

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

API 47 - 095 - 02717 County Tyler District Ellsworth
Quad Porter Falls 7.5' Pad Name Grand Field/Pool Name ----
Farm name Kenneth Tomblin Et Al Well Number Vishnu 2H
Operator (as registered with the OOG) Antero Resources Corporation
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 4373082m Easting 516292m
Landing Point of Curve Northing 4373466.58m Easting 516461.28m
Bottom Hole Northing 4377851m Easting 514978m

Elevation (ft) 1243.5' 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 11/5/2020 Date drilling commenced 3/11/2021 Date drilling ceased 4/22/2021
Date completion activities began 5/15/2021 Date completion activities ceased 7/24/2021
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

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Freshwater depth(s) ft 25' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft 2305' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 431' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

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Reviewed by:

S. Mcg
8/13/22

API 47-095 - 02717 Farm name Kenneth Tomblin Et Al Well number Vishnu 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	24"	20"	80'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	359'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2570'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	23280'	New	23#, P-110	N/A	Y
Tubing		2-3/8"			4.7#, P-110		
Packer type and depth set		N/A					

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	Class A	266 sx	15.6	1.18	56	0'	8 Hrs.
Surface	Class A	431 sx	15.6	1.20	92	0'	8 Hrs.
Coal							
Intermediate 1	Class A	882 sx	15.6	1.19	187	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	792 sx (Lead) 3626 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.4 (Lead), 1.26 (Tail)	820	-500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 23325' MD, 6815' TVD (BHL), 6900' (Deepest Point Drilled) Loggers TD (ft) 23325' MD

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

Plug back procedure N/A

Kick off depth (ft) 6201'

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

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WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

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WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

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API 47- 095 - 02717

Farm name Kenneth Tomblin Et Al

Well number Vishnu 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
*PLEASE SEE ATTACHED EXHIBIT 1					

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2								
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Please insert additional pages as applicable.

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API 47-095-02717 Farm name Kenneth Tomblin Et Al Well number Vishnu 2H

PRODUCING FORMATION(S)	DEPTHS			
	6813' (TOP)	TVD	7188' (TOP)	MD
Marcellus				

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 2800 psi Bottom Hole -- psi DURATION OF TEST -- hrs

OPEN FLOW Gas 9385 mcfpd Oil 480 bpd NGL -- bpd Water 725 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	

***PLEASE SEE ATTACHED EXHIBIT 3**

Please insert additional pages as applicable.

Drilling Contractor H & P Drilling
Address 912 N Eagle Valley Rd City Howard State PA Zip 16841

Logging Company Nine Energy Services
Address 6500 West Fwy City Fort Worth State TX Zip 76116

Cementing Company Schlumberger
Address 3600 Briarpark Drive City Houston State TX Zip 77042

Stimulating Company Halliburton
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Please insert additional pages as applicable.

Completed by Brandi Hankins Telephone 303-357-7223
Signature [Signature] Title Completions Technician Date 2/8/22

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API 47-095-02717 Farm Name Kenneth Tomblin Et Al Well Number Vishnu Unit 2H

