S# 2331

GeoMark
Petroleum Services Division

Source Rock Analyses

TOC, Rock-Eval and Maturity Testing

J. Gilson Unit #1
Columbiana County, Ohio

September 14, 2010

218 Higgins Street
Humble, TX 77338
832.644.1184

GeoMark Research, Ltd.

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Houston, TX 77095
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SOURCE ROCK ANALYSES

GEOMARK RESEARCH, LTD

J. Gilson Unit #1, Columbiana County, Ohio

Sample ID										Source Rock Analyses													
Project / Sample ID	API #	Well Name	Sampling Date	Sampling Time	Formation Name	Upper Depth (ft)	Lower Depth (ft)	Median Depth (ft)	Sample Type	Percent Carbonate (wt%)	Leco TOC (wt% HC)	Rock-Eval S1 (mg HC/g)	Rock-Eval S2 (mg HC/g)	Rock-Eval S3 (mg CO2/g)	Tmax (°C)	Measured %Ro (Vitrinite Refl.)	Calculated %Ro (RE-TMAX)	Hydrogen Index (S2x100/TOC)	Oxygen Index (S3x100/TOC)	S2/S3 Conc. (mg HC/mg CO2)	S1/TOC Norm. Oil Content	Production Index (S1/S1+S2)	Experimental Notations
RJRE-100904-001	34029206260000	J. Gilson Unit #1				8,230.00	8,260.00	8,245.00	Cuttings	19.13	1.37	0.55	0.64	0.33	370		-0.50	47	24	2	40	0.46	
RJRE-100904-002	34029206260000	J. Gilson Unit #1				8,260.00	8,270.00	8,265.00	Cuttings	15.20	1.14	0.41	0.36	0.28	405		0.13	32	25	1	36	0.53	
RJRE-100904-003	34029206260000	J. Gilson Unit #1				8,270.00	8,290.00	8,280.00	Cuttings	18.67	1.35	0.48	0.47	0.26	359		-0.70	35	19	2	36	0.51	
RJRE-100904-004	34029206260000	J. Gilson Unit #1				8,290.00	8,310.00	8,300.00	Cuttings	26.23	1.70	0.56	0.59	0.31	400		0.04	35	18	2	33	0.49	
RJRE-100904-005	34029206260000	J. Gilson Unit #1				8,310.00	8,330.00	8,320.00	Cuttings	24.88	1.80	0.60	0.62	0.33	400		0.04	34	18	2	33	0.49	
RJRE-100904-006	34029206260000	J. Gilson Unit #1				8,330.00	8,350.00	8,340.00	Cuttings	16.59	1.12	0.34	0.38	0.30	416		0.33	34	27	1	30	0.47	
RJRE-100904-007	34029206260000	J. Gilson Unit #1				8,350.00	8,380.00	8,365.00	Cuttings	27.92	1.91	0.72	0.58	0.36	416		0.33	30	19	2	38	0.55	
RJRE-100904-008	34029206260000	J. Gilson Unit #1				8,380.00	8,400.00	8,390.00	Cuttings	28.84	1.35	0.43	0.41	0.28	413		0.27	30	21	1	32	0.51	
RJRE-100904-009	34029206260000	J. Gilson Unit #1				8,400.00	8,420.00	8,410.00	Cuttings	52.52	2.28	1.05	0.64	0.36	379		-0.34	28	16	2	46	0.62	
RJRE-100904-010	34029206260000	J. Gilson Unit #1				8,420.00	8,440.00	8,430.00	Cuttings	33.46	1.86	0.65	0.48	0.30	387		-0.19	26	16	2	35	0.58	
RJRE-100904-011	34029206260000	J. Gilson Unit #1				8,440.00	8,460.00	8,450.00	Cuttings	58.23	2.93	1.18	0.60	0.34	391		-0.12	20	12	2	40	0.66	
RJRE-100904-012	34029206260000	J. Gilson Unit #1				8,460.00	8,480.00	8,470.00	Cuttings	64.31	2.92	1.16	0.48	0.34	381		-0.30	16	12	1	40	0.71	
RJRE-100904-013	34029206260000	J. Gilson Unit #1				8,480.00	8,490.00	8,485.00	Cuttings	57.81	2.98	1.20	0.37	0.27	342		-1.00	12	9	1	40	0.76	

NOTE: Tmax data is highly suspect

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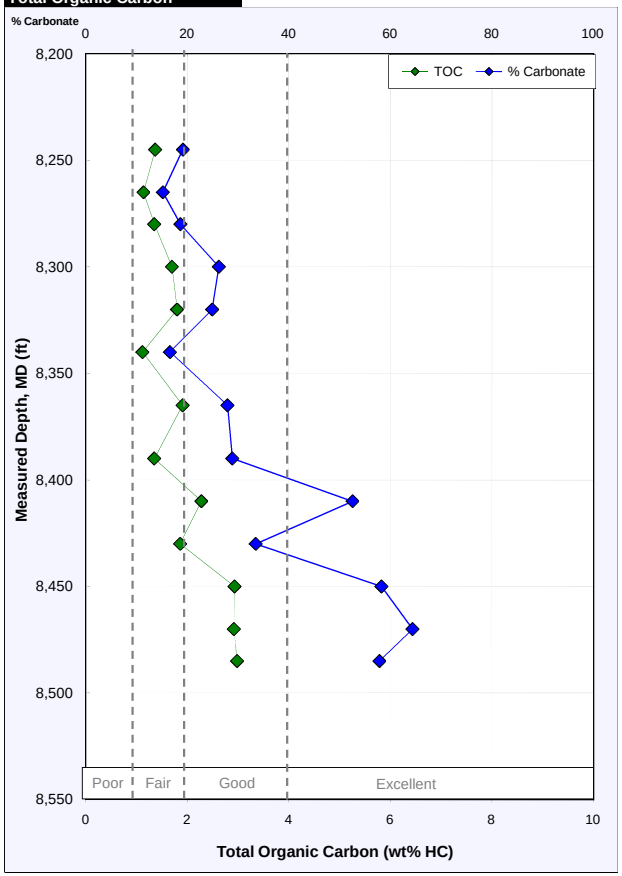
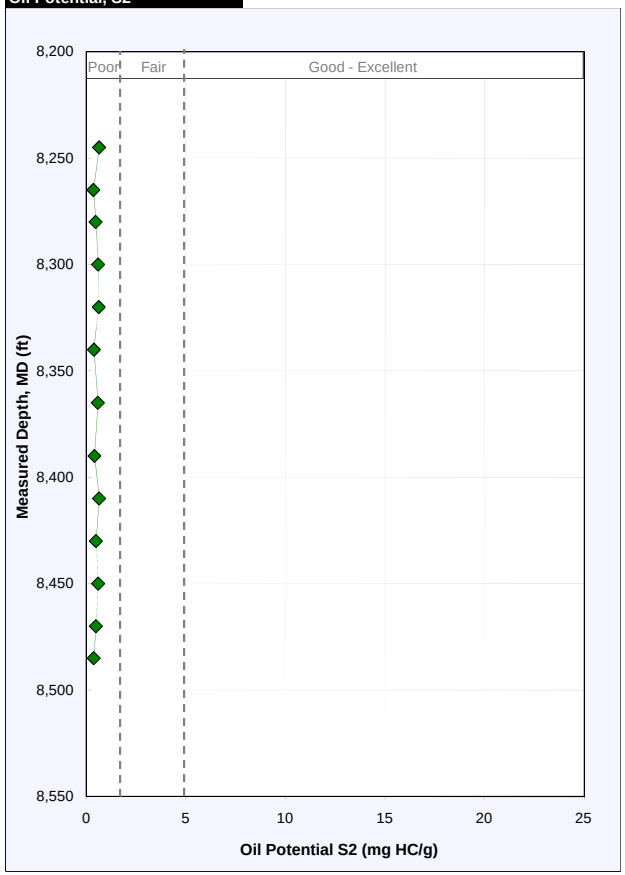
J. Gilson Unit #1, Columbiana County, Ohio

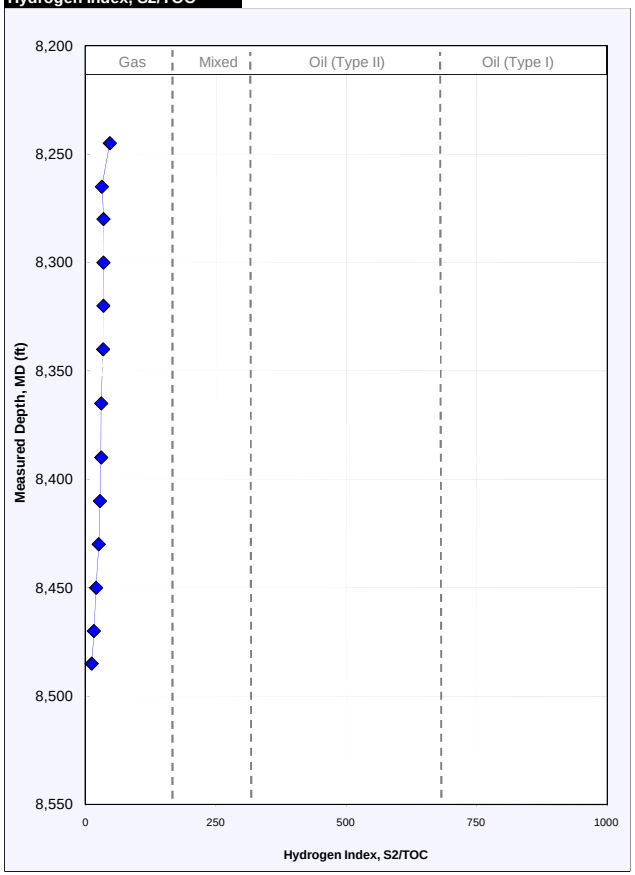
Total Organic Carbon



Oil Potential, S2



Hydrogen Index, S2/TOC



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SOURCE ROCK ANALYSES

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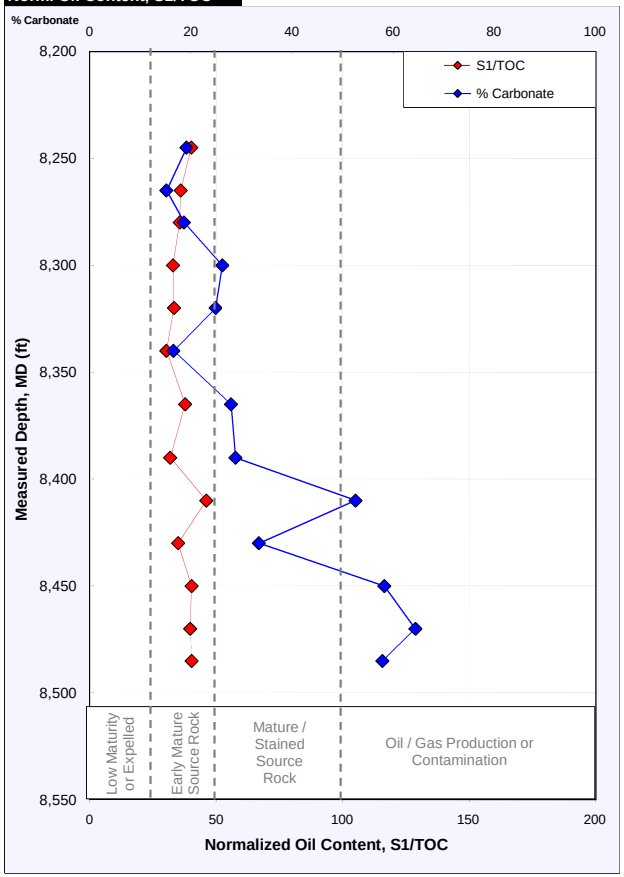
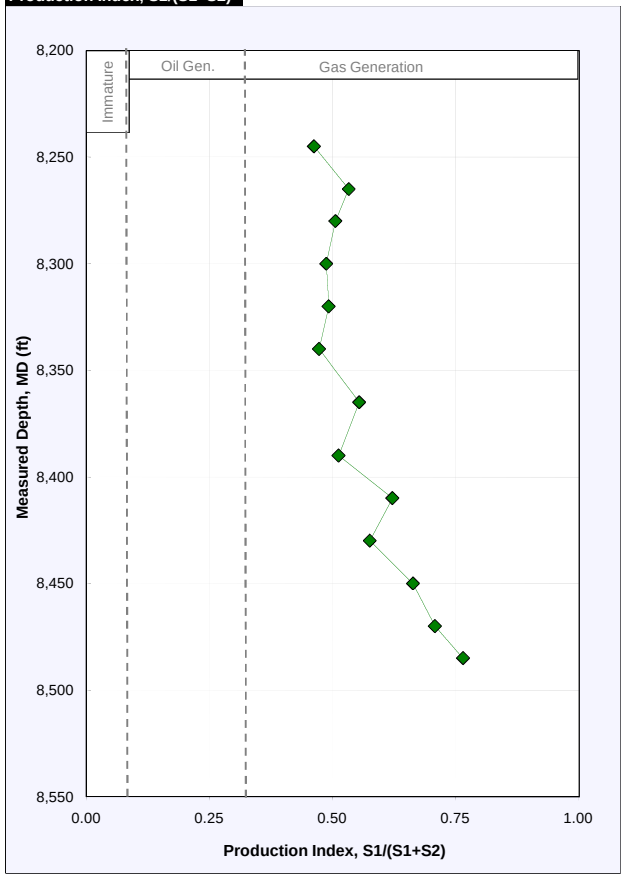
J. Gilson Unit #1, Columbiana County, Ohio

