

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

PM

API 47-051-01655 County Marshall District Sandhill
Quad Valley Grove Pad Name SHL-13 Field/Pool Name _____
Farm name Paul H. and Annette Hemsley Well Number SHL13CHS
Operator (as registered with the OOG) Noble Energy, Inc.
Address 333 Technology Drive, Suite 116 City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4428334.97 Easting 539638.41
Landing Point of Curve Northing 4428508.18 Easting 539574.41
Bottom Hole Northing 4429297.04 Easting 538997.70

Elevation (ft) 1291.22 GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
Synthetic Oil Based

Date permit issued 7/16/2013 Date drilling commenced 7/31/2013 Date drilling ceased 10/13/2013
Date completion activities began 6/1/14 Date completion activities ceased 7/19/14
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 561', 763' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1600' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 763 - 785.04' Pittsburgh, 1266.74' - 1269.77' Mahoning Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

RECEIVED
Office of Oil and Gas
N
N
OCT 09 2014
Reviewed by: _____

10/31/2014

API 47-051 - 01655 Farm name Paul H. and Annette Hemsley Well number SHL13CHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	36	30	40	N			Y
Surface	24	20	418	N	J-55 94#		Y
Coal							
Intermediate 1	17-1/2	13-3/8	1234	N	J-55 54.5#		Y
Intermediate 2	12-3/8	9-5/8	3231	N	J-55 36#		Y
Intermediate 3							
Production	8-3/4	5-1/2	10266	N	P-110 20#		Y
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Type 1	503	15.6	1.2	108	0	8
Coal							
Intermediate 1	Type 1	1029	15.6	1.19	225	0	8
Intermediate 2	Type 1	1263	15.6	1.19	266	0	8
Intermediate 3							
Production	Class A	1380	14.8	1.39	352	1550	8
Tubing							

Drillers TD (ft) 10290 Loggers TD (ft) 10213
 Deepest formation penetrated Marcellus Plug back to (ft) 6304
 Plug back procedure Cement Plug 1 of 2 from 6885 to 6304, 47.5bbbls 17.5 ppg .94 yield Class H Cement. Cement Plug 2 of 2 from 6403 to 5677, 51 bbbls 17.5ppg .94 yield Class H Cement

Kick off depth (ft) 5715 _____

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
4 Centralizers on Surface (Every third joint), 10 on Intermediate 1 (Every third joint), 56 on Intermediate 2 (Every third joint), and 134 on Production casing (Every third joint, till Curve, then Every Joint).

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

API 47- 051 - 01655

Farm name Paul H. and Annette Hemsley

Well number SHL13CHS

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	PLEASE SEE ATTACHED PERFORATION RECORD				

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	PLEASE SEE ATTACHED STIMULATION INFORMATION PER STAGE SHEET							

Please insert additional pages as applicable.

Perforation Record

API: 47-051-01655

Farm name: _____

Paul H & Annette A
Hemsley

Well Name: SHL-13C-HS

Stage No.	Stim Date	Top Perf	Bottom Perf	# of Perfs	Formation
1	6/19/2014	10025	10097	48	Marcellus
2	6/19/2014	9823	9977	40	Marcellus
3	6/22/2014	9623	9777	40	Marcellus
4	6/22/2014	9423	9577	40	Marcellus
5	6/23/2014	9223	9377	40	Marcellus
6	6/23/2014	9023	9177	40	Marcellus
7	6/23/2014	8823	8977	40	Marcellus
8	6/24/2014	8623	8777	40	Marcellus
9	6/24/2014	8423	8577	40	Marcellus
10	6/24/2014	8223	8377	40	Marcellus
11	6/24/2014	8023	8177	40	Marcellus
12	6/24/2014	7823	7977	40	Marcellus
13	6/25/2014	7623	7777	40	Marcellus
14	6/25/2014	7423	7577	40	Marcellus
15	6/29/2014	7223	7377	40	Marcellus
16	6/30/2014	7061	7177	40	Marcellus

STIMULATION INFORMATION PER STAGE

API: 47-051-01655

Farm name:

Paul H & Annette A Hemsley

Well Name: SHL-13C-HS

Stage No.	Stim Date	Avg Rate (bpm)	ATP (psi)	Max BD Pressure	ISIP (psi)	Proppant (lbs)	Water (BBLs)	Amount of N ² / other
1 Inj Test	6/18/2014	17.7	8024	9277	6072	0	1074.33	
1	6/19/2014	69.7	6711	5959	3880	497856	11113.19	
2	6/22/2014	68.7	6402	6207	4514	502982	9633.79	
3	6/22/2014	63.5	7519	6458	4113	499908	13133.57	
4	6/22/2014	68.7	6815	6042	4810	502327	10760.57	
5	6/23/2014	65.8	7114	6545	5353	500921	10498.18	
6	6/23/2014	68.7	6843	6083	4117	502262	10369.91	
7	6/23/2014	68.8	6808	6193	4912	501024	10468.19	
8	6/24/2014	68.7	6892	6020	4701	500034	11469.67	
9	6/24/2014	67.8	7041	6390	4257	498214	9527.42	
10	6/24/2014	68.7	6934	6015	4871	502030	9158.31	
11	6/24/2014	67.8	6724	6148	4439	499843	11393.65	
12	6/25/2014	66.9	7102	6547	3892	505235	11124.40	
13	6/25/2014	69.0	6745	7008		470387	8416.85	
14 Inj Test	6/26/2014	19.3	5246		5434	0	209.69	
14	6/29/2014	67.1	7009	7064	4645	501368	10187.12	
15	6/29/2014	68.3	6327	6822	5180	491630	9917.31	
16	6/30/2014	68.3	6331	6570	4644	500064	11503.66	

API 47- 051 - 01655 Farm name Paul H. and Annette Hemsley Well number SHL13CHS

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>Marcellus</u>	<u>6784</u> TVD	<u>10290</u> MD
_____	_____	_____
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas 2448 mcfpd Oil 48 bpd NGL 147 bpd Water 528 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	<u>0</u>		<u>0</u>		
	PLEASE SEE FORMATION SHEET				

Please insert additional pages as applicable.

Drilling Contractor Precision Drilling Company
Address 5400 D Big Tyler Road City Charleston State WV Zip 25313

Logging Company Diversified Well Logging
Address 711 West 10th Street City Reserve State LA Zip 70084

Cementing Company Schlumberger
Address 4600 J. Barry Court, Suite 200 City Canonsburg State PA Zip 15317

Stimulating Company Halliburton Energy SRCS
Address 121 Champion Way, Suite 110 City Canonsburg State PA Zip 15317

Please insert additional pages as applicable.

Completed by Regina A. Logue Telephone 724-820-3559
Signature Regina A. Logue Title Regulatory Analyst Date 10/16/14

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

SHL 13C
47-051-01655

Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Shale	0	732	0	732	
Pittsburgh Coal	732	742	732	742	
Shale and Sandstone	742	1516	742	1516	
Gas Sand	1516	1574	1516	1574	
Shale	1574	1693	1574	1693	
1st Salt Sand	1693	1756	1693	1756	
2nd Salt Sand	1756	1765	1756	1765	
3rd Salt Sand	1765	1815	1765	1815	
Shale	1815	1841	1815	1841	
Maxton Sand	1841	1958	1841	1958	
Shale	1958	1978	1958	2509	
Big Lime	1978	2023	1978	2023	
Big Injun	2023	2165	2023	2165	
Price	2165	2509	2165	2509	
Murrysville	2509	2522	2509	2872	
Shale	2522	2726	2522	2726	
50' Sand	2726	2743	2726	2743	
Shale	2743	2829	2743	2829	
Gordon Stray	2829	2841	2829	2841	
Shale	2841	2872	2841	2872	
Gordon	2872	2890	2872	2890	
Shale	2890	2985	2890	2985	
Fifth Sand	2985	3023	2985	3023	
Shale	3023	3423	3023	3423	
Speechley Sand	3423	3447	3423	3447	
Shale	3447	4331	3447	4333	
Warren Sand	4331	4345	4333	4347	
Shale	4345	5252	4347	5254	
Java Shale	5252	5322	5254	5324	
Pipe Creek Shale	5322	5366	5324	5368	
Angola Shale	5366	5992	5368	5997	
Rhinestreet	5992	6406	5997	6429	
Cashaqua	6406	6498	6429	6534	
Middlesex	6498	6535	6534	6579	
West River	6535	6576	6579	6631	
Burkett	6576	6609	6631	6675	
Tully Limestone	6609	6637	6675	6716	
Hamilton	6637	6751	6716	6950	
Marcellus	6751	6802	6950	7268	Gas
Onondaga	6802	6807	7268	not encountered	
Huntersville	6807	not encountered	not encountered	not encountered	

