

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

API 47-061-01783 County Monongalia District Clay
Quad Blacksville Pad Name Coastal Field/Pool Name _____
Farm name Coastal Forest Resources Company Well Number Coastal 10H
Operator (as registered with the OOG) Northeast Natural Energy LLC
Address 707 Virginia Street E., Suite 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 4395412.6 Easting 568200.0
Landing Point of Curve Northing 4395551.6 Easting 568554.4
Bottom Hole Northing 4393317.1 Easting 570270.5

Elevation (ft) 1,420' 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 - 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 08/25/17 Date drilling commenced 09/17/17 Date drilling ceased 12/18/17
Date completion activities began 1/27/2018 Date completion activities ceased 2/8/2018
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 by: LGK 11/14/18

Reviewed

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API 47-061 - 01783 Farm name Coastal Forest Resources Company Well number Coastal 10H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade w/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	30"	24"	40'	N	52.78	N/A	Grouted In
Surface	17-1/2"	13-3/8"	1,345'	N	54.5	N/A	Y 42 bbls
Coal							
Intermediate 1	12-1/4"	9-5/8"	2,664'	N	40	N/A	Y 3 bbls
Intermediate 2							
Intermediate 3							
Production	8-3/4"	5-1/2"	18,238'	N	20	N/A	Y 2000'
Tubing	N/A	2-7/8"	N/A	N	4.7	N/A	
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	4,500 PSI Grout	36.4		.75	27.27	CTS	-
Surface	Class A	1075	15.6	1.21	1300.8	CTS	8
Coal							
Intermediate 1	Class A	880	15.6	1.209	1063.9	CTS	8
Intermediate 2							
Intermediate 3							
Production	Class A	3654	14.5	1.1859	4321	3110'	48
Tubing							

Drillers TD (ft) 18,250' Loggers TD (ft) 18,220'

Deepest formation penetrated Marcellus Plug back to (ft) _____

Plug back procedure _____

Kick off depth (ft) 6,491'

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 approximately 120'

Intermediate: Bow spring centralizers every 3rd joint or approximately 120'

Production: Rigid body centralizers placed at a minimum of every other joint (~80') from TD to surface

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 _____

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Discharge Monitoring Report
Oil and Gas General Permit

Company Name: Northeast Natural Energy LLC
API No: 47-061-01783 County: Monongalia
District: Clay Well No: Costal 10H
Farm Name: Costal Forest Resource Company

Discharge Date/s From:(MMDDYY) _____ To: (MMDDYY) _____
Discharge Times. From: _____ To: _____

Total Volume to be Disposed from this facility (gallons): _____

Disposal Option(s) Utilized (write volumes in gallons):

- (1) Land Application: _____ (Include a topographical map of the Area.)
- (2) UIC: _____ Permit No. _____
- (3) Offsite Disposal: _____ Site Location: _____
- (4) Reuse: _____ Alternate Permit Number: _____
- (5) Centralized Facility: _____ Permit No. _____
- (6) Other method: _____ (Include an explanation)

Follow Instructions below to determine your treatment category:

Optional Pretreatment test: _____ Cl- mg/l _____ DO mg/l

1. Do you have permission to use expedited treatment from the Director or his representative?
(Y/N) _____ If yes, who? _____ and place a four (4) on line 7.
If not go to line 2
2. Was Frac Fluid or flowback put into the pit? (Y/N) _____ If yes, go to line 5. If not, go to line 3.
3. Do you have a chloride value pretreatment (see above)? (Y/N) _____ If yes, go to line 4
If not, go to line 5.
4. Is the Chloride level less than 5000 mg/l? (Y/N) _____ If yes, then enter a one (1) on line 7.
5. Do you have a pretreatment value for DO? (See above) (Y/N) _____ If yes, go to line 6
If not, enter a three (3) in line 7.
6. Is the DO level greater than 2.5 mg/l?(Y/N) _____ If yes, enter a two (2) on line 7. If not, enter a three (3) on line 7.
7. _____ is the category of your pit. Use the Appropriate section.
8. Comments on Pit condition: utilized a closed loop system

Name of Principal Exec. Officer: Hollie Medley
Title of Officer: Regulatory Manager
Date Completed: 8/20/2018

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. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Hollie Medley
Signature of a Principal Exec. Officer or Authorized agent.

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Category 1
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	5	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl	5,000	_____	5,000	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

*** Al is only reported if the pH is above 9.0

Category 2
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	10	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____

Date: _____

** Include a description of your aeration technique.

Aeration Code: _____

*** Al is only reported if the pH is above 9.0

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Category 3
Sampling Results
API No : _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	20	_____	N/A	N/A	Days
Fe	6	_____	6	_____	mg/l
D.O.	2.5	_____	2.5	_____	mg/l
Settleable Sol.	0.5	_____	0.5	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
Total Al***		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____
 ** Include a description of your aeration technique. Aeration Code: _____
 *** Al is only reported if the pH is above 9.0.

Category 4
Sampling Results
API No: _____

Parameter	Predischarge		Discharge		Units
	Limits	Reported	Limits	Reported	
pH	6-10	_____	6-10	_____	S.U
Settling Time	1	_____	N/A	N/A	Days
Fe	Monitor	_____	Monitor	_____	mg/l
D.O.	Monitor	_____	Monitor	_____	mg/l
Settleable Sol.	Monitor	_____	Monitor	_____	mg/l
Cl*	12,500	_____	12,500	_____	mg/l
Oil	Trace	_____	Trace	_____	Obs.
TOC**		_____	Monitor	_____	mg/l
Oil and Grease		_____	Monitor	_____	mg/l
TSS		_____	Monitor	_____	mg/l
Total Mn	Monitor	_____	Monitor	_____	mg/l
Volume		_____	Monitor	_____	Gal
Flow		_____	Monitor	_____	Gal/min
Activated Carbon (0.175)		_____	N/A	N/A	lb/Bl
Date Site Reclaimed	N/A	N/A			10 days from dis.
Disposal Area		_____	Monitor	_____	Acres

* Can be 25,000 with inspector's approval,

(Inspector's signature): _____ Date: _____

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Perforation Record

Stage Number	Report Date	Cluster 5 Bottom TD	Cluster 1 Top TD	Total Shots
1	1/26/2018	0	18,187	0
2	1/27/2018	17,888	18,047	40
3	1/28/2018	17,687	17,846	40
4	1/28/2018	17,486	17,645	40
5	1/28/2018	17,285	17,444	40
6	1/25/2018	17,084	17,243	40
7	1/25/2018	16,883	17,042	40
8	1/29/2018	16,682	16,841	40
9	1/29/2018	16,481	16,640	40
10	1/29/2018	16,281	16,439	40
11	1/30/2018	16,080	16,238	40
12	1/30/2018	15,879	16,037	40
13	1/30/2018	15,678	15,837	40
14	1/30/2018	14,874	15,033	40
15	1/25/2018	15,276	15,435	40
16	1/31/2018	15,075	15,234	40
17	1/31/2018	14,874	15,033	40
18	2/1/2018	14,673	14,832	40
19	2/1/2018	14,472	14,631	40
20	2/2/2018	14,271	14,430	40
21	2/2/2018	14,071	14,229	40
22	2/2/2018	13,870	14,028	40
23	2/2/2018	13,669	13,827	40
24	2/3/2018	13,468	13,627	40
25	2/3/2018	13,267	13,426	40
26	2/3/2018	13,066	13,225	40
27	2/3/2018	12,865	13,024	40
28	2/4/2018	12,664	12,823	40
29	2/4/2018	12,463	12,622	40
30	2/4/2018	12,262	12,421	40
31	2/4/2018	12,062	12,220	40
32	2/4/2018	11,861	12,019	40
33	2/4/2018	11,660	11,818	40
34	2/5/2018	11,459	11,618	40
35	2/5/2018	11,258	11,417	40
36	2/5/2018	11,057	11,216	40
37	2/5/2018	10,856	11,015	40
38	2/5/2018	10,655	10,814	40
39	2/6/2018	10,454	10,613	40
40	2/6/2018	10,052	10,211	40
41	2/6/2018	10,052	10,211	40
42	2/6/2018	9,852	10,010	40

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43	2/6/2018	9,651	9,809	40
44	2/6/2018	9,450	9,608	40
45	2/6/2018	9,249	9,408	40
46	2/7/2018	9,047	9,207	40
47	2/7/2018	8,847	9,006	40

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Stimulation Information Per Stage

Stage Number	Report Date	Avg Treating Rate (BPM)	Avg Treating Pressure (psi)	Breakdown Pressure (psi)	ISIP (psi)	Total Proppant Amount (lbs)	Amount Of Water (bbls)
1	1/26/2018	75	8,897	8,200	10,000	283,800	7,551
2	1/27/2018	73	9,135	7,399	5,950	302,280	8,578
3	1/28/2018	74	9,193	7,671	6,145	345,400	9,706
4	1/28/2018	72	9,080	7,971	6,559	354,360	7,701
5	1/28/2018	74	9,159	8,031	6,112	344,820	8,480
6	1/25/2018	77	9,243	8,044	6,420	355,120	8,543
7	1/25/2018	76	9,090	8,272	6,263	349,880	8,462
8	1/29/2018	76	8,843	7,786	5,338	391,640	9,131
9	1/29/2018	79	9,008	8,024	6,375	398,620	8,867
10	1/29/2018	79	9,139	7,486	5,736	406,320	8,866
11	1/30/2018	77	9,139	7,541	5,423	342,220	8,404
12	1/30/2018	79	9,092	7,688	5,533	399,320	8,541
13	1/30/2018	79	9,040	7,540	6,449	421,250	9,564
14	1/30/2018	78	9,112	7,470	5,745	453,240	9,472
15	1/25/2018	80	9,209	6,796	5,514	400,083	9,866
16	1/31/2018	80	8,917	7,269	6,008	504,020	10,748
17	1/31/2018	80	9,021	7,599	5,833	507,420	12,885
18	2/1/2018	77	9,314	7,468	6,941	437,000	11,491
19	2/1/2018	78	9,139	7,980	5,878	452,740	10,430
20	2/2/2018	80	9,142	7,003	5,711	350,600	7,975
21	2/2/2018	76	9,276	7,640	5,598	350,180	9,800
22	2/2/2018	79	9,257	7,880	6,631	346,420	7,516
23	2/2/2018	78	9,058	7,798	5,716	362,020	7,464
24	2/3/2018	79	9,078	7,601	6,515	351,040	9,189
25	2/3/2018	80	9,143	7,104	5,316	351,320	8,279
26	2/3/2018	77	8,862	7,488	5,309	359,880	7,762
27	2/3/2018	80	8,890	7,757	5,224	353,560	7,654
28	2/4/2018	77	9,048	7,468	5,560	350,580	7,631
29	2/4/2018	79	9,014	7,031	5,487	355,800	7,798
30	2/4/2018	80	8,996	7,557	5,471	356,580	7,994
31	2/4/2018	77	9,145	7,404	5,275	356,960	7,782
32	2/4/2018	79	8,715	7,773	5,227	358,240	7,552
33	2/4/2018	79	8,721	7,262	5,680	352,000	7,622
34	2/5/2018	78	8,760	7,478	5,468	352,060	7,554
35	2/5/2018	79	9,149	7,142	4,952	349,800	7,533
36	2/5/2018	82	8,897	6,816	5,624	351,400	7,599
37	2/5/2018	78	8,495	7,491	5,434	347,880	7,550
38	2/5/2018	79	8,767	7,786	5,451	350,500	7,405
39	2/6/2018	79	8,593	7,691	5,555	349,860	7,595
40	2/6/2018	80	8,786	7,291	7,355	351,640	7,561
41	2/6/2018	82	8,765	6,724	5,121	349,600	7,493
42	2/6/2018	82	8,637	6,448	5,086	349,420	7,542