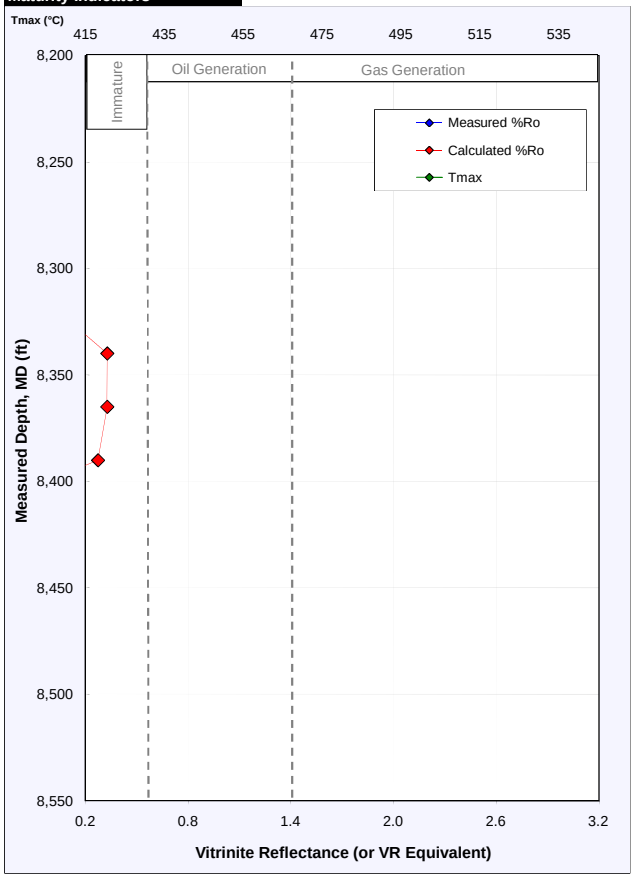
Norm. Oil Content, S1/TOC



Production Index, S1/(S1+S2)



Maturity Indicators



SOURCE ROCK ANALYSES

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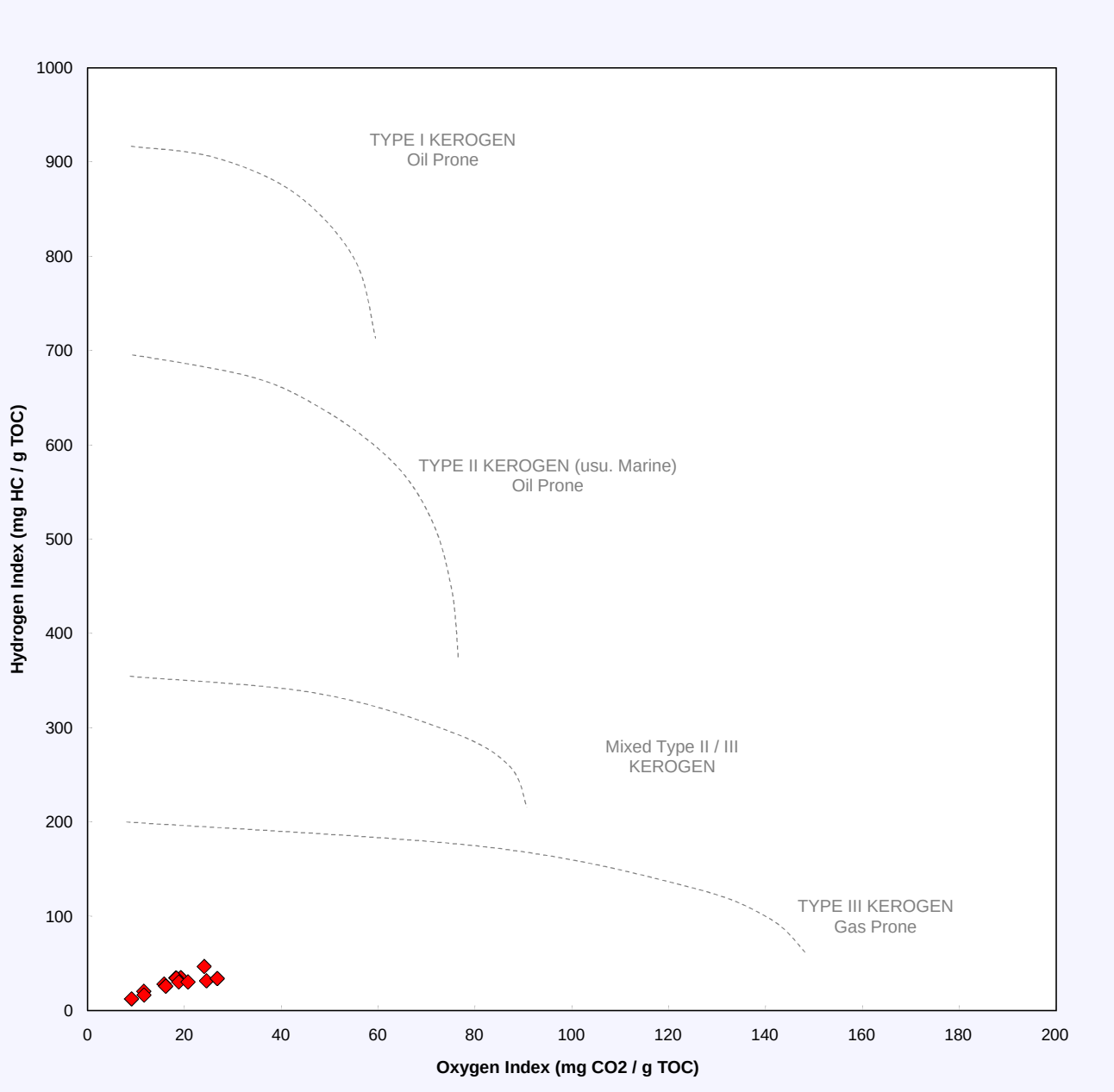
J. Gilson Unit #1, Columbiana County, Ohio

Pseudo Van Krevelen Plot



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SOURCE ROCK ANALYSES

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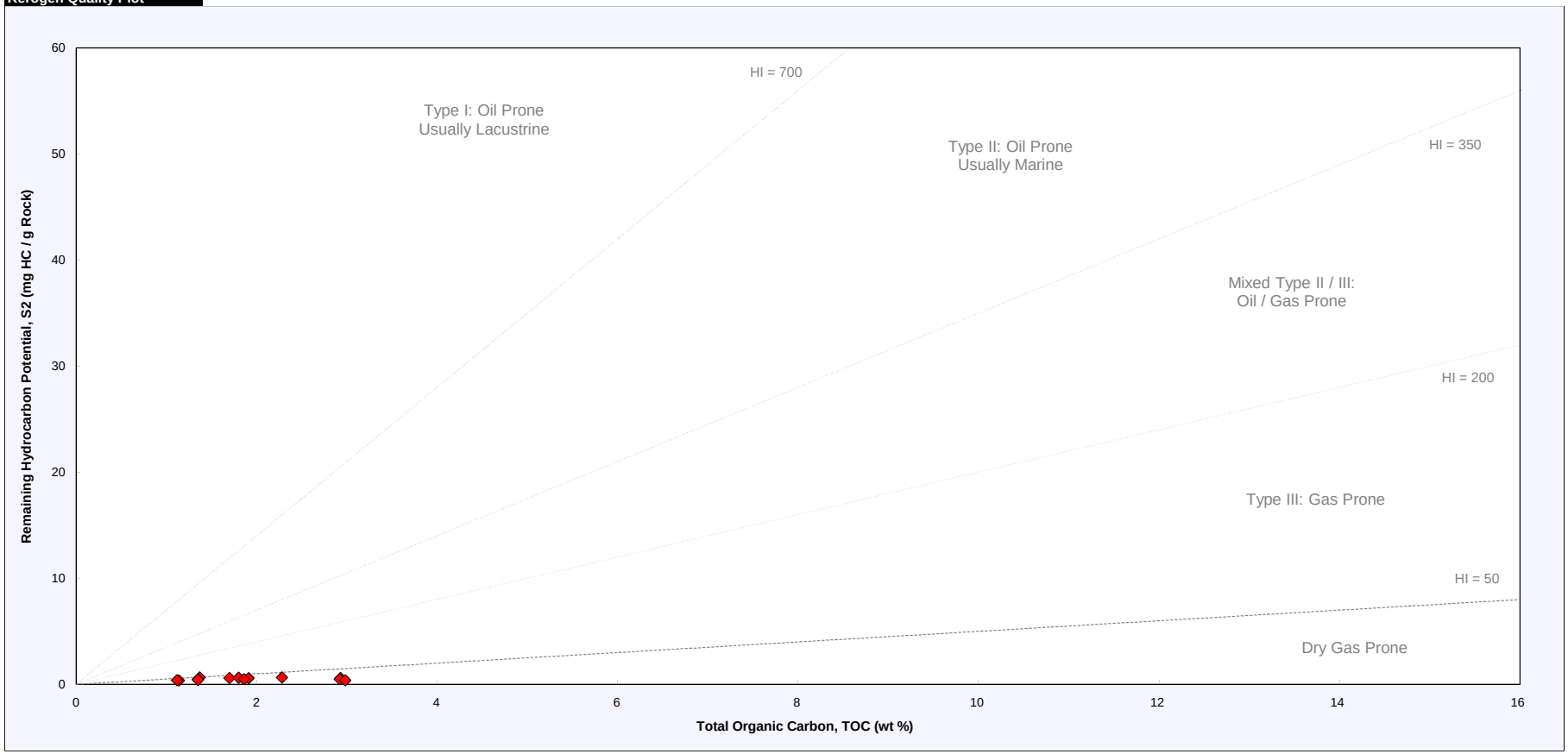
J. Gilson Unit #1, Columbiana County, Ohio

Kerogen Quality Plot

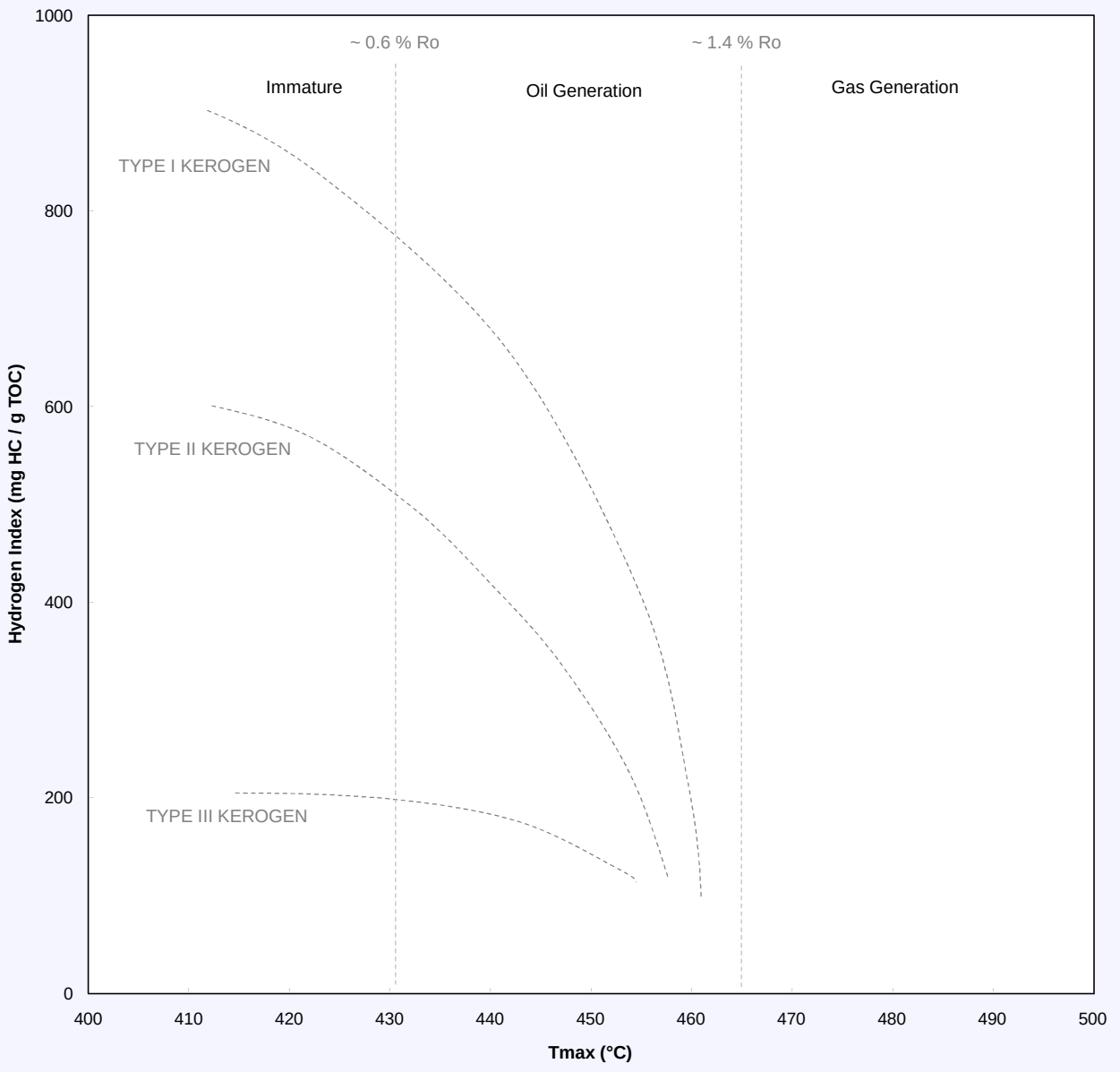


SOURCE ROCK ANALYSES

GEOMARK RESEARCH, LTD.

