

Job Number: 70003899-WT-WT
 Company: Devon Energy
 Lease/Well: Snapping 2 State #5H
 Location: Eddy County
 Rig Name: H&P 416
 RKB: ☐
 G.L. or M.S.L.: ☐

State/Country: New Mexico
 Declination: ☐
 Grid: ☐
 File name: C:\WINSERVE\03899.SVY
 Date/Time: 15-Oct-11 / 12:46
 Curve Name: As Drilled

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 AUG 21 2012
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PathFinder Energy Drilling

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane 357.28
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
Scientific Drilling Gyro Surveys										
7860.00	1.30	181.75	7856.70	-7856.70	-86.77	-28.71	-85.31	91.40	198.31	.00
Pathfinder MWD Surveys										
7934.00	1.32	261.83	7930.69	-7930.69	-87.73	-29.58	-86.23	92.58	198.63	2.28
7965.00	4.92	299.80	7961.64	-7961.64	-87.12	-31.09	-85.55	92.50	199.64	12.78
7997.00	8.88	305.95	7993.40	-7993.40	-84.99	-34.28	-83.26	91.64	201.97	12.57
8028.00	13.54	308.24	8023.80	-8023.80	-81.33	-39.07	-79.39	90.23	205.66	15.10
8060.00	17.85	307.89	8054.60	-8054.60	-76.00	-45.88	-73.74	88.78	211.12	13.47
8091.00	21.28	308.15	8083.81	-8083.81	-69.61	-54.06	-66.96	88.13	217.83	11.07
8123.00	24.62	307.71	8113.27	-8113.27	-61.94	-63.90	-58.84	89.00	225.89	10.45
8154.00	27.52	306.83	8141.11	-8141.11	-53.70	-74.75	-50.09	92.03	234.31	9.44
8186.00	29.63	304.61	8169.21	-8169.21	-44.77	-87.18	-40.58	98.00	242.82	7.38

30-015-39023

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
								Distance FT	Direction Deg	
8217.00	31.04	306.48	8195.97	-8195.97	-35.66	-99.91	-30.88	106.08	250.36	5.47
8249.00	33.33	308.01	8223.05	-8223.05	-25.34	-113.47	-19.93	116.27	257.41	7.60
8280.00	35.17	310.10	8248.67	-8248.67	-14.35	-127.01	-8.30	127.82	263.56	7.04
8312.00	37.28	311.72	8274.49	-8274.49	-1.96	-141.30	4.75	141.31	269.21	7.24
8343.00	39.31	313.70	8298.82	-8298.82	11.07	-155.41	18.44	155.80	274.08	7.65
8375.00	40.45	317.56	8323.38	-8323.38	25.74	-169.74	33.77	171.68	278.62	8.51
8407.00	40.89	323.39	8347.66	-8347.66	41.81	-183.00	50.45	187.72	282.87	11.95
8438.00	42.82	327.37	8370.75	-8370.75	58.84	-194.73	68.01	203.43	286.81	10.59
8470.00	45.55	328.75	8393.69	-8393.69	77.76	-206.53	87.48	220.68	290.63	9.04
8501.00	47.84	331.74	8414.96	-8414.96	97.35	-217.71	107.57	238.48	294.09	10.19
8533.00	49.59	335.17	8436.07	-8436.07	118.86	-228.44	129.56	257.51	297.49	9.73
8564.00	51.27	338.60	8455.83	-8455.83	140.83	-237.81	151.96	276.39	300.63	10.10
8596.00	53.90	341.75	8475.27	-8475.27	164.74	-246.42	176.25	296.41	303.76	11.34
8628.00	56.81	343.96	8493.46	-8493.46	189.89	-254.17	201.74	317.27	306.76	10.72
8659.00	59.18	346.52	8509.89	-8509.89	215.31	-260.86	227.45	338.24	309.54	10.37
8691.00	61.11	350.09	8525.82	-8525.82	242.48	-266.47	254.85	360.28	312.30	11.40
8722.00	63.49	352.99	8540.24	-8540.24	269.62	-270.50	282.16	381.93	314.91	11.29
8754.00	66.04	354.65	8553.88	-8553.88	298.40	-273.62	311.05	404.85	317.48	9.25
8785.00	70.26	355.90	8565.41	-8565.41	327.07	-275.98	339.79	427.95	319.84	14.12
8817.00	74.48	355.24	8575.10	-8575.10	357.47	-278.34	370.27	453.05	322.09	13.33
8848.00	77.73	356.75	8582.55	-8582.55	387.48	-280.44	400.35	478.31	324.11	11.50
8880.00	78.96	.50	8589.01	-8589.01	418.80	-281.19	431.68	504.44	326.12	12.10
8911.00	81.95	4.20	8594.15	-8594.15	449.34	-279.93	462.12	529.40	328.08	15.22
8943.00	86.79	6.13	8597.29	-8597.29	481.05	-277.06	493.65	555.13	330.06	16.27
8974.00	90.84	7.33	8597.93	-8597.93	511.82	-273.43	524.22	580.28	331.89	13.63
9037.00	90.22	7.53	8597.35	-8597.35	574.29	-265.28	586.23	632.60	335.21	1.03
9132.00	90.75	8.72	8596.55	-8596.55	668.33	-251.86	679.53	714.21	339.35	1.37
9249.00	91.01	7.48	8594.75	-8594.75	784.14	-235.37	794.43	818.71	343.29	1.08
9344.00	90.75	5.72	8593.29	-8593.29	878.50	-224.46	888.16	906.72	345.67	1.87
9438.00	88.29	3.61	8594.08	-8594.08	972.17	-216.81	981.37	996.06	347.43	3.45
9533.00	88.81	.80	8596.48	-8596.48	1067.06	-213.16	1075.97	1088.14	348.70	3.01
9628.00	89.78	359.39	8597.65	-8597.65	1162.05	-213.00	1170.85	1181.41	349.61	1.80
9722.00	89.87	.36	8597.94	-8597.94	1256.05	-213.21	1264.75	1274.02	350.37	1.04
9817.00	89.25	357.37	8598.67	-8598.67	1351.02	-215.09	1359.70	1368.03	350.95	3.21

