S#4161

GeoMark
Petroleum Services Division

Source Rock Analyses

TOC, Rock-Eval and Maturity Testing

Bryan Unit #1
Carroll County, Ohio

August 25, 2010

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GEOMARK

SOURCE ROCK ANALYSES

GEOMARK RESEARCH, LTD

Bryan Unit #1, Carroll 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-100802-001	3401921850000	Bryan Unit #1				7,010.00	7,040.00	7,025.00	Cuttings	16.74	0.14	0.02	0.04	0.39	364		-0.61	29	279	0	14	0.33	
RJRE-100802-002	3401921850000	Bryan Unit #1				7,040.00	7,070.00	7,055.00	Cuttings	16.23	0.14	0.02	0.04	0.50	304		-1.69	29	357	0	14	0.33	
RJRE-100802-003	3401921850000	Bryan Unit #1				7,070.00	7,100.00	7,085.00	Cuttings	33.08	0.14	0.01	0.01	0.46	0		-7.16	7	329	0	7	0.50	
RJRE-100802-004	3401921850000	Bryan Unit #1				7,100.00	7,130.00	7,115.00	Cuttings	32.54	0.15	0.01	0.01	0.27	0		-7.16	7	180	0	7	0.50	
RJRE-100802-005	3401921850000	Bryan Unit #1				7,130.00	7,160.00	7,145.00	Cuttings	20.91	0.12	0.01	0.02	0.35	0		-7.16	17	292	0	8	0.33	
RJRE-100802-006	3401921850000	Bryan Unit #1				7,160.00	7,190.00	7,175.00	Cuttings	24.42	0.14	0.01	0.04	0.41	0		-7.16	29	293	0	7	0.20	
RJRE-100802-007	3401921850000	Bryan Unit #1				7,190.00	7,220.00	7,205.00	Cuttings	20.96	0.14	0.01	0.01	0.53	0		-7.16	7	379	0	7	0.50	
RJRE-100802-008	3401921850000	Bryan Unit #1				7,220.00	7,250.00	7,235.00	Cuttings	22.90	0.14	0.01	0.01	0.45	323		-1.35	7	321	0	7	0.50	
RJRE-100802-009	3401921850000	Bryan Unit #1				7,250.00	7,280.00	7,265.00	Cuttings	14.85	0.16	0.01	0.04	0.44	324		-1.33	25	275	0	6	0.20	
RJRE-100802-010	3401921850000	Bryan Unit #1				7,280.00	7,310.00	7,295.00	Cuttings	18.96	0.15	0.01	0.01	0.47	422		0.44	7	313	0	7	0.50	
RJRE-100802-011	3401921850000	Bryan Unit #1				7,310.00	7,340.00	7,325.00	Cuttings	21.93	0.16	0.02	0.02	0.48	384		-0.25	13	300	0	13	0.50	
RJRE-100802-012	3401921850000	Bryan Unit #1				7,340.00	7,370.00	7,355.00	Cuttings	17.46	0.23	0.01	0.02	0.30	0		-7.16	9	130	0	4	0.33	
RJRE-100802-013	3401921850000	Bryan Unit #1				7,370.00	7,400.00	7,385.00	Cuttings	24.46	0.20	0.02	0.02	0.34	421		0.42	10	170	0	10	0.50	
RJRE-100802-014	3401921850000	Bryan Unit #1				7,400.00	7,430.00	7,415.00	Cuttings	18.99	0.21	0.02	0.04	0.31	336		-1.11	19	148	0	10	0.33	
RJRE-100802-015	3401921850000	Bryan Unit #1				7,430.00	7,460.00	7,445.00	Cuttings	16.25	0.27	0.03	0.07	0.36	350		-0.86	26	133	0	11	0.30	
RJRE-100802-016	3401921850000	Bryan Unit #1				7,460.00	7,490.00	7,475.00	Cuttings	13.83	0.26	0.03	0.05	0.25	332		-1.18	19	96	0	12	0.38	
RJRE-100802-017	3401921850000	Bryan Unit #1				7,490.00	7,520.00	7,505.00	Cuttings	12.39	0.30	0.02	0.03	0.27	0		-7.16	10	90	0	7	0.40	
RJRE-100802-018	3401921850000	Bryan Unit #1				7,520.00	7,550.00	7,535.00	Cuttings	10.45	0.29	0.03	0.05	0.25	323		-1.35	17	86	0	10	0.38	
RJRE-100802-019	3401921850000	Bryan Unit #1				7,550.00	7,580.00	7,565.00	Cuttings	15.32	0.31	0.04	0.06	0.31	326		-1.29	19	100	0	13	0.40	
RJRE-100802-020	3401921850000	Bryan Unit #1				7,580.00	7,610.00	7,595.00	Cuttings	16.63	0.62	0.05	0.04	0.37	336		-1.11	6	60	0	8	0.56	
RJRE-100802-021	3401921850000	Bryan Unit #1				7,610.00	7,640.00	7,625.00	Cuttings	20.71	1.37	0.52	0.43	0.32	477		1.43	31	23	1	38	0.55	
RJRE-100802-022	3401921850000	Bryan Unit #1				7,640.00	7,670.00	7,655.00	Cuttings	19.64	1.27	0.39	0.40	0.36	474		1.37	31	28	1	31	0.49	
RJRE-100802-023	3401921850000	Bryan Unit #1				7,670.00	7,700.00	7,685.00	Cuttings	18.08	1.16	0.31	0.35	0.41	472		1.34	30	35	1	27	0.47	
RJRE-100802-024	3401921850000	Bryan Unit #1				7,700.00	7,730.00	7,715.00	Cuttings	23.90	1.49	0.39	0.40	0.42	478		1.44	27	28	1	26	0.49	
RJRE-100802-025	3401921850000	Bryan Unit #1				7,730.00	7,760.00	7,745.00	Cuttings	26.49	1.51	0.43	0.52	0.36	483		1.53	34	24	1	28	0.45	
RJRE-100802-026	3401921850000	Bryan Unit #1				7,760.00	7,790.00	7,775.00	Cuttings	46.69	1.31	0.32	0.33	0.38	470		1.30	25	29	1	24	0.49	
RJRE-100802-027	3401921850000	Bryan Unit #1				7,790.00	7,820.00	7,805.00	Cuttings	50.58	1.37	0.56	0.41	0.32	483		1.53	30	23	1	41	0.58	
RJRE-100802-028	3401921850000	Bryan Unit #1				7,850.00	7,860.00	7,855.00	Cuttings	25.76	1.17	0.43	0.78	0.43	387		-0.19	67	37	2	37	0.36	Low Temp S2 peak
RJRE-100802-029	3401921850000	Bryan Unit #1				7,880.00	7,890.00	7,885.00	Cuttings	38.69	1.68	0.89	1.27	0.51	356		-0.75	76	30	2	53	0.41	Low Temp S2 peak
RJRE-100802-030	3401921850000	Bryan Unit #1				7,910.00	7,920.00	7,915.00	Cuttings	71.03	1.92	0.75	0.57	0.30	480		1.48	30	16	2	39	0.57	
RJRE-100802-031	3401921850000	Bryan Unit #1				7,940.00	7,950.00	7,945.00	Cuttings	63.97	1.63	0.63	0.52	0.33	482		1.52	32	20	2	39	0.55	
RJRE-100802-032	3401921850000	Bryan Unit #1				7,970.00	7,980.00	7,975.00	Cuttings	65.87	0.56	0.13	0.10	0.15	398		0.00	18	27	1	23	0.57	
RJRE-100802-033	3401921850000	Bryan Unit #1				8,000.00	8,010.00	8,005.00	Cuttings	45.75	0.46	0.18	0.11	0.19	431		0.60	24	41	1	39	0.62	
RJRE-100802-034	3401921850000	Bryan Unit #1				8,030.00	8,040.00	8,035.00	Cuttings	70.76	0.43	0.15	0.15	0.18	346		-0.93	35	42	1	35	0.50	
RJRE-100802-035	3401921850000	Bryan Unit #1				8,060.00	8,070.00	8,065.00	Cuttings	63.35	0.54	0.18	0.18	0.19	378		-0.36	33	35	1	33	0.50	
RJRE-100802-036	3401921850000	Bryan Unit #1				8,090.00	9,000.00	8,545.00	Cuttings	66.76	0.47	0.16	0.17	0.20	395		-0.05	36	43	1	34	0.48	

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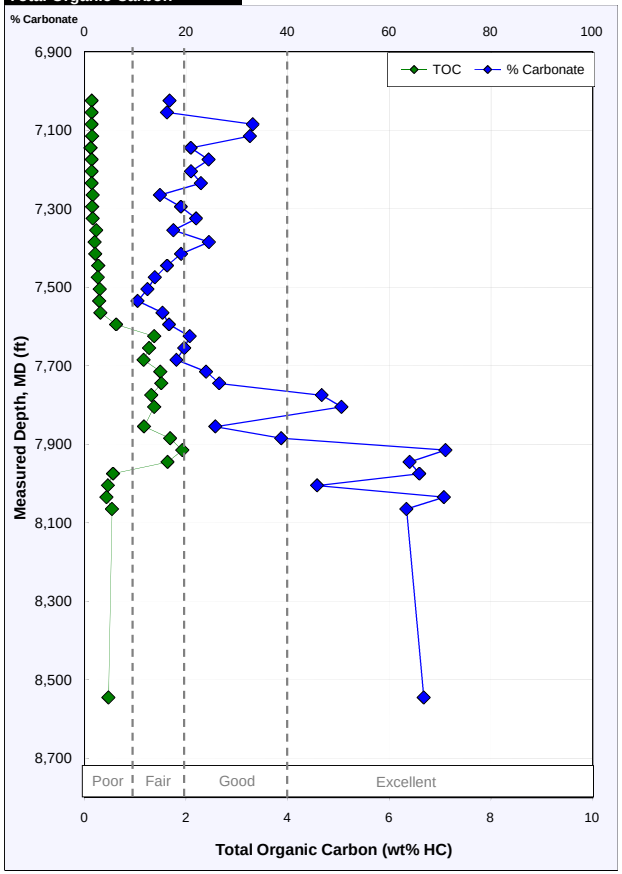
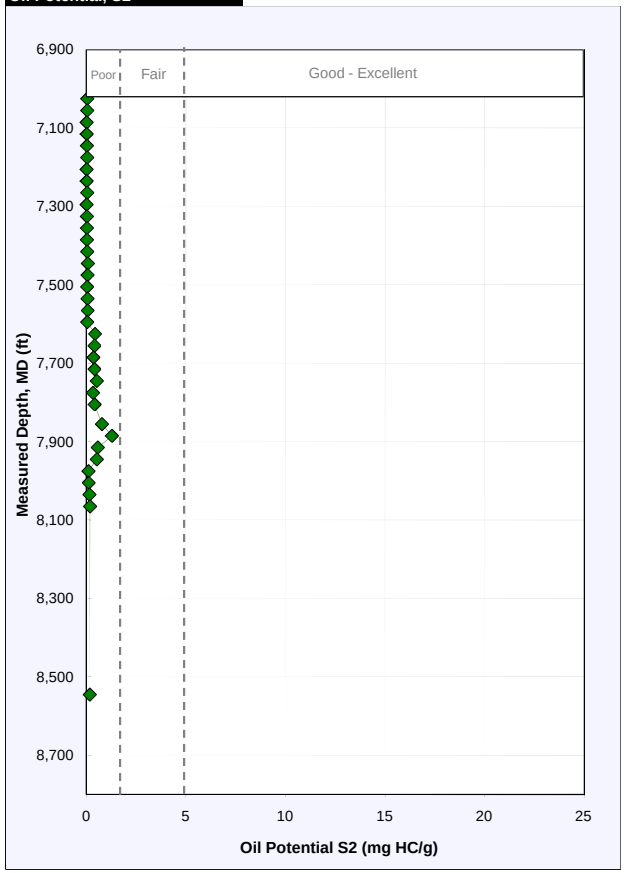
Bryan Unit #1, Carroll County, Ohio

