



KANSAS GEOLOGICAL SOCIETY

BULLETIN

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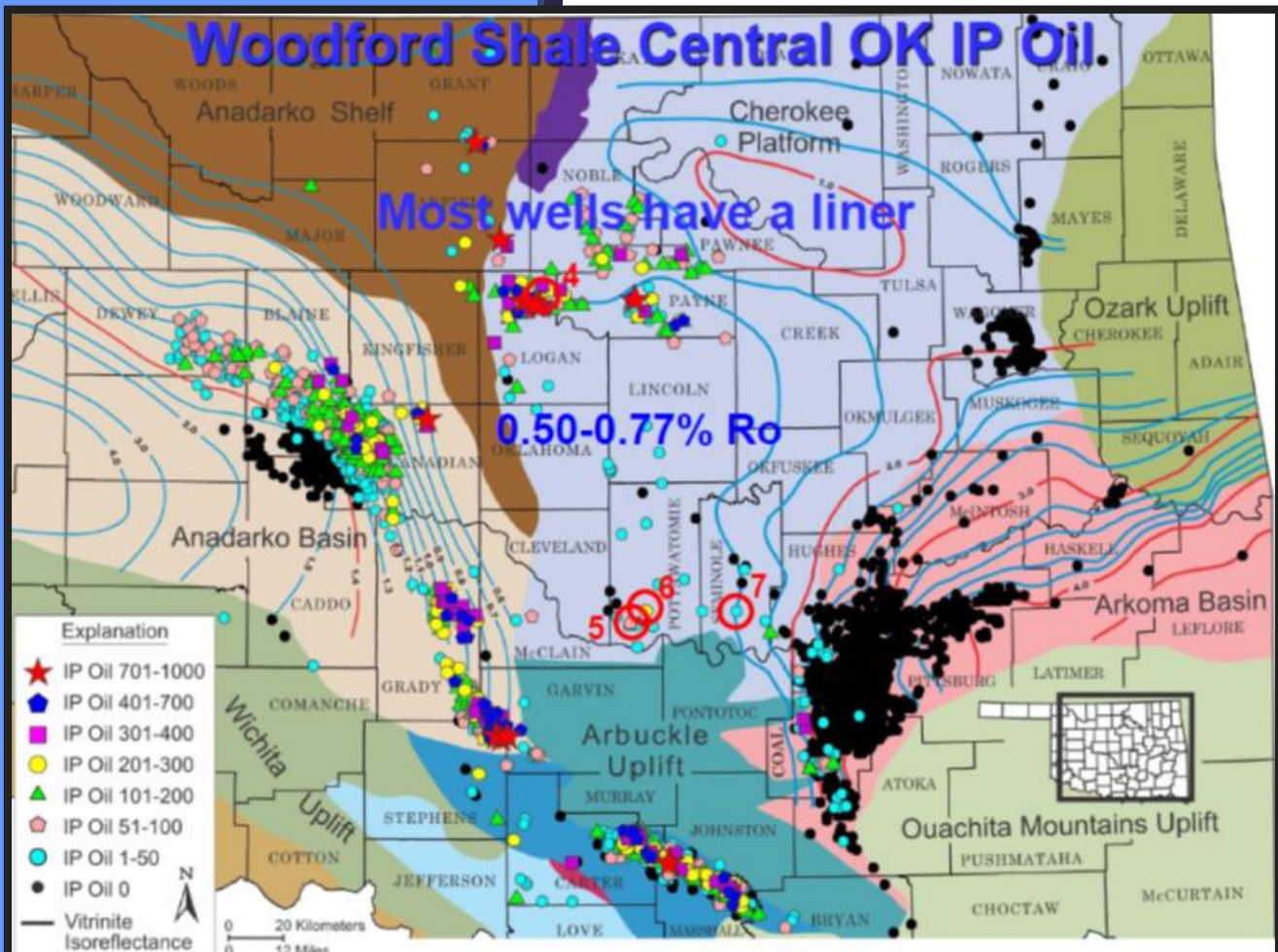
IN THIS ISSUE

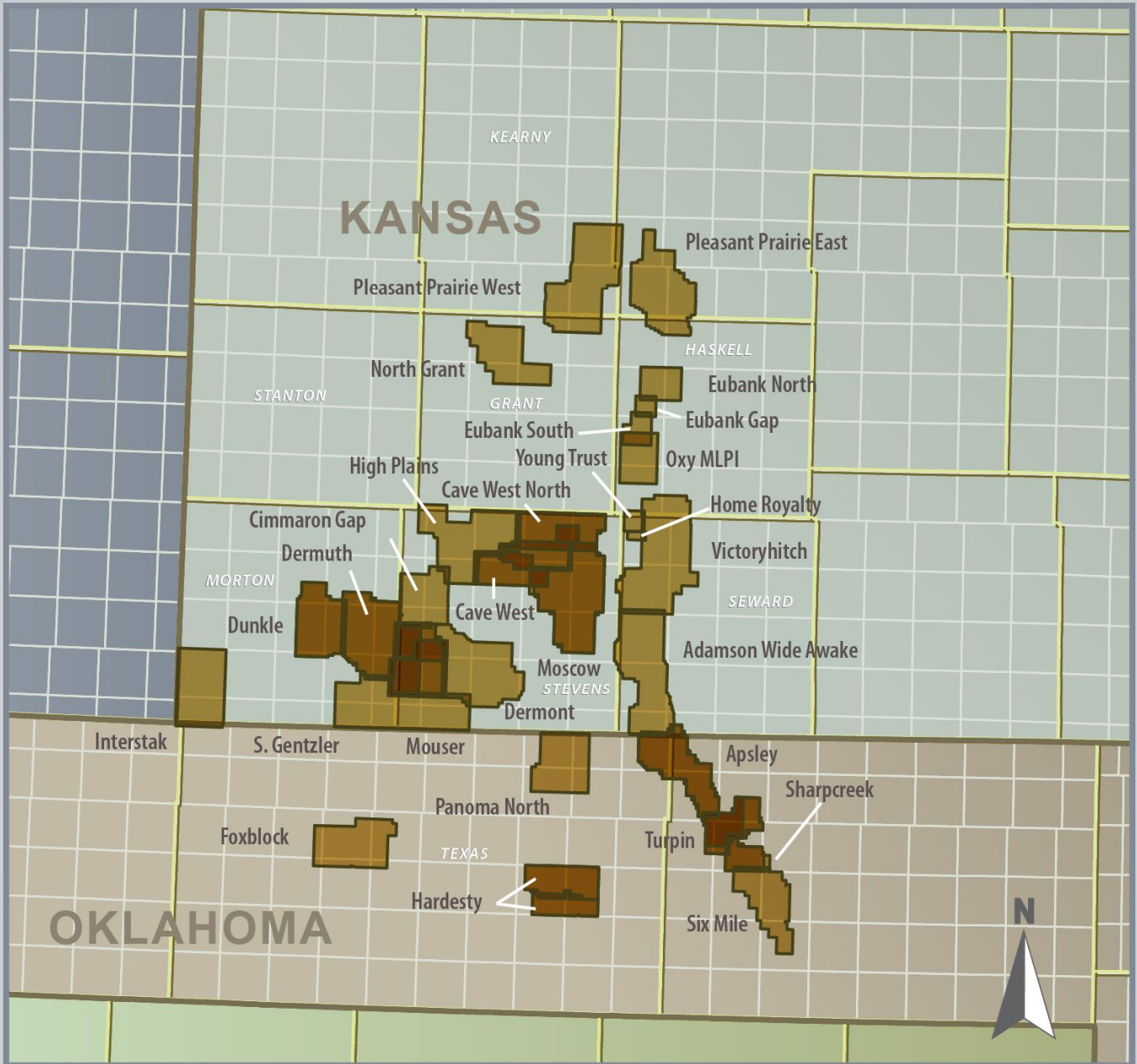
“Woodford Shale as a Source/Reservoir Rock”

By

Brian J. Cardott

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Kansas 3D Surveys

For more information, please contact:
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Pending Management Approval

Date: 3/25/15

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ON THE COVER:

A slide from Brian Cardott's power point presentation given to the Society on March 3rd. His paper is included in this issue, starting on page 10. His slide presentation can be viewed on-line at: <http://www.ogs.ou.edu/oilgaspres.php>

