

State of West Virginia
Department of Environmental Protection
Office of Oil and Gas
Well Operator's Report of Well Work

JK

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

LOCATION: Sandhill 8 Elevation: 1,130.77 Quadrangle: Majorsville

District: Sandhill County: MARSHALL
Latitude: _____ Feet South of _____ Deg. _____ Min. _____ Sec. 39.955497
Longitude: _____ Feet South of _____ Deg. _____ Min. _____ Sec. -80.535644

Company: CNX Gas Company LLC	Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. Ft.
Address: 200 Evergreene Drive Waynesburg, PA 15370	30	40.0	40.0	Cemented in
Agent: Steven Haught	20	458	458	934 sxs / 200 bbls cemented to surface
Inspector: Bill Hendershot	13 3/8	1,042.3	1,042.3	900 sxs / 192 bbls cemented to surface
Date Permit Issued: 5/24/2012	9 5/8	3,026	3,026	1056 sxs / 261 bbls cemented to surface
Date Well Work Commenced: 8/7/2012	5 1/2	14,148	14,148	2166 sxs / 518 bbls cemented
Date Well Work Completed: 7/16/2013				
Verbal Plugging:				
Date Permission granted on: 8/7/2012				
Rotary Cable Rig X				
Total Vertical Depth (ft): Original Hole - 6,496.21				
Total Measured Depth (ft): 14,158.00				
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 1603 MCF/d Oil: Initial open flow 2.0 Bbl/d

Final open flow 1741 MCF/d Final open flow 3.8 Bbl/d

Time of open flow between initial and final tests 24 Hours

Static rock Pressure 1131 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

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 1-27-14

Laura L. Atkins, Noble Energy, Inc. 1/27/14

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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, Bond Log

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	4219	
50' Sand	2449	2452	2449	4229	
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	4219	
Warren Sand	4217	4227	4219	4229	
Shale	4227	4907	4229	4938	
Java Shale	4907	5011	4938	5056	
Pipe Creek Shale	5011	5109	5056	5170	
Angola Shale	5109	5743	5170	5905	
Rhinestreet	5743	6180	5905	6434	
Cashaqua	6180	6281	6434	6568	
Middlesex	6281	6312	6568	6611	
West River	6312	6369	6611	6696	
Burkett	6369	6394	6696	6735	
Tully Limestone	6394	6421	6735	6781	
Hamilton	6421	6535	6781	7101	
Marcellus	6535	6584	7101	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	No Plug	No Plug
2	Composite Frac Plug	13,500
3	Composite Frac Plug	13,200
4	Composite Frac Plug	12,950
5	Composite Frac Plug	12,650
6	Composite Frac Plug	12,450
7	Composite Frac Plug	12,200
8	Composite Frac Plug	11,950
9	Composite Frac Plug	11,650
10A,10B	Composite Frac Plug	11,450
11	Composite Frac Plug	11,190
12	Composite Frac Plug	10,950
13	Composite Frac Plug	10,650
14	Composite Frac Plug	10,400
15	Composite Frac Plug	10,100
16	Composite Frac Plug	9,800
17	Composite Frac Plug	9,500
18	Composite Frac Plug	9,200
19A,19B	Composite Frac Plug	8,900
20A,20B,20C	Composite Frac Plug	8,600
21	Composite Frac Plug	8,000
22	Composite Frac Plug	7,700
23	Composite Frac Plug	7,500
	Bridge Plug	6,000

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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)
7/5/2013	1	Marcellus	Slickwater	13824	14061	48	7407	8382	43.7	4930	1.19	2490	6000	151,443
7/6/2013	1RP	Marcellus	Slickwater	13808	13953	32	6783	8140	41.9	5575	1.29	9641	6000	164,771
7/6/2013	1C	Marcellus	Slickwater	13525	13777	40	NA	7870	81.8	4309	1.10	436831	3000	405,591
7/6/2013	2	Marcellus	Slickwater	13225	13477	40	6369	7902	80.6	4530	1.13	435523	3000	407,322
7/6/2013	3	Marcellus	Slickwater	12975	13177	40	6430	8044	80.6	4424	1.11	366965	3000	369,374
7/7/2013	4	Marcellus	Slickwater	12677	12929	40	6063	7748	81.4	4670	1.15	435031	3000	408,668
7/7/2013	5	Marcellus	Slickwater	12473	12627	40	6211	7545	79.3	4304	1.10	289475	3000	327,006
7/7/2013	6	Marcellus	Slickwater	12225	12427	40	5883	7732	81.8	4463	1.12	363178	3000	364,340
7/7/2013	7	Marcellus	Slickwater	11975	12177	40	6095	7721	81.2	4448	1.12	364496	3000	362,260
7/8/2013	8	Marcellus	Slickwater	11675	11927	40	6841	7668	82.5	4513	1.13	437622	3000	394,281
7/8/2013	9	Marcellus	Slickwater	11473	11627	40	6031	7298	81	4480	1.12	291109	3000	321,658
7/9/2013	10	Marcellus	Slickwater	11225	11427	40	6025	7868	81	7750	1.62	230022	3000	356,072
7/10/2013	10RP	Marcellus	Slickwater	11205	11261	32	NA	8463	45.6	6846	1.48	10429	6000	192,636
7/10/2013	11	Marcellus	Slickwater	10975	11177	40	5727	7664	78.4	4870	1.18	349941	3000	361,469
7/10/2013	11inj	Marcellus	Slickwater	10975	11177	N/A	NA	7405	1.5	N/A	N/A	N/A	N/A	4,598
7/11/2013	12	Marcellus	Slickwater	10677	10927	40	6291	8071	81.2	4696	1.15	409228	3000	417,827
7/12/2013	13	Marcellus	Slickwater	10425	10527	40	5791	7918	80.8	5383	1.26	310404	6000	390,662
7/13/2013	14	Marcellus	Slickwater	10127	10377	40	5846	7701	83.4	4595	1.14	434441	3000	400,324
7/13/2013	15	Marcellus	Slickwater	9826	10077	40	7285	7766	81.2	4616	1.14	436226	3000	394,837
7/13/2013	16	Marcellus	Slickwater	9526	9777	40	6654	7672	81.8	4344	1.10	436646	3000	386,899
7/14/2013	17	Marcellus	Slickwater	9226	9477	40	7695	7849	82.7	4547	1.13	437048	3000	387,727
7/14/2013	18	Marcellus	Slickwater	8926	9177	40	7467	8094	77.4	4794	1.17	440081	3000	414,166
7/15/2013	19	Marcellus	Slickwater	8627	8877	40	7664	7923	47.4	6340	1.40	4502	6000	216,531
7/15/2013	19RP	Marcellus	Slickwater	8636	8685	40	NA	7902	91.1	5689	1.31	435471	3000	391,306
7/15/2013	20	Marcellus	Slickwater	8327	8577	40	6488	8609	44.5	7123	1.52	7903	6000	160,241
7/15/2013	20RP	Marcellus	Slickwater	8313	8373	40	6827	8503	46.1	7407	1.57	18038	6000	188,489
7/16/2013	20C	Marcellus	Slickwater	8027	8277	40	NA	6799	83.2	4503	1.12	434222	3000	382,185
7/16/2013	21	Marcellus	Slickwater	7727	7977	40	6096	6812	83.6	4747	1.16	436875	3000	383,157
7/16/2013	22	Marcellus	Slickwater	7523	7677	40	6987	6919	82.5	4974	1.19	289990	3000	305,715
7/16/2013	23	Marcellus	Slickwater	7227	7477	40	6726	6845	84.5	4599	1.13	442910	3000	375,278

