



Directional Survey

30-025-41913

Sub-Division DELAWARE BASIN	County LEA	Field Name JOHNSON RANCH	Region DELAWARE BASIN EAST	State/Province NM
Surface Legal Location Sec. 20 T23S R33E	API/UMI 3002541913	Latitude (°) 32° 17' 0.699" N	Longitude (°) 103° 35' 54.693" W	Ground Elev M... 3,707.00
				Orig KB Elev (ft) 3,730.00
				Tubing Head Elevation (ft)

Wellbores				
Wellbore Name OH	Parent Wellbore OH	SAP Well ID 37828	Vertical Section Direction (°) 2.70	HOBBS OCD

Kick Offs & Key Depths

Date 2/13/2015	Type Kick Off	Top Depth (ftKB) 10,492.0	MAY 27 2015
Actual Deviation Survey EXTREME, Proposed? No	Definitive? Yes	Proposed? No	Proposed Deviation Survey

Deviation Survey

Date 2/1/2015	Description EXTREME				
MD Tie In (ftKB) 0.00	TVD Tie In (ftKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00	NS Tie In (ft) 0.00	EW Tie 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
2/5/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD	EXTREME
2/2/2015	260.00	0.62	182.30	259.99	-1.41	-1.41	0.06	0.24	MWD	EXTREME
2/2/2015	337.00	0.70	188.66	336.99	-2.29	-2.29	-0.14	0.14	MWD	EXTREME
2/2/2015	474.00	0.40	176.50	473.98	-3.60	-3.59	-0.24	0.23	MWD	EXTREME
2/2/2015	597.00	0.31	145.20	596.98	-4.29	-4.29	-0.02	0.17	MWD	EXTREME
2/2/2015	720.00	0.31	98.30	719.98	-4.59	-4.61	0.49	0.20	MWD	EXTREME
2/2/2015	812.00	0.31	47.64	811.98	-4.43	-4.48	0.92	0.29	MWD	EXTREME
2/2/2015	935.00	0.40	13.15	934.98	-3.78	-3.84	1.27	0.18	MWD	EXTREME
2/2/2015	996.00	0.40	358.70	995.97	-3.35	-3.42	1.31	0.16	MWD	EXTREME
2/2/2015	1,118.00	0.31	337.70	1,117.97	-2.63	-2.69	1.18	0.13	MWD	EXTREME
2/2/2015	1,270.00	0.48	277.00	1,269.97	-2.21	-2.23	0.39	0.28	MWD	EXTREME
2/5/2015	1,557.00	0.79	267.24	1,556.95	-2.31	-2.18	2.78	0.11	MWD	EXTREME
2/5/2015	1,650.00	0.88	269.83	1,649.94	-2.41	-2.21	4.14	0.10	MWD	EXTREME
2/5/2015	1,745.00	1.01	276.64	1,744.93	-2.38	-2.12	5.70	0.18	MWD	EXTREME
2/5/2015	1,840.00	1.10	280.47	1,839.91	-2.20	-1.86	7.42	0.12	MWD	EXTREME
2/5/2015	1,950.00	1.10	274.14	1,949.89	-2.03	-1.59	9.52	0.11	MWD	EXTREME
2/5/2015	2,044.00	1.10	279.45	2,043.87	-1.91	-1.37	11.31	0.11	MWD	EXTREME