CALL FOR PAPERS

The Kansas Geological Society Bulletin, which is published bimonthly both in hard-copy and electronic format, seeks short papers dealing with any aspect of Kansas geology, including petroleum geology, studies of producing oil or gas fields, and outcrop or conceptual studies. Maximum printed length of papers is 5 pages as they appear in the Bulletin, including text, references, figures and/or tables, and figure/table captions. Inquiries regarding manuscripts should be sent to Rebecca Radford, manager@kgslibrary.com or mailed to 212 N. Market, Ste. 100, Wichita, KS 67202. Specific guidelines for manuscript submission appear in each issue of the Bulletin, which can also be accessed on-line at the Kansas Geological Society web site at <http://www.kgslibrary.com>

SOCIETY Technical Meetings

2015 Technical Talks

May 18 (A Monday) *"From Chaos to Confucius: Making sense out of the Mississippian Reservoirs of Northern Oklahoma"* - Shane Matson

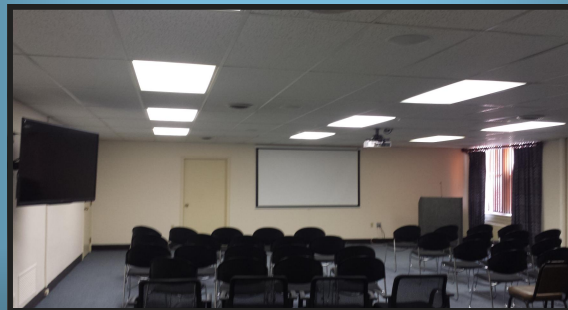
May 26 *WSU Student Field Studies* Larry Richardson's class

The Technical Talks will break for summer and resume in September

For More Information or suggestions of speakers please contact Dave Clothier: dave@mccoypetroleum.com

Note: For those geologists who need 30 points to renew their licenses, there will be a sign-in sheet at each presentation and also a certificate of attendance.

*Tech Talks are held at Landmark Square
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Please remember to check the website for the most up to date information on Technical Talks
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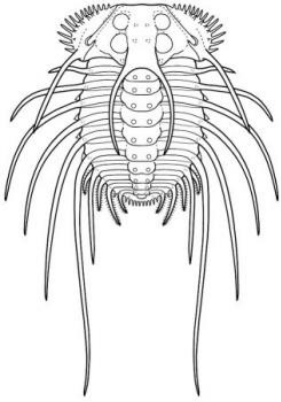
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**Tom Dudgeon correctly identified
The last one as: Andegavia**

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Paleontology are prohibited from entering.



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President's Letter

Greetings fellow KGS members,

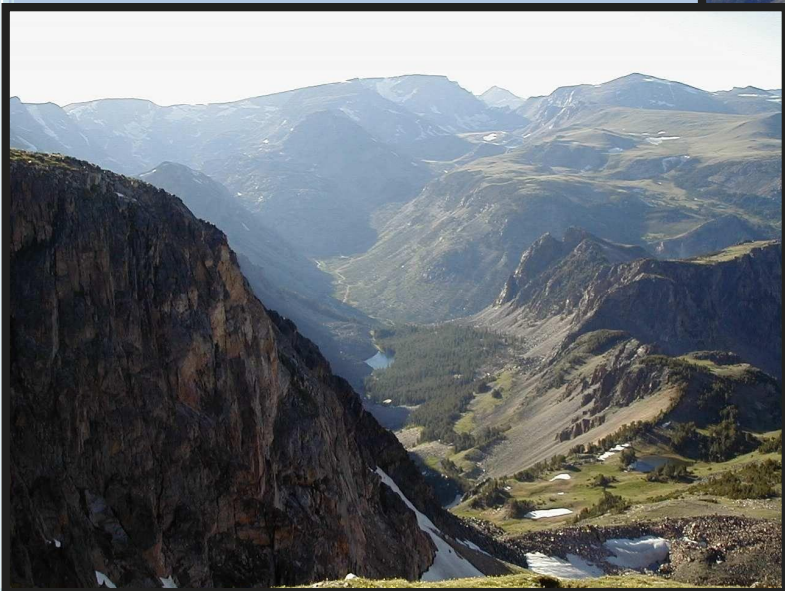
Hope everyone is weathering our recent decline in oil prices. It is unfortunate that our nation does not understand what a pivotal role our industry plays in our economy until we have a drastic change in our circumstances. With tax revenues dropping rapidly, and job loss increasing dramatically, perhaps folks will begin to understand. As I write this letter, I see the announcement that our economy grew 0.2% (stagnant) in the first quarter of this year, much lower than was projected. I remember some advice I received from an old (actually, he wasn't so old....he was younger at the time than I am now) Humble Oil geologist, Winford Howard, while on my first job. He exclaimed to me that you have to develop the attitude, "When it is too tough for everyone else, it is just right for me". This advice I have valued for just short of 40 years. Those of us that work Kansas see that play out every time the price of oil drops.

So how does this affect us at the Library? We have had to lay off some of our part time help. Fortunately, the Foundation has stepped up with some help for some of our summer employees, for which we thank them most kindly. We continue to focus on scanning in Eastern Kansas logs and Geologic Reports. Our future depends on the growth of the Digital Library, and we desperately need to back up our paper records, as a great many are irreplaceable.

I want to encourage our membership to use our facilities for their printing and scanning needs. Maps, geologic reports, hard copies of electric logs.....we can handle them all!

For this month's picture I'm stepping away from tradition with a picture of a friend of mine and fellow KGS member from Indiana, Larry Whitmer. The picture was taken in the Bear Tooth Mountain area in Montana, while Barbara and I were visiting him at his cabin east of Yellowstone in Wyoming.

Frank S. Mize
President 2015



Bear Tooth Mountain area in Montana

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From The Manager

Dear Members,

One of the more enjoyable aspects of my job as manager of the Society is when the geology students come to present their field studies and projects at our Technical Meetings. The KU students always weather the storm and come in the winter but spring brings us the Fort Hays State students and the Wichita State students.

Pictured below is Dr. Hendratta Ali and her students from Fort Hays State, with Frank Mize and Dave Clothier. These students gave us outstanding presentations and in turn, we fattened them up a bit with lunch and dessert at the Petroleum Club.

We will be looking forward to the Wichita State Petroleum Class, taught by our own Larry Richardson. His students will be presenting on Tuesday, May 26th.

Wednesday, May 13th will be the Foundation's Annual Spring Mixer at the Petroleum Club. All are welcome! See flyer in this issue or on-line.

The KGS Golf Tournament will be on Monday, **July 13th**. Watch the web site for more information as we get closer to that date. Registration forms will be available on-line or at the library or can be emailed upon request.

Respectfully submitted,
Rebecca Radford
Manager



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"Woodford Shale as a Source/Reservoir Rock"

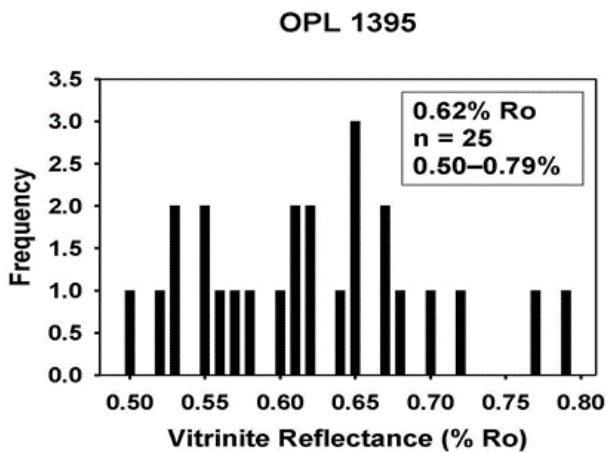
By
Brian J. Cardott

Cardott received a Bachelor's degree in geology from the University of Illinois-Urbana in 1977, and a Master's degree in geology from Southern Illinois University-Carbondale in 1981. In addition to the AAPG, he is a member of and active in several geological societies: The Society for Organic Petrology (President, 1995-1996; Vice President, 1991-1992), International Committee for Coal and Organic Petrology, Geological Society of America (Coal Geology Division Member-at-Large, 1989-1991), Oklahoma City Geological Society, and Tulsa Geological Society.