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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%	88.77710%	Density = 8.340
HYDROCHLORIC ACID 5-10%	Halliburton		Hydrochloric acid	7647-01-0	10.00%	0.10694%	
PREMIUM PROP	Halliburton	Proppant	Crystalline silica, cristobalite	14464-46-1	5.00%	0.38904%	
			Sintered bauxite	1318-16-7	100.00%	7.78070%	
SSA-2	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	2.21019%	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.02153%	
BE-9	Halliburton	Biocide	Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00%	0.00418%	
Scalechek® LP-65 Scale Inhibitor	Halliburton	Scale Inhibitor	Ammonium chloride	12125-02-9	10.00%	0.00256%	
BA-40L BUFFERING AGENT	Halliburton	Buffer	Potassium carbonate	584-08-7	60.00%	0.00007%	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Methanol	67-56-1	60.00%	0.00055%	
			Propargyl alcohol	107-19-7	10.00%	0.00009%	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Acetic acid	64-19-7	60.00%	0.00332%	
			Acetic anhydride	108-24-7	100.00%	0.00554%	
LoSurf-300D	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00002%	
			Ethanol	64-17-5	60.00%	0.00112%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.00056%	
			Naphthalene	91-20-3	5.00%	0.00009%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	0.00009%	
SP BREAKER	Halliburton	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00064%	
WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.00%	0.01443%	

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Noble Energy SHL-8G-HS Gyro+MWD 0' to 14158' MD Survey Report
(Def Survey)

Report Date: December 19, 2012 - 09:02 AM
 Client: Noble Energy
 Field: WV Marshall County (NAD 27)
 Structure / Slot: CNX/Noble Energy SHL-8 Pad / SHL-8G-HS
 Well: SHL-8G-HS
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Noble Energy SHL-8G-HS Gyro+MWD 0' to 14158' MD
 Survey Date: December 03, 2012
 Tort / AHD / DDI / ERD Ratio: 225.511 ° / 8640.209 ft / 6.624 / 1.317
 Coordinate Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
 Location Lat / Long: N 39° 57' 19.78674", W 80° 32' 8.32305"
 Location Grid N/E Y/X: N 531805.190 RUS, E 1709673.447 RUS
 CRS Grid Convergence Angle: -0.6605 °
 Grid Scale Factor: 0.99995724

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 332.696 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: KB
 TVD Reference Elevation: 1149.270 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: 52769.955 nT
 Magnetic Dip Angle: 67.444 °
 Declination Date: December 03, 2012
 Magnetic Declination Model: BGM 2012
 North Reference: Grid North
 Grid Convergence Used: -0.6605 °
 Total Corr Mag North->Grid North: -8.0512 °
 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	-1149.27	0.00	0.00	0.00	N/A	N/A	N/A	531805.19	1709673.45	N 39 57 19.79	W 80 32 8.32	0.00
	106.50	0.60	200.53	106.50	-1042.77	-0.37	-0.52	-0.20	0.56	0.56	0.00	531804.67	1709673.25	N 39 57 19.78	W 80 32 8.33	0.00
	206.50	0.48	196.12	206.49	-942.78	-1.03	-1.41	-0.50	0.13	-0.12	-4.41	531803.78	1709672.95	N 39 57 19.77	W 80 32 8.33	0.04
	306.50	0.45	202.61	306.49	-842.78	-1.59	-2.18	-0.76	0.06	-0.03	6.49	531803.01	1709672.68	N 39 57 19.77	W 80 32 8.33	0.26
	406.50	0.41	196.91	406.49	-742.78	-2.10	-2.88	-1.02	0.06	-0.04	-5.70	531802.31	1709672.43	N 39 57 19.76	W 80 32 8.34	0.41
	506.50	0.27	204.45	506.49	-642.78	-2.50	-3.44	-1.22	0.15	-0.14	7.54	531801.75	1709672.23	N 39 57 19.75	W 80 32 8.34	0.56
	606.50	0.54	182.86	606.48	-542.79	-3.05	-4.13	-1.34	0.31	0.27	-21.59	531801.06	1709672.11	N 39 57 19.75	W 80 32 8.34	0.75
	706.50	0.42	167.14	706.48	-442.79	-3.81	-4.95	-1.28	0.18	-0.12	-15.72	531800.24	1709672.16	N 39 57 19.74	W 80 32 8.34	0.88
	806.50	0.40	160.49	806.48	-342.79	-4.52	-5.64	-1.08	0.05	-0.02	-6.65	531799.55	1709672.36	N 39 57 19.73	W 80 32 8.34	0.95
	906.50	0.62	143.38	906.47	-242.80	-5.39	-6.40	-0.64	0.27	0.22	-17.11	531798.79	1709672.80	N 39 57 19.72	W 80 32 8.33	1.08
	1006.50	0.58	138.40	1006.47	-142.80	-6.42	-7.22	0.01	0.07	-0.04	-4.98	531797.97	1709673.46	N 39 57 19.72	W 80 32 8.32	1.16
	1106.50	0.51	145.43	1106.46	-42.81	-7.35	-7.96	0.60	0.10	-0.07	7.03	531797.23	1709674.05	N 39 57 19.71	W 80 32 8.31	1.23
	1206.50	0.60	136.73	1206.46	57.19	-8.30	-8.71	1.21	0.12	0.09	-8.70	531796.48	1709674.66	N 39 57 19.70	W 80 32 8.31	1.31
	1306.50	0.45	143.68	1306.45	157.18	-9.19	-9.41	1.81	0.16	-0.15	6.95	531795.78	1709675.25	N 39 57 19.69	W 80 32 8.30	1.38
	1406.50	0.27	144.21	1406.45	257.18	-9.81	-9.91	2.18	0.18	-0.18	0.53	531795.28	1709675.62	N 39 57 19.69	W 80 32 8.29	1.44
	1506.50	0.25	134.83	1506.45	357.18	-10.25	-10.26	2.47	0.05	-0.02	-9.38	531794.93	1709675.92	N 39 57 19.69	W 80 32 8.29	1.46
	1606.50	0.46	138.41	1606.45	457.18	-10.85	-10.71	2.89	0.21	0.21	3.58	531794.48	1709676.34	N 39 57 19.68	W 80 32 8.28	1.52
	1706.50	0.38	135.89	1706.45	557.18	-11.55	-11.25	3.39	0.08	-0.08	-2.52	531793.94	1709676.83	N 39 57 19.68	W 80 32 8.28	1.56
	1806.50	0.36	145.04	1806.44	657.17	-12.18	-11.75	3.80	0.06	-0.02	9.15	531793.44	1709677.24	N 39 57 19.67	W 80 32 8.27	1.59
	1906.50	0.35	149.62	1906.44	757.17	-12.80	-12.27	4.13	0.03	-0.01	4.58	531792.92	1709677.58	N 39 57 19.67	W 80 32 8.27	1.61
	2006.50	0.37	159.75	2006.44	857.17	-13.42	-12.84	4.40	0.07	0.02	10.13	531792.36	1709677.85	N 39 57 19.66	W 80 32 8.26	1.64
	2106.50	0.20	210.82	2106.44	957.17	-13.91	-13.25	4.64	0.21	-0.17	-27.93	531791.94	1709678.09	N 39 57 19.66	W 80 32 8.26	1.69
	2206.50	0.09	275.54	2206.44	1057.17	-14.03	-13.36	4.69	0.28	-0.11	143.72	531791.83	1709678.14	N 39 57 19.66	W 80 32 8.26	1.73
	2306.50	0.10	57.11	2306.44	1157.17	-13.98	-13.31	4.69	0.18	0.01	141.57	531791.88	1709678.13	N 39 57 19.66	W 80 32 8.26	1.75
	2406.50	0.38	117.96	2406.44	1257.17	-14.24	-13.42	5.05	0.34	0.28	60.85	531791.77	1709678.50	N 39 57 19.65	W 80 32 8.26	1.80