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43	2/6/2018	82	8,492	7,652	5,643	351,120	7,532
44	2/6/2018	81	8,276	7,356	5,922	354,600	7,464
45	2/6/2018	81	8,185	7,468	5,405	350,380	7,386
46	2/7/2018	82	8,298	6,509	5,285	351,340	7,386
47	2/7/2018	82	8,477	6,881	5,392	350,520	7,443

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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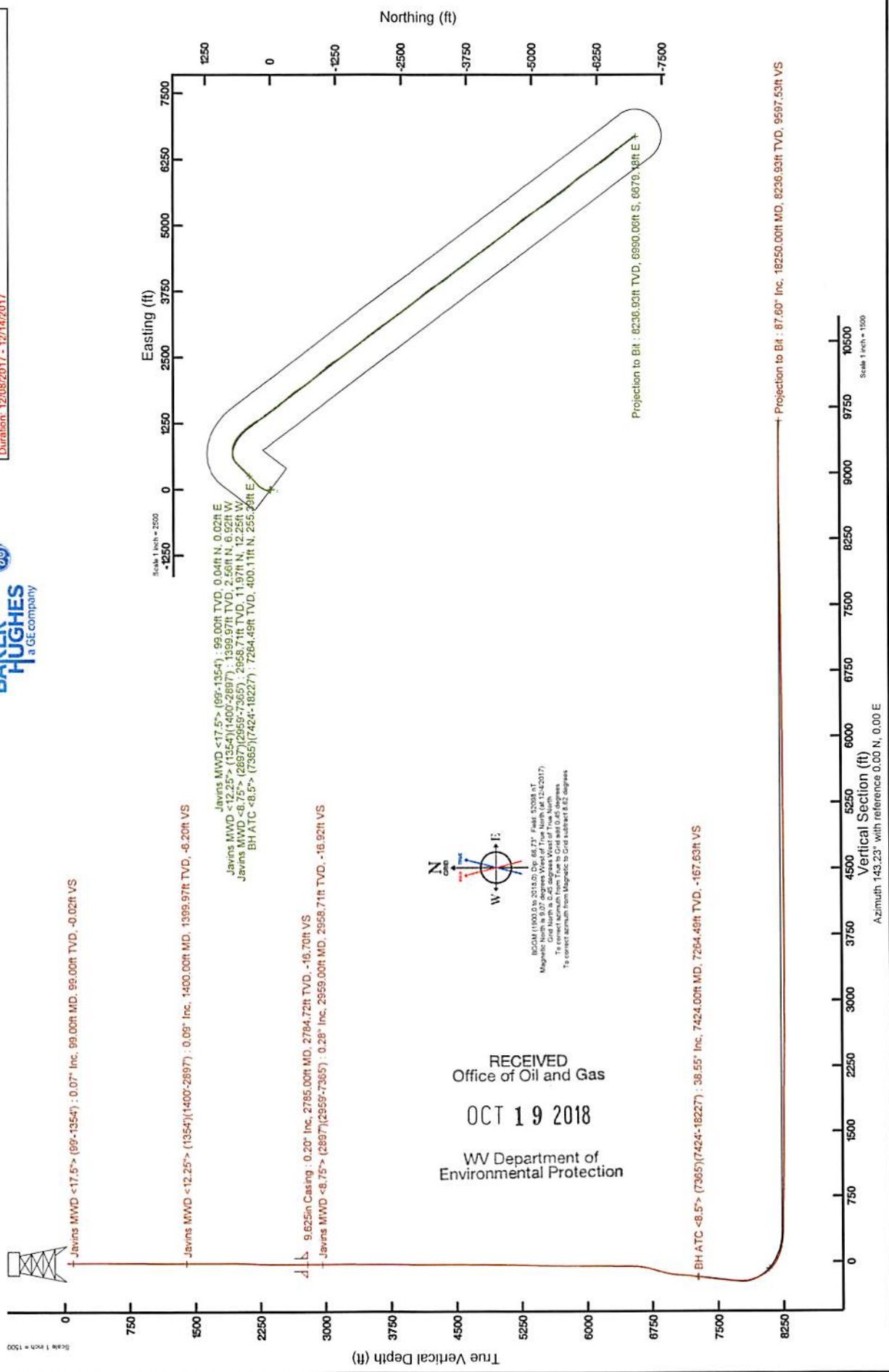
NORTHEAST NATURAL ENERGY, LLC

Location: Monongalia County, WV
 Field: Monongalia
 Facility: Coastal Pad
 Slot: Slot 10
 Well: Coastal 10H
 Wellbore: Coastal 10H.PWB



Drawn by: [Name]	Checked by: [Name]
Scale: 1 inch = 1000 feet	Scale: 1 inch = 2500 feet
Revision: 1	Revision: 1
Date: 12/14/2017	Date: 12/14/2017
Project: Coastal 10H.PWB	Project: Coastal 10H.PWB
Well: Coastal 10H	Well: Coastal 10H
Field: Monongalia	Field: Monongalia
Location: Monongalia County, WV	Location: Monongalia County, WV
Company: Northeast Natural Energy, LLC	Company: Northeast Natural Energy, LLC

Comments
API: 47-061-01667-0000
Job #: 8594915
Rig: Patterson 334
Duration: 12/08/2017 - 12/14/2017





Company: Baker Hughes, a GE Company
 Customer/Operator: Northeast Natural Energy, LLC
 Date Range: 12/7/2017 - 12/14/2017
 Rig Name: Patterson 334
 Rig Elv/Dat: 25.00 (ft) / GL
 Well: Coastal 10H
 Wellbore: Coastal 10H

Tie/Proj	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Temperature (degF)	True Vertical Depth (ft)	Northing (ft)	Easting (ft)	DLS (deg/100ft)	Vertical Section (ft)	Closure Distance (ft)	Course Length (ft)	Build Rate (deg/100ft)	Turn Rate (deg/100ft)
	0.00	0.00	25.65										
	25.00	0.00	25.65		25.00	0.00	0.00	0.00	0.00	0.00	25.00	0.00	0.00
	99.00	0.07	25.65		99.00	0.04	0.02	0.09	-0.02	0.05	74.00	0.09	0.00
	129.00	0.11	240.14		129.00	0.04	0.00	0.57	-0.03	0.04	30.00	0.13	-485.03
	158.00	0.13	304.05		158.00	0.05	-0.05	0.44	-0.07	0.07	29.00	0.07	220.38
	187.00	0.50	286.92		187.00	0.10	-0.20	1.30	-0.20	0.22	29.00	1.28	-59.07
	215.00	0.48	274.62		215.00	0.15	-0.43	0.38	-0.38	0.46	28.00	-0.07	-43.93
	244.00	0.42	273.39		244.00	0.16	-0.66	0.21	-0.53	0.68	29.00	-0.21	-4.24
	278.00	0.34	239.78		278.00	0.12	-0.87	0.68	-0.62	0.88	34.00	-0.24	-98.85
	310.00	0.46	286.48		310.00	0.11	-1.07	1.05	-0.73	1.08	32.00	0.37	145.94
	340.00	0.52	247.16		340.00	0.09	-1.32	1.12	-0.86	1.32	30.00	0.20	-131.07
	371.00	0.27	287.28		370.99	0.06	-1.52	1.16	-0.95	1.52	31.00	-0.81	129.42
	402.00	0.65	250.09		401.99	0.02	-1.75	1.50	-1.06	1.75	31.00	1.23	-119.97
	434.00	0.56	280.78		433.99	-0.01	-2.07	1.04	-1.23	2.07	32.00	-0.28	95.91
	465.00	0.17	285.97		464.99	0.03	-2.27	1.26	-1.38	2.27	31.00	-1.26	16.74
	496.00	0.49	248.05		495.99	-0.01	-2.43	1.20	-1.45	2.43	31.00	1.03	-122.32
	527.00	0.36	285.85		526.99	-0.03	-2.65	0.97	-1.56	2.65	31.00	-0.42	121.94
	558.00	0.48	246.34		557.99	-0.06	-2.86	0.99	-1.67	2.86	31.00	0.39	-127.45
	590.00	0.17	313.17		589.99	-0.08	-3.02	1.38	-1.75	3.02	32.00	-0.97	208.84
	621.00	0.40	284.60		620.99	-0.02	-3.16	0.85	-1.88	3.16	31.00	0.74	-92.16
	652.00	0.57	284.45		651.99	0.05	-3.41	0.55	-2.08	3.41	31.00	0.55	-0.48
	683.00	0.41	312.38		682.99	0.16	-3.65	0.91	-2.31	3.65	31.00	-0.52	90.10
	714.00	0.40	310.87		713.99	0.30	-3.81	0.05	-2.52	3.82	31.00	-0.03	-4.87
	745.00	0.34	266.35		744.98	0.37	-3.98	0.92	-2.68	4.00	31.00	-0.19	-143.61
	776.00	0.58	296.81		775.98	0.43	-4.21	1.08	-2.87	4.24	31.00	0.77	98.26
	808.00	0.60	282.55		807.98	0.54	-4.52	0.46	-3.14	4.55	32.00	0.06	-44.56
	839.00	0.57	274.43		838.98	0.59	-4.83	0.28	-3.37	4.87	31.00	-0.10	-26.19
	870.00	0.42	262.14		869.98	0.59	-5.10	0.59	-3.52	5.13	31.00	-0.48	-39.65
	901.00	0.28	306.28		900.98	0.62	-5.27	0.95	-3.65	5.31	31.00	-0.45	142.39
	932.00	0.27	286.43		931.98	0.68	-5.41	0.31	-3.78	5.45	31.00	-0.03	-64.03
	963.00	0.40	309.91		962.98	0.77	-5.56	0.60	-3.95	5.61	31.00	0.42	75.74
	994.00	0.57	321.77		993.98	0.96	-5.74	0.63	-4.21	5.82	31.00	0.55	38.26
	1025.00	0.60	307.86		1024.97	1.18	-5.96	0.47	-4.52	6.08	31.00	0.10	-44.87
	1057.00	0.34	316.86		1056.97	1.36	-6.16	0.84	-4.77	6.31	32.00	-0.81	28.12
	1088.00	0.52	289.65		1087.97	1.47	-6.35	0.86	-4.98	6.52	31.00	0.58	-87.77
	1119.00	0.46	333.76		1118.97	1.63	-6.54	1.20	-5.22	6.74	31.00	-0.19	142.29
	1150.00	0.42	302.89		1149.97	1.80	-6.69	0.77	-5.45	6.93	31.00	-0.13	-99.58
	1181.00	0.37	307.22		1180.97	1.92	-6.87	0.19	-5.65	7.13	31.00	-0.16	13.97
	1213.00	0.18	304.28		1212.97	2.02	-6.99	0.60	-5.80	7.27	32.00	-0.59	-9.19
	1244.00	0.17	48.69		1243.97	2.07	-7.00	0.89	-5.85	7.30	31.00	-0.03	336.81
	1275.00	0.29	331.27		1274.97	2.17	-7.00	0.98	-5.93	7.33	31.00	0.39	-249.74
	1306.00	0.38	21.93		1305.97	2.34	-7.00	0.96	-6.06	7.38	31.00	0.29	163.42
	1338.00	0.17	78.24		1337.97	2.44	-6.91	1.00	-6.10	7.33	32.00	-0.66	175.97
	1354.00	0.16	354.67		1353.97	2.47	-6.89	1.38	-6.10	7.32	16.00	-0.06	-522.31
	1400.00	0.09	321.27		1399.97	2.56	-6.92	0.21	-6.20	7.38	46.00	-0.15	-72.61
	1431.00	0.28	247.42		1430.97	2.55	-7.00	0.87	-6.24	7.46	31.00	0.61	-238.23
	1462.00	0.08	166.25		1461.97	2.50	-7.07	0.90	-6.24	7.50	31.00	-0.65	-261.84
	1493.00	0.17	178.64		1492.97	2.44	-7.06	0.30	-6.18	7.47	31.00	0.29	39.97
	1524.00	0.27	241.94		1523.97	2.36	-7.13	0.79	-6.15	7.51	31.00	0.32	204.19
	1555.00	0.25	244.02		1554.97	2.29	-7.25	0.07	-6.18	7.61	31.00	-0.06	6.71
	1586.00	0.06	147.00		1585.97	2.25	-7.30	0.85	-6.17	7.64	31.00	-0.61	-312.97
	1618.00	0.04	95.76		1617.97	2.23	-7.28	0.15	-6.15	7.62	32.00	-0.06	-160.12
	1649.00	0.19	171.37		1648.97	2.18	-7.27	0.59	-6.10	7.59	31.00	0.48	243.90
	1680.00	0.25	231.27		1679.97	2.09	-7.31	0.73	-6.05	7.60	31.00	0.19	193.23
	1711.00	0.25	232.86		1710.97	2.01	-7.42	0.02	-6.05	7.68	31.00	0.00	5.13
	1742.00	0.29	243.73		1741.97	1.93	-7.54	0.21	-6.06	7.78	31.00	0.13	35.06
	1774.00	0.15	274.48		1773.97	1.90	-7.66	0.56	-6.10	7.89	32.00	-0.44	96.09
	1805.00	0.32	234.15		1804.97	1.85	-7.77	0.73	-6.13	7.98	31.00	0.55	-130.10
	1836.00	0.19	209.69		1835.97	1.75	-7.86	0.54	-6.11	8.06	31.00	-0.42	-78.90
	1867.00	0.19	248.82		1866.97	1.69	-7.94	0.41	-6.10	8.11	31.00	0.00	126.23

