WR-35
Rev (9-11)

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

Date: 8/6/2013
API: 47-051-01558

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

LOCATION: Sandhill 8 Elevation: 1,131.62 Quadrangle: Majorsville

District: Sandhill County: MARSHALL
Latitude: _____ Feet South of _____Deg._____Min._____Sec. 39.955411
Longitude: _____Feet South of _____Deg._____Min._____Sec. -80.535531

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	514.0	514.0	950 sxs / 202 bbls cemented to surface
Inspector: Bill Hendershot		13 3/8	1,053	1,053	874 sxs / 187 bbls cemented to surface
Date Permit Issued: 5/29/2012		9 5/8	3,013	3,013	1070 sxs / 226 bbls cemented to surface
Date Well Work Commenced:	10/23/2012	5 1/2	13,914	13,914	1730 sxs / 430 bbls cement
Date Well Work Completed:	6/18/2013				
Verbal Plugging:					
Date Permission granted on:	10/23/2012				
Rotary Cable Rig X					
Total Vertical Depth (ft): ORIGINAL HOLE - 6648.02					
Total Measured Depth (ft): 13,932.00					
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 689 MCF/d Oil: Initial open flow 0.4 Bbl/d
Final open flow 1962 MCF/d Final open flow 2.8 Bbl/d
Time of open flow between initial and final tests 24 Hours
Static rock Pressure 1375 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 1-27-14 Date

Laura Adkins, Noble Energy, Inc. 1/21/14

03/07/2014

Were core samples taken? Yes__ No_X__ **Were cuttings caught during drilling? Yes_X_ No___**

Were Electrical, Mechanical or Geophyisical 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	4217	
50' Sand	2449	2452	2449	4227	
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	4217	
Warren Sand	4217	4227	4217	4227	
Shale	4227	4907	4227	4908	
Java Shale	4907	5011	4908	5012	
Pipe Creek Shale	5011	5109	5012	5110	
Angola Shale	5109	5743	5110	5746	
Rhinestreet	5743	6180	5746	6204	
Cashaqua	6180	6281	6204	6318	
Middlesex	6281	6312	6318	6355	
West River	6312	6369	6355	6430	
Burkett	6369	6394	6430	6467	
Tully Limestone	6394	6421	6467	6510	
Hamilton	6421	6535	6510	6768	
Marcellus	6535	6584	6768	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
1	Toe Sleeve	13782
2	Composite Frac Plug	13,500
3	Composite Frac Plug	13,300
4	Composite Frac Plug	13,000
5	Composite Frac Plug	12,700
6	Composite Frac Plug	12,400
7	Composite Frac Plug	12,100
8	Composite Frac Plug	11,800
9	Composite Frac Plug	11,500
10	Composite Frac Plug	11,200
11	Composite Frac Plug	11,000
12	Composite Frac Plug	10,800
13	Composite Frac Plug	10,500
14	Composite Frac Plug	10,200
15	Composite Frac Plug	9,900
16	Composite Frac Plug	9,600
17	Composite Frac Plug	9,350
18	Composite Frac Plug	9,050
19	Composite Frac Plug	8,750
20	Composite Frac Plug	8,450
21	Composite Frac Plug	8,150
22	Composite Frac Plug	7,900
23	Composite Frac Plug	7,650
24	Composite Frac Plug	7,350
25	Composite Frac Plug	7,050

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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)
6/4/2013	1	Marcellus	Slickwater	13,528	13,780	48	6,002	7,547	90.1	4,827	1.16	404,215	3,000	383,489
6/4/2013	2	Marcellus	Slickwater	13,323	13,477	40	5,913	7,733	90.1	4,588	1.12	292,252	3,000	347,634
6/4/2013	3	Marcellus	Slickwater	13,025	13,277	40	6,651	7,422	69.3	4,312	1.08	418,754	3,000	413,792
6/7/2013	3inj	Marcellus	Slickwater	13,025	13,277	N/A	N/A	8,399	10.9	N/A	N/A	N/A	3,000	50,136
6/7/2013	4	Marcellus	Slickwater	12,725	12,977	40	5,561	7,175	67.2	4,330	1.09	360,100	3,000	412,500
6/8/2013	5	Marcellus	Slickwater	12,425	12,677	40	5,369	7,600	90.1	4,670	1.14	352,532	3,000	405,349
6/9/2013	6	Marcellus	Slickwater	12,125	12,377	40	6,177	7,452	75.1	4,539	1.12	435,572	3,000	397,592
6/9/2013	7	Marcellus	Slickwater	11,825	12,077	40	5,819	7,689	89.1	4,336	1.09	435,027	3,000	392,227
6/10/2013	8	Marcellus	Slickwater	11,525	11,777	40	6,124	7,573	90.6	4,467	1.11	436,431	3,000	390,465
6/11/2013	9	Marcellus	Slickwater	11,225	11,477	40	6,264	7,537	90.2	4,544	1.12	436,406	3,000	389,136
6/11/2013	10	Marcellus	Slickwater	11,023	11,177	40	5,688	7,480	90.8	4,721	1.15	291,408	3,000	316,925
6/11/2013	11	Marcellus	Slickwater	10,823	10,977	40	5,724	7,515	90.4	4,323	1.09	295,309	3,000	310,803
6/12/2013	12	Marcellus	Slickwater	10,525	10,777	40	5,834	7,509	90.2	4,459	1.11	440,265	3,000	392,722
6/12/2013	13	Marcellus	Slickwater	10,225	10,477	40	6,235	7,182	82.1	4,763	1.15	359,151	3,000	382,685
6/13/2013	14	Marcellus	Slickwater	9,925	10,177	40	6,722	7,440	90.6	4,621	1.13	435,543	3,000	385,738
6/13/2013	15	Marcellus	Slickwater	9,625	9,877	40	6,385	7,113	90.5	4,400	1.10	358,961	3,000	386,167
6/13/2013	16	Marcellus	Slickwater	9,375	9,577	40	6,792	7,149	90.5	4,532	1.12	361,756	3,000	353,055
6/14/2013	17	Marcellus	Slickwater	9,075	9,327	40	6,640	7,214	91.0	4,545	1.12	434,484	3,000	382,614
6/15/2013	18	Marcellus	Slickwater	8,775	9,027	40	6,953	7,060	89.9	4,437	1.09	344,259	3,000	360,464
6/15/2013	19	Marcellus	Slickwater	8,475	8,727	40	7,071	7,093	90.6	4,322	1.09	435,499	3,000	382,024
6/15/2013	20	Marcellus	Slickwater	8,175	8,427	40	6,674	6,892	90.3	4,256	1.08	435,007	3,000	381,514
6/16/2013	21	Marcellus	Slickwater	7,925	8,127	40	6,918	6,931	90.9	4,470	1.11	364,876	3,000	344,078
6/16/2013	22	Marcellus	Slickwater	7,675	7,877	40	6,717	6,864	90.6	4,254	1.08	363,710	3,000	336,986
6/17/2013	23	Marcellus	Slickwater	7,375	7,627	40	6,441	6,748	89.8	4,367	1.10	434,906	3,000	386,641
6/17/2013	24	Marcellus	Slickwater	7,075	7,327	40	6,875	6,541	90.7	4,284	1.08	432,597	3,000	377,208
6/17/2013	25	Marcellus	Slickwater	6,873	7,027	40	6,119	6,534	88.7	6,622	1.44	288,483	3,000	301,033