2/5/2015	2,140.00	1.19	276.73	2,139.86	-1.73	-1.11	13.20	0.11	MWD	EXTREME
2/5/2015	2,234.00	1.19	278.44	2,233.84	-1.56	-0.85	15.14	0.04	MWD	EXTREME
2/5/2015	2,329.00	1.41	280.33	2,328.81	-1.31	-0.49	17.27	0.24	MWD	EXTREME
2/5/2015	2,423.00	1.49	283.54	2,422.78	-0.92	0.00	19.59	0.12	MWD	EXTREME
2/5/2015	2,519.00	1.71	282.84	2,518.74	-0.44	0.61	22.20	0.23	MWD	EXTREME
2/5/2015	2,614.00	1.58	281.87	2,613.70	0.02	1.19	24.87	0.14	MWD	EXTREME
2/5/2015	2,709.00	1.58	283.23	2,708.67	0.47	1.76	27.42	0.04	MWD	EXTREME
2/5/2015	2,804.00	1.49	281.56	2,803.63	0.90	2.31	29.91	0.11	MWD	EXTREME
2/5/2015	2,899.00	1.41	282.36	2,898.60	1.29	2.81	32.26	0.09	MWD	EXTREME
2/5/2015	2,994.00	1.19	280.25	2,993.58	1.61	3.23	34.37	0.24	MWD	EXTREME
2/5/2015	3,089.00	1.10	277.57	3,088.56	1.82	3.53	36.25	0.11	MWD	EXTREME
2/5/2015	3,183.00	1.10	280.33	3,182.54	2.01	3.81	38.03	0.06	MWD	EXTREME
2/5/2015	3,281.00	1.10	285.56	3,280.52	2.35	4.23	39.86	0.10	MWD	EXTREME
2/5/2015	3,376.00	0.79	289.03	3,375.51	2.74	4.69	41.36	0.33	MWD	EXTREME
2/5/2015	3,470.00	0.62	290.53	3,469.50	3.07	5.08	42.45	0.18	MWD	EXTREME
2/5/2015	3,565.00	0.62	290.66	3,564.50	3.39	5.44	43.41	0.00	MWD	EXTREME
2/5/2015	3,660.00	0.62	289.65	3,659.49	3.70	5.79	44.37	0.01	MWD	EXTREME
2/5/2015	3,754.00	0.62	283.76	3,753.49	3.94	6.09	45.35	0.07	MWD	EXTREME
2/5/2015	3,848.00	0.48	261.13	3,847.48	3.96	6.15	46.23	0.27	MWD	EXTREME
2/5/2015	3,943.00	0.62	250.36	3,942.48	3.69	5.91	47.11	0.18	MWD	EXTREME
2/5/2015	4,037.00	0.48	250.23	4,036.47	3.34	5.61	47.96	0.15	MWD	EXTREME
2/5/2015	4,132.00	0.48	259.06	4,131.47	3.10	5.40	48.72	0.08	MWD	EXTREME
2/5/2015	4,227.00	0.40	262.67	4,226.47	2.95	5.28	49.44	0.09	MWD	EXTREME
2/5/2015	4,322.00	0.35	133.25	4,321.47	2.70	5.04	49.56	0.71	MWD	EXTREME
2/5/2015	4,416.00	1.32	130.04	4,415.46	1.86	4.15	48.52	1.03	MWD	EXTREME
2/5/2015	4,508.00	1.71	125.73	4,507.42	0.47	2.66	46.59	0.44	MWD	EXTREME
2/5/2015	4,604.00	1.80	122.66	4,603.38	1.07	1.01	44.16	0.14	MWD	EXTREME
2/5/2015	4,699.00	2.29	124.46	4,698.32	2.81	-0.87	41.34	0.52	MWD	EXTREME
2/5/2015	4,798.00	2.81	123.14	4,797.22	5.08	3.31	37.68	0.53	MWD	EXTREME
2/5/2015	4,885.00	3.21	123.14	4,884.10	7.40	-5.81	33.85	0.46	MWD	EXTREME

