



4705101529



# Noble Energy SHL-8J-HS ST01 Gyro+MWD 2967' to 10333' MD Survey Report

(Def Survey)

**Report Date:** January 14, 2013 - 09:18 AM  
**Client:** Noble Energy  
**Field:** WV Marshall County (NAD 27)  
**Structure / Slot:** CNX/Noble Energy SHL-8 Pad / SHL-8J-HS  
**Well:** SHL-8J-HS  
**Borehole:** ST01  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Noble Energy SHL-8J-HS ST01 Gyro+MWD 2967' to 10333' MD  
**Survey Date:** January 03, 2013  
**Tort / AHD / DDI / ERD Ratio:** 190.683° / 4235.545 ft / 6.105 / 0.646  
**Coordinate Reference System:** NAD27 West Virginia State Plane, Northern Zone, US Feet  
**Location Lat / Long:** N 39° 57' 19.90525", W 80° 32' 8.81266"  
**Location Grid N/E Y/X:** N 531817.620 ftUS, E 1709635.461 ftUS  
**CRS Grid Convergence Angle:** -0.6606°  
**Grid Scale Factor:** 0.99995725

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	-1149.67	0.00	0.00	0.00	N/A	N/A	N/A	531817.62	1709635.46	N 39 57 19.91	W 80 32 8.81	0.00
	107.00	0.13	308.98	107.00	-1042.67	0.12	0.08	-0.09	0.12	0.12	0.00	531817.70	1709635.37	N 39 57 19.91	W 80 32 8.81	0.00
	207.00	0.09	343.00	207.00	-942.67	0.30	0.22	-0.21	0.07	-0.04	34.02	531817.84	1709635.26	N 39 57 19.91	W 80 32 8.82	0.00
	307.00	0.14	308.32	307.00	-842.67	0.49	0.37	-0.32	0.08	0.05	-34.68	531817.99	1709635.14	N 39 57 19.91	W 80 32 8.82	0.00
	407.00	0.09	346.14	407.00	-742.67	0.68	0.53	-0.44	0.09	-0.05	37.82	531818.15	1709635.02	N 39 57 19.91	W 80 32 8.82	0.00
	507.00	0.13	40.79	507.00	-642.67	0.77	0.69	-0.38	0.11	0.04	54.65	531818.31	1709635.08	N 39 57 19.91	W 80 32 8.82	0.00
	607.00	0.05	170.23	607.00	-542.67	0.75	0.73	-0.30	0.17	-0.08	129.44	531818.35	1709635.16	N 39 57 19.91	W 80 32 8.82	0.00
	707.00	0.10	282.63	707.00	-442.67	0.79	0.71	-0.38	0.13	0.05	112.40	531818.33	1709635.08	N 39 57 19.91	W 80 32 8.82	0.00
	807.00	0.07	164.75	807.00	-342.67	0.80	0.67	-0.45	0.15	-0.03	-117.88	531818.29	1709635.01	N 39 57 19.91	W 80 32 8.82	0.04
	907.00	0.31	151.04	907.00	-242.67	0.48	0.37	-0.30	0.24	0.24	-13.71	531817.99	1709635.16	N 39 57 19.91	W 80 32 8.82	0.25
	1007.00	0.54	128.49	1007.00	-142.67	-0.25	-0.16	0.20	0.28	0.23	-22.55	531817.46	1709635.66	N 39 57 19.90	W 80 32 8.81	0.51
	1107.00	0.77	120.77	1106.99	-42.68	-1.34	-0.80	1.14	0.25	0.23	-7.72	531816.82	1709636.61	N 39 57 19.90	W 80 32 8.80	0.76
	1207.00	0.82	120.83	1206.98	57.31	-2.66	-1.51	2.34	0.05	0.05	0.06	531816.11	1709637.80	N 39 57 19.89	W 80 32 8.78	0.92
	1307.00	0.63	111.11	1306.97	157.30	-3.81	-2.07	3.46	0.23	-0.19	-9.72	531815.55	1709638.92	N 39 57 19.89	W 80 32 8.77	1.08
	1407.00	0.45	114.13	1406.97	257.30	-4.65	-2.43	4.33	0.18	-0.18	3.02	531815.19	1709639.80	N 39 57 19.88	W 80 32 8.76	1.18
	1507.00	0.35	110.25	1506.96	357.29	-5.27	-2.70	4.98	0.10	-0.10	-3.88	531814.92	1709640.44	N 39 57 19.88	W 80 32 8.75	1.24
	1607.00	0.38	106.25	1606.96	457.29	-6.54	-2.89	5.58	0.04	0.03	-4.00	531814.73	1709641.05	N 39 57 19.88	W 80 32 8.74	1.28
	1707.00	0.53	145.59	1706.96	557.29	-7.36	-3.37	6.16	0.34	0.15	39.34	531814.25	1709641.62	N 39 57 19.87	W 80 32 8.73	1.38
	1807.00	0.45	153.26	1806.96	657.29	-8.18	-4.10	6.60	0.10	-0.08	7.67	531813.52	1709642.06	N 39 57 19.87	W 80 32 8.73	1.43
	1907.00	0.49	152.18	1906.95	757.28	-8.78	-4.83	6.98	0.04	0.04	-1.08	531812.79	1709642.44	N 39 57 19.86	W 80 32 8.72	1.48
	2007.00	0.21	153.89	2006.95	857.28	-8.78	-5.37	7.26	0.28	-0.28	1.71	531812.25	1709642.72	N 39 57 19.85	W 80 32 8.72	1.54
	2107.00	0.18	151.84	2106.95	957.28	-9.11	-5.68	7.41	0.03	-0.03	-2.05	531811.94	1709642.87	N 39 57 19.85	W 80 32 8.72	1.56
	2207.00	0.09	154.36	2206.95	1057.28	-9.34	-5.88	7.52	0.09	-0.09	2.52	531811.74	1709642.98	N 39 57 19.85	W 80 32 8.72	1.58
	2307.00	0.16	229.30	2306.95	1157.28	-9.42	-6.05	7.45	0.16	0.07	74.94	531811.57	1709642.91	N 39 57 19.85	W 80 32 8.72	1.61