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
								Distance FT	Direction Deg	
9912.00	89.87	357.02	8599.40	-8599.40	1445.90	-219.74	1454.70	1462.50	351.36	.75
10007.00	90.40	359.39	8599.17	-8599.17	1540.85	-222.71	1549.68	1556.86	351.78	2.56
10101.00	91.19	.18	8597.87	-8597.87	1634.83	-223.06	1643.58	1649.98	352.23	1.19
10196.00	91.63	1.06	8595.53	-8595.53	1729.80	-222.04	1738.39	1743.99	352.69	1.04
10291.00	90.04	.88	8594.15	-8594.15	1824.77	-220.43	1833.18	1838.04	353.11	1.68
10385.00	90.66	2.11	8593.57	-8593.57	1918.74	-217.98	1926.92	1931.08	353.52	1.47
10480.00	88.72	1.32	8594.09	-8594.09	2013.69	-215.13	2021.63	2025.15	353.90	2.20
10574.00	89.52	.71	8595.53	-8595.53	2107.66	-213.47	2115.41	2118.44	354.22	1.07
10669.00	89.78	.27	8596.11	-8596.11	2202.65	-212.66	2210.26	2212.90	354.49	.54
10764.00	90.40	1.06	8595.96	-8595.96	2297.65	-211.55	2305.10	2307.36	354.74	1.06
10858.00	91.10	359.83	8594.73	-8594.73	2391.63	-210.82	2398.94	2400.91	354.96	1.51
10953.00	89.25	359.39	8594.44	-8594.44	2486.63	-211.47	2493.86	2495.60	355.14	2.00
11048.00	89.16	.18	8595.76	-8595.76	2581.62	-211.83	2588.76	2590.29	355.31	.84
11142.00	89.96	359.13	8596.48	-8596.48	2675.61	-212.39	2682.67	2684.03	355.46	1.40
11237.00	90.48	359.92	8596.12	-8596.12	2770.60	-213.18	2777.60	2778.79	355.60	1.00
11332.00	90.04	.71	8595.69	-8595.69	2865.60	-212.66	2872.46	2873.48	355.76	.95
11426.00	88.46	.80	8596.92	-8596.92	2959.58	-211.42	2966.28	2967.12	355.91	1.68
11521.00	89.16	.80	8598.89	-8598.89	3054.55	-210.09	3061.08	3061.77	356.07	.74
11616.00	88.99	359.13	8600.42	-8600.42	3149.53	-210.15	3155.96	3156.54	356.18	1.77
11711.00	89.69	358.86	8601.52	-8601.52	3244.51	-211.82	3250.91	3251.42	356.26	.79
11805.00	89.78	359.04	8601.95	-8601.95	3338.50	-213.54	3344.87	3345.32	356.34	.21
11900.00	90.31	359.04	8601.88	-8601.88	3433.48	-215.13	3439.82	3440.22	356.41	.56
11994.00	87.67	358.60	8603.53	-8603.53	3527.44	-217.07	3533.77	3534.11	356.48	2.85
12089.00	87.32	358.51	8607.69	-8607.69	3622.32	-219.46	3628.65	3628.96	356.53	.38
12184.00	88.55	357.37	8611.11	-8611.11	3717.19	-222.87	3723.58	3723.87	356.57	1.76
12278.00	88.72	356.75	8613.35	-8613.35	3811.04	-227.69	3817.55	3817.84	356.58	.68
12373.00	89.25	358.25	8615.03	-8615.03	3905.93	-231.84	3912.53	3912.81	356.60	1.67
12467.00	90.22	358.51	8615.47	-8615.47	3999.89	-234.49	4006.51	4006.76	356.64	1.07
12562.00	89.96	358.16	8615.32	-8615.32	4094.85	-237.25	4101.50	4101.72	356.68	.46
12657.00	89.96	358.69	8615.38	-8615.38	4189.82	-239.87	4196.48	4196.68	356.72	.56
12751.00	89.96	358.86	8615.45	-8615.45	4283.79	-241.87	4290.45	4290.62	356.77	.18
12846.00	91.01	359.30	8614.65	-8614.65	4378.78	-243.40	4385.39	4385.54	356.82	1.20
12941.00	91.36	1.06	8612.68	-8612.68	4473.75	-243.10	4480.25	4480.35	356.89	1.89
13035.00	91.45	1.50	8610.38	-8610.38	4567.70	-241.00	4573.99	4574.05	356.98	.48

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
								Distance FT	Direction Deg	
13072.00	91.71	1.59	8609.36	-8609.36	4604.67	-240.01	4610.88	4610.92	357.02	.74
Straight Line Projection										
13122.00	91.71	1.59	8607.86	-8607.86	4654.63	-238.62	4660.71	4660.74	357.07	.00