In March 2015 Brian gave a great talk about the Woodford Shale as a Source/Reservoir Rock and some of the intricacies of this shale as it recognized as both a reservoir and as a source. The following information has been taken from internet site: <http://www.ogs.ou.edu/oilgaspres.php> For further and more detailed information please go to that site.

Outline of the presentation

- *Define the Oil Window, with an Emphasis on the Start of the Window
- *Basic Parameters Needed for Oil Production from Shale Resource Plays
- *Evaluation of Woodford Shale as a Liquid Hydrocarbon Reservoir



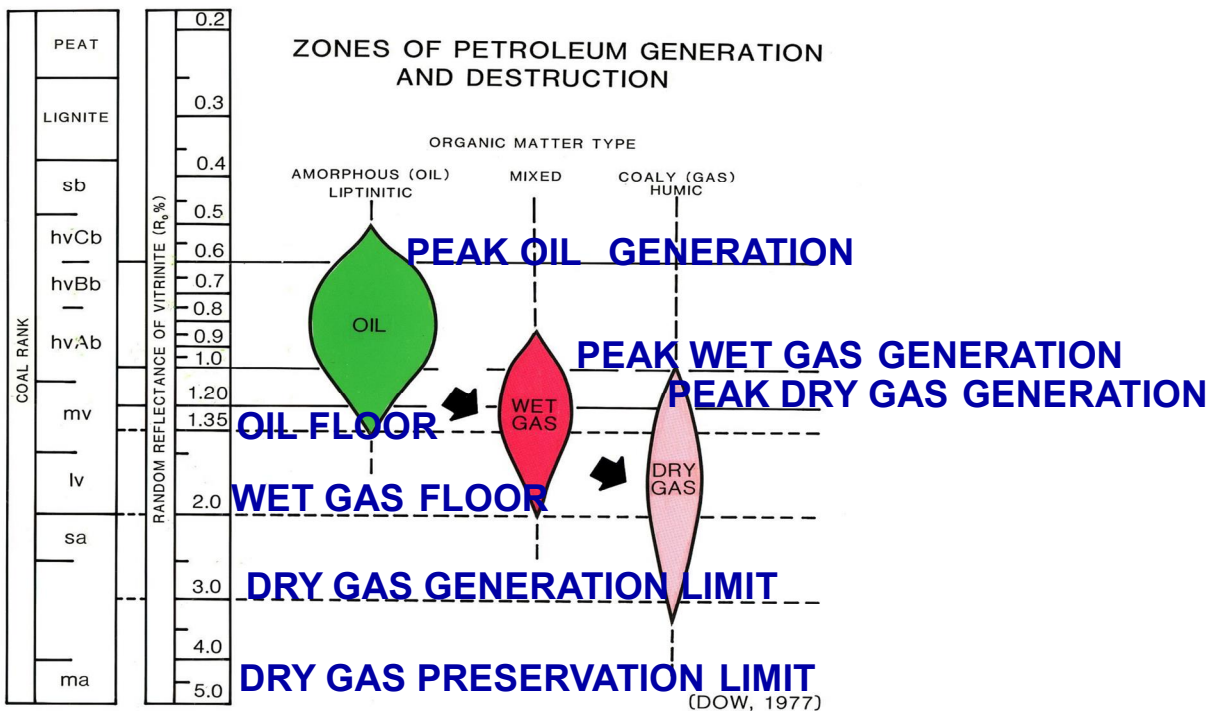
VITRINITE REFLECTANCE SUMMARY

The Vitrinite reflectance value is an average of >20 measurements typically following a normalized distribution over a range of ~0.3% Ro.

Part of the Problem of Determining the Vitrinite Reflectance of a Shale at the Start of the oil Window (~0.5% Ro) is the presence of Vitrinite-Like Pre-Oil Solid Bitumen (genetic bitumen classification of Curiale, 1986)

Pre-Oil Solid Bitumen: early generation of products of rich source rocks, probably extruded from their sources as a very viscous fluid, and migrated the minimum distance necessary to reach fractures and voids in the rock.

Vitrinite-like bitumen is the greatest source of error for low thermal maturity shales and possibly the source of reflectance suppression: Hackley and others(2013) concluded that Vitrinite reflectance measurements of early mature Devonian shales in the Appalachian Basin may erroneously include pre-oil solid bitumen reflectance measurements.



Even if some of Woodford Shale vitriniterefectance values <0.5% Ro included lower bitumen-reflectance values, the influence would most likely lower the mean Vitrinite-reflectance value by ~0.10-0.20% R0 (e.g., 0.48% Ro may actually be ~0.58-0.68% Ro at the start of the oil window), confirmed by other qualitative petrographic thermal maturity indicators.

Jarvie (2012, p. 91):

Thermal maturity values from about 0.60 to 1.40 Ro are the most likely values significant for petroleum liquid generation. Regardless of thermal maturity, there must be sufficient oil saturation to allow for the possibility of commercial production of oil. Most petroleum geochemists use 0.6% Ro as the onset of oil generation (e.g., Peters and Cassa, 1994 Applied source rock geochemistry: AAPG Memoir 60, p. 93-117)

Table 5.3. Geochemical Parameters Describing Level of Thermal Maturation

Stage of Thermal Maturity for Oil	Maturation			Generation		
	R _o (%)	T _{max} (°C)	TAl ^a	Bitumen/TOC ^b	Bitumen (mg/g rock)	PI ^c [S ₁ /(S ₁ + S ₂)]
Immature	0.2–0.6	<435	1.5–2.6	<0.05	<50	<0.10
Mature						
Early	0.6–0.65	435–445	2.6–2.7	0.05–0.10	50–100	0.10–0.15
Peak	0.65–0.9	445–450	2.7–2.9	0.15–0.25	150–250	0.25–0.40
Late	0.9–1.35	450–470	2.9–3.3	—	—	>0.40
Postmature	>1.35	>470	>3.3	—	—	—

^aTAl, thermal alteration index.

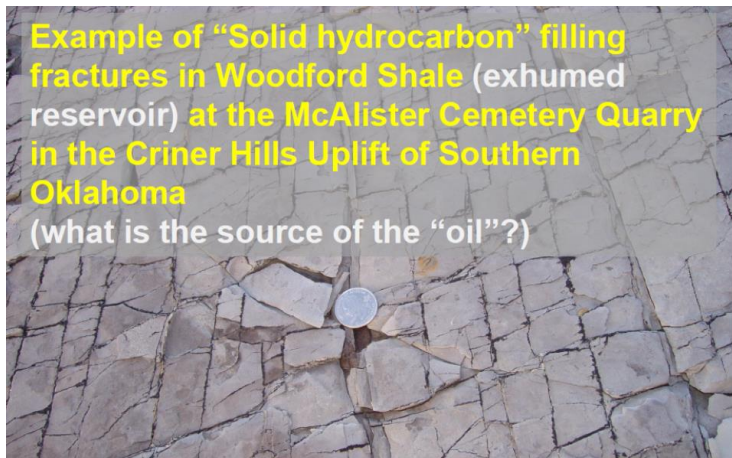
^bMature oil-prone source rocks with type I or II kerogen commonly show bitumen/TOC ratios in the range 0.05–0.25. Caution should be applied when interpreting extract yields from coals. For example, many gas-prone coals show high extract yields suggesting oil-prone character, but extract yield normalized to TOC is low (<30 mg HC/g TOC).

Bitumen/TOC ratios over 0.25 can indicate contamination or migrated oil or can be artifacts caused by ratios of small, inaccurate numbers.