JUN 02 2015



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Survey Data										
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2/5/2015	4,980.00	3.21	125.73	4,978.95	10.19	-8.82	29.47	0.15	MWD	EXTREME
2/5/2015	5,057.00	3.12	126.83	5,055.83	12.55	-11.33	26.04	0.14	MWD	EXTREME
2/5/2015	5,211.00	1.70	136.70	5,209.69	16.48	-15.51	21.12	0.96	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,305.00	2.10	123.30	5,303.64	-18.33	-17.47	18.72	0.63	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,400.00	2.00	122.60	5,398.58	-20.04	-19.32	15.87	0.11	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,495.00	4.70	65.10	5,493.43	-19.06	-18.57	10.94	4.21	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,590.00	5.20	75.10	5,588.08	-15.96	-15.82	-3.25	1.05	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,684.00	5.50	81.60	5,681.67	-13.80	-14.07	5.32	0.72	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,779.00	7.90	87.60	5,776.02	-12.35	-13.13	16.35	2.63	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,874.00	8.50	111.00	5,870.07	-13.97	-15.38	29.43	3.54	MWD	LEAM DRILLING SYSTEMS
2/5/2015	5,968.00	6.70	132.30	5,963.26	-19.65	-21.56	39.98	3.52	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,063.00	5.60	162.70	6,057.74	-27.54	-29.71	45.45	3.57	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,157.00	1.80	194.90	6,151.53	-33.30	-35.52	46.44	4.46	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,252.00	2.50	31.90	6,246.50	-32.95	-35.21	47.15	4.48	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,345.00	2.60	49.00	6,339.41	-29.72	-32.10	49.81	0.82	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,439.00	3.20	68.10	6,433.30	-27.15	-29.72	53.86	1.20	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,534.00	3.70	85.90	6,528.13	-25.69	-28.51	59.38	1.24	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,629.00	4.50	101.00	6,622.88	-25.86	-29.01	66.09	1.41	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,724.00	4.60	105.70	6,717.59	-27.26	-30.75	73.42	0.41	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,819.00	4.40	102.40	6,812.29	-28.73	-32.56	80.64	0.34	MWD	LEAM DRILLING SYSTEMS
2/5/2015	6,913.00	4.30	102.00	6,906.02	-29.90	-34.07	87.61	0.11	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,007.00	4.40	102.60	6,999.75	-31.09	-35.59	94.58	0.12	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,102.00	4.60	106.60	7,094.46	-32.63	-37.47	101.79	0.39	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,196.00	4.70	109.10	7,188.15	-34.63	-39.81	109.04	0.24	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,290.00	4.50	111.70	7,281.85	-36.92	-42.43	116.10	0.31	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,385.00	4.60	113.30	7,376.55	-39.47	-45.32	123.06	0.17	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,480.00	4.70	100.50	7,471.24	-41.34	-47.53	130.39	1.10	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,574.00	4.10	102.60	7,564.96	-42.44	-48.97	137.46	0.66	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,668.00	4.30	97.50	7,658.71	-43.31	-50.16	144.23	0.45	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,762.00	4.50	101.00	7,752.43	-44.14	-51.32	151.34	0.36	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,857.00	4.70	105.40	7,847.12	-45.53	-53.07	158.75	0.43	MWD	LEAM DRILLING SYSTEMS
2/5/2015	7,951.00	4.40	102.40	7,940.83	-46.99	-54.87	165.99	0.41	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,045.00	4.70	100.80	8,034.53	-48.14	-56.36	173.29	0.35	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,140.00	4.60	105.20	8,129.22	-49.51	-58.09	180.79	0.39	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,234.00	4.00	104.30	8,222.95	-50.98	-59.89	187.61	0.64	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,329.00	4.60	110.50	8,317.69	-52.81	-62.04	194.39	0.80	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,423.00	4.10	111.70	8,411.42	-55.06	-64.60	201.04	0.54	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,516.00	5.10	111.50	8,504.12	-57.48	-67.35	207.97	1.08	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,610.00	4.50	113.60	8,597.79	-60.14	-70.35	215.24	0.67	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,704.00	4.70	108.70	8,691.48	-62.51	-73.07	222.27	0.47	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,798.00	3.70	108.20	8,785.23	-64.39	-75.25	228.80	1.06	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,893.00	4.10	108.40	8,880.01	-66.12	-77.28	234.93	0.42	MWD	LEAM DRILLING SYSTEMS
2/5/2015	8,988.00	5.10	102.00	8,974.70	-67.73	-79.23	242.28	1.18	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,082.00	4.20	98.30	9,068.39	-68.74	-80.59	249.78	1.01	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,176.00	4.10	103.30	9,162.15	-69.69	-81.86	256.45	0.40	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,270.00	4.00	110.10	9,255.91	-71.29	-83.76	262.80	0.52	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,364.00	3.80	112.60	9,349.69	-73.33	-86.09	268.76	0.28	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,460.00	3.60	101.70	9,445.50	-74.88	-87.92	274.65	0.76	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,553.00	4.00	94.30	9,538.29	-75.43	-88.76	280.74	0.68	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,647.00	4.70	96.20	9,632.02	-75.76	-89.42	287.84	0.76	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,741.00	4.50	101.20	9,725.72	-76.54	-90.55	295.28	0.48	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,836.00	3.50	99.60	9,820.48	-77.44	-91.76	301.80	1.06	MWD	LEAM DRILLING SYSTEMS
2/5/2015	9,930.00	2.50	103.60	9,914.36	-78.17	-92.72	306.62	1.09	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,024.00	1.80	106.30	10,008.29	-78.91	-93.61	310.03	0.75	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,119.00	1.60	101.30	10,103.25	-79.45	-94.29	312.76	0.26	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,214.00	1.70	111.40	10,198.21	-80.10	-95.07	315.38	0.32	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,308.00	1.10	121.50	10,292.18	-80.99	-96.05	317.44	0.69	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,404.00	1.10	160.20	10,388.16	-82.28	-97.40	318.54	0.76	MWD	LEAM DRILLING SYSTEMS