Hydraulic Fracturing Fluid Product Component Information Disclosure



Job Start Date:	6/1/2014
Job End Date:	6/30/2014
State:	West Virginia
County:	Marshall
API Number:	47-051-01655-00-00
Operator Name:	Noble Energy, Inc.
Well Name and Number:	SHL13 C
Longitude:	-80.53581000
Latitude:	40.00420000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,784
Total Base Water Volume (gal):	7,138,303
Total Base Non Water Volume:	0

Hydraulic Fracturing Fluid Composition:

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	Base Fluid					
			Fresh Water	7732-18-5	100.00000	87.52042	Density = 8.340
SAND - PREMIUM WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	9.38622	
SAND - COMMON WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	2.41215	
HYDROCHLORIC ACID 10-30%	Halliburton	Solvent					
			Hydrochloric acid	7647-01-0	30.00000	0.04144	
HYDROCHLORIC ACID 5-10%	Halliburton	Solvent					
			Hydrochloric acid	7647-01-0	10.00000	0.03809	
FR-66	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	54742-47-8	30.00000	0.02730	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive					
			Acetic anhydride	108-24-7	100.00000	0.00336	
			Acetic acid	64-19-7	60.00000	0.00202	
BE-9	Halliburton	Biocide					

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			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00411	
Scalechek® LP-65 Scale Inhibitor	Halliburton	Scale Inhibitor					
			Ammonium chloride	12125-02-9	10.00000	0.00251	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00000	0.00068	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00034	
			Naphthalene	91-20-3	5.00000	0.00006	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00006	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00033	
			Propargyl alcohol	107-19-7	10.00000	0.00006	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
		Other Ingredient(s)					
			Water	7732-18-5		0.62974	
		Other Ingredient(s)					
			Polyacrylamide copolymer	Confidential		0.02730	
		Other Ingredient(s)					
			Organic phosphonate	Confidential		0.01503	
		Other Ingredient(s)					
			Ammonium chloride	12125-02-9		0.00455	
		Other Ingredient(s)					
			Alcohols, C12-16, ethoxylated	68551-12-2		0.00455	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.00455	
		Other Ingredient(s)					
			Fatty acid tall oil amide	Confidential		0.00455	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
		Other Ingredient(s)					
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6		0.00091	
		Other Ingredient(s)					
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8		0.00091	
		Other Ingredient(s)					
			Oxyalkylated phenolic resin	Confidential		0.00034	
		Other Ingredient(s)					
			Formaldehyde	50-00-0		0.00025	
		Other Ingredient(s)					

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			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00017	
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00017	
		Other Ingredient(s)					
			Fatty acids, tall oil	Confidential		0.00017	
		Other Ingredient(s)					
			Oxyalkylated phenolic resin	Confidential		0.00011	
		Other Ingredient(s)					
			Olefins	Confidential		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00001	
		Other Ingredient(s)					
			Olefins	Confidential		0.00001	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

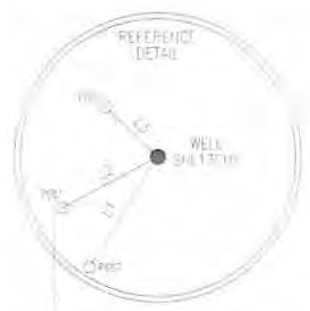
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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47-051-01655

Well is located on topo map 13,640' feet south of Latitude: 40° 02' 30"

Well is located on topo map 10,033' feet west of Longitude: 80° 30' 00"



APPROX. LANDING POINT	
UTM 17-NAD83	44428508.48
	E:539638.41
NAD27, WV NORTH	4450112.54
	E:1709831.53

LINE	BEARING	DISTANCE
L1	S 31°59'05" W	279.66'
L2	S 62°04'24" W	235.32'
L3	N 46°20' 15" W	199.35'

PERMITTED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4429294.90
 E:539003.66
 NAD27, WV NORTH
 N:552730.53
 E:1707801.89

AS DRILLED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4429297.04
 E:538997.70
 NAD27, WV NORTH
 N:552737.89
 E:1707782.44

