

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

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NOV 30 2018

API 47-061-01781 County Monongalia District Clay
Quad Blacksville WV Pad Name Coastal Field/Pool Name WV Department of Environmental Protection
Farm name Coastal Forest Resource Company Well Number Coastal 2H
Operator (as registered with the OOG) North East Natural Energy LLC
Address 707 Virginia Street East, Suit 1200 City Charleston State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4395377.8 Easting 568187.8
Landing Point of Curve Northing 4395136.4 Easting 568025.6
Bottom Hole Northing 4392914.6 Easting 569734.0

Elevation (ft) 1420' 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 Based Mud for Horizontal Section; BIO-BASE 365, CALCIUM CHLORIDE POWDER, G-SEAL PLUS, HRP, LIME, M-I WATE (BARITE), M-I-X II MEDIUM, MEGADRIL P SYSTEM, MEGADRIL P SYSTEM RENTAL, MEGAMUL, SAFE-CARB 250, VERSATHIN HF, VERSAWET, VG-PLUS, VINSEAL MEDIUM, WALNUT NUT PLUG MEDIUM

Date permit issued 08/25/2017 Date drilling commenced 10/16/2017 Date drilling ceased 11/26/2017
Date completion activities began 01/24/2018 Date completion activities ceased 03/20/2018
Verbal plugging (Y/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 1243' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2510' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 600', 1200' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed

Reviewed by:
[Signature]
1/28/2018

API 47-061 - 01781 Farm name Coastal Forest Resource Company Well number Coastal 2H

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	30	24	58	N	N/A	N/A	Y to surface
Surface	17.5	13 3/8	1338'	N	54.5	N/A	Y 49 bbls
Coal							
Intermediate 1	12.25	9 5/8	2656'	N	40	N/A	Y 1 bbls
Intermediate 2							
Intermediate 3							
Production	8.5	5.5	17825'	N	20	N/A	N 1000'
Tubing							
Packer type and depth set							

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Comment Details _____

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WV Department of
Environmental Protection
WOC
(hrs)

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	4500 psi ready mix	36.4		.75	27.27	CTS	48
Surface	Class A	1080	15.6	1.21	1137.4	CTS	8
Coal							
Intermediate 1	Class A	940	15.6	1.209	1136.5	CTS	8
Intermediate 2							
Intermediate 3							
Production	Class A	3814	14.5	1.1859	4508	2958'	48
Tubing							

Drillers TD (ft) 17865' Loggers TD (ft) 17836'

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure _____

Kick off depth (ft) 7707'

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 _____

Surface: bow spring centralizers every 3rd joint or aprox 120'

Intermediate: bow spring centralizers every 3rd joint or aprox 120'

Production: Hard bodied spiral centralizers every other joint or aprox 80' from TD to KOP then bow spring from KOP to 9 5/8" every forth joint or aprox 140'

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 _____

WR-35
Rev. 8/23/13

API 47- 061 - 01781 Farm name Coastal Forest Resource Company Well number Coastal 2H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>8221.78</u>	<u>TVD</u>	<u>17865</u> MD
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3536 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 1793 mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	<u>0</u>		<u>0</u>		<u>See Attached</u>
					RECEIVED Office of Oil and Gas
					NOV 30 2018
					WV Department of Environmental Protection

Please insert additional pages as applicable.

Drilling Contractor Patterson
Address 10713 West Sam Houston Parkway N., Ste.800 City Houston State TX Zip 77064

Logging Company Baker Hughes
Address 837 Phillipi Pike City Clarksburgh State WV Zip 26301

Cementing Company BJ Services
Address 11211 FM 2920 Rd. City Tomball State TX Zip 77375

Stimulating Company Producers Service Corporation
Address 109 Graham Street City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Hollie Medley Telephone 304-212-0422
Signature Hollie Medley Title Regulatory Manager Date 10-11-18

WR-35
Rev. 8/23/13

API 47- 061 - 01784 Farm name Coastal Forest Resources Company Well number Coastal 6H

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	8,222.8'	TVD 17,618' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 2702.08 psi Bottom Hole _____ psi DURATION OF TEST 24 hrs
 OPEN FLOW Gas 1074.875 mcfpd Oil _____ bpd NGL _____ bpd Water _____ 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)
	0		0		Please See Attachment

Please insert additional pages as applicable.

Drilling Contractor Patterson-UTI Drilling Co.
 Address 207 Carlton Dr. City Eighty Four State PA Zip 15330
 Logging Company Baker Hughes
 Address 837 Philippi Pike City Clarksburg State WV Zip 26301
 Cementing Company BJ Services
 Address 2228 Philippi Pike City Clarksburg State WV Zip 26301
 Stimulating Company Producers Service Corporation
 Address 109 Graham Street City Zanesville State OH Zip 43701

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Completed by Hollie Medley Telephone 304-212-0422
 Signature *Hollie Medley* Title Regulatory Manager Date 10-11-18 WV Department of Environmental Protection
 Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

Perforation Record

Stage Number	Report Date	Cluster 5 Bottom TD	Cluster 1 Top TD	Total Shots
1	2/10/2018	17,464	0	0
2	2/10/2018	17,263	17,419	40
3	2/10/2018	17,064	17,221	40
4	2/11/2018	16,866	17,023	40
5	2/12/2018	16,668	16,824	40
6	2/12/2018	16,470	16,626	40
7	2/13/2018	16,271	16,428	40
8	2/13/2018	16,073	16,230	40
9	2/14/2018	15,875	16,031	40
10	2/14/2018	15,677	15,833	40
11	2/19/2018	15,478	15,635	40
12	2/20/2018	15,280	15,437	40
13	2/20/2018	15,082	15,239	40
14	2/21/2018	14,884	15,040	40
15	2/21/2018	14,685	14,842	40
16	2/22/2018	14,487	14,644	40
17	2/22/2018	14,289	14,446	40
18	2/22/2018	14,091	14,247	40
19	2/24/2018	13,892	14,049	40
20	3/2/2018	13,694	13,851	40
21	3/3/2018	13,496	13,653	40
22	3/3/2018	13,298	13,454	40
23	3/3/2018	13,100	13,256	40
24	3/4/2018	12,901	13,058	40
25	3/4/2018	12,703	12,860	40
26	3/5/2018	12,505	12,661	40
27	3/5/2018	12,307	12,463	40
28	3/5/2018	12,108	12,265	40
29	3/5/2018	11,910	12,067	40
30	3/6/2018	11,712	11,868	40
31	3/6/2018	11,514	11,670	40
32	3/6/2018	11,315	11,472	40
33	3/7/2018	11,117	11,274	40
34	3/7/2018	10,919	11,075	40
35	3/8/2018	10,721	10,877	40
36	3/9/2018	10,522	10,679	40
37	3/10/2018	10,523	10,684	40
38	3/10/2018	10,126	10,283	40
39	3/10/2018	9,928	10,084	40
40	3/11/2018	9,729	9,886	40
41	3/11/2018	9,531	9,688	40
42	3/12/2018	9,333	9,490	40

