

4705101587



Noble Energy



WELL	SHL-8N-HS	FIELD	WV Marshall County (NAD 27)	STRUCTURE	Precision 543
Magnetics Parameters	Model: HEOM 2012	Dip: 8° 53'	Date: April 22, 2013	Surface Location: NAD 27 West Virginia State Plane, Northern Zone, U.S. Feet Lat: N 39° 19' 43.0" Long: W 83° 52' 34.6"	MWD Curves Date: May 4th 11 Rev: Rev 11V 22 April 11
	Mag Dec: -8.437°			Survey: 53176° 54' E: 9 1709724.32 E: 9 Scale Fact: 0.9999713	TVD Ref: K81150 '48 above MSL) Date: April 22, 2013

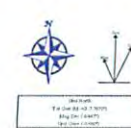
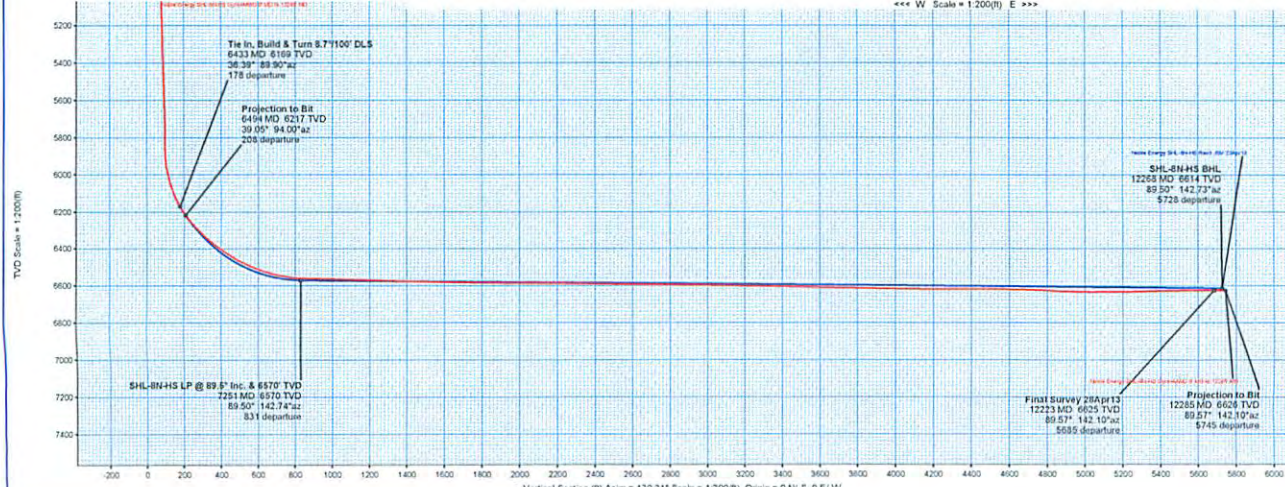
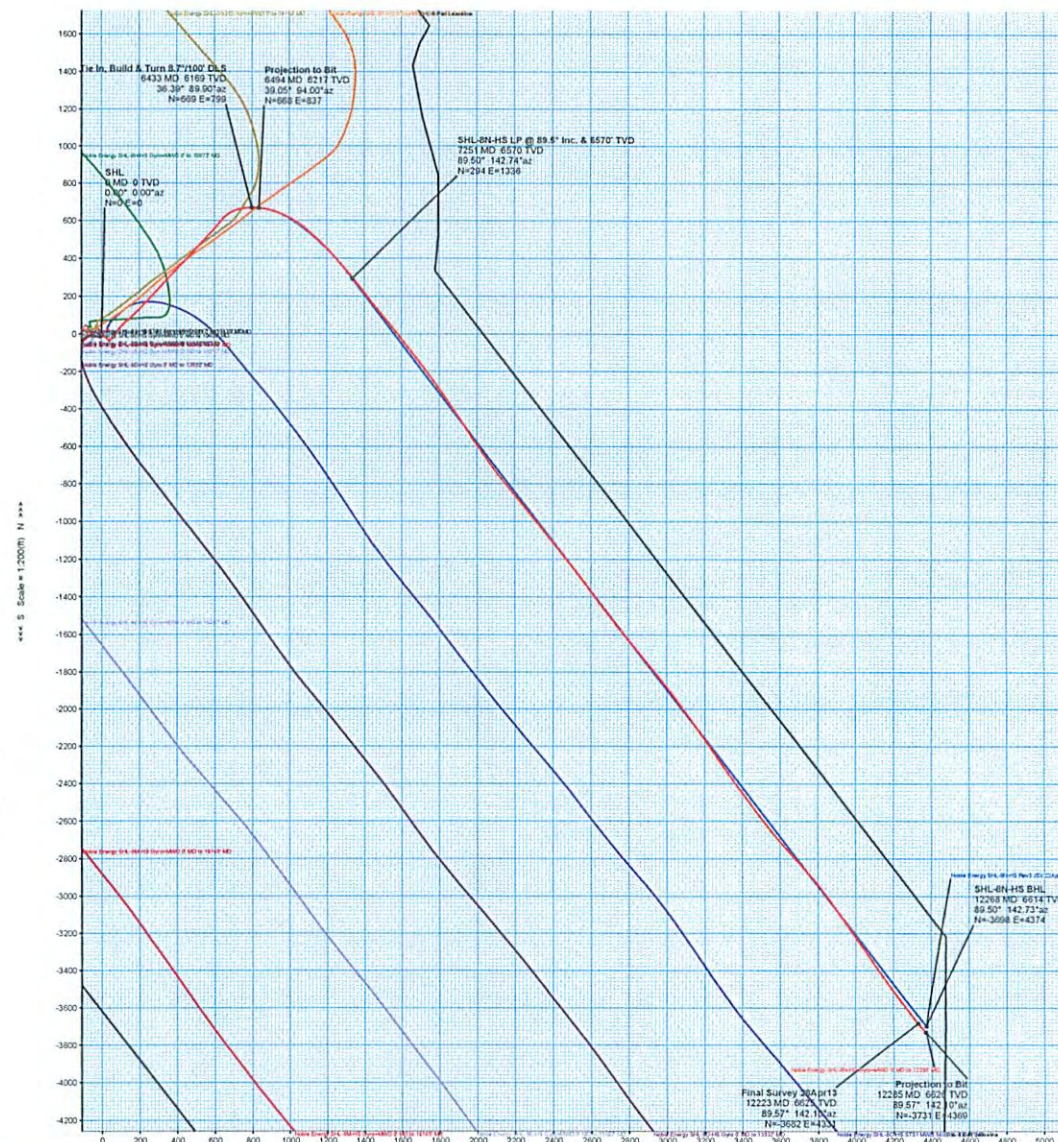
Legend