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2/5/2015	10,435.00	0.80	175.20	10,419.16	82.77	97.89	318.66	1.25	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,500.00	0.30	62.10	10,484.16	83.13	98.26	318.85	1.47	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,531.00	4.00	13.40	10,515.13	82.03	97.17	319.17	12.29	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,563.00	8.20	6.90	10,546.94	78.66	93.82	319.70	13.28	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,594.00	12.00	1.70	10,577.46	73.23	88.40	320.06	12.59	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,625.00	15.70	2.20	10,607.55	65.81	80.99	320.32	11.94	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,656.00	18.30	4.80	10,637.19	56.75	71.94	320.89	8.74	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,688.00	21.10	7.60	10,667.32	45.99	61.23	322.07	9.23	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,719.00	25.30	6.10	10,695.80	33.81	49.10	323.51	13.68	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,750.00	29.50	4.10	10,723.32	19.56	34.90	324.76	13.87	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,781.00	32.80	3.40	10,749.85	3.53	18.90	325.81	10.71	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,813.00	35.60	2.70	10,776.31	14.45	0.94	326.76	8.84	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,845.00	38.30	1.70	10,801.88	33.69	18.28	327.49	8.64	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,876.00	41.20	1.70	10,825.71	53.51	38.09	328.08	9.35	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,908.00	44.50	1.50	10,849.17	75.26	59.84	328.69	10.32	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,939.00	46.60	0.60	10,870.88	97.38	81.97	329.09	7.08	MWD	LEAM DRILLING SYSTEMS
2/5/2015	10,970.00	48.60	359.20	10,891.78	120.24	104.86	329.05	7.26	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,002.00	50.60	359.00	10,912.52	144.56	129.22	328.66	6.27	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,033.00	53.20	359.20	10,931.65	168.91	153.61	328.28	8.40	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,065.00	56.10	0.30	10,950.16	194.97	179.71	328.17	9.49	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,096.00	58.70	0.80	10,966.86	221.06	205.82	328.42	8.50	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,128.00	60.80	1.10	10,982.98	248.69	233.46	328.88	6.61	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,159.00	63.10	2.00	10,997.56	276.04	260.81	329.63	7.85	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,191.00	65.20	2.90	11,011.51	304.84	289.57	330.86	7.03	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,223.00	67.60	2.40	11,024.32	334.16	318.87	332.21	7.64	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,255.00	69.90	3.10	11,035.92	363.98	348.65	333.65	7.47	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,286.00	72.20	3.40	11,045.98	393.30	377.92	335.31	7.48	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,318.00	73.70	5.20	11,055.37	423.88	408.43	337.60	7.13	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,349.00	75.80	5.40	11,063.52	453.75	438.21	340.37	6.80	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,377.00	77.60	6.40	11,069.96	480.96	465.31	343.17	7.31	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,408.00	79.50	6.10	11,076.12	511.28	495.51	346.48	6.20	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,440.00	81.70	5.50	11,081.34	542.80	526.92	349.67	7.12	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,471.00	83.60	4.80	11,085.31	573.52	557.54	352.42	6.53	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,503.00	85.20	4.70	11,088.43	605.35	589.27	355.06	5.01	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,534.00	86.90	3.80	11,090.57	636.26	620.11	357.35	6.20	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,566.00	88.30	2.70	11,091.91	668.23	652.03	359.17	5.56	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,597.00	89.20	2.90	11,092.58	699.22	682.99	360.68	2.97	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,661.00	89.30	3.20	11,093.42	763.21	746.89	364.08	0.49	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,755.00	89.70	4.10	11,094.24	857.20	840.70	370.07	1.05	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,850.00	89.70	4.00	11,094.74	952.17	935.46	376.78	0.11	MWD	LEAM DRILLING SYSTEMS
2/5/2015	11,945.00	89.80	2.70	11,095.15	1,047.16	1,030.29	382.33	1.37	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,039.00	90.40	3.40	11,094.99	1,141.16	1,124.16	387.33	0.98	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,133.00	90.90	3.20	11,093.92	1,235.15	1,218.00	392.74	0.57	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,228.00	90.90	4.00	11,092.43	1,330.12	1,312.80	398.71	0.84	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,322.00	90.60	2.90	11,091.20	1,424.10	1,406.62	404.36	1.21	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,416.00	90.30	3.20	11,090.46	1,518.10	1,500.48	409.36	0.45	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,511.00	91.10	3.20	11,089.30	1,613.09	1,595.32	414.67	0.84	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,606.00	91.50	3.40	11,087.14	1,708.06	1,690.14	420.13	0.47	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,700.00	92.20	4.10	11,084.11	1,801.99	1,783.89	426.28	1.05	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,795.00	90.80	3.80	11,081.62	1,896.93	1,878.63	432.82	1.51	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,889.00	90.40	4.30	11,080.64	1,990.90	1,972.39	439.46	0.68	MWD	LEAM DRILLING SYSTEMS
2/5/2015	12,983.00	90.70	3.40	11,079.74	2,084.88	2,066.17	445.77	1.01	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,077.00	90.60	2.90	11,078.67	2,178.87	2,160.02	450.93	0.54	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,172.00	90.80	2.90	11,077.51	2,273.86	2,254.90	455.74	0.21	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,266.00	91.10	2.50	11,075.95	2,367.85	2,348.78	460.17	0.53	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,360.00	90.90	2.20	11,074.31	2,461.83	2,442.68	464.02	0.38	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,455.00	91.50	1.70	11,072.32	2,556.80	2,537.61	467.25	0.82	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,549.00	90.70	2.90	11,070.52	2,650.78	2,631.51	471.02	1.53	MWD	LEAM DRILLING SYSTEMS