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1899.00	0.23	235.65		1898.97	1.64	-8.04	0.20	-6.12	8.20	32.00	0.12	-41.16
1930.00	0.41	214.17		1929.97	1.51	-8.15	0.69	-6.09	8.29	31.00	0.58	-69.29
1962.00	0.44	278.24		1961.96	1.43	-8.34	1.41	-6.14	8.46	32.00	0.09	200.22
1993.00	0.66	354.74		1992.96	1.63	-8.47	2.27	-6.37	8.63	31.00	0.71	246.77
2024.00	1.14	356.73		2023.96	2.11	-8.51	1.55	-6.78	8.76	31.00	1.55	6.42
2056.00	1.55	355.83		2055.95	2.86	-8.55	1.28	-7.41	9.02	32.00	1.28	-2.81
2087.00	2.27	348.83		2086.93	3.88	-8.70	2.44	-8.32	9.53	31.00	2.32	-22.58
2118.00	2.46	356.39		2117.91	5.15	-8.87	1.18	-9.43	10.25	31.00	0.61	24.39
2149.00	2.61	355.28		2148.88	6.52	-8.97	0.51	-10.59	11.08	31.00	0.48	-3.58
2180.00	3.10	352.00		2179.84	8.05	-9.14	1.67	-11.92	12.18	31.00	1.58	-10.58
2212.00	2.91	354.81		2211.79	9.72	-9.33	0.75	-13.37	13.47	32.00	-0.59	8.78
2243.00	2.47	357.72		2242.76	11.17	-9.43	1.49	-14.59	14.62	31.00	-1.42	9.39
2274.00	1.66	357.43		2273.74	12.28	-9.48	2.61	-15.51	15.51	31.00	-2.61	-0.94
2305.00	0.99	352.39		2304.73	13.00	-9.53	2.19	-16.12	16.12	31.00	-2.16	-16.26
2336.00	0.51	310.35		2335.73	13.35	-9.67	2.26	-16.49	16.49	31.00	-1.55	-135.61
2368.00	0.53	287.25		2367.73	13.49	-9.92	0.65	-16.74	16.75	32.00	0.06	-72.19
2399.00	0.30	282.75		2398.73	13.55	-10.14	0.75	-16.92	16.92	31.00	-0.74	-14.52
2430.00	0.37	274.68		2429.73	13.57	-10.32	0.27	-17.05	17.05	31.00	0.23	-26.03
2461.00	0.46	271.15		2460.72	13.58	-10.54	0.30	-17.19	17.20	31.00	0.29	-11.39
2492.00	0.66	266.31		2491.72	13.58	-10.85	0.66	-17.37	17.38	31.00	0.65	-15.61
2524.00	0.45	238.53		2523.72	13.50	-11.14	1.05	-17.48	17.50	32.00	-0.66	-86.81
2555.00	0.35	255.73		2554.72	13.41	-11.33	0.50	-17.53	17.56	31.00	-0.32	55.48
2586.00	0.34	233.19		2585.72	13.33	-11.50	0.44	-17.56	17.61	31.00	-0.03	-72.71
2617.00	0.33	218.88		2616.72	13.21	-11.63	0.27	-17.54	17.60	31.00	-0.03	-46.16
2649.00	0.52	165.84		2648.72	13.00	-11.65	1.30	-17.38	17.45	32.00	0.59	-165.75
2678.00	0.25	191.41		2677.72	12.81	-11.63	1.08	-17.22	17.30	29.00	-0.93	88.17
2710.00	0.48	163.74		2709.72	12.61	-11.61	0.89	-17.05	17.14	32.00	0.72	-86.47
2741.00	0.38	171.57		2740.72	12.38	-11.56	0.37	-16.84	16.94	31.00	-0.32	25.26
2772.00	0.20	205.16		2771.72	12.23	-11.56	0.78	-16.72	16.83	31.00	-0.58	108.35
2803.00	0.19	211.08		2802.72	12.14	-11.61	0.07	-16.68	16.80	31.00	-0.03	19.10
2834.00	0.20	233.60		2833.72	12.06	-11.68	0.25	-16.66	16.79	31.00	0.03	72.65
2866.00	0.24	251.48		2865.72	12.01	-11.79	0.25	-16.68	16.83	32.00	0.12	55.87
2897.00	0.30	263.13		2896.72	11.98	-11.93	0.26	-16.74	16.91	31.00	0.19	37.58
2959.00	0.28	275.60		2958.71	11.97	-12.25	0.11	-16.92	17.13	62.00	-0.03	20.11
3053.00	0.29	295.39		3052.71	12.10	-12.69	0.10	-17.29	17.53	94.00	0.01	21.05
3083.00	0.46	320.71		3082.71	12.22	-12.83	0.78	-17.47	17.72	30.00	0.57	84.40
3115.00	0.43	322.96		3114.71	12.42	-12.99	0.11	-17.72	17.97	32.00	-0.09	7.03
3146.00	0.42	295.58		3145.71	12.56	-13.16	0.65	-17.94	18.19	31.00	-0.03	-88.32
3177.00	0.30	280.85		3176.71	12.63	-13.34	0.49	-18.10	18.37	31.00	-0.39	-47.52
3208.00	0.31	278.97		3207.71	12.65	-13.50	0.05	-18.22	18.51	31.00	0.03	6.06
3240.00	0.23	289.15		3239.71	12.69	-13.65	0.29	-18.34	18.64	32.00	-0.25	31.81
3271.00	0.49	300.14		3270.71	12.77	-13.82	0.86	-18.51	18.82	31.00	0.84	35.45
3302.00	0.30	270.33		3301.71	12.84	-14.02	0.88	-18.68	19.01	31.00	-0.61	-96.16
3333.00	0.26	296.16		3332.71	12.87	-14.16	0.42	-18.79	19.14	31.00	-0.13	83.32
3364.00	0.47	297.60		3363.71	12.96	-14.34	0.68	-18.97	19.33	31.00	0.68	4.65
3395.00	0.45	297.25		3394.71	13.08	-14.56	0.07	-19.19	19.57	31.00	-0.06	-1.13
3427.00	0.40	300.41		3426.71	13.19	-14.77	0.17	-19.41	19.80	32.00	-0.16	9.87
3458.00	0.38	299.22		3457.71	13.30	-14.95	0.07	-19.60	20.01	31.00	-0.06	-3.84
3489.00	0.21	304.21		3488.70	13.38	-15.09	0.55	-19.75	20.17	31.00	-0.55	16.10
3520.00	0.33	311.59		3519.70	13.47	-15.20	0.40	-19.89	20.31	31.00	0.39	23.81
3551.00	0.43	311.83		3550.70	13.61	-15.36	0.32	-20.09	20.52	31.00	0.32	0.77
3583.00	0.36	264.97		3582.70	13.68	-15.55	1.00	-20.26	20.71	32.00	-0.22	-146.44
3614.00	0.24	254.73		3613.70	13.65	-15.71	0.42	-20.34	20.81	31.00	-0.39	-33.03
3645.00	0.37	258.07		3644.70	13.62	-15.87	0.42	-20.40	20.91	31.00	0.42	10.77
3676.00	0.39	282.49		3675.70	13.62	-16.07	0.52	-20.53	21.06	31.00	0.06	78.77
3708.00	0.17	302.11		3707.70	13.67	-16.21	0.74	-20.65	21.20	32.00	-0.69	61.31
3739.00	0.16	268.17		3738.70	13.69	-16.30	0.31	-20.72	21.28	31.00	0.03	-10.77
3770.00	0.40	272.33		3769.70	13.69	-16.45	0.78	-20.81	21.40	31.00	0.77	60.32
3801.00	0.35	291.03		3800.70	13.73	-16.64	0.42	-20.96	21.58	31.00	-0.16	-171.19
3833.00	0.26	236.25		3832.70	13.73	-16.80	0.91	-21.05	21.69	32.00	-0.28	100.71
3864.00	0.38	267.47		3863.70	13.68	-16.96	0.67	-21.11	21.79	31.00	0.39	0.00
3895.00	0.38	267.47		3894.70	13.67	-17.16	0.00	-21.23	21.94	31.00	0.00	157.29
3926.00	0.12	316.23		3925.70	13.69	-17.29	1.01	-21.32	22.05	31.00	-0.84	-68.45
3957.00	0.27	295.01		3956.70	13.75	-17.38	0.53	-21.41	22.16	31.00	0.48	-185.34
3989.00	0.18	235.70		3988.70	13.75	-17.49	0.74	-21.48	22.24	32.00	-0.28	227.77
4020.00	0.24	306.31		4019.70	13.76	-17.58	0.80	-21.54	22.32	31.00	0.19	-226.26
4051.00	0.18	236.17		4050.70	13.77	-17.67	0.79	-21.61	22.40	31.00	-0.19	12.94
4082.00	0.05	240.18		4081.70	13.74	-17.72	0.42	-21.61	22.42	31.00	-0.42	49.03
4113.00	0.26	255.38		4112.70	13.71	-17.80	0.68	-21.64	22.47	31.00	0.68	208.45
4144.00	0.15	320.00		4143.70	13.73	-17.90	0.77	-21.71	22.55	31.00	-0.35	-62.81
4176.00	0.34	299.90		4175.70	13.81	-18.01	0.64	-21.84	22.69	32.00	0.59	-97.29
4207.00	0.30	269.74		4206.70	13.85	-18.17	0.55	-21.97	22.85	31.00	-0.13	

