



Directional Survey

District	County	Field Name	Project Group	State/Province			
PERMIAN BASIN	LEA	RATTLESNAKE (NM)	DELAWARE BASIN	NM			
Surface Legal Location	API/UWI	Latitude (°)	Longitude (°)	Ground Elev...	KB - GL (ft)	Orig KB Elev (ft)	Tubing Head Elevation (ft)
SEC12 T26S R34E	3002541188	32° 3' 2.389" N	103° 25' 14.025" W	3,280.90	25.00	3,305.90	

Wellbores

Wellbore Name OH	Parent Wellbore	Kick Off Depth (ftKB) 8,488.0	Vertical Section Direction (°) 359.33
Actual Deviation Survey VES GYRO / BAKER MWD, Proposed? No	Definitive? No	Proposed? No	Proposed Deviation Survey

Deviation Survey

Date 12/27/2013		Description PRODRFIT			
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00	NSTie In (ft) 0.00	EWtie In (ft) 0.00

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
12/28/2...	157.00	0.30	221.00						INC	NOV / PRODRIFT
12/28/2...	245.00	0.10	178.00						INC	NOV / PRODRIFT
12/28/2...	337.00	0.10	205.00						INC	NOV / PRODRIFT
12/28/2...	427.00	0.30	195.00						INC	NOV / PRODRIFT
12/28/2...	490.00	0.30	233.00						INC	NOV / PRODRIFT
12/28/2...	552.00	0.10	336.00						INC	NOV / PRODRIFT
12/28/2...	650.00	0.20	263.00						INC	NOV / PRODRIFT
12/28/2...	711.00	0.60	288.00						INC	NOV / PRODRIFT
12/28/2...	803.00	0.40	282.00						INC	NOV / PRODRIFT
12/28/2...	894.00	0.80	294.00						INC	NOV / PRODRIFT
12/28/2...	986.00	0.80	302.00						INC	NOV / PRODRIFT
12/28/2...	1,063.00	1.00	304.00						INC	NOV / PRODRIFT



Directional Survey

District PERMIAN BASIN	County LEA	Field Name RATTLESNAKE (NM)	Project Group DELAWARE BASIN	State/Province NM			
Surface Legal Location SEC12 T26S R34E	API/UWI 3002541188	Latitude (°) 32° 3' 2.389" N	Longitude (°) 103° 25' 14.025" W	Ground Elev... 3,280.90	KB - GL (ft) 25.00	Orig KB Elev (ft) 3,305.90	Tubing Head Elevation (ft)

Wellbores

Wellbore Name OH	Parent Wellbore	Kick Off Depth (ftKB) 8,488.0	Vertical Section Direction (°) 359.33
Actual Deviation Survey VES GYRO / BAKER MWD, Proposed? No	Definitive? No	Proposed? No	Proposed Deviation Survey

Deviation Survey

Date 12/28/2013		Description GYRO				
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00	NSTie In (ft) 0.00	EWtie In (ft) 0.00	