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43	3/12/2018	9,135	9,291	40
44	3/12/2018	8,936	9,093	40
45	3/14/2018	8,738	8,895	40
46	3/14/2018	8,540	8,697	40

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Stimulation Information Per Stage

Stage Number	Report Date	Avg Treating Rate (BPM)	Max Treating Pressure (psi)	Breakdown Pressure (psi)	ISIP (psi)	Proppant Amount (lbs)	Amount Water (bbls)
1	2/10/2018	75	9,577	7,265	5,972	302,480	8,275
2	2/10/2018	79	9,930	7,098	5,895	401,000	10,586
3	2/10/2018	74	9,830	7,786	6,091	399,180	9,014
4	2/11/2018	77	9,657	7,802	6,081	406,300	8,834
5	2/12/2018	73	10,204	8,140	5,828	335,000	9,795
6	2/12/2018	75	9,736	7,055	5,934	330,440	8,715
7	2/13/2018	80	10,278	6,884	5,607	400,960	8,691
8	2/13/2018	77	10,341	7,501	5,747	384,140	8,384
9	2/14/2018	80	10,092	6,962	6,701	401,160	8,522
10	2/14/2018	79	10,500	7,571	#N/A	398,780	7,759
11	2/19/2018	77	10,051	7,905	5,653	356,720	8,750
12	2/20/2018	80	9,594	7,571	7,033	399,640	9,063
13	2/20/2018	78	10,083	6,954	6,050	400,020	9,233
14	2/21/2018	81	9,903	7,318	6,195	397,680	8,934
15	2/21/2018	80	9,922	7,124	6,137	399,040	9,113
16	2/22/2018	80	9,861	7,213	6,080	400,470	8,852
17	2/22/2018	80	9,899	7,753	6,402	402,480	8,943
18	2/22/2018	79	9,933	7,730	6,432	401,520	8,967
19	2/24/2018	80	9,788	7,660	5,803	398,340	8,629
20	3/2/2018	80	9,330	7,810	5,625	356,440	8,252
21	3/3/2018	78	9,245	8,236	6,023	407,290	8,773
22	3/3/2018	78	9,572	7,207	5,967	387,740	8,022
23	3/3/2018	79	9,303	7,310	5,513	402,670	8,748
24	3/4/2018	80	9,333	7,866	6,240	399,810	9,910
25	3/4/2018	82	9,715	7,890	5,979	403,480	8,414
26	3/5/2018	79	9,318	7,851	6,469	405,320	8,690
27	3/5/2018	80	9,181	7,171	5,744	405,780	8,719
28	3/5/2018	78	9,597	7,700	5,504	372,880	8,251
29	3/5/2018	80	9,762	8,065	6,612	405,080	8,593
30	3/6/2018	81	9,211	7,483	5,771	399,960	8,776
31	3/6/2018	80	8,997	7,750	5,798	400,300	8,411
32	3/6/2018	80	9,252	8,535	5,736	412,840	8,606
33	3/7/2018	80	9,534	7,700	5,334	403,900	8,633
34	3/7/2018	80	8,940	7,513	5,698	402,140	8,225
35	3/8/2018	85	9,807	7,038	5,815	401,200	8,924
36	3/9/2018	83	8,953	7,887	5,225	400,040	8,340
37	3/10/2018	82	8,808	7,707	5,619	414,300	8,369
38	3/10/2018	81	8,938	8,007	5,499	399,120	8,071
39	3/10/2018	82	9,313	8,033	5,700	403,340	8,324
40	3/11/2018	81	9,077	7,324	5,674	407,440	8,091
41	3/11/2018	80	9,467	8,178	5,357	404,780	8,212
42	3/12/2018	80	9,705	8,142	5,652	399,820	8,226