J. Gilson Unit #1, Columbiana County, Ohio

Kerogen Type and Maturity



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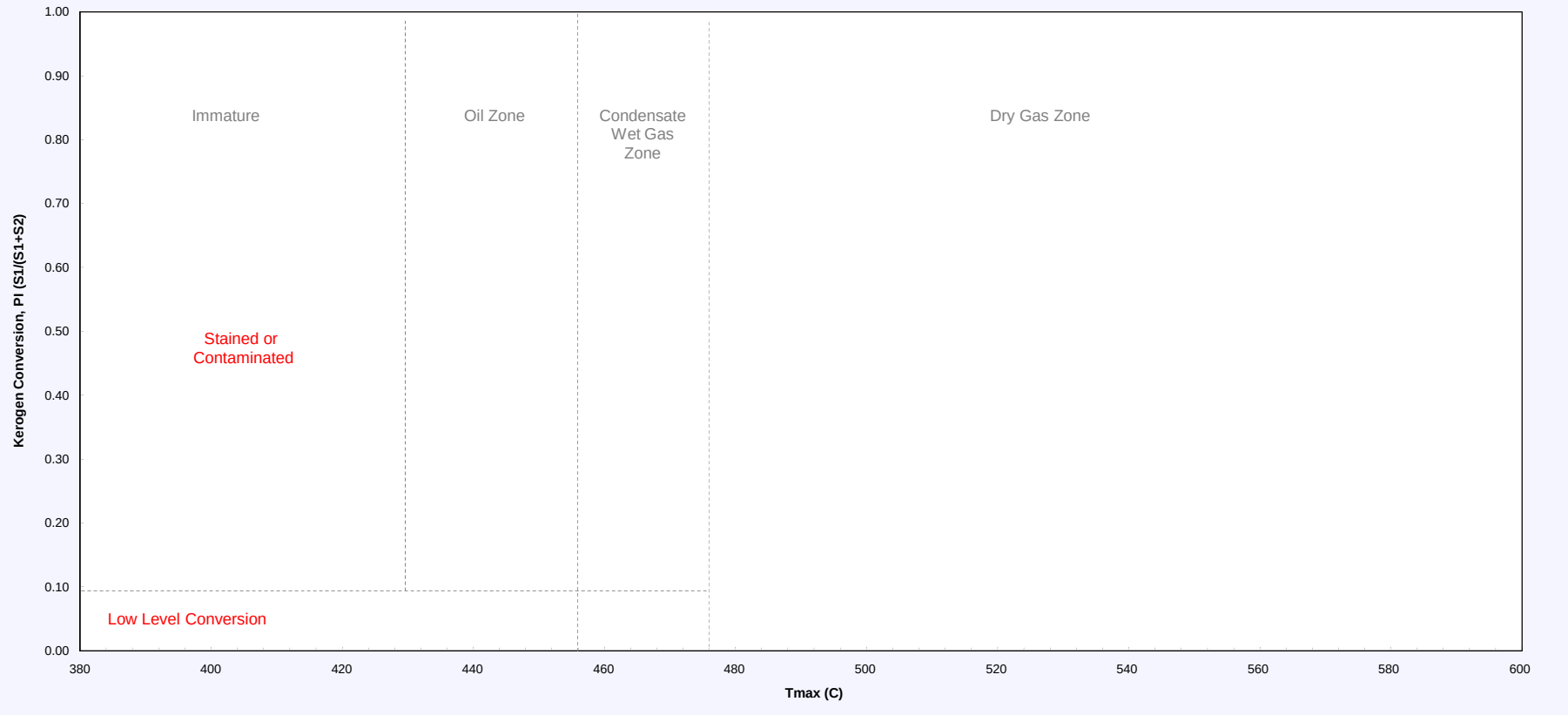
SOURCE ROCK ANALYSES

GEOMARK RESEARCH, LTD.

J. Gilson Unit #1, Columbiana County, Ohio

Kerogen Quality Plot



CHESAPEAKE ENERGY CORPORATION

Utica Cuttings II - Job #11-1107

			vTPH (S1)	pTPH (S2)	Std rec (S1) 0.16 mg/g	Std rec (S2) 8.41 mg/g
11/23/2011	CHK SAMPLE	STD CHK 99986	0.13	8.49	81.25	100.95
12/1/2011	CHK SAMPLE	STD CHK 99986	0.14	8.66	87.50	102.97
12/7/2011	CHK SAMPLE	STD CHK 99986	0.16	8.83	100.00	104.99
12/9/2011	CHK SAMPLE	STD CHK 99986	0.14	8.84	87.50	105.11
12/13/2011	CHK SAMPLE	STD CHK 99986	0.15	8.94	93.75	106.30

		TOC	Std rec (C)
11/18/2011	CHK SAMPLE	5.87	100.3
11/21/2011	CHK SAMPLE	5.83	99.7
11/22/2011	CHK SAMPLE	5.86	100.2
12/7/2011	CHK SAMPLE	5.85	100.0
12/13/2011	CHK SAMPLE	5.88	100.5

DATE	Depth	Well Name	vTPH (S1)	pTPH (S2)	S1+S2	TOC	HI	PI	NOC	API
	4375-4385	NJ Pinney #1	0.88	3.91	4.79	1.95				34007200160000
	4416-4431		0.87	2.95	3.82	1.75				
	5270-5280	34007201930000	1.34	5.01	6.35	3.00	167.00	0.211	44.67	34007201930000
	5320-5330		1.16	3.64	4.80	1.86				
	5360-5370					1.48				
	5880-5900	French & Papp #1	0.65	2.31	2.96	1.85				34007202060000
	5940-5950		0.66	2.42	3.08	1.59				
	5960-5970		0.77	2.35	3.12	1.62				
	5990-6000		0.84	2.47	3.31	1.66				
	5200-5230	Caglciu Unit #1	1.05	3.57	4.62	2.16	165.28	0.227	48.61	34007242580000
	5240-5250		0.82	2.38	3.20	1.93				
	5260-5270		0.67	1.92	2.59	1.75				
	5730-5750	Hosteteller #1				1.12				34007242700000
	5790-5810					1.16				
	5800-5840		0.49	1.36	1.85	1.51				
	4920-4930	Riley Unit #1	0.77	3.81	4.58	1.89				34007242740000
	4970-4980		0.37	2.51	2.88	1.58				
	5000-5010		0.31	2.58	2.89	2.23	115.70	0.107	13.90	
	4600-4610	Burgos #1	0.78	3.31	4.09	3.29	100.61	0.191	23.71	34007242830000
	4640-4650		0.62	1.77	2.39	1.80				
	4670-4680		0.75	2.56	3.31	2.35	108.94	0.227	31.91	
	5190-5200	Kinczel Unit #1	0.65	2.21	2.86	2.15	102.79	0.227	30.23	34007242850000
	5220-5230					1.32				
	5250-5260		0.90	2.67	3.57	1.69				
	5300-5330	Williams-Couell Unit #1	0.74	1.58	2.32	1.67				34007243580000
	5330-5360					1.25				
	5390-5420					0.97				
	5060-5080	Supplee Unit #1	0.65	2.53	3.18	1.76				34007243700000
	5080-5100					1.05				
	5100-5120					1.41				
	5200-5210	Gaul Unit #1	0.55	2.31	2.86	1.59				34007243710000
	5220-5230		0.17	0.76	0.93	1.71				
	5240-5250					1.43				

S# 0615 S# 0615 S# 4378
S# 1833 S# 1833 S# 4684
S# 2138 S# 2138 S# 4912
S# 4742 S# 4742 S# 3698
S# 4747 S# 4747 S# 3876
S# 4856 S# 4856 S# 4713
S# 4784 S# 4784 S# 1169
S# 4781 S# 4781 S# 2911
S# 4873 S# 4873 S# 3909
S# 4855 S# 4855 S# 4868
S# 4849 S# 4849 S# 5080
S# 5074 S# 5074 S# 2509
S# 5073 S# 5073 S# 0920
S# 2027 S# 2027 S# 2329
S# 2498 S# 2498 S# 5043
S# 2025

S# 3286 S# 4156
S# 4114 S# 4216
S# 5014 S# 4308
S# 3280 S# 3628
S# 4068 S# 4117
S# 4157 S# 3900
S# 4280 S# 4105
S# 4465 S# 4513
S# 4183 S# 4760
S# 4771 S# 5002
S# 1990 S# 3943
S# 2265 S# 4500
S# 3968
S# 4319

11/23/2011

6200-6210	Fobes Hruska Unit #1	1.17	2.43	3.60	1.67				34007245250000
6240-6250		1.61	2.94	4.55	2.01	146.27	0.354	80.10	
6280-6290		1.71	3.26	4.97	1.99				
10180.00	Georgetown Marine #1	0.60	0.57	1.17	2.84	20.07	0.513	21.13	34013206110000
10220.00		0.41	0.66	1.07	3.84	17.19	0.383	10.68	
10250.00		0.28	0.54	0.82	4.09	13.20	0.341	6.85	
3420-3440	34019202860000				1.02				34019202860000
3460-3480					1.45				
7800-7810	John O. Mcallister #1	0.64	0.87	1.51	1.69				34019205530000
7850-7860		0.98	1.28	2.26	2.64	48.48	0.434	37.12	
7860-7870		1.09	1.24	2.33	2.84	43.66	0.468	38.38	
7170-7200	34029205590000				0.29				34029205590000
7260-7290					0.21				
8410-8420	E. F. Sanor #1				0.11				34029206200000
8420-8430					0.07				
8440-8450					0.11				
7730-7750	J. O. and V. Gilson Unit #1				0.28				34029206260000
7740-7750					0.32				
7760-7770					0.40				
7590-7600	Frank Murray #3	0.50	0.70	1.20	2.02	34.65	0.417	24.75	34029206480000
7800-7810		0.70	0.97	1.67	2.31	41.99	0.419	30.30	
7700-7710	L. and M. Hawkins #1	1.43	1.50	2.93	2.89	51.90	0.488	49.48	34029206560000
7720-7730		1.93	1.79	3.72	2.75	65.09	0.519	70.18	
7740-7750		2.29	2.47	4.76	3.37	73.29	0.481	67.95	
7130-7140	Hoffman Unit #1	1.05	2.07	3.12	1.68				34029206650000
7150-7160		1.58	2.80	4.38	2.14	130.84	0.361	73.83	
7180-7190		1.52	2.59	4.11	2.95	87.80	0.370	51.53	
3700-3720	Clarence E. Williams #1				0.27				34029206680000
3760-3780					0.42				
8060-8108					0.41				
8150-8250		0.59	0.72	1.31	2.97	24.24	0.450	19.87	
8250-8260		0.49	0.62	1.11	2.24	27.68	0.441	21.88	
8304-8338		0.33	0.67	1.00	1.70				
8335-8366		0.41	0.73	1.14	1.68				
8170-8230	Aquila E. Solomon #21750	3.10	2.62	5.72	3.10	84.52	0.542	100.00	34029214760000
8230-8260		6.74	3.70	10.44	3.25	113.85	0.646	207.38	
8290-8320		2.80	1.90	4.70	1.95				
7560-7580	Entririn #1	0.83	1.49	2.32	2.49	59.84	0.358	33.33	34029216220000
7600-7620		0.96	1.82	2.78	3.67	49.59	0.345	26.16	
7630-7650		0.98	1.60	2.58	3.04	52.63	0.380	32.24	
5300-5310	Peabody Coal Co. #1B				0.76				34031224600000
5320-5330					0.48				
5340-5350					0.79				
5730-5760	Columbus and Southern #7002	1.91	6.48	8.39	2.57	252.14	0.228	74.32	34031261930000
5790-5820		2.17	7.33	9.50	2.33	314.59	0.228	93.13	
5850-5880		1.46	5.41	6.87	2.73	198.17	0.213	53.48	
5770-5800	Columbus and Southern #37	2.77	5.82	8.59	2.08	279.81	0.322	133.17	34031262140000
5800-5830		3.64	7.12	10.76	2.82	252.48	0.338	129.08	
5830-5850					1.38				
5370-5380	TRW Ink #1	1.27	2.65	3.92	2.60	101.92	0.324	48.85	34055203390000
5400-5410		1.33	2.73	4.06	2.39	114.23	0.328	55.65	
5450-5460		1.19	1.89	3.08	1.84				
5440-5450	C Rahn #1	0.90	2.15	3.05	2.13	100.94	0.295	42.25	34055213270000
5590-5600		0.96	2.19	3.15	2.43	90.12	0.305	39.51	
5650-5660		1.62	2.89	4.51	2.31	125.11	0.359	70.13	