- Noble Energy SHL-8N-HS Survey of 6/21/12 MD 12288
- Noble Energy SHL-8N-HS Survey of 6/21/12 MD 6626
- Noble Energy SHL-8N-HS Survey of 6/21/12 MD 6142
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Depth	Tool	Curve
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
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0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12
0.000	SRP-50	Survey of 6/21/12

Survey	Survey	Survey	Survey	Survey
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000

Survey	Survey	Survey	Survey	Survey
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000
0.000	0.000	0.000	0.000	0.000



Created By: J.Cassano
 Date Created: April 22, 2013 10:58:28 AM
 Checked Date:
 Approved By:
 Approved Date:

03/07/2014

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Noble Energy SHL-8N-HS Gyro-MWD 0' MD to 12285' MD Survey Report

(Def Survey)

Report Date: April 29, 2013 - 08:31 AM
 Client: Noble Energy
 Field: WV Marshall County (NAD 27)
 Structure / Slot: CNX/Noble Energy SHL-8 Pad / SHL-8N-HS
 Well: SHL-8N-HS
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Noble Energy SHL-8N-HS Gyro-MWD 0' MD to 12285' MD
 Survey Date: April 14, 2013
 Tort / AHD / DJI / ERD Ratio: 216.266° / 6853.249 ft / 6.439 / 1.033
 Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
 Location Lat / Long: N 39° 57' 19.42046", W 80° 32' 7.66423"
 Location Grid N/E Y/X: N 531767.540 ftUS, E 1709724.320 ftUS
 CRS Grid Convergence Angle: -0.6604°
 Grid Scale Factor: 0.99995723