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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%	87.88092%	Density = 8.330
HYDROCHLORIC ACID 5-10%	Halliburton		Hydrochloric acid	7647-01-0	10.00%	0.07585%	
SAND - COMMON WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	2.39597%	
SAND - PREMIUM WHITE	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00%	8.82072%	
FR-66	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.01948%	
BE-9	Halliburton	Biocide	Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00%	0.00405%	
Scalechek® LP-65 Scale Inhibitor	Halliburton	Scale Inhibitor	Ammonium chloride	12125-02-9	10.00%	0.00244%	
LGC-36 UC	Halliburton	Liquid Gel Concentrate	Guar gum	9000-30-0	60.00%	0.00430%	
			Naphtha, hydrotreated heavy	64742-48-9	60.00%	0.00430%	
LCA-1	Halliburton	Solvent	Paraffinic solvent	Confidential Business Information	100.00%	0.00072%	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Methanol	67-56-1	60.00%	0.00039%	
			Propargyl alcohol	107-19-7	10.00%	0.00007%	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Acetic acid	64-19-7	60.00%	0.00236%	
			Acetic anhydride	108-24-7	100.00%	0.00394%	
LoSurf-300D	Halliburton	Non-ionic Surfactant	1,2,4 Trimethylbenzene	95-63-6	1.00%	0.00001%	
			Ethanol	64-17-5	60.00%	0.00079%	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.00040%	
			Naphthalene	91-20-3	5.00%	0.00007%	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	0.00007%	
SP BREAKER	Halliburton	Breaker	Sodium persulfate	7775-27-1	100.00%	0.00018%	
WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.00%	0.00011%	

03/07/2014

4705101558

Noble Energy

noble energy

PATHFINDER
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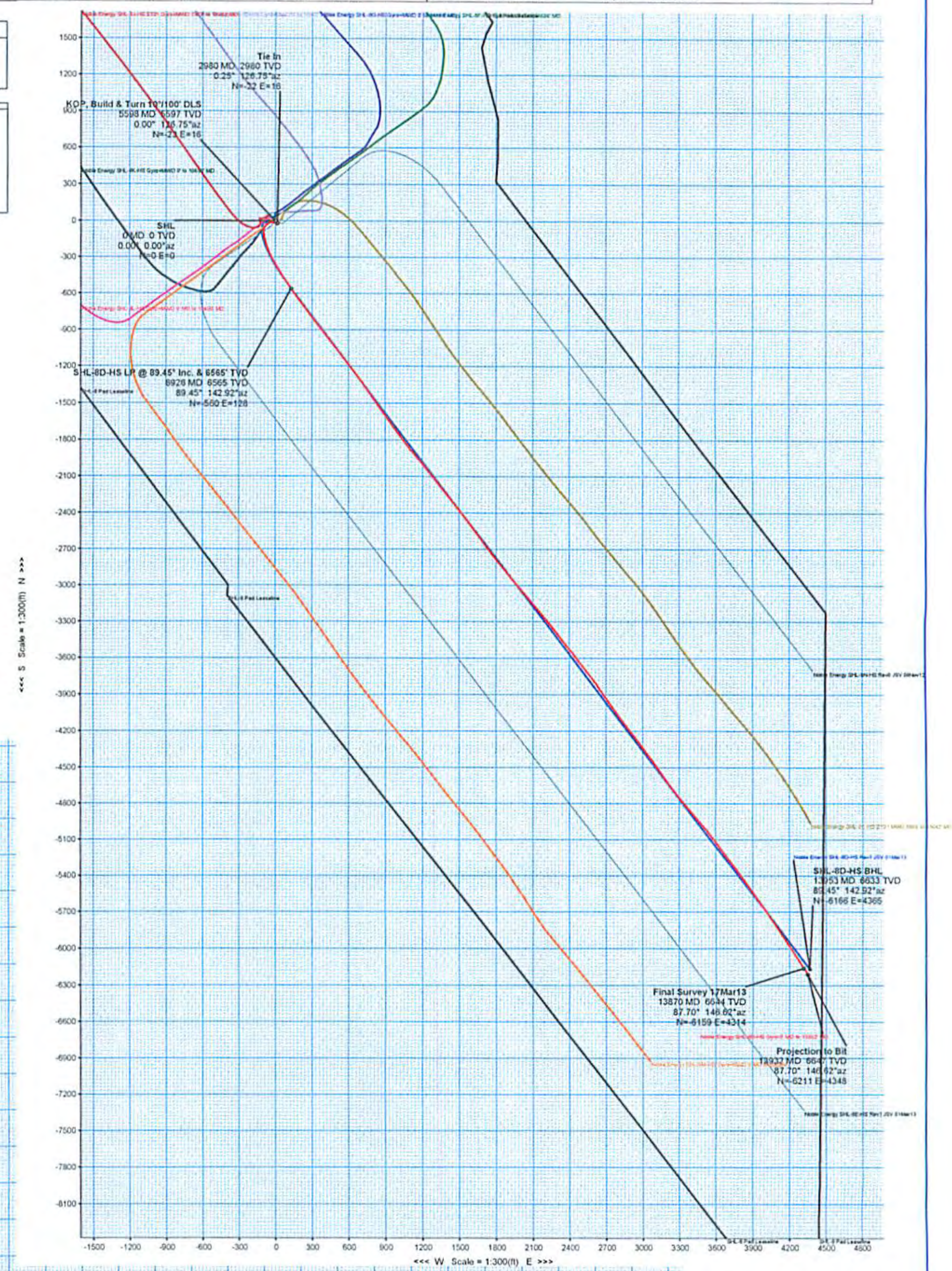
WELL	FIELD	STRUCTURE
SHL-8D-HS	WV Marshall County (NAD 27)	Precision 543

Magnetic Parameters					
Model	BGGM 2012	Dip	67.419°	Date	March 01, 2013
		Mag Dec	-8.713°	FS	52736.2nT

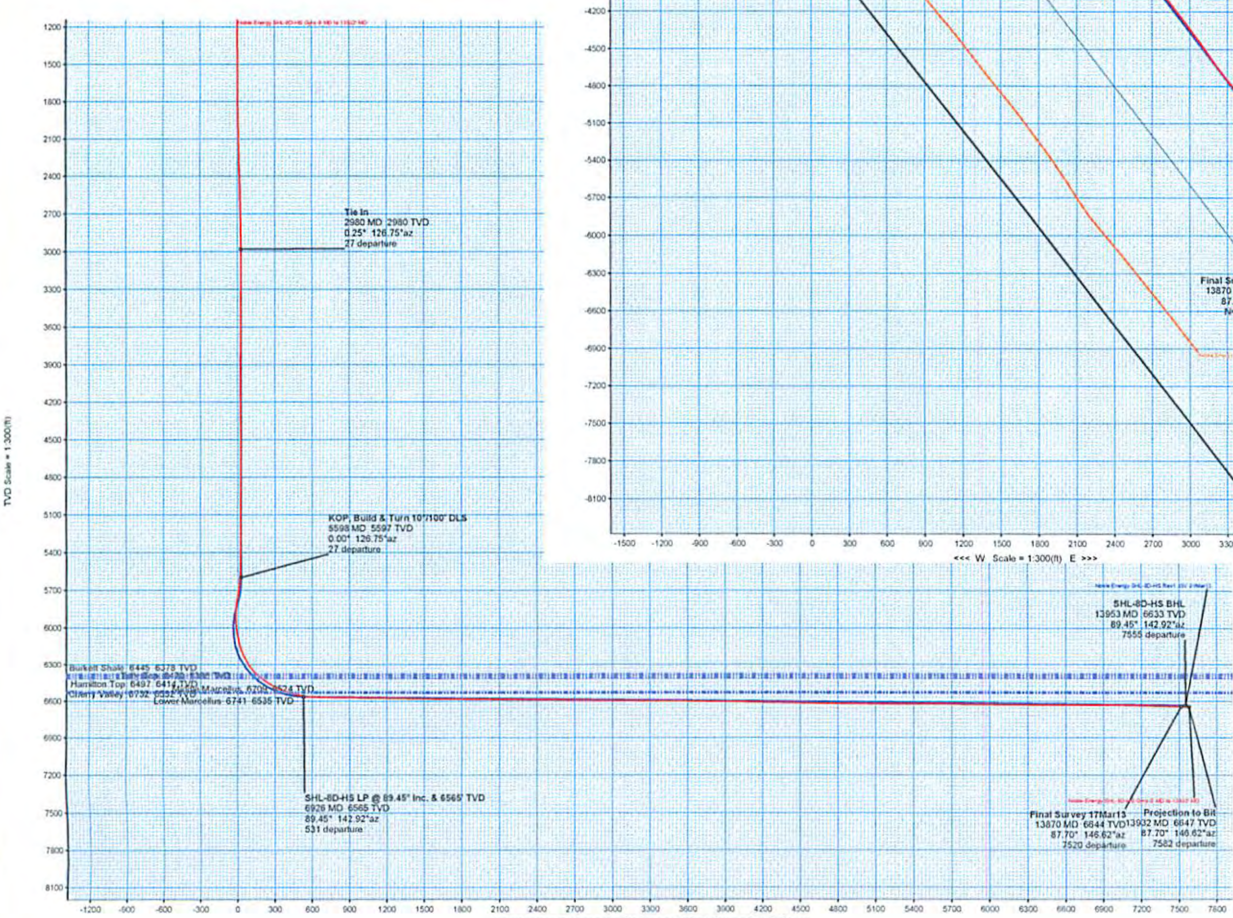
Surface Location		NAD27 West Virginia State Plane, Northern Zone, US Feet			
Lat	N 39 37 19.480	Northing	531773.75 ftUS	Grid Conv	-0.660°
Lon	W 80 32 7.910	Easting	1709705.23 ftUS	Scale Fact	0.99995724