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6429.00	0.58	301.97	6428.43	24.35	46.29	0.51	47.21	52.30	31.00	0.48	18.06
6398.00	0.43	307.57	6397.43	24.19	46.06	0.16	46.95	52.03	31.00	-0.06	19.65
6367.00	0.45	301.48	6366.43	24.06	45.87	1.21	46.73	51.79	8.00	1.12	62.12
6359.00	0.36	296.51	6358.43	24.03	45.82	0.26	46.68	51.74	31.00	0.23	21.71
6328.00	0.29	289.78	6327.43	23.96	45.66	0.11	46.52	51.56	31.00	0.06	-19.00
6297.00	0.27	295.67	6296.43	23.90	45.52	0.36	46.39	51.41	31.00	-0.35	9.55
6266.00	0.38	292.71	6265.43	23.83	45.36	0.38	46.24	51.24	31.00	-0.10	-54.06
6235.00	0.41	309.47	6234.43	23.72	45.18	0.65	46.04	51.02	31.00	0.65	3.06
6204.00	0.21	308.52	6203.43	23.62	45.05	0.53	45.88	50.86	32.00	0.53	10.66
6172.00	0.38	305.11	6171.43	23.52	44.91	0.15	45.72	50.70	31.00	-0.03	21.77
6141.00	0.39	311.86	6140.43	23.39	44.75	0.75	45.52	50.49	31.00	0.55	62.19
6110.00	0.56	292.58	6109.44	23.26	44.53	0.65	45.29	50.24	31.00	0.65	9.77
6079.00	0.36	289.55	6078.44	23.17	44.30	0.75	45.08	49.99	32.00	-0.47	7.97
6047.00	0.51	315.06	6046.44	23.03	44.10	0.26	44.85	49.76	31.00	0.26	3.52
6016.00	0.43	316.15	6015.44	22.85	43.93	1.01	44.60	49.52	31.00	-0.94	39.84
5985.00	0.72	303.80	5984.44	22.66	43.68	0.69	44.30	49.21	31.00	0.42	48.68
5954.00	0.59	288.71	5953.44	22.50	43.37	0.76	43.99	48.86	31.00	-0.42	-55.65
5923.00	0.72	305.96	5922.44	22.34	43.06	1.60	43.67	48.51	32.00	1.59	21.87
5891.00	0.21	298.96	5890.45	22.19	42.85	1.20	43.42	48.25	31.00	-1.19	-19.29
5860.00	0.58	304.94	5859.45	22.07	42.67	0.32	43.22	48.04	31.00	-0.32	0.48
5829.00	0.68	304.79	5828.45	21.88	42.39	0.17	42.90	47.70	31.00	0.16	4.16
5798.00	0.63	303.50	5797.45	21.68	42.10	0.92	42.56	47.35	31.00	0.90	-11.29
5767.00	0.91	307.00	5766.45	21.44	41.76	0.41	42.17	46.94	32.00	-0.31	16.28
5735.00	1.01	301.79	5734.46	21.13	41.32	0.47	41.66	46.41	31.00	-0.29	20.13
5704.00	1.10	295.55	5703.46	20.86	40.81	0.50	41.14	45.84	31.00	0.48	6.23
5673.00	0.95	293.62	5672.47	20.63	40.31	0.85	40.66	45.28	31.00	-0.81	-14.32
5642.00	1.20	298.06	5641.47	20.38	39.79	0.37	40.14	44.70	31.00	-0.06	-17.32
5611.00	1.22	303.43	5610.48	20.04	39.23	0.65	39.53	44.05	32.00	0.41	25.19
5579.00	1.09	295.78	5578.49	19.72	38.67	0.78	38.95	43.41	31.00	-0.58	-25.39
5548.00	1.27	303.24	5547.49	19.41	38.11	0.81	38.36	42.77	31.00	0.81	1.87
5517.00	1.02	302.66	5516.50	19.07	37.59	0.90	37.78	42.15	31.00	-0.58	35.77
5486.00	1.20	291.57	5485.50	18.80	37.06	0.78	37.25	41.56	31.00	-0.58	-23.03
5455.00	1.38	298.71	5454.51	18.50	36.43	0.34	36.63	40.86	32.00	0.06	13.81
5423.00	1.40	294.29	5422.52	18.16	35.74	0.34	35.94	40.09	31.00	-0.10	13.35
5392.00	1.43	290.15	5391.53	17.87	35.03	0.13	35.28	39.32	31.00	-0.13	0.81
5361.00	1.47	289.90	5360.54	17.60	34.29	0.32	34.63	38.54	31.00	0.26	7.55
5330.00	1.55	287.62	5329.55	17.34	33.52	0.16	33.95	37.74	31.00	-0.10	4.87
5299.00	1.58	286.11	5298.56	17.09	32.71	0.37	33.27	36.90	31.00	0.13	-12.90
5268.00	1.54	290.11	5267.58	16.83	31.91	0.26	32.58	36.07	31.00	0.26	0.58
5237.00	1.46	289.93	5236.59	16.55	31.14	0.77	31.90	35.27	32.00	0.75	7.75
5205.00	1.22	287.45	5204.59	16.31	30.44	0.33	31.29	34.53	31.00	-0.26	9.35
5174.00	1.30	290.35	5173.60	16.09	29.79	0.91	30.72	33.86	31.00	-0.03	40.10
5143.00	1.31	277.92	5142.61	15.92	29.11	0.83	30.18	33.18	31.00	-0.39	-30.55
5112.00	1.43	287.29	5111.62	15.75	28.39	0.47	29.61	32.47	32.00	0.47	-0.97
5080.00	1.28	287.63	5079.63	15.53	27.67	1.10	29.00	31.73	31.00	0.10	49.94
5049.00	1.25	272.22	5048.64	15.41	27.00	0.57	28.51	31.09	31.00	0.06	-26.32
5018.00	1.23	280.38	5017.64	15.34	26.34	0.58	28.05	30.48	31.00	0.29	24.52
4987.00	1.14	272.78	4986.65	15.26	25.70	0.44	27.61	29.89	32.00	0.44	-0.25
4955.00	1.00	272.86	4954.65	15.23	25.10	0.89	27.23	29.36	31.00	0.42	-48.61
4924.00	0.87	287.93	4923.66	15.15	24.61	0.54	26.86	28.90	31.00	0.48	16.97
4893.00	0.72	282.67	4892.66	15.03	24.20	0.62	26.52	28.48	31.00	-0.48	28.61
4862.00	0.87	273.80	4861.66	14.97	23.77	0.74	26.22	28.09	31.00	-0.39	-39.26
4831.00	0.99	285.97	4830.67	14.88	23.28	0.19	25.86	27.63	32.00	0.12	8.75
4799.00	0.95	288.77	4798.67	14.72	22.76	0.76	25.42	27.11	31.00	0.58	32.90
4768.00	0.77	272.10	4767.68	14.61	22.31	0.32	25.06	26.67	31.00	-0.13	20.87
4737.00	0.81	272.10	4736.68	14.57	21.89	0.69	24.77	26.29	31.00	0.58	-29.87
4706.00	0.63	281.26	4705.68	14.53	21.50	0.60	24.51	25.95	32.00	-0.50	-26.31
4674.00	0.79	289.78	4673.68	14.42	21.12	1.23	24.19	25.57	31.00	0.84	80.42
4643.00	0.53	264.85	4642.69	14.36	20.78	0.71	23.94	25.26	31.00	0.26	-77.94
4612.00	0.45	289.01	4611.69	14.33	20.52	0.50	23.76	25.03	31.00	-0.48	12.90
4581.00	0.60	285.01	4580.69	14.25	20.25	0.58	23.53	24.76	31.00	0.48	-35.10
4550.00	0.45	295.89	4549.69	14.15	19.98	0.17	23.30	24.49	32.00	0.16	-7.91
4518.00	0.40	298.42	4517.69	14.05	19.77	0.88	23.09	24.25	31.00	0.52	134.55
4487.00	0.24	256.77	4486.69	14.01	19.61	0.78	22.96	24.10	31.00	-0.61	-86.74
4456.00	0.43	283.66	4455.69	14.00	19.43	0.69	22.85	23.95	31.00	0.68	21.52
4425.00	0.22	272.99	4424.69	13.96	19.26	0.67	22.72	23.79	31.00	-0.65	-37.16
4394.00	0.42	288.51	4393.69	13.92	19.10	0.08	22.58	23.63	31.00	0.06	-6.77
4363.00	0.40	290.61	4362.69	13.84	18.89	0.82	22.40	23.42	31.00	0.13	125.29
4332.00	0.36	251.77	4331.69	13.84	18.69	0.65	22.27	23.26	31.00	0.65	-25.48
4301.00	0.16	259.67	4300.70	13.88	18.56	0.45	22.22	23.17	32.00	-0.44	28.41
4269.00	0.30	250.58	4268.70	13.91	18.44	0.88	22.18	23.09	31.00	0.13	-186.23
4238.00	0.26	308.31	4237.70	13.89	18.30	0.61	22.09	22.98	31.00	-0.13	124.42

