

JK

Farm Name: Consolidation Coal Company Operator Well No: SHL-8L-HS

LOCATION: Sandhill 8 Elevation: 1,130.89 Quadrangle: Majorsville

District: Sandhill County: MARSHALL
Latitude: _____ Feet South of _____ Deg. _____ Min. _____ Sec. 39.955461
Longitude: _____ Feet South of _____ Deg. _____ Min. _____ Sec. -80.535736



Company: CNX Gas Company LLC	Casing & Tubing	Used in	Left in Well	Cement fill up Cu.
Address: 200 Evergreene Drive Waynesburg, PA 15370	30	40.0	40.0	Cemented in
Agent: Steven Haught	20	464	464	775 sxs / 166 bbls cemented to surface
Inspector: Bill Hendershot	13 3/8	1,051	1,051	835 sxs / 179 bbls cemented to surface
Date Permit Issued: 5/25/2013	9 5/8	3,020	3,020	1056 sxs / 226 bbls cemented to surface
Date Well Work Commenced: 10/8/2012	5-1/2	10,390	10,390	1440 sxs / 360 bbls cemented
Date Well Work Completed: 7/29/2013				
Verbal Plugging:				
Date Permission granted on: 10/8/2012				
Rotary Cable Rig X				
Total Vertical Depth (ft): ORIGINAL HOLE - 6,521.36				
Total Measured Depth (ft): 10,400.00				
Fresh Water Depth (ft): 396				
Salt Water Depth (ft): None				
Is coal being mined in the area (N/Y)? Y				
Coal Depths (ft.): 584 - 588 Pittsburgh Seam				
Void(s) encountered (N/Y) Depth(s) None				

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) NA

Gas: Initial open flow 1047 MCF/d Oil: Initial open flow 0 Bbl/d
Final open flow 301 MCF/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 24 Hours
Static rock Pressure 1179 psig (surface pressure) after 24 Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

Office of Oil and Gas
Jan 3 2014
Environmental Protection

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

[Signature]
Signature Date 1-25-14

Rama L. Aelkenz, Noble Energy, Inc. 1/21/14

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Were core samples taken? Yes__ No_X__

Were cuttings caught during drilling? Yes_X_ No__

Were Electrical, Mechanical or Geophysical logs recorded on this well? If yes, please list: Gamma Ray Logs

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing or Stimulating: Please See Attached

Plug Back Details including Plug Type and Depth(s): Please See Attached

Surface:

Formations Encountered: Please see Attached

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Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Shale	0	584	0	584	
Pittsburgh Coal	584	588	584	588	
Shale and Sandstone	588	1058	588	1058	
Dunkard Sand	1058	1076	1058	1076	
Shale	1076	1230	1076	1230	
Gas Sand	1230	1273	1230	2449	
Shale	1273	1345	1273	2452	
1st Salt Sand	1345	1407	1345	2508	
Shale	1407	1464	1407	2511	
2nd Salt Sand	1464	1496	1464	2558	
Shale	1496	1578	1496	2566	
Maxton Sand	1578	1627	1578	2600	
Shale	1627	1654	1627	2610	
Big Lime	1654	1719	1654	2713	
Big Injun	1719	1892	1719	2754	
Price	1892	2242	1892	3145	
Murrysville	2242	2255	2242	3184	
Shale	2255	2449	2255	4266	
50' Sand	2449	2452	2449	4278	
Shale	2452	2508	2452	2508	
30' Sand	2508	2511	2508	2511	
Shale	2511	2558	2511	2558	
Gordon Stray	2558	2566	2558	2566	
Shale	2566	2600	2566	2600	
Gordon	2600	2610	2600	2610	
Shale	2610	2713	2610	2713	
Fifth Sand	2713	2754	2713	2754	
Shale	2754	3145	2754	3145	
Speechley Sand	3145	3184	3145	3184	
Shale	3184	4217	3184	4266	
Warren Sand	4217	4227	4266	4278	
Shale	4227	4907	4278	5075	
Java Shale	4907	5011	5075	5200	
Pipe Creek Shale	5011	5109	5200	5318	
Angola Shale	5109	5743	5318	6072	
Rhinestreet	5743	6180	6072	6592	
Cashaqua	6180	6281	6592	6714	
Middlesex	6281	6312	6714	6752	
West River	6312	6369	6752	6825	
Burkett	6369	6394	6825	6860	
Tully Limestone	6394	6421	6860	6901	
Hamilton	6421	6535	6901	7177	
Marcellus	6535	6584	7177	not encountered	Gas
Cherry Valley	6543	6545	not encountered	not encountered	
Onondaga	6584		not encountered	not encountered	

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Stage #	Plug Type	Plug Depth
1A,1B,1C	Toe Sleeve	10,257
2	Composite Frac Plug	10,000
3A,3B	Composite Frac Plug	9,700
4A,4B	Composite Frac Plug	9,500
5	Composite Frac Plug	9,295
6A,6B	Composite Frac Plug	9,000
7A,7B	Composite Frac Plug	8,688
8	Composite Frac Plug	8,400
9	Composite Frac Plug	8,042
10A,10B,10C	Composite Frac Plug	7,800
11	Composite Frac Plug	7,500

