



Directional Survey

Well Name: MONK 21 STATE 4H

Sub-Division DELAWARE BASIN EAST		Region BASIN EAST		Field Name BERRY SOUTH		County LEA		State/Province NM					
Surface Legal Location SEC 21 T21S R34E		API/UWI 3002542193		Latitude (°) 32° 28' 15.5" N		Longitude (°) 103° 28' 20.072" W		Orig KB Elevation (ft) 3,748.10		Ground Elev MSL (ft) 3,723.10		KB - GL (ft) 25.00	
Wellbores													
Wellbore Name OH				Parent Wellbore OH				SAP Well ID 38522				Vertical Section Direction (°) 172.97	
Kick Offs & Key Depths													
Date 6/15/2015				Type CURVE				Top Depth (ftKB) 10,334.0					
Actual Deviation Survey GYRO/MWD, Proposed? No				Definitive? Yes		Proposed? No		Proposed Deviation Survey					
Deviation Survey													
Date 6/1/2015				Description GYRO/MWD									
MD Tie In (ftKB)		TVD Tie In (ftKB)		Inclination Tie In (°)		Azimuth Tie In (°)		NSTie In (ft)		EWTie 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			
6/16/2015	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD	PATHFINDER ENERGY SE...			
6/16/2015	85.88	0.61	205.12	85.88	0.39	-0.41	-0.19	0.71	MWD	PATHFINDER ENERGY SE...			
6/16/2015	179.70	0.49	170.93	179.69	1.21	-1.26	-0.34	0.37	MWD	PATHFINDER ENERGY SE...			
6/16/2015	273.52	0.60	186.26	273.51	2.09	-2.15	-0.33	0.19	MWD	PATHFINDER ENERGY SE...			
6/16/2015	367.34	0.73	201.54	367.32	3.09	-3.19	-0.61	0.23	MWD	PATHFINDER ENERGY SE...			
6/16/2015	461.16	0.57	212.83	461.14	3.98	-4.14	-1.08	0.22	MWD	PATHFINDER ENERGY SE...			
6/16/2015	554.98	0.54	207.14	554.95	4.70	-4.92	-1.53	0.07	MWD	PATHFINDER ENERGY SE...			
6/16/2015	648.80	0.51	221.13	648.77	5.34	-5.63	-2.01	0.14	MWD	PATHFINDER ENERGY SE...			
6/16/2015	742.62	0.53	215.86	742.59	5.94	-6.30	-2.54	0.06	MWD	PATHFINDER ENERGY SE...			
6/16/2015	836.44	0.58	233.83	836.40	6.49	-6.93	-3.18	0.19	MWD	PATHFINDER ENERGY SE...			
6/16/2015	930.26	0.61	239.25	930.22	6.92	-7.47	-3.99	0.07	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,024.08	0.63	235.85	1,024.03	7.36	-8.01	-4.84	0.04	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,117.90	0.54	212.94	1,117.85	7.93	-8.67	-5.51	0.26	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,211.72	0.56	209.69	1,211.66	8.64	-9.44	-5.98	0.04	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,305.54	0.57	210.86	1,305.48	9.37	-10.24	-6.45	0.02	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,399.36	0.54	215.24	1,399.29	10.07	-11.00	-6.94	0.06	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,493.18	0.55	219.20	1,493.11	10.71	-11.71	-7.48	0.04	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,587.00	0.58	229.32	1,586.92	11.28	-12.37	-8.12	0.11	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,680.82	0.51	217.19	1,680.74	11.85	-13.01	-8.74	0.14	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,774.64	0.50	221.93	1,774.56	12.41	-13.65	-9.26	0.05	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,868.46	0.70	226.94	1,868.37	13.02	-14.35	-9.96	0.22	MWD	PATHFINDER ENERGY SE...			
6/16/2015	1,962.28	0.69	241.92	1,962.18	13.56	-15.00	-10.87	0.19	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,056.10	0.65	206.39	2,056.00	14.21	-15.75	-11.61	0.44	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,149.92	0.63	196.36	2,149.81	15.12	-16.72	-11.99	0.12	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,243.74	0.49	195.59	2,243.63	15.97	-17.60	-12.24	0.15	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,337.56	0.38	139.93	2,337.45	16.60	-18.22	-12.15	0.45	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,431.38	0.26	152.67	2,431.26	17.06	-18.65	-11.85	0.15	