03/07/2014

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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 (RUS)	Easting (RUS)	Latitude (N/S °'")	Longitude (E/W °'")	Directional Difficulty Index
	2407.00	2.26	246.24	2406.92	1257.25	-8.87	-6.93	5.54	2.11	2.10	16.94	531810.69	1709641.00	N 39 57 19.84	W 80 32 8.74	1.89
	2507.00	5.29	248.12	2506.69	1357.02	-6.89	-9.45	-0.54	3.03	3.03	1.88	531808.18	1709634.92	N 39 57 19.81	W 80 32 8.82	2.25
	2607.00	3.92	240.70	2606.37	1456.70	-4.82	-12.84	-7.80	1.49	-1.37	-7.42	531804.78	1709627.66	N 39 57 19.78	W 80 32 8.91	2.46
	2707.00	1.98	238.67	2706.23	1556.56	-3.93	-15.41	-12.26	1.94	-1.94	-2.03	531802.21	1709623.20	N 39 57 19.75	W 80 32 8.97	2.61
	2807.00	1.08	235.91	2806.19	1656.52	-3.57	-16.83	-14.52	0.90	-0.90	-2.76	531800.79	1709620.94	N 39 57 19.74	W 80 32 9.00	2.67
	2907.00	1.05	236.12	2906.18	1756.51	-3.37	-17.87	-16.06	0.03	-0.03	0.21	531799.75	1709619.40	N 39 57 19.73	W 80 32 9.02	2.69
	2967.00	1.05	237.40	2966.17	1816.50	-3.25	-18.48	-16.98	0.04	0.00	2.13	531799.15	1709618.48	N 39 57 19.72	W 80 32 9.03	2.71
	3094.00	0.75	205.67	3093.15	1943.48	-3.44	-19.85	-18.32	0.45	-0.24	-24.98	531797.77	1709617.14	N 39 57 19.71	W 80 32 9.04	2.75
	3184.00	2.95	245.48	3183.10	2033.43	-3.06	-21.34	-20.68	2.69	2.44	44.23	531796.28	1709614.78	N 39 57 19.69	W 80 32 9.08	2.85
	3273.00	2.60	246.59	3272.00	2122.33	-1.88	-23.10	-24.62	0.40	-0.39	1.25	531794.52	1709610.85	N 39 57 19.67	W 80 32 9.13	2.90
	3363.00	3.79	256.80	3361.86	2212.19	0.05	-24.59	-29.39	1.46	1.32	11.34	531793.03	1709606.08	N 39 57 19.66	W 80 32 9.19	2.97
	3452.00	3.44	257.23	3450.68	2301.01	2.59	-25.85	-34.85	0.39	-0.39	0.48	531791.77	1709600.61	N 39 57 19.65	W 80 32 9.26	3.03
	3542.00	2.98	257.43	3540.54	2390.87	4.91	-26.95	-39.77	0.51	-0.51	0.22	531790.67	1709595.69	N 39 57 19.63	W 80 32 9.32	3.07
	3631.00	2.62	256.10	3629.43	2479.76	6.86	-27.95	-44.00	0.41	-0.40	-1.49	531789.67	1709591.46	N 39 57 19.62	W 80 32 9.37	3.11
	3721.00	2.32	265.03	3719.35	2569.68	8.81	-28.60	-47.82	0.54	-0.33	9.92	531789.02	1709587.65	N 39 57 19.62	W 80 32 9.42	3.14