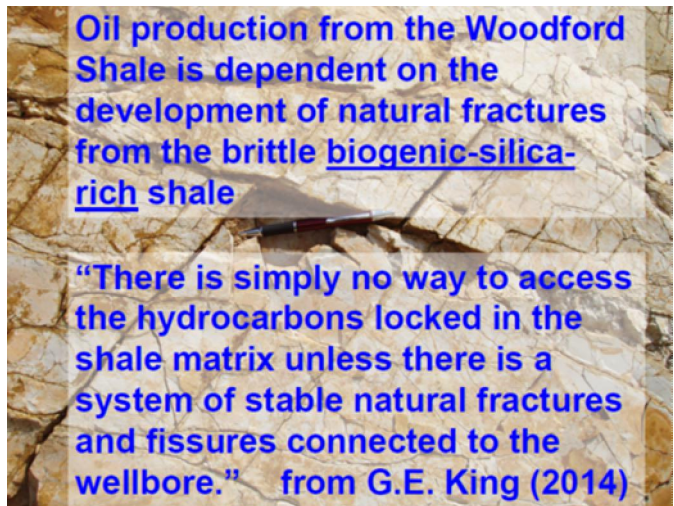
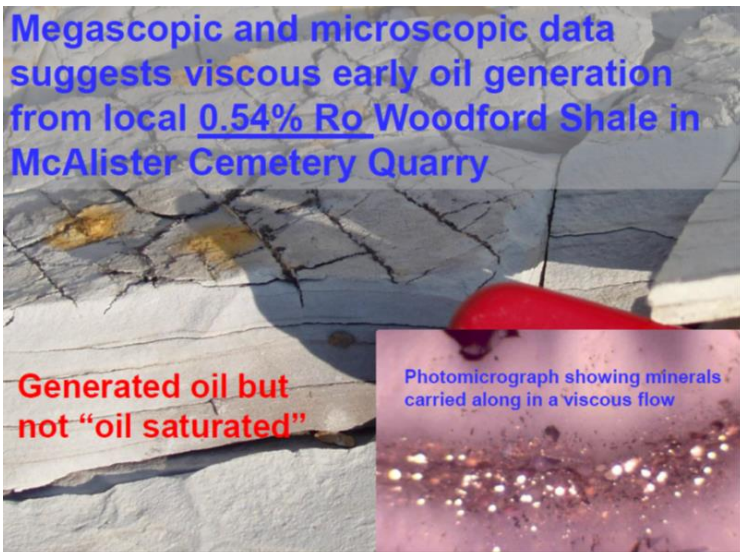
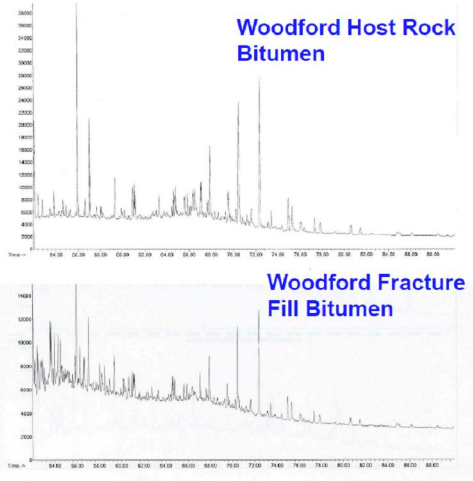
^cPI, production index.

Hunt (1996, p. 368):

the lowest value associated with the known generation of conventional oil is about 0.5% [Ro], and 0.6% [Ro] is generally recognized as the beginning of commercial oil accumulations. What is the lowest thermal maturity to produce economic quantities of oil in the Woodford Shale? Please note the start of the oil window is a **zone** rather than an exact number



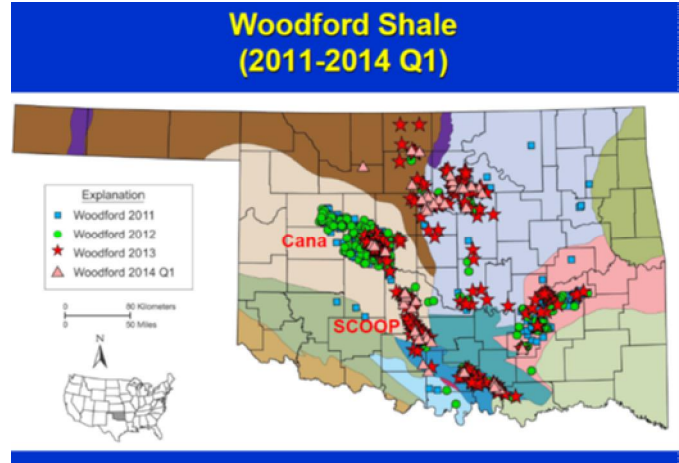
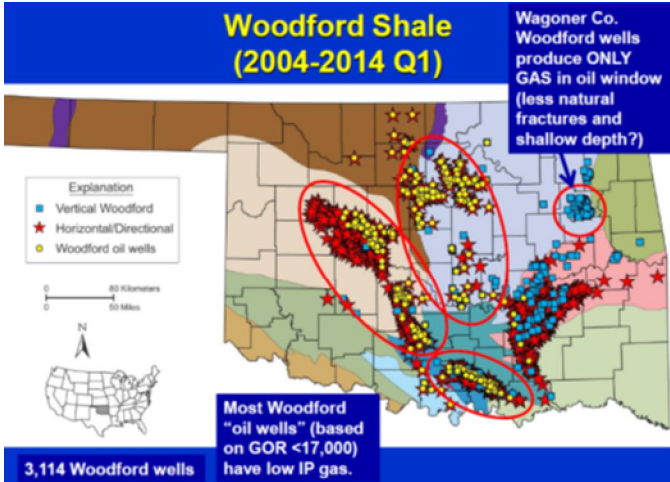
This Mass Spectrum (m/z 191 mass fragmentogram) indicates low thermal maturity “oil” from local Woodford Shale (data from Dr. R.P. Philp)



Jarvie (2012, p.91): "Although an organic-rich source rock in the oil window with good oil saturation is the most likely place to have oil, it is also the most difficult to produce, unless it has open fractures or an organic-lean facies closely associate with it. This is due to molecular size, viscosity, and sorption of oil."

Oklahoma Oil/Condensate/Gas
Production Caveat

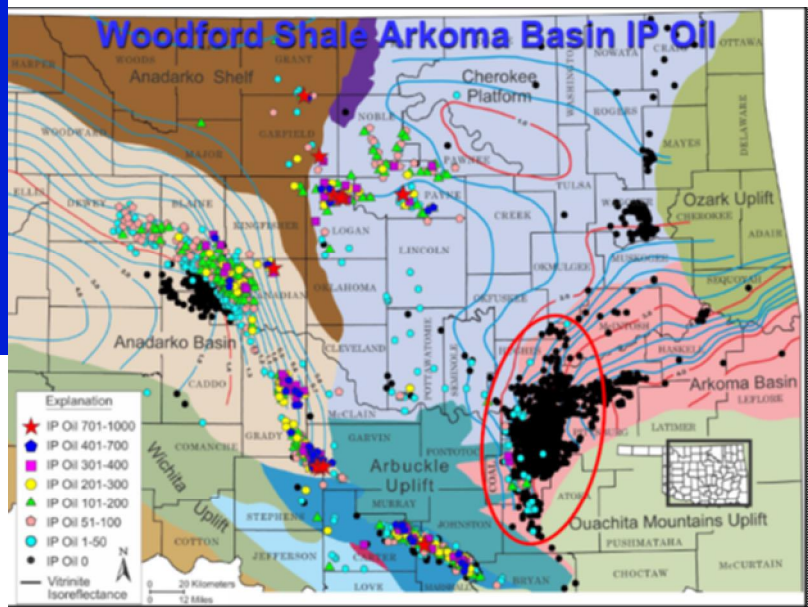
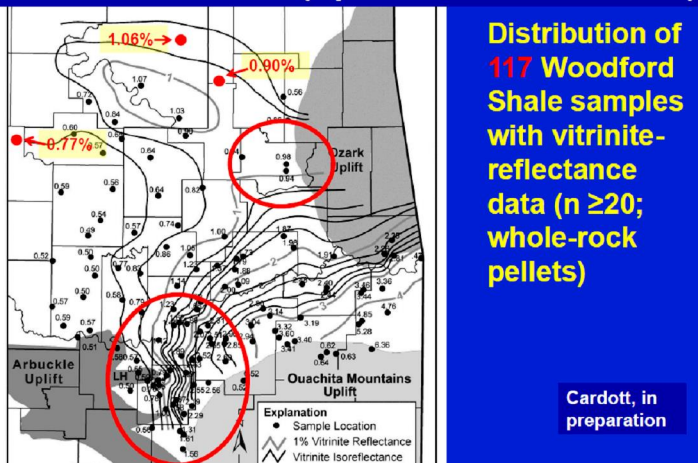
Gas Production is reported by the Oklahoma Corporation Commission by Well and Oil/condensate production reported by the Oklahoma Tax Commission by Lease [production by well is only on single-well lease] The production data is supplied by PI/Dwights LLC, 2014 HIS Energy Group.

