



Humble Geochemical Services

Division of Humble Instruments & Services, Inc

Ft. Worth Basin Geochemical Database and Report

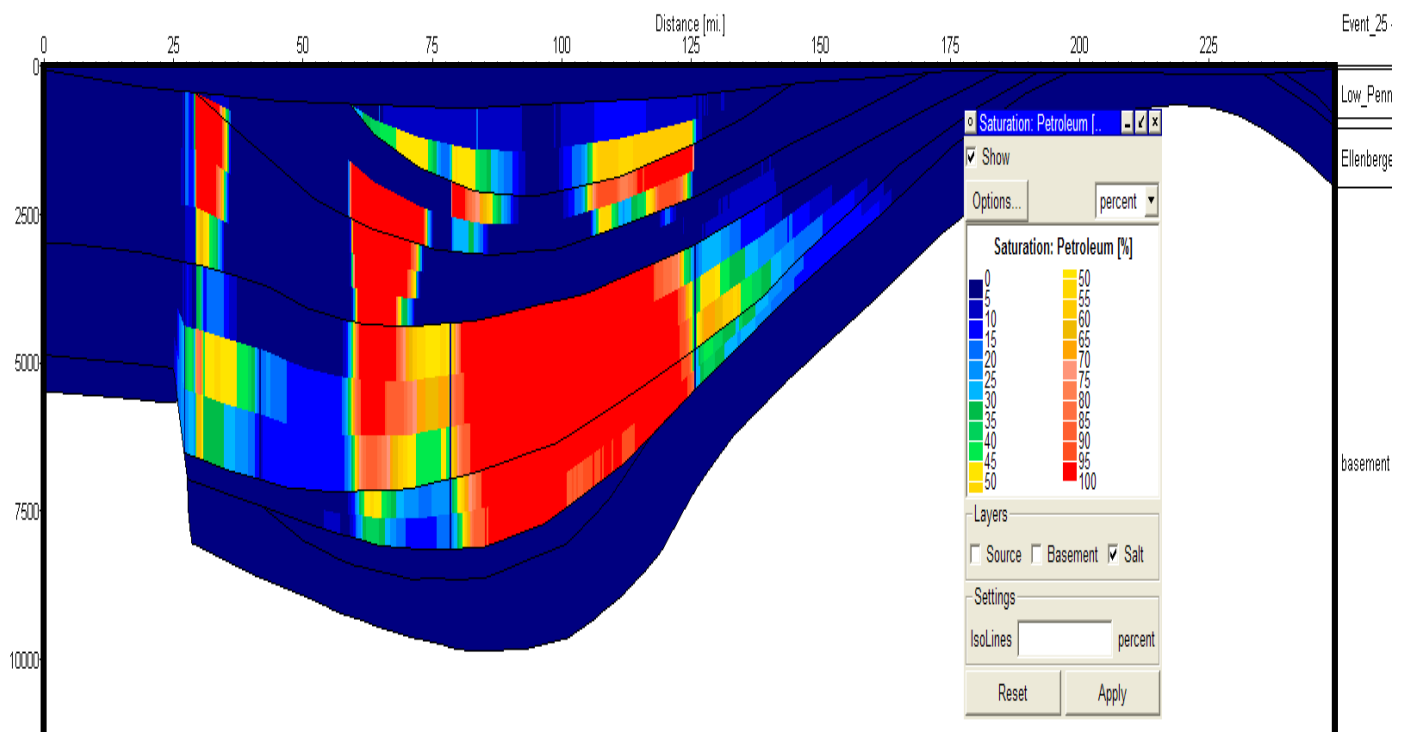
Humble Geochemical Services has a commercially-available database and report on 95 wells in the Ft. Worth Basin, Texas. This database includes over 2,000 sample results including total organic carbon (TOC) and Rock-Eval analysis as well as selected samples for vitrinite reflectance and thermal extract gas chromatographic (TEGC) fingerprints on selected samples, and bulk and compositional kinetic parameters on an immature Barnett Shale. Basin models are available on 4 wells including two in Montague County, one in Johnson County, and one in Eastland County.

Additional wells are added from time-to-time as they become available in the public domain or by release from operators. These data may be purchased separately.