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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 (EW °.')	Directional Difficulty Index
	2506.50	0.29	71.89	2506.44	1357.17	-14.55	-13.49	5.59	0.27	-0.09	-46.07	531791.70	1709679.03	N 39 57 19.65 W	80 32 8.25	1.85
	2606.50	0.19	64.42	2606.44	1457.17	-14.60	-13.34	5.98	0.10	-0.10	-7.47	531791.85	1709679.42	N 39 57 19.66 W	80 32 8.24	1.87
	2706.50	0.30	59.87	2706.43	1557.16	-14.59	-13.14	6.35	0.11	0.11	-4.55	531792.05	1709679.80	N 39 57 19.66 W	80 32 8.24	1.89
	2806.50	0.42	82.54	2806.43	1657.16	-14.70	-12.96	6.94	0.18	0.12	22.67	531792.23	1709680.39	N 39 57 19.66 W	80 32 8.23	1.92
	2839.50	0.60	88.10	2839.43	1690.16	-14.82	-12.94	7.24	0.57	0.55	16.85	531792.25	1709680.68	N 39 57 19.66 W	80 32 8.23	1.95
	3076.00	0.56	60.69	3075.92	1926.65	-15.31	-12.33	9.48	0.12	-0.02	-11.59	531792.86	1709682.93	N 39 57 19.67 W	80 32 8.20	2.02
	3119.00	0.86	34.95	3118.92	1969.65	-15.15	-11.97	9.85	1.00	0.70	-59.86	531793.23	1709683.30	N 39 57 19.67 W	80 32 8.19	2.07
	3167.00	1.30	45.44	3166.91	2017.64	-14.82	-11.29	10.44	1.00	0.92	21.85	531793.90	1709683.89	N 39 57 19.68 W	80 32 8.19	2.12
	3213.00	1.74	39.91	3212.89	2063.62	-14.40	-10.39	11.26	1.01	0.96	-12.02	531794.80	1709684.71	N 39 57 19.69 W	80 32 8.18	2.18
	3259.00	2.34	35.85	3258.86	2109.59	-13.70	-9.09	12.26	1.34	1.30	-8.83	531796.10	1709685.71	N 39 57 19.70 W	80 32 8.16	2.25
	3308.00	3.21	36.09	3307.80	2158.53	-12.63	-7.17	13.65	1.78	1.78	0.49	531798.02	1709687.10	N 39 57 19.72 W	80 32 8.15	2.34
	3356.00	4.07	34.68	3355.71	2206.44	-11.23	-4.68	15.42	1.80	1.73	-2.94	531800.51	1709688.86	N 39 57 19.74 W	80 32 8.12	2.43
	3404.00	4.90	37.16	3403.56	2254.29	-9.55	-1.65	17.62	1.78	1.79	5.17	531803.54	1709691.07	N 39 57 19.77 W	80 32 8.10	2.52
	3451.00	5.74	36.77	3450.36	2301.09	-7.66	1.83	20.24	1.79	1.79	-0.83	531807.02	1709693.69	N 39 57 19.81 W	80 32 8.06	2.61
	3498.00	6.06	31.74	3497.11	2347.84	-5.35	5.83	22.95	1.29	0.68	-10.70	531811.02	1709696.40	N 39 57 19.85 W	80 32 8.03	2.68
	3546.00	5.10	25.51	3544.88	2395.61	-2.76	9.91	25.21	2.36	-2.00	-12.98	531815.10	1709698.65	N 39 57 19.89 W	80 32 8.00	2.77
	3593.00	4.52	21.73	3591.72	2442.45	-0.28	13.51	26.79	1.41	-1.23	-8.04	531818.70	1709700.24	N 39 57 19.92 W	80 32 7.98	2.83
	3640.00	3.62	16.33	3638.60	2489.33	2.01	16.66	27.89	2.08	-1.91	-11.49	531821.85	1709701.34	N 39 57 19.95 W	80 32 7.97	2.89
	3687.00	3.55	13.89	3685.50	2536.23	4.17	19.49	28.66	0.36	-0.15	-5.19	531824.68	1709702.11	N 39 57 19.98 W	80 32 7.96	2.91
	3735.00	3.34	6.15	3733.42	2584.15	6.46	22.33	29.17	1.06	-0.44	-16.13	531827.52	1709702.61	N 39 57 20.01 W	80 32 7.95	2.95
	3782.00	2.95	8.23	3780.35	2631.08	8.59	24.88	29.49	0.86	-0.83	4.43	531830.07	1709702.93	N 39 57 20.04 W	80 32 7.95	2.98
	3830.00	2.13	7.97	3828.30	2679.03	10.32	26.99	29.79	1.71	-1.71	-0.54	531832.18	1709703.23	N 39 57 20.06 W	80 32 7.94	3.02
	3877.00	1.22	12.94	3875.28	2726.01	11.41	28.34	30.02	1.96	1.02	39.69	531833.53	1709703.47	N 39 57 20.07 W	80 32 7.94	3.05