Total Corr Mag North->Grid North: -7.7866°
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	BR (ft/100ft)	TR (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ° °)	Longitude (E/W ° ° °)	Directional Difficulty Index
SHL	0.00	0.00	0.00	0.00	-1150.76	0.00	0.00	0.00	N/A	N/A	N/A	531767.54	1709724.32	N 39 57 19.42	W 80 32 7.66	0.00
	50.00	0.17	275.32	50.00	-1100.76	-0.06	0.01	-0.07	0.34	0.34	0.00	531767.55	1709724.25	N 39 57 19.42	W 80 32 7.67	0.00
	100.00	0.13	300.77	100.00	-1050.76	-0.18	0.04	-0.20	0.15	-0.08	50.90	531767.58	1709724.12	N 39 57 19.42	W 80 32 7.67	0.00
	150.00	0.20	293.32	150.00	-1000.76	-0.32	0.11	-0.33	0.15	0.14	-14.90	531767.65	1709723.99	N 39 57 19.42	W 80 32 7.67	0.00
	200.00	0.18	333.12	200.00	-950.76	-0.47	0.21	-0.44	0.26	-0.04	79.60	531767.75	1709723.88	N 39 57 19.42	W 80 32 7.67	0.00
	250.00	0.11	280.66	250.00	-900.76	-0.59	0.29	-0.52	0.29	-0.14	-104.92	531767.83	1709723.80	N 39 57 19.42	W 80 32 7.67	0.00
	300.00	0.29	276.97	300.00	-850.76	-0.73	0.31	-0.70	0.36	0.36	-7.38	531767.85	1709723.62	N 39 57 19.42	W 80 32 7.67	0.00
	350.00	0.32	284.84	350.00	-800.76	-0.97	0.37	-0.96	0.10	0.06	15.74	531767.91	1709723.36	N 39 57 19.42	W 80 32 7.68	0.00
	400.00	0.29	274.79	400.00	-750.76	-1.20	0.41	-1.22	0.12	-0.06	-20.10	531767.95	1709723.10	N 39 57 19.42	W 80 32 7.68	0.07
	450.00	0.31	254.17	450.00	-700.76	-1.37	0.39	-1.47	0.22	0.04	-41.24	531767.93	1709722.85	N 39 57 19.42	W 80 32 7.68	0.20
	498.00	0.24	273.64	498.00	-652.76	-1.53	0.36	-1.70	0.24	-0.15	40.56	531767.90	1709722.62	N 39 57 19.42	W 80 32 7.69	0.31
	600.00	0.29	264.51	600.00	-550.76	-1.88	0.35	-2.17	0.06	0.05	-8.95	531767.89	1709722.15	N 39 57 19.42	W 80 32 7.69	0.43
	700.00	0.20	264.19	699.99	-450.77	-2.18	0.30	-2.60	0.09	-0.09	-0.32	531767.84	1709721.72	N 39 57 19.42	W 80 32 7.70	0.54
	800.00	0.21	278.65	799.99	-350.77	-2.45	0.31	-2.95	0.05	0.01	14.46	531767.85	1709721.37	N 39 57 19.42	W 80 32 7.70	0.61
	900.00	0.15	278.76	899.99	-250.77	-2.72	0.36	-3.26	0.06	-0.06	0.11	531767.90	1709721.06	N 39 57 19.42	W 80 32 7.71	0.67
	1000.00	0.16	280.61	999.99	-150.77	-2.96	0.41	-3.53	0.01	0.01	1.85	531767.95	1709720.79	N 39 57 19.42	W 80 32 7.71	0.71
	1100.00	0.11	282.29	1099.99	-50.77	-3.16	0.45	-3.76	0.15	-0.05	1.68	531767.99	1709720.56	N 39 57 19.42	W 80 32 7.71	0.75
	1200.00	0.22	338.38	1199.99	49.23	-3.42	0.65	-3.92	0.18	0.11	56.09	531768.19	1709720.40	N 39 57 19.43	W 80 32 7.71	0.83
	1300.00	0.23	16.46	1299.99	149.23	-3.67	1.02	-3.94	0.15	0.01	38.08	531768.56	1709720.38	N 39 57 19.43	W 80 32 7.71	0.90
	1400.00	0.12	73.23	1399.99	249.23	-3.69	1.24	-3.78	0.19	-0.11	56.77	531768.78	1709720.54	N 39 57 19.43	W 80 32 7.71	0.98
	1500.00	0.16	351.07	1499.99	349.23	-3.74	1.41	-3.70	0.19	0.04	-82.16	531768.95	1709720.62	N 39 57 19.43	W 80 32 7.71	1.03
	1600.00	0.17	129.49	1599.99	449.23	-3.70	1.46	-3.61	0.31	0.01	138.42	531769.00	1709720.71	N 39 57 19.43	W 80 32 7.71	1.11
	1700.00	0.15	46.68	1699.99	549.23	-3.53	1.45	-3.40	0.21	-0.02	-82.81	531768.99	1709720.92	N 39 57 19.43	W 80 32 7.71	1.16
	1800.00	0.22	148.60	1799.99	649.23	-3.34	1.38	-3.20	0.29	0.07	101.92	531768.92	1709721.12	N 39 57 19.43	W 80 32 7.71	1.23