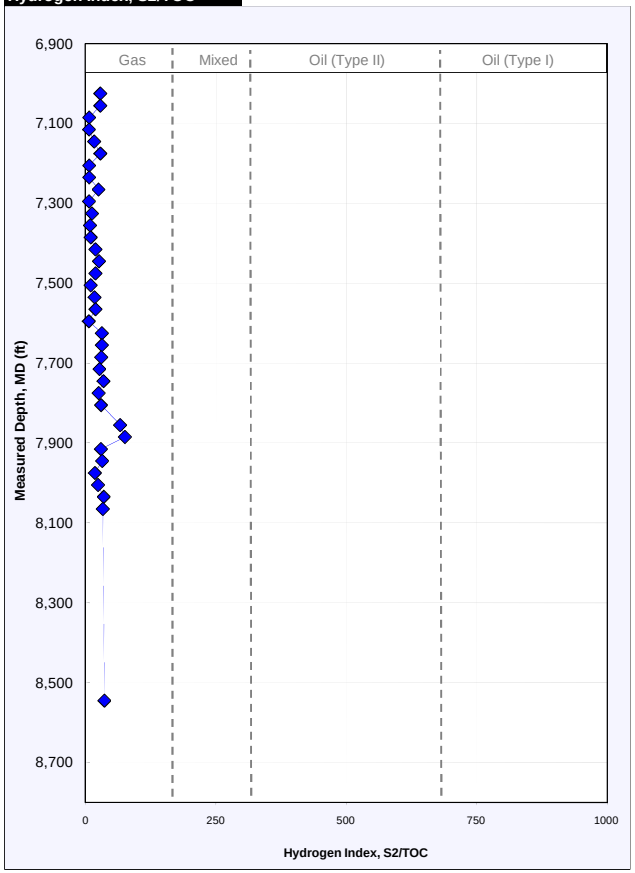
Total Organic Carbon



Oil Potential, S2



Hydrogen Index, S2/TOC



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SOURCE ROCK ANALYSES

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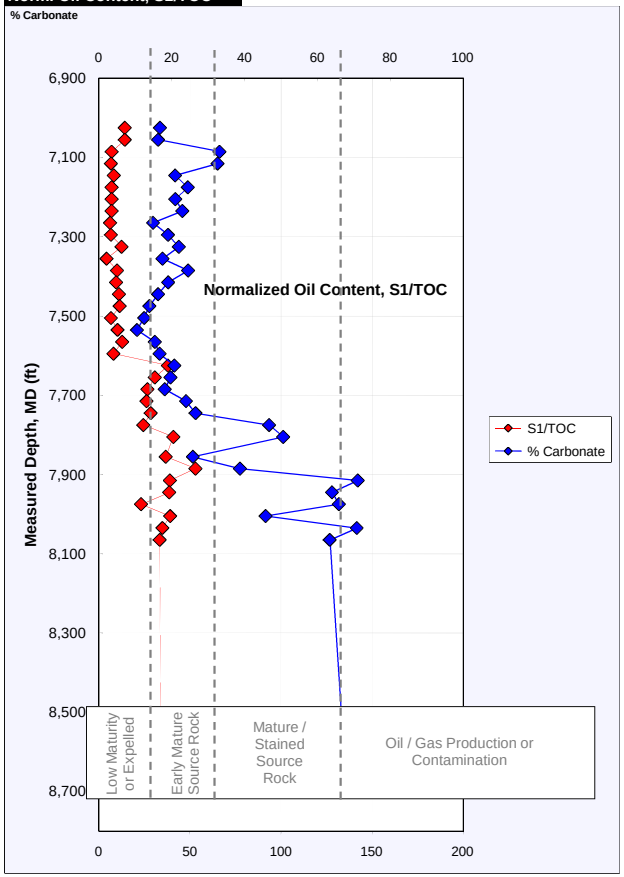
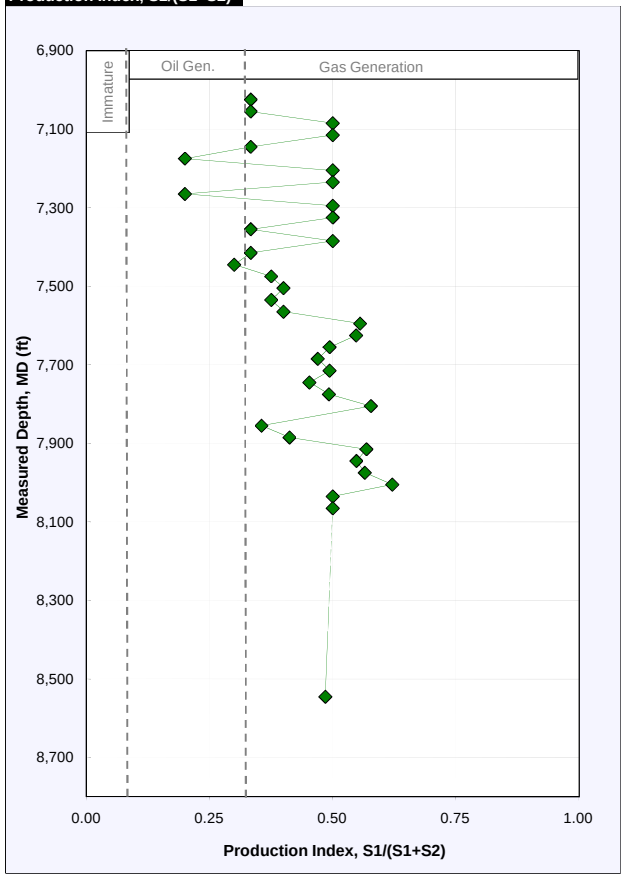
Bryan Unit #1, Carroll County, Ohio

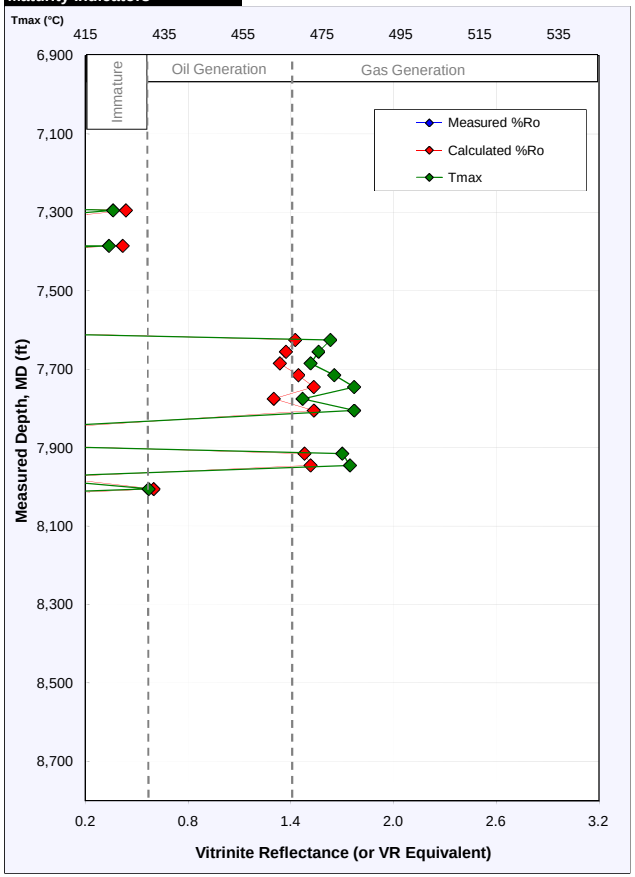
Norm. Oil Content, S1/TOC



Production Index, S1/(S1+S2)



Maturity Indicators



SOURCE ROCK ANALYSES

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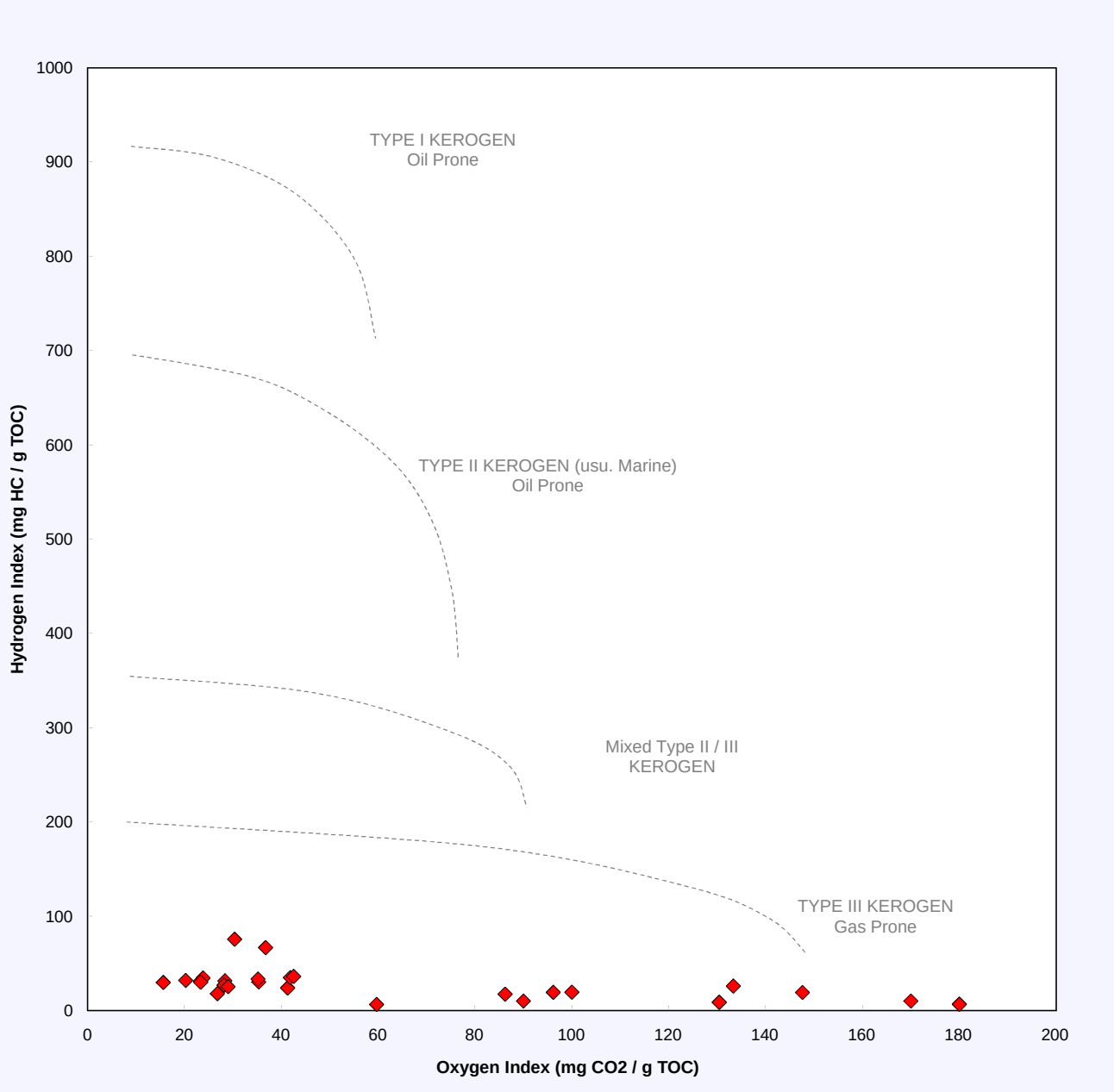
Bryan Unit #1, Carroll County, Ohio

Pseudo Van Krevelen Plot



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SOURCE ROCK ANALYSES

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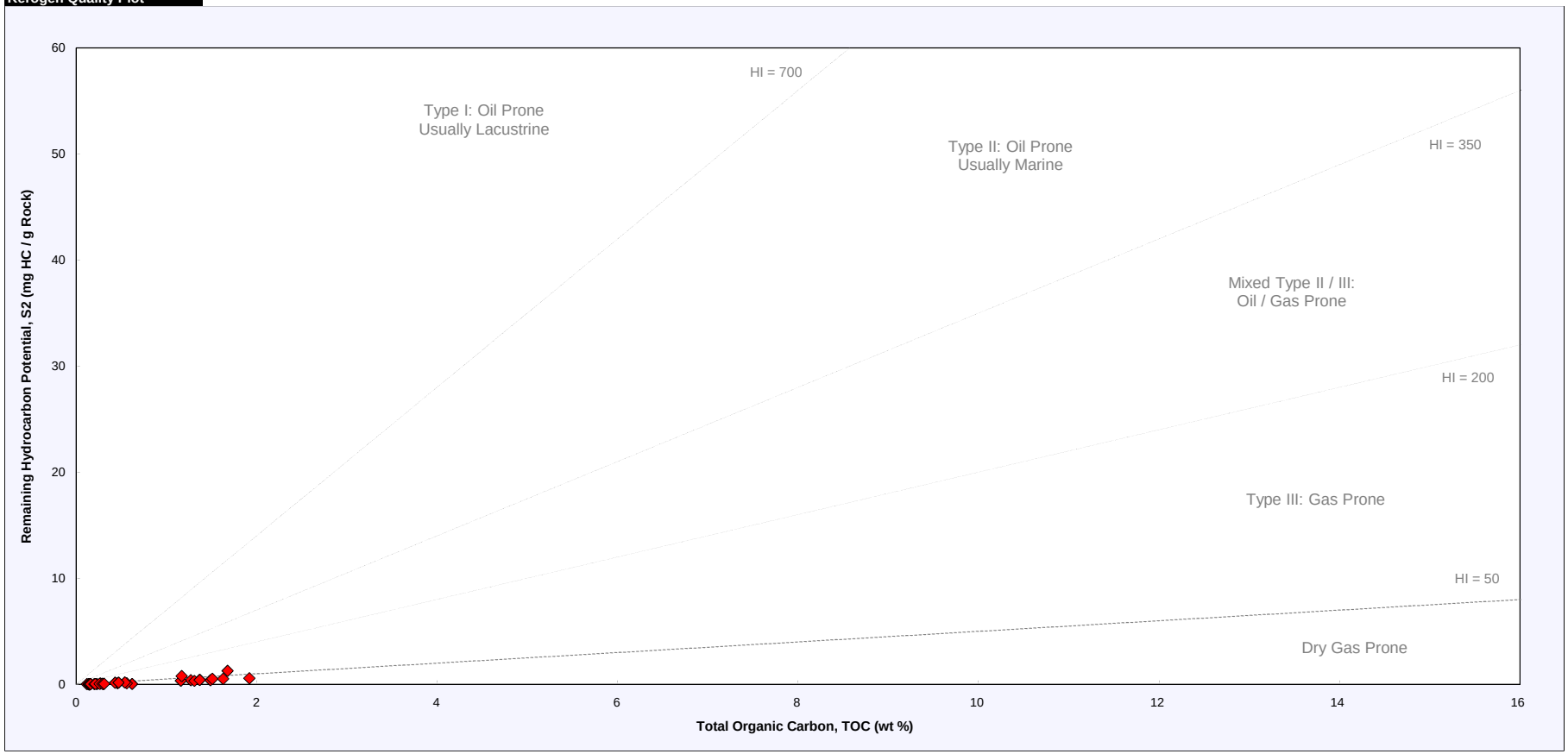
Bryan Unit #1, Carroll County, Ohio