	3924.00	1.24	6.24	3922.27	2773.00	12.22	29.34	30.19	0.31	0.04	-14.26	531834.53	1709703.63	N 39 57 20.08 W	80 32 7.94	3.06
	3972.00	0.83	4.93	3970.26	2820.99	12.95	30.20	30.28	0.86	-0.85	-2.73	531835.39	1709703.72	N 39 57 20.09 W	80 32 7.94	3.08
	4019.00	0.90	349.26	4017.25	2867.98	13.59	30.90	30.24	0.52	0.15	-33.34	531836.09	1709703.68	N 39 57 20.10 W	80 32 7.94	3.09
	4066.00	0.69	6.16	4064.25	2914.98	14.18	31.55	30.20	0.67	-0.45	35.96	531836.73	1709703.64	N 39 57 20.10 W	80 32 7.94	3.10
	4114.00	1.18	25.21	4112.24	2962.97	14.72	32.28	30.44	1.20	1.02	51.74	531837.47	1709703.88	N 39 57 20.11 W	80 32 7.94	3.12
	4161.00	1.57	49.53	4159.23	3009.96	15.16	33.14	31.13	1.48	0.83	51.74	531838.32	1709704.58	N 39 57 20.12 W	80 32 7.93	3.14
	4215.00	2.61	61.33	4213.19	3063.92	15.36	34.21	32.78	2.07	1.93	21.85	531839.39	1709706.22	N 39 57 20.13 W	80 32 7.91	3.18
	4256.00	3.79	66.13	4254.13	3104.86	15.30	35.20	34.83	2.95	2.88	11.71	531840.39	1709708.28	N 39 57 20.14 W	80 32 7.88	3.22
	4303.00	5.03	67.43	4300.99	3151.72	15.04	36.62	38.16	2.65	2.64	2.77	531841.81	1709711.60	N 39 57 20.15 W	80 32 7.84	3.26
	4350.00	6.86	65.53	4347.73	3198.46	14.73	38.57	42.62	3.92	3.89	-4.04	531843.76	1709716.06	N 39 57 20.17 W	80 32 7.78	3.32
	4395.00	8.52	63.07	4392.33	3243.06	14.57	41.20	48.03	3.76	3.69	-5.47	531846.39	1709721.48	N 39 57 20.20 W	80 32 7.71	3.38
	4440.00	10.26	61.63	4436.72	3287.45	14.63	44.61	54.53	3.90	3.87	-3.20	531849.80	1709727.98	N 39 57 20.23 W	80 32 7.63	3.44
	4485.00	12.20	59.90	4480.86	3331.59	14.93	48.90	62.17	4.38	4.31	-3.84	531854.09	1709735.62	N 39 57 20.28 W	80 32 7.53	3.51
	4530.00	13.87	58.24	4524.70	3375.43	15.58	54.13	70.87	3.80	3.71	-3.69	531859.31	1709744.32	N 39 57 20.33 W	80 32 7.42	3.57
	4574.00	15.59	57.50	4567.25	3417.98	16.53	60.08	80.35	3.93	3.91	-1.68	531865.27	1709753.79	N 39 57 20.39 W	80 32 7.30	3.63
	4619.00	16.96	56.61	4610.45	3461.18	17.77	66.94	90.93	3.09	3.04	-1.98	531872.13	1709764.37	N 39 57 20.46 W	80 32 7.17	3.69
	4664.00	18.38	55.94	4653.32	3504.05	19.30	74.53	102.28	3.19	3.16	-1.49	531879.71	1709775.73	N 39 57 20.53 W	80 32 7.02	3.75
	4709.00	19.72	54.94	4695.86	3546.59	21.16	82.86	114.38	3.06	2.98	-2.22	531888.05	1709787.82	N 39 57 20.62 W	80 32 6.87	3.81
	4753.00	20.88	53.47	4737.13	3587.86	23.42	91.79	126.75	2.88	2.64	-3.34	531896.98	1709800.20	N 39 57 20.71 W	80 32 6.71	3.86
	4797.00	22.03	51.88	4778.08	3628.81	26.23	101.55	139.55	2.93	2.61	-3.61	531906.74	1709812.99	N 39 57 20.81 W	80 32 6.55	3.91
	4843.00	23.34	51.61	4820.52	3671.25	29.60	112.54	153.48	2.86	2.85	-0.59	531917.72	1709826.92	N 39 57 20.92 W	80 32 6.37	3.96
	4888.00	24.71	51.57	4860.70	3711.43	33.05	123.67	167.51	3.11	3.11	-0.09	531928.85	1709840.95	N 39 57 21.03 W	80 32 6.19	4.01
	4932.00	26.10	52.57	4901.35	3752.08	36.61	135.53	182.74	3.23	3.09	2.22	531940.72	1709856.18	N 39 57 21.15 W	80 32 6.00	4.06
	4977.00	27.55	52.60	4941.51	3792.24	40.17	147.87	198.87	3.22	3.22	0.07	531953.05	1709872.31	N 39 57 21.27 W	80 32 5.79	4.10
	5022.00	28.92	52.42	4981.15	3831.88	43.94	160.83	215.76	3.05	3.04	-0.40	531966.01	1709889.20	N 39 57 21.40 W	80 32 5.58	4.15