Application of Database to High-Grade Prospects

These data are used to map organic richness (TOC) and thermal maturity to assess the best areas for gas across the basin. The data may be used to ascertain the best areas for dry gas or higher BTU (wet) gas. In-fill well analyses are required to evaluate specific prospect sites. Compositional fingerprints are used to high-grade areas and sweet spots within the Barnett Shale.

Compositional kinetic data is used in basin modeling to predict gas vs. oil yields at various maturity levels. Basin modeling is critical to evaluate the timing of generation and expulsion. These data provide a model for other gas plays.



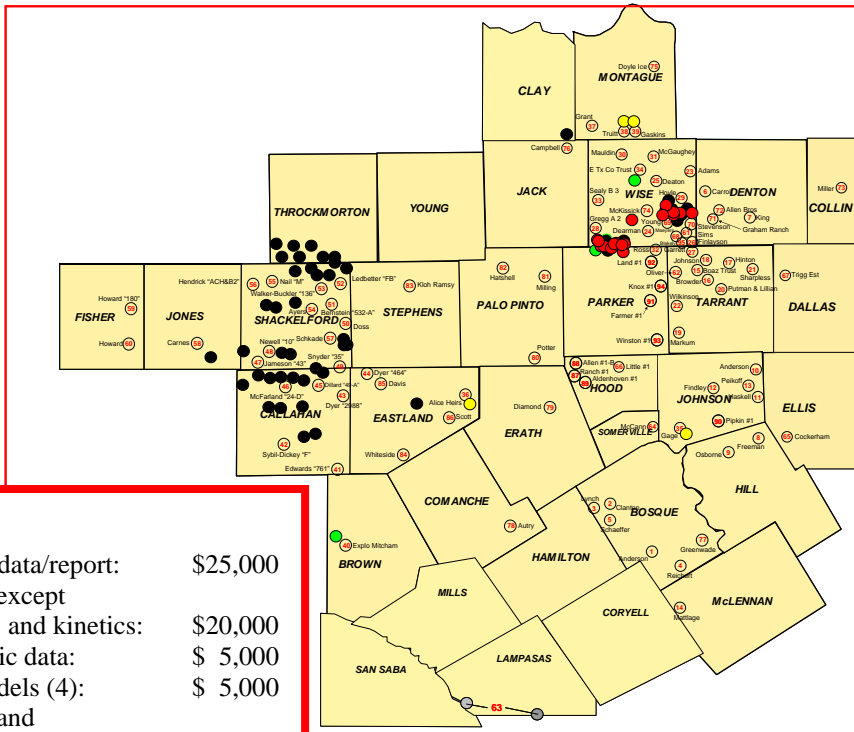
Burial history and gas saturation based on computed generation from custom kinetics and adsorption parameters for the Barnett Shale in Wise County, Texas, Ft. Worth Basin illustrating the gas prospectivity of this well point in the basin.

Ft. Worth Basin Geochemical Database

- Well Sample Locations
(all locations approximate for illustration purposes only)
- Basin Model Well Location
- Outcrop Sample
- Oil or Condensate (non-Barnett) sample
- Barnett Oil or Condensate sample
- Barnett or Boonsville Gas sample

Humble Geochemical
Services Division

Figure 1



Pricing

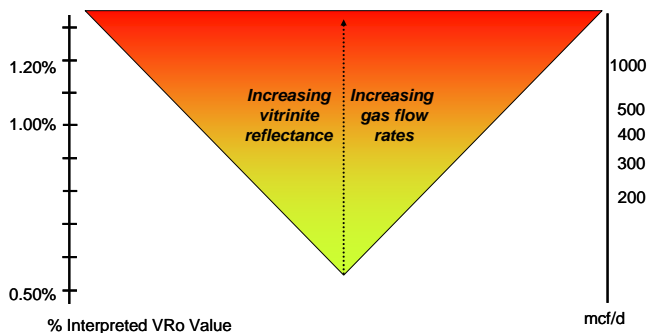
All well data/report:	\$25,000
All data except models and kinetics:	\$20,000
All kinetic data:	\$ 5,000
Well models (4):	\$ 5,000
Oil (77) and gas data (33):	\$ 5,000