Miscellaneous			
Slot	SHL-8D-HS	TVD Ref	KB(1150.128 above MSL)
Plan	Rev1 JSV 01Mar13	Srvy Date	March 01, 2013

Legend



Tie In
2980 MD 2980 TVD
0.25° 126.75°az
N=-22 E=16
KOP, Build & Turn 10°/100' DLS
5598 MD 5597 TVD
0.00° 126.75°az
N=-23 E=16
SHL
0 MD 0 TVD
0.00° 0.00°az
N=0 E=0
SHL-8D-HS LP @ 89.45° Inc. & 6565' TVD
6928 MD 6565 TVD
89.45° 142.92°az
N=-560 E=128
SHL-8D-HS BHL
13953 MD 6633 TVD
89.45° 142.92°az
N=-6166 E=4365
Final Survey 17Mar13
13870 MD 6644 TVD
87.70° 146.62°az
N=-6159 E=4314
Projection to Bit
13932 MD 6647 TVD
87.70° 146.62°az
N=-6211 E=4348
<<< S Scale = 1:300(ft) N >>>
<<< W Scale = 1:300(ft) E >>>



Tie In
2980 MD 2980 TVD
0.25° 126.75°az
27 departure
KOP, Build & Turn 10°/100' DLS
5598 MD 5597 TVD
0.00° 126.75°az
27 departure
Burkett Shale 6445 6378 TVD
Hamilton Top 6497 6414 TVD
Cherry Valley 6732 6532 TVD
Lower Marcellus 6741 6535 TVD
SHL-8D-HS LP @ 89.45° Inc. & 6565' TVD
6928 MD 6565 TVD
89.45° 142.92°az
531 departure
SHL-8D-HS BHL
13953 MD 6633 TVD
89.45° 142.92°az
7558 departure
Final Survey 17Mar13
13870 MD 6644 TVD
87.70° 146.62°az
7520 departure
Projection to Bit
13932 MD 6647 TVD
87.70° 146.62°az
7582 departure
TVD Scale = 1:300(ft)
Vertical Section (ft) Azim = 144.71° Scale = 1:300(ft) Origin = 0 N/-S, 0 E/-W

Drawn By: JVannare
Date Created: March 01, 2013 04:42:25 PM
Checked By:
Checked Date:
Approved By:
Approved Date:

03/07/2014

4705101558

PATHFINDER
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noble energy

Noble Energy SHL-8D-HS Gyro 0' MD to 13932' MD Survey Report

(Def Survey)

Report Date:	March 18, 2013 - 10:51 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Noble Energy	**Vertical Section Azimuth:**	144.709 ° (Grid North)
Field:	WV Marshall County (NAD 27)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	CNX/Noble Energy SHL-8 Pad / SHL-8D-HS	**TVD Reference Datum:**	KB
Well:	SHL-8D-HS	**TVD Reference Elevation:**	1150.120 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	1131.470 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	-8.713 °
Survey Name:	Noble Energy SHL-8D-HS Gyro 0' MD to 13932' MD	**Total Gravity Field Strength:**	999.3810mgn (9.80665 Based)
Survey Date:	March 04, 2013	**Total Magnetic Field Strength:**	52735.042 nT
Tort / AHD / DDI / ERD Ratio:	198.001 ° / 7795.141 ft / 6.510 / 1.173	**Magnetic Dip Angle:**	67.418 °
Coordinate Reference System:	NAD27 West Virginia State Plane, Northern Zone, US Feet	**Declination Date:**	March 04, 2013
Location Lat / Long:	N 39° 57' 19.47966", W 80° 32' 7.91028"	**Magnetic Declination Model:**	BGGM 2012
Location Grid N/E Y/X:	N 531773.750 ftUS, E 1709705.230 ftUS	**North Reference:**	Grid North
CRS Grid Convergence Angle:	-0.6604 °	**Grid Convergence Used:**	-0.6604 °
Grid Scale Factor:	0.99995724	**Total Corr Mag North->Grid North:**	-8.0522 °
		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	-1150.12	0.00	0.00	0.00	N/A	N/A	N/A	531773.75	1709705.23	N 39 57 19.48	W 80 32 7.91	0.00
	50.00	0.17	259.16	50.00	-1100.12	-0.03	-0.01	-0.07	0.34	0.34	0.00	531773.74	1709705.16	N 39 57 19.48	W 80 32 7.91	0.00
	100.00	0.28	273.37	100.00	-1050.12	-0.14	-0.02	-0.27	0.25	0.22	28.42	531773.73	1709704.96	N 39 57 19.48	W 80 32 7.91	0.00
	150.00	0.22	282.53	150.00	-1000.12	-0.29	0.01	-0.48	0.14	-0.12	18.32	531773.76	1709704.75	N 39 57 19.48	W 80 32 7.92	0.00
	200.00	0.17	280.26	200.00	-950.12	-0.41	0.04	-0.65	0.10	-0.10	-4.54	531773.79	1709704.58	N 39 57 19.48	W 80 32 7.92	0.00
	250.00	0.18	276.91	250.00	-900.12	-0.51	0.06	-0.80	0.03	0.02	-6.70	531773.81	1709704.43	N 39 57 19.48	W 80 32 7.92	0.00
	300.00	0.14	257.20	300.00	-850.12	-0.59	0.06	-0.94	0.13	-0.08	-39.42	531773.81	1709704.29	N 39 57 19.48	W 80 32 7.92	0.00
	350.00	0.17	262.95	350.00	-800.12	-0.65	0.04	-1.07	0.07	0.06	11.50	531773.79	1709704.16	N 39 57 19.48	W 80 32 7.92	0.00
	400.00	0.13	267.03	400.00	-750.12	-0.72	0.03	-1.20	0.08	-0.08	8.16	531773.78	1709704.03	N 39 57 19.48	W 80 32 7.93	0.00
	450.00	0.19	255.11	450.00	-700.12	-0.77	0.00	-1.34	0.14	0.12	-23.84	531773.75	1709703.89	N 39 57 19.48	W 80 32 7.93	0.00
	500.00	0.20	252.33	500.00	-650.12	-0.83	-0.05	-1.50	0.03	0.02	-5.56	531773.70	1709703.73	N 39 57 19.48	W 80 32 7.93	0.00
	550.00	0.13	210.12	550.00	-600.12	-0.83	-0.12	-1.61	0.27	-0.14	-84.42	531773.63	1709703.62	N 39 57 19.48	W 80 32 7.93	0.12
	600.00	0.07	246.54	600.00	-550.12	-0.82	-0.18	-1.67	0.17	-0.12	72.84	531773.57	1709703.56	N 39 57 19.48	W 80 32 7.93	0.18
	650.00	0.10	196.80	650.00	-500.12	-0.79	-0.24	-1.71	0.15	0.06	-99.48	531773.51	1709703.52	N 39 57 19.48	W 80 32 7.93	0.24
	700.00	0.05	188.98	700.00	-450.12	-0.75	-0.30	-1.73	0.10	-0.10	-15.64	531773.45	1709703.50	N 39 57 19.48	W 80 32 7.93	0.28
	750.00	0.02	160.55	750.00	-400.12	-0.73	-0.33	-1.73	0.07	-0.06	-56.86	531773.42	1709703.50	N 39 57 19.48	W 80 32 7.93	0.30
	800.00	0.12	156.49	800.00	-350.12	-0.67	-0.39	-1.70	0.20	0.20	-8.12	531773.36	1709703.53	N 39 57 19.48	W 80 32 7.93	0.35
	850.00	0.06	155.07	850.00	-300.12	-0.59	-0.46	-1.67	0.12	-0.12	-2.84	531773.29	1709703.56	N 39 57 19.47	W 80 32 7.93	0.39
	900.00	0.10	135.99	900.00	-250.12	-0.52	-0.51	-1.63	0.10	0.08	-38.16	531773.24	1709703.60	N 39 57 19.47	W 80 32 7.93	0.42
	950.00	0.10	138.56	950.00	-200.12	-0.44	-0.58	-1.57	0.01	0.00	5.14	531773.17	1709703.66	N 39 57 19.47	W 80 32 7.93	0.44
	1000.00	0.12	139.66	1000.00	-150.12	-0.34	-0.65	-1.51	0.04	0.04	2.20	531773.10	1709703.72	N 39 57 19.47	W 80 32 7.93	0.47
	1050.00	0.22	136.42	1050.00	-100.12	-0.19	-0.76	-1.41	0.20	0.20	-6.48	531772.99	1709703.82	N 39 57 19.47	W 80 32 7.93	0.53
	1100.00	0.16	134.51	1100.00	-50.12	-0.03	-0.88	-1.29	0.12	-0.12	-3.82	531772.87	1709703.94	N 39 57 19.47	W 80 32 7.93	0.57
	1150.00	0.29	131.31	1150.00	-0.12	0.16	-1.01	-1.15	0.26	0.26	-6.40	531772.74	1709704.08	N 39 57 19.47	W 80 32 7.92	0.64
	1200.00	0.32	129.32	1200.00	49.88	0.42	-1.18	-0.94	0.06	0.06	-3.98	531772.57	1709704.29	N 39 57 19.47	W 80 32 7.92	0.69