Directional Survey

Sub-Division DELAWARE BASIN	County LEA	Field Name JOHNSON RANCH	Region DELAWARE BASIN EAST	State/Province NM
Surface Legal Location Sec. 20 T23S R33E	APN/UWI 3002541913	Latitude (°) 32° 17' 0.699" N	Longitude (°) 103° 35' 54.693" W	Ground Elev M... 3,707.00
				Orig KB Elev (ft) 3,730.00
				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
2/5/2015	13,642.00	90.50	3.10	11,069.54	2,743.77	2,724.38	475.89	0.30	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,736.00	90.20	3.80	11,068.97	2,837.76	2,818.21	481.55	0.81	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,830.00	90.60	3.40	11,068.31	2,931.75	2,912.02	487.45	0.60	MWD	LEAM DRILLING SYSTEMS
2/5/2015	13,924.00	90.70	4.00	11,067.25	3,025.73	3,005.82	493.52	0.65	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,019.00	89.90	3.40	11,066.75	3,120.71	3,100.62	499.65	1.05	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,114.00	89.70	4.50	11,067.08	3,215.69	3,195.39	506.19	1.18	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,208.00	90.20	4.50	11,067.16	3,309.64	3,289.10	513.56	0.53	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,302.00	90.50	3.40	11,066.59	3,403.61	3,382.87	520.04	1.21	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,396.00	90.40	3.20	11,065.85	3,497.61	3,476.71	525.45	0.24	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,491.00	90.60	3.10	11,065.02	3,592.60	3,571.57	530.67	0.24	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,586.00	91.50	2.50	11,063.28	3,687.58	3,666.43	535.31	1.14	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,680.00	92.20	2.70	11,060.24	3,781.53	3,760.29	539.57	0.77	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,773.00	92.50	3.10	11,056.43	3,874.45	3,853.09	544.27	0.54	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,867.00	92.00	3.40	11,052.74	3,968.37	3,946.87	549.60	0.62	MWD	LEAM DRILLING SYSTEMS
2/5/2015	14,962.00	91.50	4.10	11,049.84	4,063.31	4,041.62	555.81	0.91	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,056.00	90.00	3.10	11,048.61	4,157.29	4,135.42	561.71	1.92	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,150.00	90.80	3.60	11,047.95	4,251.28	4,229.26	567.20	1.00	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,245.00	90.50	3.40	11,046.88	4,346.27	4,324.07	573.00	0.38	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,341.00	90.70	4.10	11,045.87	4,442.24	4,419.86	579.28	0.76	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,435.00	90.90	4.50	11,044.56	4,536.20	4,513.59	586.33	0.48	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,530.00	90.70	5.40	11,043.23	4,631.11	4,608.22	594.52	0.97	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,621.00	90.60	6.10	11,042.20	4,721.98	4,698.76	603.64	0.78	MWD	LEAM DRILLING SYSTEMS
2/5/2015	15,676.00	90.60	6.10	11,041.62	4,776.88	4,753.44	609.49	0.00	BIT	LEAM DRILLING SYSTEMS