	3810.00	1.76	263.06	3808.29	2658.62	10.59	-28.92	-50.97	0.63	-0.63	-2.21	531788.70	1709584.50	N 39 57 19.61	W 80 32 9.46	3.18
	3900.00	1.21	266.21	3898.26	2748.59	11.91	-29.15	-53.29	0.62	-0.61	3.50	531788.47	1709582.18	N 39 57 19.61	W 80 32 9.49	3.20
	3989.00	0.77	255.35	3987.25	2837.58	14.45	-29.36	-58.17	0.07	-0.06	5.69	531788.07	1709577.74	N 39 57 19.61	W 80 32 9.55	3.25
	4079.00	0.60	254.27	4077.24	2927.57	13.17	-29.64	-58.84	0.12	0.08	15.16	531788.36	1709577.29	N 39 57 19.61	W 80 32 9.56	3.25
	4168.00	0.44	263.85	4166.24	3016.57	13.55	-29.81	-58.66	0.06	0.06	0.54	531788.76	1709576.80	N 39 57 19.61	W 80 32 9.56	3.26
	4258.00	0.36	290.06	4256.24	3106.57	13.99	-29.75	-59.70	0.08	0.06	6.98	531789.24	1709576.28	N 39 57 19.62	W 80 32 9.57	3.26
	4347.00	0.31	295.12	4345.23	3195.56	14.45	-29.55	-57.72	0.12	-0.10	-9.30	531789.70	1709575.77	N 39 57 19.62	W 80 32 9.58	3.27
	4437.00	0.38	308.76	4435.23	3285.56	14.97	-29.26	-58.17	0.07	-0.06	18.48	531790.10	1709575.37	N 39 57 19.63	W 80 32 9.58	3.27
	4526.00	0.43	309.24	4524.23	3374.56	15.58	-28.86	-60.44	0.04	-0.01	-5.53	531790.52	1709575.03	N 39 57 19.63	W 80 32 9.58	3.28
	4616.00	0.48	315.52	4614.23	3464.56	16.29	-28.38	-60.80	0.06	0.06	4.36	531790.96	1709574.67	N 39 57 19.63	W 80 32 9.59	3.28
	4706.00	0.39	307.15	4704.22	3554.55	16.96	-27.93	-59.19	0.17	0.14	-11.91	531791.47	1709574.18	N 39 57 19.64	W 80 32 9.60	3.29
	4795.00	0.35	323.60	4793.22	3643.55	17.53	-27.52	-60.10	0.13	-0.04	18.48	531790.10	1709575.37	N 39 57 19.63	W 80 32 9.58	3.27
	4885.00	0.34	318.62	4883.22	3733.55	18.07	-27.10	-60.44	0.04	-0.01	-5.53	531790.52	1709575.03	N 39 57 19.63	W 80 32 9.58	3.28
	4974.00	0.39	322.50	4972.22	3822.55	18.64	-26.66	-63.68	0.06	0.06	4.36	531790.96	1709574.67	N 39 57 19.63	W 80 32 9.59	3.28
	5064.00	0.52	311.78	5062.22	3912.55	19.35	-26.15	-63.68	0.17	0.14	-11.91	531791.47	1709574.18	N 39 57 19.64	W 80 32 9.60	3.29
	5153.00	0.52	309.58	5151.21	4001.54	20.15	-25.62	-61.90	0.02	0.00	-2.47	531792.00	1709573.56	N 39 57 19.64	W 80 32 9.60	3.29
	5243.00	0.52	305.21	5241.21	4091.54	20.94	-25.13	-62.55	0.04	0.00	-4.86	531792.49	1709572.92	N 39 57 19.65	W 80 32 9.61	3.30