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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
	5066.00	30.16	51.86	5019.43	3870.16	47.91	174.14	232.89	2.89	2.82	-1.27	531979.32	1709906.32	N 39 57 21.53 W	80 32 5.36	4.19
	5112.00	31.51	51.03	5058.93	3909.66	52.52	188.84	251.32	3.08	2.93	-1.80	531994.02	1709924.76	N 39 57 21.68 W	80 32 5.12	4.24
	5156.00	30.42	49.84	5096.66	3947.39	57.32	203.26	268.78	2.84	-2.48	-2.70	532008.44	1709942.21	N 39 57 21.83 W	80 32 4.90	4.28
	5201.00	28.56	48.45	5135.83	3986.56	62.50	217.74	285.54	4.40	-4.13	-3.09	532022.92	1709958.97	N 39 57 21.97 W	80 32 4.69	4.32
	5246.00	27.73	50.70	5175.51	4026.24	67.32	231.51	301.69	2.99	-1.84	5.00	532036.69	1709975.12	N 39 57 22.11 W	80 32 4.48	4.35
	5290.00	27.96	54.43	5214.41	4065.14	70.94	243.99	318.00	3.99	0.52	8.48	532049.17	1709991.43	N 39 57 22.23 W	80 32 4.28	4.39
	5335.00	28.72	54.55	5254.02	4104.75	73.98	256.40	335.39	1.69	1.69	0.27	532061.58	1710008.82	N 39 57 22.36 W	80 32 4.05	4.42
	5380.00	29.51	53.31	5293.34	4144.07	77.32	269.29	353.09	2.21	1.76	-2.76	532074.47	1710026.52	N 39 57 22.49 W	80 32 3.83	4.44
	5425.00	30.43	53.06	5332.32	4183.05	81.04	282.76	371.08	2.06	2.04	-0.56	532087.94	1710044.51	N 39 57 22.62 W	80 32 3.60	4.47
	5470.00	31.41	53.59	5370.92	4221.65	84.80	296.57	389.63	2.26	2.18	1.18	532101.75	1710063.06	N 39 57 22.76 W	80 32 3.36	4.50
	5514.00	32.54	54.66	5408.25	4258.98	88.27	310.22	408.51	2.87	2.57	2.43	532115.40	1710081.94	N 39 57 22.90 W	80 32 3.12	4.53
	5559.00	31.85	53.34	5446.33	4297.06	91.89	324.31	427.91	2.19	-1.53	-2.93	532129.49	1710101.33	N 39 57 23.04 W	80 32 2.88	4.55
	5604.00	31.58	52.04	5484.61	4335.34	96.00	338.65	446.72	1.63	-0.60	-2.89	532143.82	1710120.15	N 39 57 23.18 W	80 32 2.64	4.58
	5647.00	30.33	51.44	5521.48	4372.21	100.20	352.34	464.09	2.99	-2.91	-1.40	532157.52	1710137.51	N 39 57 23.32 W	80 32 2.42	4.60
	5692.00	29.77	51.94	5560.43	4411.16	104.51	366.31	481.77	1.36	-1.24	1.11	532171.49	1710155.19	N 39 57 23.46 W	80 32 2.19	4.62
	5738.00	30.16	53.73	5600.29	4451.02	108.44	380.19	500.08	2.12	0.85	3.89	532185.36	1710173.50	N 39 57 23.60 W	80 32 1.96	4.65
	5782.00	30.84	54.22	5638.20	4488.93	111.82	393.32	518.14	1.65	1.55	1.11	532198.49	1710191.56	N 39 57 23.73 W	80 32 1.73	4.66
	5827.00	31.69	54.40	5676.66	4527.39	115.23	406.95	537.11	1.90	1.89	0.40	532212.12	1710210.53	N 39 57 23.87 W	80 32 1.49	4.69
	5871.00	31.92	53.37	5714.06	4564.79	118.78	420.61	555.84	1.34	0.52	-2.34	532225.79	1710229.26	N 39 57 24.01 W	80 32 1.25	4.70
	5917.00	31.93	53.96	5753.10	4603.83	122.60	435.03	575.44	0.68	0.02	1.28	532240.20	1710248.86	N 39 57 24.15 W	80 32 1.00	4.72
	5961.00	31.56	53.87	5790.52	4641.25	126.13	448.66	594.14	0.85	-0.84	-0.20	532253.83	1710267.56	N 39 57 24.29 W	80 32 0.76	4.74
	6006.00	32.33	54.66	5828.70	4679.43	129.62	462.57	613.47	1.95	1.71	1.76	532267.74	1710286.89	N 39 57 24.43 W	80 32 0.51	4.76
	6050.00	33.21	54.68	5865.70	4716.43	132.95	476.34	632.90	2.00	2.00	0.05	532281.51	1710306.32	N 39 57 24.57 W	80 32 0.27	4.77
	6096.00	34.18	54.22	5903.97	4754.70	136.61	491.18	653.66	2.18	2.11	-1.00	532296.34	1710327.08	N 39 57 24.71 W	80 32 0.00	4.79
	6141.00	35.41	54.66	5940.92	4791.65	140.30	506.11	674.55	2.79	2.73	0.98	532311.28	1710347.97	N 39 57 24.86 W	80 31 59.74	4.82
	6185.00	35.36	54.91	5976.79	4827.52	143.80	520.80	695.37	0.35	-0.11	0.57	532325.97	1710368.79	N 39 57 25.01 W	80 31 59.47	4.83
	6229.00	35.57	53.98	6012.63	4863.36	147.47	535.65	716.14	1.32	0.48	-2.11	532340.81	1710389.55	N 39 57 25.16 W	80 31 59.21	4.85
	6274.00	35.22	51.33	6049.32	4900.05	152.01	551.45	736.86	3.50	-0.78	-5.89	532356.62	1710410.27	N 39 57 25.32 W	80 31 58.94	4.87
	6319.00	34.97	42.61	6086.16	4936.89	159.00	569.06	755.73	11.15	-0.56	-19.38	532374.23	1710429.14	N 39 57 25.50 W	80 31 58.70	4.91
	6364.00	34.83	36.52	6123.08	4973.81	169.10	588.89	772.11	7.75	-0.31	-13.53	532394.05	1710445.53	N 39 57 25.69 W	80 31 58.50	4.94
	6408.00	36.12	31.82	6158.92	5009.65	181.30	610.01	786.43	6.86	2.93	-10.68	532415.17	1710459.84	N 39 57 25.90 W	80 31 58.32	4.96
	6456.00	37.89	29.16	6197.25	5047.98	196.71	634.91	801.07	4.97	3.69	-5.54	532440.07	1710474.49	N 39 57 26.15 W	80 31 58.13	4.99
	6501.00	40.40	29.00	6232.15	5082.88	212.43	659.73	814.88	5.58	5.58	-0.36	532464.89	1710488.29	N 39 57 26.40 W	80 31 57.96	5.01
	6589.00	45.22	33.65	6296.70	5147.43	243.44	710.71	846.04	6.55	5.48	5.28	532515.87	1710519.45	N 39 57 26.91 W	80 31 57.56	5.06
	6635.00	46.38	24.08	6328.81	5179.54	261.78	739.54	861.90	15.12	2.52	-20.80	532544.70	1710535.31	N 39 57 27.19 W	80 31 57.37	5.11
	6678.00	49.27	16.00	6357.70	5208.43	283.38	769.45	872.75	15.45	6.72	-18.79	532574.60	1710546.16	N 39 57 27.49 W	80 31 57.23	5.15
	6722.00	50.86	11.04	6385.96	5236.69	308.90	802.23	880.62	9.37	3.61	-11.27	532607.39	1710554.02	N 39 57 27.81 W	80 31 57.13	5.18
	6766.00	54.26	5.16	6412.72	5263.45	337.38	836.79	885.49	13.12	7.73	-13.36	532641.95	1710558.90	N 39 57 28.16 W	80 31 57.08	5.21
	6811.00	59.25	0.15	6437.39	5288.12	369.98	874.36	887.19	14.47	11.09	-11.13	532679.51	1710560.60	N 39 57 28.53 W	80 31 57.06	5.25
	6856.00	63.79	355.41	6458.85	5309.58	405.79	913.86	885.62	13.69	10.09	-10.53	532719.01	1710559.03	N 39 57 28.92 W	80 31 57.09	5.28
	6901.00	67.45	351.20	6477.43	5328.16	444.15	954.54	880.83	11.78	8.13	-9.36	532759.69	1710554.23	N 39 57 29.32 W	80 31 57.15	5.31
	6945.00	69.90	347.21	6493.43	5344.16	483.44	994.79	873.14	10.12	5.57	-9.07	532799.93	1710546.55	N 39 57 29.72 W	80 31 57.26	5.34
	6990.00	72.43	344.53	6507.96	5358.69	524.90	1036.08	862.74	7.96	5.62	-5.96	532841.22	1710536.15	N 39 57 30.12 W	80 31 57.40	5.37
	7035.00	75.25	342.06	6520.49	5371.22	567.38	1077.47	850.31	8.19	6.27	-5.49	532882.61	1710523.72	N 39 57 30.53 W	80 31 57.56	5.39
	7080.00	77.60	339.58	6531.05	5381.78	610.67	1118.78	835.94	7.48	5.22	-5.51	532923.92	1710509.35	N 39 57 30.94 W	80 31 57.75	5.42
	7125.00	80.12	335.58	6539.75	5390.48	654.65	1159.58	819.50	10.36	5.60	-8.89	532964.71	1710492.51	N 39 57 31.34 W	80 31 57.98	5.44
	7169.00	81.72	331.45	6546.70	5397.43	698.09	1198.45	799.72	9.96	3.64	-9.39	533003.59	1710473.13	N 39 57 31.72 W	80 31 58.23	5.47
	7214.00	84.39	327.84	6552.14	5402.87	742.68	1236.99	777.15	9.93	5.93	-8.02	533042.12	1710450.56	N 39 57 32.10 W	80 31 58.53	5.49

