



Job Number: SVGJ-110420

Company: Exxon Mobil

Lease/Well: PCU 197-36A1

Location: Rio Blanco County, CO

Rig Name: Northern Lights Energy Wireline

RKB: 0'

G.L. or M.S.L.: GL

State/Country: Colorado/USA

Declination: 12.38°

Grid: East To Grid North

File name: F:\SURVEY\2011\SU-1\EXXONNM-1\19736A1.SVY

Date/Time: 21-Jun-11 / 16:28

Curve Name: Surface - 13040' M.D. (Rate Gyro)

05-103-11180-00

## WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method

Vertical Section Plane 63.94

Vertical Section Referenced to Wellhead

Rectangular Coordinates Referenced to Wellhead

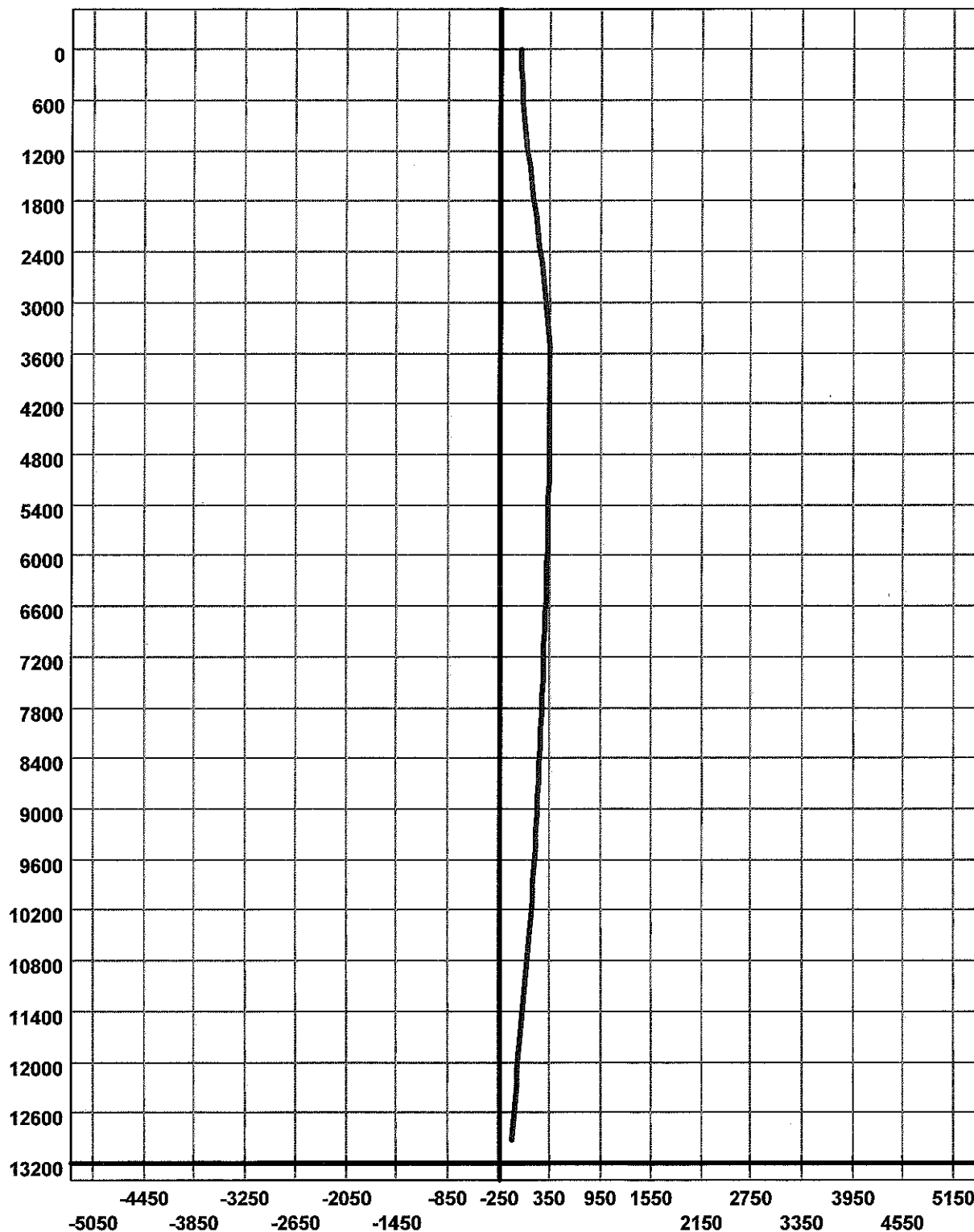
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
200.00	.75	320.78	199.99	1.01	-83	-30	1.31	320.78	.38
400.00	3.68	57.05	399.85	5.52	3.73	5.78	6.66	34.06	1.92
600.00	7.48	59.74	598.87	15.58	20.37	25.14	25.64	52.60	1.90
800.00	10.85	61.76	796.29	31.05	48.20	56.94	57.34	57.22	1.69
1000.00	14.53	64.74	991.37	50.67	87.49	100.86	101.10	59.92	1.87
1200.00	15.54	64.94	1184.52	72.72	134.45	152.73	152.86	61.59	.51
1400.00	16.35	65.06	1376.83	95.94	184.25	207.66	207.73	62.49	.41
1600.00	16.49	64.03	1568.67	120.24	235.29	264.19	264.23	62.93	.16
1800.00	16.30	63.36	1760.54	145.25	285.90	320.64	320.68	63.07	.13