Kerogen Quality Plot



SOURCE ROCK ANALYSES

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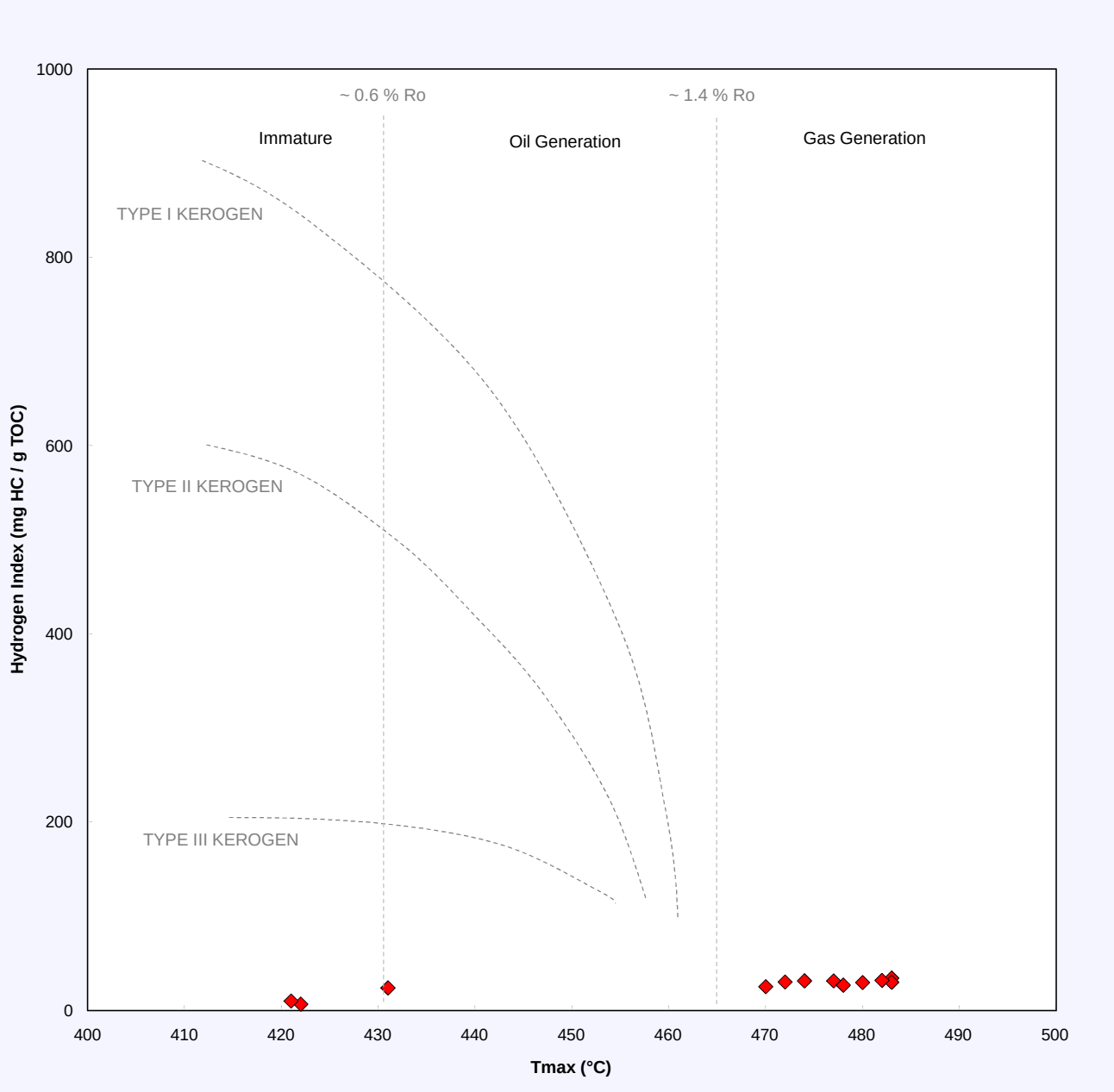
Bryan Unit #1, Carroll County, Ohio

Kerogen Type and Maturity



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SOURCE ROCK ANALYSES

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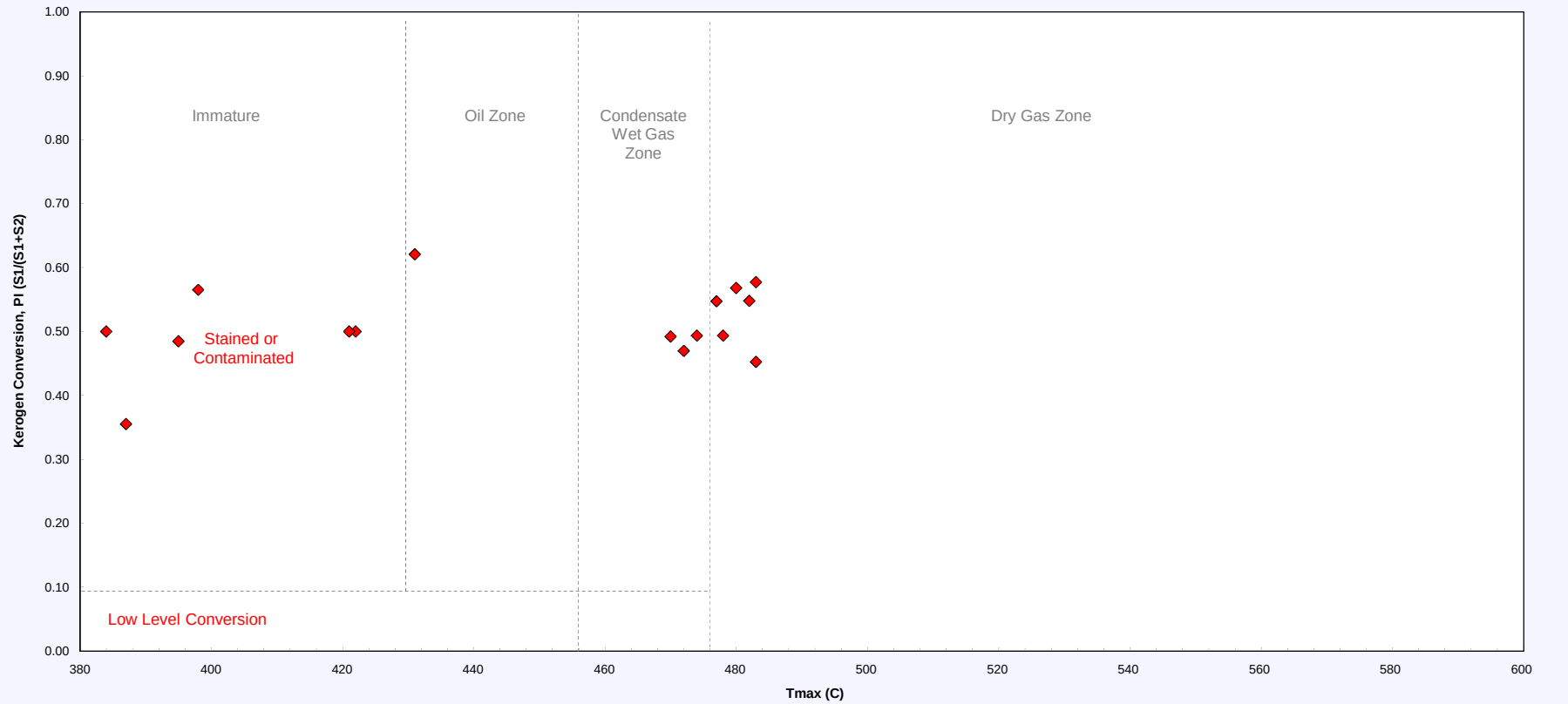
Bryan Unit #1, Carroll County, Ohio

Kerogen Quality Plot



Weatherford LABORATORIES

S# 4161

TOTAL ORGANIC CARBON, PROGRAMMED PYROLYSIS DATA

CMR ENERGY, LP

Well Name :	Multiple Well Study	**Operator :** J. Kurek **SRA ID :** Fletch Junior	**State :** OH **County :** Undisclosed	**Weatherford Labs Project**	CO-53295

	Weatherford Labs ID	Well Name	Client ID	Median Depth (feet)	Sample Type	Sample Prep	*	TOC	S1	S2	S3	Tmax (°C)	**	Meas. % Ro	HI	OI	S2/S3	S1/TOC *100	PI	Notes Check	Notes Pyrogram	Lab ID
34007202060000	1-1	French & Papp 1	007-20206	5710.0	Cuttings	NOPR		1.05	0.64	1.59	0.39	444			151	37	4	61	0.29			53295-1-1.RAW
34007202060000	1-2	French & Papp 1	007-20207	5850.0	Cuttings	NOPR		1.61	0.91	2.45	0.38	440			152	24	6	57	0.27			53295-1-2.RAW
34007202060000	1-3	French & Papp 1	007-20208	5890.0	Cuttings	NOPR		1.42	0.79	2.18	0.36	440			154	25	6	56	0.27			53295-1-3.RAW
34007202060000	1-4	French & Papp 1	007-20209	5935.0	Cuttings	NOPR		1.30	0.75	1.94	0.33	434			149	25	6	58	0.28			53295-1-4.RAW
34007202060000	1-5	French & Papp 1	007-20210	6005.0	Cuttings	NOPR		1.38	0.66	2.04	0.36	438			148	26	6	48	0.24			53295-1-5.RAW
34007202060000	1-6	French & Papp 1	007-20211	6035.0	Cuttings	NOPR		0.41	0.19	0.76	0.21	434			188	52	4	47	0.20			53295-1-6.RAW
34007202060000	1-7	French & Papp 1	007-20212	6085.0	Cuttings	NOPR		0.37	0.26	0.97	0.33	446			263	89	3	70	0.21			53295-1-7.RAW
34133240270000	2-1	Wantz R Unit 1-2161	133-24027	5655.0	Cuttings	NOPR		0.53	0.24	0.76	0.19	430			142	36	4	45	0.24			53295-2-1.RAW
34133240270000	2-2	Wantz R Unit 1-2162	133-24028	5755.0	Cuttings	NOPR		0.66	0.32	1.00	0.19	430			151	29	5	48	0.24			53295-2-2.RAW
34133240270000	2-3	Wantz R Unit 1-2163	133-24029	5785.0	Cuttings	NOPR		1.46	1.06	2.47	0.22	440			169	15	11	73	0.30			53295-2-3.RAW
34133240270000	2-4	Wantz R Unit 1-2164	133-24030	5815.0	Cuttings	NOPR		1.32	0.79	2.40	0.28	450			182	21	9	60	0.25			53295-2-4.RAW
34133240270000	2-5	Wantz R Unit 1-2165	133-24031	5895.0	Cuttings	NOPR		0.94	0.58	1.48	0.31	439			157	33	5	62	0.28			53295-2-5.RAW
34133240270000	2-6	Wantz R Unit 1-2166	133-24032	5915.0	Cuttings	NOPR		1.67	1.40	2.99	0.34	443			179	20	9	84	0.32			53295-2-6.RAW
34151250860000	3-1	Barley 1-2397	151-25086	6845.0	Cuttings	NOPR		0.63	0.33	1.14	0.64	427			181	102	2	52	0.22			53295-3-1.RAW
34151250860000	3-2	Barley 1-2397	151-25087	6855.0	Cuttings	NOPR		2.32	1.39	3.36	0.32	440			145	14	11	60	0.29			53295-3-2D.RAW
34029206480000	4-1	Murray 3	029-20648	7395.0	Cuttings	NOPR		0.38	0.12	3.50	0.12	439			919	31	29	31	0.03			53295-4-1.RAW
34029206480000	4-2	Murray 3	029-20648	7505.0	Cuttings	NOPR		0.54	0.13	0.42	0.22	432	**		78	41	2	24	0.24			53295-4-2.RAW
34029206480000	4-3	Murray 3	029-20648	7555.0	Cuttings	NOPR		1.51	0.42	0.80	0.17	437			53	11	5	28	0.34			53295-4-3.RAW
34019218500000	5-1	Bryan Unit 1	019-21850	7655.0	Cuttings	NOPR		1.47	0.36	0.78	0.41	430			53	28	2	24	0.32			53295-5-1.RAW
34019218500000	5-2	Bryan Unit 1	019-21850	7685.0	Cuttings	NOPR		1.26	0.32	0.76	0.47	429			60	37	2	25	0.30			53295-5-2.RAW
34019218500000	5-3	Bryan Unit 1	019-21850	7745.0	Cuttings	NOPR		1.54	0.38	0.85	0.32	433			55	21	3	25	0.31			53295-5-3.RAW
34019218500000	5-4	Bryan Unit 1	019-21850	7805.0	Cuttings	NOPR		1.68	0.52	0.98	0.33	433			58	20	3	31	0.35			53295-5-4.RAW
34019218500000	5-5	Bryan Unit 1	019-21850	7835.0	Cuttings	NOPR		1.22	0.28	0.95	0.45	429			78	37	2	23	0.23			53295-5-5.RAW
34019218500000	5-6	Bryan Unit 1	019-21850	7875.0	Cuttings	NOPR		1.55	0.51	1.18	0.38	429			76	25	3	33	0.30			53295-5-6.RAW
34067201030000	6-1	Roy Birney 1	067-20103	8375.0	Cuttings	NOPR		0.44	0.13	0.27	0.43	337	**		61	98	1	29	0.33			53295-6-1.RAW
34067201030000	6-2	Roy Birney 1	067-20103	8465.0	Cuttings	NOPR		0.68	0.15	0.47	0.38	413	**		69	56	1	22	0.24			53295-6-2.RAW
34067201030000	6-3	Roy Birney 1	067-20103	8495.0	Cuttings	NOPR		2.80	0.66	1.30	0.37	441			46	13	4	24	0.34			53295-6-3.RAW
34067201030000	6-4	Roy Birney 1	067-20103	8515.0	Cuttings	NOPR		2.80	0.63	1.19	0.37	439			43	13	3	23	0.35			53295-6-4.RAW
34067201030000	6-5	Roy Birney 1	067-20103	8545.0	Cuttings	NOPR		2.65	0.67	1.50	0.37	435			57	14	4	25	0.31			53295-6-5.RAW
34067201030000	6-6	Roy Birney 1	067-20103	8575.0	Cuttings	NOPR		1.61	0.37	0.58	0.67	429			36	42	1	23	0.39			53295-6-6.RAW

Notes:

"-1" – not measured or invalid value for T_{max}
TOC - Total Organic Carbon, wt. %
S1 - volatile hydrocarbon (HC) content, mg HC/ g rock
S2 - remaining HC generative potential, mg HC/ g rock
S3 - carbon dioxide content, mg CO_2 / g rock

* - comments regarding contamination
** - low S2, Tmax is unreliable
Meas. %Ro - measured vitrinite reflectance
HI - Hydrogen index = S2 x 100 / TOC, mg HC/ g TOC
OI - Oxygen Index = S3 x 100 / TOC, mg CO_2/ g TOC
PI - Production Index = S1 / (S1+S2)