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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
	1250.00	0.27	124.14	1249.99	99.87	0.66	-1.34	-0.74	0.11	-0.10	-10.36	531772.41	1709704.49	N 39 57 19.47	W 80 32 7.92	0.74
	1300.00	0.25	132.10	1299.99	149.87	0.88	-1.48	-0.56	0.08	-0.04	15.92	531772.27	1709704.67	N 39 57 19.47	W 80 32 7.92	0.78
	1350.00	0.28	139.66	1349.99	199.87	1.11	-1.64	-0.40	0.09	0.06	15.12	531772.11	1709704.83	N 39 57 19.46	W 80 32 7.92	0.82
	1400.00	0.27	154.01	1399.99	249.87	1.35	-1.84	-0.27	0.14	-0.02	28.70	531771.91	1709704.96	N 39 57 19.46	W 80 32 7.91	0.86
	1450.00	0.27	156.87	1449.99	299.87	1.58	-2.06	-0.17	0.03	0.00	5.72	531771.69	1709705.06	N 39 57 19.46	W 80 32 7.91	0.89
	1500.00	0.24	154.53	1499.99	349.87	1.80	-2.26	-0.08	0.06	-0.06	-4.68	531771.49	1709705.15	N 39 57 19.46	W 80 32 7.91	0.92
	1550.00	0.34	156.61	1549.99	399.87	2.05	-2.49	0.02	0.20	0.20	4.16	531771.26	1709705.25	N 39 57 19.46	W 80 32 7.91	0.97
	1600.00	0.33	160.47	1599.99	449.87	2.33	-2.76	0.13	0.05	-0.02	7.72	531770.99	1709705.36	N 39 57 19.45	W 80 32 7.91	1.00
	1650.00	0.52	156.12	1649.99	499.87	2.69	-3.10	0.27	0.39	0.38	-8.70	531770.65	1709705.50	N 39 57 19.45	W 80 32 7.91	1.07
	1700.00	0.42	155.76	1699.99	549.87	3.09	-3.48	0.44	0.20	-0.20	-0.72	531770.27	1709705.67	N 39 57 19.45	W 80 32 7.90	1.12
	1750.00	0.58	155.29	1749.99	599.87	3.52	-3.88	0.62	0.32	0.32	-0.94	531769.87	1709705.85	N 39 57 19.44	W 80 32 7.90	1.18
	1800.00	0.66	151.34	1799.98	649.86	4.06	-4.36	0.86	0.18	0.16	-7.90	531769.39	1709706.09	N 39 57 19.44	W 80 32 7.90	1.23
	1850.00	0.78	148.02	1849.98	699.86	4.68	-4.90	1.18	0.25	0.24	-6.64	531768.85	1709706.41	N 39 57 19.43	W 80 32 7.89	1.29
	1900.00	0.87	143.85	1899.97	749.85	5.40	-5.50	1.59	0.22	0.18	-8.34	531768.25	1709706.82	N 39 57 19.43	W 80 32 7.89	1.35
	1950.00	0.89	145.56	1949.97	799.85	6.17	-6.12	2.03	0.07	0.04	3.42	531767.63	1709707.26	N 39 57 19.42	W 80 32 7.88	1.39
	2000.00	0.95	142.43	1999.96	849.84	6.97	-6.77	2.50	0.16	0.12	-6.26	531766.98	1709707.73	N 39 57 19.41	W 80 32 7.88	1.44
	2050.00	1.02	143.01	2049.95	899.83	7.83	-7.46	3.02	0.14	0.14	1.16	531766.30	1709708.25	N 39 57 19.41	W 80 32 7.87	1.49
	2100.00	1.02	142.92	2099.95	949.83	8.72	-8.17	3.56	0.00	0.00	-0.18	531765.58	1709708.79	N 39 57 19.40	W 80 32 7.86	1.53
	2150.00	1.14	141.64	2149.94	999.82	9.66	-8.91	4.13	0.24	0.24	-2.56	531764.84	1709709.36	N 39 57 19.39	W 80 32 7.86	1.58
	2200.00	1.15	142.59	2199.93	1049.81	10.66	-9.70	4.75	0.04	0.02	1.90	531764.05	1709709.98	N 39 57 19.38	W 80 32 7.85	1.62
	2250.00	1.21	138.83	2249.92	1099.80	11.69	-10.50	5.40	0.20	0.12	-7.52	531763.26	1709710.63	N 39 57 19.38	W 80 32 7.84	1.66
	2300.00	1.89	140.75	2299.90	1149.78	13.03	-11.53	6.27	1.36	1.36	3.84	531762.22	1709711.50	N 39 57 19.37	W 80 32 7.83	1.78
	2350.00	2.14	144.46	2349.87	1199.75	14.79	-12.93	7.33	0.56	0.50	7.42	531760.82	1709712.56	N 39 57 19.35	W 80 32 7.81	1.86
	2400.00	2.52	140.49	2399.83	1249.71	16.82	-14.54	8.58	0.83	0.76	-7.94	531759.21	1709713.81	N 39 57 19.34	W 80 32 7.80	1.95
	2450.00	2.51	145.55	2449.78	1299.66	19.01	-16.29	9.89	0.44	-0.02	10.12	531757.46	1709715.12	N 39 57 19.32	W 80 32 7.78	2.02
	2500.00	2.27	146.75	2499.73	1349.61	21.10	-18.02	11.06	0.49	-0.48	2.40	531755.73	1709716.29	N 39 57 19.30	W 80 32 7.77	2.08
	2550.00	1.45	136.25	2549.71	1399.59	22.71	-19.30	12.04	1.77	-1.64	-21.00	531754.45	1709717.27	N 39 57 19.29	W 80 32 7.75	2.18
	2600.00	1.17	132.90	2599.69	1449.57	23.84	-20.11	12.85	0.58	-0.56	-6.70	531753.64	1709718.08	N 39 57 19.28	W 80 32 7.74	2.22
	2650.00	0.95	132.44	2649.69	1499.57	24.74	-20.74	13.53	0.44	-0.44	-0.92	531753.02	1709718.76	N 39 57 19.28	W 80 32 7.73	2.25
	2700.00	0.85	128.49	2699.68	1549.56	25.50	-21.25	14.12	0.24	-0.20	-7.90	531752.50	1709719.35	N 39 57 19.27	W 80 32 7.73	2.27
	2750.00	0.59	126.35	2749.68	1599.56	26.10	-21.63	14.62	0.52	-0.52	-4.28	531752.12	1709719.85	N 39 57 19.27	W 80 32 7.72	2.29
	2800.00	0.37	125.41	2799.67	1649.55	26.50	-21.88	14.96	0.44	-0.44	-1.88	531751.88	1709720.19	N 39 57 19.27	W 80 32 7.71	2.31
	2850.00	0.35	127.29	2849.67	1699.55	26.80	-22.06	15.21	0.05	-0.04	3.76	531751.69	1709720.44	N 39 57 19.26	W 80 32 7.71	2.32
	2900.00	0.27	129.62	2899.67	1749.55	27.06	-22.23	15.43	0.16	-0.16	4.66	531751.52	1709720.66	N 39 57 19.26	W 80 32 7.71	2.33
	2950.00	0.34	125.77	2949.67	1799.55	27.31	-22.39	15.64	0.15	0.14	-7.70	531751.36	1709720.87	N 39 57 19.26	W 80 32 7.71	2.34
	2980.00	0.25	126.75	2979.67	1829.55	27.46	-22.48	15.76	0.30	-0.30	3.27	531751.27	1709720.99	N 39 57 19.26	W 80 32 7.70	2.34
	3030.00	0.68	220.12	3029.67	1879.55	27.64	-22.77	15.66	1.48	0.86	186.74	531750.98	1709720.89	N 39 57 19.26	W 80 32 7.71	2.39
	3119.00	1.80	229.40	3118.65	1968.53	27.90	-24.09	14.26	1.27	1.26	10.43	531749.66	1709719.49	N 39 57 19.24	W 80 32 7.72	2.48
	3209.00	0.45	282.23	3208.63	2058.51	27.77	-24.93	12.84	1.74	-1.50	58.70	531748.82	1709718.07	N 39 57 19.23	W 80 32 7.74	2.57
	3298.00	0.35	248.05	3297.63	2147.51	27.45	-24.96	12.24	0.29	-0.11	-38.40	531748.79	1709717.47	N 39 57 19.23	W 80 32 7.75	2.58
	3388.00	0.37	259.86	3387.63	2237.51	27.26	-25.11	11.70	0.09	0.02	13.12	531748.64	1709716.93	N 39 57 19.23	W 80 32 7.76	2.59
	3477.00	0.50	274.24	3476.62	2326.50	26.89	-25.14	11.03	0.19	0.15	16.16	531748.61	1709716.26	N 39 57 19.23	W 80 32 7.76	2.61
	3567.00	0.42	264.09	3566.62	2416.50	26.48	-25.14	10.31	0.13	-0.09	-11.28	531748.61	1709715.54	N 39 57 19.23	W 80 32 7.77	2.62
	3657.00	0.52	290.81	3656.62	2506.50	25.98	-25.03	9.60	0.26	0.11	29.69	531748.72	1709714.83	N 39 57 19.23	W 80 32 7.78	2.64
	3746.00	0.45	272.74	3745.61	2595.49	25.43	-24.87	8.88	0.19	-0.08	-20.30	531748.88	1709714.11	N 39 57 19.23	W 80 32 7.79	2.65
	3836.00	0.31	277.57	3834.61	2684.49	25.05	-24.82	8.29	0.16	-0.16	5.43	531748.93	1709713.52	N 39 57 19.24	W 80 32 7.80	2.67
	3925.00	0.40	291.56	3924.61	2774.49	24.62	-24.67	7.76	0.14	0.10	15.54	531749.08	1709712.99	N 39 57 19.24	W 80 32 7.81	2.68
	4014.00	1.08	50.96	4013.60	2863.48	24.31	-24.03	8.12	1.49	0.76	134.16	531749.72	1709713.35	N 39 57 19.24	W 80 32 7.80	2.73