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	5/15/2021	23213.3	23176.5	36	Marcellus
2	5/15/2021	23135.161	22920.327	36	Marcellus
3	5/16/2021	22882.18798	22667.354	36	Marcellus
4	5/16/2021	22629.21497	22414.381	36	Marcellus
5	5/16/2021	22376.24195	22161.4079	36	Marcellus
6	5/16/2021	22123.26893	21908.4349	36	Marcellus
7	5/17/2021	21870.29592	21655.4619	36	Marcellus
8	5/17/2021	21617.3229	21402.4889	36	Marcellus
9	5/17/2021	21364.34989	21149.5159	36	Marcellus
10	5/17/2021	21111.37687	20896.5429	36	Marcellus
11	5/18/2021	20858.40385	20643.5698	36	Marcellus
12	5/18/2021	20605.43084	20390.5968	36	Marcellus
13	5/18/2021	20352.45782	20137.6238	36	Marcellus
14	5/19/2021	20099.48481	19884.6508	36	Marcellus
15	5/19/2021	19846.51179	19631.6778	36	Marcellus
16	5/19/2021	19593.53878	19378.7048	36	Marcellus
17	5/19/2021	19340.56576	19125.7317	36	Marcellus
18	5/20/2021	19087.59274	18872.7587	36	Marcellus
19	5/20/2021	18834.61973	18619.7857	36	Marcellus
20	5/20/2021	18581.64671	18366.8127	36	Marcellus
21	5/20/2021	18328.6737	18113.8397	36	Marcellus
22	5/21/2021	18075.70068	17860.8667	36	Marcellus
23	5/21/2021	17822.72766	17607.8937	36	Marcellus
24	5/21/2021	17569.75465	17354.9206	36	Marcellus
25	5/22/2021	17316.78163	17101.9476	36	Marcellus
26	5/22/2021	17063.80862	16848.9746	36	Marcellus
27	5/22/2021	16810.8356	16596.0016	36	Marcellus
28	5/22/2021	16557.86259	16343.0286	36	Marcellus
29	5/22/2021	16304.88957	16090.0556	36	Marcellus
30	5/23/2021	16051.91655	15837.0825	36	Marcellus
31	5/23/2021	15798.94354	15584.1095	36	Marcellus
32	5/23/2021	15545.97052	15331.1365	36	Marcellus
33	5/23/2021	15292.99751	15078.1635	36	Marcellus
34	5/24/2021	15040.02449	14825.1905	36	Marcellus
35	5/24/2021	14787.05147	14572.2175	36	Marcellus
36	5/24/2021	14534.07846	14319.2444	36	Marcellus
37	5/24/2021	14281.10544	14066.2714	36	Marcellus
38	5/25/2021	14028.13243	13813.2984	36	Marcellus
39	5/25/2021	13775.15941	13560.3254	36	Marcellus
40	5/25/2021	13522.18639	13307.3524	36	Marcellus
41	5/25/2021	13269.21338	13054.3794	36	Marcellus
42	5/25/2021	13016.24036	12801.4063	36	Marcellus
43	5/26/2021	12763.26735	12548.4333	36	Marcellus
44	5/26/2021	12510.29433	12295.4603	36	Marcellus
45	5/26/2021	12257.32132	12042.4873	36	Marcellus
46	5/26/2021	12004.3483	11789.5143	36	Marcellus
47	5/26/2021	11751.37528	11536.5413	36	Marcellus
48	5/27/2021	11498.40227	11283.5683	36	Marcellus
49	5/27/2021	11245.42925	11030.5952	36	Marcellus
50	5/27/2021	10992.45624	10777.6222	36	Marcellus
51	5/27/2021	10739.48322	10524.6492	36	Marcellus
52	5/27/2021	10486.5102	10271.6762	36	Marcellus
53	5/28/2021	10233.53719	10018.7032	36	Marcellus
54	5/28/2021	9980.564172	9765.73016	36	Marcellus
55	5/28/2021	9727.591156	9512.75714	36	Marcellus
56	5/28/2021	9474.618141	9259.78413	36	Marcellus
57	5/28/2021	9221.645125	9006.81111	36	Marcellus
58	5/29/2021	8968.672109	8753.8381	36	Marcellus
59	5/29/2021	8715.699093	8500.86508	36	Marcellus
60	5/29/2021	8462.726077	8247.89206	36	Marcellus
61	5/29/2021	8209.753061	7994.91905	36	Marcellus
62	5/29/2021	7956.780045	7741.94603	36	Marcellus
63	5/30/2021	7703.807029	7488.97302	36	Marcellus
64	5/30/2021	7450.834014	7236	36	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	5/15/2021	80.41	10209	8690	3302	164160	214400	N/A
2	5/15/2021	83.88	9870	6868	3563.46	520130	395721	N/A
3	5/16/2021	82.61	10075	6542	3597	516280	384306	N/A
4	5/16/2021	84.24	10066	5912	3375	499070	383154	N/A
5	5/16/2021	85.21	10068	5572	3472	502230	382467	N/A
6	5/16/2021	87.01	10032	5920	3645	510170	382137	N/A
7	5/17/2021	84.39	10049	9015	3640	513590	361159	N/A
8	5/17/2021	87.96	10095	7873	3798	506750	362441	N/A
9	5/17/2021	85.71	10096	6305	3373	507130	362642	N/A
10	5/17/2021	86.46	9869	8265	3625	512010	364222	N/A
11	5/18/2021	84.04	9845	8486	3551	506240	363507	N/A
12	5/18/2021	88.49	10097	8174	3323	506680	356256	N/A
