

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

API 47 - 085 - 10044 County Ritchie District Union
Quad Pullman 7.5' Pad Name Ness Pad Field/Pool Name ---
Farm name Ness, Ashley E., Jr. Well Number Langford Unit 1H
Operator (as registered with the OOG) Antero Resources
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4338466m Easting 508529m
Landing Point of Curve Northing 4338383.09m Easting 507958.28m
Bottom Hole Northing 4341173m Easting 506806m

Elevation (ft) 1076' 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)
Air- Foam & 4% KCL
Mud- Polymer

Date permit issued 7/30/2013 Date drilling commenced 10/28/2013 Date drilling ceased 1/21/2014
Date completion activities began 4/13/2014 Date completion activities ceased 1/11/2015
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 62' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1620', 1838' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 456' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

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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	24"	20"	40'	New	51# H-40	N/A	Yes
Surface	17- 1/2"	13- 3/8"	445'	New	48# J-55	N/A	Yes
Coal							
Intermediate 1	12-1/4"	9-5/8"	2536'	New	36# J-55	N/A	Yes
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5-1/2"	17252'	New	23# P-110	N/A	Yes
Tubing		2-3/8"	6812'		5.95# N-80	N/A	
Packer type and depth set		N/A					

Comment Details SIDETRACK: Fish in hole at 7259'. Unable to POOH, set cement plug from 6168' - 6804' using 250 sacks of Class A cement. Inspector Dave Cowan was notified at 2300 on 12/21/2013.

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	Class A	100	15.6	1.18	38	0	8 Hrs.
Surface	Class A	515	15.6	1.18	309	0	8 Hrs.
Coal							
Intermediate 1	Class A	983	15.6	1.18	794	0	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	697 sx (Lead) 1221 sx (Tail)	14.5 Lead 15.2 Tail	1.44 Lead 1.8 Tail	3486	-500' into Intermediate Casing	
Tubing							

Drillers TD (ft) 17252' MD, 6433' TVD (BHL), 6487' TVD (Deepest Point Drilled) Loggers TD (ft) 17196'
 Deepest formation penetrated Marcellus Plug back to (ft) N/A
 Plug back procedure N/A

Kick off depth (ft) 6400'

** This is a subsequent well. Antero only runs wireline logs on the first well on a multi-well pad (Rufus Unit 1H API#47-085-10046). Please reference the wireline logs submitted with Form WR-35 for the Rufus Unit 1H.

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 _____

Conductor- 0
 Surface- 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
 Intermediate- 1 above float joint, 1 above float collar, 1 every 4th joint to surface
 Production- 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

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 _____

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PRODUCING FORMATION(S)	DEPTHS		
	6426' (TOP)	TVD	6878' (TOP) MD
Marcellus			

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 3000 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 9007 mcfpd Oil 77 bpd NGL --- bpd Water 2 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	
	0		0		
* PLEASE SEE EXHIBIT 3					

Please insert additional pages as applicable.

Drilling Contractor Patterson - UTI Drilling Company LLC
Address 207 Carlton Dr. City Eighty Four State PA Zip 15330

Logging Company Cased Hole Solutions
Address 100 Arentzen Blvd. City Charleroi State PA Zip 15022

Cementing Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Stimulating Company Nabors Completion & Production Services, Co.
Address 1650 Hackers Creek City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Kara Quackenbush Telephone 303-357-7233
Signature *Kara Quackenbush* Title Permitting Agent Date 3/25/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Register
WV Department of Environmental Protection
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API 47-085-10044 Farm Name Ness, Ashlev E., Jr Well Number Langford Unit 1H