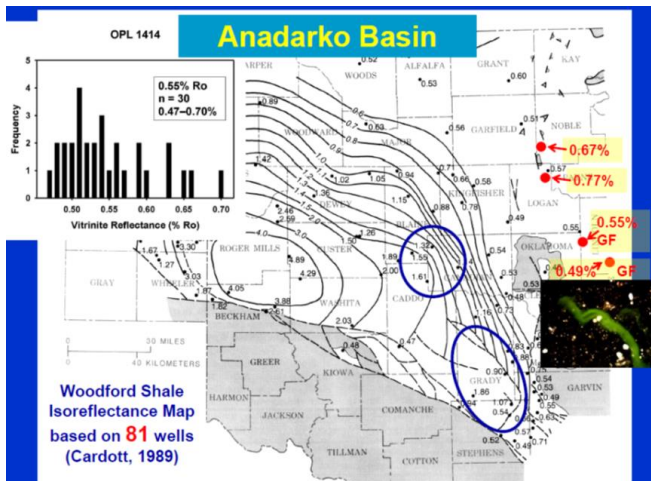


Due to a number of variables, Woodford Shale Vitrinite isoreflectance maps should be used as a qualitative thermal maturity indicator (e.g., start, middle, end of oil window; condensate window; gas window) and not as a "drill here" indicator because of the following factors:

- *Vitrinite reflectance is an average of many values and has some internal variation.
- *Woodford Shale Vitrinite reflectance was originally determined to estimate the general hydrocarbon source rock potential
- *The Woodford Shale is divided into three informal members: the lower member was deposited more near-shore marine and is where the most and largest Vitrinite and petrified wood is found.
- *The Vitrinite reflectance value is extrapolated to the entire thickness even though the Woodford shale may be up to 700' thick.

Isoreflectance Map of the Woodford Shale in Eastern Oklahoma (Updated November 2011)



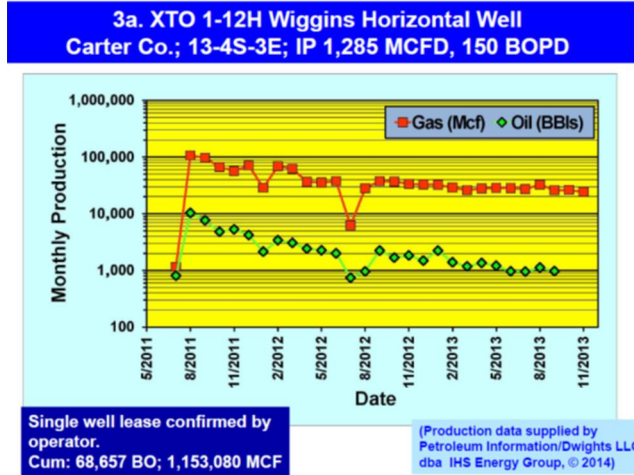
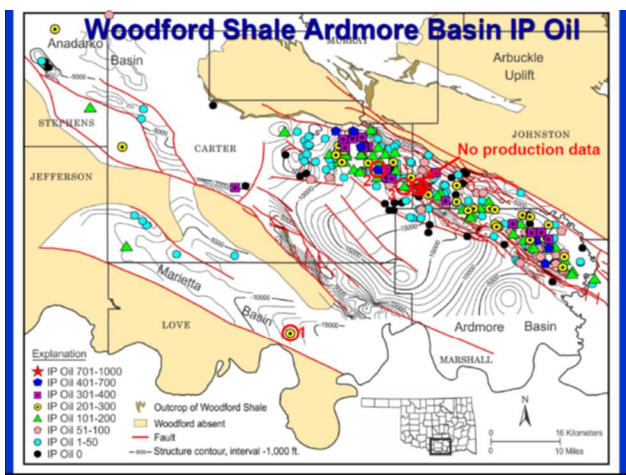
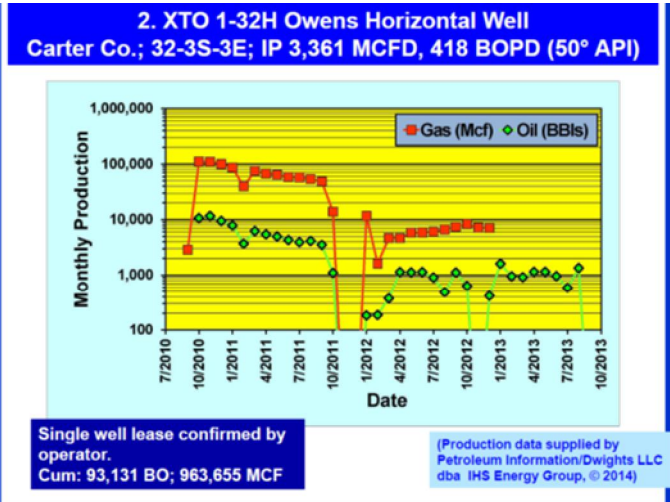
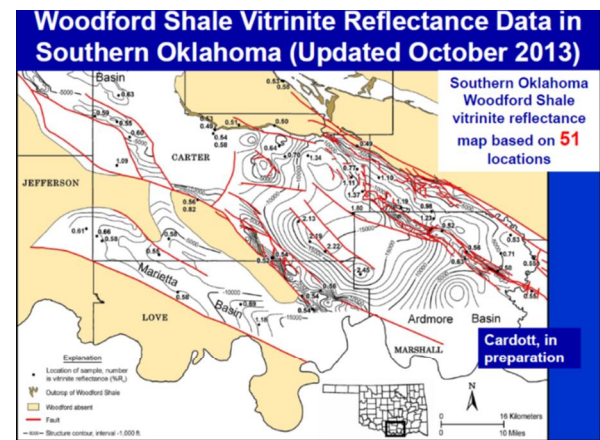
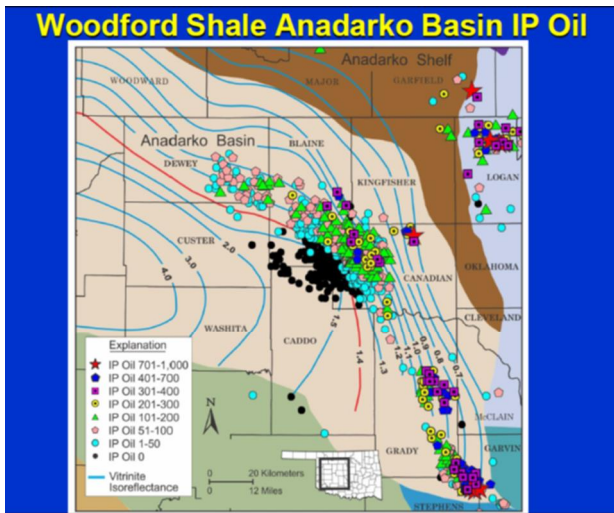