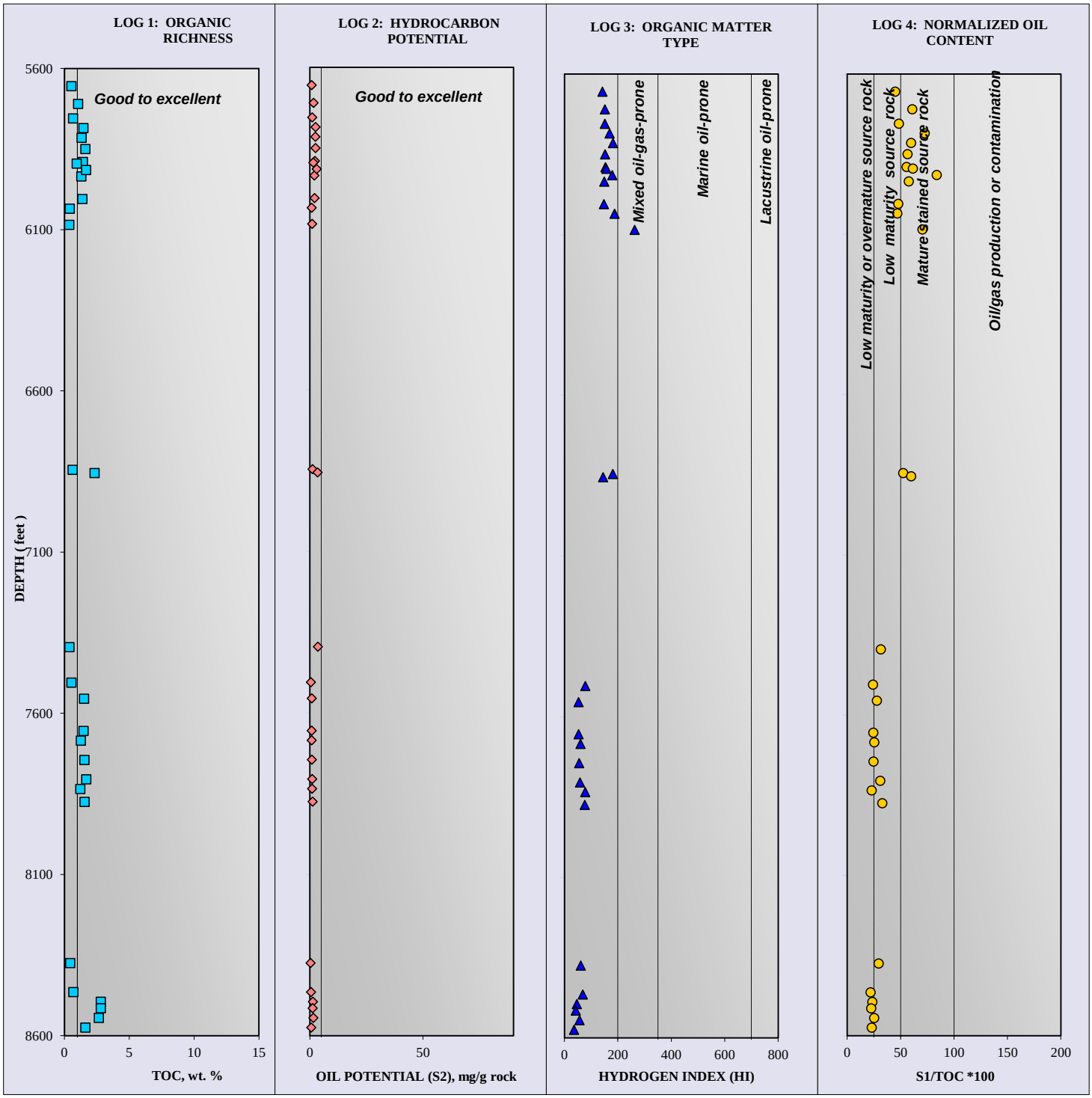
Pyrogram:
f - flat S2 peak
n - normal
ltS2sh - low temperature S2 shoulder
ltS2p - low temperature S2 peak
htS2p - high temperature S2 peak

RE - Programmed pyrolysis on Rock-Eval instrument
EXT - Extracted Rock
NOPR - Normal Preparation

Ardent Resources - Bob Heim

GEOCHEMICAL LOGS - Multiple Well Study

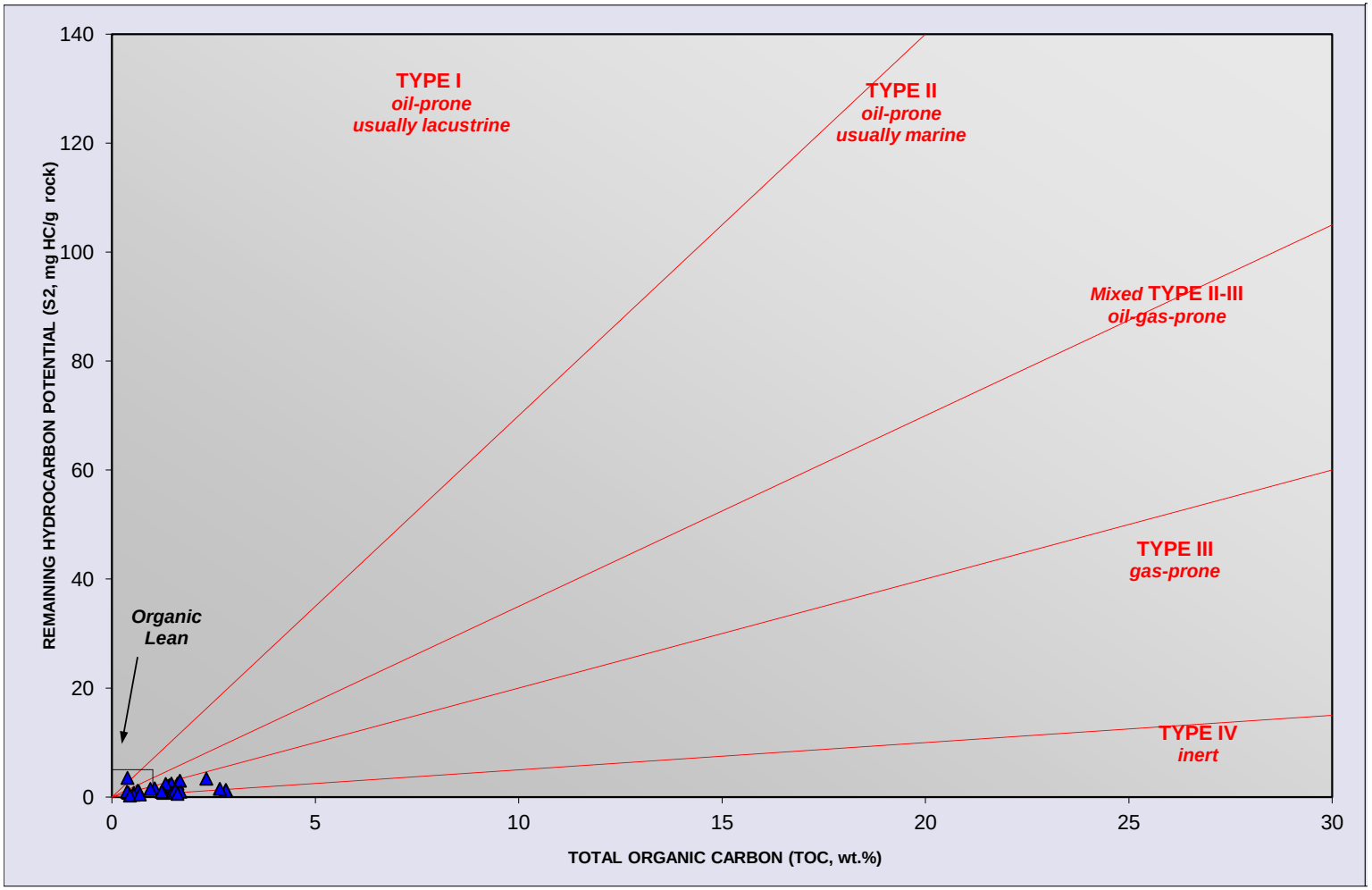
Company: CMR ENERGY, LP **Project #: CO-53295**



Weatherford LABORATORIES

KEROGEN QUALITY PLOT - Multiple Well Study

Company: CMR Energy, LP **Project #: CO-53295**



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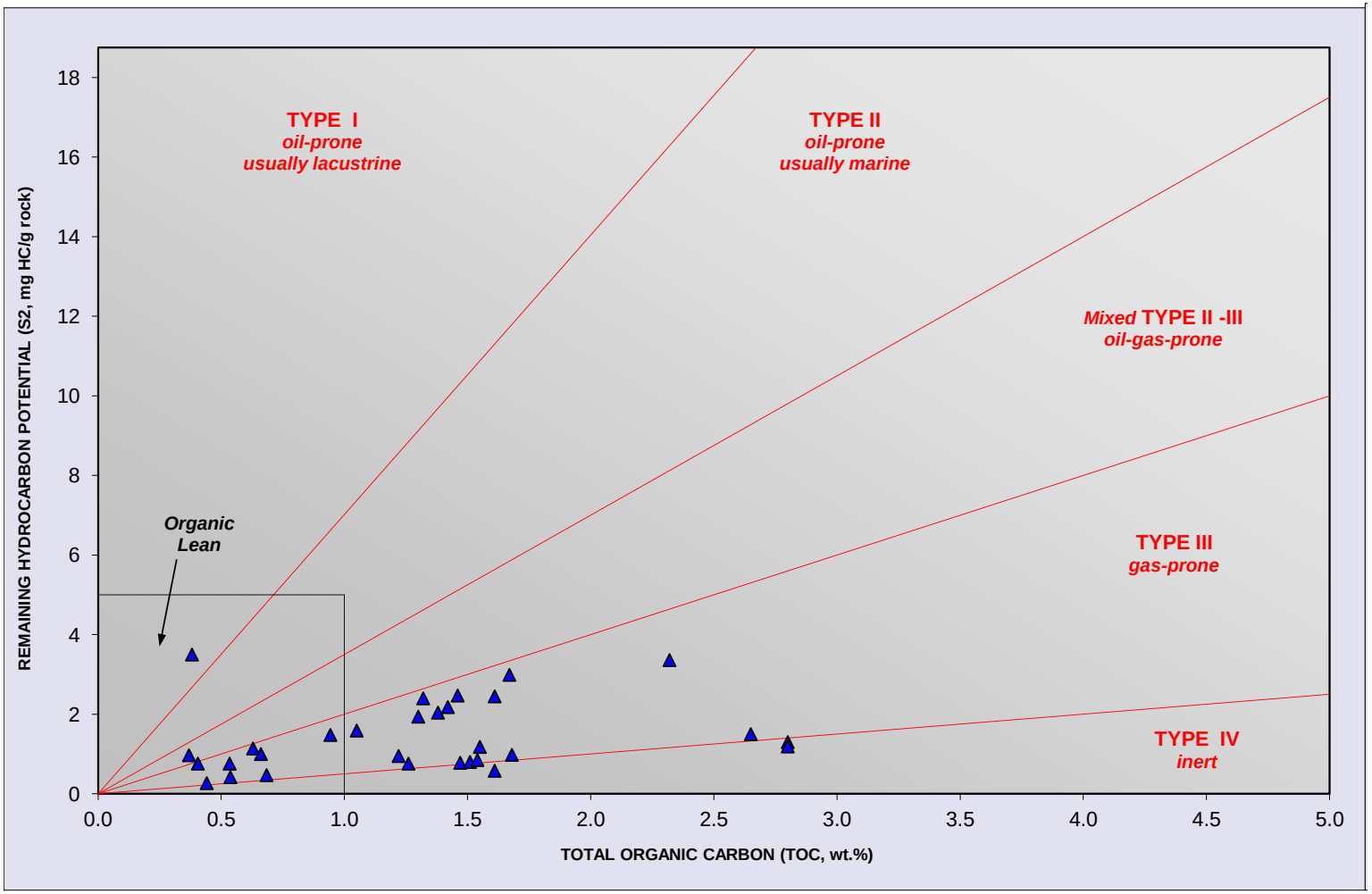
Weatherford LABORATORIES

KEROGEN QUALITY PLOT - Multiple Well Study

Company: CMR Energy, LP **Project #: CO-53295**



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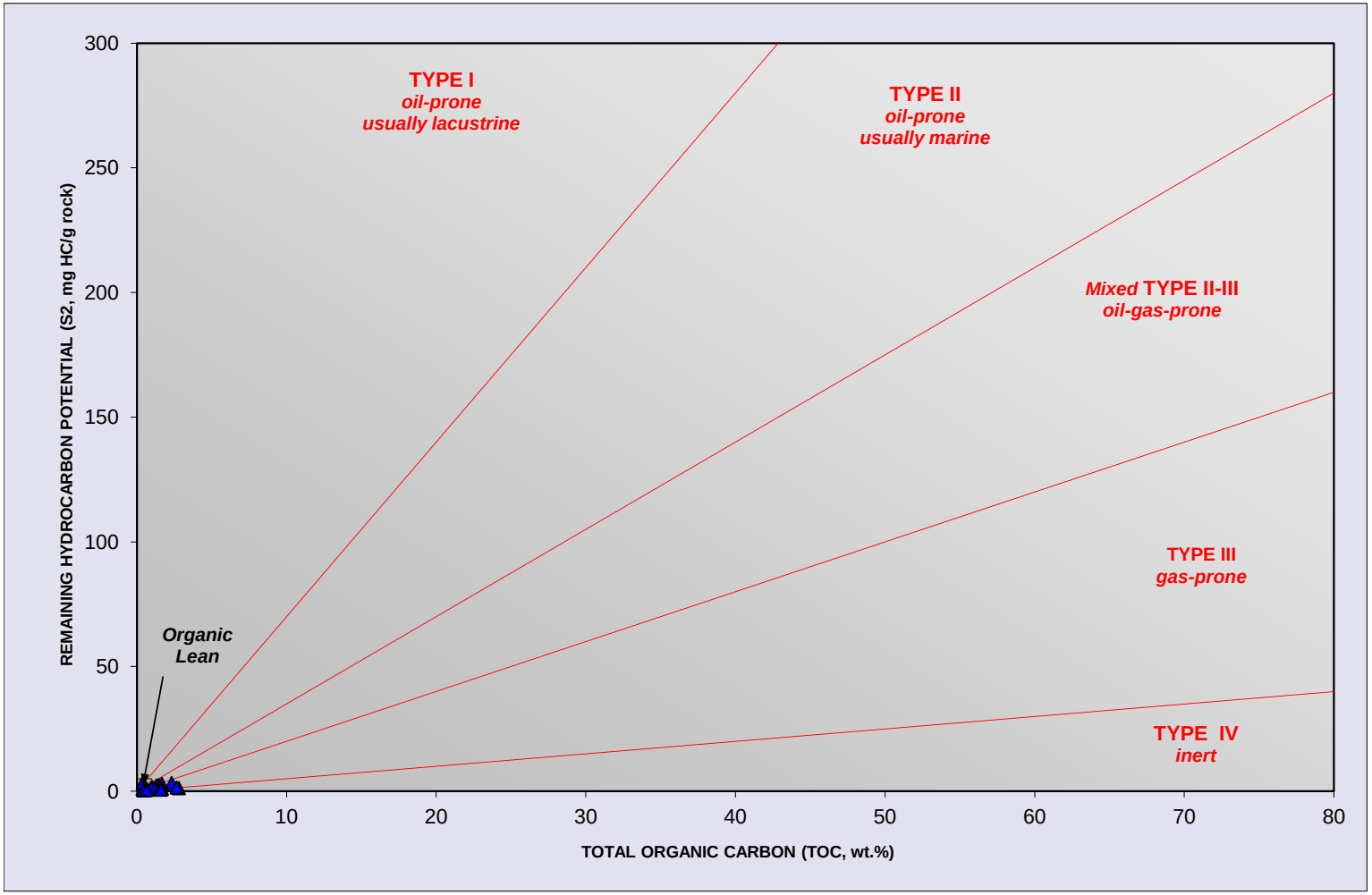
KEROGEN QUALITY PLOT - Multiple Well Study