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
1/1/2014	47.60	1.00	82.91						MWD	BAKER HUGHES INTEQ
12/28/2...	145.29	0.21	167.90						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	236.04	0.10	172.33						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	326.79	0.15	151.66						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	417.54	0.20	146.51						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	508.29	0.17	199.43						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	599.04	0.14	231.35						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	690.78	0.27	274.29						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	782.52	0.55	275.42						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	874.26	0.71	281.87						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	966.00	0.86	287.71						GYRO	VAUHG N ENERGY SERVICES
12/28/2...	1,038.00	0.90	289.51						GYRO	VAUHG N ENERGY SERVICES
12/30/2...	1,262.00	0.50	299.65						MWD	BAKER HUGHES INTEQ
12/30/2...	1,354.00	0.43	327.64						MWD	BAKER HUGHES INTEQ
12/30/2...	1,449.00	0.40	0.73						MWD	BAKER HUGHES INTEQ
12/30/2...	1,544.00	0.33	278.38						MWD	BAKER HUGHES INTEQ
12/30/2...	1,639.00	0.15	343.99						MWD	BAKER HUGHES INTEQ
12/30/2...	1,734.00	0.38	303.91						MWD	BAKER HUGHES INTEQ
12/30/2...	1,918.00	0.37	171.77						MWD	BAKER HUGHES INTEQ
12/30/2...	2,111.00	0.44	116.51						MWD	BAKER HUGHES INTEQ
12/30/2...	2,299.00	0.51	88.64						MWD	BAKER HUGHES INTEQ
12/30/2...	2,488.00	0.46	82.33						MWD	BAKER HUGHES INTEQ
12/30/2...	2,678.00	0.93	77.19						MWD	BAKER HUGHES INTEQ
12/30/2...	2,867.00	1.24	82.15						MWD	BAKER HUGHES INTEQ
12/30/2...	3,057.00	1.51	301.73						MWD	BAKER HUGHES INTEQ
12/30/2...	3,247.00	0.94	336.33						MWD	BAKER HUGHES INTEQ
12/30/2...	3,436.00	0.90	10.59						MWD	BAKER HUGHES INTEQ
12/30/2...	3,625.00	1.11	22.29						MWD	BAKER HUGHES INTEQ
12/30/2...	3,815.00	1.83	275.16						MWD	BAKER HUGHES INTEQ
1/1/2014	4,004.00	1.65	282.17						MWD	BAKER HUGHES INTEQ
1/1/2014	4,193.00	1.05	327.79						MWD	BAKER HUGHES INTEQ
1/1/2014	4,382.00	0.72	345.13						MWD	BAKER HUGHES INTEQ
1/1/2014	4,571.00	0.65	38.01						MWD	BAKER HUGHES INTEQ
1/1/2014	4,949.00	1.64	93.69						MWD	BAKER HUGHES INTEQ
1/1/2014	5,138.00	1.92	104.34						MWD	BAKER HUGHES INTEQ
1/1/2014	5,810.00	0.70	125.00						EM	FLODRIFT
1/1/2014	5,905.00	0.40	127.00						EM	FLODRIFT
1/1/2014	5,949.00	0.70	149.00						EM	FLODRIFT
1/1/2014	6,043.00	0.40	158.00						EM	FLODRIFT
1/1/2014	6,138.00	0.40	169.00						EM	FLODRIFT
1/1/2014	6,232.00	0.40	169.00						EM	FLODRIFT
1/1/2014	6,327.00	0.10	106.00						EM	FLODRIFT
1/1/2014	6,422.00	0.30	184.00						EM	FLODRIFT
1/1/2014	6,516.00	0.40	210.00						EM	FLODRIFT
1/1/2014	6,611.00	0.40	177.00						EM	FLODRIFT
1/1/2014	6,705.00	0.10	212.00						EM	FLODRIFT
1/1/2014	6,800.00	0.30	157.00						EM	FLODRIFT



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1/1/2014	6,989.00	0.20	163.00						EM	FLODRIFT
1/1/2014	7,089.00	0.10	118.00						EM	FLODRIFT
1/1/2014	7,177.00	0.10	118.00						EM	FLODRIFT
1/1/2014	7,272.00	0.10	30.00						EM	FLODRIFT
1/1/2014	7,367.00	0.10	183.00						EM	FLODRIFT
1/1/2014	7,462.00	0.30	183.00						EM	FLODRIFT
1/5/2014	7,557.00	0.30	188.00						EM	FLODRIFT
1/5/2014	7,651.00	0.90	170.00						EM	FLODRIFT
1/5/2014	7,746.00	0.70	169.00						EM	FLODRIFT
1/5/2014	7,841.00	0.80	185.00						EM	FLODRIFT
1/6/2014	7,936.00	0.30	198.00						EM	FLODRIFT
1/6/2014	8,031.00	0.60	219.00						EM	FLODRIFT
1/6/2014	8,125.00	0.80	206.00						EM	FLODRIFT
1/6/2014	8,220.00	0.10	7.00						EM	FLODRIFT
1/6/2014	8,315.00	0.80	197.00						EM	FLODRIFT



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Wellbores

Wellbore Name OH	Parent Wellbore	Kick Off Depth (ftKB) 8,488.0	Vertical Section Direction (°) 359.33
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Deviation Survey

Date 1/6/2014		Description VES GYRO / BAKER MWD			
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00	NSTie In (ft) 0.00	EWtie In (ft) 0.00