02/15/2019

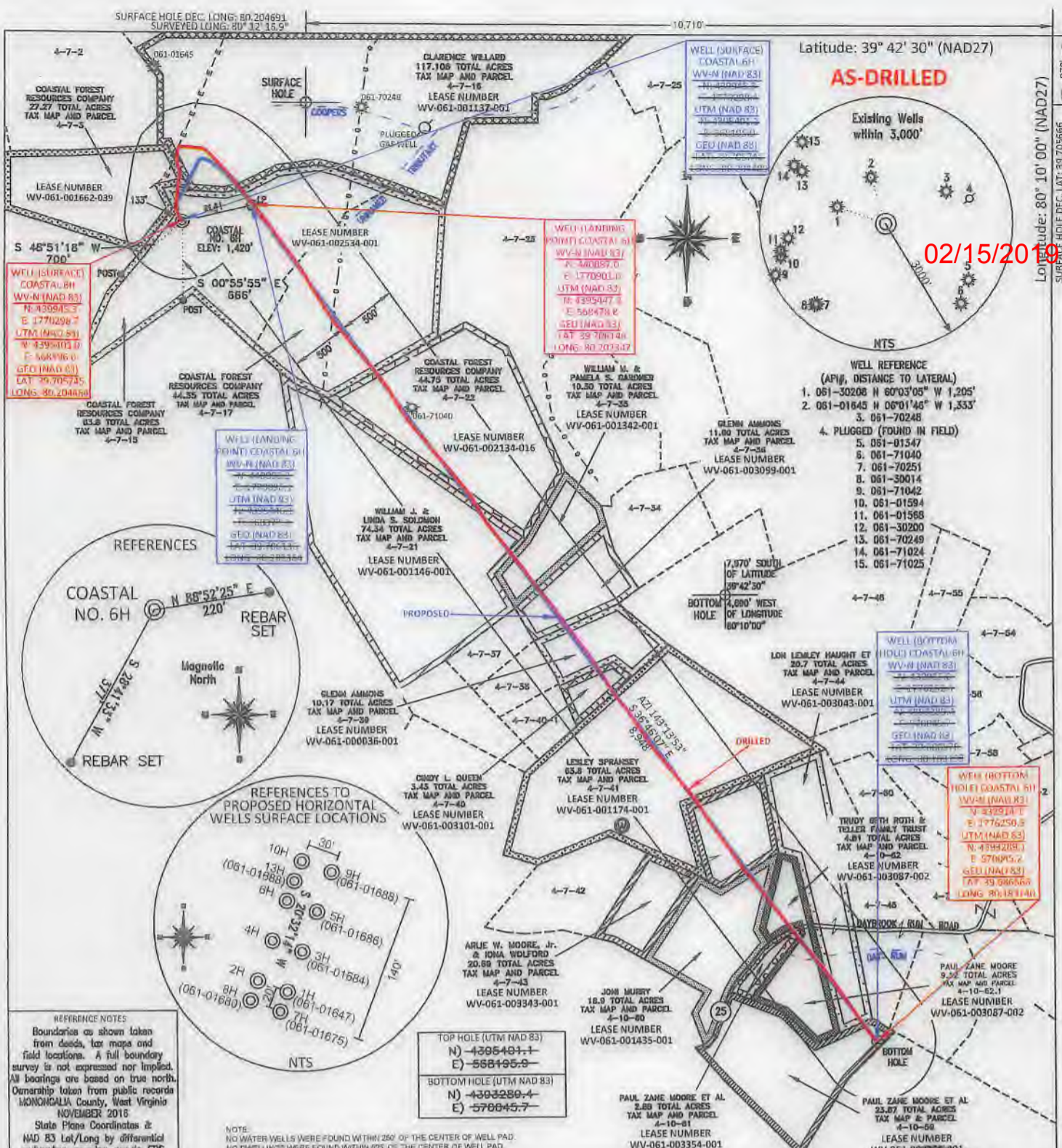
43	3/12/2018	80	9,212	7,738	5,768	402,020	8,242
44	3/12/2018	81	9,458	7,696	5,236	397,860	8,022
45	3/14/2018	80	10,083	7,746	5,764	344,100	7,959
46	3/14/2018	79	9,576	7,837	5,533	409,620	8,325

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Lithology/Formation

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, H2S, etc)
Sand/Shale/Silt	0	40			sand/shale/silt
Red Rock	40	120			red rock
Sand/Shale/Silt	120	2407			sand/shale/silt
Limestone	2407	2495			limestone
Big Injun	2495	2625			sandstone
Sand/Shale	2625	3140			sand/shale
Shale	3140	5140			shale
Grey Shale	5140	5488			shale
Shale	5488	5898			shale
Sandstone/Shale	5898	7754			shale/sandstone
Burkett	7754	7928	8152	8370	shale
Geneseo	7928	7974	8370	8434	shale
Tully	7974	8016	8434	8511	limestone
Hamilton	8016	8131	8511	8716	shale
Marcellus	8131	8187	8716	8861	shale
Cherry Valley	8187	8191	8861	8872	limestone
Lower Marcellus	8191		8872		shale

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REFERENCE NOTES
 Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records MONONGALIA County, West Virginia NOVEMBER 2018
 State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS Tracked by EAM

NOTE
 NO WATER WELLS WERE FOUND WITHIN 250' OF THE CENTER OF WELL PAD.
 NO DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF WELL PAD.

TOP HOLE (UTM NAD 83)
 N) -4395404.1
 E) -588195.9
BOTTOM HOLE (UTM NAD 83)
 N) -4393289.4
 E) -578845.7

FILE #: NNE12
 DRAWING #: 2353
 SCALE: PLAT: 1" = 1200'
 TICK MARK: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/200
 PROVEN SOURCE OF ELEVATION: SUBMETER MAPPING GRADE GPS

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: *[Signature]*
 L.L.S. #2124 : Ernest J. Benchek III



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

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

WATERSHED: DUNKARD CREEK ELEVATION: 1,420'
 COUNTY/DISTRICT: MONONGALIA / CLAY QUADRANGLE: BLACKSVILLE, WV
 SURFACE OWNER: COASTAL FOREST RESOURCES COMPANY ACREAGE: 63.8 +/-
 OIL & GAS ROYALTY OWNER: WACO OIL AND GAS, ET AL ACREAGE: 488.05 +/-
 LEASE NUMBERS: _____

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

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 8,204' TMD: 17,560.54'
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC DESIGNATED AGENT: JOHN ADAMS
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
 CITY: CHARLESTON STATE: WV ZIP CODE: 25301 CITY: CHARLESTON STATE: WV ZIP CODE: 25301

DATE: JUNE 19, 2018
 OPERATOR'S WELL #: COASTAL NO. 6H
 API WELL #: 47 61 01781 As Drilled
 STATE COUNTY PERMIT

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	2/9/2018
Job End Date:	3/15/2018
State:	West Virginia
County:	Monongalia
API Number:	47-061-01784-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Coastal 6H
Latitude:	39.69505000
Longitude:	-80.22288000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,244
Total Base Water Volume (gal):	16,116,310
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
Water	Company 1	Carrier/Base Fluid	Water	7732-18-5	100.00000	87.48355	None
Sand (Proppant)	Producers Service Corp	Proppant	Crystalline Silica (quartz)	14808-60-7	100.00000	11.74364	None
HCl Acid (7.5%)	Producers Service Corp	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.09721	None
STIMLUBE HBVB	Producers Service Corp	Friction Reducer	Petroleum Distallates	64742-47-8	30.00000	0.02917	None
			Ammonium Acetate	631-61-8	10.00000	0.00972	None
BIOC11219A	Nalco-Champion	Biocide	Methanol	67-56-1	60.00000	0.01247	None
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00623	None
			Glutaraldehyde	111-30-8	10.00000	0.00208	None
SCAL16486A	Nalco-Champion	Scale Inhibitor	Amine Triphosphate	Proprietary	30.00000	0.00164	None
			Ethylene Glycol	107-21-1	30.00000	0.00164	None

