

COG

30-015-38227



Job Number: 1110460
 Company: Phoenix Technology
 Lease/Well: Cooperhead Fee A 1H
 Location: Eddy County
 Rig Name: Silver Oak 11
 RKB: 17.5
 G.L. or M.S.L.: □

State/Country: TX /USA
 Declination: 7.60
 Grid: -.16
 File name: C:\WINSERVE\COPFA1H.SVY
 Date/Time: 26-Aug-11 / 20:47
 Curve Name: Survey's

Scientific Drilling

WINSERVE PROPOSAL REPORT
 Minimum Curvature Method
 Vertical Section Plane 359.14
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
tie in									
6065.00	1.82	190.05	6063.74	3.32	-49.62	4.06	49.73	273.83	.00
6161.00	.80	164.70	6159.71	1.17	-49.71	1.92	49.72	271.35	1.20
6192.00	.30	107.20	6190.71	.94	-49.57	1.68	49.58	271.09	2.22
6224.00	2.10	11.90	6222.71	1.49	-49.37	2.23	49.40	271.73	6.71
6256.00	7.30	6.50	6254.59	4.08	-49.02	4.82	49.19	274.76	16.29
6288.00	12.20	3.60	6286.12	9.48	-48.58	10.21	49.50	281.04	15.38
6320.00	16.70	2.10	6317.10	17.46	-48.20	18.18	51.26	289.91	14.11
6352.00	21.20	.30	6347.35	27.84	-48.00	28.56	55.49	300.12	14.18
6384.00	25.50	1.20	6376.73	40.52	-47.83	41.23	62.68	310.27	13.48
6415.00	28.90	2.00	6404.29	54.68	-47.42	55.39	72.38	319.07	11.03
6447.00	32.20	3.30	6431.85	70.93	-46.66	71.62	84.90	326.66	10.52
6479.00	34.90	2.10	6458.52	88.59	-45.84	89.27	99.75	332.64	8.69
6511.00	38.00	.90	6484.25	107.59	-45.35	108.26	116.76	337.15	9.94
6542.00	41.10	359.40	6508.15	127.33	-45.30	127.99	135.15	340.41	10.46
6574.00	43.20	358.40	6531.88	148.80	-45.72	149.47	155.66	342.92	6.89
6606.00	45.90	357.20	6554.68	171.23	-46.59	171.91	177.45	344.78	8.84
6637.00	49.80	357.60	6575.48	194.18	-47.63	194.87	199.94	346.22	12.62
6669.00	54.20	358.50	6595.18	219.38	-48.48	220.08	224.67	347.54	13.93
6701.00	57.80	.10	6613.07	245.90	-48.79	246.60	250.69	348.78	11.99
6733.00	60.90	.90	6629.38	273.42	-48.55	274.12	277.70	349.93	9.92