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Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
1/6/2014	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	156.93	0.20	169.76	156.93	-0.27	-0.27	0.05	0.13	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	251.54	0.12	173.15	251.54	-0.53	-0.53	0.09	0.09	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	346.15	0.15	149.82	346.15	-0.74	-0.74	0.16	0.07	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	440.76	0.20	144.39	440.76	-0.98	-0.98	0.32	0.06	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	535.37	0.19	197.55	535.37	-1.27	-1.26	0.37	0.18	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	629.98	0.18	235.10	629.98	-1.50	-1.50	0.20	0.13	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	724.59	0.29	277.93	724.59	-1.55	-1.55	-0.16	0.21	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	819.20	0.55	272.89	819.19	-1.48	-1.49	-0.85	0.28	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	913.81	0.69	279.15	913.80	-1.36	-1.38	-1.86	0.16	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,008.42	0.88	287.12	1,008.40	-1.04	-1.07	-3.12	0.23	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,103.03	0.90	287.32	1,103.00	-0.59	-0.64	-4.52	0.02	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,197.64	0.79	277.34	1,197.60	-0.27	-0.33	-5.88	0.19	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,292.25	0.69	267.42	1,292.20	-0.19	-0.28	-7.10	0.17	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,386.86	0.63	252.31	1,386.80	-0.36	-0.46	-8.16	0.19	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,481.47	0.42	246.12	1,481.41	-0.65	-0.76	-8.97	0.23	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,576.08	0.39	238.41	1,576.02	-0.96	-1.07	-9.56	0.07	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,670.69	0.30	229.21	1,670.63	-1.28	-1.40	-10.03	0.11	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,765.30	0.29	227.34	1,765.23	-1.60	-1.72	-10.39	0.01	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,859.91	0.32	223.40	1,859.84	-1.95	-2.08	-10.75	0.04	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	1,954.52	0.32	213.31	1,954.45	-2.36	-2.49	-11.07	0.06	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,049.13	0.40	199.39	2,049.06	-2.89	-3.02	-11.33	0.12	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,143.74	0.47	175.29	2,143.67	-3.59	-3.72	-11.41	0.21	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,238.35	0.33	156.75	2,238.28	-4.22	-4.36	-11.27	0.20	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,332.96	0.41	133.95	2,332.88	-4.71	-4.84	-10.92	0.18	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,427.57	0.44	111.36	2,427.49	-5.09	-5.21	-10.33	0.18	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,522.18	0.40	118.94	2,522.10	-5.39	-5.50	-9.71	0.07	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,616.79	0.29	124.43	2,616.71	-5.69	-5.80	-9.22	0.12	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,711.40	0.27	97.94	2,711.32	-5.86	-5.96	-8.80	0.14	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,806.01	0.52	95.93	2,805.92	-5.94	-6.04	-8.15	0.26	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,900.62	0.75	102.93	2,900.53	-6.14	-6.22	-7.12	0.26	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	2,995.23	0.95	134.00	2,995.13	-6.83	-6.90	-5.96	0.52	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,089.84	0.93	190.61	3,089.73	-8.14	-8.20	-5.53	0.94	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,184.45	1.11	238.75	3,184.32	-9.36	-9.43	-6.46	0.90	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,279.06	1.42	276.85	3,278.91	-9.67	-9.77	-8.41	0.93	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,373.67	1.03	316.61	3,373.50	-8.89	-9.01	-10.15	0.96	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,468.28	0.94	329.15	3,468.10	-7.60	-7.73	-11.14	0.25	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,562.89	0.86	337.63	3,562.70	-6.27	-6.40	-11.80	0.16	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,657.50	0.81	341.31	3,657.30	-4.97	-5.11	-12.29	0.08	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,752.11	0.91	347.40	3,751.90	-3.60	-3.75	-12.67	0.14	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,846.72	0.94	336.80	3,846.49	-2.15	-2.30	-13.14	0.18	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	3,941.33	1.61	306.67	3,941.08	-0.62	-0.79	-14.51	0.98	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	4,035.94	1.88	291.75	4,035.65	0.77	0.57	-17.02	0.56	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	4,130.55	1.76	288.62	4,130.21	1.85	1.61	-19.83	0.16	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	4,225.16	1.58	281.78	4,224.78	2.61	2.34	-22.49	0.28	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	4,319.77	1.06	312.59	4,319.36	3.49	3.20	-24.41	0.91	GYRO	VAUHGN ENERGY SERVICES
1/6/2014	4,414.38	0.96	321.42	4,413.96	4.71	4.41	-25.55	0.20	GYRO	VAUHGN ENERGY SERVICES