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (NIS ° ' ")	Longitude (EW ° ' ")	Directional Difficulty Index
	1900.00	0.34	134.39	1899.99	749.23	-2.86	1.01	-2.89	0.14	0.12	-14.21	531768.55	1709721.43	N 39 57 19.43	W 80 32 7.70	1.28
	1930.00	0.30	136.27	1929.99	779.23	-2.69	0.89	-2.77	0.14	-0.13	6.27	531768.43	1709721.55	N 39 57 19.43	W 80 32 7.70	1.30
	1957.00	0.31	161.01	1956.99	806.23	-2.56	0.77	-2.70	0.49	0.04	91.63	531768.31	1709721.62	N 39 57 19.43	W 80 32 7.70	1.33
	2047.00	0.79	132.53	2046.98	896.22	-1.73	0.12	-2.16	0.60	0.53	-31.64	531767.66	1709722.16	N 39 57 19.42	W 80 32 7.69	1.45
	2136.00	2.11	125.32	2135.95	985.19	0.52	-1.24	-0.38	1.49	1.48	-8.10	531766.30	1709723.95	N 39 57 19.41	W 80 32 7.67	1.69
	2226.00	3.38	129.32	2225.85	1075.09	4.82	-3.88	3.03	1.43	1.41	4.44	531763.66	1709727.35	N 39 57 19.38	W 80 32 7.62	1.95
	2316.00	4.61	126.51	2315.63	1164.87	11.08	-7.72	7.99	1.38	1.37	-3.12	531759.82	1709732.31	N 39 57 19.35	W 80 32 7.56	2.19
	2405.00	5.58	132.53	2404.28	1253.52	18.98	-12.77	14.05	1.24	1.09	6.76	531754.77	1709738.37	N 39 57 19.30	W 80 32 7.48	2.39
	2495.00	5.71	126.33	2493.84	1343.08	27.81	-18.38	20.88	0.69	0.14	-6.89	531749.16	1709745.20	N 39 57 19.24	W 80 32 7.39	2.54
	2584.00	4.92	123.83	2582.46	1431.70	36.03	-23.13	27.62	0.92	-0.89	-2.81	531744.41	1709751.94	N 39 57 19.20	W 80 32 7.31	2.66
	2674.00	4.09	124.53	2672.18	1521.42	43.05	-27.10	33.47	0.92	-0.92	0.78	531740.45	1709757.79	N 39 57 19.16	W 80 32 7.23	2.76
	2763.00	3.60	122.82	2760.98	1610.22	48.98	-30.41	38.43	0.57	-0.55	-1.92	531737.13	1709762.75	N 39 57 19.12	W 80 32 7.17	2.83
	2853.00	2.20	122.99	2850.86	1700.10	53.50	-32.88	42.26	1.56	-1.56	0.19	531734.66	1709766.58	N 39 57 19.10	W 80 32 7.12	2.91
	2942.00	0.22	177.31	2939.84	1789.08	55.31	-33.98	43.70	2.34	-2.22	61.03	531733.56	1709768.02	N 39 57 19.09	W 80 32 7.10	2.99
	2988.00	0.40	220.73	2985.84	1835.08	55.37	-34.19	43.60	0.62	0.39	94.39	531733.35	1709767.92	N 39 57 19.09	W 80 32 7.10	3.00
	3105.00	0.62	216.51	3102.83	1952.07	55.41	-35.01	42.96	0.19	0.19	-3.61	531732.53	1709767.27	N 39 57 19.08	W 80 32 7.11	3.01
	3194.00	0.62	222.53	3191.83	2041.07	55.42	-35.75	42.34	0.07	0.00	6.76	531731.79	1709766.66	N 39 57 19.07	W 80 32 7.12	3.02
	3284.00	0.62	229.30	3281.82	2131.06	55.32	-36.43	41.65	0.08	0.00	7.52	531731.11	1709765.96	N 39 57 19.05	W 80 32 7.12	3.03
	3373.00	0.40	239.71	3370.82	2220.06	55.14	-36.90	41.01	0.27	-0.25	11.70	531730.64	1709765.33	N 39 57 19.06	W 80 32 7.13	3.04
	3463.00	0.48	246.83	3460.81	2310.05	54.87	-37.21	40.39	0.11	0.09	7.91	531730.34	1709764.71	N 39 57 19.06	W 80 32 7.14	3.05
	3552.00	0.31	254.13	3549.81	2399.05	54.57	-37.42	39.82	0.20	-0.19	8.20	531730.12	1709764.14	N 39 57 19.06	W 80 32 7.15	3.05
	3642.00	0.31	249.60	3639.81	2489.05	54.31	-37.57	39.36	0.03	0.00	-5.03	531729.97	1709763.68	N 39 57 19.05	W 80 32 7.15	3.06
	3732.00	0.31	3729.81	3729.81	2579.05	54.08	-37.74	38.90	0.01	0.00	-1.22	531729.80	1709763.22	N 39 57 19.05	W 80 32 7.16	3.06