03/28/2014

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
	4104.00	1.83	63.21	4103.58	2953.46	24.46	-22.85	10.06	0.90	0.83	13.61	531750.90	1709715.29	N 39 57 19.26	W 80 32 7.78	2.78
	4193.00	1.90	62.52	4192.53	3042.41	24.87	-21.53	12.64	0.08	0.08	-0.78	531752.22	1709717.87	N 39 57 19.27	W 80 32 7.74	2.81
	4283.00	0.58	95.90	4282.51	3132.39	25.38	-20.89	14.41	1.61	-1.47	37.09	531752.86	1709719.64	N 39 57 19.27	W 80 32 7.72	2.87
	4373.00	0.53	201.47	4372.50	3222.38	25.90	-21.32	14.72	0.98	-0.06	117.30	531752.43	1709719.94	N 39 57 19.27	W 80 32 7.72	2.90
	4462.00	0.63	218.15	4461.50	3311.38	26.27	-22.09	14.26	0.22	0.11	18.74	531751.66	1709719.49	N 39 57 19.26	W 80 32 7.72	2.91
	4551.00	0.52	216.05	4550.49	3400.37	26.54	-22.80	13.72	0.13	-0.12	-2.36	531750.95	1709718.95	N 39 57 19.26	W 80 32 7.73	2.92
	4640.00	0.39	224.41	4639.49	3489.37	26.72	-23.34	13.27	0.16	-0.15	9.39	531750.41	1709718.50	N 39 57 19.25	W 80 32 7.74	2.93
	4730.00	0.32	226.15	4729.49	3579.37	26.81	-23.74	12.88	0.08	-0.08	1.93	531750.02	1709718.11	N 39 57 19.25	W 80 32 7.74	2.94
	4819.00	0.25	213.05	4818.49	3668.37	26.92	-24.07	12.59	0.11	-0.08	-14.72	531749.68	1709717.82	N 39 57 19.24	W 80 32 7.75	2.95
	4909.00	0.17	238.35	4908.49	3758.37	26.99	-24.31	12.37	0.13	-0.09	28.11	531749.45	1709717.60	N 39 57 19.24	W 80 32 7.75	2.95
	4998.00	0.14	305.40	4997.49	3847.37	26.87	-24.31	12.17	0.19	-0.03	75.34	531749.44	1709717.40	N 39 57 19.24	W 80 32 7.75	2.96
	5088.00	0.28	309.77	5087.49	3937.37	26.56	-24.11	11.91	0.16	0.16	4.86	531749.64	1709717.14	N 39 57 19.24	W 80 32 7.75	2.97
	5178.00	0.37	306.08	5177.49	4027.37	26.07	-23.80	11.51	0.10	0.10	-4.10	531749.96	1709716.74	N 39 57 19.25	W 80 32 7.76	2.97
	5267.00	0.34	309.81	5266.48	4116.36	25.54	-23.46	11.07	0.04	-0.03	4.19	531750.29	1709716.30	N 39 57 19.25	W 80 32 7.76	2.98
	5357.00	0.23	313.04	5356.48	4206.36	25.11	-23.16	10.74	0.12	-0.12	3.59	531750.59	1709715.96	N 39 57 19.25	W 80 32 7.77	2.98
	5446.00	0.22	312.03	5445.48	4295.36	24.77	-22.93	10.48	0.01	-0.01	-1.13	531750.82	1709715.71	N 39 57 19.25	W 80 32 7.77	2.99
	5536.00	2.37	288.25	5535.45	4385.33	23.10	-22.23	8.58	2.41	2.39	-26.42	531751.52	1709713.81	N 39 57 19.26	W 80 32 7.80	3.05
	5581.00	5.60	286.22	5580.34	4430.22	20.63	-21.32	5.59	7.18	7.18	-4.51	531752.43	1709710.82	N 39 57 19.27	W 80 32 7.84	3.14
	5626.00	7.85	284.54	5625.03	4474.91	16.57	-19.94	0.51	5.02	5.00	-3.73	531753.81	1709705.74	N 39 57 19.28	W 80 32 7.90	3.22
	5670.00	10.04	281.45	5668.49	4518.37	11.48	-18.42	-6.16	5.09	4.98	-7.02	531755.33	1709699.07	N 39 57 19.30	W 80 32 7.99	3.30
	5715.00	12.83	280.46	5712.59	4562.47	5.04	-16.74	-14.92	6.22	6.20	-2.20	531757.01	1709690.31	N 39 57 19.31	W 80 32 8.10	3.39
	5760.00	15.63	279.60	5756.21	4606.09	-2.82	-14.82	-25.81	6.24	6.22	-1.91	531758.93	1709679.42	N 39 57 19.33	W 80 32 8.24	3.49
	5805.00	16.48	264.33	5799.47	4649.35	-10.26	-14.44	-38.15	9.54	1.89	-33.93	531759.31	1709667.08	N 39 57 19.33	W 80 32 8.40	3.59
	5850.00	17.63	249.22	5842.51	4692.39	-15.12	-17.49	-50.88	10.14	2.56	-33.58	531756.26	1709654.35	N 39 57 19.30	W 80 32 8.56	3.69
	5895.00	17.89	243.55	5885.37	4735.25	-17.89	-22.98	-63.44	3.89	0.58	-12.60	531750.77	1709641.79	N 39 57 19.25	W 80 32 8.72	3.76
	5940.00	17.55	232.51	5928.25	4778.13	-18.69	-30.19	-75.01	7.49	-0.76	-24.53	531743.56	1709630.22	N 39 57 19.17	W 80 32 8.87	3.84
	5984.00	16.18	219.05	5970.37	4820.25	-16.78	-39.00	-84.14	9.38	-3.11	-30.59	531734.76	1709621.09	N 39 57 19.08	W 80 32 8.98	3.91
	6029.00	14.92	207.73	6013.73	4863.61	-12.46	-49.00	-90.79	7.29	-2.80	-25.16	531724.76	1709614.44	N 39 57 18.99	W 80 32 9.07	3.97
	6075.00	15.82	194.04	6058.10	4907.98	-5.69	-60.32	-95.07	8.11	1.96	-29.76	531713.43	1709610.16	N 39 57 18.87	W 80 32 9.12	4.03
	6119.00	17.96	187.90	6100.21	4950.09	3.17	-72.86	-97.46	6.33	4.86	-13.95	531700.89	1709607.78	N 39 57 18.75	W 80 32 9.15	4.08
	6163.00	19.95	181.05	6141.82	4991.70	14.16	-87.09	-98.53	6.78	4.52	-15.57	531686.66	1709606.71	N 39 57 18.61	W 80 32 9.16	4.13
	6208.00	22.83	172.69	6183.73	5033.61	28.06	-103.43	-97.56	9.31	6.40	-18.58	531670.32	1709607.68	N 39 57 18.45	W 80 32 9.15	4.19
	6253.00	26.47	167.58	6224.63	5074.51	45.02	-121.90	-94.29	9.37	8.09	-11.36	531651.86	1709610.95	N 39 57 18.26	W 80 32 9.10	4.25
	6298.00	30.20	165.32	6264.23	5114.11	64.86	-142.65	-89.26	8.62	8.29	-5.02	531631.11	1709615.97	N 39 57 18.06	W 80 32 9.04	4.31
	6343.00	34.25	164.60	6302.29	5152.17	87.37	-165.81	-83.03	9.04	9.00	-1.60	531607.94	1709622.21	N 39 57 17.83	W 80 32 8.95	4.37
	6387.00	39.90	163.54	6337.38	5187.26	112.39	-191.30	-75.73	12.92	12.84	-2.41	531582.45	1709629.50	N 39 57 17.58	W 80 32 8.85	4.44
	6432.00	45.64	161.17	6370.40	5220.28	141.51	-220.40	-66.44	13.25	12.76	-5.27	531553.36	1709638.79	N 39 57 17.29	W 80 32 8.73	4.51
	6477.00	50.01	157.75	6400.61	5250.49	173.75	-251.60	-54.72	11.22	9.71	-7.60	531522.16	1709650.51	N 39 57 16.99	W 80 32 8.58	4.57
	6521.00	54.19	155.04	6427.64	5277.52	207.74	-283.39	-40.80	10.67	9.50	-6.16	531490.37	1709664.43	N 39 57 16.67	W 80 32 8.39	4.63
	6566.00	58.79	152.66	6452.48	5302.36	244.77	-317.05	-24.25	11.13	10.22	-5.29	531456.71	1709680.98	N 39 57 16.34	W 80 32 8.17	4.69
	6611.00	61.43	151.02	6474.90	5324.78	283.48	-351.44	-5.83	6.66	5.87	-3.64	531422.33	1709699.40	N 39 57 16.01	W 80 32 7.93	4.74
	6656.00	64.86	149.06	6495.23	5345.11	323.45	-386.21	14.22	8.56	7.62	-4.36	531387.56	1709719.45	N 39 57 15.66	W 80 32 7.67	4.79
	6700.00	68.35	147.49	6512.70	5362.58	363.75	-420.55	35.46	8.58	7.93	-3.57	531353.22	1709740.69	N 39 57 15.33	W 80 32 7.39	4.84
	6745.00	71.26	146.95	6528.23	5378.11	405.93	-456.05	58.32	6.56	6.47	-1.20	531317.72	1709763.55	N 39 57 14.98	W 80 32 7.09	4.88
	6790.00	74.13	146.51	6541.62	5391.50	448.87	-491.96	81.89	6.45	6.38	-0.98	531281.81	1709787.12	N 39 57 14.63	W 80 32 6.79	4.92
	6835.00	78.59	146.53	6552.22	5402.10	492.56	-528.43	106.01	9.91	9.91	0.04	531245.34	1709811.23	N 39 57 14.27	W 80 32 6.47	4.97
	6879.00	83.01	145.76	6559.26	5409.14	535.97	-564.49	130.20	10.19	10.05	-1.75	531209.29	1709835.42	N 39 57 13.92	W 80 32 6.16	5.01
	6924.00	83.50	145.61	6564.54	5414.42	580.65	-601.40	155.39	1.14	1.09	-0.33	531172.38	1709860.61	N 39 57 13.55	W 80 32 5.83	5.04