EXHIBIT 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	13-Apr-14	17,034	17,161	60	Marcellus
2	5-Nov-14	16,883	17,010	60	Marcellus
3	5-Nov-14	16,732	16,860	60	Marcellus
4	6-Nov-14	16,581	16,709	60	Marcellus
5	7-Nov-14	16,430	16,558	60	Marcellus
6	8-Nov-14	16,279	16,407	60	Marcellus
7	8-Nov-14	16,128	16,256	60	Marcellus
8	8-Nov-14	15,977	16,105	60	Marcellus
9	9-Nov-14	15,826	15,954	60	Marcellus
10	9-Nov-14	15,675	15,803	60	Marcellus
11	9-Nov-14	15,524	15,652	60	Marcellus
12	9-Nov-14	15,374	15,501	60	Marcellus
13	10-Nov-14	15,223	15,350	60	Marcellus
14	10-Nov-14	15,072	15,199	60	Marcellus
15	10-Nov-14	14,921	15,049	60	Marcellus
16	11-Nov-14	14,770	14,898	60	Marcellus
17	11-Nov-14	14,619	14,747	60	Marcellus
18	11-Nov-14	14,468	14,596	60	Marcellus
19	11-Nov-14	14,317	14,445	60	Marcellus
20	12-Nov-14	14,166	14,294	60	Marcellus
21	12-Nov-14	14,015	14,143	60	Marcellus
22	12-Nov-14	13,864	13,992	60	Marcellus
23	12-Nov-14	13,713	13,841	60	Marcellus
24	13-Nov-14	13,563	13,690	60	Marcellus
25	13-Nov-14	13,412	13,539	60	Marcellus
26	13-Nov-14	13,261	13,388	60	Marcellus
27	14-Nov-14	13,110	13,238	60	Marcellus
28	14-Nov-14	12,959	13,087	60	Marcellus
29	14-Nov-14	12,808	12,936	60	Marcellus
30	14-Nov-14	12,657	12,785	60	Marcellus
31	14-Nov-14	12,506	12,634	60	Marcellus
32	15-Nov-14	12,355	12,483	60	Marcellus
33	15-Nov-14	12,204	12,332	60	Marcellus
34	15-Nov-14	12,053	12,181	60	Marcellus
35	15-Nov-14	11,902	12,030	60	Marcellus
36	16-Nov-15	11,752	11,879	60	Marcellus
37	16-Nov-15	11,601	11,728	60	Marcellus
38	16-Nov-15	11,450	11,577	60	Marcellus
39	16-Nov-15	11,299	11,427	60	Marcellus
40	17-Nov-14	11,148	11,276	60	Marcellus
41	17-Nov-14	10,997	11,125	60	Marcellus
42	17-Nov-14	10,846	10,974	60	Marcellus
43	17-Nov-14	10,695	10,823	60	Marcellus
44	18-Nov-14	10,544	10,672	60	Marcellus
45	18-Nov-14	10,393	10,521	60	Marcellus
46	18-Nov-14	10,242	10,370	60	Marcellus
47	18-Nov-14	10,091	10,219	60	Marcellus
48	19-Nov-14	9,940	10,068	60	Marcellus
49	19-Nov-14	9,790	9,917	60	Marcellus
50	19-Nov-14	9,639	9,766	60	Marcellus
51	20-Nov-14	9,488	9,615	60	Marcellus
52	20-Nov-14	9,337	9,465	60	Marcellus
53	20-Nov-14	9,186	9,314	60	Marcellus
54	20-Nov-14	9,035	9,163	60	Marcellus
55	20-Nov-14	8,884	9,012	60	Marcellus
56	21-Nov-14	8,733	8,861	60	Marcellus
57	21-Nov-14	8,582	8,710	60	Marcellus
58	21-Nov-14	8,431	8,559	60	Marcellus
59	21-Nov-14	8,280	8,408	60	Marcellus
60	22-Nov-14	8,129	8,257	60	Marcellus
61	22-Nov-14	7,979	8,106	60	Marcellus
62	22-Nov-14	7,828	7,955	60	Marcellus
63	22-Nov-14	7,677	7,804	60	Marcellus
64	22-Nov-14	7,526	7,654	60	Marcellus
65	23-Nov-14	7,375	7,503	60	Marcellus
66	23-Nov-14	7,224	7,352	60	Marcellus
67	23-Nov-14	7,073	7,201	60	Marcellus
68	23-Nov-14	6,922	7,050	60	Marcellus