Directional Survey

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1/6/2014	4,508.99	0.56	334.94	4,508.56	5.76	5.45	-26.24	0.46	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	4,603.60	0.46	350.42	4,603.17	6.56	6.25	-26.50	0.18	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	4,698.21	0.56	28.47	4,697.77	7.33	7.03	-26.34	0.37	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	4,792.82	0.61	36.50	4,792.38	8.14	7.84	-25.82	0.10	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	4,887.43	0.77	43.74	4,886.98	8.99	8.70	-25.08	0.19	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	4,982.04	1.06	47.26	4,981.58	10.04	9.76	-24.00	0.31	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,076.65	1.42	72.33	5,076.17	10.96	10.71	-22.24	0.68	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,171.26	1.64	103.80	5,170.75	10.97	10.74	-19.81	0.91	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,265.87	1.75	100.87	5,265.31	10.34	10.14	-17.07	0.15	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,360.48	1.46	102.36	5,359.89	9.78	9.61	-14.48	0.31	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,455.09	1.34	111.26	5,454.47	9.10	8.95	-12.27	0.26	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,549.70	1.62	112.64	5,549.05	8.15	8.04	-10.00	0.30	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,644.31	1.17	119.71	5,643.63	7.14	7.04	-7.93	0.51	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,738.92	0.94	129.07	5,738.22	6.15	6.08	-6.49	0.30	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,833.53	0.83	122.83	5,832.82	5.28	5.22	-5.31	0.15	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	5,928.14	0.70	125.09	5,927.42	4.56	4.51	-4.26	0.14	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,022.75	0.70	135.74	6,022.03	3.80	3.77	-3.39	0.14	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,117.36	0.51	144.47	6,116.63	3.04	3.01	-2.74	0.22	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,211.97	0.48	154.36	6,211.24	2.34	2.31	-2.32	0.10	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,306.58	0.48	175.54	6,305.84	1.58	1.56	-2.12	0.19	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,401.19	0.53	217.26	6,400.45	0.84	0.81	-2.35	0.38	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,495.80	0.42	241.69	6,495.06	0.33	0.30	-2.92	0.24	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,590.41	0.27	236.14	6,589.67	0.05	0.01	-3.41	0.16	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,685.02	0.45	203.75	6,684.27	-0.41	-0.45	-3.75	0.28	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,779.63	0.43	203.72	6,778.88	-1.07	-1.12	-4.04	0.02	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,874.24	0.29	216.44	6,873.49	-1.58	-1.64	-4.33	0.17	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	6,968.85	0.21	217.67	6,968.10	-1.91	-1.97	-4.57	0.08	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,063.46	0.33	220.02	7,062.71	-2.25	-2.31	-4.86	0.13	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,158.07	0.15	230.42	7,157.32	-2.54	-2.60	-5.13	0.19	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,252.68	0.15	247.40	7,251.93	-2.66	-2.73	-5.34	0.05	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,347.29	0.17	293.93	7,346.54	-2.65	-2.72	-5.58	0.13	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,441.90	0.34	263.50	7,441.15	-2.62	-2.69	-5.99	0.22	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,536.51	0.47	250.16	7,535.75	-2.78	-2.85	-6.63	0.17	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,631.12	0.72	207.38	7,630.36	-3.43	-3.51	-7.27	0.52	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,725.73	0.84	213.97	7,724.96	-4.52	-4.62	-7.93	0.16	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,820.34	0.66	216.59	7,819.56	-5.53	-5.63	-8.64	0.19	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	7,914.95	0.62	221.17	7,914.17	-6.34	-6.45	-9.30	0.07	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,009.56	0.71	236.55	8,008.77	-7.04	-7.16	-10.13	0.21	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,104.17	0.77	222.80	8,103.37	-7.82	-7.95	-11.05	0.20	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,198.78	0.88	205.62	8,197.97	-8.93	-9.07	-11.80	0.28	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,293.39	0.79	196.49	8,292.57	-10.21	-10.35	-12.30	0.17	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,388.00	0.90	194.77	8,387.17	-11.55	-11.70	-12.67	0.12	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,418.00	0.76	178.91	8,417.17	-11.97	-12.12	-12.73	0.89	GYRO	VAUHG N ENERGY SERVICES
1/6/2014	8,494.00	0.90	40.20	8,493.16	-12.03	-12.17	-12.33	2.04	MWD	BAKER HUGHES INTEQ
1/6/2014	8,526.00	3.60	359.20	8,525.14	-10.83	-10.97	-12.18	9.31	MWD	BAKER HUGHES INTEQ
1/6/2014	8,557.00	6.50	349.10	8,556.02	-8.13	-8.28	-12.53	9.75	MWD	BAKER HUGHES INTEQ
1/6/2014	8,588.00	9.60	349.80	8,586.71	-3.85	-4.01	-13.32	10.00	MWD	BAKER HUGHES INTEQ
1/6/2014	8,620.00	12.40	351.80	8,618.12	2.19	2.02	-14.28	8.83	MWD	BAKER HUGHES INTEQ
1/7/2014	8,651.00	16.10	349.50	8,648.16	9.72	9.54	-15.54	12.07	MWD	BAKER HUGHES INTEQ
1/7/2014	8,683.00	18.60	353.40	8,678.70	19.17	18.98	-16.93	8.61	MWD	BAKER HUGHES INTEQ
1/7/2014	8,714.00	18.30	347.10	8,708.11	28.85	28.63	-18.59	6.50	MWD	BAKER HUGHES INTEQ
1/7/2014	8,746.00	20.50	347.70	8,738.29	39.25	39.01	-20.91	6.90	MWD	BAKER HUGHES INTEQ
1/7/2014	8,777.00	22.80	351.70	8,767.10	50.52	50.25	-22.93	8.81	MWD	BAKER HUGHES INTEQ
1/7/2014	8,809.00	26.30	353.20	8,796.21	63.72	63.43	-24.66	11.11	MWD	BAKER HUGHES INTEQ
1/8/2014	8,840.00	30.30	352.80	8,823.50	78.32	78.02	-26.46	12.92	MWD	BAKER HUGHES INTEQ