	5332.00	0.39	298.88	5330.21	4180.54	21.62	-24.75	-63.14	0.16	-0.15	-7.11	531792.87	1709572.32	N 39 57 19.65	W 80 32 9.62	3.30
	5422.00	0.46	311.53	5420.20	4270.53	22.26	-24.36	-63.68	0.13	0.08	14.06	531793.26	1709571.78	N 39 57 19.66	W 80 32 9.63	3.31
	5483.00	0.42	304.87	5481.20	4331.53	22.72	-24.07	-64.05	0.11	-0.07	-10.92	531793.55	1709571.41	N 39 57 19.66	W 80 32 9.63	3.31
	5593.00	0.32	227.96	5591.20	4441.53	23.09	-24.05	-64.61	0.42	-0.09	-69.92	531793.58	1709570.86	N 39 57 19.66	W 80 32 9.63	3.32
	5638.00	4.38	177.48	5636.15	4486.48	21.73	-25.85	-64.63	9.30	9.02	-112.18	531791.77	1709570.84	N 39 57 19.64	W 80 32 9.64	3.40
	5685.00	9.01	171.32	5682.82	4533.15	17.15	-31.28	-63.99	9.95	9.85	-13.11	531786.34	1709571.47	N 39 57 19.59	W 80 32 9.63	3.50
	5733.00	13.46	169.32	5729.89	4580.22	9.07	-40.49	-62.39	9.30	9.27	-4.17	531777.13	1709573.08	N 39 57 19.50	W 80 32 9.61	3.59
	5780.00	16.32	171.10	5775.31	4625.64	-1.36	-52.39	-60.35	6.16	6.09	3.79	531765.23	1709575.11	N 39 57 19.38	W 80 32 9.58	3.67
	5825.00	16.86	177.55	5818.44	4668.77	-11.95	-65.16	-59.10	4.26	4.26	14.33	531752.46	1709576.37	N 39 57 19.25	W 80 32 9.56	3.74
	5870.00	14.48	194.42	5861.78	4712.11	-20.40	-77.14	-60.22	11.37	-5.29	37.49	531740.49	1709575.25	N 39 57 19.14	W 80 32 9.57	3.83
	5914.00	13.35	216.94	5904.52	4754.85	-24.76	-86.53	-64.64	12.49	-2.57	51.18	531731.09	1709570.82	N 39 57 19.04	W 80 32 9.63	3.91
	5959.00	14.14	234.44	5948.25	4798.58	-25.51	-93.88	-72.24	9.37	1.76	38.89	531723.74	1709563.22	N 39 57 18.97	W 80 32 9.73	3.97
	6004.00	16.18	248.85	5991.70	4842.03	-23.06	-99.34	-82.56	9.49	4.53	32.02	531718.28	1709552.90	N 39 57 18.91	W 80 32 9.86	4.03
	6049.00	18.41	260.85	6034.68	4885.01	-17.39	-102.74	-95.43	9.32	4.96	26.67	531714.89	1709540.03	N 39 57 18.88	W 80 32 10.02	4.09
	6093.00	21.46	270.93	6076.05	4926.38	-8.55	-103.71	-110.35	10.42	6.93	22.91	531713.91	1709525.12	N 39 57 18.87	W 80 32 10.21	4.15
	6138.00	24.30	279.18	6117.51	4967.84	3.85	-102.10	-127.73	9.51	6.31	18.33	531715.52	1709507.74	N 39 57 18.88	W 80 32 10.44	4.22