	4268.00	14.81	30.20	4262.42	2668.05	53.78	-37.91	38.38	0.11	0.10	11.70	531729.63	1709762.70	N 39 57 19.05	W 80 32 7.17	3.07
	4388.00	20.08	35.63	4348.25	2758.05	53.41	-37.98	37.83	0.15	-0.10	19.00	531729.57	1709762.15	N 39 57 19.05	W 80 32 7.17	3.07
	4447.00	23.29	58.22	4430.95	2847.02	53.82	-36.94	39.24	3.10	2.46	163.48	531730.60	1709763.56	N 39 57 19.06	W 80 32 7.15	3.15
	4090.00	6.02	50.31	4087.52	2936.76	55.25	-32.89	44.54	3.96	3.91	-8.79	531734.65	1709768.86	N 39 57 19.10	W 80 32 7.09	3.26
	4268.00	14.81	30.20	4262.42	2668.05	53.78	-37.91	38.38	0.11	0.10	11.70	531729.63	1709762.70	N 39 57 19.05	W 80 32 7.17	3.07
	4388.00	20.08	35.63	4348.25	2758.05	53.41	-37.98	37.83	0.15	-0.10	19.00	531729.57	1709762.15	N 39 57 19.05	W 80 32 7.17	3.07
	4447.00	23.29	58.22	4430.95	2847.02	53.82	-36.94	39.24	3.10	2.46	163.48	531730.60	1709763.56	N 39 57 19.06	W 80 32 7.15	3.15
	4537.00	27.91	47.80	4512.11	3361.35	56.31	66.05	129.58	5.72	5.13	5.86	531833.58	1709853.89	N 39 57 20.09	W 80 32 6.01	3.99
	4626.00	31.99	47.72	4589.21	3438.45	62.14	95.91	162.46	4.58	4.58	-0.09	531863.45	1709886.78	N 39 57 20.39	W 80 32 5.89	4.11
	4716.00	31.82	44.33	4665.61	3514.85	66.96	128.92	196.68	2.00	-3.77	531896.46	1709920.99	N 39 57 20.72	W 80 32 5.16	4.20	
	4805.00	30.01	43.01	4741.97	3591.21	69.73	161.99	228.26	2.17	-2.03	-1.48	531929.52	1709952.57	N 39 57 21.05	W 80 32 4.76	4.28
	4895.00	30.28	42.93	4819.80	3669.04	71.90	195.06	259.07	0.30	0.30	-0.09	531962.59	1709983.38	N 39 57 21.38	W 80 32 4.37	4.34
	4984.00	29.31	42.22	4897.03	3746.27	73.73	227.62	288.99	1.16	-1.09	-0.80	531995.15	1710013.30	N 39 57 21.70	W 80 32 3.99	4.39
	5074.00	28.78	43.41	4975.71	3824.95	75.71	259.67	318.69	0.87	-0.59	1.32	532027.20	1710042.99	N 39 57 22.02	W 80 32 3.61	4.44
	5163.00	28.52	43.41	5053.82	3903.06	78.09	290.67	348.01	0.29	-0.29	0.00	532058.20	1710072.31	N 39 57 22.33	W 80 32 3.24	4.48
	5253.00	28.61	44.42	5132.86	3982.10	80.87	321.67	377.86	0.55	0.10	1.12	532089.20	1710102.16	N 39 57 22.64	W 80 32 2.86	4.52
	5343.00	28.21	43.81	5212.02	4061.26	83.79	352.41	407.66	0.55	-0.44	-0.68	532119.94	1710131.97	N 39 57 22.95	W 80 32 2.48	4.56
	5432.00	27.82	43.23	5290.59	4139.83	86.20	382.72	436.45	0.53	-0.44	-0.65	532150.25	1710160.75	N 39 57 23.25	W 80 32 2.12	4.59
	5522.00	27.69	43.01	5370.24	4219.48	88.32	413.32	465.10	0.18	-0.14	-0.24	532180.84	1710189.40	N 39 57 23.56	W 80 32 1.75	4.62
	5611.00	28.39	43.72	5448.79	4298.03	90.63	443.73	493.83	0.87	0.79	0.80	532211.25	1710218.13	N 39 57 23.86	W 80 32 1.39	4.65
	5700.00	28.52	42.40	5527.92	4377.16	92.76	475.06	523.11	0.71	0.14	-1.47	532242.58	1710247.40	N 39 57 24.17	W 80 32 1.02	4.68
	5790.00	28.52	42.79	5606.12	4455.36	94.52	506.34	551.87	0.21	0.00	0.44	532273.86	1710276.16	N 39 57 24.49	W 80 32 0.65	4.71
	5880.00	29.31	43.63	5684.90	4534.14	96.80	538.05	581.66	0.99	0.88	0.93	532305.57	1710305.96	N 39 57 24.80	W 80 32 0.28	4.73
	5969.00	28.78	41.52	5762.71	4611.95	98.59	569.86	610.90	1.30	-0.60	-2.37	532337.38	1710335.19	N 39 57 25.12	W 80 31 59.90	4.76