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6460.00	0.62	314.01		6459.43	24.55	-46.54	0.43	-47.52	52.62	31.00	0.13	38.84
6491.00	1.78	21.98		6490.42	25.11	-46.48	5.32	-47.94	52.83	31.00	3.74	219.26
6523.00	5.43	35.80		6522.35	26.80	-45.41	11.64	-48.65	52.73	32.00	11.41	43.19
6554.00	8.89	39.61		6553.11	29.84	-43.02	11.26	-49.65	52.36	31.00	11.16	12.29
6585.00	12.37	35.90		6583.57	34.37	-39.55	11.44	-51.21	52.40	31.00	11.23	-11.97
6616.00	15.75	30.20		6613.64	40.70	-35.48	11.77	-53.84	54.00	31.00	10.90	-18.39
6647.00	19.43	27.06		6643.18	48.93	-31.02	12.26	-57.76	57.94	31.00	11.87	-10.13
6679.00	22.20	23.64		6673.09	59.21	-26.17	9.45	-63.10	64.74	32.00	8.66	-10.69
6710.00	24.21	23.18		6701.58	70.42	-21.32	6.51	-69.17	73.58	31.00	6.48	-1.48
6741.00	26.81	23.85		6729.56	82.66	-15.99	8.44	-75.79	84.19	31.00	8.39	2.16
6772.00	29.62	23.15		6756.87	96.10	-10.15	9.13	-83.06	96.64	31.00	9.06	-2.26
6804.00	32.25	24.71		6784.32	111.13	-3.47	8.59	-91.10	111.19	32.00	8.22	4.87
6835.00	33.50	26.64		6810.36	126.29	3.82	5.26	-98.88	126.35	31.00	4.03	6.23
6866.00	34.49	29.26		6836.06	141.60	11.95	5.70	-106.27	142.10	31.00	3.19	8.45
6897.00	34.94	31.16		6861.54	156.85	20.83	3.78	-113.18	158.23	31.00	1.45	6.13
6929.00	35.83	33.38		6887.63	172.52	30.73	4.89	-119.80	175.23	32.00	2.78	6.94
6959.00	37.53	35.60		6911.69	187.28	40.88	7.19	-125.55	191.69	30.00	5.67	7.40
6991.00	39.62	37.51		6936.71	203.30	52.77	7.52	-131.27	210.04	32.00	6.53	5.97
7022.00	41.95	39.64		6960.18	219.12	65.40	8.75	-136.38	228.67	31.00	7.52	6.87
7053.00	42.88	43.99		6983.07	234.69	79.34	9.93	-140.51	247.74	31.00	3.00	14.03
7084.00	42.33	47.73		7005.89	249.31	94.39	8.36	-143.20	266.57	31.00	-1.77	12.06
7116.00	41.91	48.08		7029.63	263.69	110.31	1.50	-145.20	285.84	32.00	-1.31	1.09
7147.00	41.60	49.26		7052.75	277.33	125.81	2.72	-146.84	304.53	31.00	-1.00	3.81
7178.00	41.05	48.57		7076.03	290.78	141.24	2.30	-148.38	323.27	31.00	-1.77	-2.23
7209.00	40.38	48.17		7099.53	304.21	156.36	2.32	-150.09	342.04	31.00	-2.16	-1.29
7240.00	40.68	46.47		7123.09	317.87	171.17	3.69	-152.17	361.02	31.00	0.97	-5.48
7272.00	40.55	46.11		7147.38	332.26	186.22	0.84	-154.68	380.89	32.00	-0.41	-1.12
7303.00	39.95	46.81		7171.04	346.06	200.74	2.42	-157.04	400.07	31.00	-1.94	2.26
7334.00	39.66	46.09		7194.86	359.73	215.13	1.76	-159.39	419.15	31.00	-0.94	-2.32
7365.00	39.70	44.90		7218.72	373.61	229.24	2.45	-162.05	438.33	31.00	0.13	-3.84
7424.00	38.55	44.33	117.58	7264.49	400.11	255.39	2.04	-167.63	474.67	59.00	-1.95	-0.97
7518.00	34.73	42.72	120.28	7339.90	440.75	294.04	4.19	-177.04	529.83	94.00	-4.06	-1.71
7613.00	35.14	42.83	120.28	7417.78	480.68	330.98	0.44	-186.92	583.61	95.00	0.43	0.12
7707.00	36.36	43.94	122.98	7494.07	520.58	368.71	1.47	-196.30	637.93	94.00	1.30	1.18
7802.00	37.95	45.28	125.69	7569.78	561.42	409.01	1.88	-204.89	694.61	95.00	1.67	1.41
7898.00	37.16	45.73	131.09	7645.89	602.43	450.75	0.87	-212.75	752.39	96.00	-0.82	0.47
7992.00	38.37	48.80	133.80	7720.20	641.47	493.03	2.38	-218.71	809.05	94.00	1.29	3.27
8087.00	38.58	58.91	136.50	7794.65	676.22	540.63	6.62	-218.06	865.77	95.00	0.22	10.64
8181.00	39.11	72.04	136.50	7867.99	700.54	594.03	8.77	-205.58	918.49	94.00	0.56	13.97
8275.00	43.53	79.37	139.20	7938.61	715.67	654.11	6.97	-181.73	969.56	94.00	4.70	7.80
8370.00	46.12	89.04	141.91	8006.07	722.29	720.59	7.67	-147.24	1020.27	95.00	2.73	10.18
8465.00	49.07	97.70	136.50	8070.19	718.05	790.47	7.41	-102.01	1067.91	95.00	3.11	9.12
8559.00	55.20	111.83	136.50	8128.04	698.86	861.78	13.52	-43.95	1109.54	94.00	6.52	15.03
8654.00	65.58	122.61	141.91	8175.02	660.86	934.78	14.70	30.19	1144.79	95.00	10.93	11.35
8747.00	74.36	129.26	144.61	8206.88	609.55	1005.33	11.58	113.51	1175.68	93.00	9.44	7.15
8841.00	80.05	135.90	147.31	8227.71	547.55	1072.71	9.17	203.52	1204.38	94.00	6.05	7.06
8936.00	84.82	138.69	150.02	8240.21	478.36	1136.55	5.80	297.15	1233.12	95.00	5.02	2.94
9031.00	90.31	143.25	152.72	8244.25	404.67	1196.27	7.51	391.93	1262.87	95.00	5.78	4.80
9125.00	89.66	144.08	155.42	8244.27	328.95	1251.97	1.12	485.93	1294.46	94.00	-0.69	0.88
9220.00	88.62	151.18	158.12	8245.70	248.78	1302.79	7.55	580.58	1326.33	95.00	-1.09	7.47
9315.00	89.11	150.97	160.83	8247.58	165.64	1348.73	0.56	674.67	1358.87	95.00	0.52	-0.22
9410.00	88.83	145.52	163.53	8249.29	84.91	1398.70	5.74	769.25	1401.28	95.00	-0.29	-5.74
9505.00	88.86	141.93	158.12	8251.21	8.35	1454.89	3.78	864.21	1454.91	95.00	0.03	-3.78
9599.00	88.98	142.89	160.83	8252.98	-66.12	1512.22	1.03	958.19	1513.66	94.00	0.13	1.02
9692.00	89.29	143.24	168.94	8254.38	-140.45	1568.10	0.50	1051.18	1574.37	93.00	0.33	0.38
9787.00	89.26	137.93	168.94	8255.59	-213.81	1628.39	5.59	1146.03	1642.37	95.00	-0.03	-5.59
9881.00	89.57	138.95	168.94	8256.55	-284.14	1690.74	1.13	1239.70	1714.45	94.00	0.33	1.09
9976.00	89.85	138.60	174.34	8257.03	-355.59	1753.35	0.47	1334.41	1789.05	95.00	0.29	-0.37
10071.00	90.22	141.38	174.34	8256.97	-428.35	1814.42	2.95	1429.25	1864.30	95.00	0.39	2.93
10166.00	90.22	145.95	177.05	8256.60	-504.86	1870.69	4.81	1524.22	1937.62	95.00	0.00	4.9
10261.00	90.09	148.94	177.05	8256.35	-584.92	1921.81	3.15	1618.95	2008.85	95.00	-0.14	3.15
10356.00	89.91	147.79	177.05	8256.35	-665.80	1971.64	1.23	1713.57	2081.02	95.00	-0.19	-1.21
10451.00	89.57	142.48	179.75	8256.78	-743.72	2025.92	5.60	1808.48	2158.12	95.00	-0.36	-5.59
10546.00	89.78	140.70	179.75	8257.32	-818.16	2084.94	1.89	1903.44	2239.72	95.00	0.22	-1.87
10640.00	89.42	140.58	182.45	8257.97	-890.84	2144.55	0.40	1997.34	2322.22	94.00	-0.38	-0.13
10736.00	89.17	140.56	182.45	8259.15	-964.98	2205.52	0.26	2093.23	2407.39	96.00	0.26	-0.02
10831.00	89.05	137.91	182.45	8260.63	-1036.92	2267.54	2.79	2187.98	2493.38	95.00	-0.13	-2.79
10926.00	89.08	140.19	179.75	8262.18	-1108.66	2329.79	2.40	2282.71	2580.12	95.00	0.03	2.40
11020.00	89.05	147.36	182.45	8263.72	-1184.43	2385.30	7.63	2376.63	2663.18	94.00	-0.03	7.63
11115.00	89.23	149.39	182.45	8265.14	-1265.31	2435.10	2.14	2471.23	2744.22	95.00	0.19	2.14
11211.00	89.54	148.59	185.16	8266.17	-1347.58	2484.56	0.89	2566.74	2826.48	96.00	0.32	-0.83
11306.00	90.22	143.04	185.16	8266.37	-1426.14	2537.91	5.89	2661.60	2911.16	95.00	0.72	-5.84

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18132.00	88.58	145.88	214.89	8232.80	6890.04	6616.75	1.43	9480.05	9552.70	95.00	-0.92	1.09
18037.00	89.45	144.84	214.89	8231.17	6811.89	6562.76	3.14	9385.13	9458.95	95.00	-0.64	3.07
17942.00	90.06	141.92	212.19	8230.76	6735.65	6506.10	1.05	9290.14	9364.74	96.00	0.00	1.05
17846.00	90.06	140.91	209.48	8230.86	6660.61	6446.23	1.40	9194.19	9269.18	95.00	0.61	1.26
17751.00	89.48	139.71	214.89	8230.48	6587.51	6385.56	2.12	9099.32	9174.46	95.00	-0.06	-2.12
17656.00	89.54	141.72	214.89	8229.67	6513.99	6325.41	0.85	9004.42	9079.81	95.00	-0.72	-0.46
17561.00	90.22	142.16	214.89	8229.47	6439.19	6266.85	3.47	8909.44	8985.35	95.00	-0.52	-0.43
17466.00	90.71	145.42	214.89	8230.24	6362.55	6210.74	0.66	8814.46	8891.30	95.00	-0.13	-0.65
17371.00	90.83	146.04	214.89	8231.52	6284.05	6157.25	0.85	8719.56	8797.78	95.00	-0.03	0.85
17276.00	90.66	145.23	212.19	8232.92	6205.64	6103.63	2.12	8624.66	8704.27	96.00	0.09	-2.11
17180.00	90.77	147.26	212.19	8234.28	6125.84	6050.30	0.07	8528.80	8609.99	94.00	-0.06	-0.02
17086.00	90.83	147.28	212.19	8235.59	6046.77	5999.48	2.52	8435.05	8518.05	95.00	0.06	2.52
16991.00	90.77	144.89	212.19	8236.92	5967.94	5946.48	4.32	8340.18	8424.78	95.00	0.13	4.32
16896.00	90.65	140.79	212.19	8238.10	5892.26	5889.11	4.35	8245.21	8330.69	96.00	-0.06	4.35
16800.00	90.71	136.61	212.19	8239.24	5820.16	5825.77	0.08	8149.54	8234.92	95.00	-0.03	-0.07
16705.00	90.74	136.68	212.19	8240.44	5751.08	5760.56	4.18	8055.17	8139.96	94.00	-0.03	4.18
16611.00	90.77	140.61	214.89	8241.68	5680.55	5698.47	2.24	7961.50	8046.19	95.00	0.19	2.23
16516.00	90.95	142.73	212.19	8243.11	5606.04	5639.56	2.99	7866.55	7951.87	95.00	0.03	2.99
16421.00	90.92	145.57	212.19	8244.66	5529.05	5583.93	2.40	7771.59	7858.16	95.00	0.48	2.35
16326.00	90.46	143.34	212.19	8245.80	5451.76	5528.71	1.40	7676.62	7764.56	95.00	0.03	1.40
16231.00	90.43	142.01	212.19	8246.54	5376.22	5471.12	1.65	7581.63	7670.52	95.00	-0.13	1.64
16136.00	90.55	143.57	212.19	8247.35	5300.57	5413.67	4.71	7486.64	7576.53	95.00	-0.07	4.71
16041.00	90.62	148.04	212.19	8248.32	5222.01	5360.30	0.38	7391.76	7483.46	94.00	0.07	0.37
15947.00	90.55	147.69	209.48	8249.28	5142.42	5310.30	2.03	7298.08	7392.14	95.00	0.55	1.96
15852.00	90.03	145.83	209.48	8249.76	5062.97	5258.23	3.59	7203.26	7299.49	95.00	-0.36	3.57
15757.00	90.77	149.48	209.48	8250.09	4982.84	5207.32	3.54	7108.54	7207.21	95.00	0.09	3.54
15662.00	90.28	145.86	209.48	8250.63	4902.65	5158.25	4.54	7013.83	7115.00	95.00	-0.39	4.53
15567.00	90.65	141.56	209.48	8251.40	4826.14	5100.03	2.75	6918.86	7021.54	95.00	0.42	2.72
15472.00	90.25	138.98	206.78	8252.15	4753.09	5039.32	2.96	6823.99	6927.23	94.00	-0.55	2.90
15378.00	90.77	141.71	209.48	8252.99	4680.73	4979.34	0.42	6730.13	6833.96	94.00	0.10	0.40
15284.00	90.68	142.09	206.78	8254.18	4606.76	4921.34	0.82	6636.16	6741.06	95.00	0.00	0.82
15189.00	90.68	142.87	206.78	8255.30	4531.42	4863.49	1.32	6541.17	6647.35	95.00	0.36	1.27
15094.00	90.34	141.66	204.08	8256.15	4456.29	4805.35	1.01	6446.19	6553.62	95.00	-0.03	-1.01
14999.00	90.37	142.62	206.78	8256.74	4381.29	4747.05	1.00	6351.21	6459.89	94.00	0.10	1.00
14905.00	90.28	141.68	206.78	8257.27	4307.07	4669.37	0.27	6257.23	6367.19	95.00	-0.06	0.26
14810.00	90.34	141.43	209.48	8257.97	4232.66	4620.31	2.33	6162.28	6273.37	94.00	-0.03	-2.33
14716.00	90.37	143.62	209.48	8258.37	4158.07	4573.12	1.95	6068.29	6180.86	95.00	0.16	1.95
14621.00	90.22	145.47	209.48	8258.86	4080.69	4518.02	0.38	5973.32	6088.06	94.00	-0.03	0.38
14527.00	90.25	145.11	209.48	8259.24	4003.42	4464.49	2.93	5879.38	5993.59	95.00	-0.06	2.93
14432.00	90.31	142.33	206.78	8259.71	3926.84	4408.28	1.19	5784.40	5903.65	95.00	0.17	1.18
14337.00	90.15	141.21	206.78	8260.09	3852.22	4349.50	0.80	5689.43	5810.14	96.00	-0.20	-0.77
14241.00	90.34	141.95	206.78	8260.50	3777.01	4289.84	0.69	5593.47	5715.64	94.00	-0.10	-0.68
14147.00	90.43	142.59	204.08	8261.13	3702.67	4232.32	5.04	5499.49	5623.37	94.00	-0.10	-5.04
14053.00	90.52	141.73	204.08	8261.91	3625.73	4178.37	1.89	5405.56	5522.15	95.00	0.00	1.89
13958.00	90.52	145.53	204.08	8262.77	3546.58	4125.84	9.26	5310.22	5440.66	94.00	0.52	9.24
13864.00	90.03	136.84	204.08	8263.22	3473.41	4066.98	2.24	5216.87	5348.35	95.00	-0.16	-2.23
13769.00	90.18	138.96	204.08	8263.40	3402.92	4003.29	6.96	5122.28	5254.16	95.00	-0.17	-6.96
13674.00	90.34	145.57	201.37	8263.83	3327.84	3945.18	2.80	5027.35	5161.30	95.00	0.09	2.80
13579.00	90.25	148.23	201.37	8264.32	3248.26	3893.31	1.13	4932.55	5070.41	94.00	0.00	1.13
13485.00	90.25	149.29	201.37	8264.73	3167.89	3844.56	1.91	4838.99	4981.58	95.00	-0.28	1.88
13390.00	90.52	147.50	201.37	8265.37	3086.99	3794.78	4.35	4744.39	4891.81	95.00	0.61	4.31
13295.00	89.94	143.41	201.37	8265.75	3008.76	3740.92	4.51	4649.48	4800.74	94.00	0.03	4.51
13201.00	89.91	139.17	198.67	8265.63	2935.42	3682.15	0.25	4555.55	4709.02	95.00	-0.25	0.02
13106.00	90.15	139.15	201.37	8265.68	2863.55	3620.02	2.80	4460.79	4615.68	94.00	-0.03	-2.80
13012.00	90.18	141.78	201.37	8265.95	2791.06	3501.19	0.45	4366.91	4523.83	95.00	0.09	0.44
12917.00	90.09	142.20	198.67	8266.17	2716.21	3501.69	2.47	4271.93	4431.66	94.00	0.13	-2.47
12823.00	89.97	144.52	198.67	8266.22	2640.79	3445.60	0.66	4177.94	4341.19	95.00	-0.19	0.63
12728.00	90.15	143.92	198.67	8266.32	2563.72	3390.05	0.16	4082.96	4250.31	95.00	0.00	-0.16
12633.00	90.15	144.07	198.67	8266.57	2486.87	3334.21	0.49	3987.97	4159.50	94.00	-0.14	0.47
12539.00	90.28	143.63	195.97	8266.92	2410.97	3278.76	2.44	3893.97	4069.77	95.00	0.29	2.42
12444.00	90.00	141.33	195.97	8267.15	2335.62	3220.90	2.54	3798.99	3978.61	95.00	-0.23	-2.53
12349.00	90.22	143.73	195.97	8267.34	2260.23	3163.11	4.14	3704.00	3887.67	95.00	0.11	4.14
12254.00	90.12	147.66	193.27	8267.62	2181.77	3109.58	3.70	3609.11	3798.64	95.00	0.06	3.69
12159.00	90.06	144.15	193.27	8267.77	2103.11	3056.34	2.01	3514.23	3710.03	95.00	0.61	1.92
12064.00	89.48	142.33	193.27	8267.99	2027.01	2999.49	0.21	3419.23	3620.18	95.00	-0.13	-0.17
11969.00	89.60	142.49	193.27	8266.62	1951.73	2941.54	1.44	3324.24	3530.14	95.00	-0.13	-1.43
11874.00	89.72	143.85	193.27	8266.06	1875.70	2884.59	5.54	3229.25	3440.80	94.00	-0.14	5.54
11780.00	89.85	138.64	190.56	8265.71	1802.42	2825.77	1.88	3135.34	3351.67	96.00	-0.09	-1.87
11684.00	89.94	140.44	187.86	8265.53	1729.38	2763.48	3.10	3039.54	3259.99	94.00	-0.03	-3.10
11590.00	89.97	143.35	185.16	8265.46	1655.42	2705.48	1.47	2945.58	3171.75	95.00	-0.42	-1.41
11495.00	90.37	144.69	187.86	8265.74	1578.55	2649.67	1.16	2850.59	3084.24	94.00	0.30	1.12
11401.00	90.09	143.64	187.86	8266.12	1502.34	2594.63	0.65	2756.60	2998.19	95.00	-0.14	0.63