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	6183.00	27.46	286.89	6158.01	5008.34	19.55	-97.61	-146.81	10.25	7.02	17.13	531720.02	1709488.66	N 39 57 18.92 W	80 32 10.68	4.28
	6228.00	30.42	293.60	6197.40	5047.73	38.46	-90.03	-167.18	9.75	6.58	14.91	531727.60	1709468.28	N 39 57 19.00 W	80 32 10.95	4.34
	6272.00	33.13	299.55	6234.81	5085.14	59.71	-79.63	-187.86	9.41	6.16	13.52	531737.99	1709447.61	N 39 57 19.10 W	80 32 11.21	4.40
	6317.00	35.72	305.43	6271.93	5122.26	83.95	-65.95	-209.27	9.36	5.76	13.07	531751.67	1709426.20	N 39 57 19.23 W	80 32 11.49	4.46
	6362.00	39.29	310.37	6307.63	5157.96	110.73	-49.10	-230.84	10.37	7.93	10.98	531768.53	1709404.63	N 39 57 19.39 W	80 32 11.77	4.52
	6407.00	42.67	315.79	6341.61	5191.94	140.00	-28.92	-252.34	10.89	7.51	12.04	531788.70	1709383.13	N 39 57 19.59 W	80 32 12.05	4.57
	6451.00	46.12	318.59	6373.05	5223.38	170.73	-6.33	-273.24	9.02	7.84	6.36	531811.29	1709362.23	N 39 57 19.81 W	80 32 12.32	4.63
	6496.00	49.97	320.76	6403.13	5253.46	204.19	19.18	-294.87	9.28	8.56	4.82	531836.80	1709340.60	N 39 57 20.06 W	80 32 12.60	4.68
	6541.00	54.94	321.65	6430.54	5280.87	239.85	46.99	-317.21	11.16	11.04	1.98	531864.61	1709318.26	N 39 57 20.33 W	80 32 12.89	4.73
	6586.00	58.52	322.36	6455.23	5305.56	277.44	76.64	-340.37	8.06	7.96	1.58	531894.25	1709295.11	N 39 57 20.62 W	80 32 13.19	4.78
	6631.00	62.17	322.97	6477.49	5327.82	316.50	107.73	-364.08	8.20	8.11	1.36	531925.34	1709271.40	N 39 57 20.93 W	80 32 13.50	4.83
	6675.00	65.30	323.41	6496.96	5347.29	355.89	139.32	-387.71	7.17	7.11	1.00	531956.93	1709247.77	N 39 57 21.24 W	80 32 13.81	4.87
	6720.00	69.17	323.92	6514.37	5364.70	397.29	172.74	-412.29	8.66	8.60	1.13	531990.35	1709223.19	N 39 57 21.57 W	80 32 14.13	4.92
	6765.00	72.70	323.56	6529.06	5379.39	439.73	207.03	-437.44	7.88	7.84	-0.80	532024.64	1709198.04	N 39 57 21.90 W	80 32 14.46	4.96
	6810.00	76.55	323.75	6540.99	5391.32	483.02	241.97	-463.15	8.57	8.56	0.42	532059.58	1709172.33	N 39 57 22.24 W	80 32 14.80	5.00
	6855.00	80.86	323.56	6549.80	5400.13	527.05	277.50	-489.30	9.59	9.58	-0.42	532095.11	1709146.18	N 39 57 22.59 W	80 32 15.14	5.04
	6899.00	86.11	324.56	6554.79	5405.12	570.64	312.89	-514.95	12.14	11.93	2.27	532130.49	1709120.54	N 39 57 22.94 W	80 32 15.47	5.09
	6944.00	89.59	325.19	6556.48	5406.81	615.44	349.66	-540.82	7.86	7.73	1.40	532167.26	1709094.67	N 39 57 23.30 W	80 32 15.81	5.12
	6989.00	90.41	324.67	6556.48	5406.81	660.28	386.49	-566.67	2.16	1.82	-1.16	532204.09	1709068.81	N 39 57 23.66 W	80 32 16.15	5.15
	7034.00	91.92	324.39	6555.57	5405.90	705.13	423.13	-592.78	3.41	3.36	-0.62	532240.73	1709042.71	N 39 57 24.02 W	80 32 16.49	5.18
	7123.00	91.20	325.13	6553.14	5403.47	793.79	495.79	-644.11	1.16	-0.81	0.83	532313.39	1708991.38	N 39 57 24.73 W	80 32 17.16	5.23
	7213.00	90.48	324.71	6551.83	5402.16	883.45	569.43	-695.83	0.93	-0.80	-0.47	532387.03	1708939.66	N 39 57 25.45 W	80 32 17.83	5.27
	7302.00	90.89	324.58	6550.76	5401.09	972.15	642.02	-747.33	0.48	0.46	-0.15	532459.61	1708888.17	N 39 57 26.16 W	80 32 18.50	5.31
	7392.00	90.14	324.90	6549.95	5400.28	1061.84	715.50	-799.28	0.91	-0.83	0.36	532533.09	1708836.22	N 39 57 26.88 W	80 32 19.18	5.35
