

API# : 4702103673IDENTIFICATION AND LITHOLOGICAL DESCRIPTION OF SAMPLES

Company: EASTERN AMERICAN ENERGY Well: KILLINGSWORTH NO. 1  
 Formation: ELK-ALEXANDER Field: GLENNVILLE  
 County (Parish), State: GILMER, WEST VIRGINIA

Sample Identification	Depth, feet	Lithological Description
1A	4664-4665	Sst,sil,dk gry,vf gr,wl srted,wl consol,w/sh lam,vfri mic
2A	4666-4667	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac w/sil cmt mic
3A	4667-4668	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
4A	4674-4675	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil,cmt mic
5A	4675-4676	Ssil,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
6A	4678-4679	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
7A	4679-4680	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
8A	4694-4695	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
9A	4695-4696	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
10A	4696-4697	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic

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Sample Identification	Depth, feet	Lithological Description
11A	4697-4698	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
12A	4700-4701	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
13A	4701-4702	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
14A	4702-4703	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
15A	4705-4706	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
16A	4706-4707	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
17A	4708-4709	Sst,sil,dk gry,vf gr,wl srted,wl consol,grad bdg,mic
18A	4714-4715	Sst,sil,dk gry,vf gr,wl srted,wl consol,mic
19A	4717-4718	Sst,sil,dk gry,vf gr,wl srted,wl consol,mic
20A	4720-4721	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic

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Sample Identification	Depth, feet	Lithological Description
21A	4721-4722	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
22A	4722-4723	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
23A	4723-4724	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
24A	4724-4725	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
25A	4726-4727	Sst,wil,dk gry,vf gr,wl srted,wl consol,frac w/sil cmt mic
26A	4727-4728	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
27A	4729-4730	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
28A	4730-4731	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
29A	4731-4732	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
30A	4737-4738	Sst,sil,dk gry,vf gr,wl srted,wl consol,mic

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Sample Identification	Depth, feet	Lithological Description
31A	4741-4742	Sst,sil,dk gry,vf gr,wl srtd,wl consol,mic
32A	4742-4743	Sst,sil,dk gry,vf gr,wl srtd,wl consol,frac,w/sh lam
		mic
33A	4743-4744	Sst,sil,dk gry,vf gr,wl srtd,wl consol,mic
34A	4745-4746	Sst,sil,dk gry,vf gr,wl srtd,wl consol,mic
35A	4747-4748	Sst,sil,dk gry,vf gr,wl srtd,wl consol,frac,w/sil cmt
		w/sh lam,mic
36A	4748-4749	Sst,sil,dk gry,vf gr,wl srtd,wl consol,frac,w/sil cmt
		mic
37A	4749-4750	Sst,sil,dk gry,vf gr,wl srtd,wl consol,frac,w/sil cmt
		mic
38A	4751-4752	Sst,sil,dk gry,vf gr,wl srtd,wl consol,mic
39A	4752-4753	Sst,sil,dk gry,vf gr,wl srtd,wl consol,frac,w/sil cmt
		mic
40A	4753-4754	Sst,sil,dk gry,vf gr,wl srtd,wl consol,frac,w/sil cmt
		w/sh lam,mic

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Sample Identification	Depth, feet	Lithological Description
41A	4754-4755	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
42A	4756-4757	Sst,sil,dk gry,vf gr,wl srted,wl consol,mic
43A	4757-4758	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
44A	4759-4760	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac w/sil cmt mic
45A	4762-4763	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
46A	4765-4766	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
47A	4766-4767	Sh,blk,vf gr,wl srted,wl consol,frac,w/sil cmt,mic
48A	4767-4768	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
49A	4768-4769	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic
50A	4770-4771	Sst,sil,dk gry,vf gr,wl srted,wl consol,frac,w/sil cmt mic



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Company EASTERN AMERICAN ENERGY Formation ELK-ALEXANDER  
 Well KILLINGSWORTH NO. 1 County GILMER  
 Field GLENNVILLE State WEST VIRGINIA