	18227.00	87.60	149.48	214.89	8235.97	6970.26	6667.51	3.93	9574.69	9645.73	95.00	-1.03	3.79
Proj	18250.00	87.60	149.48		8236.93	-6990.06	6679.18	0.00	9597.53	9668.11	23.00	0.00	0.00

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/26/2018
Job End Date:	2/7/2018
State:	West Virginia
County:	Monongalia
API Number:	47-061-01783-00-00
Operator Name:	Northeast Natural Energy LLC
Well Name and Number:	Coastal 10H
Latitude:	39.69510000
Longitude:	-80.22290000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	8,266
Total Base Water Volume (gal):	15,937,990
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	87.60246	None
Sand (Proppant)	Producers Service Corp	Proppant	Crystalline Silica (quartz)	14808-60-7	100.00000	11.39895	None
IC Acid (7.5%)	Producers Service Corp	Acidizing	Hydrochloric Acid	7647-01-0	15.00000	0.13033	None
STIMLUBE HBVB	Producers Service Corp	Friction Reducer	Petroleum Distillates	64742-47-8	30.00000	0.03030	None
			Ammonium Acetate	631-61-8	10.00000	0.01010	None
BIOC11219A	Nalco-Champion	Biocide	Methanol	67-56-1	60.00000	0.01260	None
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00630	None
			Glutaraldehyde	111-30-8	10.00000	0.00210	None
SCAL16486A	Nalco-Champion	Scale Inhibitor	Amine Triphosphate	Proprietary	30.00000	0.00168	None
			Ethylene Glycol	107-21-1	30.00000	0.00168	None

PROHIB II	Producers Service Corp	Inhibitor					
			Acetic Acid	64-19-7	90.00000	0.00146	None
			2-Ethylhexanol	104-76-7	10.00000	0.00016	None
			Methanol	67-56-1	10.00000	0.00016	None
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00008	None
			Diethanolamine	111-42-2	1.00000	0.00002	None
PRO-DRB-LT	Producers Service Corp	Oxidizer					
			Ammonium Persulfate	7727-54-0	80.00000	0.00040	None
			Crystalline Silica in the form of Quartz	14808-60-7	15.00000	0.00007	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	631-61-8	10.00000	0.01010	
			Benzyl-(C12-C16 Alkyl)-Dimethyl-Ammonium Chloride	68424-85-1	30.00000	0.00630	
			Glutaraldehyde	111-30-8	10.00000	0.00210	
			Ethylene Glycol	107-21-1	30.00000	0.00168	
			2-Ethylhexanol	104-76-7	10.00000	0.00016	
			Methanol	67-56-1	10.00000	0.00016	
			Cocamide Diethanolamine	68603-42-9	5.00000	0.00008	
			Crystalline Silica in the form of Quartz	14808-60-7	15.00000	0.00007	
			Diethanolamine	111-42-2	1.00000	0.00002	

* 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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Sold To #: 359876	Ship To #: 0003618764	Quote #: 0022345688	Sales Order #: 0904280504
Customer: NORTHEAST NATURAL ENERGY LLC-EBUS		Customer Rep: ...	
Well Name: COASTAL	Well #: 10H	API/UWI #: 47-061-01687-08	
Field:	City (SAP): BLACKSVILLE	County/Parish: MONONGALIA	State: WEST VIRGINIA
Legal Description: 940S 39*42'30"-10700W 80*10'00"-BLACKSVI			
Contractor:		Rig/Platform Name/Num:	
Job BOM: 7521 7521			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA\HB67143		Srv Supervisor: Dylan Morrison	
Job			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	1345ft		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	1345		
Open Hole Section			17.5				40	1370		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	13.375				Top Plug	13.375		HES
Float Shoe	13.375			1345	Bottom Plug	13.375		HES
Float Collar	13.375			1302	SSR plug set	13.375		HES
Insert Float	13.375				Plug Container	13.375	1	HES
Stage Tool	13.375				Centralizers	13.375		HES

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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	Fresh Water	Fresh Water	210	bbl	8.33					
Stage/Plug #: 2										
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	
2	Gel Spacer	Gel Spacer	25	bbl	8.4					
20 lbm/bbl		NATIONAL PREMIUM GOLD - 50 LB BAG (101612629)								

1 lbm/bbl	POLY-E-FLAKE (101216940)
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Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
3	Fresh Water	Fresh Water	10	bbl	8.33				

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
4	HalCem (TM) System	HALCEM (TM) SYSTEM	1075	sack	15.6	1.21		6	5.41

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/min	Total Mix Fluid Gal
5	Fresh Water Displacement	Fresh Water Displacement	201	bbl	8.33			6	

Cement Left In Pipe	Amount	43 ft	Reason	Shoe Joint
Mix Water:	pH 6	Mix Water Chloride:	## ppm	Mix Water Temperature: 66°F
Cement Temperature:	77 °F	Plug Displaced by:	8.33 lb/gal	Disp. Temperature: 65 °F
Plug Bumped?	Yes	Bump Pressure:	550 psi	Floats Held? Yes
Cement Returns:	49 bbl	Returns Density:	## lb/gal kg/m3	Returns Temperature: ## °F °C

Comment pumped 210bbl processed water to clear the shoe, then 25bbl gel, 10bbl fresh, 227bbl cement, 201bbl processed water. Bumped at 550psi, taken to 1150psi. held for 5 min, bled back 1.5bbl, FLOATS HELD. 49bbl of cement back 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 (bbl)	DS Pump Rate (bbl/min)	Comments
Event	1	Call Out	Call Out	9/7/2017	14:00:00	USER					
Event	2	Pre-Convoy Safety Meeting	Pre-Convoy Safety Meeting	9/7/2017	16:20:00	USER					
Event	3	Depart Shop for Location	Depart Shop for Location	9/7/2017	16:30:00	USER					
Event	4	Arrive At Loc	Arrive At Loc	9/7/2017	21:30:00	USER					
Event	5	Assessment Of Location Safety Meeting	Assessment Of Location Safety Meeting	9/7/2017	22:00:00	USER					rig TOOH, began to run casing.
Event	6	Pre-Rig Up Safety Meeting	Pre-Rig Up Safety Meeting	9/8/2017	01:45:00	USER					
Event	7	Rig-Up Equipment	Rig-Up Equipment	9/8/2017	02:00:00	USER					
Event	8	Pre-Job Safety Meeting	Pre-Job Safety Meeting	9/8/2017	03:40:00	USER	2.00	8.40	5.60	0.00	
Event	9	Start Job	Start Job	9/8/2017	03:57:49	COM5	1.00	0.00	5.60	0.00	Load Lines 3bbl
Event	10	Test Lines	Test Lines	9/8/2017	04:00:50	COM5	3579.00	8.56	8.70	0.00	test to 4000psi
Event	11	Circulate Well	Circulate Well	9/8/2017	04:02:05	COM5	12.00	8.44	0.00	0.00	210bbl Processed Water to clear shoe
Event	12	Pump Spacer 1	Pump Spacer 1	9/8/2017	04:35:29	COM5	-1.00	8.95	211.70	2.00	25bbl Gel, 4bpm
Event	13	Pump Spacer 2	Pump Spacer 2	9/8/2017	04:41:45	COM5	61.00	8.41	25.60	6.30	10bbl Fresh Water 65°F.
Event	14	Pump Cement	Pump Cement	9/8/2017	04:48:08	COM5	90.00	16.19	12.80	3.80	227bbl Cement 15.6ppg, 6bpm, 140psi. 77°F, had issues with deliver from two of the three 660s
Event	15	Pump Displacement	Pump Displacement	9/8/2017	05:57:47	COM5	-9.00	15.49	228.00	0.00	201bbl Processed Water, 8bpm, 350psi. returned cement to surface at 152bbl

iCem[®] Service

(v. 4.4.18)