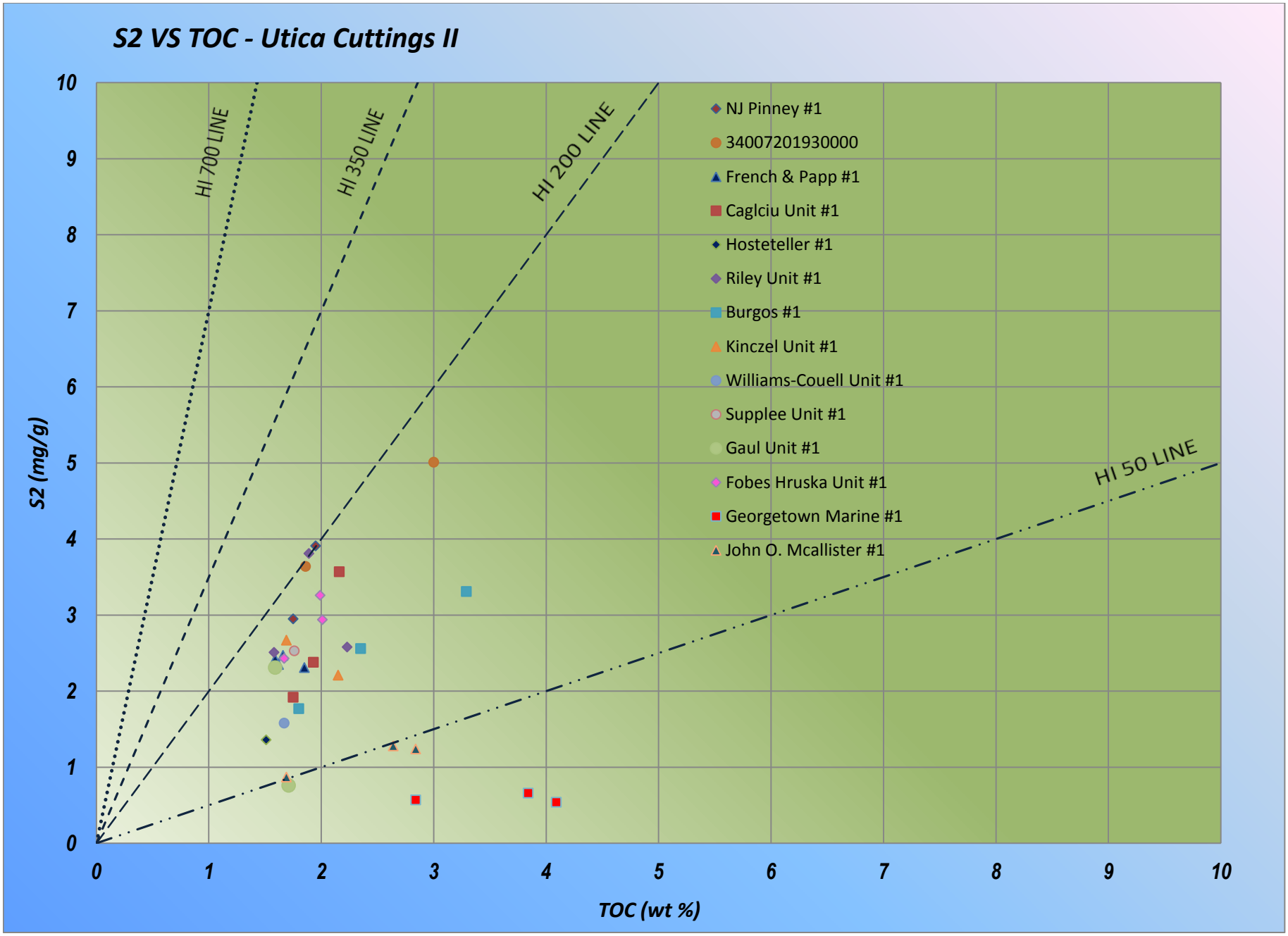
12/1/2011	5590-5600	Russel Oriely #1	0.96	2.29	3.25	1.69				34055215240000
	5610-5620		0.88	2.40	3.28	2.11	113.74	0.268	41.71	
	5720-5730		2.71	3.80	6.51	2.22	171.17	0.416	122.07	
	5820-5830		2.41	4.19	6.60	3.03	138.28	0.365	79.54	
	5900-5910	Voytko #1	0.90	2.47	3.37	2.11	117.06	0.267	42.65	34055215340000
	5910-5920		1.33	2.95	4.28	2.47	119.43	0.311	53.85	
	6390-6400	Morris-Misock Unit #1	1.33	4.05	5.38	2.55	158.82	0.247	52.16	34059239240000
	6420-6430		1.74	5.24	6.98	2.58	203.10	0.249	67.44	
	6430-6440		1.03	3.14	4.17	1.77				
	6220-6230	Hasting #1	1.30	5.36	6.66	3.25	164.92	0.195	40.00	34059239320000
	6250-6260		1.68	5.50	7.18	2.46	223.58	0.234	68.29	
	6280-6290		1.50	5.89	7.39	3.54	166.38	0.203	42.37	
	7960-7990	Berry #1	1.76	2.88	4.64	3.53	81.59	0.379	49.86	34067205910000
	7990-8020		1.28	1.88	3.16	1.89				
	8020-8030		0.99	1.46	2.45	1.71				
	7060-7090	34067209710000				1.36				34067209710000
	7650-7680	Clyde Van Horn #1	1.34	2.69	4.03	3.20	84.06	0.333	41.88	34067207640000
	7710-7720		1.06	1.83	2.89	2.29	79.91	0.367	46.29	
	7740-7750		1.75	2.89	4.64	2.74	105.47	0.377	63.87	
12/7/2011	5540-5560	Troyer #1	2.44	7.44	9.88	2.40	310.00	0.247	101.67	34075212830000
	5620-5640		1.55	4.89	6.44	1.80				
	5580-5600	E.A. Troyer #1	4.08	9.40	13.48	3.35	280.60	0.303	121.79	34075216090000
	5610-5620		2.29	6.02	8.31	1.82				
	5640-5650		4.01	8.16	12.17	2.46	331.71	0.329	163.01	
	5485-5515	Hersherberger SN 1	1.42	5.32	6.74	1.62				34075247130000
	5515-5545		1.88	7.83	9.71	2.31	338.96	0.194	81.39	
	5545-5575		2.13	9.54	11.67	3.56	267.98	0.183	59.83	
	4750.00	Yoder-Mast #1D				1.38				34075253630000
	4810-4820		2.12	9.93	12.05	2.85	348.42	0.176	74.39	
	4840.00		1.53	8.84	10.37	2.53	349.41	0.148	60.47	
	9380-9390	NAC 2-3				0.77				34081205010000
	9410-9420		0.97	1.09	2.06	3.29	33.13	0.471	29.48	
	9430-9440		0.95	1.04	1.99	2.29	45.41	0.477	41.48	
	4600-4610	Calhio Chemical Inc. #1	1.12	3.44	4.56	2.00	172.00	0.246	56.00	34085201420000
	4640-4650		0.99	2.98	3.97	2.64	112.88	0.249	37.50	
	4680-4690		1.05	2.76	3.81	2.04	135.29	0.276	51.47	
	6705-6710	W and M Brenner #1	2.10	4.36	6.46	2.76	157.97	0.325	76.09	34099201230000
	6735-6740		2.23	4.29	6.52	3.79	113.19	0.342	58.84	
	6760-6765		2.58	4.73	7.31	3.44	137.50	0.353	75.00	
	6630-6660	William Brenner #1	1.76	5.04	6.80	3.07	164.17	0.259	57.33	34099202120000
	6690-6720		2.52	4.34	6.86	3.17	136.91	0.367	79.50	
	6750-6760		2.69	4.96	7.65	3.57	138.94	0.352	75.35	
	6900-6930	North Star #1				0.83				34099231270000
	8300-8320	Amerada #1				1.36				34121212780000
	8340-8360		1.11	3.07	4.18	2.65	115.85	0.266	41.89	
	8380-8400		1.72	4.84	6.56	3.87	125.06	0.262	44.44	
	7020-7030	Patrick Archibald #1				0.75				34121217300000
	7070-7080		1.35	2.64	3.99	2.46	107.32	0.338	54.88	
	7110-7120		0.87	1.63	2.50	1.54				
	6630-6660	Ohio Power Co. #OPC-35K				0.46				34121238780000
	6670-6700					0.42				
	6710-6730		1.16	4.06	5.22	2.41	168.46	0.222	48.13	
	7310-7320	Miley #1				0.37				34121240720000
	7340-7350					0.87				
	7360-7370		1.00	1.99	2.99	2.16	92.13	0.334	46.30	
	7380-7390		0.91	1.64	2.55	1.55				