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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
	7259.00	87.46	323.71	6555.34	5406.07	787.23	1274.09	751.91	11.42	6.82	-9.18	533079.22	1710425.32	N 39 57 32.46 W	80 31 58.86	5.52
	7304.00	88.87	321.09	6556.78	5407.51	831.47	1309.72	724.47	6.61	3.13	-5.82	533114.85	1710397.88	N 39 57 32.81 W	80 31 59.21	5.54
	7385.00	89.00	318.92	6558.28	5409.01	910.48	1371.76	672.42	2.68	0.16	-2.68	533176.89	1710345.84	N 39 57 33.42 W	80 31 59.89	5.57
	7475.00	89.62	318.86	6559.37	5410.10	997.87	1439.56	613.25	0.69	0.69	-0.07	533244.69	1710286.67	N 39 57 34.08 W	80 32 0.66	5.60
	7560.00	90.03	319.03	6559.63	5410.36	1080.43	1503.66	557.42	0.52	0.48	0.20	533308.78	1710230.85	N 39 57 34.71 W	80 32 1.39	5.62
	7649.00	91.07	319.42	6558.77	5409.50	1166.98	1571.05	499.30	1.25	1.17	0.44	533376.17	1710172.73	N 39 57 35.37 W	80 32 2.14	5.65
	7740.00	91.30	318.89	6556.89	5407.62	1255.43	1639.88	439.80	0.63	0.25	-0.58	533444.99	1710113.23	N 39 57 36.04 W	80 32 2.92	5.67
	7831.00	91.92	319.01	6554.33	5405.06	1343.79	1708.48	380.06	0.69	0.68	0.13	533513.59	1710053.49	N 39 57 36.71 W	80 32 3.70	5.70
	7921.00	92.37	318.51	6550.97	5401.70	1431.08	1776.10	320.78	0.75	0.50	-0.56	533581.21	1709994.21	N 39 57 37.37 W	80 32 4.47	5.72
	8012.00	93.09	318.87	6546.63	5397.36	1519.27	1844.38	260.77	0.88	0.79	0.40	533649.49	1709934.21	N 39 57 38.04 W	80 32 5.25	5.74
	8101.00	93.78	318.37	6541.30	5392.03	1605.44	1911.04	202.04	0.96	0.78	-0.56	533716.14	1709875.48	N 39 57 38.69 W	80 32 6.01	5.77
	8191.00	94.23	318.90	6535.01	5385.74	1692.53	1978.42	142.71	0.77	0.50	0.59	533783.52	1709816.15	N 39 57 39.35 W	80 32 6.78	5.79
	8281.00	92.20	318.23	6529.97	5380.70	1779.67	2045.78	83.25	2.37	-2.26	-0.74	533850.88	1709756.69	N 39 57 40.01 W	80 32 7.56	5.81
	8370.00	88.80	317.75	6529.19	5379.92	1865.73	2111.90	23.70	3.86	-3.82	-0.54	533917.00	1709697.14	N 39 57 40.66 W	80 32 8.33	5.84
	8460.00	90.41	318.71	6529.81	5380.54	1952.87	2179.02	-36.25	2.08	1.79	1.07	533984.11	1709637.20	N 39 57 41.32 W	80 32 9.11	5.86
	8549.00	90.41	319.80	6529.17	5379.90	2039.43	2246.45	-94.34	1.22	0.00	1.22	534051.54	1709579.11	N 39 57 41.98 W	80 32 9.87	5.88
	8639.00	90.14	320.71	6528.74	5379.47	2127.32	2315.65	-151.88	1.05	-0.30	1.01	534120.73	1709521.57	N 39 57 42.65 W	80 32 10.62	5.90
	8728.00	89.79	321.49	6528.80	5379.53	2214.50	2384.91	-207.77	0.96	-0.39	0.88	534189.99	1709465.69	N 39 57 43.33 W	80 32 11.34	5.92
	8818.00	89.38	321.91	6529.45	5380.18	2302.85	2455.54	-263.55	0.65	-0.46	0.47	534260.62	1709409.91	N 39 57 44.02 W	80 32 12.07	5.94
	8907.00	89.35	321.87	6530.43	5381.16	2390.26	2525.56	-318.47	0.06	-0.03	-0.04	534330.64	1709354.99	N 39 57 44.71 W	80 32 12.79	5.95
	8997.00	89.42	321.92	6531.40	5382.13	2478.66	2596.37	-374.01	0.10	0.08	0.06	534401.45	1709299.46	N 39 57 45.40 W	80 32 13.51	5.97
	9087.00	89.28	321.73	6532.42	5383.15	2567.04	2667.12	-429.63	0.26	-0.16	-0.21	534472.19	1709243.84	N 39 57 46.09 W	80 32 14.23	5.98
	9176.00	89.52	322.77	6533.35	5384.08	2654.56	2737.49	-484.11	1.20	0.27	1.17	534542.56	1709189.35	N 39 57 46.78 W	80 32 14.95	6.00
	9265.00	89.48	322.77	6534.13	5384.86	2742.22	2808.35	-537.96	0.04	-0.04	0.00	534613.41	1709135.51	N 39 57 47.48 W	80 32 15.65	6.02