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	6076.00	27.02	39.66	5857.27	4706.51	98.94	607.86	643.49	1.83	-1.64	-1.74	532375.38	1710367.78	N 39 57 25.50 W	80 31 59.49	4.80
	6120.00	26.53	45.62	5896.56	4745.80	99.77	622.43	656.89	6.20	-1.11	13.55	532389.95	1710381.18	N 39 57 25.65 W	80 31 59.32	4.83
	6164.00	26.99	54.00	5935.86	4785.10	103.08	635.18	672.00	8.63	1.05	19.05	532402.69	1710396.29	N 39 57 25.77 W	80 31 59.13	4.86
	6209.00	27.86	61.60	5975.82	4825.06	109.35	646.19	689.51	8.01	1.93	16.89	532413.70	1710413.80	N 39 57 25.88 W	80 31 58.91	4.89
	6254.00	27.55	68.47	6015.67	4864.91	118.11	655.01	708.45	7.13	-0.69	15.27	532422.52	1710432.74	N 39 57 25.97 W	80 31 58.66	4.92
	6299.00	28.14	75.55	6055.47	4904.71	129.18	661.48	728.41	7.46	1.31	15.73	532428.99	1710452.70	N 39 57 26.04 W	80 31 58.41	4.95
	6343.00	31.01	81.10	6093.74	4942.98	142.60	665.82	749.66	9.01	6.52	12.61	532433.33	1710473.95	N 39 57 26.09 W	80 31 58.14	4.98
	6388.00	33.69	86.22	6131.76	4981.00	159.18	668.44	773.58	8.51	5.96	11.38	532435.95	1710497.86	N 39 57 26.11 W	80 31 57.83	5.01
	6433.00	36.39	89.90	6168.60	5017.84	178.34	669.29	799.39	7.62	6.00	8.18	532436.80	1710523.67	N 39 57 26.13 W	80 31 57.50	5.03
	6478.00	39.29	93.93	6204.14	5053.38	200.01	668.33	826.96	8.47	6.44	8.96	532435.84	1710551.24	N 39 57 26.12 W	80 31 57.14	5.06
	6522.00	41.88	98.16	6237.56	5086.80	223.70	665.29	855.41	8.59	5.89	9.61	532432.80	1710579.69	N 39 57 26.09 W	80 31 56.78	5.09
	6567.00	44.80	102.97	6270.29	5119.53	250.54	659.60	885.74	9.79	6.49	10.69	532427.11	1710610.02	N 39 57 26.04 W	80 31 56.39	5.12
	6612.00	46.27	107.57	6301.82	5151.06	279.65	651.13	916.70	7.99	3.27	10.22	532418.64	1710640.98	N 39 57 25.96 W	80 31 55.99	5.15
	6657.00	48.51	112.24	6332.30	5181.54	310.70	639.84	947.82	9.11	4.98	10.38	532407.35	1710672.09	N 39 57 25.85 W	80 31 55.59	5.18
	6701.00	51.54	115.31	6360.56	5209.80	343.03	626.23	978.65	8.72	6.89	6.98	532393.74	1710702.93	N 39 57 25.72 W	80 31 55.19	5.20
	6746.00	54.33	118.86	6387.69	5236.93	377.99	609.87	1010.60	8.83	6.20	7.89	532377.38	1710734.88	N 39 57 25.56 W	80 31 54.78	5.23
	6791.00	55.73	123.31	6413.49	5262.73	414.39	590.83	1042.16	8.68	3.11	9.89	532358.34	1710766.44	N 39 57 25.38 W	80 31 54.37	5.26
	6836.00	57.03	128.37	6438.42	5287.66	451.73	568.89	1072.52	9.80	2.89	11.24	532336.40	1710796.79	N 39 57 25.16 W	80 31 53.98	5.29
	6880.00	60.65	130.78	6461.18	5310.42	489.37	544.90	1101.52	9.47	8.23	5.48	532312.41	1710825.79	N 39 57 24.93 W	80 31 53.60	5.31
	6925.00	64.69	132.04	6481.84	5331.08	529.33	518.45	1131.49	9.32	8.98	2.80	532285.97	1710855.76	N 39 57 24.67 W	80 31 53.21	5.34
	6970.00	67.92	133.29	6499.92	5349.16	570.49	490.53	1161.78	7.61	7.18	2.78	532258.05	1710886.05	N 39 57 24.40 W	80 31 52.82	5.36
	7014.00	70.55	135.61	6515.52	5364.76	611.51	461.72	1191.14	7.75	5.98	5.27	532229.24	1710915.41	N 39 57 24.12 W	80 31 52.44	5.39
	7059.00	73.44	137.06	6529.43	5378.67	654.06	430.76	1220.68	7.12	6.42	3.22	532198.28	1710944.95	N 39 57 23.82 W	80 31 52.05	5.41
	7104.00	77.25	138.29	6540.81	5390.05	697.22	398.58	1249.99	8.87	8.47	2.73	532166.10	1710974.25	N 39 57 23.50 W	80 31 51.67	5.44