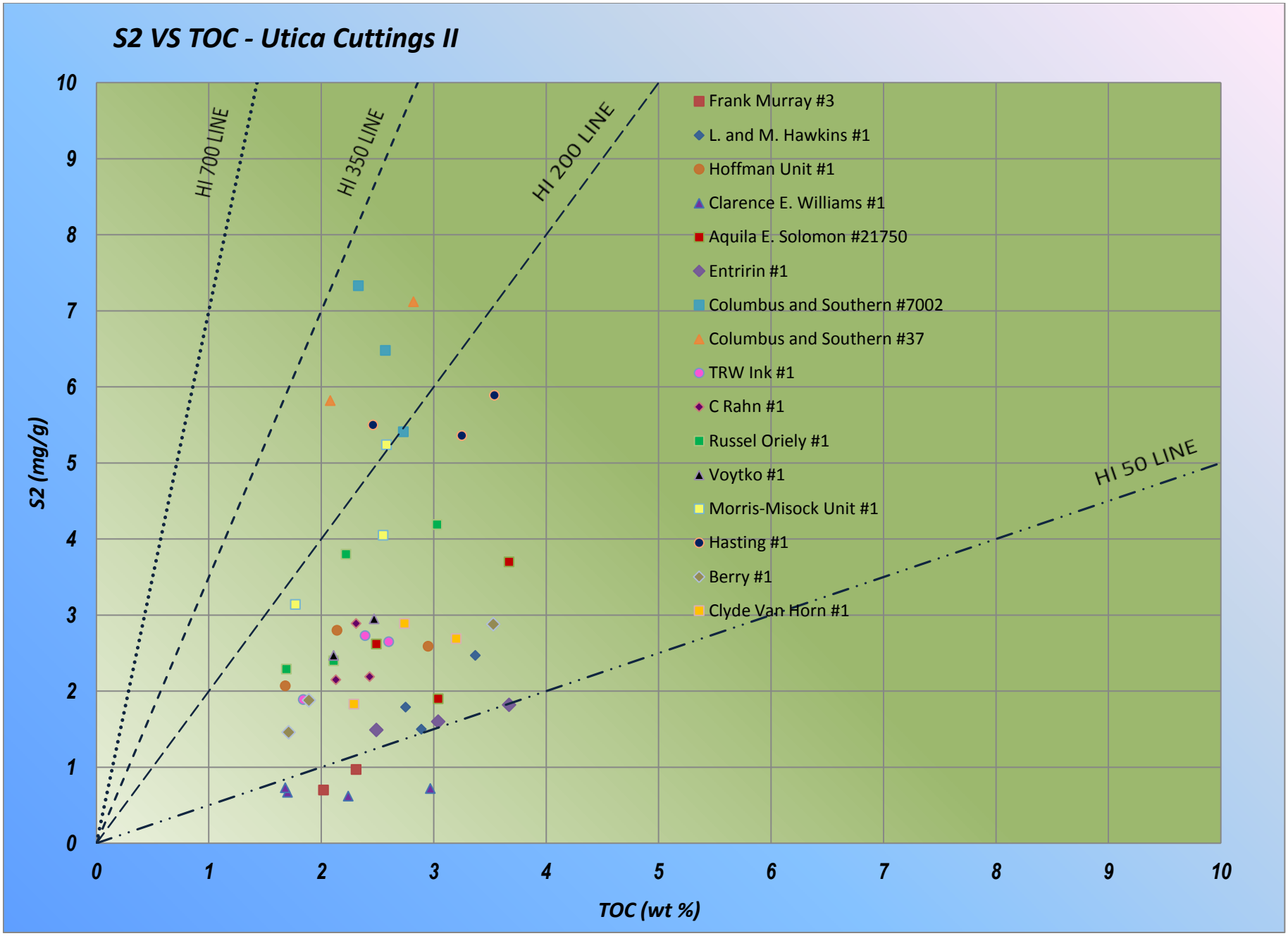
12/9/2011	5840-5850	Steve Sassey #1	2.17	4.07	6.24	3.00	135.67	0.348	72.33	34133206100000
	5890-5900		2.06	4.19	6.25	2.73	153.48	0.330	75.46	
	5930-5940		1.57	3.19	4.76	2.26	141.15	0.330	69.47	
	6140-6150	Truog #2	2.08	4.01	6.09	2.28	175.88	0.342	91.23	34133238880000
	6180-6190		3.01	5.90	8.91	3.45	171.01	0.338	87.25	
	6200-6210		2.98	5.11	8.09	2.44	209.43	0.368	122.13	
	5910-5930	Wantz #1-2161	1.56	3.49	5.05	2.11	165.40	0.309	73.93	34133240270000
	5940-5950		1.78	3.90	5.68	2.42	161.16	0.313	73.55	
	5970-5980		2.27	4.70	6.97	2.80	167.86	0.326	81.07	
	6000-6010		1.87	3.93	5.80	2.00	196.50	0.322	93.50	
	6350-6360	Fox #2	14.32	8.58	22.90	4.47	191.95	0.625	320.36	34133240330000
	6370-6380		7.82	7.48	15.30	4.69	159.49	0.511	166.74	
	6410-6420		2.67	4.52	7.19	2.36	191.53	0.371	113.14	
	6470-6480	Deerfield Lands #1	1.81	4.42	6.23	2.57	171.98	0.291	70.43	34133241110000
	6480-6490		4.84	9.05	13.89	3.58	252.79	0.348	135.20	
	6420-6450	34133241710000	1.27	3.90	5.17	1.84				34133241710000
	6480-6510		2.80	5.70	8.50	2.73	208.79	0.329	102.56	
	6510-6520		2.55	5.30	7.85	3.15	168.25	0.325	80.95	
	6510-6530	Myers #1G	2.97	5.75	8.72	3.06	187.91	0.341	97.06	34133242760000
	6540-6560		2.72	4.90	7.62	2.85	171.93	0.357	95.44	
	6570-6580		2.64	5.07	7.71	2.08	243.75	0.342	126.92	
	6650-6660	34151211230000	3.75	5.08	8.83	2.97	171.04	0.425	126.26	34151211230000
	6670-6680		3.48	4.85	8.33	2.78	174.46	0.418	125.18	
	6690-6700		3.57	4.75	8.32	2.80	169.64	0.429	127.50	
	6460-6480	Poonseller #4A	3.20	6.66	9.86	3.05	218.36	0.325	104.92	34151219990000
	6520-6540		3.26	7.36	10.62	3.60	204.44	0.307	90.56	
	6560-6580		2.74	6.76	9.50	3.31	204.23	0.288	82.78	
	6040-6070	Plott and Co. #1-3224	3.74	7.34	11.08	2.98	246.31	0.338	125.50	34151245370000
	6100-6130		3.63	7.10	10.73	3.11	228.30	0.338	116.72	
	6140-6150		3.51	7.09	10.60	2.87	247.04	0.331	122.30	
	6150-6160		4.48	7.68	12.16	4.48	171.43	0.368	100.00	
12/13/2011	5780-5790	Harrold #3	3.39	9.38	12.77	3.65	256.99	0.265	92.88	34151246970000
	5790-5800		2.29	6.40	8.69	2.50	256.00	0.264	91.60	
	5810-5820		3.35	9.34	12.69	3.21	290.97	0.264	104.36	
	6880-6910	Belknap-Slagel #1	2.90	4.25	7.15	2.68	158.58	0.406	108.21	34151249780000
	6910-6940		0.92	1.54	2.46	2.31	66.67	0.374	39.83	
	6940-6970		2.29	3.39	5.68	3.33	101.80	0.403	68.77	
	6970-7000		2.85	3.91	6.76	3.07	127.36	0.422	92.83	
	6850-6860	34151250860000	2.29	4.77	7.06	3.00	159.00	0.324	76.33	34151250860000
	6870-6880		2.90	5.08	7.98	3.09	164.40	0.363	93.85	
	6880-6890		2.41	4.27	6.68	2.83	150.88	0.361	85.16	
	6320-6330	Rainari Comm #1				0.50				34151251770000
	6330-6340		1.04	3.20	4.24	2.23	143.50	0.245	46.64	
	6340-6350		1.51	4.66	6.17	2.72	171.32	0.245	55.51	
	6350-6360		2.06	6.14	8.20	3.15	194.92	0.251	65.40	
	5280-5290	Ortahmptom Trustees #2	1.89	4.81	6.70	2.77	173.65	0.282	68.23	34153209070000
	5310-5320		3.00	6.55	9.55	3.21	204.05	0.314	93.46	
	5340-5350		2.41	5.57	7.98	3.18	175.16	0.302	75.79	
	5550-5560	Maitino Farms Comm #1	1.71	4.13	5.84	2.80	147.50	0.293	61.07	34155235540000
	5660-5670		1.58	3.51	5.09	2.66	131.95	0.310	59.40	
	5700-5710		2.90	5.42	8.32	2.93	184.98	0.349	98.98	
	5760-5770		4.09	8.90	12.99	2.85	312.28	0.315	143.51	
	6050-6080	Mac Unit #1	0.85	2.63	3.48	1.50				34157245580000
	6080-6110		2.54	6.44	8.98	2.71	237.64	0.283	93.73	

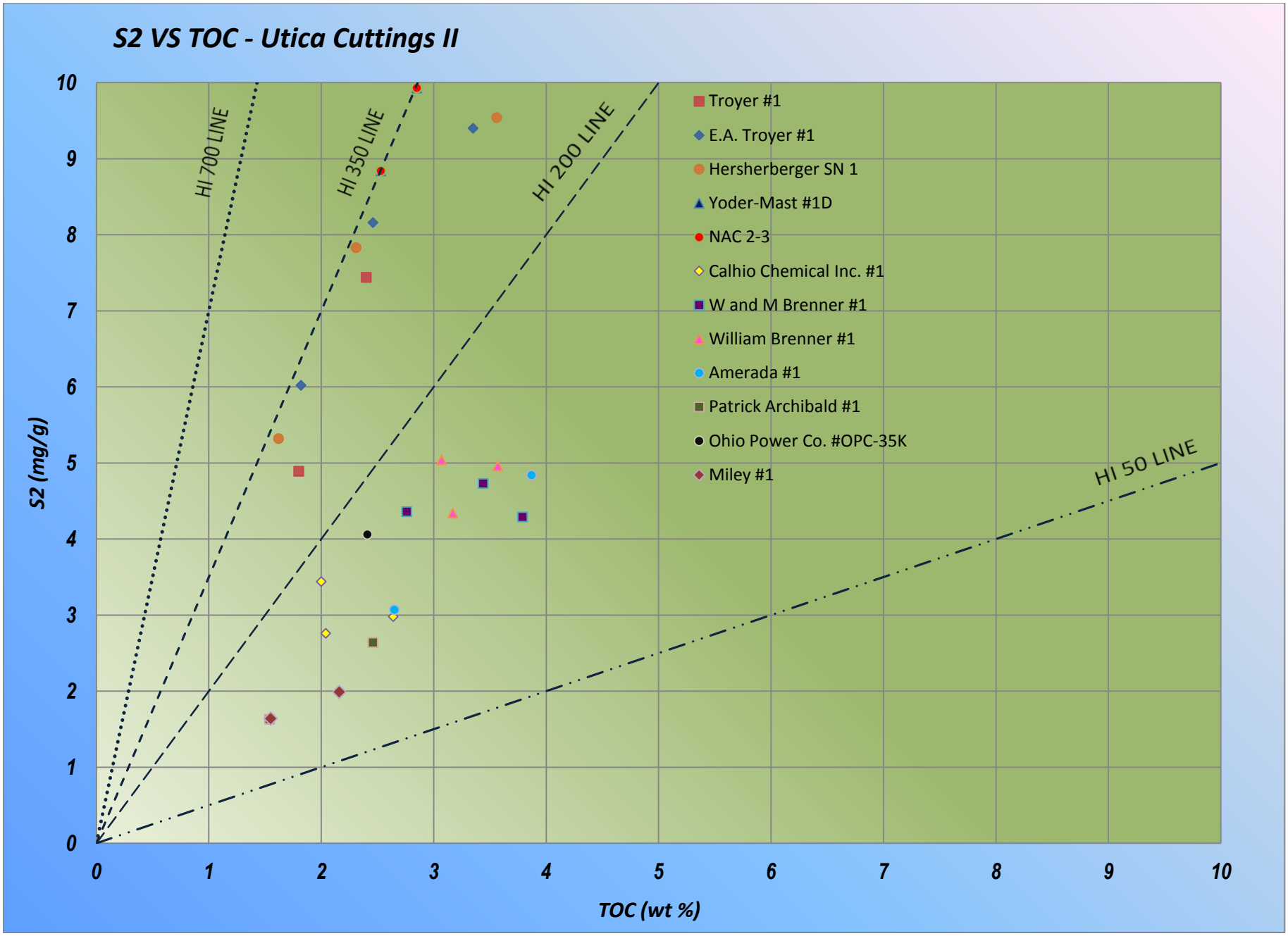
	6340-6370		1.74	3.75	5.49	1.86				
	6370-6400	Poland Nugen Bond #3	2.55	5.16	7.71	2.93	176.11	0.331	87.03	34157248870000
	6400-6430		1.38	3.21	4.59	1.79				
	6150-6180	Youngen #1	1.96	5.54	7.50	2.40	230.83	0.261	81.67	34157249690000
	5860-5870	34157251630000	2.15	4.75	6.90	1.80				34157251630000
	3030.00		0.94	10.98	11.92	3.31	331.72	0.079	28.40	
	3040.00					0.92				
	3060.00	34157253340000	0.89	15.80	16.69	5.35	295.33	0.053	16.64	34157253340000
	6300-6330		2.04	5.18	7.22	2.35	220.43	0.283	86.81	
	6360-6390		2.10	5.51	7.61	2.41	228.63	0.276	87.14	
	5570-5600		2.16	5.73	7.89	2.22	258.11	0.274	97.30	
	5600-5630	M. Miller #1	2.22	5.77	7.99	3.04	189.80	0.278	73.03	34169246810000
	5630-5660		3.21	8.20	11.41	3.18	257.86	0.281	100.94	
	4620-4630		1.77	10.59	12.36	3.26	324.85	0.143	54.29	
	4650-4670	Cross #5-2235	1.78	11.96	13.74	3.74	319.79	0.130	47.59	34169250990000
	4690-4700		1.82	10.90	12.72	3.72	293.01	0.143	48.92	