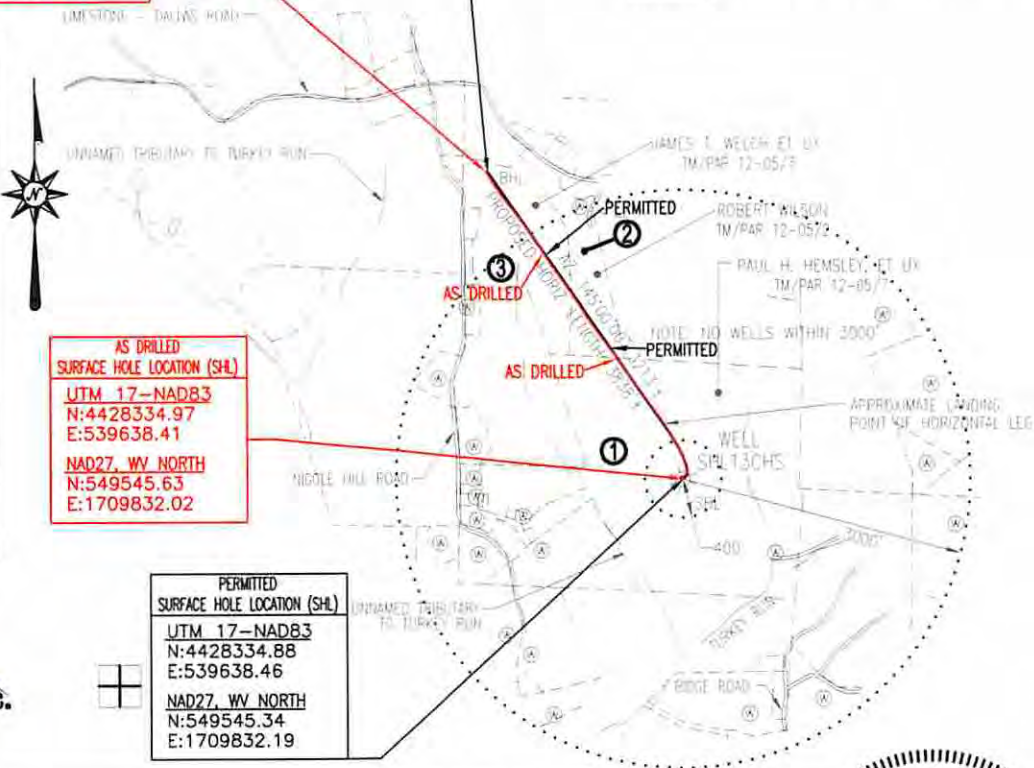
AS DRILLED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4428334.97
 E:539638.41
 NAD27, WV NORTH
 N:549545.63
 E:1709832.02

PERMITTED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4428334.88
 E:539638.46
 NAD27, WV NORTH
 N:549545.34
 E:1709832.19

- NOTES:
- There are no water wells or developed springs within 250' of proposed well.
 - There are no existing buildings within 625' of proposed well.
 - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
 - There are no native trout streams within 300' of proposed well.
 - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
 - It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

LEGEND

- COPE MAP SYMBOL
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED
- WATER SOURCE
- LEASE NUMBER BASED ON ATTACHED WW-6A1
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- PROPOSED HORIZONTAL WELL
- ROAD
- STREAM (ORDER LVL)
- AS DRILLED
- WELLS WITHIN 3000'
- EXISTING WELLS
- PLUGGED WELLS

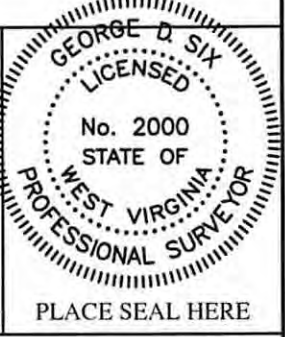


Blue Mountain Inc.
 11023 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

FILE #: SHL13CHS-AS DRILLED
 DRAWING #: SHL13CHS-AS DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

Signed: *George D. Six*
 R.P.E.: _____ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: OCTOBER 2, 2014
 OPERATOR'S WELL #: SHL13CHS-AS DRILLED
 API WELL #: 47 51
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: TURKEY RUN ELEVATION: 1283.00'

COUNTY/DISTRICT: MARSHALL / SAND HILL QUADRANGLE: VALLEY GROVE, WV 7.5'

SURFACE OWNER: PAUL H. & ANNETTE A. HEMSLEY ACREAGE: 121.65±

OIL & GAS ROYALTY OWNER: SEE ATTACHED WW-6A1 ACREAGE: 172.454±

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6781'± TMD: 10,313'±

WELL OPERATOR NOBLE ENERGY INC. DESIGNATED AGENT STEVEN M. GREEN
 Address 333 TECHNOLOGY DRIVE, SUITE 116 Address 500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590
 City CANONSBURG State PA Zip Code 15317 City CHARLESTON State WV Zip Code 25301

10/31/2014