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PROHIB II	Producers Service Corp	Inhibitor					
			Acetic Acid	64-19-7	90.00000	0.00109	None
			Methanol	67-56-1	10.00000	0.00012	None
			2-Ethylhexanol	104-76-7	10.00000	0.00012	None
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00006	None
			Diethanolamine	111-42-2	1.00000	0.00001	None
PRO-DRB-LT	Producers Service Corp	Oxidizer					
			Ammonium Persulfate	7727-54-0	80.00000	0.00002	None
			Crystalline Silica in the form of Quartz	14808-60-7	15.00000	0.00000	None
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 Chemical(s)	Listed Above	See Trade Name(s) List					
			Ammonium Acetate	531-61-8	10.00000	0.00972	
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00623	
			Glutaraldehyde	111-30-8	10.00000	0.00208	
			Ethylene Glycol	107-21-1	30.00000	0.00164	
			Methanol	67-56-1	10.00000	0.00012	
			2-Ethylhexanol	104-76-7	10.00000	0.00012	
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00006	
			Diethanolamine	111-42-2	1.00000	0.00001	
			Crystalline Silica in the form of Quartz	14808-60-7	15.00000	0.00000	

* 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)

1.0 Real-Time Job Summary

1.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	DH Density (ppg)	DS Pmp Stg Tot (bbl)	DS Pump Press (psi)	DS Pump Rate (bbl/min)	Comments
Event	1	Arrive at Rig	Arrive at Rig	9/19/2017	13:30:00	USER					crew on location crew late to location due to accident on route 19 Start Charging 1330
Event	2	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/19/2017	13:30:00	USER					stay hydrated work together work smart use team lifts watch pinch points slips trips and falls
Event	3	Other	Water Test	9/19/2017	14:00:00	USER					ph 7 CL good temp 70 SG 1.000 Mud scales read water at 8.33ppg
Event	4	Safety Meeting - Pre Job	Safety Meeting - Pre Job	9/19/2017	15:50:00	USER					SWA Mustar points Buffer zone co man 911 caller pump schedule
Event	5	Start Job	Start Job	9/19/2017	16:32:31	COM5	8.47	0.00	-1.00	0.00	ready to pump loaded lines with 3bbl of water
Event	6	Test Lines	Test Lines	9/19/2017	16:37:36	COM5	8.14	2.90	4423.00	0.00	Closed in cement head tested kick outs to 500psi then tested lines to 4500psi good test
Event	7	Circulate Well	Circulate Well	9/19/2017	16:38:37	COM5	8.06	236	3.00	0.00	pumped 236bbl h2o to load casing and get fluid on Backside at an average rate of 7.5bpm with psi of 121
Event	8	Pump Spacer 1	Pump Spacer 1	9/19/2017	17:16:58	COM5	8.12	25.0	-1.00	1.50	pumped 25bbl of gel spacer @ 4.5bpm with psi of 50
Event	9	Pump Spacer 2	Pump Spacer 2	9/19/2017	17:23:03	COM5	8.09	8.0	45.00	4.30	pumped 8bbl of h2o to clean mix tubs out
Event	10	Pump Cement	Pump Cement	9/19/2017	17:28:24	COM5	8.09	240.0	9.00	1.50	Pumped 1075sks (240bbl

iCem[®] Service
 (v. 4.4.18)

Created: Tuesday, September 19, 2017

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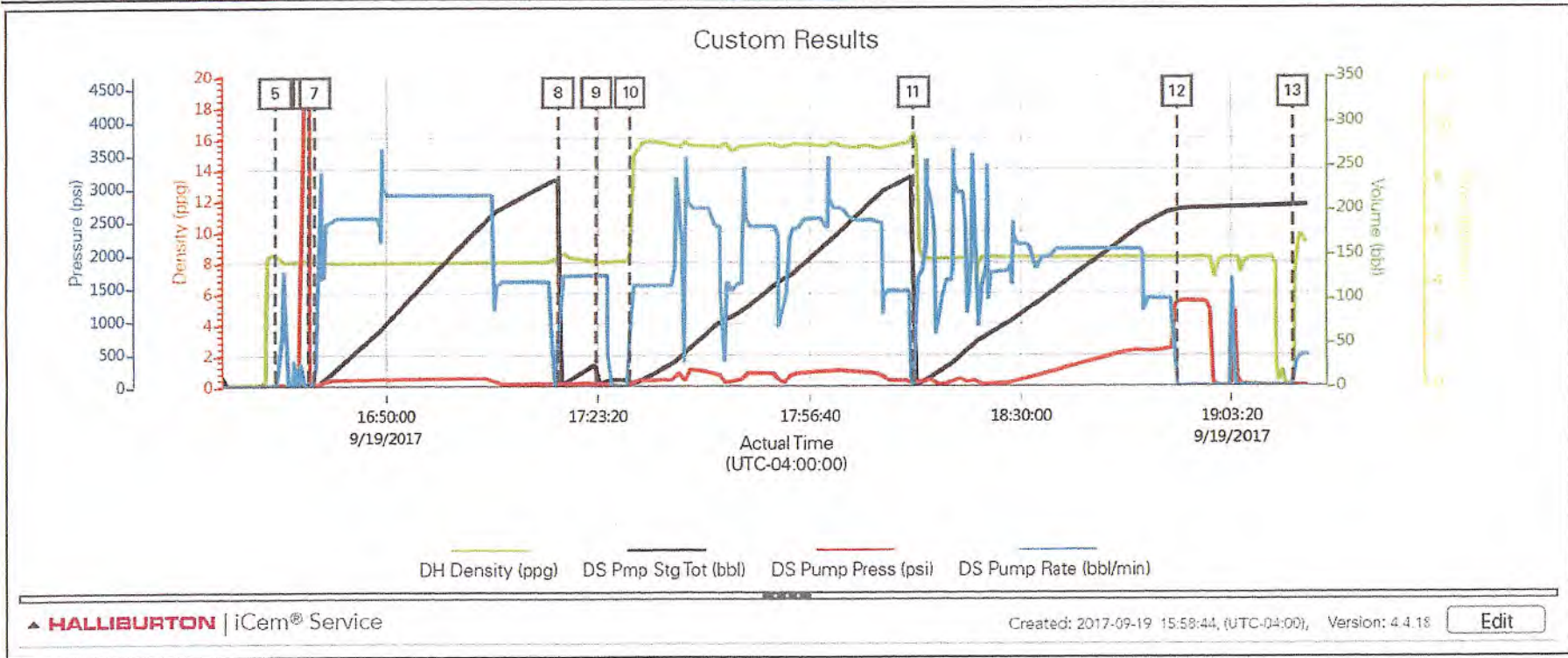
Class A) Halcem @ 15.6ppg
 1.21yield 5.41 gal/sk @ an
 average rate of 6.8bpm with
 psi of 200 with sampe
 weights of 15.8ppg,
 15.6ppg, and 15.6ppg and a
 tem of 75degrees 72bbl
 into cement we got returns
 to surface