Company: CMR Energy, LP **Project #: CO-53295 / CO-53295**



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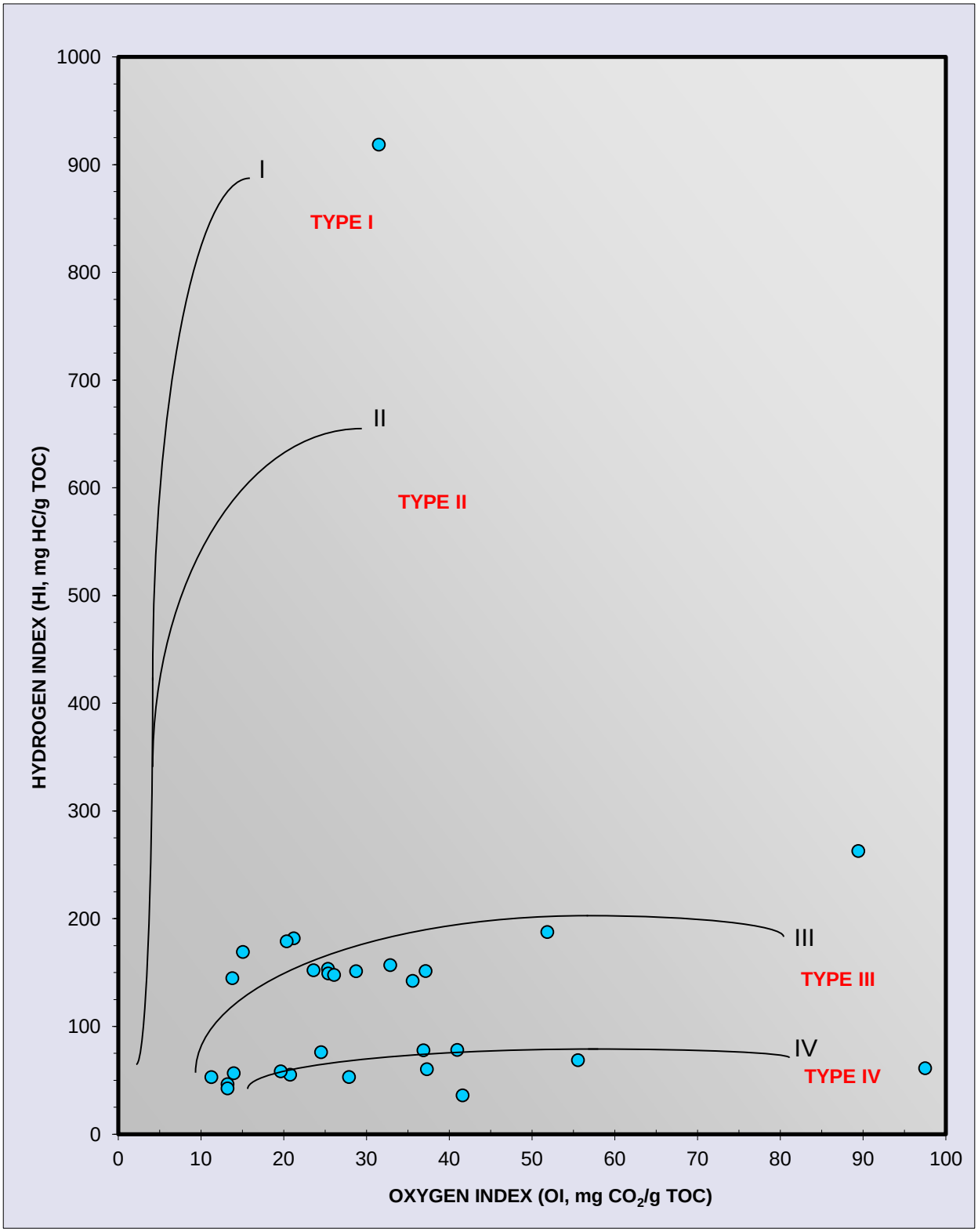
KEROGEN TYPE - Multiple Well Study

Company: CMR Energy, LP **Project #: CO-53295**



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Fax: 720-898-8222

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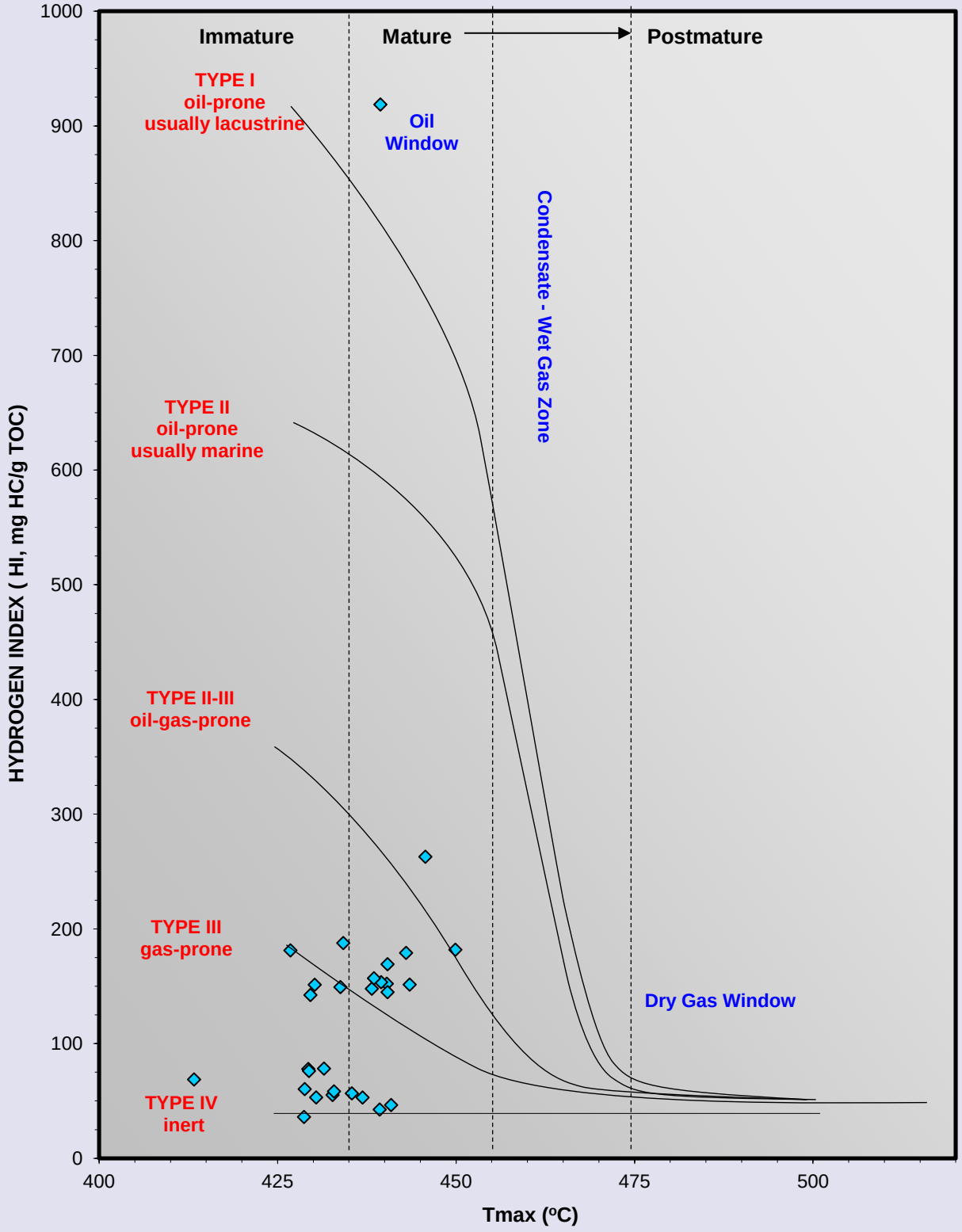
KEROGEN TYPE AND MATURITY (Tmax) - Multiple Well Study

Company: CMR Energy, LP **Project #:** CO-53295



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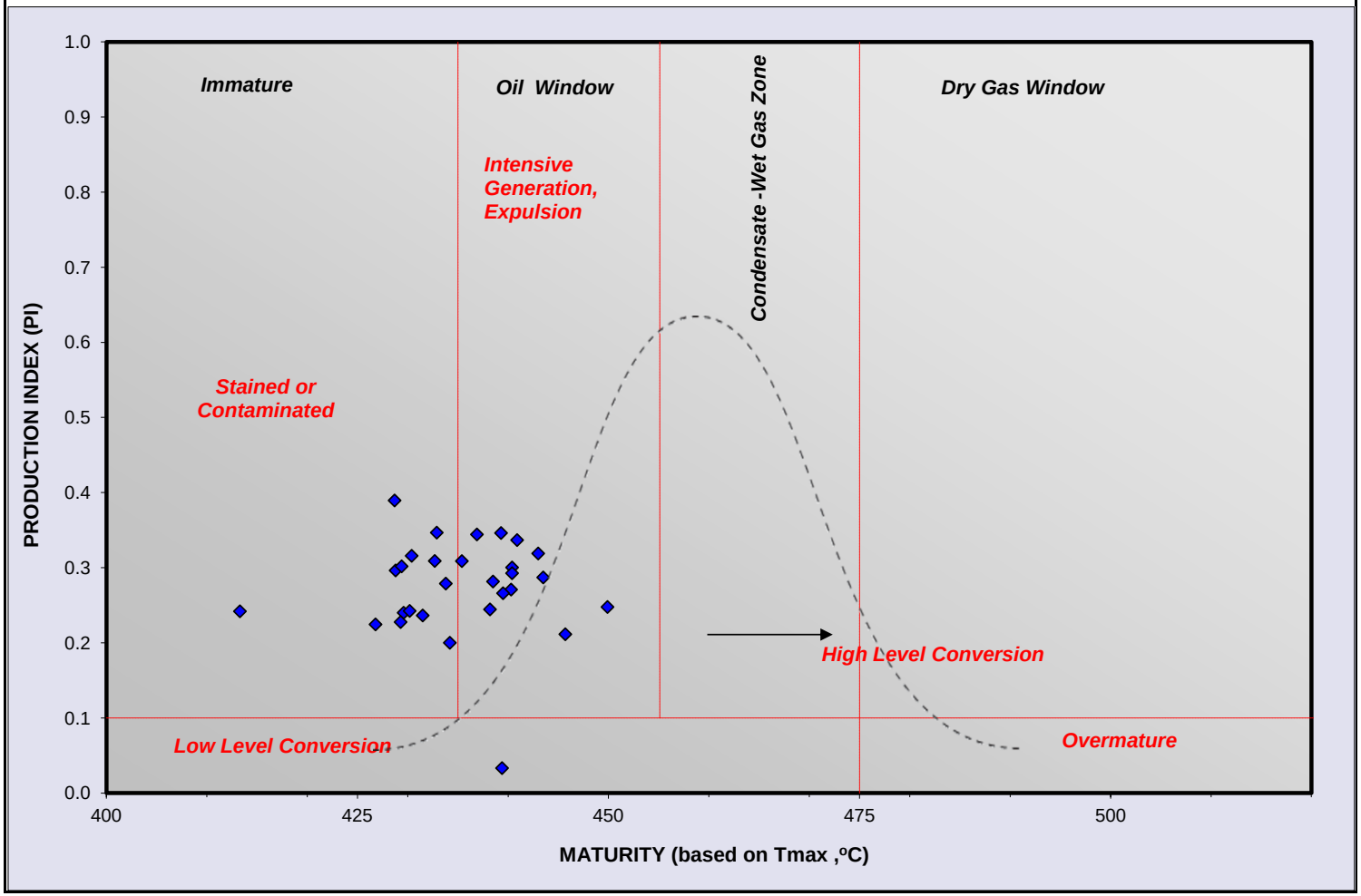
Fax: 720-898-8222

Weatherford LABORATORIES

KEROGEN CONVERSION AND MATURITY (Tmax) - Multiple Well Study

Company: CMR Energy, LP **Project #: CO-53295**



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Weatherford LABORATORIES

S# 2138 S# 4727 S# 2580 S# 3876
S# 4157 S# 4117 S# 2335 S# 4454
S# 4216 S# 3919 S# 2699 S# 4751
S# 2366 S# 4068 S# 3968 S# 3974
S# 4161 S# 2329 S# 2027 S# 2520
S# 2287 S# 1910 S# 3957

TOTAL ORGANIC CARBON, PROGRAMMED PYROLYSIS DATA

CMR ENERGY, LP

Well Name : Multiple Well Study
Operator : J. Kurek
SRA ID : Fletch Junior
State : OH
County : Undisclosed
Weatherford Labs Project CO-53295