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Stimulation Summary

Date	Stage #	Formation	Frac Type	Top Perf	Bottom Perf	# of Perfs	BD Press (psi)	ATP (psi)	Avg Rate (bpm)	ISIP (psi)	Frac Gradient	Sand (lbs)	Acid (gals)	Water (gals)
7/19/2013	1	Marcellus	Slickwater	10028	10253	48	6555	8099	88.14	4304	1.09	429464	3000	299,955
7/20/2013	2	Marcellus	Slickwater	9726	9977	40	6212	7610	81.2	4225	1.08	436806	3000	306,285
7/21/2013	3	Marcellus	Slickwater	9525	9677	40	6437	8817	36.4	4884	1.18	1389	6000	94,365
7/22/2013	3RP	Marcellus	Slickwater	9515	9578	30	6160	7522	70.5	4478	1.12	288681	6000	367,152
7/22/2013	4	Marcellus	Slickwater	9325	9477	40	5937	8148	52.6	5507	1.28	7444	6000	228,453
7/22/2013	4RP	Marcellus	Slickwater	9312	9372	30	6168	7935	72.4	4458	1.12	292099	3000	253,314
7/23/2013	5	Marcellus	Slickwater	9026	9277	40	6496	7793	81.69	4401	1.11	436276	3000	306,840
7/24/2013	6	Marcellus	Slickwater	8726	8977	40	6738	7800	65.6	8655	1.76	298466	3000	332,460
7/25/2013	6inj	Marcellus	Slickwater	8723	8977	N/A	N/A	N/A	69.9	4469	N/A	0	3000	3,042
7/25/2013	6RP	Marcellus	Slickwater	8709	8751	32	7444	8768	79.1	5199	1.12	191451	3000	255,125
7/26/2013	7	Marcellus	Slickwater	8426	8677	40	5712	7276	81.3	4792	1.23	178252	3000	320,638
7/26/2013	7RP	Marcellus	Slickwater	8422	8469	40	6265	8550	81	4459	1.17	438096	3000	318,165
7/26/2013	8	Marcellus	Slickwater	8126	8377	40	6188	7589	81.7	4491	1.11	353553	3000	301,394
7/27/2013	9	Marcellus	Slickwater	7826	8032	40	7198	6915	63.5	N/A	1.12	460952	3000	293,206
7/28/2013	10	Marcellus	Slickwater	7526	7777	40	6978	7183	16.87	N/A	N/A	3888	3007	84,277
7/28/2013	10B	Marcellus	Slickwater	7526	7777	40	N/A	7904	16.9	N/A	N/A	0	1000	28,249
7/28/2013	10RP	Marcellus	Slickwater	7567	7736	40	5952	6908	75.8	N/A	N/A	176573	3000	220,850
7/29/2013	11	Marcellus	Slickwater	7226	7477	40	NA	6861	82.3	7303	1.55	378985	3000	280,258

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Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator				100.00%	87.91549%	Density = 8.330
FE ACID - <10% HCL	Halliburton		Hydrochloric acid	7647-01-0	10.00%	0.13430%	
100 MESH	Halliburton				100.00%	1.06381%	
40/70 White	Halliburton				100.00%	9.52012%	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.01707%	
BE-9	Halliburton	Biocide	Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00%	0.00412%	
Scalechek® LP-65 Scale Inhibitor	Halliburton	Scale Inhibitor	Ammonium chloride	12125-02-9	10.00%	0.00252%	
LCA-1	Halliburton	Solvent	Paraffinic solvent	Confidential Business Information	100.00%	0.00346%	
LoSurf-300D	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00002%	
			Ethanol	64-17-5	60.00%	0.00125%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.00063%	
			Naphthalene	91-20-3	5.00%	0.00010%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	0.00010%	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Methanol	67-56-1	60.00%	0.00309%	
			Propargyl alcohol	107-19-7	10.00%	0.00052%	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Acetic acid	64-19-7	60.00%	0.00075%	
			Acetic anhydride	108-24-7	100.00%	0.00125%	
SP BREAKER	Halliburton	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00088%	
WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.00%	0.02140%	

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Noble Energy SHL-8L-HS Gyro+MWD 0' MD to 10400' MD Survey Report

(Def Survey)

Report Date: February 18, 2013 - 09:09 AM
Client: Noble Energy
Field: WV Marshall County (NAD 27)
Structure / Slot: CNX/Noble Energy SHL-8 Pad / SHL-8L-HS
Well: SHL-8L-HS
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Noble Energy SHL-8L-HS Gyro+MWD 0' MD to 10400' MD
Survey Date: February 06, 2013
Tort / AHD / DDI / ERD Ratio: 209.613° / 51170.280 ft / 6.235 / 0.788
Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
Location Lat / Long: N 39° 57' 19.65762", W 80° 32' 8.64523"
Location Grid N/E Y/X: N 531792.415 RUS, E 1709648.209 RUS
CRS Grid Convergence Angle: -0.6606°
Grid Scale Factor: 0.99995724