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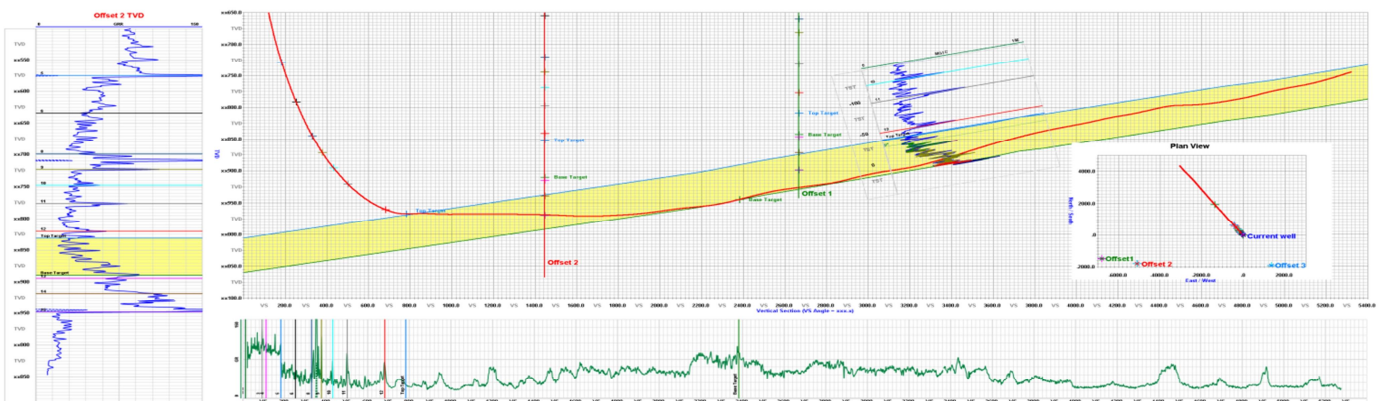
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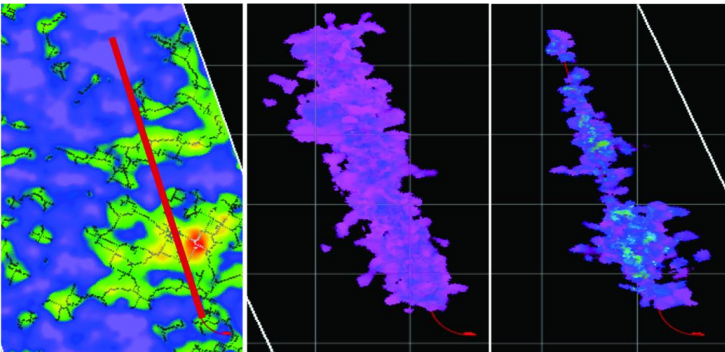
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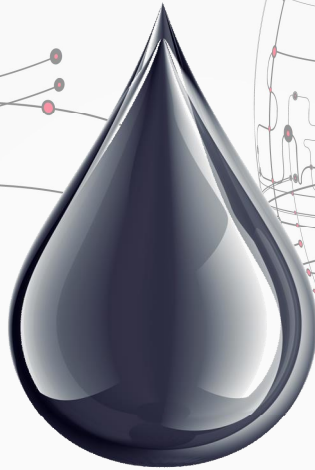


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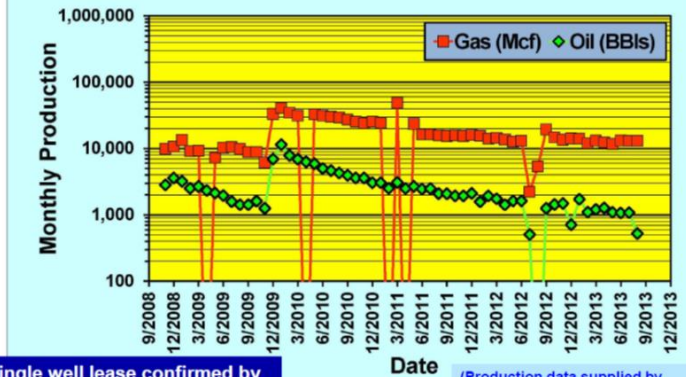


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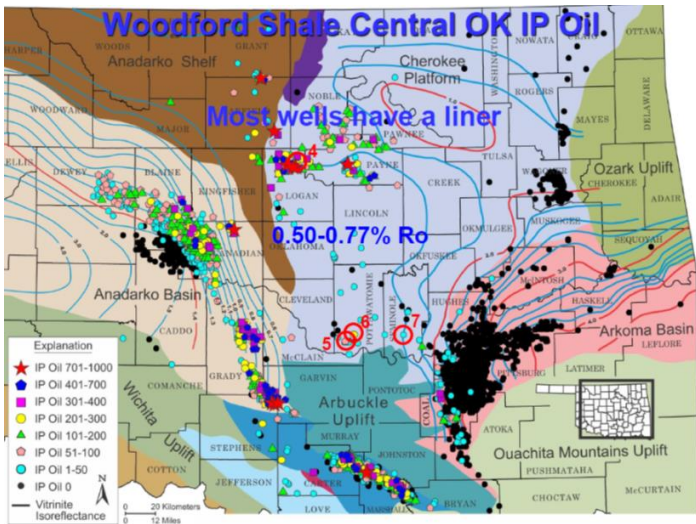
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**3b. Wagner & Brown 1H-1 Hartgraves Horizontal Well
Carter Co.; 1-4S-3E; IP 243 MCFD, 252 BOPD [shut in for
drilling/completion work on other wells on same pad]**

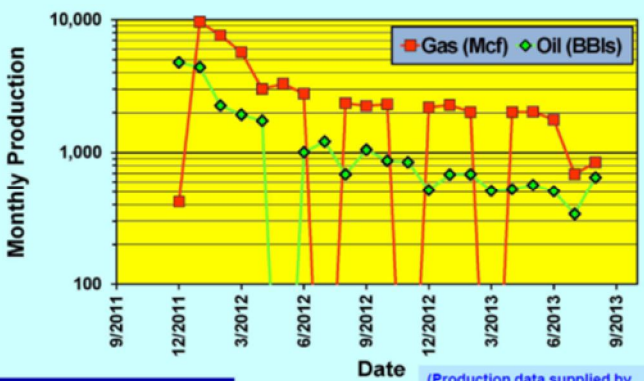


Single well lease confirmed by operator.
Cum: 154,994 BO; 943,423 MCF

(Production data supplied by Petroleum Information/Dwights LLC dba IHS Energy Group, © 2014)



**4. Devon Energy 1-33H Johnson Horizontal Well;
Logan Co.; 33-19N-2W; IP 242 MCFD, 285 BOPD**



Single well lease confirmed by operator.
Cum: 25,761 BO; 53,415 MCF

In an area recently measured 0.77% VRo

(Production data supplied by Petroleum Information/Dwights LLC dba IHS Energy Group, © 2014)

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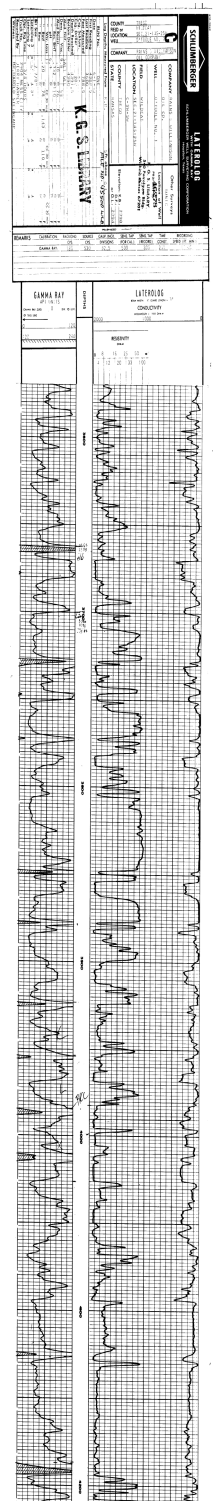
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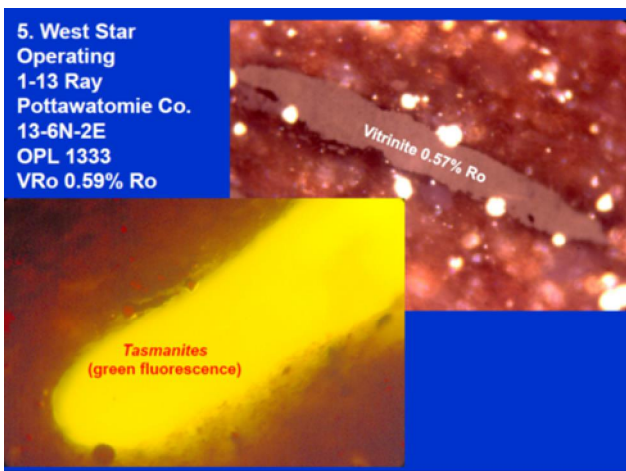
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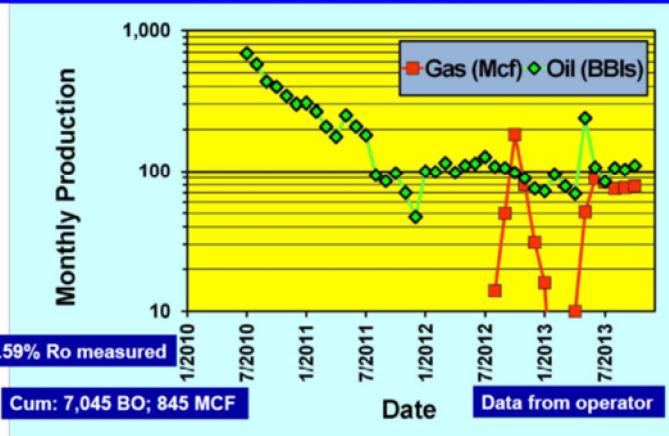
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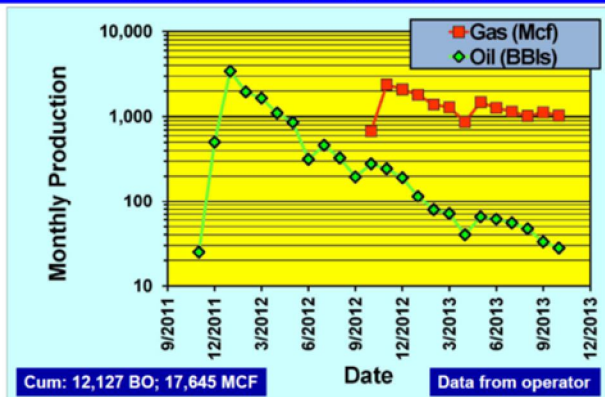
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5. West Star Operating 1-13 Ray Vertical Well Pottawatomie Co.; 13-6N-2E; IP not reported (delayed hook-up to gas pipeline)