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	
2000.00	16.54	63.07	1952.38	170.73	336.37	377.17	377.21	63.09	.13
2200.00	16.70	65.11	2144.03	195.72	387.81	434.37	434.40	63.22	.30
2400.00	16.21	65.40	2335.84	219.44	439.26	491.01	491.02	63.46	.25
2600.00	15.30	65.38	2528.32	242.05	488.64	545.29	545.30	63.65	.46
2800.00	14.94	64.30	2721.40	264.22	535.85	597.45	597.46	63.75	.23
3000.00	15.02	63.72	2914.60	286.88	582.32	649.15	649.15	63.77	.08
3200.00	13.19	66.59	3108.56	307.42	626.50	697.86	697.86	63.86	.98
3400.00	9.57	66.04	3304.60	323.24	662.65	737.28	737.28	64.00	1.81
3600.00	6.90	65.73	3502.52	334.93	688.80	765.91	765.91	64.07	1.34
3800.00	3.95	64.91	3701.60	342.79	705.99	784.81	784.81	64.10	1.48
4000.00	.82	18.51	3901.41	347.07	712.69	792.70	792.71	64.03	1.72
4200.00	.38	179.22	4101.41	347.77	713.15	793.43	793.43	64.00	.59
4400.00	.84	102.13	4301.40	346.80	714.59	794.29	794.30	64.11	.42
4600.00	1.01	186.45	4501.38	344.74	715.83	794.50	794.51	64.28	.62
4800.00	1.17	143.99	4701.35	341.33	716.83	793.90	793.95	64.54	.40
5000.00	1.09	208.20	4901.32	338.01	717.13	792.71	792.80	64.76	.60
5200.00	1.22	164.18	5101.28	334.28	716.81	790.79	790.93	65.00	.44
5400.00	1.20	177.79	5301.23	330.14	717.47	789.57	789.78	65.29	.14
5600.00	1.33	144.80	5501.19	326.15	718.89	789.09	789.42	65.60	.36
5800.00	1.15	205.26	5701.15	322.44	719.37	787.89	788.33	65.86	.63
6000.00	1.54	168.60	5901.10	317.99	719.05	785.64	786.22	66.14	.46
6200.00	2.02	190.02	6101.00	311.88	718.97	782.89	783.70	66.55	.41
6400.00	2.01	198.04	6300.88	305.08	717.27	778.37	779.45	66.96	.14
6600.00	2.30	170.27	6500.74	297.79	716.86	774.80	776.25	67.44	.54
6800.00	2.15	196.28	6700.60	290.23	716.49	771.14	773.04	67.95	.51
7000.00	2.50	147.48	6900.45	282.95	717.78	769.11	771.54	68.49	.97
7200.00	2.64	150.20	7100.25	275.27	722.41	769.90	773.08	69.14	.09
7400.00	2.33	164.31	7300.06	267.36	725.80	769.47	773.48	69.78	.34
7600.00	2.22	152.91	7499.91	260.00	728.67	768.81	773.66	70.36	.23