47 05 1 01558

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
	6969.00	87.56	144.25	6568.05	5417.93	625.51	-638.11	181.16	9.51	9.02	-3.02	531135.67	1709886.39	N 39 57 13.19	W 80 32 5.49	5.08
	7058.00	88.97	142.69	6570.74	5420.62	714.44	-709.59	234.11	2.36	1.58	-1.75	531064.19	1709939.33	N 39 57 12.49	W 80 32 4.80	5.14
	7119.00	88.83	143.06	6571.92	5421.80	775.40	-758.22	270.92	0.65	-0.23	0.61	531015.57	1709976.14	N 39 57 12.02	W 80 32 4.32	5.17
	7209.00	89.86	143.00	6572.94	5422.82	865.35	-830.12	325.05	1.15	1.14	-0.07	530943.67	1710030.26	N 39 57 11.31	W 80 32 3.61	5.22
	7298.00	90.03	142.75	6573.03	5422.91	954.31	-901.08	378.76	0.34	0.19	-0.28	530872.71	1710083.97	N 39 57 10.62	W 80 32 2.91	5.26
	7388.00	89.00	142.30	6573.79	5423.67	1044.24	-972.50	433.52	1.25	-1.14	-0.50	530801.29	1710138.73	N 39 57 9.92	W 80 32 2.20	5.30
	7477.00	88.97	141.78	6575.37	5425.25	1133.13	-1042.66	488.25	0.59	-0.03	-0.58	530731.14	1710193.46	N 39 57 9.23	W 80 32 1.49	5.34
	7567.00	88.90	141.93	6577.04	5426.92	1223.00	-1113.43	543.83	0.18	-0.08	0.17	530660.37	1710249.04	N 39 57 8.54	W 80 32 0.76	5.37
	7656.00	88.97	142.53	6578.70	5428.58	1311.90	-1183.77	598.33	0.68	0.08	0.67	530590.04	1710303.54	N 39 57 7.85	W 80 32 0.05	5.40
	7746.00	89.04	142.97	6580.26	5430.14	1401.83	-1255.40	652.80	0.49	0.08	0.49	530518.41	1710358.00	N 39 57 7.15	W 80 31 59.34	5.44
	7835.00	89.24	143.59	6581.59	5431.47	1490.79	-1326.73	706.01	0.73	0.22	0.70	530447.08	1710411.21	N 39 57 6.45	W 80 31 58.65	5.47
	7925.00	89.35	145.03	6582.70	5432.58	1580.78	-1399.82	758.51	1.60	0.12	1.60	530374.00	1710463.71	N 39 57 5.73	W 80 31 57.96	5.50
	8014.00	89.35	145.31	6583.71	5433.59	1669.77	-1472.87	809.34	0.31	0.00	0.31	530300.95	1710514.53	N 39 57 5.02	W 80 31 57.30	5.52
	8104.00	89.52	145.21	6584.60	5434.48	1759.77	-1546.82	860.62	0.22	0.19	-0.11	530227.00	1710565.81	N 39 57 4.29	W 80 31 56.63	5.55
	8194.00	89.48	145.25	6585.38	5435.26	1849.76	-1620.75	911.95	0.06	-0.04	0.04	530153.07	1710617.14	N 39 57 3.57	W 80 31 55.96	5.57
	8283.00	89.38	144.77	6586.27	5436.15	1938.75	-1693.66	962.98	0.55	-0.11	-0.54	530080.17	1710668.17	N 39 57 2.85	W 80 31 55.30	5.60
	8372.00	89.66	143.72	6587.01	5436.89	2027.75	-1765.88	1014.98	1.22	0.31	-1.18	530007.95	1710720.17	N 39 57 2.14	W 80 31 54.62	5.62
	8462.00	89.73	142.32	6587.49	5437.37	2117.70	-1837.77	1069.12	1.56	0.08	-1.56	529936.06	1710774.30	N 39 57 1.44	W 80 31 53.91	5.65
	8551.00	89.73	140.39	6587.91	5437.79	2206.55	-1907.28	1124.69	2.17	0.00	-2.17	529866.55	1710829.87	N 39 57 0.76	W 80 31 53.19	5.68
	8641.00	89.45	141.21	6588.56	5438.44	2296.33	-1977.02	1181.57	0.96	-0.31	0.91	529796.82	1710886.75	N 39 57 0.08	W 80 31 52.45	5.70
	8730.00	89.38	141.40	6589.47	5439.35	2385.17	-2046.48	1237.21	0.23	-0.08	0.21	529727.36	1710942.39	N 39 56 59.40	W 80 31 51.72	5.72
	8820.00	89.42	141.48	6590.41	5440.29	2475.02	-2116.85	1293.31	0.10	0.04	0.09	529656.99	1710998.48	N 39 56 58.71	W 80 31 50.99	5.74
	8909.00	89.59	141.19	6591.18	5441.06	2563.86	-2186.34	1348.91	0.38	0.19	-0.33	529587.50	1711054.08	N 39 56 58.03	W 80 31 50.27	5.76
	8999.00	89.21	142.04	6592.12	5442.00	2653.72	-2256.89	1404.79	1.03	-0.42	0.94	529516.96	1711109.96	N 39 56 57.34	W 80 31 49.54	5.78