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EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	4-Nov-14	63.1	7,530	6,109	5,018	185,100	6,041	N/A
2	5-Nov-14	64.9	7,747	5,988	4,921	116,600	6,066	N/A
3	6-Nov-14	67.8	7,271	5,912	5,193	167,400	5,533	N/A
4	7-Nov-14	68.5	7,288	5,684	5,233	172,900	5,573	N/A
5	8-Nov-14	66.9	7,247	5,896	3,957	214,700	6,084	N/A
6	8-Nov-14	67.9	7,316	5,655	4,512	175,700	6,566	N/A
7	8-Nov-14	68.2	7,448	5,544	5,135	214,600	6,153	N/A
8	9-Nov-14	68.7	7,441	5,698	6,120	210,600	5,940	N/A
9	9-Nov-14	63.6	7,205	5,566	5,760	216,600	5,959	N/A
10	9-Nov-14	65.0	7,124	5,449	5,246	214,200	5,951	N/A
11	9-Nov-14	67.6	7,046	5,290	5,290	211,500	5,946	N/A
12	10-Nov-14	66.9	6,849	5,309	5,355	213,300	5,934	N/A
13	10-Nov-14	64.9	7,091	5,558	5,113	167,200	6,458	N/A
14	10-Nov-14	64.9	7,077	5,515	4,943	212,900	5,900	N/A
15	10-Nov-14	64.3	7,072	5,272	4,661	211,400	5,895	N/A
16	11-Nov-14	64.3	6,964	5,414	4,716	213,500	5,880	N/A
17	11-Nov-14	63.5	6,931	5,105	5,076	214,400	5,856	N/A
18	11-Nov-14	62.3	6,147	5,347	5,242	132,200	4,749	N/A
19	12-Nov-14	66.3	6,791	5,272	5,518	211,100	5,818	N/A
20	12-Nov-14	66.9	6,705	5,332	5,215	215,200	5,868	N/A
21	12-Nov-14	67.5	6,677	5,405	5,347	214,600	5,836	N/A
22	12-Nov-14	67.1	6,945	5,422	5,272	213,500	5,810	N/A
23	13-Nov-14	66.7	6,848	5,515	5,191	211,400	5,773	N/A
24	13-Nov-14	66.8	6,688	5,534	4,938	214,300	5,776	N/A
25	13-Nov-14	66.0	6,982	5,376	4,705	214,300	5,758	N/A
26	13-Nov-14	66.4	7,133	5,347	5,328	213,300	5,729	N/A
27	14-Nov-14	67.3	6,882	5,309	5,639	213,800	5,875	N/A
28	14-Nov-14	68.1	6,680	5,317	5,278	213,100	5,697	N/A
29	14-Nov-14	64.5	6,850	5,625	5,460	204,500	5,574	N/A
30	14-Nov-14	65.8	7,458	5,612	5,861	213,700	5,807	N/A
31	15-Nov-14	65.3	7,089	5,698	5,944	210,400	5,696	N/A
32	15-Nov-14	67.0	7,173	5,881	5,332	191,200	5,445	N/A
33	15-Nov-14	62.7	7,904	5,772	5,529	97,800	6,185	N/A
34	15-Nov-14	64.7	7,134	5,473	5,386	215,300	5,631	N/A
35	16-Nov-14	64.6	6,754	5,264	5,412	215,400	5,640	N/A
36	16-Nov-14	66.9	6,666	5,154	5,594	214,300	5,626	N/A
37	16-Nov-14	67.5	6,728	5,317	5,968	214,400	5,691	N/A
38	16-Nov-14	64.6	6,618	5,742	5,133	212,300	5,573	N/A
39	16-Nov-14	64.3	6,801	5,742	5,088	214,000	5,572	N/A
40	17-Nov-14	66.9	6,648	5,251	5,515	214,600	5,664	N/A
41	17-Nov-14	67.1	7,154	5,632	5,538	211,000	5,756	N/A
42	17-Nov-14	64.7	6,707	5,620	5,268	212,400	5,544	N/A
43	17-Nov-14	64.6	7,013	5,735	4,998	207,700	5,550	N/A
44	18-Nov-14	66.1	7,395	5,590	5,281	129,500	5,893	N/A
45	18-Nov-14	65.6	6,948	5,966	4,536	212,800	5,518	N/A
46	18-Nov-14	67.9	6,829	5,741	4,455	210,900	5,469	N/A
47	19-Nov-14	65.9	6,513	5,309	4,906	213,100	5,469	N/A
48	19-Nov-14	68.2	6,457	5,159	5,463	210,500	5,970	N/A
49	19-Nov-14	67.5	6,256	5,212	5,287	206,900	5,586	N/A
50	19-Nov-14	66.6	6,818	5,253	4,545	213,400	5,332	N/A
51	20-Nov-14	67.1	6,690	5,309	5,086	213,900	5,516	N/A
52	20-Nov-14	67.6	6,588	5,272	5,505	210,800	5,445	N/A
53	20-Nov-14	67.7	6,802	5,684	5,508	212,400	5,396	N/A
54	20-Nov-14	68.3	6,581	5,816	5,191	213,600	5,440	N/A
55	20-Nov-14	64.2	6,889	5,228	5,366	190,800	5,166	N/A
56	21-Nov-14	70.7	7,626	5,703	5,496	95,300	5,800	N/A
57	21-Nov-14	68.9	6,653	5,494	4,864	213,600	5,329	N/A
58	21-Nov-14	68.8	6,791	5,501	5,398	216,800	5,461	N/A
59	21-Nov-14	30.4	8,193	5,497	5,091	20,400	4,854	N/A
60	22-Nov-14	65.3	6,400	5,553	5,646	211,600	5,271	N/A
61	22-Nov-14	67.3	6,611	5,701	5,405	211,200	5,412	N/A
62	22-Nov-14	72.5	6,431	5,313	5,889	208,000	5,193	N/A
63	22-Nov-14	67.3	6,060	5,696	4,856	214,400	5,351	N/A
64	22-Nov-14	67.1	6,102	6,182	5,592	214,400	5,292	N/A
65	23-Nov-14	67.5	6,351	5,295	5,540	213,200	5,251	N/A
66	23-Nov-14	68.2	6,174	5,590	5,616	211,900	5,210	N/A
67	23-Nov-14	68.5	6,228	6,014	5,721	209,600	5,162	N/A
68	23-Nov-14	67.1	5,685	5,625	3,365	213,400	5,225	N/A
AVG=		66.0	6,881	5,535	5,229	13,540,800	384,389	TOTAL