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											away, 49bbl of cement back to surface.
Event	16	Bump Plug	Bump Plug	9/8/2017	06:34:34	COM5	1226.00	7.83	201.40	0.00	bumped at 550psi. taken to 1150psi, held for 5 min. bled back 1.5bbl, FLOATS HELD.
Event	17	End Job	End Job	9/8/2017	06:50:55	COM5	14.00	1.27	209.70	4.90	
Event	18	Pre-Rig Down Safety Meeting	Pre-Rig Down Safety Meeting	9/8/2017	07:30:00	USER					
Event	19	Rig-Down Equipment	Rig-Down Equipment	9/8/2017	07:45:00	USER					
Event	20	Depart Location Safety Meeting	Depart Location Safety Meeting	9/8/2017	08:55:00	USER					
Event	21	Depart Location	Depart Location	9/8/2017	09:00:00	USER					

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Sold To #: 359876	Ship To #: 0003618764	Quote #: 0022346782	Sales Order #: 0904287487
Customer: NORTHEAST NATURAL ENERGY LLC-EBUS		Customer Rep:	
Well Name: COASTAL	Well #: 10H	API/UWI #: 47-061-01687-08	
Field:	City (SAP): BLACKSVILLE	County/Parish: MONONGALIA	State: WEST VIRGINIA
Legal Description: 940S 39*42'30"-10700W 80*10'00"-BLACKSVI			
Contractor:		Rig/Platform Name/Num:	
Job BOM: 7522 7522			
Well Type: HORIZONTAL GAS			
Sales Person: HALAMERICA\HB67143		Srvc Supervisor:	
Job			

Formation Name			
Formation Depth (MD)	Top		Bottom
Form Type			BHST
Job depth MD	2710ft		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		13.375	12.615	54.5	BTC	J-55	0	1345		
Casing		9.625	8.835	40	8 RD	J-55	0	2673		
Open Hole Section			12.25				1345	2673		

Tools and Accessories

Type	Size in	Qty	Make	Depth ft	Type	Size in	Qty	Make
Guide Shoe	9.625			2710	Top Plug	9.625		HES
Float Shoe	9.625				Bottom Plug	9.625		HES
Float Collar	9.625				SSR plug set	9.625		HES
Insert Float	9.625				Plug Container	9.625		HES
Stage Tool	9.625				Centralizers	9.625		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	Gel Spacer	Gel Spacer	25	bbl	8.4					
		20 lbm/bbl NATIONAL PREMIUM GOLD - 50 LB BAG (101612629)								
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	
2	Water Spacer	Water Spacer	10	bbl	8.33					

Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
3	HalCem (TM) System	HALCEM (TM) SYSTEM	880	sack	15.6	1.209	5.42	6	5.42
Fluid #	Stage Type	Fluid Name	Qty	Qty UoM	Mixing Density lbm/gal	Yield ft3/sack	Mix Fluid Gal	Rate bbl/mi n	Total Mix Fluid Gal
4	Fresh Water Displacement	Fresh Water Displacement	200	bbl	8.33				
Cement Left In Pipe		Amount 45 ft	Reason			Shoe Joint			
Mix Water: pH 7		Mix Water Chloride: ## ppm			Mix Water Temperature: ## °F °C				
Cement Temperature: ## °F °C		Plug Displaced by: ## lb/gal kg/m3 XXXX			Disp. Temperature: ## °F °C				
Plug Bumped? Yes		Bump Pressure: 500 psi			Floats Held? Yes				
Cement Returns: 3bbl		Returns Density: ## lb/gal kg/m3			Returns Temperature: ## °F °C				
Comment									

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2.0 Real-Time Job Summary

2.1 Job Event Log

Type	Seq. No.	Activity	Graph Label	Date	Time	Source	Pass-Side Pump Pressure (psi)	Downhole Density (ppg)	Pump Stage Total (bbl)	Pass-Side Pump Rate (bbl/min)	Comments
Event	1	Arrive At Loc	Arrive At Loc	9/10/2017	16:00:00	USER					Arrive At Loc
Event	2	Rig-up Lines	Rig-up Lines	9/10/2017	21:00:00	USER					Rig-up Lines
Event	3	Pumping On Tubing Or Casing	Pumping On Tubing Or Casing	9/10/2017	21:30:00	USER					pumped down casing
Event	4	Start Job	Start Job	9/11/2017	05:23:36	COM6	19.00	8.40	1461.9	0.00	Start Job
Event	5	Pump Spacer 1	Pump Spacer 1	9/11/2017	05:23:58	COM6	7.00	8.42	0.0	0.00	pumped water to load lines
Event	6	Test Lines	Test Lines	9/11/2017	05:30:38	COM6	21.00	8.45	17.1	0.00	tested lines to 500 then to 4000 psi
Event	7	Pump Spacer 1	Pump Spacer 1	9/11/2017	05:36:36	COM6	1.00	0.00	17.1	0.00	pumped 25 gel spacer
Event	8	Pump Spacer 2	Pump Spacer 2	9/11/2017	05:44:24	COM6	94.00	8.57	25.1	0.00	pumped 10 bbl water spacer
Event	9	Pump Cement	Pump Cement	9/11/2017	05:50:00	USER	21.00	8.41	18.6	0.00	pumped 190 bbl cement density 15.6 yield 1.21.water 5.42 down hole temp 78 deg f
Event	10	Drop Top Plug	Drop Top Plug	9/11/2017	06:49:00	USER	-13.00	11.30	243.4	0.00	troped hes9 5/8 top plugs
Event	11	Pump Displacement	Pump Displacement	9/11/2017	06:49:32	COM6	-14.00	10.43	0.0	0.00	pumped 192 bbl displment started getting spacer back at 164 bbl into displacement and cement back at 189 for a total of 3 bbl cement back to surface
Event	12	Other	Other	9/11/2017	07:26:12	COM6	465.00	10.12	179.8	0.00	started getting spacer back
Event	13	Bump Plug	Bump Plug	9/11/2017	07:31:54	COM6	1177.00	10.07	196.9	0.00	bumped plug at 500 psi and took pressure to 1000 psi

Cementing Treatment



Start Date	12/16/2017	Well	47-061-01783
End Date	12/17/2017	County	MONONGALIA
Client	NORTHEAST NATURAL ENERGY LLC	State/Province	WV
Client Field Rep	Josh Grimm	API	47-061-01783
Service Supervisor		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	2,673.00	2,673.00	0.00	J-55	
Open Hole	8.50			18,250.00	7,760.00	10.00		
Casing	4.78	5.50	20.00	18,239.00	7,760.00		P-110	BTC
Open Hole	8.75			7,407.00	7,407.00	10.00		

Shoe Length (ft): 24

HARDWARE

Bottom Plug Used?	Yes	Tool Type	Float Collar
Bottom Plug Provided By	Non BJ	Tool Depth (ft)	18,215.00
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)	
Top Plug Size	5.500	Max Casing Pressure - Operated (psi)	
Centralizers Used	Yes	Pipe Movement	None
Centralizers Quantity		Job Pumped Through	Manifold
Centralizers Type		Top Connection Thread	BTC
Landing Collar Depth (ft)	18,215	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)	2.00	10 min SGS	
Circulation Rate (bpm)	10.00	30 min SGS	
Circulation Volume (bbls)		Flare Prior to/during the Cement Job	No
Lost Circulation Prior to Cement Job	No	Gas Present	No
Mud Density In (ppg)		Gas Units	
Mud Density Out (ppg)			
PV Mud In			
PV Mud Out			
YP Mud In			
YP Mud Out			

TEMPERATURE

Ambient Temperature (°F)		Slurry Cement Temperature (°F)	65.00
Mix Water Temperature (°F)	63.00	Flow Line Temperature (°F)	

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	MultiBond 13.5 ppg	13.5000					77.0000
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	3,654	4,321.0000	769.5000
Displacement 1	Inhibited Water	8.3400				0.0000	20.0000
Displacement Final	Treated Water	8.3400				0.0000	384.0000

Fluid Type	Fluid Name	Component	Concentration	UOM

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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	MultiBond 13.5 ppg	RETARDER, R-3	1.10 PPB
Spacer / Pre Flush / Flush	MultiBond 13.5 ppg	FOAM PREVENTER, FP-13L	0.03 GPB
Spacer / Pre Flush / Flush	UltraBond 10 13.5 ppg	IntegraGuard RHEO 10	100.00 PCT
Spacer / Pre Flush / Flush	UltraBond 10 13.5 ppg	SURFACTANT, S-5	3.50 GPB
Spacer / Pre Flush / Flush	MultiBond 13.5 ppg	13.5 ppg IntegraGUARD Multi	100.00 PCT
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	SPECIAL ADDITIVE, MPA-170	0.30 BWOB
Tail Slurry	Single Slurry 14.5 ppg	BONDING AGENT, EC-1	1.00 BWOB
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
Displacement 1	Inhibited Water	RETARDER, SUGAR, GRANULAR	200.00 LBS
Displacement 1	Inhibited Water	BIOCIDE, ALPHA 1427	0.80 GPT
Displacement 1	Inhibited Water	SCALE CONTROL, FraCare SI 720	0.25 GPT
Displacement Final	Treated Water	SCALE CONTROL, FraCare SI 720	0.25 GPT
Displacement Final	Treated Water	BIOCIDE, ALPHA 1427	0.80 GPT

TREATMENT SUMMARY

Time	Fluid	Rate (bpm)	Fluid Vol. (bbls)	Pipe Pressure (psi)	Annulus Pressure (psi)	Comments
12/17/2017 2:45 AM	UltraBond 10 13.5 ppg	5.50	100.00		950.00	
12/17/2017 3:05 AM	MultiBond 13.5 ppg	5.50	77.00		1,000.00	
12/17/2017 3:24 AM	Single Slurry 14.5 ppg	6.50	769.50		1,300.00	
12/17/2017 5:41 AM	Inhibited Water	7.80	20.00		2,100.00	Treated Sugar Water
12/17/2017 5:44 AM	Treated Water	7.80	384.00		4,000.00	Slowed rate as pressure increased

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Cementing Treatment



/ Bumped plug to
4500 psi

	Min	Max	Avg
Pressure (psi)	950.00	4,500.00	4,000.00
Rate (bpm)	3.00	7.80	6.00

DISPLACEMENT AND END OF JOB SUMMARY

Displaced By	BJ	Amount of Cement Returned/Reversed	0.00
Calculated Displacement Volume (bbls)	404.00	Method Used to Verify Returns	Visual
Actual Displacement Volume (bbls)	404.00	Amount of Spacer to Surface	154.00
Did Float Hold?	Yes	Pressure Left on Casing (psi)	0.00
Bump Plug	Yes	Amount Bled Back After Job	6.00
Bump Plug Pressure (psi)	4,500.00	Total Volume Pumped (bbls)	1,350.00
Were Returns Planned at Surface	Yes	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