	9355.00	89.31	323.05	6535.08	5385.81	2830.91	2880.14	-592.23	0.36	-0.19	0.31	534685.20	1709081.24	N 39 57 48.18 W	80 32 16.35	6.03
	9444.00	89.35	323.16	6536.12	5386.85	2918.66	2951.31	-645.66	0.13	0.04	0.12	534756.37	1709027.82	N 39 57 48.88 W	80 32 17.05	6.05
	9533.00	90.38	324.47	6536.33	5387.06	3008.57	3024.75	-699.38	1.83	1.13	1.44	534829.81	1708974.10	N 39 57 49.60 W	80 32 17.75	6.06
	9623.00	90.34	325.12	6535.78	5386.51	3095.73	3096.66	-750.11	0.74	-0.05	0.74	534901.71	1708923.37	N 39 57 50.30 W	80 32 18.41	6.08
	9713.00	90.52	324.46	6535.11	5385.84	3184.87	3170.19	-802.00	0.76	0.20	-0.73	534975.23	1708871.48	N 39 57 51.02 W	80 32 19.09	6.09
	9803.00	90.34	323.93	6534.43	5385.16	3273.88	3243.18	-854.65	0.62	-0.20	-0.59	535048.22	1708818.83	N 39 57 51.74 W	80 32 19.78	6.11
	9892.00	90.52	323.37	6533.76	5384.49	3314.85	3314.85	-907.40	0.66	0.20	-0.63	535119.90	1708766.08	N 39 57 52.44 W	80 32 20.47	6.12
	9982.00	90.58	323.16	6532.90	5383.63	3450.55	3386.98	-961.23	0.24	0.07	-0.23	535192.02	1708712.26	N 39 57 53.15 W	80 32 21.17	6.14
	10072.00	90.48	322.29	6532.07	5382.80	3539.18	3458.59	-1015.74	0.97	-0.11	-0.97	535263.63	1708657.75	N 39 57 53.85 W	80 32 21.88	6.15
	10161.00	90.58	322.35	6531.24	5381.97	3626.72	3529.03	-1070.14	0.13	0.11	0.07	535334.06	1708603.36	N 39 57 54.54 W	80 32 22.59	6.16
	10251.00	90.48	322.40	6530.41	5381.14	3715.26	3600.31	-1125.08	0.12	-0.11	0.06	535405.33	1708548.42	N 39 57 55.24 W	80 32 23.30	6.17
	10341.00	90.52	323.04	6529.63	5380.36	3803.90	3671.91	-1179.59	0.71	0.04	0.71	535476.94	1708493.91	N 39 57 55.94 W	80 32 24.01	6.19
	10430.00	90.31	322.86	6528.98	5379.71	3891.61	3742.94	-1233.21	0.31	-0.24	-0.20	535547.97	1708440.29	N 39 57 56.63 W	80 32 24.71	6.20
	10520.00	90.45	323.05	6528.38	5379.11	3980.31	3814.78	-1287.43	0.26	0.16	0.21	535619.80	1708386.07	N 39 57 57.34 W	80 32 25.42	6.21
	10609.00	90.55	323.91	6527.61	5378.34	4068.16	3886.30	-1340.39	0.97	0.11	0.97	535691.31	1708333.11	N 39 57 58.04 W	80 32 26.11	6.23
	10699.00	90.38	324.03	6526.88	5377.61	4157.12	3959.08	-1393.33	0.23	-0.19	0.13	535764.09	1708280.18	N 39 57 58.75 W	80 32 26.80	6.24
	10788.00	90.58	324.66	6526.13	5376.86	4245.17	4031.39	-1445.21	0.74	0.22	0.71	535836.40	1708228.31	N 39 57 59.46 W	80 32 27.48	6.25
	10878.00	90.79	324.42	6525.06	5375.79	4334.25	4104.69	-1497.41	0.35	0.23	-0.27	535909.70	1708176.10	N 39 58 0.18 W	80 32 28.16	6.26
	10968.00	90.86	324.19	6523.76	5374.49	4423.28	4177.78	-1549.92	0.27	0.08	-0.26	535982.78	1708123.60	N 39 58 0.89 W	80 32 28.85	6.27
	11057.00	90.79	323.46	6522.48	5373.21	4511.20	4249.61	-1602.45	0.82	-0.08	-0.82	536054.61	1708071.07	N 39 58 1.60 W	80 32 29.53	6.28
	11146.00	90.79	323.39	6521.25	5371.98	4599.03	4321.08	-1655.48	0.08	0.00	-0.08	536126.08	1708018.05	N 39 58 2.30 W	80 32 30.22	6.30
	11236.00	90.86	323.15	6519.95	5370.68	4687.81	4393.20	-1709.29	0.28	0.08	-0.27	536198.20	1707964.23	N 39 58 3.00 W	80 32 30.92	6.31
	11326.00	90.69	322.37	6518.75	5369.48	4775.47	4464.05	-1763.15	0.90	-0.19	-0.88	536269.04	1707910.38	N 39 58 3.70 W	80 32 31.63	6.32
	11416.00	90.79	321.71	6517.59	5368.32	4863.91	4535.00	-1818.50	0.74	0.11	-0.73	536339.99	1707855.03	N 39 58 4.39 W	80 32 32.35	6.33
	11506.00	91.13	321.78	6516.10	5366.83	4951.27	4604.88	-1873.60	0.39	0.38	0.08	536409.87	1707799.93	N 39 58 5.08 W	80 32 33.07	6.34