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 297.720° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: KB
TVD Reference Elevation: 1149.390 ft above MSL
Seabed / Ground Elevation: 1131.470 ft above MSL
Magnetic Declination: -8.712°
Total Gravity Field Strength: 999.3811mgn (9.80665 Based)
Total Magnetic Field Strength: 52745.122 nT
Magnetic Dip Angle: 67.425°
Declination Date: February 06, 2013
Magnetic Declination Model: BGGM 2012
North Reference: Grid North
Grid Convergence Used: -0.6606°
Total Corr Mag North->Grid North: -8.0518°
Local Coord Referenced To: Well Head

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
SHL	0.00	0.00	0.00	0.00	-1149.39	0.00	0.00	0.00	N/A	N/A	N/A	531792.42	1709648.21	N 39 57 19.66	W 80 32 8.65	0.00
	100.00	0.50	318.62	100.00	-1049.39	0.41	0.33	-0.29	0.50	0.50	0.00	531792.74	1709647.92	N 39 57 19.66	W 80 32 8.65	0.00
	200.00	0.50	327.57	199.99	-949.40	1.19	1.02	-0.81	0.08	0.00	8.95	531793.44	1709647.40	N 39 57 19.67	W 80 32 8.66	0.00
	300.00	0.44	328.69	299.99	-849.40	1.90	1.72	-1.24	0.06	-0.06	1.12	531794.13	1709646.96	N 39 57 19.67	W 80 32 8.66	0.13
	400.00	0.22	338.38	399.99	-749.40	2.38	2.23	-1.51	0.23	-0.22	9.69	531794.64	1709646.69	N 39 57 19.68	W 80 32 8.67	0.37
	500.00	0.04	329.93	499.99	-649.40	2.55	2.43	-1.60	0.18	-0.18	-8.45	531794.85	1709646.61	N 39 57 19.68	W 80 32 8.67	0.49
	600.00	0.17	278.47	599.99	-549.40	2.72	2.49	-1.77	0.15	0.13	-51.46	531794.90	1709646.44	N 39 57 19.68	W 80 32 8.67	0.57
	700.00	0.21	288.68	699.99	-449.40	3.04	2.57	-2.09	0.05	0.04	10.21	531794.98	1709646.12	N 39 57 19.68	W 80 32 8.67	0.63
	800.00	0.15	265.92	799.99	-349.40	3.33	2.62	-2.39	0.09	-0.06	-22.76	531795.03	1709645.82	N 39 57 19.68	W 80 32 8.68	0.70
	900.00	0.13	214.09	899.99	-249.40	3.46	2.51	-2.59	0.12	-0.02	-51.83	531794.93	1709645.62	N 39 57 19.68	W 80 32 8.68	0.76
	1000.00	0.51	141.05	999.99	-149.40	3.06	2.07	-2.37	0.49	0.38	-73.04	531794.49	1709645.84	N 39 57 19.68	W 80 32 8.68	0.94
	1100.00	0.63	127.23	1099.98	-49.41	2.11	1.39	-1.65	0.18	0.12	-13.82	531793.81	1709646.56	N 39 57 19.67	W 80 32 8.67	1.07
	1200.00	0.60	115.72	1199.98	50.59	1.05	0.83	-0.74	0.13	-0.03	-11.51	531793.25	1709647.47	N 39 57 19.67	W 80 32 8.65	1.17
	1300.00	0.77	111.26	1299.97	150.58	-0.15	0.36	0.36	0.18	0.17	-4.46	531792.78	1709648.56	N 39 57 19.66	W 80 32 8.64	1.28
	1400.00	0.66	113.64	1399.96	250.57	-1.39	-0.11	1.51	0.11	-0.11	2.38	531792.30	1709649.72	N 39 57 19.66	W 80 32 8.63	1.36
	1500.00	0.64	117.39	1499.95	350.56	-2.52	-0.60	2.53	0.05	-0.02	3.75	531791.82	1709650.74	N 39 57 19.65	W 80 32 8.61	1.42
	1600.00	0.63	118.70	1599.95	450.56	-3.63	-1.12	3.51	0.02	-0.01	1.31	531791.30	1709651.72	N 39 57 19.65	W 80 32 8.60	1.47
	1700.00	0.43	127.59	1699.94	550.55	-4.55	-1.61	4.29	0.22	-0.20	8.89	531790.80	1709652.50	N 39 57 19.64	W 80 32 8.59	1.54
	1800.00	0.63	120.31	1799.94	650.55	-5.47	-2.12	5.06	0.21	0.20	-7.28	531790.30	1709653.27	N 39 57 19.64	W 80 32 8.58	1.60
	1900.00	0.60	114.25	1899.93	750.54	-6.54	-2.61	6.01	0.07	-0.03	-6.06	531789.80	1709654.22	N 39 57 19.63	W 80 32 8.57	1.64
	2000.00	0.56	109.03	1999.93	850.54	-7.54	-2.99	6.95	0.07	-0.04	-5.22	531789.43	1709655.16	N 39 57 19.63	W 80 32 8.56	1.68
	2100.00	0.38	117.13	2099.93	950.54	-8.36	-3.30	7.71	0.19	-0.18	8.10	531789.12	1709655.92	N 39 57 19.63	W 80 32 8.55	1.73
	2200.00	0.37	101.97	2199.92	1050.53	-9.00	-3.51	8.32	0.10	-0.01	-15.16	531788.90	1709656.53	N 39 57 19.62	W 80 32 8.54	1.76
	2300.00	0.30	80.69	2299.92	1150.53	-9.52	-3.54	8.90	0.14	-0.07	-21.28	531788.88	1709657.10	N 39 57 19.62	W 80 32 8.53	1.79