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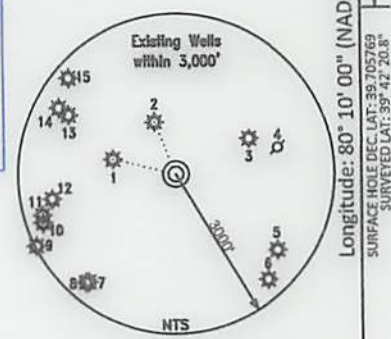
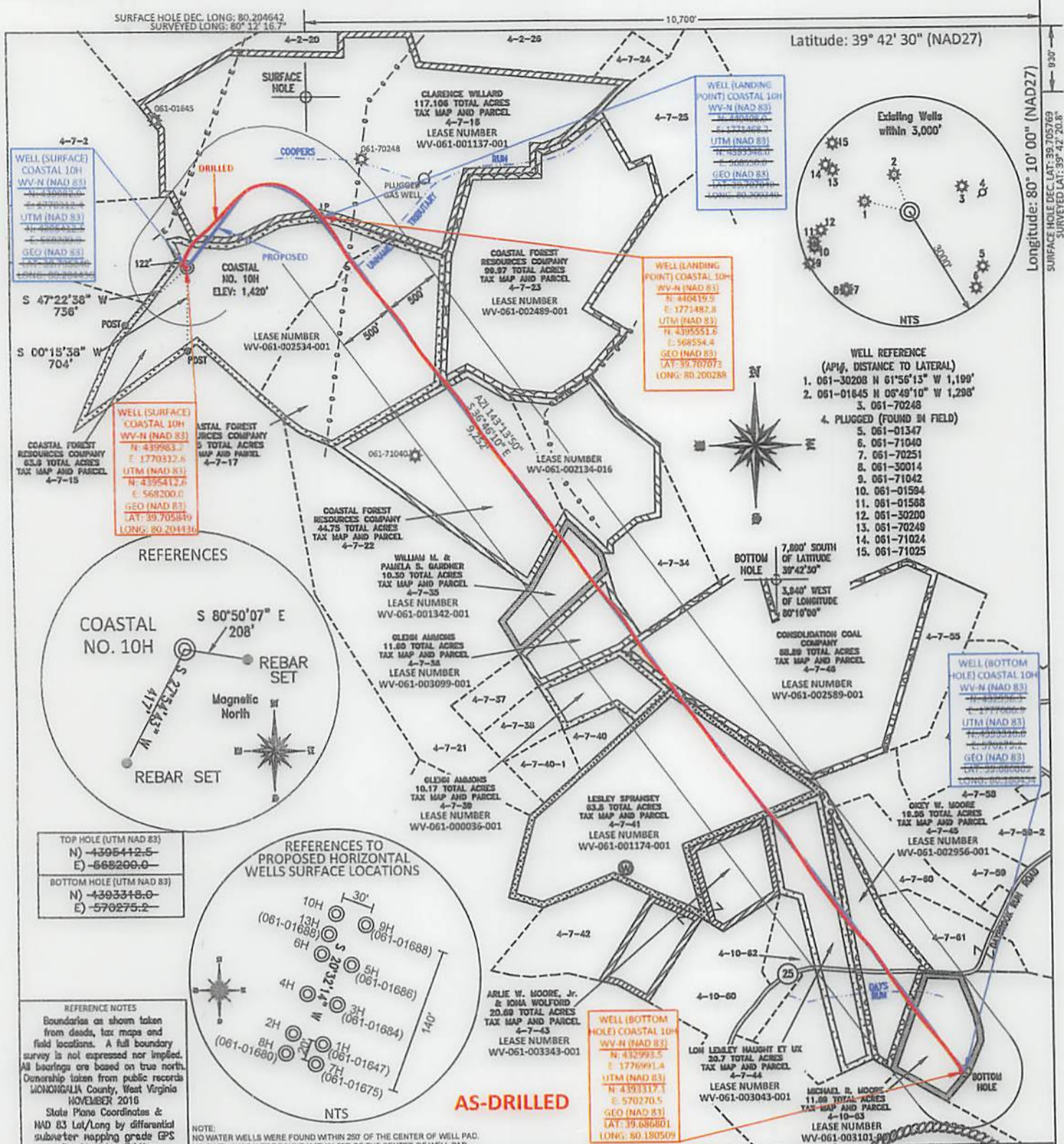
Cementing Treatment



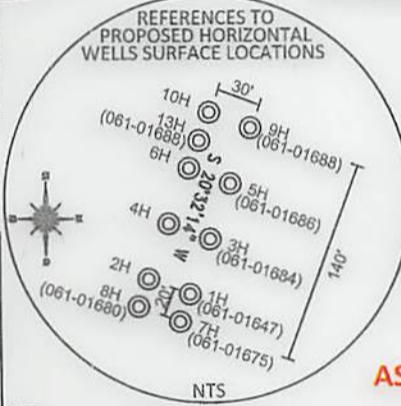
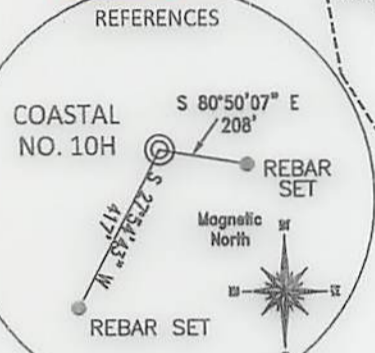
Treatment Report

Job Summary

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- WELL REFERENCE**
(API#, DISTANCE TO LATERAL)
- 061-30208 N 61°56'13" W 1,199'
 - 061-01645 N 05°49'10" W 1,298'
 - 061-70248
 - PLUGGED (FOUND IN FIELD)
 - 061-01347
 - 061-71040
 - 061-70251
 - 061-30014
 - 061-71042
 - 061-01594
 - 061-01588
 - 061-30200
 - 061-70249
 - 061-71024
 - 061-71025



TOP HOLE (UTM NAD 83)
N) -4395412.5
E) -568200.0

BOTTOM HOLE (UTM NAD 83)
N) -4393318.0
E) -570275.2

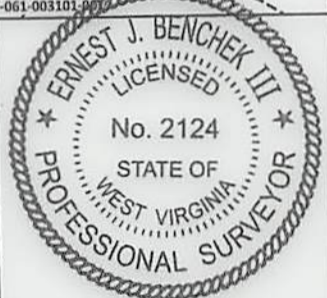
REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records MONONGALIA County, West Virginia NOVEMBER 2018
State Plane Coordinates & NAD 83 Lat/Long by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

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

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 WVDEP

OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

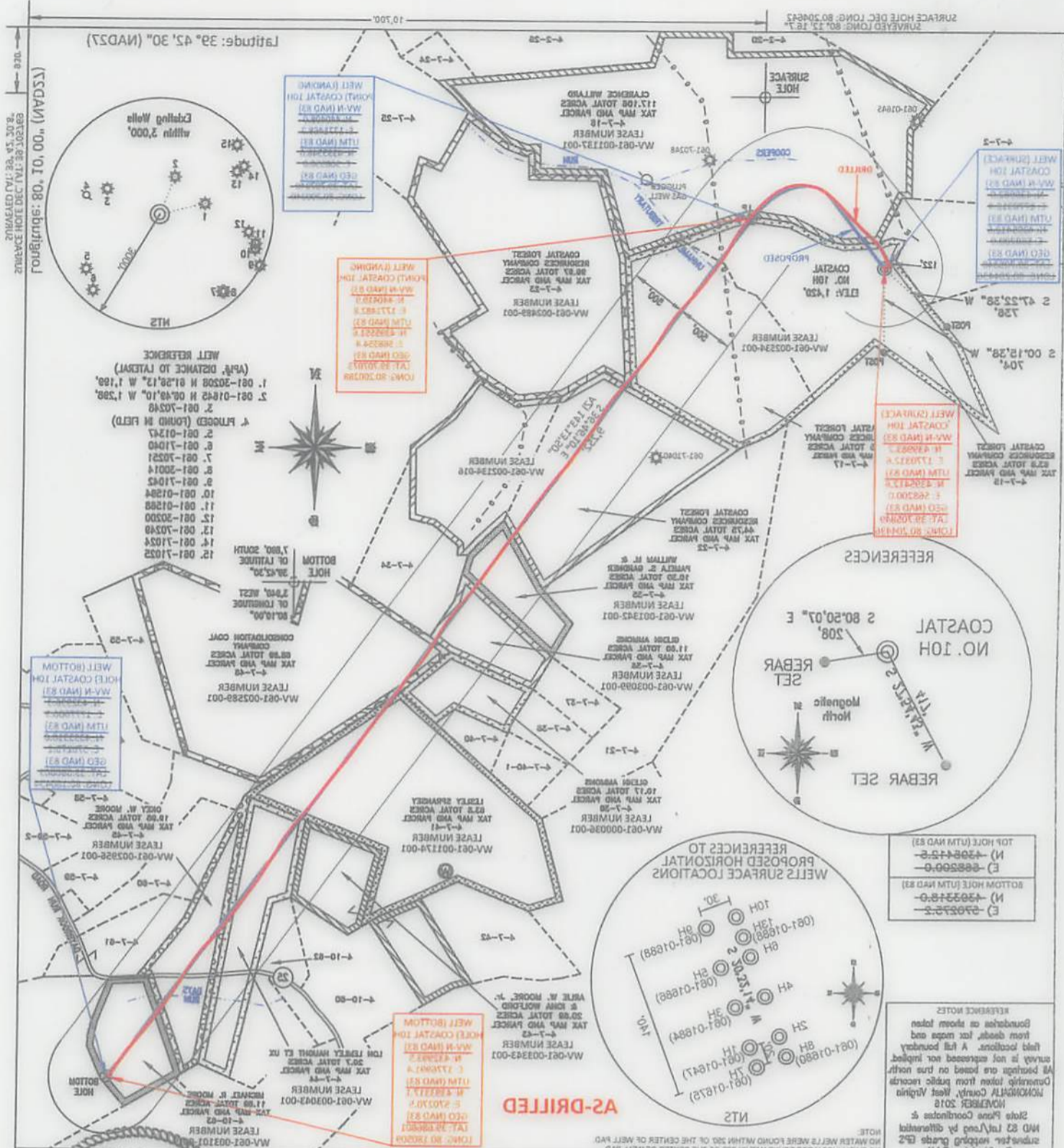
Well Type: Oil Waste Diposal Production Deep
 Gas Liquid Injection Storage Shallow

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: 611.54 +/-
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: 18,199.21'
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. 10H
API WELL #: 47 61
STATE COUNTY PERMIT



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: _____
 Ernest J. Benchek III, License No. 2124

FILE #:	INE12
DRAWING #:	2323
SCALE:	PLAT: 1" = 1200' TICK MARK: 1" = 200'
MINIMUM DEGREE OF ACCURACY:	1/200
PROVEN SOURCE OF ELEVATION:	GRADE GPS

CITY: CHARLESTON STATE: WV ZIP CODE: 25301
 ADDRESS: 707 VIRGINIA STREET EAST, SUITE 1200
 WELL OPERATOR: NORTHEAST NATURAL ENERGY LLC
 DESIGNATED AGENT: JOHN ADAMS
 TARGET FORMATION: MARCELLUS
 ESTIMATED DEPTH: 8,204' TMD: 18,199.21'
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY):
 PERFORATE NEW FORMATION PLUG & ABANDON
 DRILL DEEPER REDRILL FRACTURE OR STIMULATE

OIL & GAS ROYALTY OWNER: WACO OIL AND GAS, ET AL
 SURFACE OWNER: COASTAL FOREST RESOURCES COMPANY
 COUNTY/DISTRICT: MONONGALIA / CLAY
 WATERSHED: DUNKARD CREEK
 ELEVATION: 1,420'
 QUADRANGLE: BLACKSVILLE, WV

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

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

DATE: JUNE 19, 2018

STATE COUNTY PERMIT # 47 61
 API WELL # 47
 OPERATOR'S WELL #: COASTAL NO. 10H