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVSS (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
	11594.00	91.10	321.61	6514.35	5365.08	5039.60	4675.49	-1929.38	0.19	-0.03	-0.19	536480.47	1707744.16	N 39 58 5.77 W	80 32 33.79	6.35
	11683.00	90.93	321.42	6512.77	5363.50	5126.90	4745.15	-1984.75	0.29	-0.19	-0.21	536550.13	1707688.78	N 39 58 6.45 W	80 32 34.51	6.36
	11773.00	90.41	321.98	6511.72	5362.45	5215.24	4815.77	-2040.53	0.85	-0.58	0.62	536620.75	1707633.01	N 39 58 7.14 W	80 32 35.24	6.37
	11863.00	90.38	321.86	6511.10	5361.83	5303.65	4886.62	-2096.04	0.14	-0.03	-0.13	536691.59	1707577.51	N 39 58 7.84 W	80 32 35.97	6.38
	11952.00	90.45	322.71	6510.45	5361.18	5391.18	4957.02	-2150.48	0.96	0.08	0.96	536761.99	1707523.07	N 39 58 8.53 W	80 32 36.67	6.39
	12042.00	90.41	322.48	6509.78	5360.51	5479.78	5028.51	-2205.15	0.26	-0.04	-0.26	536833.47	1707468.40	N 39 58 9.23 W	80 32 37.39	6.40
	12132.00	90.55	323.20	6509.02	5359.75	5568.45	5100.23	-2259.51	0.81	0.16	0.80	536905.19	1707414.04	N 39 58 9.93 W	80 32 38.10	6.41
	12221.00	90.38	323.27	6508.30	5359.03	5656.24	5171.53	-2312.78	0.21	-0.19	0.08	536976.49	1707360.77	N 39 58 10.63 W	80 32 38.79	6.42
	12310.00	90.62	323.59	6507.52	5358.25	5744.07	5243.00	-2365.80	0.45	0.27	0.36	537047.96	1707307.75	N 39 58 11.33 W	80 32 39.48	6.43
	12400.00	90.52	323.87	6506.63	5357.36	5832.97	5315.56	-2419.04	0.33	-0.11	0.31	537120.51	1707254.51	N 39 58 12.04 W	80 32 40.18	6.44
	12489.00	90.14	323.75	6506.12	5356.85	5920.90	5387.39	-2471.59	0.45	-0.43	-0.13	537192.34	1707201.97	N 39 58 12.74 W	80 32 40.86	6.45
	12578.00	89.86	323.47	6506.12	5356.85	6008.78	5459.03	-2524.39	0.44	-0.31	-0.31	537263.98	1707149.17	N 39 58 13.44 W	80 32 41.55	6.46
	12668.00	89.97	323.99	6506.25	5356.98	6097.68	5531.58	-2577.65	0.57	0.12	0.56	537336.53	1707095.91	N 39 58 14.15 W	80 32 42.25	6.47
	12757.00	90.45	323.51	6505.92	5356.65	6185.59	5603.35	-2630.29	0.75	0.54	-0.52	537408.29	1707043.28	N 39 58 14.86 W	80 32 42.93	6.48
	12846.00	90.41	323.31	6505.26	5355.99	6273.43	5674.81	-2683.34	0.23	-0.04	-0.22	537479.74	1706990.23	N 39 58 15.56 W	80 32 43.63	6.49
	12936.00	90.79	323.64	6504.31	5355.04	6362.26	5747.12	-2736.90	0.56	0.42	0.37	537552.06	1706936.67	N 39 58 16.27 W	80 32 44.32	6.50
	13025.00	90.52	324.10	6503.30	5354.03	6450.20	5819.00	-2789.37	0.60	-0.30	0.52	537623.93	1706884.20	N 39 58 16.97 W	80 32 45.01	6.51
	13115.00	90.34	323.99	6502.62	5353.35	6539.17	5891.85	-2842.21	0.23	-0.20	-0.12	537696.78	1706831.36	N 39 58 17.68 W	80 32 45.70	6.52
	13204.00	90.52	323.96	6501.95	5352.68	6627.14	5963.83	-2894.56	0.21	0.20	-0.03	537768.76	1706779.02	N 39 58 18.39 W	80 32 46.38	6.52
	13293.00	90.45	324.46	6501.20	5351.93	6715.16	6036.02	-2946.60	0.57	-0.08	0.56	537840.94	1706726.98	N 39 58 19.10 W	80 32 47.06	6.53
	13383.00	90.38	324.06	6500.55	5351.28	6804.19	6109.07	-2999.17	0.45	-0.08	-0.44	537913.99	1706674.41	N 39 58 19.81 W	80 32 47.75	6.54
	13472.00	90.48	324.76	6499.88	5350.61	6892.25	6181.44	-3050.97	0.79	0.11	0.79	537986.36	1706622.62	N 39 58 20.52 W	80 32 48.42	6.55
	13561.00	90.45	324.84	6499.16	5349.89	6980.41	6254.17	-3102.27	0.10	-0.03	0.09	538059.08	1706571.32	N 39 58 21.23 W	80 32 49.09	6.56
	13651.00	90.72	325.42	6498.24	5348.97	7069.62	6328.00	-3153.72	0.71	0.30	0.64	538132.91	1706519.87	N 39 58 21.96 W	80 32 49.76	6.57
	13740.00	90.38	324.35	6497.38	5348.11	7157.79	6400.80	-3204.91	1.26	-0.30	-1.20	538205.71	1706468.68	N 39 58 22.67 W	80 32 50.43	6.58
	13830.00	90.45	323.05	6496.73	5347.46	7246.68	6473.33	-3258.19	1.45	0.08	-1.44	538278.23	1706415.40	N 39 58 23.38 W	80 32 51.13	6.59
	13919.00	90.31	321.28	6496.14	5346.87	7334.17	6543.62	-3312.78	1.99	-0.16	-1.99	538348.51	1706360.82	N 39 58 24.07 W	80 32 51.84	6.60
	14008.00	90.27	319.50	6495.69	5346.42	7421.12	6612.18	-3369.52	2.00	-0.04	-2.00	538417.07	1706304.08	N 39 58 24.74 W	80 32 52.58	6.61
Final Survey 19Dec12	14078.00	90.48	318.36	6495.23	5345.96	7489.11	6664.95	-3415.50	1.66	0.30	-1.63	538469.84	1706258.10	N 39 58 25.26 W	80 32 53.18	6.62
Projection to Bit	14158.00	90.48	318.36	6494.56	5345.29	7566.61	6724.74	-3468.66	0.00	0.00	0.00	538529.63	1706204.95	N 39 58 25.84 W	80 32 53.87	6.62

Survey Type: Def Survey

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

Survey Program:

Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size Casing Diameter (in)	Survey Tool Type	Borehole / Survey
Act Sins	0.000	17.800		30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / Noble Energy SHL-8G-HS Gyro+MWD 0' to 14158' MD
Act Sins	17.800	2839.500		30.000	SLB_NSG+MSHOT	Original Borehole / Noble Energy SHL-8G-HS Gyro+MWD 0' to
Act Sins	2839.500	14078.000		30.000	SLB_MWD-STD	Original Borehole / Noble Energy SHL-8G-HS Gyro+MWD 0' to

02/28/2014

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Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	TVSS (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
	14078.000		14158.000		Act Slms	30.000	30.000	SLB_BLIND+TREND								

Original Borehole / Noble Energy
SHL-8G-HS Gyro+MWD 0' to

02/28/2014