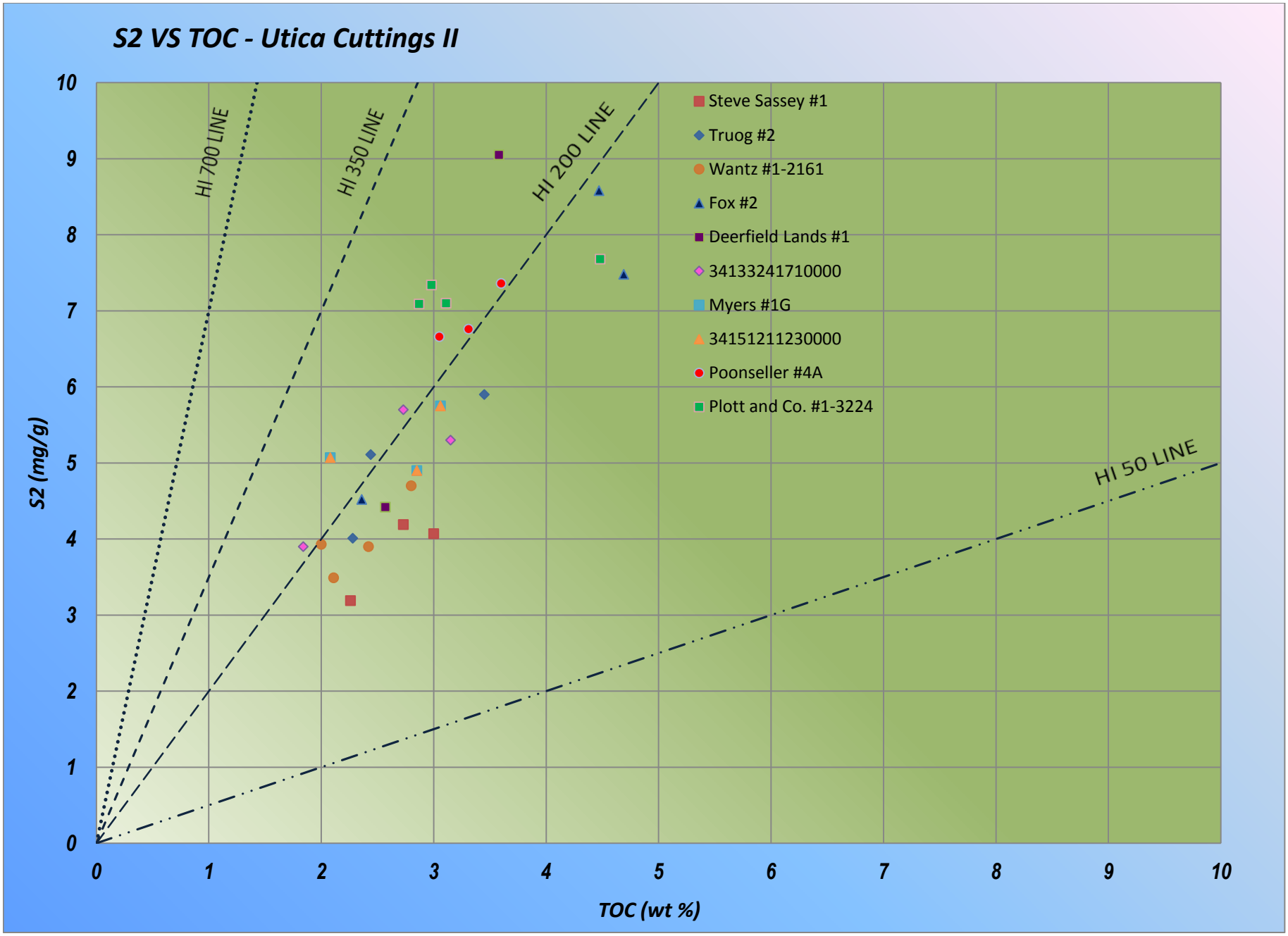
SRA testing not performed on samples with TOC values < 1.50%
vTPH (S1) = Volatile Total Petroleum Hydrocarbons (mg/g)
pTPH (S2) = Kerogen yield
TOC = Total Organic Carbon
HI = Hydrogen Index
PI = Production Index

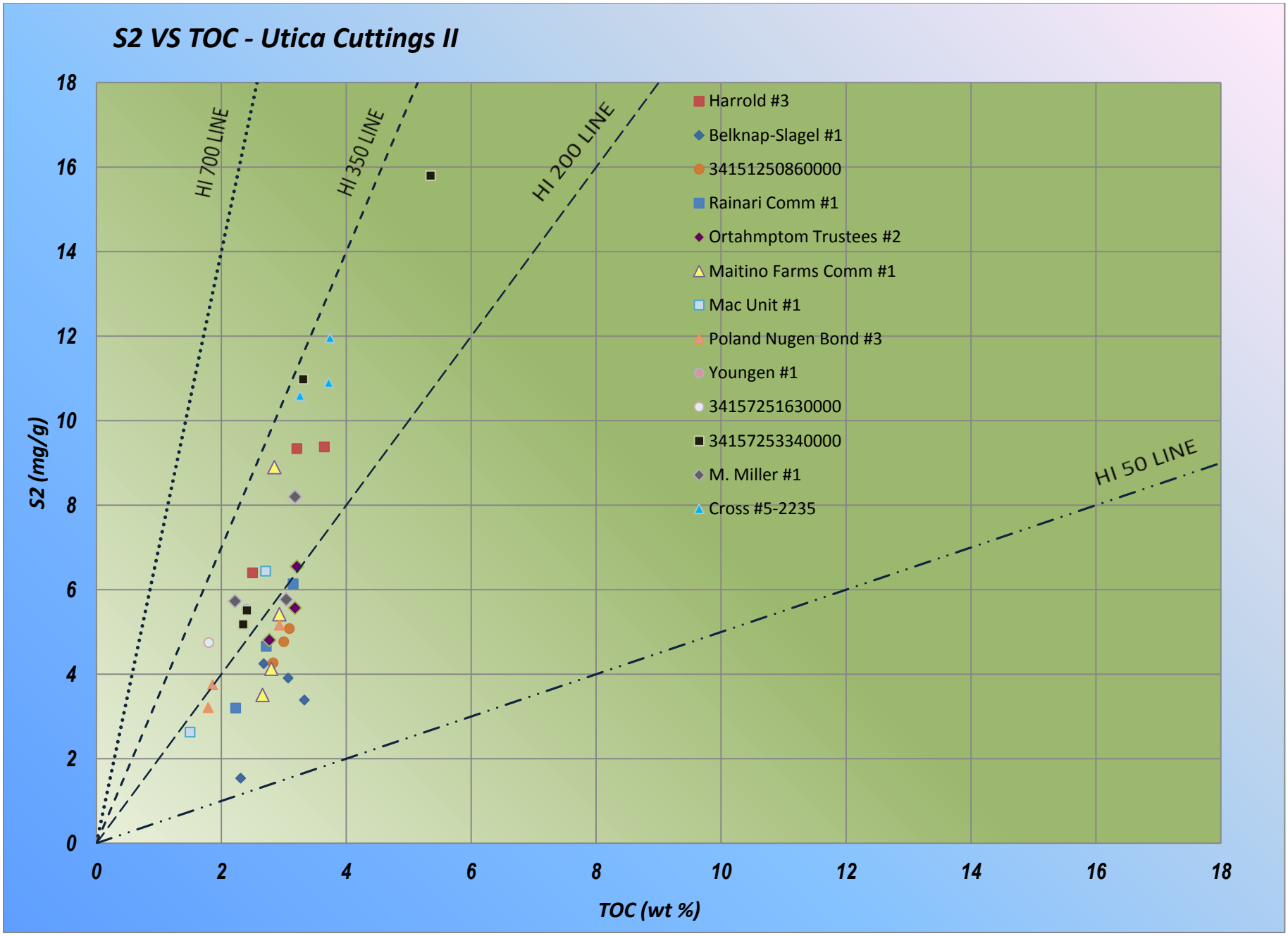
NOC = Normalized Oil Content = (S1/TOC) x 100 (Jarvie and Baker, 1984)

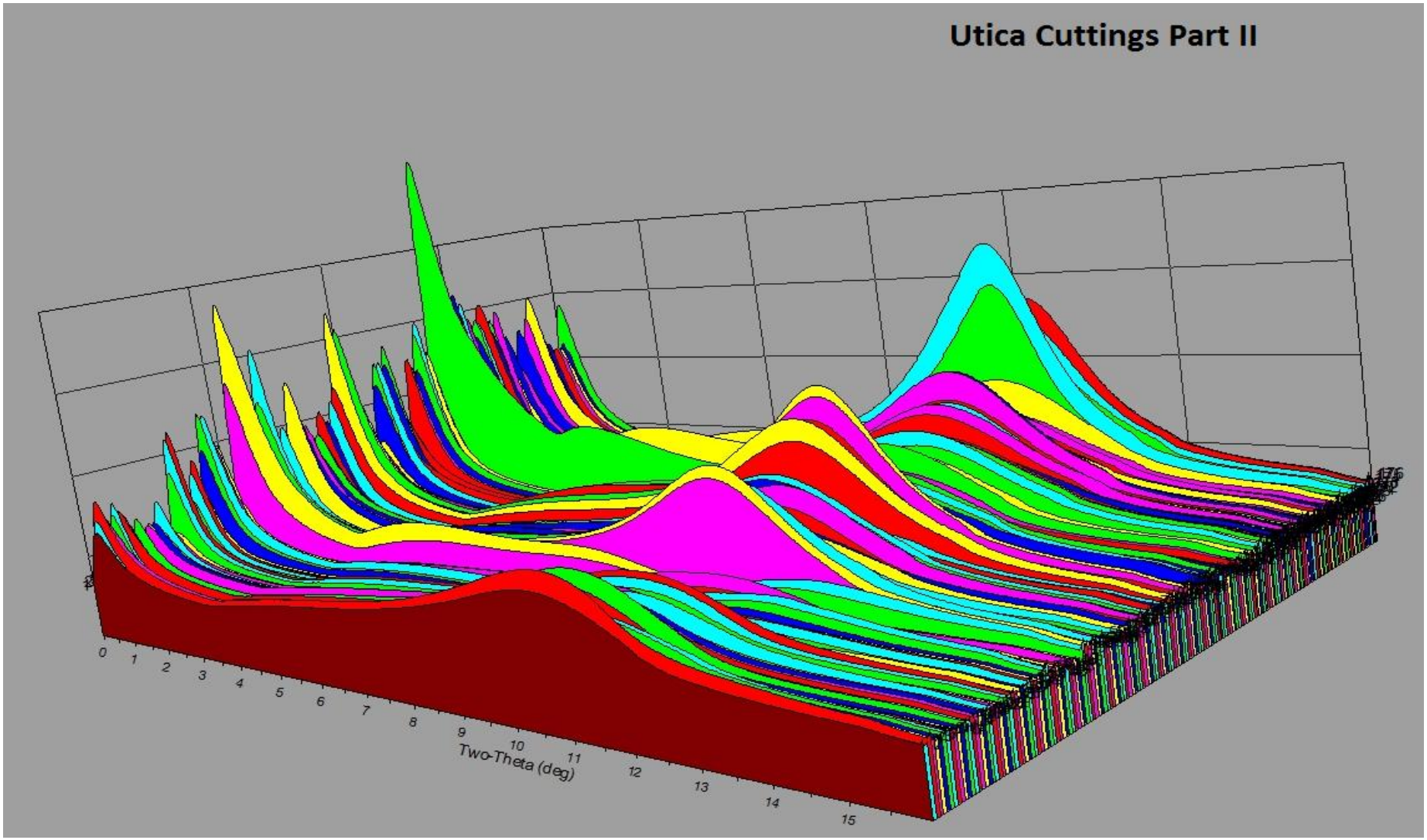

S2 VS TOC - Utica Cuttings II
S2 (mg/g)
TOC (wt %)
0
1
2
3
4
5
6
7
8
9
10
HI 700 LINE
HI 350 LINE
HI 200 LINE
HI 50 LINE
NJ Pinney #1
34007201930000
French & Papp #1
Caglciu Unit #1
Hosteteller #1
Riley Unit #1
Burgos #1
Kinczel Unit #1
Williams-Couell Unit #1
Supplee Unit #1
Gaul Unit #1
Fobes Hruska Unit #1
Georgetown Marine #1
John O. Mcallister #1


S2 VS TOC - Utica Cuttings II
HI 700 LINE
HI 350 LINE
HI 200 LINE
HI 50 LINE
Frank Murray #3
L. and M. Hawkins #1
Hoffman Unit #1
Clarence E. Williams #1
Aquila E. Solomon #21750
Entririn #1
Columbus and Southern #7002
Columbus and Southern #37
TRW Ink #1
C Rahn #1
Russel Oriely #1
Voytko #1
Morris-Misock Unit #1
Hasting #1
Berry #1
Clyde Van Horn #1
S2 (mg/g)
TOC (wt %)
0
1
2
3
4
5
6
7
8
9
10