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Comments	MD (ft)	Incl (°)	Azimuth 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
	2400.00	0.32	56.11	2399.92	1250.53	-9.86	-3.34	9.39	0.13	0.02	-24.58	531789.07	1709657.59	N 39 57 19.63 W	80 32 8.52	1.82
	2500.00	0.20	45.71	2499.92	1350.53	-10.05	-3.06	9.74	0.13	-0.12	-10.40	531789.35	1709657.95	N 39 57 19.63 W	80 32 8.52	1.85
	2600.00	0.35	39.39	2599.92	1450.53	-10.17	-2.71	10.06	0.15	0.15	-6.32	531789.71	1709658.27	N 39 57 19.63 W	80 32 8.52	1.88
	2700.00	0.10	22.38	2699.92	1550.53	-10.22	-2.39	10.29	0.26	-0.25	-17.01	531790.03	1709658.50	N 39 57 19.64 W	80 32 8.51	1.91
	2800.00	0.15	8.94	2799.92	1650.53	-10.17	-2.18	10.34	0.06	0.05	-13.44	531790.24	1709658.55	N 39 57 19.64 W	80 32 8.51	1.92
	2900.00	0.21	15.58	2899.92	1750.53	-10.09	-1.87	10.41	0.06	0.06	6.64	531790.54	1709658.62	N 39 57 19.64 W	80 32 8.51	1.94
	2970.00	0.63	30.09	2969.91	1820.52	-10.08	-1.42	10.64	0.61	0.60	20.73	531791.00	1709658.85	N 39 57 19.64 W	80 32 8.51	1.99
	3031.00	0.16	96.15	3030.91	1881.52	-10.17	-1.14	10.89	0.96	-0.77	108.30	531791.28	1709659.10	N 39 57 19.65 W	80 32 8.51	2.05
	3103.00	1.88	290.43	3102.90	1953.51	-9.09	-0.73	9.89	2.83	2.39	-230.17	531791.68	1709658.09	N 39 57 19.65 W	80 32 8.52	2.21
	3198.00	3.84	295.34	3197.78	2048.39	-4.37	1.17	5.55	2.08	2.06	5.17	531793.59	1709653.76	N 39 57 19.67 W	80 32 8.57	2.39
	3294.00	2.27	279.68	3293.64	2144.25	0.65	2.87	0.77	1.84	-1.64	-16.31	531795.28	1709648.98	N 39 57 19.69 W	80 32 8.64	2.55
	3413.00	0.98	212.00	3412.60	2263.21	2.97	2.40	-2.09	1.77	-1.08	-56.87	531794.82	1709646.12	N 39 57 19.68 W	80 32 8.67	2.66
	3511.00	0.89	221.38	3510.59	2361.20	3.21	1.12	-3.04	0.18	-0.09	9.57	531793.53	1709645.17	N 39 57 19.67 W	80 32 8.68	2.69
	3557.00	0.53	205.80	3556.58	2407.19	3.29	0.66	-3.37	0.88	-0.78	-33.87	531793.07	1709644.84	N 39 57 19.66 W	80 32 8.69	2.71
	3605.00	1.75	226.69	3604.57	2455.18	3.52	-0.04	-4.00	2.64	2.54	43.52	531792.37	1709644.21	N 39 57 19.66 W	80 32 8.70	2.76
	3652.00	5.37	235.93	3651.47	2502.08	4.79	-1.77	-6.34	7.77	7.70	19.66	531790.65	1709641.87	N 39 57 19.64 W	80 32 8.73	2.88
	3699.00	9.31	239.22	3698.08	2548.69	7.82	-4.95	-11.43	8.43	8.38	7.00	531787.47	1709636.78	N 39 57 19.61 W	80 32 8.79	3.02
	3746.00	11.57	236.62	3744.30	2594.91	12.09	-9.49	-18.64	4.91	4.81	-5.53	531782.93	1709629.57	N 39 57 19.56 W	80 32 8.88	3.14
	3794.00	14.20	235.26	3791.09	2641.70	17.13	-15.49	-27.50	5.52	5.48	-2.83	531776.92	1709620.71	N 39 57 19.50 W	80 32 9.00	3.26
	3841.00	16.53	234.46	3836.40	2687.01	22.81	-22.66	-37.68	4.98	4.96	-1.70	531769.75	1709610.54	N 39 57 19.43 W	80 32 9.13	3.37
	3889.00	18.60	233.38	3882.16	2732.77	29.20	-31.20	-49.38	4.37	4.31	-2.25	531761.22	1709598.83	N 39 57 19.34 W	80 32 9.27	3.47
	3936.00	20.67	233.16	3926.43	2777.04	36.01	-40.65	-62.03	4.41	4.40	-0.47	531751.77	1709586.18	N 39 57 19.25 W	80 32 9.44	3.57
	3983.00	23.28	233.17	3970.01	2820.62	43.56	-51.19	-76.11	5.55	5.55	0.02	531741.23	1709572.10	N 39 57 19.14 W	80 32 9.61	3.67
	4030.00	25.84	234.48	4012.75	2863.36	52.17	-62.71	-91.88	5.57	5.45	2.79	531729.71	1709556.33	N 39 57 19.03 W	80 32 9.82	3.76