Well #	County	Operator	Lease	Well #	County	Operator	Lease
1	Bosque	C. M. Buie	Anderson #1	48	Shackelford	Jones Company	Newell "10" #3
2	Bosque	American Liberty	Clanton #1	49	Shackelford	Jones Company	Snyder "35" #1
3	Bosque	C. H. Plumley	Lynch #1	50	Shackelford	Jones Company	Frank Doss #1
4	Bosque	American Petrofina	Reichert #1	51	Shackelford	Jones Company	Bernstein "532 A" #1
5	Bosque	Sinclair O&G	Schaeffer #1	52	Shackelford	Jones Company	Ledbetter "FB" #1
6	Denton	G. E. Hall	Carrol, Rupert #1	53	Shackelford	Jones Company	Walker-Buckler "136" #2
7	Denton	Trentman	King, Rose M. Est. #1	54	Shackelford	Jones Company	Bill Ayers #1
8	Hill	Humble	Freeman #1	55	Shackelford	Jones Company	Nail "M" #37
9	Hill	Humphrey	Osborne #1	56	Shackelford	Jones Company	Hendrick ACH&B2 #1
10	Johnson	Carter-Gifford	Anderson, Nora #1	57	Shackelford	Jones Company	Ruben Schkade #3
11	Johnson	Humble	Haskell, Dean et al #1	58	Jones	Jones Company	Viola Carnes #1
12	Johnson	Sunray DX	Findley, S. B. #1	59	Fisher	Jones Company	Hattie Howard 180 #2
13	Johnson	Christie Mitchell et al	Piekoff, Nick #1	60	Fisher	Jones Company	Hattie Howard #1
14	McLennan	Falcon Oil	#1 Mattlage	61	Wise	Mitchell Energy Corp.	Sims, T. P. #2
15	Tarrant	Argonaut Energy Co.	Boaz Trust #1	62	Tarrant	Anadarko	Oliver #1
16	Tarrant	Lone Star Production	Browder #1	63	Lampasas		Outcrops
17	Tarrant	A. G. Carter	Hinton, T. R. #1	64	Somervell	Dallas Prod.	#1 McCann
18	Tarrant	Mitchell Energy Corp.	Johnson, Lottie B. #1	65	Ellis	Mobil	Cockerham #1
19	Tarrant	Rowan Drilg. Co.	Markum, B. L. #1	66	Hood	Frank Basin	Little, H. B. #1
20	Tarrant	Bruce Sullivan	Putman & Lillian #1	67	Dallas	Mobil	Trigg Est. #1
21	Tarrant	C. Andrade III	#1 R. B. Sharpless	68	Wise	Mitchell Energy Corp.	Maeyers #1
22	Tarrant	Mitchell Energy Corp.	Wilkenson, H. H. #1	69	Wise	Mitchell Energy Corp.	Young, W. C. Bill #2
23	Wise	Longhorn Producion	Adams #1	70	Wise	Mitchell Energy Corp.	Stevenson, Doris #1
24	Wise	Christie Mitchell	Dearman, H. H. #1	71	Denton	Mitchell Energy Corp.	Graham Ranch #1
25	Wise	George Mitchell	Deaton #1	72	Denton	Carter	Allen #1
26	Wise	Mitchell Energy Corp.	Finlayson #1	73	Collin	Humble	Miller, H. C. #1
27	Wise	George Mitchell	Garrett #1	74	Wise	Cities Service	McKissick #1
28	Wise	Anadarko	Gregg #2	75	Montague	Derrick	#1 Doyle Ice
29	Wise	Longhorn Producion	Hoyle, C. B. #1	76	Jack	Texaco	Campbell #1
30	Wise	Higgs	Mauldin, M. B. #1	77	Bosque	Southland Oil	Greenwade #1
31	Wise	Sunray DX Oil	McGaughy #1	78	Comanche	Humble	Autry #1
32	Wise	George Mitchell	Ross, V. D. #1	79	Erath	Collier	Diamond #1
33	Wise	Oxy USA	Sealy #3	80	Palo Pinto	Lone Star Production	Potter #1
34	Wise	George Mitchell	East Tx. Trust #1	81	Palo Pinto	Grace Petroleum	Milling #1
35	Johnson	Austral Oil	Gage, Roy D. #1	82	Palo Pinto	Mitchell Energy Corp.	Hatshell #1-A
36	Eastland	Jones Company	Alice E. Heirs #1	83	Stephens	Gulf	Kloh Ramsy #6
37	Montague	Oryx Energy Company	#1 Grant	84	Eastland	Dorchestor	Whiteside # 1
38	Montague	Anadarko	#1 Truitt	85	Eastland	Newman	Davis #1
39	Montague	Anadarko	#1 Gaskins	86	Eastland	Steam Energy	Scott #1
40	Brown	Jones Company	Explo Mitcham #3	87	Hood	Toto Gas Co.	W. D. Ranch #1
41	Callahan	Musselman	Edwards "761" #1	88	Hood	Cities Service	John Allen #1-B
42	Callahan	Petropool Inc.	Sybil-Dickey "F" #1	89	Hood	Wes-Mor	Aldenhoven #1
43	Callahan	Jones Company	Dyer "2988" #2	90	Johnson	Conoco	Pipkin #1
44	Eastland	Jones Company	Dyer "464" #1	91	Parker	Northwest	Farmer #1
45	Callahan	Jones Company	Dillard "49-A" #2	92	Parker	Kadane	Land #1
46	Callahan	Genesis Exploration Co.	McFarland 24 #1-D	93	Parker	Moncrief/Kadane & Sons	Winston #1
47	Shackelford	Jones Company	Jameson "43" #1	94	Parker	Moncrief	Knox #1
				95	Wise	Robert Lindsey	Blakely #1