S2 VS TOC - Utica Cuttings II
HI 700 LINE
HI 350 LINE
HI 200 LINE
HI 50 LINE
Troyer #1
E.A. Troyer #1
Hersherberger SN 1
Yoder-Mast #1D
NAC 2-3
Calhio Chemical Inc. #1
W and M Brenner #1
William Brenner #1
Amerada #1
Patrick Archibald #1
Ohio Power Co. #OPC-35K
Miley #1
S2 (mg/g)
TOC (wt %)
0
1
2
3
4
5
6
7
8
9
10


S2 VS TOC - Utica Cuttings II
HI 700 LINE
HI 350 LINE
HI 200 LINE
HI 50 LINE
Steve Sassey #1
Truog #2
Wantz #1-2161
Fox #2
Deerfield Lands #1
34133241710000
Myers #1G
34151211230000
Poonseller #4A
Plott and Co. #1-3224
S2 (mg/g)
TOC (wt %)
0
1
2
3
4
5
6
7
8
9
10


S2 VS TOC - Utica Cuttings II
S2 (mg/g)
TOC (wt %)
0
2
4
6
8
10
12
14
16
18
HI 700 LINE
HI 350 LINE
HI 200 LINE
HI 50 LINE
Harrold #3
Belknap-Slagel #1
34151250860000
Rainari Comm #1
Ortahmptom Trustees #2
Maitino Farms Comm #1
Mac Unit #1
Poland Nugen Bond #3
Youngen #1
34157251630000
34157253340000
M. Miller #1
Cross #5-2235


Utica Cuttings Part II
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
Two-Theta (deg)

WEIGHT PERCENT

Data NORMALIZED to sum to 100%

WELL NAME	Utica Cuttings Samples II (11-1107)				
API	34007200160000		34007201930000		
WELL NAME	NJ Pinney #1		34007201930000		
SAMPLE DEPTH	4375-4385	4416-4431	5270-5280	5320-5330	5360-5370
SAMPLE DEPTH	4385	4431	5280	5330	5370
NON-CLAY FRACTION					
Quartz	29.0	20.4	23.4	23.2	9.6
K-Feldspar	0.9	1.1	0.0	0.1	0.0
Plagioclase	5.1	3.2	2.6	3.1	0.5
Organic Carbon (TOC)	1.9	1.9	3.0	1.9	1.5
Apatite	0.4	0.6	0.8	0.7	0.8
Pyrite	1.9	1.7	1.9	1.8	0.8
Calcite	5.8	14.4	20.4	19.2	50.5
Dolomite	3.3	11.6	8.6	4.8	12.3
Siderite	0.0	0.0	0.0	0.0	0.0
Gypsum	0.0	0.0	0.0	0.0	0.0
Halite	0.0	0.0	0.0	0.0	0.0
Anhydrite	0.0	0.0	0.0	0.0	0.0
TOTAL	48.3	54.9	60.7	54.9	76.0
CLAY FRACTION					
Mixed-Layer ILLITE/SMECTITE (Includes R3)	6.7	6.1	6.2	7.0	4.1
Illite + Mica	38.5	34.1	30.5	34.7	18.8
Chlorite	6.5	4.9	2.6	3.4	1.2
TOTAL	51.7	45.1	39.3	45.1	24.0
GRAND TOTAL	100.0	100.0	100.0	100.0	100.0
% Expandable Layers in I/S	14.0	13.6	13.6	13.6	13.6
% I/S to Illite in <1.0um Fraction	22.3	20.5	20.5	20.5	20.5
% Expandable I/S Layers in sample	0.95	0.83	0.84	0.94	0.55
% Fe in the Dolomite/Ankerite	52.1	43.1/89.2	57.3	43.1/85.2	21.5

Comments

Some samples have two distinguished dolomite compositions

No TRA data

Because of the type of samples and limited quantity available, several shortcuts had to be made.

Samples were handground, and run in the XRD using the sample spinner to regain counting statistics.

No internal standard was added so not to contaminate the samples.

Clay expandability and % I/S to illite tends to be rather uniform across the Utica so 5 samples were submitted for

clay extraction and the average values from these samples were used for the other samples during data analyses.

34007202060000				34007242580000			34007242700000		
French & Papp #1				Caglciu Unit #1			Hosteteller #1		
5880-5900	5940-5950	5960-5970	5990-6000	5200-5230	5240-5250	5260-5270	5730-5750	5790-5810	5800-5840
5900	5950	5970	6000	5230	5250	5270	5750	5810	5840
21.2	18.5	4.6	3.9	27.4	21.2	21.3	22.1	10.8	6.6
0.0	0.3	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0
5.3	2.6	0.5	0.3	4.2	4.4	3.7	6.0	1.6	1.7
1.8	1.5	1.8	1.7	2.1	1.9	1.8	1.0	1.1	1.4
0.6	0.4	0.5	0.4	0.2	0.6	0.2	0.5	0.5	2.2
1.7	1.5	0.4	0.4	1.9	1.6	1.2	1.3	1.4	1.0
28.7	37.9	82.2	84.3	16.7	32.2	35.5	30.8	61.3	69.9
8.4	11.4	2.2	3.3	5.8	8.1	5.0	7.0	5.6	2.3
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.7	74.1	92.2	94.3	58.6	70.1	69.0	68.8	82.3	85.1
5.1	3.8	1.2	0.5	5.6	4.6	4.1	4.4	2.8	2.3
24.1	20.4	6.4	4.9	31.9	23.0	23.8	23.5	14.1	11.3
3.2	1.7	0.2	0.3	3.9	2.3	3.1	3.3	0.8	1.3
32.3	25.9	7.8	5.7	41.4	29.9	31.0	31.2	17.7	14.9
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.69	0.52	0.17	0.07	0.76	0.62	0.56	0.60	0.38	0.31
61.5	52.8	30.4	24.7	67.3	25.9/72.0	29.4/78.7	34.7/79.5	31.4/80.5	40.4/87.4

34007242740000			34007242830000			34007242850000		
Riley Unit #1			Burgos #1			Kinczel Unit #1		
4920-4930	4970-4980	5000-5010	4600-4610	4640-4650	4670-4680	5190-5200	5220-5230	5250-5260
4930	4980	5010	4610	4650	4680	5200	5230	5260
25.7	23.7	18.0	23.2	21.1	23.0	21.9	7.1	6.4
0.7	0.0	0.0	0.5	0.0	0.2	0.6	0.0	0.0
3.9	4.1	2.6	2.7	1.5	2.4	3.3	0.7	0.6
2.2	1.6	2.2	3.3	1.8	2.4	2.4	1.3	1.3
1.1	0.4	0.6	0.3	0.2	0.5	0.5	0.5	0.7
1.8	1.9	2.5	3.2	1.9	2.8	1.5	0.7	0.7
8.6	7.3	19.0	8.0	24.6	16.0	28.1	70.9	72.9
6.2	10.0	17.3	13.5	10.8	11.9	7.7	5.5	5.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4.6	4.8	3.3	0.0	0.0	0.0	0.0	0.0	0.0
54.8	53.7	65.3	54.7	62.0	59.3	66.0	86.8	88.2
5.4	5.6	5.1	5.8	5.7	5.7	4.8	2.1	1.9
34.2	35.4	27.2	36.0	30.1	31.9	26.0	10.4	9.5
5.6	5.2	2.4	3.5	2.2	3.1	3.2	0.7	0.4
45.2	46.3	34.7	45.3	38.0	40.7	34.0	13.2	11.8
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.73	0.76	0.69	0.79	0.78	0.77	0.65	0.29	0.26
12.2/57.1	12.7/55.8	8.5/74.2	36.9/80.7	56.8	31.9/71.5	42.6/86.9	27.2/78.5	24.4/77.0

34007243580000 Williams-Couell Unit #1			34007243700000 Supplee Unit #1			34007243710000 Gaul Unit #1		
5300-5330	5330-5360	5390-5420	5060-5080	5080-5100	5100-5120	5200-5210	5220-5230	5240-5250
5330	5360	5420	5080	5100	5120	5210	5230	5250
21.6	20.7	19.9	22.2	21.6	15.9	25.2	23.5	23.2
0.0	0.5	0.0	0.4	0.0	0.0	0.9	1.3	0.6
3.6	3.6	3.4	4.1	3.7	2.1	4.8	5.0	6.2
1.8	1.3	1.0	1.9	1.2	1.5	1.7	1.8	1.5
0.7	0.5	0.3	0.0	0.5	0.4	0.3	0.4	0.0
1.7	2.0	1.6	2.1	1.5	1.6	1.9	1.9	1.5
29.0	22.3	24.1	26.3	34.1	46.0	8.3	8.7	10.7
8.1	10.0	10.5	3.8	6.1	8.6	4.4	4.9	5.3
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.8	1.0
0.0	5.0	0.0	0.0	0.0	0.0	1.2	1.8	6.3
66.6	65.9	61.3	60.9	68.6	76.1	48.7	50.3	56.3
4.9	4.9	5.4	5.6	4.6	3.8	6.6	6.0	5.1
25.2	25.8	30.2	29.6	24.0	18.6	38.0	36.7	31.9
3.3	3.4	3.1	4.0	2.9	1.5	6.7	7.0	6.8
33.4	34.1	38.7	39.1	31.4	23.9	51.3	49.7	43.7
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	14.4	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.3	20.5	20.5
0.66	0.66	0.73	0.76	0.62	0.51	0.94	0.81	0.69
59.8	59.8	68.0	41.6/87.4	39.1/86.7	34.7/78.2	56.6	57.8	10.8/64.3

34007245250000			34013206110000			34019202860000	
Fobes Hruska Unit #1			Georgetown Marine #1			34019202860000	
6200-6210	6240-6250	6280-6290	10180	10220	10250	3420-3440	3460-3480
6210	6250	6290	10180	10220	10250	3440	3480
20.9	10.3	6.6	18.1	15.6	15.4	36.0	37.1
1.5	0.0	0.0	0.0	0.0	0.4	0.1	0.0
3.9	1.2	0.6	4.8	4.1	4.1	2.0	3.1
1.8	2.3	2.5	3.1	4.2	4.3	1.0	1.4
0.4	0.6	0.4	0.1	0.6	0.3	0.1	0.6
1.6	1.0	0.6	1.2	1.9	1.1	2.4	2.4
27.7	57.6	72.0	39.8	39.1	37.9	0.0	0.2
7.7	6.1	4.5	3.5	3.5	3.8	0.0	0.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.4
0.7	0.4	0.6	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66.1	79.5	87.9	70.7	68.9	67.3	42.1	45.3
4.6	3.5	2.1	3.3	5.2	5.2	5.3	5.4
25.8	16.5	9.9	22.4	24.2	25.6	47.1	42.3
3.5	0.5	0.1	3.7	1.8	1.9	5.4	7.0
33.9	20.5	12.1	29.3	31.1	32.7	57.9	54.7
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	12.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.2	20.5
0.62	0.48	0.28	0.45	0.70	0.71	0.66	0.73
55.6	37.4	27.4	61.0	34.4	34.2		