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,525.20	0.27	176.79	2,525.08	17.48	-19.06	-11.74	0.12	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,619.02	0.24	195.59	2,618.90	17.88	-19.47	-11.78	0.09	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,712.84	0.29	205.69	2,712.72	18.26	-19.87	-11.94	0.07	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,806.66	0.58	282.63	2,806.54	18.30	-19.98	-12.50	0.63	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,900.48	0.33	202.18	2,900.36	18.38	-20.13	-13.07	0.66	MWD	PATHFINDER ENERGY SE...			
6/16/2015	2,994.30	0.32	226.17	2,994.18	18.77	-20.56	-13.36	0.14	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,088.12	0.16	234.52	3,087.99	18.99	-20.82	-13.66	0.17	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,181.94	0.23	198.12	3,181.81	19.22	-21.07	-13.82	0.15	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,275.76	0.19	108.53	3,275.63	19.46	-21.30	-13.73	0.32	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,369.58	1.73	61.49	3,369.44	19.01	-20.68	-12.34	1.71	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,463.40	3.49	63.35	3,463.16	17.53	-18.72	-8.54	1.88	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,557.22	3.51	49.54	3,556.80	14.99	-15.57	-3.81	0.90	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,651.04	3.80	58.24	3,650.43	12.11	-12.07	1.02	0.67	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,744.86	3.82	71.15	3,744.05	10.17	-9.43	6.62	0.91	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,838.68	3.77	82.77	3,837.66	9.52	-8.03	12.64	0.82	MWD	PATHFINDER ENERGY SE...			
6/16/2015	3,932.50	3.65	69.24	3,931.29	8.80	-6.58	18.49	0.94	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,026.32	3.99	78.00	4,024.90	7.81	-4.85	24.48	0.72	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,120.14	3.40	83.45	4,118.53	7.55	-3.85	30.44	0.73	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,213.96	4.00	82.20	4,212.15	7.52	-3.09	36.44	0.65	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,307.78	3.87	82.37	4,305.75	7.45	-2.22	42.82	0.14	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,401.60	3.83	69.03	4,399.36	6.66	-0.68	48.89	0.95	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,495.42	3.25	74.08	4,493.00	5.49	1.17	54.37	0.70	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,589.24	2.92	90.38	4,586.69	5.39	1.88	59.32	0.99	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,683.06	3.04	89.85	4,680.38	6.00	1.87	64.19	0.13	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,776.88	2.82	91.24	4,774.08	6.63	1.83	68.99	0.25	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,870.70	2.81	77.69	4,867.78	6.75	2.27	73.54	0.71	MWD	PATHFINDER ENERGY SE...			
6/16/2015	4,964.52	2.47	75.11	4,961.50	6.26	3.28	77.74	0.38	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,058.34	2.05	68.56	5,055.25	5.57	4.41	81.26	0.52	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,152.16	1.89	55.69	5,149.02	4.44	5.90	84.10	0.50	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,245.98	1.83	57.54	5,242.79	3.09	7.57	86.64	0.09	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,339.80	1.87	65.33	5,336.56	1.98	9.02	89.30	0.27	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,433.62	1.79	60.85	5,430.33	0.96	10.37	91.97	0.17	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,527.44	1.48	66.50	5,524.11	0.07	11.57	94.36	0.37	MWD	PATHFINDER ENERGY SE...			
6/16/2015	5,621.26	1.21	74.74	5,617.91	-0.42	12.31	96.42	0.35	MWD	PATHFINDER ENERGY SE...			
6/5/2015	5,715.08	1.00	71.22	5,711.71	-0.73	12.84	98.16	0.24	MWD	PATHFINDER ENERGY SE...			