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EXHIBIT 3

LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Fresh Water	62	N/A	62	N/A
Siltstone	0	456	0	456
Coal	456	486	456	486
Sand	486	516	486	516
Shale	516	1266	516	1,266
Sandstone	1266	1296	1266	1296
Shale	1296	1356	1296	1356
Sandstone	1356	1386	1356	1386
Shale	1386	1506	1386	1506
Sandstone	1506	1906	1506	1906
Limestone	1906	1993	1906	1993
Big Lime	1993	2052	1993	2052
Big Injun	2052	2302	2052	2302
Gantz Sand	2302	2473	2302	2473
Fifty Foot Sandstone	2473	2688	2473	2688
Gordon	2688	2969	2688	2969
Fifth Sandstone	2969	3063	2969	3064
Bayard	3063	3435	3064	3447
Warren	3435	6816	3447	3861
Speechley	6816	4025	3861	4093
Baltown	4025	4518	4093	4643
Bradford	4518	4895	4643	5054
Benson	4895	5142	5054	5331
Alexander	5142	5360	5331	5573
Elk	5360	5745	5573	5997
Rhinestreet	5745	6107	5997	6397
Sycamore	6107	6271	6397	6583
Middlesex	6271	6375	6583	6741
Burkett	6375	6405	6741	6812
Tully	6405	6426	6812	6878
Marcellus	6426	NA	6878	17228