Directional Survey

District PERMIAN BASIN	County LEA	Field Name RATTLESNAKE (NM)	Project Group DELAWARE BASIN	State/Province NM
Surface Legal Location SEC12 T26S R34E	API/UWI 3002541188	Latitude (°) 32° 3' 2.389" N	Longitude (°) 103° 25' 14.025" W	Ground Elev... 3,280.90
			KB - GL (ft) 25.00	Orig KB Elev (ft) 3,305.90
				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
1/8/2014	8,872.00	34.30	353.10	8,850.54	95.31	94.98	-28.55	12.51	MWD	BAKER HUGHES INTEQ
1/8/2014	8,903.00	37.70	355.50	8,875.62	113.46	113.11	-30.35	11.87	MWD	BAKER HUGHES INTEQ
1/8/2014	8,935.00	40.70	357.80	8,900.41	133.66	133.30	-31.52	10.42	MWD	BAKER HUGHES INTEQ
1/8/2014	8,966.00	44.70	359.10	8,923.19	154.67	154.31	-32.08	13.21	MWD	BAKER HUGHES INTEQ
1/8/2014	8,998.00	48.90	0.50	8,945.09	177.99	177.63	-32.15	13.51	MWD	BAKER HUGHES INTEQ
1/8/2014	9,029.00	52.60	0.80	8,964.70	201.99	201.63	-31.87	11.96	MWD	BAKER HUGHES INTEQ
1/9/2014	9,061.00	57.90	1.70	8,982.94	228.26	227.90	-31.29	16.72	MWD	BAKER HUGHES INTEQ
1/9/2014	9,092.00	62.10	1.90	8,998.43	255.07	254.73	-30.45	13.56	MWD	BAKER HUGHES INTEQ
1/9/2014	9,124.00	65.80	2.60	9,012.48	283.78	283.45	-29.32	11.73	MWD	BAKER HUGHES INTEQ
1/9/2014	9,155.00	69.40	2.40	9,024.29	312.39	312.08	-28.07	11.63	MWD	BAKER HUGHES INTEQ
1/9/2014	9,187.00	73.70	2.30	9,034.42	342.70	342.41	-26.82	13.44	MWD	BAKER HUGHES INTEQ
1/9/2014	9,218.00	78.00	2.40	9,042.00	372.71	372.43	-25.59	13.87	MWD	BAKER HUGHES INTEQ
1/9/2014	9,250.00	80.80	2.10	9,047.88	404.12	403.86	-24.36	8.80	MWD	BAKER HUGHES INTEQ
1/9/2014	9,281.00	82.60	1.80	9,052.36	434.76	434.52	-23.31	5.88	MWD	BAKER HUGHES INTEQ
1/9/2014	9,313.00	84.30	1.50	9,056.01	466.52	466.29	-22.40	5.39	MWD	BAKER HUGHES INTEQ
1/9/2014	9,340.00	86.70	2.20	9,058.12	493.41	493.19	-21.53	9.26	MWD	BAKER HUGHES INTEQ
1/9/2014	9,371.00	88.40	2.30	9,059.45	524.34	524.14	-20.31	5.49	MWD	BAKER HUGHES INTEQ
1/9/2014	9,435.00	91.10	0.50	9,059.73	588.29	588.11	-18.75	5.07	MWD	BAKER HUGHES INTEQ
1/9/2014	9,498.00	91.60	0.40	9,058.24	651.26	651.09	-18.26	0.81	MWD	BAKER HUGHES INTEQ
1/9/2014	9,592.00	90.70	1.10	9,056.36	745.21	745.06	-17.03	1.21	MWD	BAKER HUGHES INTEQ
1/10/2014	9,687.00	90.00	1.10	9,055.78	840.16	840.04	-15.20	0.74	MWD	BAKER HUGHES INTEQ
1/10/2014	9,781.00	92.10	4.10	9,054.05	933.98	933.91	-10.94	3.90	MWD	BAKER HUGHES INTEQ
1/10/2014	9,875.00	90.40	4.40	9,052.00	1,027.61	1,027.63	-3.98	1.84	MWD	BAKER HUGHES INTEQ
1/10/2014	9,970.00	90.30	3.80	9,051.42	1,122.28	1,122.38	2.82	0.64	MWD	BAKER HUGHES INTEQ
1/11/2014	10,065.00	89.10	1.20	9,051.92	1,217.12	1,217.28	6.96	3.01	MWD	BAKER HUGHES INTEQ
1/11/2014	10,159.00	89.50	359.50	9,053.07	1,311.09	1,311.27	7.53	1.86	MWD	BAKER HUGHES INTEQ