	7149.00	80.95	139.07	6549.32	5398.56	740.92	365.39	1279.16	8.40	8.22	1.73	532132.92	1711003.42	N 39 57 23.18 W	80 31 51.29	5.46
	7193.00	84.25	139.58	6554.99	5404.23	783.99	332.31	1307.59	7.59	7.50	1.16	532099.83	1711031.85	N 39 57 22.85 W	80 31 50.92	5.48
	7238.00	87.08	140.19	6558.39	5407.63	828.22	297.99	1336.50	6.43	6.29	1.36	532065.52	1711060.76	N 39 57 22.52 W	80 31 50.55	5.50
	7282.00	88.28	142.25	6562.03	5411.27	916.49	227.90	1392.82	2.65	1.33	2.29	531995.43	1711117.08	N 39 57 22.83 W	80 31 49.81	5.54
	7327.00	88.87	142.12	6563.13	5412.37	959.52	193.15	1419.79	1.37	1.34	-0.30	531960.68	1711144.04	N 39 57 21.49 W	80 31 49.46	5.55
	7419.00	89.51	141.26	6563.79	5413.03	1005.57	156.27	1448.92	2.28	1.36	-1.83	531923.81	1711173.17	N 39 57 21.13 W	80 31 49.08	5.57
	7509.00	88.74	140.10	6565.16	5414.40	1094.06	86.66	1505.94	1.55	-0.86	-1.29	531854.19	1711230.19	N 39 57 20.45 W	80 31 48.34	5.59
	7599.00	88.34	141.03	6567.46	5416.70	1182.57	17.17	1563.09	1.12	-0.44	1.03	531784.71	1711287.34	N 39 57 19.77 W	80 31 47.60	5.62
	7688.00	87.97	141.63	6570.32	5419.56	1269.85	-52.28	1618.67	0.79	-0.42	0.67	531715.26	1711342.92	N 39 57 19.09 W	80 31 46.87	5.64
	7778.00	88.17	142.20	6573.35	5422.59	1357.93	-123.08	1674.15	0.67	0.22	0.63	531644.47	1711398.40	N 39 57 18.39 W	80 31 46.15	5.67
	7867.00	88.20	143.09	6576.17	5425.41	1444.80	-193.79	1728.13	1.00	0.03	1.00	531573.76	1711452.37	N 39 57 17.70 W	80 31 45.45	5.69
	7957.00	88.45	144.69	6578.80	5428.04	1532.21	-266.47	1781.14	1.80	0.28	1.78	531501.09	1711505.38	N 39 57 16.99 W	80 31 44.75	5.72
	8046.00	88.48	145.40	6581.19	5430.43	1618.21	-339.38	1832.11	0.80	0.03	0.80	531428.17	1711556.35	N 39 57 16.27 W	80 31 44.09	5.74
	8136.00	89.20	146.58	6583.01	5432.25	1704.80	-413.97	1882.44	1.54	0.80	1.31	531353.59	1711606.68	N 39 57 15.54 W	80 31 43.43	5.76
	8225.00	89.48	146.70	6584.03	5433.27	1790.16	-488.30	1931.38	0.34	0.31	0.13	531279.26	1711655.61	N 39 57 14.81 W	80 31 42.79	5.78
	8315.00	89.60	146.60	6584.76	5434.02	1876.48	-563.48	1980.86	0.17	0.13	-0.11	531204.09	1711705.09	N 39 57 14.08 W	80 31 42.15	5.80
	8404.00	89.86	145.47	6585.18	5434.42	1962.11	-637.29	2030.58	1.30	0.29	-1.27	531130.28	1711754.81	N 39 57 13.35 W	80 31 41.50	5.82
	8494.00	89.91	143.65	6585.36	5434.60	2049.29	-710.61	2082.76	2.02	0.06	-2.02	531056.96	1711806.99	N 39 57 12.63 W	80 31 40.82	5.84
	8583.00	89.80	141.73	6585.58	5434.82	2136.19	-781.40	2136.71	2.16	-0.12	-2.16	530986.18	1711860.93	N 39 57 11.94 W	80 31 40.11	5.86
	8673.00	89.26	141.30	6586.32	5435.56	2224.44	-851.84	2192.71	0.77	-0.60	-0.48	530915.73	1711916.93	N 39 57 11.25 W	80 31 39.38	5.88
	8763.00	88.97	141.34	6587.71	5436.95	2312.74	-922.09	2248.95	0.33	-0.32	0.04	530845.49	1711973.17	N 39 57 10.56 W	80 31 38.65	5.90
	8853.00	89.06	140.99	6589.24	5438.48	2400.11	-991.41	2304.75	0.41	0.10	-0.39	530776.17	1712028.97	N 39 57 9.88 W	80 31 37.93	5.92
	8943.00	88.88	140.78	6590.86	5440.10	2488.54	-1061.23	2361.52	0.31	-0.20	-0.23	530706.36	1712085.74	N 39 57 9.20 W	80 31 37.19	5.93
	9034.00	88.91	141.57	6592.58	5441.82	2575.90	-1130.55	2417.31	0.89	0.03	0.89	530637.04	1712141.52	N 39 57 8.52 W	80 31 36.46	5.95

