11,239.67	769.40	-769.18	32.75	1.00	MWD	BAKER HUGHES INTEQ
2/7/2014	11,902.00	89.97	181.39	11,239.71	864.36	-864.15	30.62	0.23	MWD	BAKER HUGHES INTEQ
2/7/2014	11,997.00	88.95	180.24	11,240.61	959.33	-959.14	29.27	1.62	MWD	BAKER HUGHES INTEQ
2/7/2014	12,092.00	89.38	180.82	11,241.99	1,054.31	-1,054.12	28.39	0.76	MWD	BAKER HUGHES INTEQ
2/7/2014	12,187.00	88.49	181.58	11,243.76	1,149.25	-1,149.08	26.40	1.23	MWD	BAKER HUGHES INTEQ
2/7/2014	12,282.00	88.86	181.59	11,245.95	1,244.17	-1,244.02	23.78	0.39	MWD	BAKER HUGHES INTEQ
2/7/2014	12,377.00	86.97	179.19	11,249.41	1,339.08	-1,338.95	23.13	3.21	MWD	BAKER HUGHES INTEQ
2/7/2014	12,472.00	86.88	178.79	11,254.51	1,433.94	-1,433.79	24.80	0.43	MWD	BAKER HUGHES INTEQ
2/7/2014	12,567.00	88.55	178.80	11,258.29	1,528.85	-1,528.69	26.80	1.76	MWD	BAKER HUGHES INTEQ
2/7/2014	12,661.00	88.95	178.64	11,260.35	1,622.82	-1,622.65	28.90	0.46	MWD	BAKER HUGHES INTEQ
2/7/2014	12,756.00	89.17	178.55	11,261.90	1,717.79	-1,717.61	31.23	0.25	MWD	BAKER HUGHES INTEQ
2/7/2014	12,851.00	88.18	178.57	11,264.10	1,812.75	-1,812.55	33.61	1.04	MWD	BAKER HUGHES INTEQ
2/7/2014	12,947.00	87.87	179.48	11,267.41	1,908.69	-1,908.48	35.25	1.00	MWD	BAKER HUGHES INTEQ
2/7/2014	13,042.00	87.26	180.22	11,271.45	2,003.60	-2,003.39	35.50	1.01	MWD	BAKER HUGHES INTEQ
2/7/2014	13,137.00	87.47	180.33	11,275.81	2,098.49	-2,098.29	35.04	0.25	MWD	BAKER HUGHES INTEQ
2/7/2014	13,232.00	87.87	180.46	11,279.68	2,193.40	-2,193.21	34.39	0.44	MWD	BAKER HUGHES INTEQ
2/7/2014	13,327.00	88.30	179.80	11,282.85	2,288.35	-2,288.15	34.17	0.83	MWD	BAKER HUGHES INTEQ
2/7/2014	13,422.00	86.76	179.77	11,286.94	2,383.25	-2,383.06	34.53	1.62	MWD	BAKER HUGHES INTEQ
2/7/2014	13,517.00	86.86	179.57	11,292.23	2,478.11	-2,477.91	35.07	0.24	MWD	BAKER HUGHES INTEQ
2/7/2014	13,612.00	86.76	179.52	11,297.52	2,572.96	-2,572.76	35.83	0.12	MWD	BAKER HUGHES INTEQ
2/7/2014	13,707.00	87.75	178.97	11,302.07	2,667.85	-2,667.64	37.08	1.19	MWD	BAKER HUGHES INTEQ
2/7/2014	13,802.00	89.14	178.63	11,304.64	2,762.80	-2,762.59	39.06	1.51	MWD	BAKER HUGHES INTEQ
2/7/2014	13,897.00	91.08	178.38	11,304.46	2,857.78	-2,857.55	41.54	2.06	MWD	BAKER HUGHES INTEQ
2/7/2014	13,992.00	90.43	178.87	11,303.21	2,952.76	-2,952.51	43.82	0.86	MWD	BAKER HUGHES INTEQ
2/7/2014	14,087.00	91.73	178.69	11,301.42	3,047.73	-3,047.47	45.84	1.38	MWD	BAKER HUGHES INTEQ
2/7/2014	14,181.00	91.05	179.32	11,299.14	3,141.70	-3,141.43	47.48	0.99	MWD	BAKER HUGHES INTEQ