6. West Star Operating 1-33H Salt Creek Horizontal Well Pottawatomie Co.; 33-7N-3E; IP 256 MCFD, 215 BOPD (delayed hook-up to gas pipeline)



Vitrinite reflectance values <0.5% Ro may have errors because (1) pre-oil solid bitumen may be mistaken for vitrinite and (2) this is the level that vitrinite forms from huminite. Oil production ranges from thermal maturities of ~0.59-1.18% Ro in the Anadarko, Ardmore, and Arkoma Basins and shelf area (dependent on oil saturation). Condensate production ranges from thermal maturities of ~1.15-1.67% Ro in the Anadarko, Ardmore, and Arkoma Basins.

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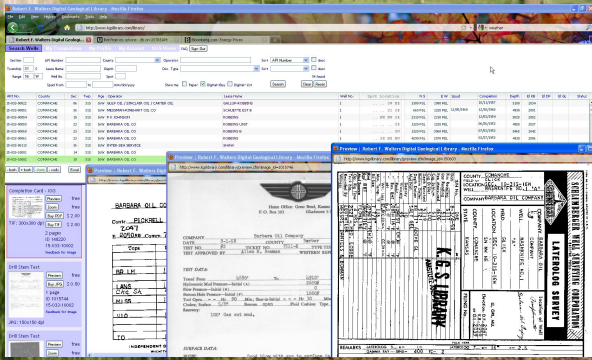
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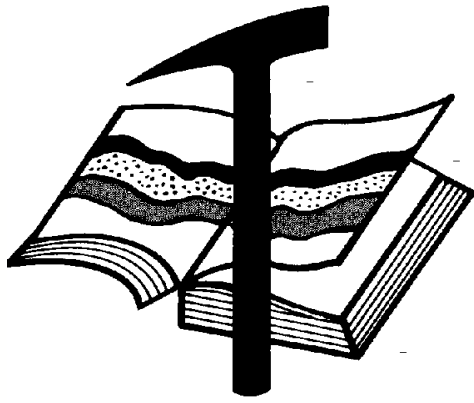
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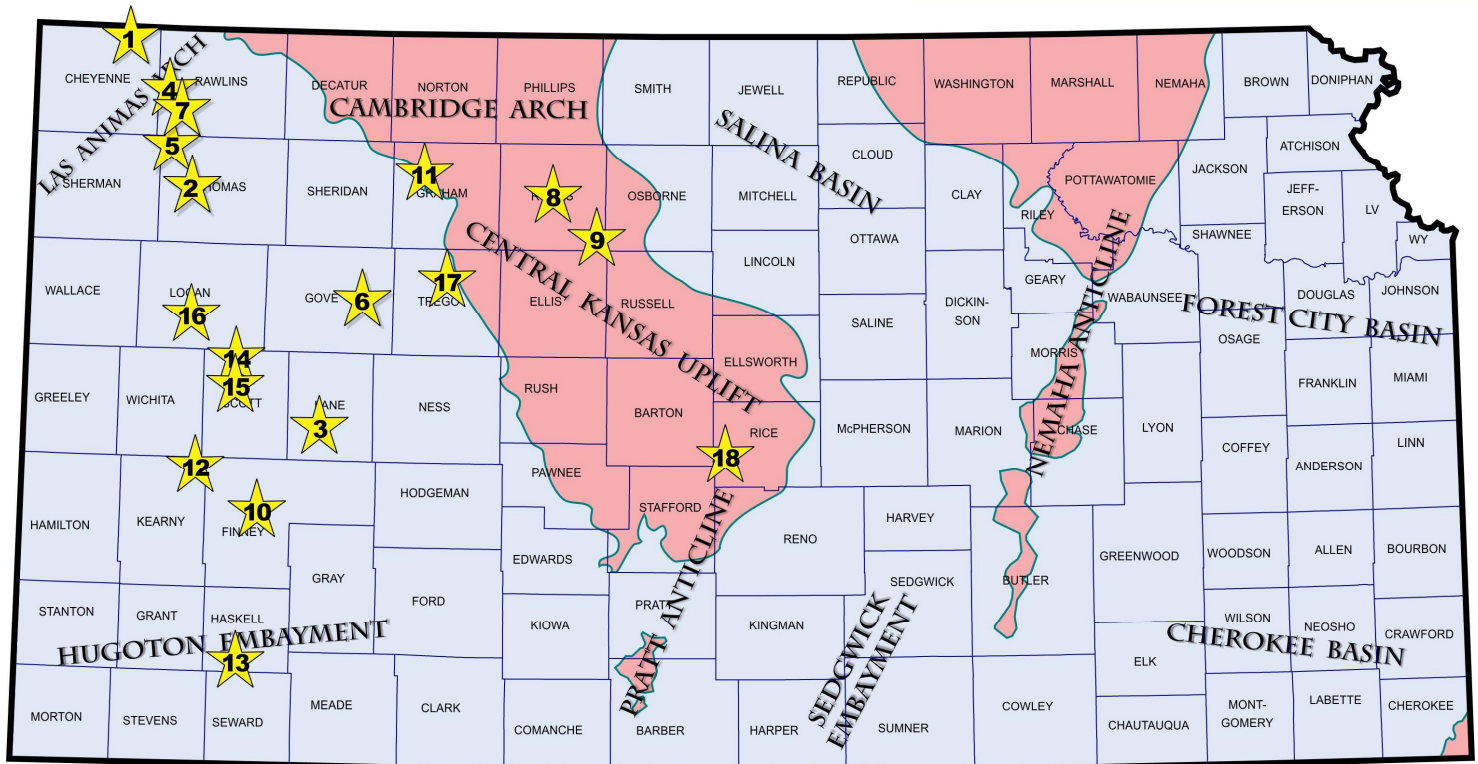
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Exploration Highlights

By John H. Morrison, III
Independent Oil & Gas



1-Murfin Drilling Company, Wichita (KS), has discovered new Lansing-Kansas City oil reserves at the #1-29 Bash wildcat well in Cheyenne County, northwest Kansas. The new Devilø Canyon North pool opener is producing oil in the NE/4 of section 29- T1s- R38W, about thirteen miles north and three miles west of Bird City. The well was drilled to a depth of 5,002 ft in Granite rock. The new reserves lie over one mile north of the Devilø Canyon field (estbl. 1988, LKC oil).