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	11/5/2014
Job End Date:	11/23/2014
State:	West Virginia
County:	Ritchie
API Number:	47-085-10044-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Langford Unit 1H
Longitude:	-80.90123100
Latitude:	39.19541400
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,487
Total Base Water Volume (gal):	16,144,338
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	ANTERO RESOURCES	Water	Water	7732-18-5	100.00000	90.38442	
WV Specific 40/70 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia	Crystalline Silica, quartz	14808-60-7	99.90000	5.25889	
			Aluminum Oxide	1344-28-1	1.10000	0.05791	
			Iron Oxide	1309-37-1	0.10000	0.00526	
			Titanium Oxide	13463-67-7	0.10000	0.00526	
WV Specific 20/40 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia	Crystalline Silica, quartz	14808-60-7	99.90000	3.21345	
			Aluminum Oxide	1344-28-1	1.10000	0.03538	
			Titanium Oxide	13463-67-7	0.10000	0.00322	
			Iron Oxide	1309-37-1	0.10000	0.00322	
WV Local 100 mesh Sand	Nabors Completion and Production Services	Sand - Bulk - West Virginia	Crystalline Silica, quartz	14808-60-7	99.90000	0.60831	
			Aluminum Oxide	1344-28-1	1.10000	0.00670	

NO	DATE	DESCRIPTION	AMOUNT	CHECK NO	BANK
1	06/01/15	...	...	...	...
2	06/02/15	...	...	...	...
3	06/03/15	...	...	...	...
4	06/04/15	...	...	...	...
5	06/05/15	...	...	...	...
6	06/06/15	...	...	...	...
7	06/07/15	...	...	...	...
8	06/08/15	...	...	...	...
9	06/09/15	...	...	...	...
10	06/10/15	...	...	...	...
11	06/11/15	...	...	...	...
12	06/12/15	...	...	...	...
13	06/13/15	...	...	...	...
14	06/14/15	...	...	...	...
15	06/15/15
16	06/16/15
17	06/17/15
18	06/18/15
19	06/19/15
20	06/20/15
21	06/21/15
22	06/22/15
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25	06/25/15
26	06/26/15
27	06/27/15
28	06/28/15
29	06/29/15
30	06/30/15

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					Iron Oxide	1309-37-1	0.10000	0.00061	
					Titanium Oxide	13463-67-7	0.10000	0.00061	
HCl Acid (12.5-18.0%) 22 Baume	Nabors Completion and Production Services	Bulk Acid							
					Water	7732-18-5	87.50000	0.20060	
					Hydrochloric Acid	7647-01-0	18.00000	0.04127	
Calcium Chloride (CaCl2)	Nabors Completion and Production Services	Cement Accelerators							
					Calcium Chloride	10043-52-4	100.00000	0.09485	
WFR-6W	Nabors Completion and Production Services	Friction Reducer							
					Anionic Water-Soluble Polymer Emulsion	Proprietary	100.00000	0.07617	
LSG-100L	Nabors Completion and Production Services	Gelling Agents							
					Petroleum Distillates	64742-47-8	70.00000	0.06058	
Super TSC-LT	Nabors Completion and Production Services	Paraffin & Scale Additives							
					100% Non-Hazardous Mixture	Proprietary	100.00000	0.01806	
AQUACAR DB 20	Nabors Completion and Production Services	Biocides							
					Polyethylene glycol	25322-68-3	54.50000	0.00881	
					2,2-Dibromo-3-nitrilo- propionamide (DBNPA)	10222-01-2	20.00000	0.00323	
					Sodium bromide	7647-15-6	4.00000	0.00065	
					Dibromoacetone	3252-43-5	3.00000	0.00049	
Super GREEN SOLV- M	Nabors Completion and Production Services	Paraffin & Scale Additives							
					Aliphatic Hydrocarbons	Proprietary	95.00000	0.00138	
					Dodecane	Proprietary	14.00000	0.00020	
					Tetradecane	Proprietary	11.00000	0.00016	
					Tridecane	Proprietary	9.00000	0.00013	
					Undecane	Proprietary	8.00000	0.00012	
Potassium Chloride (KCl)	Nabors Completion and Production Services	Cement Accelerators							
					Potassium Chloride	7447-40-7	100.00000	0.00138	
OB-2 LT	Nabors Completion and Production Services	Gel Breakers							
					Ammonium Persulfate	7727-54-0	85.00000	0.00090	
					Crystalline Silica (in the form of quartz)	14808-60-7	10.00000	0.00011	
Acid Inhibitor 2 (AI-2)	Nabors Completion and Production Services	Acid Corrosion Inhibitors							