	4078.00	28.10	234.45	4055.53	2906.14	61.96	-75.36	-109.60	4.71	4.71	-0.06	531717.06	1709538.62	N 39 57 18.90 W	80 32 10.04	3.85
	4173.00	32.51	233.02	4137.53	2988.14	82.95	-103.74	-148.21	4.70	4.64	-1.51	531688.68	1709500.00	N 39 57 18.62 W	80 32 10.53	4.00
	4263.00	30.12	231.45	4214.41	3065.02	102.37	-132.36	-185.20	2.81	-2.66	-1.74	531660.06	1709463.02	N 39 57 18.33 W	80 32 11.00	4.11
	4352.00	30.33	231.34	4291.31	3141.92	120.36	-160.32	-220.21	0.24	0.24	-0.12	531632.10	1709428.01	N 39 57 18.05 W	80 32 11.45	4.18
	4442.00	30.87	232.80	4368.78	3219.39	139.26	-188.48	-256.35	1.02	1.60	1.62	531603.95	1709391.88	N 39 57 17.77 W	80 32 11.91	4.25
	4531.00	31.92	236.00	4444.76	3295.37	160.08	-215.44	-294.04	2.21	1.18	3.60	531576.99	1709354.18	N 39 57 17.50 W	80 32 12.39	4.32
	4621.00	32.62	236.33	4520.86	3371.47	182.97	-242.19	-333.96	0.80	0.78	0.37	531550.23	1709314.27	N 39 57 17.23 W	80 32 12.90	4.38
	4710.00	32.43	234.01	4595.90	3446.51	205.03	-269.52	-373.23	1.42	-0.21	-2.61	531522.91	1709274.99	N 39 57 16.95 W	80 32 13.40	4.44
	4800.00	32.55	231.77	4671.82	3522.43	225.59	-298.68	-411.78	1.34	0.13	-2.49	531493.75	1709236.45	N 39 57 16.66 W	80 32 13.89	4.49
	4899.00	31.10	231.41	4747.43	3598.04	244.58	-327.84	-448.55	1.64	-1.63	-0.40	531464.59	1709199.68	N 39 57 16.37 W	80 32 14.36	4.54
	4979.00	30.61	231.02	4824.70	3675.31	262.98	-356.75	-484.53	0.59	-0.54	-0.43	531435.68	1709163.70	N 39 57 16.08 W	80 32 14.81	4.57
	5068.00	34.87	232.06	4900.83	3751.44	281.60	-385.41	-520.62	1.43	1.29	1.17	531407.03	1709127.61	N 39 57 15.79 W	80 32 15.27	4.61
	5158.00	34.20	234.73	4976.33	3826.94	302.85	-414.58	-559.96	3.16	2.71	2.97	531377.85	1709088.27	N 39 57 15.50 W	80 32 15.77	4.67
	5247.00	34.06	235.22	5050.00	3900.61	325.72	-443.24	-600.85	0.35	-0.16	0.55	531349.19	1709047.38	N 39 57 15.21 W	80 32 16.29	4.70
	5337.00	34.41	235.88	5124.41	3975.02	349.36	-471.88	-642.61	0.57	0.39	0.73	531320.56	1709005.63	N 39 57 14.92 W	80 32 16.83	4.73
	5426.00	34.81	235.67	5197.66	4048.27	373.13	-500.31	-684.40	0.47	0.45	-0.24	531292.12	1708963.84	N 39 57 14.64 W	80 32 17.36	4.76
	5516.00	34.87	236.32	5271.53	4122.14	397.49	-529.07	-727.03	0.42	0.07	0.72	531263.37	1708921.22	N 39 57 14.35 W	80 32 17.90	4.79
	5605.00	31.37	233.87	5346.06	4196.67	419.89	-556.84	-766.92	4.21	-3.93	-2.75	531235.59	1708881.32	N 39 57 14.07 W	80 32 18.41	4.84
	5695.00	29.49	234.26	5423.66	4274.27	440.11	-583.60	-803.83	2.10	-2.09	0.43	531208.84	1708844.42	N 39 57 13.80 W	80 32 18.88	4.87
	5784.00	28.88	234.11	5501.36	4351.97	459.45	-608.99	-839.02	0.69	-0.69	-0.17	531183.45	1708809.23	N 39 57 13.54 W	80 32 19.33	4.89
	5875.00	32.56	234.75	5577.86	4428.47	479.89	-635.42	-876.00	4.15	4.13	0.72	531157.02	1708772.25	N 39 57 13.28 W	80 32 19.80	4.93
	5965.00	34.41	234.37	5652.92	4503.53	502.31	-664.22	-916.45	2.07	2.06	-0.42	531128.23	1708731.80	N 39 57 12.99 W	80 32 20.31	4.96
	6052.00	33.75	234.11	5726.63	4577.24	524.58	-693.36	-956.92	0.76	-0.74	-0.29	531099.08	1708691.33	N 39 57 12.70 W	80 32 20.83	4.99
	6148.00	33.71	233.35	5801.48	4652.09	546.49	-722.93	-997.21	0.47	-0.04	-0.84	531069.52	1708651.04	N 39 57 12.40 W	80 32 21.34	5.01