Event	11	Pump Displacement	Pump Displacement	9/19/2017	18:13:10	COM5	8.40	200.0	25.00	0.00	dropped top plug and started displacement of 200bbl 150bbl into displacement we got cement to surface giving us 50bbl of cement to surface along with 25bbl of gel
Event	12	Bump Plug	Bump Plug	9/19/2017	18:54:43	COM5	8.29	200.00	1278.00	0.00	bumped plug with 200bbl pumped at 500psi and took to 1300 si and held for 5 min checked floats floats leaking by pumped 2bbl back into and released again floats still leaking by informed by OSR to close cement head in
Event	13	End Job	End Job	9/19/2017	19:12:43	COM5					done pumping start wash up Stop Charging @ 1930
Event	14	Safety Meeting - Pre Rig-Down	Safety Meeting - Pre Rig-Down	9/19/2017	19:37:07	USER					Slips trips falls pinch points work together work smart stay hydrated
Event	15	Crew Leave Location	Crew Leave Location	9/19/2017	21:37:44	USER					

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2.1 Case 1-Custom Results.png



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2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	Pump Stg Tot (bbl)	PS Pump Rate (bbl/min)	Recirc Density (ppg)	DS Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	9/30/2017	07:45:00	USER						
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/30/2017	09:50:00	USER						
Event	3	Depart Shop for Location	Depart Shop for Location	9/30/2017	10:00:00	USER						
Event	4	Arrive At Loc	Arrive At Loc	9/30/2017	13:35:00	USER						
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	9/30/2017	13:45:00	USER						rig still to run 1000' of casing, water temp 75°F.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/30/2017	14:00:00	USER						
Event	7	Rig-Up Equipment	Rig-Up Equipment	9/30/2017	14:10:00	USER						
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/30/2017	17:15:00	USER	43.00	31.90	0.00	7.45	0.00	
Event	9	Start Job	Start Job	9/30/2017	17:25:13	COM5	40.00	31.90	0.00	7.46	0.00	5bbl Load lines
Event	10	Test Lines	Test Lines	9/30/2017	17:27:13	COM5	36.00	37.10	0.00	7.45	0.00	test to 500psi, then 4500psi
Event	11	Circulate Well	Circulate Well	9/30/2017	17:30:05	COM5	42.00	0.00	0.00	7.46	0.00	170bbl Drill water to load hole.
Event	12	Pump Spacer 1	Pump Spacer 1	9/30/2017	17:54:14	COM5	37.00	0.00	0.00	7.49	1.10	25bbl Gel Spacer, 3bpm
Event	13	Pump Spacer 2	Pump Spacer 2	9/30/2017	18:03:34	COM5	79.00	0.00	0.00	7.50	4.90	10bbl FRESH Water
Event	14	Pump Cement	Pump Cement	9/30/2017	18:08:50	COM5	42.00	0.00	0.00	15.42	0.30	195bbl Class H cement 15.6ppg, 4bpm, 200psi, 80°F
Event	15	Pump Displacement	Pump Displacement	9/30/2017	19:08:00	COM5	50.00	194.80	0.00	3.74	0.00	199bbl Drill Water displacement, 39bbl of cement to surface.

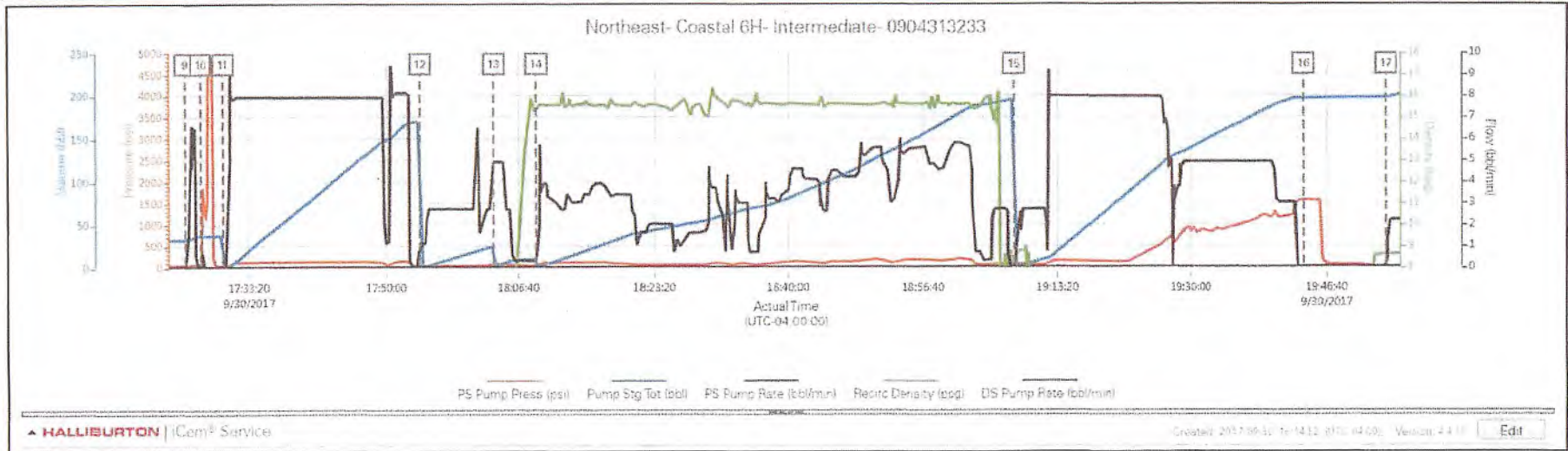
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Event	16	Bump Plug	Bump Plug	9/30/2017	19:43:49	COM5	bumped at 1100psi, taken to 1600psi. held for 5 min. bled back 1bbl.
Event	17	End Job	End Job	9/30/2017	19:53:54	COM5	
Event	18	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/30/2017	21:30:00	USER	
Event	19	Rig-Down Equipment	Rig-Down Equipment	9/30/2017	21:35:00	USER	
Event	20	Depart Location Safety Meeting	Depart Location Safety Meeting	9/30/2017	22:15:00	USER	
Event	21	Depart Location	Depart Location	9/30/2017	22:30:00	USER	