	9089.00	89.21	141.71	6593.36	5443.24	2743.61	-2327.68	1460.35	0.37	0.00	-0.37	529446.17	1711165.52	N 39 56 56.64	W 80 31 48.82	5.80
	9178.00	89.35	143.06	6594.48	5444.36	2832.52	-2398.17	1514.67	1.52	0.16	1.52	529375.69	1711219.83	N 39 56 55.95	W 80 31 48.11	5.82
	9267.00	89.62	143.94	6595.28	5445.16	2921.50	-2469.71	1567.60	1.03	0.30	0.99	529304.15	1711272.76	N 39 56 55.25	W 80 31 47.42	5.84
	9357.00	89.83	144.14	6595.71	5445.59	3011.49	-2542.56	1620.45	0.32	0.23	0.22	529231.30	1711325.61	N 39 56 54.54	W 80 31 46.73	5.86
	9446.00	89.76	144.43	6596.03	5445.91	3100.49	-2614.82	1672.41	0.34	-0.08	0.33	529159.05	1711377.56	N 39 56 53.83	W 80 31 46.05	5.87
	9536.00	89.76	143.85	6596.41	5446.29	3190.48	-2687.76	1725.13	0.64	0.00	-0.64	529086.11	1711430.28	N 39 56 53.12	W 80 31 45.36	5.89
	9626.00	89.97	142.59	6596.62	5446.50	3280.45	-2759.84	1779.01	1.42	0.23	-1.40	529014.03	1711484.16	N 39 56 52.41	W 80 31 44.66	5.91
	9715.00	89.79	141.41	6596.81	5446.69	3369.35	-2829.97	1833.81	1.34	-0.20	-1.33	528943.90	1711538.95	N 39 56 51.72	W 80 31 43.95	5.93
	9805.00	88.87	140.96	6597.86	5447.74	3459.17	-2900.09	1890.21	1.14	-1.02	-0.50	528873.79	1711595.36	N 39 56 51.04	W 80 31 43.21	5.94
	9894.00	88.87	140.02	6599.61	5449.49	3547.91	-2968.75	1946.83	1.06	0.00	-1.06	528805.14	1711651.97	N 39 56 50.36	W 80 31 42.48	5.96
	9984.00	88.76	139.87	6601.47	5451.35	3637.58	-3037.62	2004.73	0.21	-0.12	-0.17	528736.27	1711709.87	N 39 56 49.69	W 80 31 41.72	5.98
	10074.00	88.80	140.34	6603.39	5453.27	3727.27	-3106.65	2062.44	0.52	0.04	0.52	528667.24	1711767.58	N 39 56 49.01	W 80 31 40.97	5.99
	10163.00	88.80	140.17	6605.25	5455.13	3815.98	-3175.07	2119.33	0.19	0.00	-0.19	528598.82	1711824.47	N 39 56 48.34	W 80 31 40.23	6.00
	10253.00	88.97	140.87	6607.01	5456.89	3905.73	-3244.52	2176.54	0.80	0.19	0.78	528529.37	1711881.68	N 39 56 47.66	W 80 31 39.49	6.02
	10343.00	89.18	141.55	6608.46	5458.34	3995.55	-3314.66	2232.92	0.79	0.23	0.76	528459.24	1711938.05	N 39 56 46.98	W 80 31 38.75	6.03
	10432.00	89.28	142.03	6609.65	5459.53	4084.42	-3384.59	2287.96	0.55	0.11	0.54	528389.31	1711993.09	N 39 56 46.29	W 80 31 38.04	6.05
	10522.00	89.24	142.67	6610.82	5460.70	4174.34	-3455.84	2342.93	0.71	-0.04	0.71	528318.06	1712048.06	N 39 56 45.60	W 80 31 37.32	6.06
	10611.00	89.04	141.80	6612.15	5462.03	4263.24	-3526.19	2397.43	1.00	-0.22	-0.98	528247.72	1712102.56	N 39 56 44.91	W 80 31 36.61	6.08
	10701.00	89.18	142.20	6613.55	5463.43	4353.13	-3597.10	2452.84	0.47	0.16	0.44	528176.81	1712157.96	N 39 56 44.21	W 80 31 35.89	6.09
	10791.00	89.21	141.76	6614.82	5464.70	4443.02	-3668.00	2508.27	0.49	0.03	-0.49	528105.92	1712213.38	N 39 56 43.52	W 80 31 35.17	6.10
	10880.00	89.21	142.98	6616.04	5465.92	4531.94	-3738.47	2562.60	1.37	0.00	1.37	528035.44	1712267.71	N 39 56 42.83	W 80 31 34.46	6.12
	10970.00	89.07	143.62	6617.39	5467.27	4621.90	-3810.62	2616.38	0.73	-0.16	0.71	527963.30	1712321.49	N 39 56 42.12	W 80 31 33.76	6.13
	11059.00	88.97	144.64	6618.92	5468.80	4710.88	-3882.73	2668.52	1.15	-0.11	1.15	527891.19	1712373.63	N 39 56 41.41	W 80 31 33.08	6.15
	11149.00	89.55	145.12	6620.08	5469.96	4800.87	-3956.34	2720.29	0.84	0.64	0.53	527817.59	1712425.40	N 39 56 40.69	W 80 31 32.40	6.16
	11238.00	89.42	144.87	6620.88	5470.76	4889.87	-4029.24	2771.34	0.32	-0.15	-0.28	527744.69	1712476.45	N 39 56 39.98	W 80 31 31.74	6.17