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6764.00	64.30	1.20	6643.64	300.94	-48.05	301.62	304.75	350.93	11.00
6796.00	66.60	.80	6656.94	330.04	-47.54	330.71	333.44	351.80	7.28
6828.00	70.20	.10	6668.72	359.78	-47.31	360.45	362.88	352.51	11.43
6860.00	73.80	.20	6678.60	390.21	-47.23	390.88	393.06	353.10	11.25
6891.00	78.40	359.90	6686.05	420.30	-47.20	420.96	422.94	353.59	14.87
6922.00	82.80	359.20	6691.11	450.87	-47.44	451.53	453.36	353.99	14.37
6964.00	88.80	.30	6694.18	492.74	-47.62	493.40	495.03	354.48	14.52
7058.00	90.70	.30	6694.59	586.73	-47.13	587.37	588.62	355.41	2.02
7151.00	90.10	359.90	6693.95	679.73	-46.97	680.36	681.35	356.05	.78
7245.00	89.70	359.90	6694.11	773.73	-47.13	774.35	775.16	356.51	.43
7338.00	90.50	359.50	6693.95	866.73	-47.62	867.34	868.03	356.86	.96
7433.00	90.50	358.80	6693.12	961.71	-49.03	962.34	962.96	357.08	.74
7526.00	90.30	359.10	6692.47	1054.69	-50.73	1055.34	1055.91	357.25	.39
7620.00	90.10	359.30	6692.14	1148.68	-52.05	1149.34	1149.86	357.41	.30
7714.00	90.00	359.40	6692.06	1242.68	-53.11	1243.33	1243.81	357.55	.15
7807.00	89.80	359.30	6692.22	1335.67	-54.17	1336.33	1336.77	357.68	.24
7901.00	89.90	359.30	6692.47	1429.66	-55.32	1430.33	1430.73	357.78	.11
7994.00	89.10	359.40	6693.28	1522.65	-56.37	1523.33	1523.70	357.88	.87
8088.00	88.90	359.70	6694.92	1616.64	-57.11	1617.31	1617.64	357.98	.38
8181.00	89.80	359.30	6695.97	1709.63	-57.92	1710.30	1710.61	358.06	1.06
8275.00	89.40	358.50	6696.63	1803.60	-59.73	1804.30	1804.59	358.10	.95
8369.00	89.50	358.70	6697.53	1897.57	-62.02	1898.29	1898.59	358.13	.24
8462.00	89.40	358.40	6698.43	1990.54	-64.38	1991.28	1991.58	358.15	.34
8557.00	89.80	359.40	6699.09	2085.52	-66.20	2086.28	2086.57	358.18	1.13
8650.00	90.10	.20	6699.17	2178.52	-66.52	2179.27	2179.53	358.25	.92
8743.00	90.70	359.70	6698.52	2271.51	-66.60	2272.26	2272.49	358.32	.84
8837.00	90.00	.70	6697.95	2365.51	-66.28	2366.24	2366.44	358.40	1.30
8931.00	89.90	359.90	6698.03	2459.51	-65.78	2460.22	2460.39	358.47	.86
9024.00	89.50	359.90	6698.52	2552.50	-65.95	2553.21	2553.36	358.52	.43
9118.00	90.70	.20	6698.35	2646.50	-65.86	2647.19	2647.32	358.57	1.32
9212.00	90.60	.20	6697.29	2740.50	-65.54	2741.17	2741.28	358.63	.11
9306.00	90.50	.30	6696.38	2834.49	-65.13	2835.15	2835.24	358.68	.15
9399.00	90.00	359.80	6695.98	2927.49	-65.05	2928.14	2928.21	358.73	.76
9492.00	90.60	.90	6695.49	3020.48	-64.48	3021.11	3021.17	358.78	1.35
9586.00	90.60	358.90	6694.51	3114.47	-64.64	3115.09	3115.15	358.81	2.13
9680.00	90.10	359.30	6693.93	3208.46	-66.12	3209.09	3209.14	358.82	.68
9773.00	90.10	358.50	6693.77	3301.44	-67.90	3302.09	3302.14	358.82	.86
9866.00	89.80	359.10	6693.85	3394.42	-69.85	3395.09	3395.14	358.82	.72
9960.00	90.30	358.80	6693.77	3488.41	-71.57	3489.09	3489.14	358.82	.62
10053.00	89.50	358.10	6693.93	3581.37	-74.09	3582.08	3582.14	358.81	1.14
10147.00	89.80	359.50	6694.50	3675.34	-76.06	3676.07	3676.13	358.81	1.52

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
10240.00	90.50	359.30	6694.26	3768.34	-77.03	3769.07	3769.13	358.83	.78
10333.00	90.50	.30	6693.45	3861.33	-77.36	3862.06	3862.11	358.85	1.08
10427.00	90.70	359.40	6692.47	3955.33	-77.60	3956.05	3956.09	358.88	.98
10521.00	89.10	358.80	6692.63	4049.31	-79.08	4050.04	4050.08	358.88	1.82
10615.00	90.60	.70	6692.88	4143.30	-79.49	4144.03	4144.07	358.90	2.58
10709.00	90.20	1.00	6692.22	4237.29	-78.09	4237.99	4238.01	358.94	.53
10803.00	90.10	1.70	6691.97	4331.26	-75.88	4331.91	4331.93	359.00	.75
10896.00	90.60	359.60	6691.40	4424.25	-74.82	4424.88	4424.88	359.03	2.32
10990.00	89.50	359.50	6691.32	4518.25	-75.56	4518.87	4518.88	359.04	1.18
11084.00	89.40	359.30	6692.23	4612.24	-76.55	4612.87	4612.87	359.05	.24
11178.00	90.10	359.60	6692.64	4706.23	-77.45	4706.86	4706.87	359.06	.81
11272.00	90.50	.00	6692.14	4800.23	-77.78	4800.86	4800.86	359.07	.60
11366.00	90.00	359.30	6691.73	4894.22	-78.35	4894.85	4894.85	359.08	.92
11460.00	90.20	359.80	6691.57	4988.22	-79.09	4988.85	4988.85	359.09	.57
11553.00	90.70	.00	6690.84	5081.22	-79.25	5081.84	5081.84	359.11	.58
11647.00	91.20	.00	6689.28	5175.20	-79.25	5175.81	5175.81	359.12	.53
TD-PBHL									
11703.00	91.20	.00	6688.11	5231.19	-79.25	5231.79	5231.79	359.13	.00