Table 1. Well list corresponding to Figure 1.

Geochemical Evaluation of Barnett Shale for Producibility

Geochemical evaluation of the prospectivity of Barnett Shale or other black shale prospects requires sufficient knowledge of the decomposition of organic matter and oil into gas as well. Organic richness is directly related to gas yields so total organic carbon (TOC) analysis is essential to any assessment. Rock-Eval data provides data allowing assessment of remaining hydrocarbon potential, which is directly related to thermal maturity. Vitrinite reflectance is a key analysis as gas in commercial quantities will only be found at values exceeding about 1.0% VR where oil-to-gas cracking becomes the predominant process for increased gas yields and by decomposition of oil allows for commercial flow rates through such low permeability source/reservoir rocks. Gas composition can be used to assess the maturity of producing areas. TEGC fingerprinting of cuttings or core samples and gas composition allows assessment of the hydrocarbon composition to assess producibility.



Speculative and general correlation of daily flow rates to thermal maturity for the Barnett Shale.

Analytical Program for Drilling Wells

Evaluation of drilling wells for assessment of the producibility, i.e., sweet spots, utilizes a 5-step program:

1. Collection of mud gas samples for determination of lost gas
2. Collection of canned or bottled cuttings for desorbed gas yields in SCF/ton
3. TOC and Rock-Eval analysis for evaluation of organic richness, thermal maturity, and level of conversion
4. Vitrinite reflectance for assessment of the level of thermal maturity (oil, condensate, or dry gas phases)
5. Compositional fingerprinting for assessment of any liquid hydrocarbons that could cause flow or decline issues

Sample requirements are minimal with only a tablespoon of cuttings required. About ¼ of an unadulterated SWC will suffice for all analyses.

Containers and procedures for taking samples at the well site are available from our laboratory.

A typical analytical program with report for a well is about \$6000 to \$10,000, a very low cost compared to drilling and completion costs and excellent return-on-investment for understanding these difficult to characterize and log tight gas shales. Previously drilled wells (age does not affect results!) are analyzed by steps 3-5 only.

Humble now offers proprietary and nonproprietary sample storage as well as proprietary and nonproprietary analytical prices

Contacts:

Dan Jarvie (full report discussion)
Hank Alimi (geochemist)
Tim Ruble (geochemist)
Dick Drozd (geochemist)
Jack Burgess (microscopy)
Charlene Boggs (administration)

Humble Geochemical Services Division

218 Higgins Street Humble, Texas 77338
P.O. Box 789 Humble, Texas 77347

Telephone: 281-540-6050

Fax: 281-540-2864 :Fax

Email: danjarvie@humble-inc.com

Web site: <http://www.humble-inc.com>