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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 (RUS)	Eastng (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Directional Difficulty Index
	6231.00	33.50	234.67	5875.61	4726.22	568.31	-761.87	-1037.06	0.85	-0.24	1.48	531040.58	1708611.19	N 39 57 12.11 W	80 32 21.85	5.03
	6321.00	33.92	234.20	5950.47	4801.08	590.76	-780.92	-1077.70	0.55	0.47	-0.52	531011.53	1708570.56	N 39 57 11.82 W	80 32 22.37	5.05
	6430.00	32.23	232.07	6041.81	4892.42	616.31	-816.59	-1125.29	1.88	-1.55	-1.95	530975.87	1708522.97	N 39 57 11.46 W	80 32 22.97	5.08
	6475.00	31.89	234.10	6079.95	4930.56	626.54	-830.93	-1144.39	2.51	-0.76	4.51	530961.52	1708503.87	N 39 57 11.32 W	80 32 23.22	5.09
	6520.00	30.74	243.84	6118.42	4969.03	638.61	-842.98	-1164.35	11.52	-2.56	21.64	530949.47	1708483.91	N 39 57 11.19 W	80 32 23.47	5.13
	6564.00	32.01	251.62	6156.00	5006.61	653.33	-851.62	-1185.52	9.64	2.89	17.68	530940.83	1708462.74	N 39 57 11.11 W	80 32 23.74	5.15
	6610.00	32.99	256.93	6194.80	5045.41	671.27	-858.30	-1209.30	6.56	2.13	11.54	530934.16	1708438.97	N 39 57 11.04 W	80 32 24.05	5.18
	6654.00	34.21	263.68	6231.46	5082.07	690.59	-862.37	-1233.27	8.93	2.77	15.34	530930.08	1708415.00	N 39 57 10.99 W	80 32 24.35	5.20
	6698.00	34.32	271.56	6267.84	5118.45	711.99	-863.39	-1257.97	10.08	0.25	17.91	530929.06	1708390.29	N 39 57 10.98 W	80 32 24.67	5.23
	6744.00	35.00	279.22	6305.70	5156.31	736.15	-860.93	-1283.97	9.58	1.48	16.65	530931.53	1708364.30	N 39 57 11.00 W	80 32 25.00	5.25
	6788.00	37.72	282.85	6341.13	5191.74	761.13	-855.91	-1309.56	7.88	6.18	8.25	530936.54	1708338.71	N 39 57 11.05 W	80 32 25.33	5.28
	6834.00	42.98	287.11	6376.19	5226.80	790.17	-848.16	-1338.29	12.91	11.43	9.26	530944.29	1708309.98	N 39 57 11.12 W	80 32 25.70	5.31
	6878.00	49.34	291.44	6406.65	5257.26	821.54	-837.63	-1368.19	16.10	14.45	9.84	530954.82	1708280.08	N 39 57 11.22 W	80 32 26.09	5.34
	6923.00	54.71	296.37	6434.34	5284.95	856.91	-823.22	-1400.57	14.72	11.93	10.96	530969.23	1708247.70	N 39 57 11.36 W	80 32 26.51	5.38
	6967.00	60.94	300.44	6457.77	5308.38	894.12	-805.48	-1433.28	16.18	14.16	9.25	530986.97	1708214.99	N 39 57 11.53 W	80 32 26.93	5.41
	7011.00	65.46	303.38	6477.61	5328.22	933.27	-784.71	-1466.60	11.88	10.27	6.68	531007.74	1708181.68	N 39 57 11.74 W	80 32 27.36	5.44
	7058.00	68.58	307.32	6495.96	5346.57	976.14	-759.67	-1501.87	10.18	6.64	8.38	531032.78	1708146.41	N 39 57 11.98 W	80 32 27.82	5.46
	7102.00	70.36	310.72	6511.39	5362.00	1016.53	-733.73	-1533.87	8.29	4.05	7.73	531058.72	1708114.41	N 39 57 12.23 W	80 32 28.23	5.49
	7147.00	71.22	313.93	6526.20	5376.81	1057.65	-705.12	-1565.28	7.00	1.91	7.13	531087.33	1708083.00	N 39 57 12.51 W	80 32 28.64	5.51
	7192.00	75.10	317.17	6539.24	5389.85	1098.63	-674.37	-1595.42	11.04	8.62	7.20	531118.07	1708052.86	N 39 57 12.81 W	80 32 29.03	5.53
	7236.00	78.98	319.42	6549.11	5399.72	1138.76	-642.37	-1623.94	10.13	8.82	5.11	531150.08	1708024.35	N 39 57 13.12 W	80 32 29.40	5.55
	7281.00	82.84	319.97	6556.22	5406.83	1179.96	-608.49	-1652.67	8.66	8.58	1.22	531183.96	1707995.61	N 39 57 13.46 W	80 32 29.78	5.58
	7326.00	87.80	320.76	6559.89	5410.50	1221.34	-573.96	-1681.27	11.16	11.02	1.76	531218.48	1707967.01	N 39 57 13.79 W	80 32 30.15	5.60