Directional Survey

District PERMIAN BASIN	County LEA	Field Name JOHNSON RANCH	Project Group DELAWARE BASIN	State/Province NM
Surface Legal Location SEC22 T23S R33E	API/UWI 3002541488	Latitude (°) 32° 16' 58.623" N	Longitude (°) 103° 34' 7.528" W	Ground Elev... 3,701.20
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,726.20
				Tubing Head Elevation (ft)

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
2/7/2014	14,276.00	89.81	180.33	11,298.43	3,236.69	-3,236.42	47.77	1.68	MWD	BAKER HUGHES INTEQ
2/7/2014	14,371.00	90.83	180.03	11,297.90	3,331.68	-3,331.42	47.47	1.12	MWD	BAKER HUGHES INTEQ
2/7/2014	14,561.00	91.66	179.05	11,293.77	3,521.63	-3,521.37	48.99	0.68	MWD	BAKER HUGHES INTEQ
2/7/2014	14,656.00	91.73	178.11	11,290.96	3,616.58	-3,616.29	51.35	0.99	MWD	BAKER HUGHES INTEQ
2/7/2014	14,751.00	92.19	177.99	11,287.71	3,711.49	-3,711.18	54.58	0.50	MWD	BAKER HUGHES INTEQ
2/7/2014	14,845.00	92.22	177.04	11,284.09	3,805.36	-3,805.02	58.65	1.01	MWD	BAKER HUGHES INTEQ
2/7/2014	14,939.00	92.81	176.62	11,279.97	3,899.16	-3,898.79	63.84	0.77	MWD	BAKER HUGHES INTEQ
2/7/2014	15,034.00	91.42	177.39	11,276.46	3,994.00	-3,993.59	68.80	1.67	MWD	BAKER HUGHES INTEQ
2/7/2014	15,129.00	91.05	178.35	11,274.41	4,088.93	-4,088.50	72.33	1.08	MWD	BAKER HUGHES INTEQ
2/7/2014	15,223.00	88.61	179.78	11,274.69	4,182.92	-4,182.48	73.87	3.01	MWD	BAKER HUGHES INTEQ
2/7/2014	15,318.00	86.76	181.04	11,278.53	4,277.82	-4,277.39	73.19	2.36	MWD	BAKER HUGHES INTEQ
2/7/2014	15,413.00	88.30	181.80	11,282.62	4,372.68	-4,372.27	70.84	1.81	MWD	BAKER HUGHES INTEQ
2/7/2014	15,507.00	88.12	181.71	11,285.56	4,466.57	-4,466.18	67.96	0.21	MWD	BAKER HUGHES INTEQ
2/7/2014	15,602.00	88.34	181.35	11,288.49	4,561.47	-4,561.10	65.42	0.44	MWD	BAKER HUGHES INTEQ
2/7/2014	15,696.00	88.74	181.08	11,290.89	4,655.40	-4,655.05	63.43	0.51	MWD	BAKER HUGHES INTEQ
2/7/2014	15,791.00	88.74	180.53	11,292.98	4,750.35	-4,750.02	62.10	0.58	MWD	BAKER HUGHES INTEQ
2/7/2014	15,886.00	88.74	180.33	11,295.07	4,845.32	-4,844.99	61.38	0.21	MWD	BAKER HUGHES INTEQ
2/7/2014	15,980.00	90.40	181.19	11,295.77	4,939.29	-4,938.98	60.14	1.99	MWD	BAKER HUGHES INTEQ
2/7/2014	16,074.00	91.79	181.20	11,293.98	5,033.23	-5,032.94	58.18	1.48	MWD	BAKER HUGHES INTEQ
2/7/2014	16,142.00	91.79	181.20	11,291.85	5,101.17	-5,100.89	56.75	0.00	BIT	BAKER HUGHES INTEQ