34019205530000			34029205590000		34029206200000			34029206260000	
John O. Mcallister #1			34029205590000		E. F. Sanor #1			J. O. and V. Gilson Un	
7800-7810	7850-7860	7860-7870	7170-7200	7260-7290	8410-8420	8420-8430	8440-8450	7730-7740	7740-7750
7810	7860	7870	7200	7290	8420	8430	8450	7740	7750
16.3	7.6	6.8	27.6	26.3	3.1	3.7	3.3	22.1	18.4
0.4	0.0	0.0	0.3	0.1	1.1	1.4	0.5	0.9	0.4
2.8	1.3	1.2	7.9	6.9	0.0	0.9	0.7	7.8	5.8
1.7	2.9	3.3	0.3	0.2	0.1	0.1	0.1	0.3	0.3
0.5	0.7	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.1	0.7	0.8	1.2	1.1	0.2	0.2	0.2	0.4	0.3
42.5	62.6	66.1	6.9	8.5	53.7	49.1	57.4	14.9	22.6
4.4	5.8	3.7	1.0	1.7	29.2	30.2	28.3	0.8	0.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
69.6	81.7	83.6	45.2	44.8	87.4	85.6	91.0	47.1	48.5
4.3	1.2	1.2	5.3	6.4	2.1	2.9	1.5	5.0	5.7
23.2	16.7	14.7	38.2	38.0	10.0	11.2	7.1	35.2	33.9
2.9	0.3	0.5	11.3	10.8	0.6	0.4	0.3	12.8	11.9
30.4	18.3	16.4	54.8	55.2	12.6	14.4	9.0	52.9	51.5
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.58	0.17	0.16	0.72	0.87	0.28	0.39	0.21	0.68	0.77
37.4	30.7	31.9	50.8	56.3	46.4	46.1	14.0/52.1		

it #1
7760-7770
7770

19.0
0.4
6.0
0.5
0.0
0.3
23.4
0.7
0.0
0.0
0.0
0.0
50.3

5.9
32.8
11.0
49.7

100.0

13.6
20.5
0.80

34029206480000		34029206560000			34029206650000		
Frank Murray #3		L. and M. Hawkins #1			Hoffman Unit #1		
7590-7600	7800-7810	7700-7710	7720-7730	7740-7750	7130-7140	7150-7160	7180-7190
7600	7810	7710	7730	7750	7140	7160	7190
20.9	12.2	11.5	10.4	7.2	17.2	15.5	14.1
0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.3
4.7	2.0	2.2	1.9	1.1	3.5	2.9	2.5
2.1	2.5	3.2	3.1	3.9	1.9	2.3	3.2
0.3	0.8	0.7	0.6	1.4	0.0	0.4	0.4
1.9	1.1	1.1	0.9	0.9	1.2	1.1	1.0
22.6	51.5	54.4	57.6	62.3	34.8	39.6	42.8
4.1	5.0	4.5	5.0	4.1	5.6	8.2	6.4
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.8
56.7	75.2	77.6	79.4	80.8	64.6	71.6	71.4
5.0	3.5	3.6	3.5	3.4	5.1	4.2	4.2
31.2	19.4	17.7	16.6	15.4	27.0	22.4	22.0
7.1	1.9	1.0	0.5	0.4	3.3	1.8	2.3
43.3	24.8	22.4	20.6	19.2	35.4	28.4	28.6
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.68	0.47	0.49	0.47	0.46	0.69	0.57	0.57
45.1	33.2	32.7	30.4	31.2	47.1	28.7	9.5/38.9

34029206680000							34029214760000		
Clarence E. Williams #1							Aquila E. Solomon #21750		
3700-3720	3760-3780	8060-8108	8150-8250	8250-8260	8304-8338	8335-8366	8170-8230	8230-8260	8290-8320
3720	3780	8108	8250	8260	8338	8366	8230	8260	8320
30.3	23.5	23.2	21.3	23.1	21.4	19.3	14.8	12.3	17.5
0.9	2.2	1.1	0.5	0.9	1.0	0.5	0.1	0.1	0.0
5.4	2.4	5.4	6.4	6.7	4.8	5.7	2.4	2.2	2.9
0.3	0.4	0.5	3.4	2.5	2.0	1.7	3.3	3.6	2.0
0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.3	1.1	0.5
0.8	0.0	1.7	3.0	2.7	1.9	1.4	1.0	1.0	1.2
1.1	0.2	6.6	8.9	15.0	15.0	19.6	38.9	44.9	38.2
0.8	0.2	5.8	1.4	4.6	3.0	4.2	7.4	5.1	8.3
0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
39.6	31.9	44.4	44.9	55.5	49.1	52.4	68.2	70.3	70.5
4.3	4.4	5.9	6.1	4.6	5.8	5.3	5.1	5.0	4.0
43.2	51.2	38.1	39.6	32.2	36.1	34.7	24.6	22.9	22.0
12.8	12.6	11.7	9.4	7.8	9.0	7.6	2.2	1.8	3.4
60.4	68.1	55.6	55.1	44.5	50.9	47.6	31.8	29.7	29.5
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.5	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	17.6	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.58	0.60	0.79	0.83	0.62	0.79	0.72	0.69	0.68	0.54
		49.6	45.9	45.9	46.9	39.4	26.7	29.9	8.8/38.9

34029216220000			34031224600000			34031261930000		
Entririn #1			Peabody Coal Co. #1B			Columbus and Southern #7002		
7560-7580	7600-7620	7630-7650	5300-5310	5320-5330	5340-5350	5730-5760	5790-5820	5850-5880
7580	7620	7650	5310	5330	5350	5760	5820	5880
17.6	15.9	8.8	21.3	21.4	21.3	10.9	11.8	8.1
0.0	0.0	0.0	2.0	1.9	1.6	0.0	0.7	0.9
3.8	2.0	1.5	3.0	2.8	3.7	2.5	3.7	1.4
2.7	4.3	3.5	1.0	0.5	0.9	2.9	2.7	3.2
0.5	0.7	0.8	0.4	0.6	0.5	0.3	0.9	0.8
1.4	1.3	0.9	0.9	0.5	0.7	0.9	0.7	1.1
40.1	54.9	63.9	9.3	9.9	15.8	53.7	50.4	60.6
6.2	4.8	5.1	2.9	3.3	5.6	4.0	4.1	3.6
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72.3	83.7	84.5	40.9	41.0	50.1	75.2	75.1	79.7
3.8	2.6	0.8	6.1	8.1	5.8	3.5	3.7	3.2
22.3	13.7	14.6	44.0	43.3	36.3	18.9	19.0	16.1
1.6	0.0	0.1	9.0	7.7	7.8	2.4	2.1	1.1
27.7	16.3	15.5	59.1	59.0	49.9	24.8	24.9	20.3
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.3	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	22.1	20.5	20.5	20.5	20.5
0.52	0.35	0.11	0.83	1.08	0.79	0.48	0.50	0.43
39.6	30.4	31.2	57.1	56.1	11.0/57.1	42.9	42.9	36.9

34031262140000			34055203390000			34055213270000		
Columbus and Southern #37			TRW Ink #1			C Rahn #1		
5770-5800	5800-5830	5830-5850	5370-5380	5400-5410	5450-5460	5440-5450	5590-5600	5650-5660
5800	5830	5850	5380	5410	5460	5450	5600	5660
15.0	12.0	9.0	19.6	9.8	4.6	26.5	22.2	15.5
0.0	0.0	0.5	0.0	0.0	0.0	0.8	0.0	0.0
3.0	1.8	1.6	2.5	0.7	0.0	4.9	2.8	1.7
2.4	3.4	1.6	2.8	2.6	2.0	2.3	2.6	2.5
0.4	0.5	0.3	0.5	0.5	0.5	0.0	0.2	0.6
0.8	1.2	0.8	1.6	0.8	0.5	1.9	1.5	0.9
44.7	55.7	58.1	25.0	63.6	72.5	9.6	25.2	51.3
3.2	5.0	4.0	10.6	5.9	9.4	4.0	5.9	5.7
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69.5	79.6	75.8	62.5	83.8	89.5	50.0	60.4	78.2
4.2	3.2	3.4	4.9	1.4	1.2	5.3	5.3	3.3
23.2	16.4	18.7	28.9	14.2	9.1	35.6	30.2	17.0
3.1	0.7	2.1	3.6	0.5	0.2	9.1	4.2	1.5
30.5	20.4	24.2	37.5	16.2	10.5	50.0	39.6	21.8
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.57	0.44	0.46	0.66	0.20	0.16	0.71	0.71	0.45
47.8	36.1	40.9	51.6	32.4	16.0	49.8	55.8	37.1

34055215240000 Russel Oriely #1				34055215340000 Voytko #1		34059239240000 Morris-Misock Unit #1		
5590-5600	5610-5620	5720-5730	5820-5830	5900-5910	5910-5920	6390-6400	6420-6430	6430-6440
5600	5620	5730	5830	5910	5920	6400	6430	6440
20.7	19.5	5.5	14.8	6.8	7.4	17.3	6.9	8.1
0.0	0.0	0.0	0.5	0.1	0.0	1.0	0.6	0.3
4.0	4.2	0.6	2.3	0.7	0.5	3.4	2.3	1.2
1.8	2.4	2.5	3.2	2.3	2.9	3.0	3.2	2.0
0.4	0.4	0.5	0.4	0.6	0.8	0.1	2.1	1.9
1.9	1.9	0.5	1.2	0.6	0.5	1.4	1.1	1.0
21.2	25.1	70.0	40.3	70.3	68.0	31.9	61.0	62.5
7.5	7.8	6.0	7.5	6.4	6.2	3.1	2.9	5.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57.5	61.3	85.6	70.2	87.8	86.4	61.1	80.2	82.1
5.3	4.7	1.4	4.0	1.9	1.7	4.9	2.2	2.0
31.2	28.9	12.8	23.0	10.2	11.6	28.9	15.1	13.6
5.9	5.1	0.2	2.8	0.1	0.3	5.1	2.5	2.3
42.5	38.7	14.4	29.8	12.2	13.6	38.9	19.8	17.9
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.72	0.64	0.19	0.54	0.26	0.22	0.67	0.30	0.27
52.6	54.1	23.0	46.1	22.2	19.2	32.9/78.0	35.9	39.1

34059239320000			34067205910000			34067209710000	34067207640000		
Hasting #1			Berry #1			34067209710000	Clyde Van Horn #1		
6220-6230	6250-6260	6280-6290	7960-7990	7990-8020	8020-8030	7060-7090	7650-7680	7710-7720	7740-7750
6230	6260	6290	7990	8020	8030	7090	7680	7720	7750
16.5	17.6	12.7	15.7	9.1	9.6	18.2	22.0	15.4	10.2
0.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
4.1	4.3	2.6	3.3	1.6	1.5	2.7	4.5	2.1	1.5
3.4	2.6	3.7	3.6	2.0	1.8	1.4	3.2	2.5	2.9
0.0	0.2	0.4	0.4	0.3	0.2	0.3	0.2	0.6	1.4
1.1	1.3	1.2	0.9	0.6	0.7	0.9	1.1	1.2	1.1
36.7	27.7	49.1	46.9	64.4	63.0	36.8	33.8	48.3	58.9
4.8	3.8	5.7	2.6	3.5	3.3	4.2	4.5	4.3	4.4
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67.0	57.4	75.5	73.3	81.6	80.1	64.5	69.4	74.4	80.4
4.3	5.7	3.3	4.3	3.0	3.4	4.8	3.8	4.3	2.9
24.9	31.0	19.1	21.1	14.6	15.7	26.5	23.5	19.9	15.7
3.8	5.9	2.1	1.3	0.8	0.8	4.1	3.3	1.4	1.0
33.0	42.6	24.5	26.7	18.4	19.9	35.5	30.6	25.6	19.6
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5	20.5
0.58	0.78	0.45	0.59	0.41	0.46	0.65	0.52	0.59	0.40
45.9	39.9	36.9	35.1	31.7	32.7	41.1	41.4	36.1	31.9

34075216090000 E.A. Troyer #1	34075253630000 Yoder-Mast #1D	34081205010000 NAC 2-3	34099202120000 William Brenner #1	34121212780000 Amerada #1
5610-5620	4810-4820	9410-9420	6690-6720	8340-8360
5620	4820	9420	6720	8360
7.6	12.5	21.0	14.1	29.6
0.0	0.0	0.7	0.0	0.5
0.7	0.6	3.9	2.0	4.2
2.0	3.2	3.3	3.4	2.7
0.4	0.6	0.5	0.7	0.0
0.6	0.9	1.3	1.2	1.6
69.5	61.9	39.2	48.7	25.8
4.2	5.4	5.8	7.3	1.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.5	0.0
0.0	0.0	0.9	0.0	0.0
0.0	0.0	1.2	0.0	0.0
85.0	85.0	77.8	78.0	65.4
2.2	2.2	3.1	3.6	3.8
12.4	12.7	17.3	17.9	24.9
0.4	0.0	1.8	0.5	5.9
15.0	15.0	22.2	22.0	34.6
100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5
0.30	0.30	0.42	0.49	0.52
37.6	32.7	31.7	42.6	36.4

34121238780000 Ohio Power Co. #OPC-35K	34121240720000 Miley #1	34151246970000 Harrold #3	34151250860000 34151250860000	34153209070000 Ortahmptom Trustees #2
6670-6700	7360-7370	5790-5800	6870-6880	5310-5320
6700	7370	5800	6880	5320
14.1	14.1	17.0	6.8	18.2
0.7	0.5	0.3	0.0	0.8
4.3	3.7	2.5	1.2	3.6
0.5	1.9	2.0	2.7	3.8
0.0	0.4	0.4	1.8	0.7
1.0	1.4	0.9	0.9	1.4
37.6	42.5	48.1	65.0	26.7
3.8	2.7	5.0	3.9	10.9
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0
62.0	67.2	76.2	82.3	66.1
4.1	4.4	3.5	2.7	5.4
26.7	24.5	18.5	14.5	26.5
7.1	3.9	1.8	0.4	1.9
38.0	32.8	23.8	17.7	33.9
100.0	100.0	100.0	100.0	100.0
13.6	13.6	13.6	13.6	13.6
20.5	20.5	20.5	20.5	20.5
0.56	0.60	0.48	0.37	0.73
33.4/85.7	35.1/93.4	38.6	28.7	46.9