	7371.00	90.14	320.45	6560.69	5411.30	1262.79	-539.19	-1709.82	5.25	5.20	-0.69	531253.25	1707938.46	N 39 57 14.13 W	80 32 30.52	5.62
	7415.00	91.96	321.37	6559.89	5410.50	1303.22	-505.05	-1737.56	4.63	4.14	2.09	531287.39	1707910.72	N 39 57 14.47 W	80 32 30.88	5.64
	7505.00	92.20	321.47	6556.62	5407.23	1385.58	-434.74	-1793.65	0.29	0.27	0.11	531357.70	1707854.64	N 39 57 15.16 W	80 32 31.61	5.66
	7594.00	92.61	321.17	6552.89	5403.50	1467.06	-365.32	-1849.22	0.57	0.46	-0.34	531427.11	1707799.07	N 39 57 15.84 W	80 32 32.34	5.68
	7685.00	90.58	321.57	6550.35	5400.96	1550.38	-294.26	-1906.01	2.27	-2.23	0.44	531498.17	1707742.29	N 39 57 16.53 W	80 32 33.07	5.71
	7773.00	90.65	321.93	6549.41	5400.02	1630.75	-225.16	-1960.49	0.42	0.08	0.41	531567.27	1707687.81	N 39 57 17.21 W	80 32 33.78	5.73
	7863.00	90.93	322.14	6548.17	5398.78	1712.76	-154.21	-2015.85	0.39	0.31	0.23	531638.21	1707632.45	N 39 57 17.90 W	80 32 34.51	5.75
	7953.00	89.18	322.52	6548.08	5398.69	1794.58	-82.97	-2070.84	1.99	-1.94	0.42	531709.44	1707577.46	N 39 57 18.60 W	80 32 35.22	5.77
	8042.00	88.70	322.46	6549.73	5400.34	1875.38	-12.39	-2125.03	0.54	-0.54	-0.07	531780.03	1707523.28	N 39 57 19.29 W	80 32 35.93	5.79
	8132.00	89.86	322.19	6550.86	5401.47	1957.20	58.84	-2180.03	1.32	1.29	-0.30	531851.25	1707468.28	N 39 57 19.99 W	80 32 36.65	5.82
	8221.00	90.96	322.50	6550.22	5400.83	2038.28	129.03	-2234.75	1.27	1.24	-0.29	531921.44	1707413.56	N 39 57 20.68 W	80 32 37.36	5.84
	8310.00	91.17	321.93	6548.57	5399.18	2119.63	198.79	-2289.98	0.71	0.24	-0.67	531991.20	1707358.33	N 39 57 21.36 W	80 32 38.08	5.86
	8400.00	91.58	321.22	6546.41	5397.02	2202.11	288.99	-2346.27	0.47	0.46	-0.12	532061.39	1707302.05	N 39 57 22.05 W	80 32 38.81	5.87
	8490.00	90.34	321.02	6544.90	5395.51	2284.69	339.04	-2402.75	1.40	-1.38	-0.22	532131.44	1707245.57	N 39 57 22.73 W	80 32 39.55	5.89
	8579.00	90.52	321.27	6544.23	5394.84	2366.36	408.34	-2458.58	0.35	0.20	0.28	532200.74	1707189.74	N 39 57 23.41 W	80 32 40.27	5.91
	8669.00	91.03	322.50	6543.02	5393.63	2448.46	479.14	-2514.13	1.48	0.57	1.37	532271.54	1707134.19	N 39 57 24.10 W	80 32 41.00	5.93
	8758.00	90.27	321.77	6542.01	5392.62	2529.49	549.40	-2568.75	1.18	-0.85	-0.82	532341.79	1707079.57	N 39 57 24.79 W	80 32 41.71	5.95
	8848.00	91.34	322.65	6540.74	5391.35	2611.39	620.51	-2623.90	1.54	1.19	0.98	532412.90	1707024.43	N 39 57 25.49 W	80 32 42.43	5.97
	8938.00	91.72	324.28	6538.34	5388.95	2692.42	692.80	-2677.45	1.86	0.42	1.81	532485.18	1706970.88	N 39 57 26.20 W	80 32 43.13	5.99
	9027.00	90.24	325.69	6536.82	5387.43	2771.52	765.68	-2728.51	2.30	-1.66	1.58	532558.06	1706919.82	N 39 57 26.91 W	80 32 43.79	6.00
	9117.00	89.73	324.71	6536.84	5387.45	2851.36	839.58	-2779.87	1.23	-0.57	-1.09	532631.96	1706868.46	N 39 57 27.64 W	80 32 44.46	6.02
	9206.00	90.69	324.65	6536.51	5387.12	2930.69	912.20	-2831.33	1.08	1.08	-0.07	532704.57	1706817.01	N 39 57 28.35 W	80 32 45.14	6.04
	9295.00	90.41	324.22	6535.66	5386.27	3010.18	984.59	-2883.09	0.58	-0.31	0.58	532776.96	1706765.25	N 39 57 29.06 W	80 32 45.81	6.05
	9385.00	90.51	325.05	6534.94	5385.55	3090.43	1057.98	-2935.18	0.93	0.11	0.92	532850.35	1706713.16	N 39 57 29.78 W	80 32 46.49	6.07
	9474.00	90.03	325.42	6534.52	5385.13	3169.36	1131.09	-2985.93	0.68	-0.54	0.42	532923.46	1706662.42	N 39 57 30.49 W	80 32 47.15	6.08