EB-4L	Nabors Completion and Production Services	Gel Breakers	Propargyl Alcohol	107-19-7	40.00000	0.00017
			Glycol Ethers	111-46-6	40.00000	0.00017
			Isopropyl Alcohol	67-63-0	40.00000	0.00017
			Tar bases, quinoline derivs, benzyl chloride-quaternized	72480-70-7	10.00000	0.00004
			Ethylene Glycol	107-21-1	40.00000	0.00019
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 Ingredients	Other Ingredients					
	Nabors Completion and Production Services		Copolymer	Proprietary	100.00000	0.07617
			guar gum	9000-30-0	50.00000	0.04327
			Water	7732-18-5	40.00000	0.03047
			Isoparaffinic Solvent	64742-47-8	26.00000	0.01980
			Water	7732-18-5	60.00000	0.01084
			Proprietary	Proprietary	50.00000	0.00903
			Water	7732-18-5	32.00000	0.00517
			Sodium Chloride	7647-14-5	5.00000	0.00474
			Potassium Chloride	7447-40-7	5.00000	0.00474
			Ethoxylated alcohols	Proprietary	4.00000	0.00305
			Ethylene Glycol	107-21-1	4.00000	0.00305
			Proprietary	Proprietary	15.00000	0.00271
			Proprietary	Proprietary	15.00000	0.00271
			Proprietary	Proprietary	15.00000	0.00271
			Surfactant Blend	Proprietary	3.00000	0.00229
			Crystalline Silica (in the form of quartz)	14808-60-7	2.00000	0.00173
			Surfactant	68439-51-0	2.00000	0.00173
			Water	7732-18-5	1.00000	0.00095
			Sugar	57-50-1	100.00000	0.00047
			Proprietary	Proprietary	100.00000	0.00047
			Water	7732-18-5	100.00000	0.00024
			Water	7732-18-5	48.00000	0.00021
			Monobromo-3-nitropropionamide	1113-55-9	1.00000	0.00016
			2,2-Dibromomaloniamide	73003-80-2	1.00000	0.00016
			Alkali Chloride salt	Proprietary	15.00000	0.00016
			2-Propenamide as residual	79-06-1	0.10000	0.00008
			2-Butoxyethanol	111-76-2	13.00000	0.00006
			Proprietary	Proprietary	10.00000	0.00004
			Proprietary	Proprietary	1.00000	0.00001
			Proprietary	Proprietary	1.00000	0.00001
			Proprietary	Proprietary	1.00000	0.00001
			Proprietary	Proprietary	1.00000	0.00001
			Proprietary	Proprietary	0.99000	0.00000

RECEIVED
Office of Oil and Gas
MAY 26 2015
WV Department of
Environmental Protection

LATITUDE 39°12'30"

7,483'

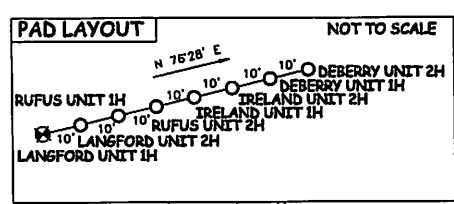
1,321' TO BOTTOM HOLE
LATITUDE 39°15'00"