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Report Printed: 9/22/2015



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Surface Legal Location SEC 21 T21S R34E		API/UWI 3002542193		Latitude (°) 32° 28' 15.5" N		Longitude (°) 103° 28' 20.072" W		Orig KB Elevation (ft) 3,748.10		Ground Elev MSL (ft) 3,723.10		KB - GL (ft) 25.00	
Survey Data													
Date	MD (ftKB)	Incl (°)	Azm (°)	TVD (ftKB)	VS (ft)	N/S (ft)	E/W (ft)	DLS (°/100ft)	Survey Tool	Survey Company			
6/16/2015	11,044.00	68.24	173.28	10,849.02	337.47	-243.01	786.76	9.11	MWD	PATHFINDER ENERGY SE...			
6/16/2015	11,075.00	71.84	173.75	10,859.60	366.60	-271.96	790.05	11.70	MWD	PATHFINDER ENERGY SE...			
6/16/2015	11,107.00	76.41	173.77	10,868.35	397.37	-302.54	793.39	14.28	MWD	PATHFINDER ENERGY SE...			
6/16/2015	11,138.00	79.93	174.08	10,874.70	427.70	-332.71	796.60	11.40	MWD	PATHFINDER ENERGY SE...			
6/16/2015	11,170.00	83.54	175.30	10,879.30	459.35	-364.24	799.53	11.90	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,196.00	86.98	174.36	10,881.45	485.25	-390.04	801.87	13.71	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,291.00	90.13	173.29	10,883.85	580.19	-484.44	812.08	3.50	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,385.00	89.66	171.88	10,884.02	674.19	-577.65	824.21	1.58	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,479.00	90.05	172.58	10,884.26	768.18	-670.79	836.92	0.85	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,574.00	90.22	172.99	10,884.03	863.18	-765.04	848.85	0.47	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,668.00	90.84	173.76	10,883.16	957.17	-858.41	859.70	1.05	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,763.00	91.68	174.18	10,881.08	1,052.13	-952.86	869.67	0.99	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,857.00	89.89	174.00	10,879.79	1,146.10	-1,046.34	879.35	1.91	MWD	PATHFINDER ENERGY SE...			
6/17/2015	11,951.00	89.05	172.40	10,880.66	1,240.09	-1,139.67	890.48	1.92	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,046.00	89.22	172.90	10,882.09	1,335.08	-1,233.88	902.63	0.56	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,140.00	89.55	173.72	10,883.10	1,429.07	-1,327.24	913.58	0.94	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,235.00	90.39	171.99	10,883.15	1,524.07	-1,421.49	925.40	2.02	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,329.00	91.62	171.54	10,881.50	1,618.03	-1,514.51	938.86	1.39	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,424.00	91.89	172.23	10,878.59	1,712.97	-1,608.51	952.26	0.78	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,518.00	92.46	172.57	10,875.02	1,806.89	-1,701.62	964.69	0.71	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,612.00	91.61	173.07	10,871.69	1,900.83	-1,794.82	976.43	1.05	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,707.00	90.49	173.47	10,869.95	1,995.81	-1,889.15	987.56	1.25	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,801.00	90.78	173.54	10,868.90	2,089.80	-1,982.54	998.19	0.32	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,895.00	91.34	172.27	10,867.16	2,183.79	-2,075.80	1,009.80	1.48	MWD	PATHFINDER ENERGY SE...			
6/18/2015	12,990.00	91.31	172.55	10,864.97	2,278.76	-2,169.95	1,022.34	0.30	MWD	PATHFINDER ENERGY SE...			
6/18/2015	13,084.00	91.70	173.08	10,862.50	2,372.72	-2,263.17	1,034.10	0.70	MWD	PATHFINDER ENERGY SE...			
6/18/2015	13,178.00	91.71	173.09	10,859.70	2,466.68	-2,356.45	1,045.41	0.02	MWD	PATHFINDER ENERGY SE...			
6/18/2015	13,273.00	92.72	174.00	10,856.03	2,561.60	-2,450.77	1,056.08	1.43	MWD	PATHFINDER ENERGY SE...			
6/18/2015	13,367.00	92.49	173.04	10									