	7481.00	89.42	323.98	6550.29	5400.62	1150.57	787.90	-851.04	1.31	-0.81	-1.03	532605.49	1708784.46	N 39 57 27.59 W	80 32 19.86	5.39
	7571.00	88.70	323.44	6551.77	5402.10	1240.37	860.43	-904.30	1.00	-0.80	-0.60	532678.02	1708731.20	N 39 57 28.30 W	80 32 20.55	5.42
	7660.00	89.66	323.49	6553.04	5403.37	1329.20	931.94	-957.27	1.08	1.08	0.06	532749.51	1708678.23	N 39 57 29.01 W	80 32 21.24	5.46
	7750.00	91.24	323.85	6552.34	5402.67	1419.01	1004.44	-1010.59	1.80	1.76	0.40	532822.01	1708624.92	N 39 57 29.72 W	80 32 21.94	5.49
	7839.00	90.24	323.39	6551.19	5401.52	1507.82	1076.08	-1063.37	1.24	-1.12	-0.52	532893.66	1708572.13	N 39 57 30.42 W	80 32 22.63	5.52
	7929.00	90.03	323.05	6550.98	5401.31	1597.68	1148.17	-1117.26	0.44	-0.23	-0.38	532965.74	1708518.25	N 39 57 31.12 W	80 32 23.33	5.55
	8018.00	91.65	322.68	6549.67	5400.00	1686.56	1219.11	-1170.98	1.87	1.82	-0.42	533036.68	1708464.53	N 39 57 31.82 W	80 32 24.03	5.58
	8108.00	90.76	321.71	6547.78	5398.11	1776.47	1290.20	-1226.14	1.46	-0.99	-1.08	533107.76	1708409.38	N 39 57 32.51 W	80 32 24.75	5.61
	8197.00	89.69	322.31	6547.43	5397.76	1865.42	1360.34	-1280.92	1.38	-1.20	0.67	533177.90	1708354.60	N 39 57 33.20 W	80 32 25.46	5.63
	8287.00	91.00	321.98	6546.89	5397.22	1955.35	1431.40	-1336.14	1.50	1.46	-0.37	533248.96	1708299.38	N 39 57 33.90 W	80 32 26.18	5.66
	8376.00	90.82	322.04	6545.47	5395.80	2044.28	1501.54	-1390.92	0.21	-0.20	0.07	533319.09	1708244.60	N 39 57 34.58 W	80 32 26.90	5.68
	8466.00	89.90	320.75	6544.91	5395.24	2134.25	1571.86	-1447.07	1.76	-1.02	-1.43	533389.41	1708188.45	N 39 57 35.27 W	80 32 27.63	5.71
	8555.00	89.45	320.32	6545.41	5395.74	2223.25	1640.57	-1503.64	0.70	-0.51	-0.48	533458.12	1708131.89	N 39 57 35.95 W	80 32 28.36	5.73
	8645.00	91.20	321.64	6544.90	5395.23	2313.23	1710.49	-1560.30	2.44	1.94	1.47	533528.03	1708075.23	N 39 57 36.63 W	80 32 29.10	5.76
	8734.00	91.03	322.37	6543.17	5393.50	2402.16	1780.61	-1615.07	0.84	-0.19	0.82	533598.15	1708020.46	N 39 57 37.32 W	80 32 29.82	5.78
	8824.00	90.69	322.79	6541.82	5392.15	2492.06	1822.08	-1669.76	0.60	-0.38	0.47	533669.62	1707965.78	N 39 57 38.02 W	80 32 30.53	5.80
	8913.00	90.17	322.76	6541.15	5391.48	2580.95	1922.95	-1723.60	0.59	-0.58	-0.03	533740.48	1707911.94	N 39 57 38.71 W	80 32 31.23	5.82
	9003.00	88.59	322.96	6542.13	5392.46	2670.83	1994.69	-1777.93	1.77	-1.76	0.22	533812.22	1707857.61	N 39 57 39.41 W	80 32 31.94	5.84
	9092.00	90.00	323.77	6543.22	5393.55	2759.67	2066.10	-1831.03	1.83	1.58	0.91	533883.62	1707804.51	N 39 57 40.11 W	80 32 32.63	5.86
	9182.00	92.06	324.05	6541.60	5391.93	2849.44	2138.81	-1884.03	2.31	2.29	0.31	533956.33	1707751.51	N 39 57 40.83 W	80 32 33.32	5.88
	9272.00	90.96	324.69	6539.26	5389.59	2938.15	2211.12	-1935.86	1.43	-1.24	0.72	534028.64	1707699.68	N 39 57 41.53 W	80 32 34.00	5.90
	9362.00	88.66	324.07	6537.88	5389.89	3027.88	2284.28	-1988.28	2.65	-2.56	-0.69	534101.79	1707647.27	N 39 57 42.25 W	80 32 34.68	5.93
	9452.00	90.00	323.73	6540.60	5390.93	3116.67	2356.18	-2040.71	1.55	1.51	-0.38	534173.70	1707594.84	N 39 57 42.96 W	80 32 35.37	5.95
	9542.00	90.00	324.04	6540.60	5390.93	3206.47	2428.89	-2093.76	0.34	0.00	0.34	534246.40	1707541.80	N 39 57 43.67 W	80 32 36.06	5.96