13	5/18/2021	79.37	9910	4612	3013	508810	365256	N/A
14	5/19/2021	75.36	9884	6280	3833	517480	533402	N/A
15	5/19/2021	84.11	10046	6595	3260	506660	360996	N/A
16	5/19/2021	84.41	9345	5520	3189	504180	366413	N/A
17	5/19/2021	91.15	10044	5691	3600	517020	363551	N/A
18	5/20/2021	90.81	10055	5409	3425	513090	362918	N/A
19	5/20/2021	90.86	10034	5614	3479	507690	362984	N/A
20	5/20/2021	87.57	9668	5856	3887	510770	361522	N/A
21	5/20/2021	90.92	9719	5706	4218	518780	363548	N/A
22	5/21/2021	92.72	9927	5599	3713	511520	361568	N/A
23	5/21/2021	94.06	9953	5622	3472	501120	357743	N/A
24	5/21/2021	92.57	9497	5583	3268	506300	360347	N/A
25	5/22/2021	94.91	9778	5234	3555	511280	366765	N/A
26	5/22/2021	97.94	10010	4989	31070	510470	367004	N/A
27	5/22/2021	93.4	9396	5171	3258	510250	361098	N/A
28	5/22/2021	95.87	9500	6218	3361	513080	363490	N/A
29	5/22/2021	98.66	9627	5177	3380	512970	363152	N/A
30	5/23/2021	98.65	9719	5256	3608	508830	363424	N/A
31	5/23/2021	98.2	9651	5899	3829	503920	357572	N/A
32	5/23/2021	92.42	9098	4266	3403	506820	364770	N/A
33	5/23/2021	97.13	9245	5776	3594	506020	361805	N/A
34	5/24/2021	98.41	9486	4620	3707	507820	363565	N/A
35	5/24/2021	97.94	9233	5774	4005	505070	365844	N/A
36	5/24/2021	96.2	9376	5410	3180	505440	360501	N/A
37	5/24/2021	97.62	9050	6447	3596	504190	355379	N/A
38	5/25/2021	98.43	8955	6671	3408	512360	362430	N/A
39	5/25/2021	98.13	9028	8992	3808	506120	360409	N/A
40	5/25/2021	98.46	9067	7522	3733	510270	355657	N/A
41	5/25/2021	99.13	9094	6848	3425	508640	356221	N/A
42	5/25/2021	99.11	8821	877	3189	509980	359052	N/A
43	5/26/2021	96.75	8688	8654	3587	506120	365305	N/A
44	5/26/2021	98.52	8965	9154	3445	504540	358954	N/A
45	5/26/2021	98.17	9078	7407	3384	501580	353619	N/A
46	5/26/2021	98.73	8978	6979	3301	510920	377007	N/A
47	5/26/2021	99.11	8813	6634	3424	509960	375054	N/A
48	5/27/2021	97.67	8845	3742	3753	506560	375039	N/A
49	5/27/2021	98.72	8836	3820	3768	510170	374555	N/A
50	5/27/2021	95.16	8692	6927	3714	509610	371938	N/A
51	5/27/2021	98.24	8946	4987	3555	513780	367588	N/A
52	5/27/2021	96.15	8655	7141	3179	509760	372453	N/A
53	5/28/2021	98.17	8988	6262	3327	503520	373553	N/A
54	5/28/2021	98.36	8703	6546	3293	513210	372041	N/A
55	5/28/2021	97.77	8404.49	4370	4160.55	504320	369735	N/A
56	5/28/2021	95.6	8605	5650	3508	512780	371977	N/A
57	5/28/2021	99.06	8367	4841	3698	507970	374777	N/A
58	5/29/2021	97.95	8088	5899	3674	508250	373090	N/A
59	5/29/2021	98.85	8896	6147	3456	503310	367339	N/A
60	5/29/2021	98.21	8605	4898	3453	504700	369849	N/A
61	5/29/2021	98.63	8209	5445	3552.16	504600	372380	N/A
62	5/29/2021	98.75	8067	6177	3067	501710	370025	N/A
63	5/30/2021	99.04	8020	5786	3397	505210	371585	N/A
64	5/30/2021	95.43	7874	5928	3101	516870	373061	N/A
	AVG=	93	9,311	6,098	3,946	32,210,840	23,491,722	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
Silty Sandstone	74	164	74	164
Shaley Siltstone	164	194	164	194
Shaley Sandstone	194	314	194	314
Shaley Siltstone	314	734	314	734
Sandy Siltstone	734	674	734	674
Shaley Siltstone, Tr Limestone	674	1,314	674	1,314
Shaley Sandstone	1,314	1,554	1,314	1,554
Sandstone, Tr Shale	1,554	1,664	1,554	1,664
Silty Shale	1,664	1,734	1,664	1,734
Shaley Siltstone	1,734	1,784	1,734	1,784
Sandy Shale	1,784	1,974	1,784	1,974
Shale, Tr Limestone	1,974	2,084	1,974	2,084
Shaley Limestone	2,084	2,092	2,084	N/A
Big Lime	2,118	3,014	2,094	3,020
Fifty Foot Sandstone	3,014	3,139	2,994	3,147
Gordon	3,139	3,419	3,121	3,436
Fifth Sandstone	3,419	3,494	3,410	3,513
Bayard	3,494	4,213	3,487	4,257
Speechley	4,213	4,537	4,231	4,593
Balltown	4,537	4,931	4,567	5,004
Bradford	4,931	5,197	4,978	5,280
Benson	5,197	5,467	5,254	5,563
Alexander	5,467	6,653	5,537	6,847
Sycamore	6,515	6,627	6,675	6,821
Middlesex	6,627	6,725	6,821	6,981
Burkett	6,725	6,757	6,981	7,041
Tully	6,757	6,813	7,041	7,188
Marcellus	6,813	NA	7,188	NA