Weatherford Labs ID	Well Name	Client ID	Median Depth (feet)	Formation	Sample Type	Sample Prep	*	TOC	S1	S2	S3	Tmax (°C)	**	Meas. % Ro	HI	OI	S2/S3	S1/TOC *100	PI	Notes Checks	Notes Pyrogram	Lab ID
1-1	French & Papp 1	007-20206	5710.0	Undisclosed	Cuttings	NOPR		1.05	0.64	1.59	0.39	444			151	37	4	61	0.29			53295-1-1.RAW
1-2	French & Papp 1	007-20207	5850.0	Undisclosed	Cuttings	NOPR		1.61	0.91	2.45	0.38	440			152	24	6	57	0.27			53295-1-2.RAW
1-3	French & Papp 1	007-20208	5890.0	Undisclosed	Cuttings	NOPR		1.42	0.79	2.18	0.36	440			154	25	6	56	0.27			53295-1-3.RAW
1-4	French & Papp 1	007-20209	5935.0	Undisclosed	Cuttings	NOPR		1.30	0.75	1.94	0.33	434			149	25	6	58	0.28			53295-1-4.RAW
1-5	French & Papp 1	007-20210	6005.0	Undisclosed	Cuttings	NOPR		1.38	0.66	2.04	0.36	438			148	26	6	48	0.24			53295-1-5.RAW
1-6	French & Papp 1	007-20211	6035.0	Undisclosed	Cuttings	NOPR		0.41	0.19	0.76	0.21	434			188	52	4	47	0.20			53295-1-6.RAW
1-7	French & Papp 1	007-20212	6085.0	Undisclosed	Cuttings	NOPR		0.37	0.26	0.97	0.33	446			263	89	3	70	0.21			53295-1-7.RAW
2-1	Wantz R Unit 1-2161	133-24027	5655.0	Undisclosed	Cuttings	NOPR		0.53	0.24	0.76	0.19	430			142	36	4	45	0.24			53295-2-1.RAW
2-2	Wantz R Unit 1-2162	133-24028	5755.0	Undisclosed	Cuttings	NOPR		0.66	0.32	1.00	0.19	430			151	29	5	48	0.24			53295-2-2.RAW
2-3	Wantz R Unit 1-2163	133-24029	5785.0	Undisclosed	Cuttings	NOPR		1.46	1.06	2.47	0.22	440			169	15	11	73	0.30			53295-2-3.RAW
2-4	Wantz R Unit 1-2164	133-24030	5815.0	Undisclosed	Cuttings	NOPR		1.32	0.79	2.40	0.28	450			182	21	9	60	0.25			53295-2-4.RAW
2-5	Wantz R Unit 1-2165	133-24031	5895.0	Undisclosed	Cuttings	NOPR		0.94	0.58	1.48	0.31	439			157	33	5	62	0.28			53295-2-5.RAW
2-6	Wantz R Unit 1-2166	133-24032	5915.0	Undisclosed	Cuttings	NOPR		1.67	1.40	2.99	0.34	443			179	20	9	84	0.32			53295-2-6.RAW
3-1	Barley 1-2397	151-25086	6845.0	Undisclosed	Cuttings	NOPR		0.63	0.33	1.14	0.64	427			181	102	2	52	0.22			53295-3-1.RAW
3-2	Barley 1-2397	151-25087	6855.0	Undisclosed	Cuttings	NOPR		2.32	1.39	3.36	0.32	440			145	14	11	60	0.29			53295-3-2D.RAW
4-1	Murray 3	029-20648	7395.0	Undisclosed	Cuttings	NOPR		0.38	0.12	3.50	0.12	439			919	31	29	31	0.03			53295-4-1.RAW
4-2	Murray 3	029-20648	7505.0	Undisclosed	Cuttings	NOPR		0.54	0.13	0.42	0.22	432	**		78	41	2	24	0.24			53295-4-2.RAW
4-3	Murray 3	029-20648	7555.0	Undisclosed	Cuttings	NOPR		1.51	0.42	0.80	0.17	437			53	11	5	28	0.34			53295-4-3.RAW
5-1	Bryan Unit 1	019-21850	7655.0	Undisclosed	Cuttings	NOPR		1.47	0.36	0.78	0.41	430			53	28	2	24	0.32			53295-5-1.RAW
5-2	Bryan Unit 1	019-21850	7685.0	Undisclosed	Cuttings	NOPR		1.26	0.32	0.76	0.47	429			60	37	2	25	0.30			53295-5-2.RAW
5-3	Bryan Unit 1	019-21850	7745.0	Undisclosed	Cuttings	NOPR		1.54	0.38	0.85	0.32	433			55	21	3	25	0.31			53295-5-3.RAW
5-4	Bryan Unit 1	019-21850	7805.0	Undisclosed	Cuttings	NOPR		1.68	0.52	0.98	0.33	433			58	20	3	31	0.35			53295-5-4.RAW
5-5	Bryan Unit 1	019-21850	7835.0	Undisclosed	Cuttings	NOPR		1.22	0.28	0.95	0.45	429			78	37	2	23	0.23			53295-5-5.RAW
5-6	Bryan Unit 1	019-21850	7875.0	Undisclosed	Cuttings	NOPR		1.55	0.51	1.18	0.38	429			76	25	3	33	0.30			53295-5-6.RAW
6-1	Roy Birney 1	067-20103	8375.0	Undisclosed	Cuttings	NOPR		0.44	0.13	0.27	0.43	337	**		61	98	1	29	0.33			53295-6-1.RAW
6-2	Roy Birney 1	067-20103	8465.0	Undisclosed	Cuttings	NOPR		0.68	0.15	0.47	0.38	413	**		69	56	1	22	0.24			53295-6-2.RAW
6-3	Roy Birney 1	067-20103	8495.0	Undisclosed	Cuttings	NOPR		2.80	0.66	1.30	0.37	441			46	13	4	24	0.34			53295-6-3.RAW
6-4	Roy Birney 1	067-20103	8515.0	Undisclosed	Cuttings	NOPR		2.80	0.63	1.19	0.37	439			43	13	3	23	0.35			53295-6-4.RAW
6-5	Roy Birney 1	067-20103	8545.0	Undisclosed	Cuttings	NOPR		2.65	0.67	1.50	0.37	435			57	14	4	25	0.31			53295-6-5.RAW
6-6	Roy Birney 1	067-20103	8575.0	Undisclosed	Cuttings	NOPR		1.61	0.37	0.58	0.67	429			36	42	1	23	0.39			53295-6-6.RAW

Notes:

"-1" – not measured or invalid value for T_{max}
TOC - Total Organic Carbon, wt. %
S1 - volatile hydrocarbon (HC) content, mg HC/ g rock
S2 - remaining HC generative potential, mg HC/ g rock
S3 - carbon dioxide content, mg CO_2 / g rock

* - comments regarding contamination
** - low S2, Tmax is unreliable
Meas. %Ro - measured vitrinite reflectance
HI - Hydrogen index = S2 x 100 / TOC, mg HC/ g TOC
OI - Oxygen Index = S3 x 100 / TOC, mg CO_2/ g TOC
PI - Production Index = S1 / (S1+S2)

Pyrogram:
f - flat S2 peak
n - normal
ltS2sh - low temperature S2 shoulder
ltS2p - low temperature S2 peak
htS2p - high temperature S2 peak

RE - Programmed pyrolysis on Rock-Eval instrument
EXT - Extracted Rock
NOPR - Normal Preparation

Overton Energy - George Alcorn, 2012

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LABORATORIES

TOTAL ORGANIC CARBON, PROGRAMMED PYROLYSIS DATA

POINT PLEASANT ENERGY, LLC

Well Name : Buckeye Project
Operator : R. Schlauder
SRA ID : Fletch Junior
State : OH
County : Undisclosed
Weatherford Labs Project CO-53295

Weatherford Labs ID	Client ID	Median Depth (feet)	Formation	Sample Type	Sample Prep	*	TOC	S1	S2	S3	Tmax (°C)	**	Meas. % Ro	HI	OI	S2/S3	S1/TOC *100	PI	Notes Checks	Notes Pyrogram	Lab ID
7-1	Eaton Unit 2-3089	5155.0	Undisclosed	Cuttings	NOPR		1.61	0.91	1.97	0.49	441			122	30	4	57	0.32			53295-7-1G.RAW
7-2	Eaton Unit 2-3090	5220.0	Undisclosed	Cuttings	NOPR		1.43	0.74	1.70	0.51	445			119	36	3	52	0.30			53295-7-2G.RAW
7-3	Eaton Unit 2-3091	5250.0	Undisclosed	Cuttings	NOPR		1.21	0.70	1.35	0.64	440			112	53	2	58	0.34			53295-7-3G.RAW
7-4	Eaton Unit 2-3092	5290.0	Undisclosed	Cuttings	NOPR		1.70	0.99	2.06	0.47	451			121	28	4	58	0.32			53295-7-4G.RAW
7-5	Eaton Unit 2-3093	5310.0	Undisclosed	Cuttings	NOPR		1.49	0.93	2.01	0.36	450			135	24	6	62	0.32			53295-7-5G.RAW
8-1	Maitino Farms Comm #1 #3788-001	5495.0	Undisclosed	Cuttings	NOPR		1.32	0.59	1.94	0.33	442			147	25	6	45	0.23			53295-8-1G.RAW
8-2	Maitino Farms Comm #1 #3788-001	5565.0	Undisclosed	Cuttings	NOPR		2.03	1.86	3.40	0.32	439			167	16	11	92	0.35			53295-8-2G.RAW
8-3	Maitino Farms Comm #1 #3788-001	5655.0	Undisclosed	Cuttings	NOPR		2.17	1.65	3.06	0.31	447			141	14	10	76	0.35			53295-8-3G.RAW
8-4	Maitino Farms Comm #1 #3788-001	5705.0	Undisclosed	Cuttings	NOPR		2.35	2.44	3.98	0.30	443			169	13	13	104	0.38			53295-8-4G.RAW
8-5	Maitino Farms Comm #1 #3788-001	5735.0	Undisclosed	Cuttings	NOPR		2.44	2.76	4.27	0.28	441			175	11	15	113	0.39			53295-8-5G.RAW
8-6	Maitino Farms Comm #1 #3788-001	5775.0	Undisclosed	Cuttings	NOPR		2.31	2.93	4.56	0.29	446			197	13	16	127	0.39			53295-8-6G.RAW
9-1	Russell-O Reilly #1	5815.0	Undisclosed	Cuttings	NOPR		2.20	1.73	2.86	0.48	444			130	22	6	79	0.38			53295-9-1G.RAW
9-2	Russell-O Reilly #1	5825.0	Undisclosed	Cuttings	NOPR		1.97	1.33	2.67	0.40	447			136	20	7	68	0.33			53295-9-2G.RAW
9-3	Russell-O Reilly #1	5835.0	Undisclosed	Cuttings	NOPR		1.65	1.12	2.38	0.32	428			144	19	7	68	0.32			53295-9-3G.RAW
9-4	Russell-O Reilly #1	5845.0	Undisclosed	Cuttings	NOPR		1.38	0.96	1.67	0.27	442			121	20	6	70	0.37			53295-9-4G.RAW
9-5	Russell-O Reilly #1	5855.0	Undisclosed	Cuttings	NOPR		2.28	1.90	3.23	0.42	436			142	18	8	83	0.37			53295-9-5G.RAW
10-1	W.R. Troug #2-1564	6015.0	Undisclosed	Cuttings	NOPR		1.79	1.57	3.10	0.50	438			173	28	6	88	0.34			53295-10-1G.RAW
10-2	W.R. Troug #2-1564	6105.0	Undisclosed	Cuttings	NOPR		2.03	1.84	3.31	0.52	433			163	26	6	91	0.36			53295-10-2G.RAW
10-3	W.R. Troug #2-1564	6145.0	Undisclosed	Cuttings	NOPR		2.26	2.16	3.86	0.50	431			171	22	8	96	0.36			53295-10-3G.RAW
10-4	W.R. Troug #2-1564	6155.0	Undisclosed	Cuttings	NOPR		2.67	2.78	4.58	0.50	434			172	19	9	104	0.38			53295-10-4G.RAW
10-5	W.R. Troug #2-1564	6195.0	Undisclosed	Cuttings	NOPR		2.65	2.63	4.22	0.50	439			159	19	8	99	0.38			53295-10-5G.RAW
10-6	W.R. Troug #2-1564	6205.0	Undisclosed	Cuttings	NOPR		2.51	2.69	4.24	0.49	439			169	20	9	107	0.39			53295-10-6G.RAW
11-1	W. Brenner #1	6510.0	Undisclosed	Cuttings	NOPR		1.91	1.20	2.31	0.39	443			121	20	6	63	0.34			53295-11-1G.RAW
11-2	W. Brenner #1	6615.0	Undisclosed	Cuttings	NOPR		1.16	0.84	1.33	0.41	440			115	35	3	72	0.39			53295-11-2G.RAW
11-3	W. Brenner #1	6645.0	Undisclosed	Cuttings	NOPR		2.34	1.81	4.55	0.46	413			194	20	10	77	0.28			53295-11-3G.RAW
11-4	W. Brenner #1	6675.0	Undisclosed	Cuttings	NOPR		2.72	2.44	3.73	0.49	438			137	18	8	90	0.40			53295-11-4G.RAW
11-5	W. Brenner #1	6705.0	Undisclosed	Cuttings	NOPR		2.54	2.24	3.63	0.48	438			143	19	8	88	0.38			53295-11-5G.RAW
11-6	W. Brenner #1	6735.0	Undisclosed	Cuttings	NOPR		2.75	2.18	3.51	0.35	450			128	13	10	79	0.38			53295-11-6G.RAW
11-7	W. Brenner #1	6755.0	Undisclosed	Cuttings	NOPR		3.80	2.76	4.86	0.44	453			128	12	11	73	0.36			53295-11-7G.RAW
12-1	B. Westfell Comm. 1-?	6165.0	Undisclosed	Cuttings	NOPR		2.65	2.99	4.86	0.68	424			183	26	7	113	0.38			53295-12-1G.RAW
12-2	B. Westfell Comm. 1-?	6225.0	Undisclosed	Cuttings	NOPR		1.83	2.10	3.36	0.56	425			184	31	6	115	0.38			53295-12-2G.RAW
12-3	B. Westfell Comm. 1-?	6285.0	Undisclosed	Cuttings	NOPR		1.84	2.05	3.34	0.78	423			182	42	4	111	0.38			53295-12-3G.RAW
12-4	B. Westfell Comm. 1-?	6315.0	Undisclosed	Cuttings	NOPR		3.11	3.54	5.40	0.81	429			174	26	7	114	0.40			53295-12-4G.RAW
12-5	B. Westfell Comm. 1-?	6345.0	Undisclosed	Cuttings	NOPR		2.84	3.33	5.26	0.80	427			185	28	7	117	0.39			53295-12-5G.RAW
12-6	B. Westfell Comm. 1-?	6375.0	Undisclosed	Cuttings	NOPR		3.01	3.61	5.21	0.78	432			173	26	7	120	0.41			53295-12-6G.RAW
13-1	Hoffman Unit #1	6905.0	Undisclosed	Cuttings	NOPR		0.58	0.22	0.42	0.23	421	**		72	40	2	38	0.34			53295-13-1G.RAW
13-2	Hoffman Unit #1	6995.0	Undisclosed	Cuttings	NOPR		1.09	0.49	1.08	0.22	439			99	20	5	45	0.31			53295-13-2G.RAW
13-3	Hoffman Unit #1	7055.0	Undisclosed	Cuttings	NOPR		0.98	0.35	0.67	0.57	451			68	58	1	36	0.34			53295-13-3G.RAW
13-4	Hoffman Unit #1	7115.0	Undisclosed	Cuttings	NOPR		1.75	1.20	1.90	0.29	448			109	17	7	69	0.39			53295-13-4G.RAW
13-5	Hoffman Unit #1	7155.0	Undisclosed	Cuttings	NOPR		2.75	1.67	2.70	0.52	456			98	19	5	61	0.38			53295-13-5G.RAW