SUMMARY OF ROUTINE PERMEABILITY, POROSITY AND KLINKENBERG  
PERMEABILITY AS A FUNCTION OF OVERBURDEN PRESSURE

Sample Identification	Depth Feet	Effective Overburden Pressure, Psi		Klinkenberg Permeability * Millidarcys
		Permeability to Air Millidarcys	Porosity Percent	
** 1A	4664-65	11	3.7	0.0432
** 2A	4666-67	3.8	5.3	0.2174
** 3A	4667-68	0.03	3.3	0.0634 20.2% + 0.0033
** 4A	4674-75	6.4	5.7	SAMPLE FAILURE
** 5A	4675-76	4.5	6.2	SAMPLE FAILURE
** 6A	4678-79	0.40	5.6	0.0156
** 7A	4679-80	0.64	5.9	0.0056
** 8A	4694-95	0.27	5.3	0.0132
** 9A	4695-96	0.34	6.1	0.0179
** 10A	4696-97	0.45	7.0	0.0245
** 11A	4697-98	95	7.5	0.0001 21.3% + 0.0042 ***
** 12A	4700-01	0.45	5.7	0.0207
** 13A	4701-02	0.50	6.1	0.0359
** 14A	4702-03	0.76	6.3	0.0508
** 15A	4705-06	2.6	5.1	0.2072 17.1% +
** 16A	4607-08	1.0	5.1	0.0294
** 17A	4708-09	0.07	5.5	0.0020

\* Permeability to Nitrogen

\*\* Fractured Core Plug

\*\*\* Redrilled Core Plug

+ Measured at specified Water Saturations

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Sample Identification	Depth Feet	Effective Overburden Pressure, Psi		
		Permeability to Air Millidarcys	Porosity Percent	Klinkenberg Permeability * Millidarcys
18A	4714-15	< 0.01	4.4	0.0001
** 19A	4717-18	13	4.2	0.5190
** 20A	4720-21	0.48	5.6	0.2206 50% + 0.2025
** 21A	4721-22	4.2	6.4	0.0087 8.5% + 0.2510
** 22A	4722-23	0.29	6.2	0.0160 44.3% + 0.0194
** 23A	4723-24	47	7.3	SAMPLE FAILURE
** 24A	4724-25	82	7.7	0.0114 28.6% +
** 25A	4726-27	0.72	6.0	0.0451
** 26A	4727-28	24	6.2	0.0001 28.2% + 0.0011 ***
** 27A	4729-30	0.41	5.8	0.0322
** 28A	4730-31	1.9	6.0	0.1302 0.0051 22.1% +
** 29A	4731-32	0.32	2.0	0.0177
** 30A	4737-38	0.02	2.0	0.0008
** 31A	4741-42	2.7	1.5	0.2222 0.0001 72 % +
32A	4742-43	2.7	2.3	0.2244 0.0001 62.5% +
33A	4743-44	0.01	1.6	0.0006
34A	4745-46	0.01	2.1	0.0002
** 35A	4747-48	14	4.3	0.6233

\* Permeability to Nitrogen  
 \*\* Fractured Core Plug  
 \*\*\* Redrilled Core Plug  
 + Measured at specified Water Saturations



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PERMEABILITY AS A FUNCTION OF OVERBURDEN PRESSURE

Sample Identification	Depth Feet	Effective Overburden Pressure, Psi		
		Permeability to Air Millidarcys	Porosity Percent	Klinkenberg Permeability * Millidarcys
** 36A	4748-49	0.06	5.5	0.0020
** 37A	4749-50	8.9	5.5	0.3213
38A	4751-52	0.01	5.5	0.2306 22 % + 0.0001
** 39A	4752-53	12	1.5	0.2403 19.8% +
** 40A	4753-54	4.0	5.8	0.2000 0.0134 18.2% +
** 41A	4754-55	0.13	5.4	0.0130
** 42A	4756-57	0.01	1.8	0.0001
** 43A	4757-58	0.08	2.7	0.0025
** 44A	4759-60	0.18	3.0	0.0066
** 45A	4762-63	3.4	4.2	0.0099
** 46A	4765-66	2.2	2.8	0.0089
** 47A	4766-67	19	5.1	SAMPLE FAILURE
48A	4767-68	0.10	5.0	0.0111
49A	4768-69	0.67	5.1	0.493
50A	4770-71	0.71	2.7	0.1001
51A	4771-72	0.19	2.9	0.0079

\* Permeability to Nitrogen  
 \*\* Fractured Core Plug  
 \*\*\* Redrilled Core Plug  
 + Measured at specified Water Saturations