1/11/2014	10,254.00	89.00	357.80	9,054.31	1,406.07	1,406.23	5.30	1.87	MWD	BAKER HUGHES INTEQ
1/11/2014	10,348.00	89.00	358.20	9,055.95	1,500.03	1,500.16	2.02	0.43	MWD	BAKER HUGHES INTEQ
1/11/2014	10,443.00	89.10	358.40	9,057.53	1,595.01	1,595.11	-0.80	0.24	MWD	BAKER HUGHES INTEQ
1/11/2014	10,537.00	88.90	358.40	9,059.17	1,688.98	1,689.05	-3.43	0.21	MWD	BAKER HUGHES INTEQ
1/11/2014	10,631.00	89.00	358.60	9,060.89	1,782.95	1,783.01	-5.89	0.24	MWD	BAKER HUGHES INTEQ
1/11/2014	10,726.00	91.20	0.10	9,060.73	1,877.95	1,877.99	-6.96	2.80	MWD	BAKER HUGHES INTEQ
1/11/2014	10,820.00	90.10	0.10	9,059.66	1,971.93	1,971.98	-6.80	1.17	MWD	BAKER HUGHES INTEQ
1/11/2014	10,914.00	89.60	359.20	9,059.91	2,065.93	2,065.98	-7.37	1.10	MWD	BAKER HUGHES INTEQ
1/12/2014	11,009.00	88.90	358.90	9,061.15	2,160.92	2,160.96	-8.95	0.80	MWD	BAKER HUGHES INTEQ
1/12/2014	11,104.00	91.50	358.10	9,060.82	2,255.90	2,255.92	-11.44	2.86	MWD	BAKER HUGHES INTEQ
1/12/2014	11,197.00	92.50	358.50	9,057.57	2,348.82	2,348.82	-14.19	1.16	MWD	BAKER HUGHES INTEQ
1/12/2014	11,291.00	93.40	358.80	9,052.73	2,442.69	2,442.67	-16.40	1.01	MWD	BAKER HUGHES INTEQ
1/12/2014	11,386.00	91.50	358.60	9,048.67	2,537.59	2,537.55	-18.56	2.01	MWD	BAKER HUGHES INTEQ
1/12/2014	11,481.00	90.50	357.60	9,047.02	2,632.56	2,632.48	-21.71	1.49	MWD	BAKER HUGHES INTEQ
1/12/2014	11,576.00	90.80	358.10	9,045.94	2,727.52	2,727.41	-25.27	0.61	MWD	BAKER HUGHES INTEQ
1/12/2014	11,671.00	90.90	357.90	9,044.53	2,822.48	2,822.34	-28.59	0.24	MWD	BAKER HUGHES INTEQ
1/12/2014	11,766.00	88.60	357.70	9,044.94	2,917.44	2,917.26	-32.23	2.43	MWD	BAKER HUGHES INTEQ
1/12/2014	11,860.00	89.60	358.00	9,046.42	3,011.40	3,011.18	-35.76	1.11	MWD	BAKER HUGHES INTEQ
1/12/2014	11,955.00	89.40	357.70	9,047.25	3,106.36	3,106.11	-39.32	0.38	MWD	BAKER HUGHES INTEQ
1/13/2014	12,049.00	89.50	356.90	9,048.15	3,200.30	3,200.00	-43.75	0.86	MWD	BAKER HUGHES INTEQ
1/13/2014	12,144.00	89.30	356.80	9,049.15	3,295.20	3,294.85	-48.97	0.24	MWD	BAKER HUGHES INTEQ
1/13/2014	12,239.00	91.10	358.20	9,048.81	3,390.15	3,389.76	-53.11	2.40	MWD	BAKER HUGHES INTEQ
1/13/2014	12,333.00	92.10	358.70	9,046.19	3,484.10	3,483.68	-55.66	1.19	MWD	BAKER HUGHES INTEQ
1/13/2014	12,428.00	93.10	359.40	9,041.88	3,579.00	3,578.57	-57.23	1.28	MWD	BAKER HUGHES INTEQ
1/13/2014	12,523.00	92.60	359.90	9,037.16	3,673.88	3,673.45	-57.81	0.74	MWD	BAKER HUGHES INTEQ
1/13/2014	12,617.00	92.00	359.40	9,033.38	3,767.80	3,767.37	-58.38	0.83	MWD	BAKER HUGHES INTEQ
1/13/2014	12,712.00	89.00	358.40	9,032.56	3,862.78	3,862.34	-60.21	3.33	MWD	BAKER HUGHES INTEQ
1/13/2014	12,807.00	90.90	359.40	9,032.64	3,957.77	3,957.32	-62.03	2.26	MWD	BAKER HUGHES INTEQ
1/14/2014	12,902.00	90.80	0.30	9,031.23	4,052.76	4,052.31	-62.28	0.95	MWD	BAKER HUGHES INTEQ