LONGITUDE 80°55'00"
4,738'
LONGITUDE 80°52'30"
1,026' TO BOTTOM HOLE

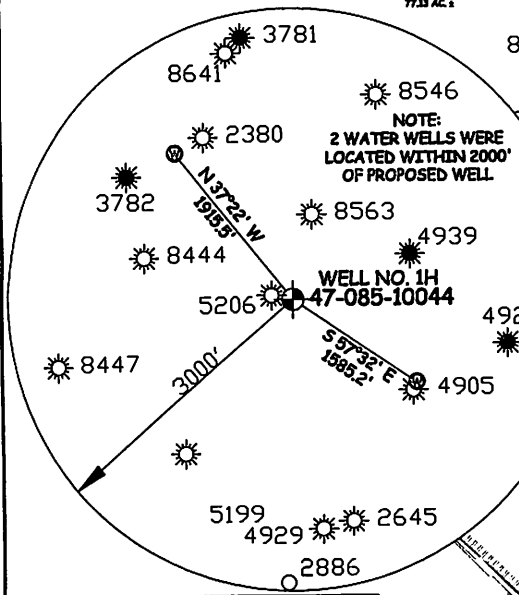
Antero Resources Corporation
Well No. Langford Unit 1H
47-085-10044 (AS DRILLED)

AS DRILLED DATA:
WELL 1H TOP HOLE INFORMATION:
N: 256,350ft E: 1,602,828ft
LAT: 39°11'43.17" LON: 80°54'05.05"
BOTTOM HOLE INFORMATION:
N: 265,325ft E: 1,597,321ft
LAT: 39°13'11.02" LON: 80°55'16.78"
WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

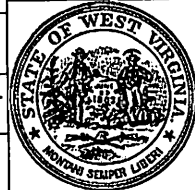
(NAD) 83 (UTM) ZONE 17 COORDS:
WELL 1H TOP HOLE INFORMATION:
N: 4,338,466m E: 508,529m
BOTTOM HOLE INFORMATION:
N: 4,341,173m E: 506,806m



- NOTES
1. NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.
2. TOP HOLE DATA SHOWN HEREON WAS PROVIDED BY ALLEGHENY SURVEYS, INC.
3. AS DRILLED DATA WAS PROVIDED BY ANTERO RESOURCES CORPORATION.
4. WLS IS NOT CERTIFYING THE DATA AND INFORMATION PROVIDED LISTED IN NOTES 2 AND 3, ONLY THE RELATIONSHIP TO THE DATA AND INFORMATION PROVIDED TO THE LEASE BOUNDARIES.
5. WLS IS BY NO MEANS RESPONSIBLE FOR ANY ERRORS OR INACCURACIES WITH THE DATA AND INFORMATION THAT HAS BEEN PROVIDED.



JOB # 13-016WA
DRAWING # LANGFORD1HAD
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WILLOW LAND SURVEYING PLLC
220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415

LEGEND
- - - Surface Owner Boundary Lines +/-
--- Interior Surface Tracts +/-
X Existing Fence
O Found monument, as noted
O Proposed Well Path
O As Drilled Well Path

DATE 03/30/15
OPERATOR'S WELL# LANGFORD UNIT #1H
API WELL # 47 - 085 - 10044
STATE COUNTY PERMIT

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS
WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL
(IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X
LOCATION: ELEVATION 1,080' ORIGINAL - 1,076' AS DRILLED WATERSHED SOUTH FORK HUGHES RIVER
QUADRANGLE PULLMAN 7.5' DISTRICT UNION COUNTY RITCHIE
SURFACE OWNER ASHLEY E. NESS, JR. ACREAGE 90 ACRES +/-
OIL & GAS ROYALTY OWNER HERBERT O. IRELAND ET AL; CHARLIE HEASTER ET AL; KENNETH GODFREY ET UX; JACK H. LANGFORD; BERNARD RICHARDS ET UX; EDWIN DEEM; ROBERT GASTLER; JACK H. LANGFORD ET AL. LEASE ACREAGE 90 ACRES +/-; 234.49 ACRES +/-; 175.69 ACRES +/-; 50.59 ACRES +/-; 214.94 ACRES +/-; 92.13 ACRES +/-; 31.26 ACRES +/-; 448.5 ACRES +/-
PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) (X) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG
TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,433' TVD 17,252' MD
WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
DENVER, CO 80202 CHARLESTON, WV 25313

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