05/2014

# 4705101529

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
	9630.00	89.21	323.95	6541.22	5391.55	3296.25	2501.69	-2146.66	0.88	-0.88	-0.10	534319.20	1707488.90	N 39 57 44.38	W 80 32 36.75	5.98
	9719.00	90.72	323.60	6541.27	5391.60	3385.05	2573.49	-2199.25	1.74	1.70	-0.39	534390.99	1707436.31	N 39 57 45.08	W 80 32 37.44	6.00
	9809.00	90.17	324.47	6540.57	5390.90	3474.83	2646.33	-2252.11	1.14	-0.61	0.97	534463.83	1707383.45	N 39 57 45.80	W 80 32 38.12	6.01
	9899.00	90.41	323.34	6540.12	5390.45	3564.61	2719.05	-2305.13	1.28	0.27	-1.26	534536.55	1707330.44	N 39 57 46.51	W 80 32 38.82	6.03
	9989.00	90.58	323.55	6539.34	5389.67	3654.45	2791.34	-2358.73	0.30	0.19	0.23	534608.84	1707276.84	N 39 57 47.22	W 80 32 39.52	6.05
	10079.00	91.68	323.75	6537.56	5387.89	3744.25	2863.81	-2412.06	1.24	1.22	0.22	534681.30	1707223.51	N 39 57 47.93	W 80 32 40.21	6.06
	10169.00	90.58	323.00	6535.79	5386.12	3834.08	2936.03	-2465.74	1.48	-1.22	-0.83	534753.52	1707169.83	N 39 57 48.64	W 80 32 40.91	6.08
	10259.00	90.14	322.66	6535.22	5385.55	3923.96	3007.74	-2520.12	0.62	-0.49	-0.38	534825.23	1707115.46	N 39 57 49.34	W 80 32 41.62	6.09
Final Survey 11Jan13	10270.00	90.03	322.86	6535.21	5385.54	3934.95	3016.50	-2526.77	2.08	-1.00	1.82	534833.98	1707108.80	N 39 57 49.42	W 80 32 41.71	6.10
Projection to Bit	10333.00	90.03	322.86	6535.17	5385.50	3997.87	3066.72	-2564.81	0.00	0.00	0.00	534884.20	1707070.76	N 39 57 49.92	W 80 32 42.20	6.10

Survey Type: Def Survey

Survey Error Model: ISCSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	18.200	Act Sns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	ST01 / Noble Energy SHL-8J-HS ST01 Gyro+MWD 2967' to 10333' MD
	18.200	2967.000	Act Sns	30.000	30.000	SLB_NSG+MSHOT	ST01 / Noble Energy SHL-8J-HS ST01 Gyro+MWD 2967' to 10333'
	2967.000	10270.000	Act Sns	30.000	30.000	SLB_MWD-STD	ST01 / Noble Energy SHL-8J-HS ST01 Gyro+MWD 2967' to 10333'
	10270.000	10333.000	Act Sns	30.000	30.000	SLB_BLIND+TREND	ST01 / Noble Energy SHL-8J-HS ST01 Gyro+MWD 2967' to 10333'

03/07/2014