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3.1 Tiger #7312.png





Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 359876	Ship To #: 3821833	Quote #: 0022346085	Sales Order #: 0904296725
Customer: NORTHEAST NATURAL ENERGY LLC-EBUS		Customer Rep:	
Well Name: COASTAL	Well #: 6H	API/UWI #: 47-061-01784-00	
Field:	City (SAP): BLACKSVILLE	County/Parish: MONONGALIA	State: WEST VIRGINIA
Legal Description: 970S 39*42'30"-10710W 80*10'00"-BLACKSVI			
Contractor:		Rig/Platform Name/Num:	
Job BOM: 7521 7521			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA/HB67143		Srcv Supervisor: Brian Leasure	
Job			

Formation Name	
Formation Depth (MD)	Top Bottom
Form Type	BHST
Job depth MD	1340ft Job Depth TVD
Water Depth	Wk Ht Above Floor
Perforation Depth (MD)	From To

Well Data										
Description	New / Used	Size in	ID in	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD ft	Top TVD ft	Bottom TVD ft
Casing		24	23.75	94.62			0	40		
Casing		13.375	12.615	54.5	BTC	J-55	0	1340		
Open Hole Section			17.5				40	1340		

Tools and Accessories									
Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make	
Guide Shoe	13.375			1340	Top Plug	13.375		HES	
Float Shoe	13.375				Bottom Plug	13.375		HES	
Float Collar	13.375				SSR plug set	13.375		HES	
Insert Float	13.375				Plug Container	13.375		HES	
Stage Tool	13.375				Centralizers	13.375		HES	

Fluid Data												
Stage/Plug #: 1												
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal			
1	Water	Water	236	bbl	8.33			7.5				
2	Gel Spacer	Gel Spacer	25	bbl	8.4			4.5				
		20 lbm/bbl		NATIONAL PREMIUM GOLD - 50 LB BAG (101612629)								
		1 lbm/bbl		POLY-E-FLAKE (101216940)								

HALLIBURTON

Cementing Job Summary

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft ³ /sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal	
3	Fresh Water	Fresh Water	8	bbl	8.33					
4	HalCem (TM) System	HALCEM (TM) SYSTEM	1075	sack	15.6	1.21		6	5.41	
5	Fresh Water Displacement	Fresh Water Displacement	200	bbl	8.33			5.5		
Cement Left in Pipe		Amount	45 ft		Reason			Shoe Joint		
Mix Water:		pH 7	Mix Water Chloride:		Mix Water Temperature:			70°F		
Cement Temperature:		75 °F	Plug Displaced by:		8.4 lb/gal		Disp. Temperature:			70 °F
Plug Bumped?		Yes	Bump Pressure:		1300 psi		Floats Held?			No
Cement Returns:		50bbl	Returns Density:		lb/gal		Returns Temperature:			
Comment got 50bbl of cement to surface										

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2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	DH Density (ppg)	Pump Stg Tot (bbi)	PS Pump Rate (bbl/min)	DS Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	9/26/2017	00:05:00	USER						
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/26/2017	02:55:00	USER						
Event	3	Depart Shop for Location	Depart Shop for Location	9/26/2017	03:00:00	USER						
Event	4	Arrive At Loc	Arrive At Loc	9/26/2017	06:30:00	USER						
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	9/26/2017	06:35:00	USER						
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/26/2017	07:00:00	USER						
Event	7	Rig-Up Equipment	Rig-Up Equipment	9/26/2017	07:10:00	USER						
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/26/2017	08:45:00	USER	1.00	0.04	19.40	0.00	0.00	
Event	9	Start Job	Start Job	9/26/2017	09:00:13	COM5	-1.00	8.37	19.40	0.00	0.00	load lines 5bbl
Event	10	Test Lines	Test Lines	9/26/2017	09:02:07	COM5	1.00	0.11	24.50	0.00	0.00	test to 500psi, then 3000psi.
Event	11	Pump Cement	Pump Cement	9/26/2017	09:14:12	COM5	68.00	15.02	0.00	3.40	0.00	95bbl Cement 16.4ppg, 75°F, 4bpm, 200psi, weight checked three times.
Event	12	Pump Displacement	Pump Displacement	9/26/2017	09:48:23	COM5	-2.00	18.06	0.00	0.00	0.00	7bbl of fresh water at 2bpm.
Event	13	Other	Other	9/26/2017	09:54:10	COM5	-1.00	8.15	6.90	0.00	0.00	rig to pull up from 2276' to 1465' we washed up pump truck while waiting on rig.
Event	14	Clean Lines	Clean Lines	9/26/2017	10:33:06	COM5	-1.00	-0.14	58.20	0.00	0.00	pumped down wiper ball with 13bbl fresh water to clean DP.

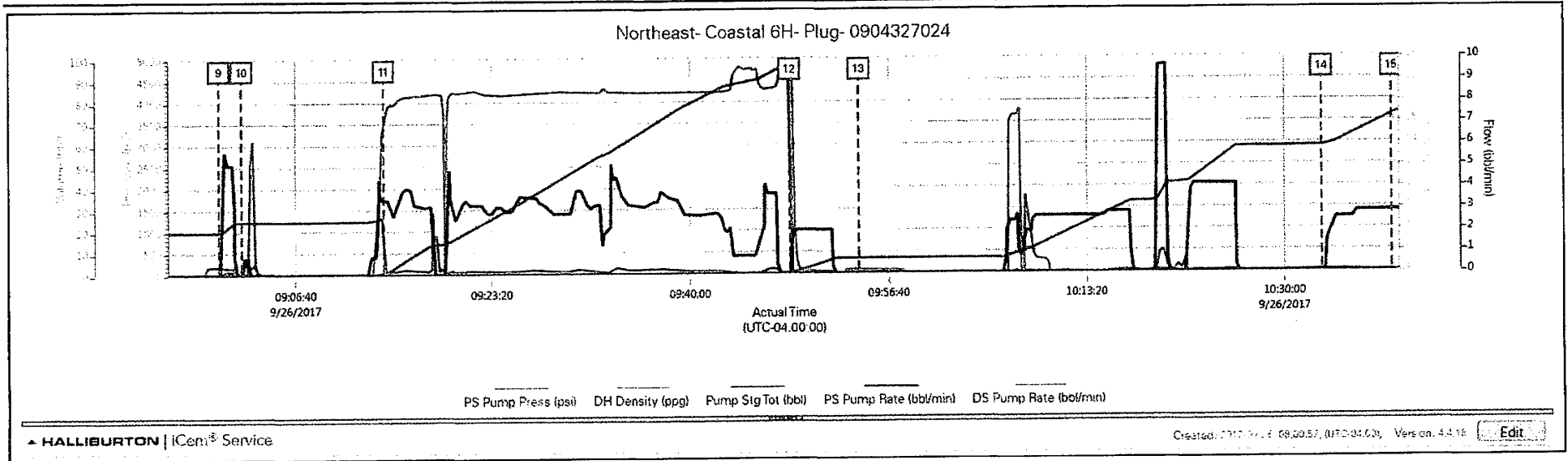
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Event	15	End Job	End Job	9/26/2017	10:38:57	COM5	15.00	8.03	72.40	2.80	0.00
Event	16	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/26/2017	11:30:00	USER					
Event	17	Rig-Down Equipment	Rig-Down Equipment	9/26/2017	11:35:00	USER					
Event	18	Depart Location Safety Meeting	Depart Location Safety Meeting	9/26/2017	12:55:00	USER					
Event	19	Depart Location	Depart Location	9/26/2017	13:00:00	USER					