Weatherford®
LABORATORIES

TOTAL ORGANIC CARBON, PROGRAMMED PYROLYSIS DATA

POINT PLEASANT ENERGY, LLC

Well Name : Buckeye Project
Operator : R. Schlauder
SRA ID : Fletch Junior
State : OH
County : Undisclosed
Weatherford Labs Project CO-53295

Weatherford Labs ID	Client ID	Median Depth (feet)	Formation	Sample Type	Sample Prep	*	TOC	S1	S2	S3	Tmax (°C)	**	Meas. % Ro	HI	OI	S2/S3	S1/TOC *100	PI	Notes Checks	Notes Pyrogram	Lab ID
13-6	Hoffman Unit #1	7195.0	Undisclosed	Cuttings	NOPR		2.72	2.02	2.94	0.38	448			108	14	8	74	0.41			53295-13-6G.RAW
14-1	Mrugala, Mike & Mary #1	7505.0	Undisclosed	Cuttings	NOPR		1.96	0.54	0.75	0.23	459			38	12	3	28	0.42			53295-14-1G.RAW
14-2	Mrugala, Mike & Mary #1	7545.0	Undisclosed	Cuttings	NOPR		1.72	0.50	0.67	0.25	457			39	15	3	29	0.43			53295-14-2G.RAW
14-3	Mrugala, Mike & Mary #1	7605.0	Undisclosed	Cuttings	NOPR		1.59	0.46	0.65	0.24	459			41	15	3	29	0.41			53295-14-3G.RAW
14-4	Mrugala, Mike & Mary #1	7655.0	Undisclosed	Cuttings	NOPR		2.72	0.99	1.20	0.33	479			44	12	4	36	0.45			53295-14-4G.RAW
14-5	Mrugala, Mike & Mary #1	7705.0	Undisclosed	Cuttings	NOPR		2.53	0.95	1.29	0.36	472			51	14	4	38	0.42			53295-14-5G.RAW
14-6	Mrugala, Mike & Mary #1	7735.0	Undisclosed	Cuttings	NOPR		2.68	1.08	1.29	0.40	472			48	15	3	40	0.46			53295-14-6G.RAW
15-1	Clarence Williams #1	8255.0	Undisclosed	Cuttings	NOPR		2.05	0.48	0.71	0.57	339			35	28	1	23	0.40			53295-15-1G.RAW
15-2	Clarence Williams #1	8321.0	Undisclosed	Cuttings	NOPR		2.08	0.74	1.72	0.64	408			83	31	3	36	0.30			53295-15-2G.RAW
15-3	Clarence Williams #1	8350.5	Undisclosed	Cuttings	NOPR		1.71	0.44	0.74	0.33	345			43	19	2	26	0.37			53295-15-3G.RAW
15-4	Clarence Williams #1	8425.5	Undisclosed	Cuttings	NOPR		2.97	1.21	2.21	0.51	448			74	17	4	41	0.35			53295-15-4G.RAW
16-1	E. J. Plott & Co. Inc. #1-3224	5935.0	Undisclosed	Cuttings	NOPR		1.49	0.99	2.54	0.40	446			170	27	6	66	0.28			53295-16-1G.RAW
16-2	E. J. Plott & Co. Inc. #1-3224	5995.0	Undisclosed	Cuttings	NOPR		1.33	1.04	2.75	0.32	448			207	24	9	78	0.27			53295-16-2G.RAW
16-3	E. J. Plott & Co. Inc. #1-3224	6055.0	Undisclosed	Cuttings	NOPR		1.15	1.02	1.74	0.32	450			151	28	5	89	0.37			53295-16-3G.RAW
16-4	E. J. Plott & Co. Inc. #1-3224	6085.0	Undisclosed	Cuttings	NOPR		1.81	2.11	3.62	0.41	448			200	23	9	117	0.37			53295-16-4G.RAW
16-5	E. J. Plott & Co. Inc. #1-3224	6115.0	Undisclosed	Cuttings	NOPR		2.49	3.16	5.19	0.37	449			208	15	14	127	0.38			53295-16-5G.RAW
16-6	E. J. Plott & Co. Inc. #1-3224	6145.0	Undisclosed	Cuttings	NOPR		2.27	2.65	4.67	0.44	450			206	19	11	117	0.36			53295-16-6G.RAW
17-1	Clark, Etal Unit #1	7150.0	Undisclosed	Cuttings	NOPR		1.83	0.82	1.42	0.43	459			78	23	3	45	0.37			53295-17-1G.RAW
17-2	Clark, Etal Unit #1	7210.0	Undisclosed	Cuttings	NOPR		1.38	0.61	0.86	0.41	463			62	30	2	44	0.41			53295-17-2G.RAW
17-3	Clark, Etal Unit #1	7270.0	Undisclosed	Cuttings	NOPR		1.32	0.57	0.90	0.36	465			68	27	3	43	0.39			53295-17-3G.RAW
17-4	Clark, Etal Unit #1	7310.0	Undisclosed	Cuttings	NOPR		2.37	1.36	1.97	0.44	471			83	19	4	57	0.41			53295-17-4G.RAW
17-5	Clark, Etal Unit #1	7330.0	Undisclosed	Cuttings	NOPR		3.14	1.97	2.72	0.42	472			87	13	6	63	0.42			53295-17-5G.RAW
17-6	Clark, Etal Unit #1	7370.0	Undisclosed	Cuttings	NOPR		2.40	1.45	2.09	0.45	470			87	19	5	60	0.41			53295-17-6G.RAW
18-1	Ervin Keim #2	6075.0	Undisclosed	Cuttings	NOPR		0.35	0.13	0.39	0.40	441	**		112	115	1	37	0.25			53295-18-1G.RAW
18-2	Ervin Keim #2	6135.0	Undisclosed	Cuttings	NOPR		0.66	0.25	0.82	0.35	439			125	53	2	38	0.23			53295-18-2G.RAW
18-3	Ervin Keim #2	6195.0	Undisclosed	Cuttings	NOPR		1.22	0.60	2.00	0.37	448			164	30	5	49	0.23			53295-18-3G.RAW
18-4	Ervin Keim #2	6225.0	Undisclosed	Cuttings	NOPR		1.26	0.61	2.01	0.41	446			160	33	5	48	0.23			53295-18-4G.RAW
18-5	Ervin Keim #2	6285.0	Undisclosed	Cuttings	NOPR		1.15	0.52	1.86	0.39	449			162	34	5	45	0.22			53295-18-5G.RAW
18-6	Ervin Keim #2	6315.0	Undisclosed	Cuttings	NOPR		2.03	1.68	4.33	0.37	446			213	18	12	83	0.28			53295-18-6G.RAW
19-1	Clyde Van Horn #1	7515.0	Undisclosed	Cuttings	NOPR		0.44	0.13	0.31	0.66	420	**		71	151	0	30	0.30			53295-19-1G.RAW
19-2	Clyde Van Horn #1	7635.0	Undisclosed	Cuttings	NOPR		1.39	0.59	1.05	0.65	445			76	47	2	42	0.36			53295-19-2G.RAW
19-3	Clyde Van Horn #1	7665.0	Undisclosed	Cuttings	NOPR		1.93	0.88	1.56	0.71	449			81	37	2	46	0.36			53295-19-3G.RAW
19-4	Clyde Van Horn #1	7695.0	Undisclosed	Cuttings	NOPR		2.57	1.06	1.93	0.61	452			75	24	3	41	0.35			53295-19-4G.RAW
19-5	Clyde Van Horn #1	7705.0	Undisclosed	Cuttings	NOPR		2.82	1.18	2.09	0.64	453			74	23	3	42	0.36			53295-19-5G.RAW
19-6	Clyde Van Horn #1	7725.0	Undisclosed	Cuttings	NOPR		2.52	1.36	2.15	0.57	470			85	23	4	54	0.39			53295-19-6G.RAW
20-1	Badertscher Unit	6175.0	Undisclosed	Cuttings	NOPR		0.68	0.35	0.96	0.54	438			142	80	2	52	0.27			53295-20-1G.RAW
20-2	Badertscher Unit	6185.0	Undisclosed	Cuttings	NOPR		1.18	0.58	1.91	0.60	444			162	51	3	49	0.23			53295-20-2G.RAW
20-3	Badertscher Unit	6205.0	Undisclosed	Cuttings	NOPR		0.85	0.39	1.21	0.63	445			143	74	2	46	0.24			53295-20-3G.RAW
20-4	Badertscher Unit	6235.0	Undisclosed	Cuttings	NOPR		1.87	1.19	3.11	0.53	442			166	28	6	64	0.28			53295-20-4G.RAW
20-5	Badertscher Unit	6245.0	Undisclosed	Cuttings	NOPR		2.32	1.25	3.43	0.57	450			148	25	6	54	0.27			53295-20-5G.RAW

Weatherford®
LABORATORIES

TOTAL ORGANIC CARBON, PROGRAMMED PYROLYSIS DATA

POINT PLEASANT ENERGY, LLC

Well Name : Buckeye Project
Operator : R. Schlauder
SRA ID : Fletch Junior
State : OH
County : Undisclosed
Weatherford Labs Project CO-53295

Weatherford Labs ID	Client ID	Median Depth (feet)	Formation	Sample Type	Sample Prep	*	TOC	S1	S2	S3	Tmax (°C)	**	Meas. % Ro	HI	OI	S2/S3	S1/TOC *100	PI	Notes Checks	Notes Pyrogram	Lab ID
21-1	Stoneking Comm #1	6875.0	Undisclosed	Cuttings	NOPR		0.45	0.10	0.30	0.51	407	**		66	113	1	22	0.25			53295-21-1G.RA
21-2	Stoneking Comm #1	6905.0	Undisclosed	Cuttings	NOPR		0.36	0.08	0.27	0.38	413	**		74	105	1	22	0.23			53295-21-2G.RA
21-3	Stoneking Comm #1	6925.0	Undisclosed	Cuttings	NOPR		0.41	0.08	0.27	0.37	452	**		66	91	1	20	0.23			53295-21-3G.RA
21-4	Stoneking Comm #1	6975.0	Undisclosed	Cuttings	NOPR		0.36	0.09	0.28	0.35	412	**		77	96	1	25	0.24			53295-21-4G.RA
21-5	Stoneking Comm #1	7025.0	Undisclosed	Cuttings	NOPR		0.82	0.24	0.75	0.54	430			92	66	1	29	0.24			53295-21-5G.RA
21-6	Stoneking Comm #1	7055.0	Undisclosed	Cuttings	NOPR		1.68	0.61	1.52	0.55	452			90	33	3	36	0.29			53295-21-6G.RA
22-1	Turner William/Lvenham (Tate) #1A	6365.0	Undisclosed	Cuttings	NOPR		0.24	0.06	0.21	0.33	443	**		89	140	1	26	0.22			53295-22-1G.RA
22-2	Turner William/Lvenham (Tate) #1A	6405.0	Undisclosed	Cuttings	NOPR		0.20	0.05	0.19	0.34	456	**		95	169	1	25	0.21			53295-22-2G.RA
22-3	Turner William/Lvenham (Tate) #1A	6455.0	Undisclosed	Cuttings	NOPR		0.18	0.05	0.17	0.33	334	**		94	182	1	28	0.23			53295-22-3G.RA
22-4	Turner William/Lvenham (Tate) #1A	6465.0	Undisclosed	Cuttings	NOPR		0.17	0.04	0.14	0.28	346	**		83	166	1	24	0.22			53295-22-4G.RA
22-5	Turner William/Lvenham (Tate) #1A	6515.0	Undisclosed	Cuttings	NOPR		0.67	0.55	1.19	0.48	448			177	72	2	82	0.32			53295-22-5G.RA
22-6	Turner William/Lvenham (Tate) #1A	6535.0	Undisclosed	Cuttings	NOPR		0.44	0.34	0.73	0.58	445			165	131	1	77	0.32			53295-22-6G.RA
23-1	Carl Matheny Unit #2	8355.0	Undisclosed	Cuttings	NOPR		0.20	0.06	0.17	0.48	374	**		83	235	0	29	0.26			53295-23-1G.RA
23-2	Carl Matheny Unit #2	8365.0	Undisclosed	Cuttings	NOPR		0.20	0.05	0.15	0.45	369	**		75	224	0	25	0.25			53295-23-2G.RA
23-3	Carl Matheny Unit #2	8395.0	Undisclosed	Cuttings	NOPR		0.21	0.05	0.14	0.46	359	**		67	221	0	24	0.26			53295-23-3G.RA
23-4	Carl Matheny Unit #2	8455.0	Undisclosed	Cuttings	NOPR		0.17	0.04	0.12	0.34	384	**		72	204	0	24	0.25			53295-23-4G.RA
23-5	Carl Matheny Unit #2	8485.0	Undisclosed	Cuttings	NOPR		0.19	0.02	0.09	0.38	349	**		47	198	0	10	0.18			53295-23-5G.RA
23-6	Carl Matheny Unit #2	8515.0	Undisclosed	Cuttings	NOPR		0.20	0.04	0.11	0.42	341	**		56	213	0	20	0.27			53295-23-6G.RA
23-7	Carl Matheny Unit #2	8535.0	Undisclosed	Cuttings	NOPR		0.18	0.02	0.09	0.54	351	**		51	309	0	11	0.18			53295-23-7G.RA
23-8	Carl Matheny Unit #2	8555.0	Undisclosed	Cuttings	NOPR		0.19	0.03	0.08	0.48	347	**		43	257	0	16	0.27			53295-23-8G.RA
23-9	Carl Matheny Unit #2	8575.0	Undisclosed	Cuttings	NOPR		1.10	0.27	0.31	0.38	328	**		28	35	1	25	0.47			53295-23-9GD.RA