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Comments	MD (ft)	Incl (°)	Azim Grd (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	BR (ft/100ft)	TR (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S °'")	Longitude (E/W °'")	Directional Difficulty Index	
	9121.00	88.97	142.30	6594.24	5443.48	2664.00	-1201.40	2472.79	0.81	0.07	0.81	530566.20	1712197.00	N 39 57 7.83 W	80 31 35.74	5.97	
	9210.00	89.00	142.61	6595.82	5445.06	2750.97	-1271.95	2527.02	0.35	0.03	0.35	530495.64	1712251.22	N 39 57 7.14 W	80 31 35.03	5.98	
	9300.00	89.20	143.17	6597.23	5446.47	2838.76	-1343.72	2581.31	0.66	0.22	0.62	530423.88	1712305.52	N 39 57 6.43 W	80 31 34.32	6.00	
	9389.00	89.43	143.75	6598.29	5447.53	2925.39	-1415.22	2634.30	0.70	0.26	0.65	530352.39	1712358.50	N 39 57 5.73 W	80 31 33.63	6.01	
	9479.00	89.69	143.08	6598.99	5448.23	3013.01	-1487.48	2687.94	0.80	0.29	-0.74	530280.12	1712412.14	N 39 57 5.03 W	80 31 32.93	6.03	
	9568.00	89.60	141.92	6599.54	5448.78	3099.96	-1558.09	2742.11	1.31	-0.10	-1.30	530209.52	1712466.31	N 39 57 4.33 W	80 31 32.23	6.04	
	9658.00	89.00	140.61	6600.64	5449.88	3188.29	-1628.29	2798.42	1.60	-0.67	-1.46	530139.33	1712522.62	N 39 57 3.65 W	80 31 31.49	6.06	
	9747.00	88.86	141.05	6602.30	5451.54	3275.75	-1697.27	2854.63	0.52	-0.16	0.49	530070.34	1712578.82	N 39 57 2.97 W	80 31 30.76	6.07	
	9837.00	88.97	141.22	6604.00	5453.24	3364.10	-1767.34	2911.09	0.22	0.12	0.19	530000.28	1712635.28	N 39 57 2.29 W	80 31 30.03	6.09	
	9927.00	88.88	142.38	6605.69	5454.93	3452.25	-1838.05	2966.74	1.29	-0.10	1.29	529929.57	1712690.92	N 39 57 1.59 W	80 31 29.30	6.10	
	10016.00	88.65	143.02	6607.61	5456.85	3539.12	-1908.83	3020.66	0.76	-0.26	0.72	529858.80	1712744.84	N 39 57 0.90 W	80 31 28.60	6.12	
	10106.00	88.71	144.53	6609.68	5458.92	3626.59	-1981.41	3073.83	1.68	0.07	1.68	529786.22	1712798.01	N 39 57 0.19 W	80 31 27.91	6.13	
	10196.00	88.97	145.17	6611.51	5460.75	3713.65	-2054.98	3125.63	0.77	0.29	0.71	529712.65	1712849.81	N 39 56 59.47 W	80 31 27.23	6.15	
	10285.00	88.83	145.14	6613.21	5462.45	3799.62	-2128.01	3176.47	0.16	-0.16	-0.03	529639.62	1712900.65	N 39 56 58.75 W	80 31 26.57	6.16	
	10375.00	89.11	145.88	6614.83	5464.07	3886.42	-2202.18	3227.43	0.88	0.31	0.82	529565.46	1712951.60	N 39 56 58.02 W	80 31 25.90	6.17	
	10464.00	89.28	145.69	6616.08	5465.32	3972.14	-2275.77	3277.47	0.29	0.19	-0.21	529491.87	1713001.64	N 39 56 57.30 W	80 31 25.25	6.18	
	10554.00	89.60	144.72	6616.96	5466.20	4059.08	-2349.67	3328.82	1.13	0.36	-1.08	529417.97	1713052.99	N 39 56 56.58 W	80 31 24.58	6.20	
	10644.00	89.77	143.87	6617.46	5466.70	4146.37	-2422.76	3381.35	0.96	0.19	-0.94	529344.89	1713105.51	N 39 56 55.86 W	80 31 23.89	6.21	
	10733.00	89.91	143.50	6617.70	5466.94	4232.92	-2494.47	3434.05	0.44	0.16	-0.42	529273.18	1713158.22	N 39 56 55.16 W	80 31 23.21	6.22	
	10823.00	89.86	143.26	6617.89	5467.13	4320.55	-2566.70	3487.74	0.27	-0.06	-0.27	529200.95	1713211.90	N 39 56 54.45 W	80 31 22.51	6.23	
	10912.00	89.77	141.44	6618.17	5467.41	4407.56	-2637.17	3542.10	2.05	-0.10	-2.04	529130.49	1713266.26	N 39 56 53.76 W	80 31 21.80	6.25	
	11002.00	89.97	139.62	6618.38	5467.62	4496.10	-2706.64	3599.31	2.03	0.22	-2.02	529061.02	1713323.47	N 39 56 53.08 W	80 31 21.05	6.26	
	11091.00	89.26	137.92	6618.98	5468.22	4584.10	-2773.57	3657.96	2.07	-0.80	-1.91	528994.09	1713382.12	N 39 56 52.43 W	80 31 20.29	6.28	
	11181.00	88.28	138.05	6620.91	5470.15	4673.26	-2840.42	3718.19	1.10	-1.09	0.14	528927.25	1713442.34	N 39 56 51.77 W	80 31 19.51	6.29	
	11270.00	87.68	141.03	6624.04	5473.28	4761.01	-2908.09	3775.90	3.41	-0.67	3.35	528859.58	1713500.05	N 39 56 51.11 W	80 31 18.76	6.31	
	11360.00	87.25	143.30	6628.03	5477.27	4848.97	-2979.09	3831.05	2.56	-0.48	2.52	528788.58	1713555.19	N 39 56 50.41 W	80 31 18.04	6.32	
	11450.00	88.00	144.61	6631.76	5481.00	4936.32	-3051.80	3883.96	1.68	0.83	1.46	528715.88	1713608.10	N 39 56 49.70 W	80 31 17.35	6.33	
	11539.00	89.94	145.43	6633.36	5482.60	5022.34	-3124.70	3934.97	2.37	2.18	0.92	528642.98	1713659.11	N 39 56 48.99 W	80 31 16.68	6.35	
	11629.00	91.06	145.88	6632.57	5481.81	5109.09	-3199.01	3985.74	1.34	1.24	0.50	528568.67	1713709.88	N 39 56 48.26 W	80 31 16.02	6.36	
	11719.00	90.49	145.48	6631.35	5480.59	5195.82	-3273.33	4036.48	0.77	-0.63	-0.44	528494.35	1713760.62	N 39 56 47.53 W	80 31 15.36	6.37	
	11808.00	91.26	145.40	6629.99	5479.23	5281.69	-3346.62	4086.96	0.87	0.87	-0.09	528421.07	1713811.10	N 39 56 46.81 W	80 31 14.70	6.38	
	11897.00	91.23	144.50	6628.04	5477.28	5367.74	-3419.46	4138.06	1.01	0.00	-1.01	528348.23	1713862.19	N 39 56 46.10 W	80 31 14.03	6.39	
	11987.00	91.23	144.31	6626.08	5475.32	5454.97	-3492.63	4190.43	0.21	-0.03	-0.21	528275.07	1713914.56	N 39 56 45.38 W	80 31 13.35	6.40	
	12077.00	90.23	143.86	6624.93	5474.17	5542.34	-3565.51	4243.22	1.22	-1.11	-0.50	528202.19	1713967.35	N 39 56 44.67 W	80 31 12.66	6.41	
	12166.00	89.80	142.71	6624.91	5474.15	5629.03	-3636.85	4296.43	1.38	-0.48	-1.29	528130.85	1714020.55	N 39 56 43.97 W	80 31 11.97	6.43	
Final Survey	12223.00	89.57	142.10	6625.22	5474.46	5684.74	-3682.01	4331.20	1.14	-0.40	-1.07	528085.69	1714055.33	N 39 56 43.52 W	80 31 11.51	6.43	
28Apr13	12285.00	89.57	142.10	6625.69	5474.93	5745.41	-3730.94	4369.28	0.00	0.00	0.00	528036.77	1714093.41	N 39 56 43.05 W	80 31 11.02	6.44	
Projection to Bit																	
Survey Type:																	
Def Survey																	
Survey Error Model:																	
Survey Program:																	
ISCSWA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma																	
Description		MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Borehole / Survey	Survey Tool Type									

03/07/2014

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S °.′.″)	Longitude (E/W °.′.″)	Directional Difficulty Index
		0.000	19.290		Act Sins	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / Noble Energy 12285' MD	SHL-8N-HS Gyro+MWD 0' MD to 12285' MD						
		19.290	1930.000		Act Sins	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Noble Energy	SHL-8N-HS Gyro+MWD 0' MD to						
		1930.000	5969.000		Act Sins	30.000	30.000	SLB_MWD-POOR	Original Borehole / Noble Energy	SHL-8N-HS Gyro+MWD 0' MD to						
		5969.000	12223.000		Act Sins	30.000	30.000	SLB_MWD-STD	Original Borehole / Noble Energy	SHL-8N-HS Gyro+MWD 0' MD to						
		12223.000	12285.000		Act Sins	30.000	30.000	SLB_BLIND+TREND	Original Borehole / Noble Energy	SHL-8N-HS Gyro+MWD 0' MD to						

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