*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/15/2021
Job End Date:	5/30/2021
State:	West Virginia
County:	Tyler
API Number:	47-095-02717-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	VISHNU UNIT 2H
Latitude:	39.50713000
Longitude:	-80.81066000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,900
Total Base Water Volume (gal):	24,371,376
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
Produced Water	Halliburton	Base Fluid					
			Water	7732-18-5	100.00000	86.42042	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.08389	

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OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker							
MC B-8614A	MultiChem	Biocide				Listed Below			
						Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant				Listed Below			
Exceletrate LX-15	Halliburton	Friction Reducer				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent				Listed Below			
HYDROCHLORI C ACID, 22 BAUME	Halliburton	Solvent				Listed Below			
FLUID Enviro- Syn HCR-7000- WL	Fluid Energy Group	Acid Replacement				Listed Below			
						Listed Below			

Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.

Crystalline silica, quartz	14808-60-7	100.00000	13.43754
Complex Amine Compound	Proprietary	60.00000	0.02820
Hydrochloric acid	7647-01-0	30.00000	0.01419
Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01410
Proprietary	Proprietary	20.00000	0.00701
Guar gum	9000-30-0	100.00000	0.00413
Proprietary	Proprietary	10.00000	0.00350
Glutaraldehyde	111-30-8	30.00000	0.00252
Surfactant	Proprietary	5.00000	0.00235
Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00235
Ethoxylated alcohols	Proprietary	5.00000	0.00047
Organic chloride compound	Proprietary	1.00000	0.00047
Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00047
Alkyl (C12-16) dimethylbenzyl ammonium chloride	68424-85-1	5.00000	0.00042
Ammonium persulfate	7727-54-0	100.00000	0.00010
Methanol	67-56-1	100.00000	0.00009
Ethanol	64-17-5	1.00000	0.00008
Oxyated phenolic resin	Proprietary	30.00000	0.00003
Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00003
Modified thiourea polymer	Proprietary	30.00000	0.00003
Organic salt #2	Proprietary	0.01000	0.00000
Sodium hydroxide	1310-73-2	0.01000	0.00000
Organic salt #1	Proprietary	0.01000	0.00000
Sodium glycolate	2836-32-0	0.01000	0.00000

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			Nitrated acetate salt	Proprietary	0.01000	0.00000			
			Formaldehyde	50-00-0	0.01000	0.00000			
			Acrylamide	79-06-1	0.01000	0.00000			
			Hexadecene	629-73-2	5.00000	0.00000			
			Propargyl alcohol	107-19-7	5.00000	0.00000			
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000			

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

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

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

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)