Directional Survey

District	County	Field Name	Project Group	State/Province			
PERMIAN BASIN	LEA	RATTLESNAKE (NM)	DELAWARE BASIN	NM			
Surface Legal Location	API/UWI	Latitude (°)	Longitude (°)	Ground Elev...	KB - GL (ft)	Orig KB Elev (ft)	Tubing Head Elevation (ft)
SEC12 T26S R34E	3002541188	32° 3' 2.389" N	103° 25' 14.025" W	3,280.90	25.00	3,305.90	

Survey Data

Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company
1/14/2014	12,996.00	91.80	0.80	9,029.10	4,146.71	4,146.28	-61.38	1.19	MWD	BAKER HUGHES INTEQ
1/14/2014	13,184.00	90.60	0.40	9,025.16	4,334.62	4,334.22	-59.41	0.67	MWD	BAKER HUGHES INTEQ
1/14/2014	13,280.00	90.80	0.50	9,023.99	4,430.59	4,430.21	-58.65	0.23	MWD	BAKER HUGHES INTEQ
1/14/2014	13,374.00	90.00	1.00	9,023.33	4,524.56	4,524.20	-57.42	1.00	MWD	BAKER HUGHES INTEQ
1/14/2014	13,468.00	90.10	1.30	9,023.25	4,618.51	4,618.18	-55.54	0.34	MWD	BAKER HUGHES INTEQ
1/14/2014	13,563.00	90.20	2.20	9,023.00	4,713.43	4,713.13	-52.64	0.95	MWD	BAKER HUGHES INTEQ
1/14/2014	13,657.00	91.10	3.50	9,021.93	4,807.24	4,807.01	-47.96	1.68	MWD	BAKER HUGHES INTEQ
1/14/2014	13,731.00	91.80	4.50	9,020.06	4,880.97	4,880.80	-42.80	1.65	MWD	BAKER HUGHES INTEQ
1/14/2014	13,788.00	91.80	4.50	9,018.27	4,937.71	4,937.60	-38.33	0.00	BIT	BAKER HUGHES INTEQ