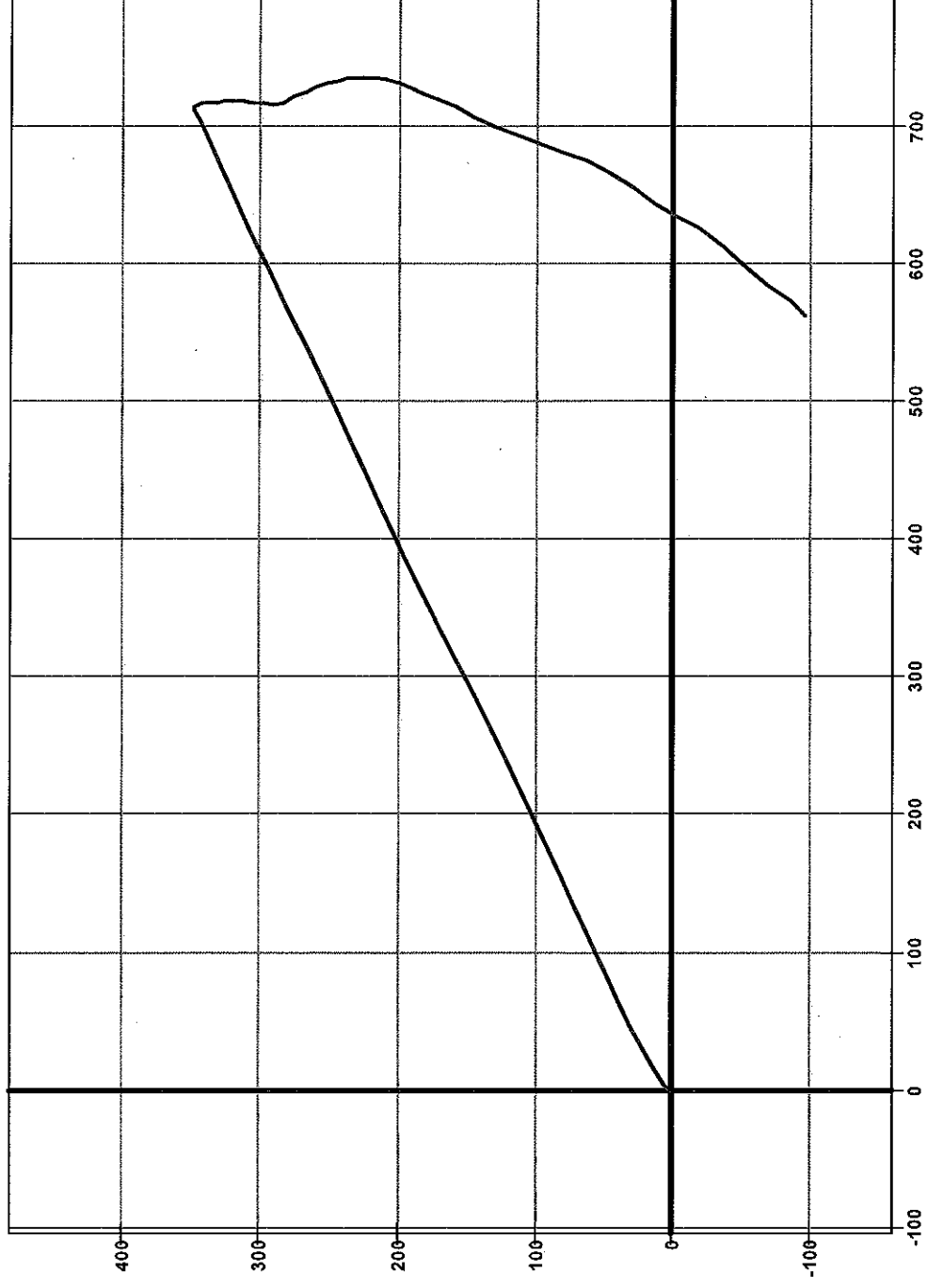
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
7800.00	2.40	160.31	7699.74	252.61	731.84	768.41	774.21	70.96	.17
8000.00	2.30	175.52	7899.58	244.67	733.56	766.47	773.29	71.55	.31
8200.00	2.54	162.38	8099.40	236.44	735.22	764.34	772.30	72.17	.30
8400.00	2.44	188.77	8299.22	228.01	735.91	761.26	770.42	72.79	.57
8600.00	2.93	175.33	8499.00	218.71	735.68	756.97	767.50	73.44	.40
8800.00	2.59	193.38	8698.77	209.22	735.05	752.23	764.24	74.11	.46
9000.00	2.75	200.23	8898.56	200.32	732.34	745.89	759.25	74.70	.18
9200.00	2.94	207.39	9098.31	191.26	728.33	738.30	753.02	75.29	.20
9400.00	2.56	197.93	9298.08	182.46	724.59	731.08	747.21	75.87	.30
9600.00	3.91	202.51	9497.76	171.91	720.61	722.87	740.83	76.58	.69
9800.00	4.21	211.76	9697.26	159.37	714.13	711.54	731.70	77.42	.36
10000.00	4.60	204.30	9896.67	145.82	706.97	699.15	721.85	78.35	.35
10200.00	4.27	205.75	10096.07	131.80	700.43	687.12	712.72	79.34	.17
10400.00	4.92	194.47	10295.43	116.79	695.05	675.70	704.80	80.46	.56
10600.00	5.34	204.12	10494.63	99.99	689.11	662.98	696.32	81.74	.48
10800.00	5.64	202.90	10693.71	82.44	681.48	648.41	686.45	83.10	.16
11000.00	5.82	196.70	10892.72	63.68	674.74	634.12	677.74	84.61	.32