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Cementing Job Summary

The Road to Excellence Starts with Safety

Sold To #: 359876	Ship To #: 3821833	Quote #:	Sales Order #: 0904313233
Customer: Northeast Natural Energy.		Customer Rep: Ross	
Well Name: Coastal	Well #: 6H	API/UWI #: 47-061-01784-00	
Field:	City (SAP): Blacksville	County/Parish: Monongalia	State: WV
Contractor:	Rig/Platform Name/Num: Higlands #13		
Job Purpose: 9.625 Intermediate			
Well Type:	Job Type:		
Sales Person:	Srvc Supervisor: Dylan Morrison	MBU ID Emp #:	

TOTAL	Total is the sum of each column separately		
-------	--	--	--

Job				Job Times			
Formation Name	Formation Depth (MD) Top	Bottom	Called Out	Date	Time	Time Zone	
Form Type	BHST		On Location	9-30-17			
Job depth MD	2680	Job Depth TVD	Job Started	9-30-17			
Water Depth		Wk Ht Above Floor	Job Completed	9-30-17			
Perforation Depth (MD) From		To	Departed Loc	9-30-17			

Well Data											
Description	New / Used	Max pressure Psi	Size In	ID In	Weight lbm/ft	Thread	Grade	Top MD ft	Bottom MD Ft	Top TVD ft	Bottom TVD Ft
		2000	9.625	8.835	40	8-rd	J-55		2680		2680

Tools and Accessories													
Type	Size	Qty	Make	Depth	Type	Size	Qty	Make	Depth	Type	Size	Qty	Make
Guide Shoe				2680	MS CEMTR					Weld A			
Float Shoe					Bridge Plug					Bottom Plug			
Float Collar				2638	Retainer					SSR plug set			
Insert Float					Lim Clamp					BASKETS			
Stage Tool					Plug Set					Centralizers			

Miscellaneous Materials											
Gelling Agt	Conc	Surfactant	Conc	Acid Type	Qty	Conc	%				
Treatment Fld	Conc	Inhibitor	Conc	Sand Type	Size	Qty					

Fluid Data

Fluid	Stage Type	Gel Spacer	Qty	Qty uom	Density	Yield	Mix Fluid	Rate	Total Mix Fluid
1			25	bbl	8.4	ft3/sk	Gal/sk	bbl/min	Gal/sk
2		Water Spacer	10	bbl	8.33	ft3/sk	Gal/sk	5	
3		Class H Cement	195	bbl	15.6	1.2	5.42	5	

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0904313233
Case: Case 1

2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	PS Pump Press (psi)	Pump Stg Tot (bbl)	PS Pump Rate (bbl/min)	Recirc Density (ppg)	DS Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	9/30/2017	07:45:00	USER						
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/30/2017	09:50:00	USER						
Event	3	Depart Shop for Location	Depart Shop for Location	9/30/2017	10:00:00	USER						
Event	4	Arrive At Loc	Arrive At Loc	9/30/2017	13:35:00	USER						
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	9/30/2017	13:45:00	USER						rig still to run 1000' of casing, water temp 75°F.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/30/2017	14:00:00	USER						
Event	7	Rig-Up Equipment	Rig-Up Equipment	9/30/2017	14:10:00	USER						
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/30/2017	17:15:00	USER	43.00	31.90	0.00	7.45	0.00	
Event	9	Start Job	Start Job	9/30/2017	17:25:13	COM5	40.00	31.90	0.00	7.46	0.00	5bbl Load lines
Event	10	Test Lines	Test Lines	9/30/2017	17:27:13	COM5	36.00	37.10	0.00	7.45	0.00	test to 500psi, then 4500psi
Event	11	Circulate Well	Circulate Well	9/30/2017	17:30:05	COM5	42.00	0.00	0.00	7.46	0.00	170bbl Drill water to load hole.
Event	12	Pump Spacer 1	Pump Spacer 1	9/30/2017	17:54:14	COM5	37.00	0.00	0.00	7.49	1.10	25bbl Gel Spacer, 3bpm
Event	13	Pump Spacer 2	Pump Spacer 2	9/30/2017	18:03:34	COM5	79.00	0.00	0.00	7.50	4.90	10bbl FResh Water
Event	14	Pump Cement	Pump Cement	9/30/2017	18:08:50	COM5	42.00	0.00	0.00	15.42	0.30	195bbl Class H cement 15.6ppg, 4bpm, 200psi, 80°F
Event	15	Pump Displacement	Pump Displacement	9/30/2017	19:08:00	COM5	50.00	194.80	0.00	3.74	0.00	199bbl Drill Water displacement, 39bbl of cement to surface.

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bumped at 1100psi, taken
 to 1600psi. held for 5 min.
 bled back 1bbl.