09/09/2014

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
	11327.00	89.45	143.50	6621.76	5471.64	4978.86	-4101.40	2823.42	1.54	0.03	-1.54	527672.53	1712528.52	N 39 56 39.27	W 80 31 31.06	6.19
	11417.00	89.66	143.07	6622.45	5472.33	5068.83	-4173.55	2877.22	0.53	0.23	-0.48	527600.39	1712582.33	N 39 56 38.56	W 80 31 30.35	6.20
	11506.00	89.93	143.46	6622.77	5472.65	5157.80	-4244.87	2930.46	0.53	0.30	0.44	527529.07	1712635.55	N 39 56 37.86	W 80 31 29.66	6.21
	11596.00	89.59	143.01	6623.15	5473.03	5247.77	-4316.97	2984.32	0.63	-0.38	-0.50	527456.97	1712689.42	N 39 56 37.16	W 80 31 28.96	6.22
	11686.00	89.79	144.25	6623.64	5473.52	5337.75	-4389.44	3037.69	1.40	0.22	1.38	527384.51	1712742.78	N 39 56 36.45	W 80 31 28.26	6.23
	11775.00	89.86	145.47	6623.91	5473.79	5426.74	-4462.21	3088.92	1.37	0.08	1.37	527311.74	1712794.01	N 39 56 35.73	W 80 31 27.59	6.25
	11864.00	89.66	146.08	6624.28	5474.16	5515.73	-4535.80	3138.97	0.72	-0.22	0.69	527238.15	1712844.06	N 39 56 35.01	W 80 31 26.94	6.26
	11954.00	89.69	144.44	6624.79	5474.67	5605.72	-4609.76	3190.26	1.82	0.03	-1.82	527164.20	1712895.34	N 39 56 34.29	W 80 31 26.27	6.27
	12044.00	89.52	142.66	6625.41	5475.29	5695.69	-4682.14	3243.72	1.99	-0.19	-1.98	527091.81	1712948.81	N 39 56 33.58	W 80 31 25.58	6.29
	12133.00	89.45	141.10	6626.21	5476.09	5784.58	-4752.16	3298.66	1.75	-0.08	-1.75	527021.81	1713003.74	N 39 56 32.89	W 80 31 24.86	6.30
	12223.00	89.38	139.54	6627.13	5477.01	5874.31	-4821.42	3356.12	1.73	-0.08	-1.73	526952.55	1713061.20	N 39 56 32.21	W 80 31 24.11	6.31
	12312.00	89.52	139.23	6627.99	5477.87	5962.92	-4888.97	3414.06	0.38	0.16	-0.35	526884.99	1713119.13	N 39 56 31.55	W 80 31 23.36	6.32
	12402.00	89.35	140.01	6628.87	5478.75	6052.56	-4957.53	3472.36	0.89	-0.19	0.87	526816.44	1713177.43	N 39 56 30.88	W 80 31 22.60	6.34
	12491.00	89.48	142.47	6629.78	5479.66	6141.39	-5026.92	3528.07	2.77	0.15	2.76	526747.05	1713233.14	N 39 56 30.20	W 80 31 21.87	6.35
	12580.00	89.24	143.50	6630.78	5480.66	6230.34	-5097.98	3581.65	1.19	-0.27	1.16	526676.00	1713286.72	N 39 56 29.51	W 80 31 21.18	6.36
	12670.00	89.28	144.40	6631.94	5481.82	6320.32	-5170.74	3634.61	1.00	0.04	1.00	526603.24	1713339.67	N 39 56 28.79	W 80 31 20.49	6.37
	12759.00	89.42	144.18	6632.95	5482.83	6409.31	-5243.00	3686.55	0.29	0.16	-0.25	526530.98	1713391.62	N 39 56 28.09	W 80 31 19.81	6.38
	12849.00	90.55	143.87	6632.97	5482.85	6499.31	-5315.83	3739.42	1.30	1.26	-0.34	526458.15	1713444.48	N 39 56 27.37	W 80 31 19.12	6.39
	12938.00	90.48	144.47	6632.17	5482.05	6588.30	-5387.99	3791.52	0.68	-0.08	0.67	526386.00	1713496.58	N 39 56 26.66	W 80 31 18.44	6.40
	13027.00	90.52	144.57	6631.40	5481.28	6677.29	-5460.46	3843.17	0.12	0.04	0.11	526313.54	1713548.23	N 39 56 25.95	W 80 31 17.77	6.41
	13117.00	90.00	145.26	6630.99	5480.87	6767.29	-5534.10	3894.90	0.96	-0.58	0.77	526239.89	1713599.96	N 39 56 25.23	W 80 31 17.09	6.42
	13206.00	89.45	145.00	6631.41	5481.29	6856.29	-5607.12	3945.78	0.68	-0.62	-0.29	526166.88	1713650.84	N 39 56 24.52	W 80 31 16.43	6.43
	13296.00	89.45	145.58	6632.28	5482.16	6946.28	-5681.10	3997.03	0.64	0.00	0.64	526092.90	1713702.08	N 39 56 23.79	W 80 31 15.76	6.44
	13384.00	89.73	146.27	6632.91	5482.79	7034.26	-5753.99	4046.33	0.85	0.32	0.78	526020.02	1713751.38	N 39 56 23.08	W 80 31 15.12	6.45
	13473.00	89.42	146.72	6633.57	5483.45	7123.21	-5828.20	4095.46	0.61	-0.35	0.51	525945.81	1713800.50	N 39 56 22.35	W 80 31 14.47	6.46
	13563.00	89.42	147.20	6634.48	5484.36	7213.14	-5903.64	4144.53	0.53	0.00	0.53	525870.37	1713849.57	N 39 56 21.61	W 80 31 13.83	6.47
	13652.00	87.94	146.60	6636.53	5486.41	7302.04	-5978.18	4193.11	1.79	-1.66	-0.67	525795.84	1713898.16	N 39 56 20.88	W 80 31 13.20	6.48
	13741.00	88.01	146.15	6639.67	5489.55	7390.95	-6052.24	4242.37	0.51	0.08	-0.51	525721.78	1713947.41	N 39 56 20.15	W 80 31 12.56	6.49
	13831.00	87.80	146.14	6642.96	5492.84	7480.86	-6126.93	4292.47	0.23	-0.23	-0.01	525647.09	1713997.51	N 39 56 19.42	W 80 31 11.90	6.50
Final Survey 17Mar13	13870.00	87.70	146.62	6644.50	5494.38	7519.82	-6159.38	4314.05	1.26	-0.26	1.23	525614.64	1714019.09	N 39 56 19.10	W 80 31 11.62	6.50
Projection to Bit	13932.00	87.70	146.62	6646.98	5496.86	7581.73	-6211.11	4348.13	0.00	0.00	0.00	525562.92	1714053.17	N 39 56 18.59	W 80 31 11.17	6.51

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 (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	18.650		Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / Noble Energy SHL-8D-HS Gyro 0' MD to 13932' MD
	18.650	2980.000		Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / Noble Energy SHL-8D-HS Gyro 0' MD to 13932'
	2980.000	13870.000		Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / Noble Energy SHL-8D-HS Gyro 0' MD to 13932'

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
		13870.000	13932.000		Act Stns	30.000	30.000	SLB_BLIND+TREND		Original Borehole / Noble Energy SHL-8D-HS Gyro 0' MD to 13932'						