11200.00	5.67	212.61	11091.72	45.64	666.50	618.79	668.06	86.08	.80
11400.00	5.77	215.67	11290.73	29.15	655.32	601.50	655.96	87.45	.16
11600.00	5.43	214.52	11489.77	13.19	644.09	584.40	644.23	88.83	.18
11800.00	4.89	206.01	11688.97	-2.27	634.99	569.43	634.99	90.21	.47
12000.00	5.56	212.56	11888.13	-18.10	626.04	554.44	626.30	91.66	.45
12200.00	6.48	218.04	12087.03	-35.15	613.87	536.02	614.87	93.28	.54
12400.00	6.29	225.14	12285.79	-51.77	599.15	515.49	601.38	94.94	.41
12600.00	6.45	214.14	12484.57	-68.80	585.08	495.37	589.11	96.71	.61
12800.00	4.39	222.63	12683.66	-83.73	573.59	478.49	579.67	98.31	1.10
13000.00	3.93	221.44	12883.14	-94.50	563.87	465.03	571.73	99.51	.23
Last Survey Depth Recorded									
13040.00	3.66	222.18	12923.05	-96.47	562.10	462.57	570.32	99.74	.69

Company: Exxon Mobil  
Lease/Well: PCU 197-36A1  
Location: Rio Blanco County, CO  
Rig Name: Northern Lights Energy Wireline  
Declination: 12.38°  
Grid: East To Grid North

**MS** Energy Services



Company: Exxon Mobil  
Lease/Well: PCU 197-36A1  
Location: Rio Blanco County, CO  
Rig Name: Northern Lights Energy Wireline  
Declination: 12.38°  
Grid: East To Grid North



o-- Surface - 13040' M.D. (Rate Gyro)