Event	16	Bump Plug	Bump Plug	9/30/2017	19:43:49	COM5
Event	17	End Job	End Job	9/30/2017	19:53:54	COM5
Event	18	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/30/2017	21:30:00	USER
Event	19	Rig-Down Equipment	Rig-Down Equipment	9/30/2017	21:35:00	USER
Event	20	Depart Location Safety Meeting	Depart Location Safety Meeting	9/30/2017	22:15:00	USER
Event	21	Depart Location	Depart Location	9/30/2017	22:30:00	USER

Cementing Treatment



Start Date	11/6/2017	Well	47-061-01784
End Date	12/28/2017	County	MONONGALIA
Client	NORTHEAST NATURAL ENERGY LLC	State/Province	WV
Client Field Rep	Jamie Czerneski	API	47-061-01784
Service Supervisor	Brian Lough	Formation	
Field Ticket No.		Rig	Patterson 334
District	Bridgeport, WV	Type of Job	Long String

WELL GEOMETRY

Type	ID (in)	OD (in)	Wt. (lb/ft)	MD (ft)	TVD (ft)	Excess(%)	Grade	Thread
Previous Casing	8.84	9.63	40.00	2,681.00	2,681.00	0.00	J-55	
Open Hole	8.50			17,610.00	8,250.00	10.00		
Casing	4.78	5.50	20.00	17,610.00	8,250.00		P-110	
Open Hole	8.75			6,013.00	6,013.00	10.00		

Shoe Length (ft): 45

HARDWARE

Bottom Plug Used?	Yes	Tool Type	Float Collar
Bottom Plug Provided By	Non BJ	Tool Depth (ft)	17,565.00
Bottom Plug Size	5.500	Max Tubing Pressure - Rated (psi)	
Top Plug Used?	Yes	Max Tubing Pressure - Operated (psi)	
Top Plug Provided By	Non BJ	Max Casing Pressure - Rated (psi)	10,112.00
Top Plug Size	5.500	Max Casing Pressure - Operated (psi)	5,000.00
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity		Job Pumped Through	Manifold
Centralizers Type	Rigid	Top Connection Thread	Butress
Landing Collar Depth (ft)	17,565	Top Connection Size	5.5

CIRCULATION PRIOR TO JOB

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Cementing Treatment



Well Circulated By	Rig	Solids Present at End of Circulation	No
Circulation Prior to Job	Yes	10 sec SGS	
Circulation Time (min)	1.00	10 min SGS	
Circulation Rate (bpm)	7.00	30 min SGS	
Circulation Volume (bbls)	1,150.00	Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)	12.70	Gas Units	
Mud Density Out (ppg)	12.70		
PV Mud In			
PV Mud Out			
YP Mud In			
YP Mud Out			

TEMPERATURE

Ambient Temperature (°F)	6.00	Slurry Cement Temperature (°F)	62.00
Mix Water Temperature (°F)	57.00	Flow Line Temperature (°F)	62.00

BJ FLUID DETAILS

Fluid Type	Fluid Name	Density (ppg)	Yield (Cu Ft/sk)	H2O Req. (gals/sk)	Vol (sk)	Vol (Cu Ft)	Vol (bbls)
Spacer / Pre Flush / Flush	UltraBond 10 13.5 ppg	13.5000					100.0000
Tail Slurry	Single Slurry 14.5 ppg	14.5000	1.1859	5.18	3,470	4,115.0000	732.8000
Displacement 1	Inhibited Water	8.3400				0.0000	20.0000
Displacement Final	Treated Water	8.3400				0.0000	369.6000

Fluid Type	Fluid Name	Component	Concentration	UOM
Spacer / Pre Flush / Flush	UltraBond 10 13.5 ppg	IntegraGuard RHEO 10	100.00	PCT

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Cementing Treatment



Spacer / Pre Flush / Flush	UltraBond 10 13.5 ppg	WEIGHTING ADDITIVE, BARITE	284.62 PPB
Spacer / Pre Flush / Flush	UltraBond 10 13.5 ppg	SURFACTANT, S-5	3.50 GPB
Tail Slurry	Single Slurry 14.5 ppg	CEMENT, FLY ASH (POZZOLAN)	50.00 PCT
Tail Slurry	Single Slurry 14.5 ppg	FOAM PREVENTER, FP-13L	0.38 GALS/100SK
Tail Slurry	Single Slurry 14.5 ppg	CEMENT, CLASS A	50.00 PCT
Tail Slurry	Single Slurry 14.5 ppg	RETARDER, R-3	0.30 BWOB
Tail Slurry	Single Slurry 14.5 ppg	BONDING AGENT, EC-1	1.00 BWOB
Tail Slurry	Single Slurry 14.5 ppg	SPECIAL ADDITIVE, MPA- 170	0.30 BWOB
Displacement 1	Inhibited Water	RETARDER, SUGAR, GRANULAR	200.00 LBS
Displacement 1	Inhibited Water	SCALE CONTROL, FraCare SI 720	0.25 GPT
Displacement 1	Inhibited Water	BIOCIDE, MAQUAT 25:12	0.80 GPT
Displacement Final	Treated Water	BIOCIDE, MAQUAT 25:12	0.80 GPT
Displacement Final	Treated Water	SCALE CONTROL, FraCare SI 720	0.25 GPT

TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)	Annulus Pressure (psi)	Comments
12/27/2017 9:22 PM	UltraBond 10 13.5 ppg	5.40	100.00		1,100.00	
12/27/2017 9:46 PM	Single Slurry 14.5 ppg	6.00	732.80		1,800.00	
12/27/2017 11:57 PM	Inhibited Water	7.00	20.00		1,800.00	
12/27/2017 11:59 PM	Treated Water	5.00	390.00		4,350.00	

	Min	Max	Avg
Pressure (psi)	1.00	4,350.00	2,000.00
Rate (bpm)	1.00	7.80	

DISPLACEMENT AND END OF JOB SUMMARY

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Cementing Treatment



Displaced By	BJ	Amount of Cement Returned/Reversed	0.00
Calculated Displacement Volume (bbls)	389.50	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	390.00	Amount of Spacer to Surface	84.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amount Bled Back After Job	5.50
Bump Plug Pressure (psi)	4,350.00	Total Volume Pumped (bbls)	1,197.00
Were Returns Planned at Surface	No	Top Out Cement Spotted	No
Cement returns During Job	None	Lost Circulation During Cement Job	No

CEMENT PLUG

Bottom of Cement Plug?	Yes	Wiper Balls Used?	No
Wiper Ball Quantity		Plug Catcher	No
Number of Plugs			

SQUEEZE

Injection Rate (bpm)	Fluid Density (ppg)
Injection Pressure (psi)	ISIP (psi)
Type of Squeeze	FSIP (psi)
Operators Max SQ Pressure (psi)	

COMMENTS

Treatment Report

Job Summary

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Cementing Treatment



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