Notes:

"-1" – not measured or invalid value for T_{max}
TOC - Total Organic Carbon, wt. %
S1 - volatile hydrocarbon (HC) content, mg HC/ g rock
S2 - remaining HC generative potential, mg HC/ g rock
S3 - carbon dioxide content, mg CO_2 / g rock

* - comments regarding contamination
** - low S2, Tmax is unreliable
Meas. %Ro - measured vitrinite reflectance
HI - Hydrogen index = S2 x 100 / TOC, mg HC/ g TOC
OI - Oxygen Index = S3 x 100 / TOC, mg CO_2/ g TOC
PI - Production Index = S1 / (S1+S2)

Pyrogram:
f - flat S2 peak
n - normal
ltS2sh - low temperature S2 shoulder
ltS2p - low temperature S2 peak
htS2p - high temperature S2 peak

RE - Programmed pyrolysis on Rock-Eval instrument
EXT - Extracted Rock
NOPR - Normal Preparation

Weatherford
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy, LLC
Well: Buckeye Project
Area:
Sample Type: Cuttings

File No: 53295
Date: 08/14/11
Analyst: R. King

Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS			Brittleness Index
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other	
French & Papp 1													
1-1	5,710	6	5	1	20	6	7	4	4	47	12	41	87.0
1-2	5,850	25	4	1	18	3	4	4	2	39	30	31	91.7
1-3	5,890	26	5	1	19	4	5	4	1	35	32	33	93.5
1-4	5,935	37	6	0	18	3	3	3	0	30	43	27	96.4
1-5	6,005	67	3	1	6	1	1	8	0	13	71	16	92.2
1-6	6,035	74	3	0	11	1	2	5	1	3	77	20	94.8
1-7	6,085	63	3	1	12	1	1	3	0	16	67	17	97.0
Wantz R Unit 1-2161													
2-1	5,655	9	8	1	29	3	6	2	4	38	18	44	91.9
2-2	5,755	6	8	0	25	6	6	3	9	37	14	49	83.6
2-3	5,785	12	5	0	24	3	5	4	3	44	17	39	89.5
2-4	5,815	14	5	1	23	4	6	4	3	40	20	40	90.1
2-5	5,895	12	8	0	27	4	5	3	7	34	20	46	87.2
2-6	5,915	23	8	0	20	3	4	2	3	37	31	32	93.4
Barley 1-2397													
3-1	6,845	10	9	0	23	5	4	2	3	44	19	37	92.5
3-2	6,855	58	2	0	8	2	2	6	0	22	60	18	93.5
Murray 3													
4-1	7,395	11	4	0	26	4	7	2	10	36	15	49	84.0
4-2	7,505	7	5	1	20	5	7	3	16	36	13	51	73.8
4-3	7,555	11	2	1	21	6	7	5	4	43	14	43	86.4
Bryan Unit 1													
5-1	7,655	13	3	1	20	4	6	5	4	44	17	39	86.2

Weatherford
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy, LLC
Well: Buckeye Project
Area:
Sample Type: Cuttings

File No: 53295
Date: 08/14/11
Analyst: R. King

Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS			Brittleness Index
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other	
5-2	7,685	15	3	1	19	5	8	5	4	40	19	41	87.1
5-3	7,745	19	3	0	19	3	5	4	2	45	22	33	90.8
5-4	7,805	35	3	1	18	1	4	3	2	33	39	28	93.8
5-5	7,835	20	2	1	22	6	8	3	3	35	23	42	92.1
5-6	7,875	11	2	0	25	5	8	3	3	43	13	44	91.1
Roy Birney 1													
6-1	8,375	13	4	1	18	4	8	3	4	45	18	37	89.1
6-2	8,465	15	2	0	19	3	5	3	2	51	17	32	91.4
6-3	8,495	38	2	0	17	1	4	2	1	35	40	25	96.2
6-4	8,515	38	2	0	19	4	5	4	2	26	40	34	93.2
6-5	8,545	39	3	1	17	2	5	4	1	28	43	29	94.2
6-6	8,575	41	3	1	14	2	4	4	1	30	45	25	94.0

Weatherford®
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy
Well: Buckeye Project
Area:
Sample Type: Cuttings

File No: 53295
Date: 09/08/11
Analyst: J. Kurek & B. Hankin

Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS		
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other
7-1	5,150	17	5	1	22	2	4	5	1	43	23	34
7-2	5,220	20	11	1	18	2	3	4	1	40	32	28
7-3	5,250	24	10	0	19	3	4	2	1	37	34	29
7-4	5,290	45	4	1	11	3	3	3	0	30	50	20
7-5	5,310	72	5	1	8	1	1	3	0	9	78	13
8-1	5,490	4	3	0	21	2	5	4	2	59	7	34
8-2	5,560	25	4	0	19	4	5	4	1	38	29	33
8-3	5,650	25	5	1	21	3	3	3	1	38	31	31
8-4	5,700	47	5	1	16	1	2	4	0	24	53	23
8-5	5,730	64	4	0	9	1	2	3	1	16	68	16
8-6	5,770	55	1	1	13	1	1	2	0	26	57	17
9-1	5,810	38	5	0	15	4	2	3	1	32	43	25
9-2	5,820	44	4	1	15	2	3	2	1	28	49	23
9-3	5,830	63	2	1	9	2	2	3	0	18	66	16
9-4	5,840	69	2	1	8	2	2	2	3	11	72	17
9-5	5,850	59	3	1	7	1	1	5	0	23	63	14
10-1	6,000	16	4	0	19	4	5	5	1	46	20	34
10-2	6,090	22	5	1	19	4	3	3	1	42	28	30
10-3	6,140	24	5	0	19	2	4	3	1	42	29	29
10-4	6,150	43	1	1	15	3	2	1	1	33	45	22
10-5	6,190	30	45	4	1	14	1	2	2	0	79	21
10-6	6,200	44	1	1	15	3	3	1	1	31	46	23

Weatherford
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy
Well: Buckeye Project
Area:
Sample Type: Cuttings

File No: 53295
Date: 09/08/11
Analyst: J. Kurek & B. Hankin

Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS		
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other
11-1	6,450	17	5	1	20	2	4	4	2	45	23	32
11-2	6,600	24	3	0	20	3	4	3	2	41	27	32
11-3	6,630	23	6	1	17	4	4	2	1	42	30	28
11-4	6,660	45	5	0	14	2	3	4	1	46	50	24
11-5	6,690	46	4	0	14	2	3	2	0	29	50	21
11-6	6,720	59	4	0	8	1	2	2	0	24	63	13
11-7	6,750	53	5	1	9	3	2	5	1	21	59	20
12-1	6,150	11	3	1	19	4	5	7	2	48	15	37
12-2	6,210	18	2	0	20	3	5	4	3	45	20	35
12-3	6,270	24	1	0	18	3	4	4	1	45	25	30
12-4	6,300	36	3	0	16	2	3	2	1	37	39	24
12-5	6,330	37	4	1	17	2	3	4	2	30	42	28
12-6	6,360	53	2	1	10	2	1	3	1	27	56	17
13-1	6,900	9	3	1	22	4	7	3	3	48	13	39
13-2	6,990	16	4	0	20	3	6	5	4	42	20	38
13-3	7,050	16	9	1	20	3	5	3	6	37	26	37
13-4	7,110	38	3	0	18	1	3	1	1	35	41	24
13-5	7,150	37	4	1	15	2	5	4	1	31	42	27
13-6	7,190	56	4	0	10	1	2	1	0	26	60	14
14-1	7,500	12	3	1	20	2	5	7	2	48	16	36
14-2	7,540	16	3	1	19	5	7	4	2	43	20	37

Weatherford
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy
Well: Buckeye Project
Area:
Sample Type: Cuttings

File No: 53295
Date: 09/08/11
Analyst: J. Kurek & B. Hankin

Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS		
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other
14-3	7,600	27	4	0	18	3	4	5	1	38	31	31
14-4	7,650	38	5	0	16	4	4	5	1	27	43	30
14-5	7,700	54	5	1	16	2	2	3	1	16	60	24
14-6	7,730	46	4	1	10	2	3	5	1	28	51	21
15-1	8,250	15	3	1	19	5	6	5	3	43	19	38
15-2	8,304	68	10	2	0	12	1	3	2	0	80	20
15-3	8,335	20	3	1	19	2	5	3	2	45	24	31
15-4	8,408	53	4	1	12	1	3	5	1	20	58	22
15-5	8,441									0	0	0
16-1	5,920	19	3	1	19	3	5	4	0	46	23	31
16-2	5,980	21	5	0	18	2	5	3	1	45	26	29
16-3	6,040	48	4	1	12	1	3	2	1	28	53	19
16-4	6,070	35	3	0	17	3	4	3	1	34	38	28
16-5	6,100	52	4	1	10	1	2	3	1	26	57	17
16-6	6,140	43	4	1	11	1	3	4	1	32	48	20
17-1	7,140	19	3	1	21	4	4	6	1	41	23	36
17-2	7,200	21	4	1	19	4	5	6	2	38	26	36
17-3	7,260	23	4	1	20	5	3	3	2	39	28	33
17-4	7,300	41	3	0	16	4	4	3	2	27	44	29
17-5	7,320	46	3	0	15	3	3	4	1	25	49	26
17-6	7,360	37	4	1	13	1	3	3	1	37	42	21

Weatherford
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy
Well: Buckeye Project
Area:
Sample Type: Cuttings

File No: 53295
Date: 09/08/11
Analyst: J. Kurek & B. Hankin

Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS		
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other
18-1	6,060	11	2	1	21	5	7	4	3	46	14	40
18-2	6,120	17	3	1	17	2	5	4	2	49	21	30
18-3	6,180	18	3	1	18	3	4	5	2	46	22	32
18-4	6,210	26	1	0	19	2	4	3	2	43	27	30
18-5	6,270	22	2	1	18	4	5	3	3	42	25	33
18-6	6,300	45	4	1	11	1	2	4	0	32	50	18
19-1	7,500	13	2	1	18	3	5	4	2	52	16	32
19-2	7,620	12	2	0	16	4	4	1	4	57	14	29
19-3	7,650	39	5	1	14	3	4	2	1	31	45	24
19-4	7,690	43	4	1	13	2	3	6	1	27	48	25
19-5	7,700	36	39	3	1	12	1	2	5	0	78	22
19-6	7,720	24	50	4	1	11	2	3	4	0	78	22
20-1	6,170	16	3	0	18	5	5	3	3	47	19	34
20-2	6,180	29	3	0	16	3	4	3	2	40	32	28
20-3	6,200	41	21	3	1	18	4	6	3	0	65	35
20-4	6,230	34	2	0	11	3	3	4	1	42	36	22
20-5	6,240	31	48	3	0	11	2	2	2	0	82	18
21-1	6,860	20	4	1	17	3	6	3	3	43	25	32
21-2	6,890	16	3	1	19	5	5	2	2	47	20	33
21-3	6,920	19	3	1	18	4	5	3	3	44	23	33
21-4	6,970	17	3	0	19	4	6	3	2	46	20	34
21-5	7,020	24	2	0	17	4	4	4	2	43	26	31

Weatherford
LABORATORIES

WEATHERFORD LABORATORIES
WELLSITE X-RAY DIFFRACTION
(WEIGHT %)

Client: Point Pleasant Energy
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File No: 53295
Date: 09/08/11
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Sample Number	Sample Depth (ft)	CARBONATES			OTHER MINERALS					TOTALS		
		Calcite	Fe-Dol	Siderite	Quartz	K-spar	Plag.	Pyrite	Anhydrite	Clays	Carb.	Other
21-6	7,050	28	3	1	19	3	4	3	3	36	32	32
22-1	6,360	28	3	1	18	4	7	2	2	35	32	33
22-2	6,400	21	1	0	19	4	3	1	2	49	22	29
22-3	6,450	30	3	1	17	3	5	2	2	37	34	29
22-4	6,460	13	4	1	22	4	7	2	2	45	18	37
22-5	6,510	52	1	1	9	1	2	4	1	29	54	17
22-6	6,530	54	3	0	15	2	3	2	0	21	57	22
23-1	8,350	23	1	0	16	4	3	0	2	51	24	25
23-2	8,360	23	4	1	16	3	4	4	2	43	28	29
23-3	8,390	19	3	1	16	3	4	4	3	47	23	30
23-4	8,450	7	3	1	21	5	4	3	3	53	11	36
23-5	8,480	27	4	1	19	3	7	2	2	35	32	33
23-6	8,510	7	1	0	22	7	5	1	2	55	8	37
23-7	8,530	8	3	1	23	5	6	3	3	48	12	40
23-8	8,550	12	4	1	19	5	5	1	2	51	17	32
23-9	8,570	8	3	0	13	3	2	0	4	67	11	22
	AVERAGE											

*Interstratified mixed-layer illite/smectite

Ohio Department of Natural Resources
Division of Geological Survey

H.R. Collins Laboratory & Geological Sample Repository

I, George Alcorn, have been granted permission to remove samples from the Ohio Division of Geological Survey (ODGS) well cuttings sample collection (see enclosed list of samples). I understand that the requested cutting samples are the property of the ODGS and according to the conditions outlined in the ODGS Cuttings-Use Policy any unused samples will be promptly returned to Gregory A. Schumacher, Coordinator of the H.R. Collins Laboratory. All unused samples, analytical results, and a copy of any published or unpublished reports will be forwarded to the ODGS by November 9, 2011.

I also acknowledge that all postage and handling costs associated with the return of samples, analytical results, and your report (s) are my responsibility.

Signature _____ Date 8/9/2011

George Alcorn
4265 San Felipe
Suite 1040
Houston, TX 77027

Witnessed by:

Signature _____ Date 8-9-11

Gregory A. Schumacher
Geologist and H.R. Collins Laboratory Coordinator
3307 South Old State Rd.
Delaware, OH 43015-7635