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Directional Difficulty Index
	9564.00	89.59	325.41	6534.82	5385.43	3249.05	1205.19	-3037.01	0.49	-0.49	-0.01	532997.55	1706611.33	N 39 57 31.22 W	80 32 47.82	6.10
	9654.00	89.69	323.81	6535.38	5385.99	3329.32	1278.56	-3089.13	1.78	0.11	-1.78	533070.91	1706559.22	N 39 57 31.94 W	80 32 48.50	6.11
	9743.00	91.48	326.05	6534.47	5385.08	3408.46	1351.39	-3140.26	3.22	2.01	2.52	533143.74	1706508.09	N 39 57 32.65 W	80 32 49.17	6.13
	9833.00	91.24	324.61	6532.34	5382.95	3488.18	1425.38	-3191.44	1.62	-0.27	-1.60	533217.73	1706456.91	N 39 57 33.38 W	80 32 49.84	6.15
	9922.00	91.58	323.17	6530.15	5380.76	3568.03	1497.26	-3243.88	1.66	0.38	-1.62	533289.61	1706404.48	N 39 57 34.08 W	80 32 50.52	6.16
	10012.00	91.31	323.62	6527.88	5378.49	3649.12	1569.49	-3297.52	0.58	-0.30	0.50	533361.83	1706350.83	N 39 57 34.79 W	80 32 51.22	6.18
	10102.00	90.89	322.21	6526.15	5376.76	3730.54	1641.27	-3351.78	1.63	-0.47	-1.57	533433.61	1706296.58	N 39 57 35.49 W	80 32 51.93	6.19
	10191.00	91.10	320.82	6524.60	5375.21	3811.96	1710.92	-3407.16	1.58	0.24	-1.56	533503.26	1706241.20	N 39 57 36.17 W	80 32 52.65	6.21
	10281.00	91.00	321.51	6522.95	5373.56	3894.52	1781.02	-3463.59	0.77	-0.11	0.77	533573.35	1706184.78	N 39 57 36.86 W	80 32 53.38	6.22
Survey 16Feb13	10339.00	90.69	321.39	6522.10	5372.71	3947.61	1826.37	-3499.73	0.57	-0.53	-0.21	533618.70	1706148.64	N 39 57 37.30 W	80 32 53.86	6.23
Projection to Bit	10400.00	90.69	321.39	6521.36	5371.97	4003.47	1874.03	-3537.79	0.00	0.00	0.00	533666.36	1706110.58	N 39 57 37.77 W	80 32 54.35	6.24

Survey Type: Def Survey

Survey Error Model: ISWISA 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	17.920	Act Sins	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / Noble Energy SHL-8L-HS Gyro+MWD 0' MD to 10400' MD
	17.920	3413.000	Act Sins	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Noble Energy SHL-8L-HS Gyro+MWD 0' MD to
	3413.000	10339.000	Act Sins	30.000	30.000	SLB_MWD-STD	Original Borehole / Noble Energy SHL-8L-HS Gyro+MWD 0' MD to
	10339.000	10400.000	Act Sins	30.000	30.000	SLB_BLIND+TREND	Original Borehole / Noble Energy SHL-8L-HS Gyro+MWD 0' MD to

03/07/2014