2-VAL Energy, Wichita (KS), has a new Cherokee (Johnson Zone) oil discovery in western Thomas County. The #1-21 Otto is on pump making an undisclosed amount of oil at site located in the NW/4 of section 21- T8s- R35W, about seven miles east of the town of Brewster. The wildcat well opens the Schroeder Southeast oil field nearly one and one-quarter miles east of Valø John lease in section 20, which also produced Cherokee oil last year and established the Schroeder East field.

3-Larson Operating Company, Olmitz (KS), is producing oil from the Lansing-Kansas City formation at their #1-32 Lora, spotted in the SE/4 of section 32- T19s- R29W in Lane County. The wildcat well establishes new production over one and one-half miles east of the Clark Southeast oil field (est. 2009, LKC and Marmaton), or about nine miles southwest of Dighton, Kansas. Rotary total depth was stopped at 4,675 ft. No completion details are available. The new field has been given the name Frontier East.

4-Samuel Gary Jr & Associates, Inc., Denver (CO), has discovered oil deposits in the Celia Sand member of the Marmaton Group at the #1-3 Fisher Cattle Company, spotted in the NW/4 of section 3- T4s- R36W, in Rawlins County. The new

Wind Crest West pool opener found new reserves nearly one mile southeast of established production in the Celia South oil field (estbl. 1983, Marmaton, Cherokee oil) and about three miles southeast of the town of McDonald, Kansas. Total depth of the well is 4,949 ft.

5-Raymond Oil Company, Inc., Wichita (KS), has successfully completed the 1 Baird Revocable Trust as a commercial oil well to open the Sun Dog oil field in Thomas County. Discovery was made in the SE/4 of section 25- T6s- R36W, nearly two miles south of the WWM oil field (estbl. 1979, Marmaton oil). The 4,876 ft deep well is producing crude from the Marmaton (Pawnee) formation, about ten miles northeast of Brewster, Kansas.

6-Questa Energy Corporation, Amarillo (TX), is producing crude oil from the Lansing-Kansas City formation at the #1-36 Bird, located in the NW/4 of section 36- T13s- R27W, in Gove County. The wildcat well was drilled to a total depth of 4,460 ft at site situated about twelve miles southeast of Gove, Kansas. Operator stepped-out almost one and one-half miles north of the established Sutcliffe field (estbl. 1971, LKC, Miss oil) to find the new reserves. The new field has been named. Sutcliffe North.

7-Samuel Gary Jr. & Associates, Inc., of Denver (CO), has discovered new Marmaton (Pawnee) oil reserves at the #1-12 Fisher Cattle Company ó a remote exploratory well drilled in Rawlins County. Crude oil is being produced at location in the SW/4 of section 12- T4s- R36W, two miles southeast of the Windy Ridge field (Arbuckle oil), or a little over five miles southeast of the town of McDonald. Total depth was logged at 4,912 ft. The new field been named FCC.

8-Staab Oil Company, Hays (KS), is pumping 15 bbl of oil per day, no water, at the #1 Hayes wildcat discovery well in Rooks County, about five miles southwest of Stockton, Kansas. The new Webster View Southeast pool opener is drilled to a total depth in the Arbuckle of 3,480 ft in the SE/4 of section 6- T 8s- R 18W. The well is producing 30-degree gravity crude from the Arbuckle formation. Closest known established production lies over one mile away in the Sweet North field (estbl. 1988, Conglomerate, Arbuckle oil).

9-Sandlin Oil Corporation, Denver (CO), has completed their #1 Brown Etal for 20 bbls of oil and an equal amount of water per day. The 3,650 ft deep wildcat well was drilled in the NE/4 of section 17- T10s- R16W, in Rooks County. It establishes production from the LansingóKansas City formation at site located over three-quarters mile west of the Natoma Northwest field (estbl. 1965, Shawnee, LKC oil), or a little over two miles east of Codell, Kansas. The new field has been named Codell East.

10-American Warrior, Inc., Garden City (KS), is producing oil from the Mississippian (Saint Louis) formation at the #1-5 OóBrateóFinney, located in the SW/4 of section 5- T23s- R32W, in Finney County. The wildcat well establishes new production over one and one-half miles southeast of the Damme East field (estbl. 1992, Marmaton oil). Total depth was stopped at 5,000 ft. The new Seven Mile pool lies just over six miles north of Garden City, Kansas.

11-Red Oak Energy, Inc., Wichita (KS), is producing crude oil from the LansingóKansas City formation at their #9-1 Brown in Graham County. The wildcat well found new reserves over three-quarters mile northwest of the Bessie May field (estbl. 2010, LKC oil), or about seven miles northwest of Penokee, Kansas. Drill site is located in the SW/4 of section 9- T 7s- R 24W. Rotary total depth was obtained at 4,200 ft. The new field is named Bessie May North.

12-Merit Energy Company LLC, Dallas (TX), has discovered new Morrow oil reserves at the #26-1 Cobra in Kearny County. The Cobra pool opener is producing crude at location in the SW/4 of section 26- T 21s- R 35W, about fifteen miles north of Deerfield, Kansas. The new reserves were found several one and one-half miles east of Marmaton oil production in the Beymer (estbl. 1965) and is over two miles south of closest known Morrow production in the Christabelle field (estbl. 1971). Operator bottomed the well at 5,170 ft.

13-Elsewhere in Haskell County, Merit Energy Company LLC is producing oil from the Morrow formation at the #12-1 Jacob Moss, spotted in the NW/4 of section 12- T 30s- R 33W. The 5,690 ft deep well establishes the new Tice Northeast field two and one-half miles southwest of the town of Sublette. Discovery site lies over one mile east of the Tice field (estbl. 2009, Morrow oil).

14-Grand Mesa Operating Company, Wichita (KS), has discovered oil deposits in the Marmaton (Altamont) formation at the #1-32 Stoll, located in the SE/4 of section 32- T 16s- R 33W, in Scott County. The Frick Northeast pool opener is producing crude one mile northeast of the established Frick field (estbl: 2012, Marmaton, Cherokee oil) and is about nine miles northwest of the town of Fort Scott, Kansas. The well was bottomed at 4,865 ft.

15-Stelbar Oil Corporation, Wichita (KS), has successfully completed the #1-12 Ellis as a commercial oil well in the NE/4 of section 12- T17s- R33W in Scott County. Operator drilled the wildcat well to a total depth of 4,780 ft. Oil reserves are being recovered from the LansingóKansas City limestones. Discovery site lies over one and one-half miles southwest of oil production in the Christy Canyon field (estbl: 2007, Cherokee oil). Closest LKC production in the area is located over four miles away from Stelbaró latest find. The new field has been given the name Christy Canyon Southwest.

16-Black Tea Oil LLC, Hays (KS), has established at the Antelope Springs oil field in Logan County with the discovery of Lansing ó Kansas City and Cherokee (Johnson Zone) oil deposits at the #1 Wood -Aó spotted in the NW/4 of section 16- T14s- R35W. The wildcat well was drilled to a total depth of 4,500 ft at site located nearly five miles south of Russell Springs, Kansas. Closest known production in the vicinity lies over five miles away in the Lone Butte Southwest field (estbl: 2012, Marmaton oil).

17-H & C Oil Operating, Plainville (KS), has completed the 3-1 North Fork Farms in Trego County to open a new Wakeeney Townsite oil field over one and one-quarter miles southeast of the now abandoned LaRue field (estbl: 1974, abdn: 1981, LKC oil). Discovery was made in the NW/4 of section 3- T12s- R23W, less than one-half mile northeast of the town of Wakeeney, Kansas. Oil is being produced from the LansingóKansas City limestones, Rotary total depth was stopped at 4,282 ft.

18-Carrie Exploration & Development LLC, Hays (KS), is producing 18 bbl oil and 60 bbl water per day at the #1C-1 Brian (API 15-159-22799) in Rice County. The well establishes new Lansing-Kansas City oil production over three-quarters mile west of abandoned Simpson oil production in the Raymond East field (estbl: 1954, abdn: 1955) and over one and one quarter miles northeast of production in the Groves field (estbl: 1966, LKC oil). Well site is located in the SW/4 of section 26- T20s- R10W, less than one-half mile east of the town of Raymond. Rotary total depth was ceased at 3,415 ft in the Arbuckle formation. The field is named Raymond.

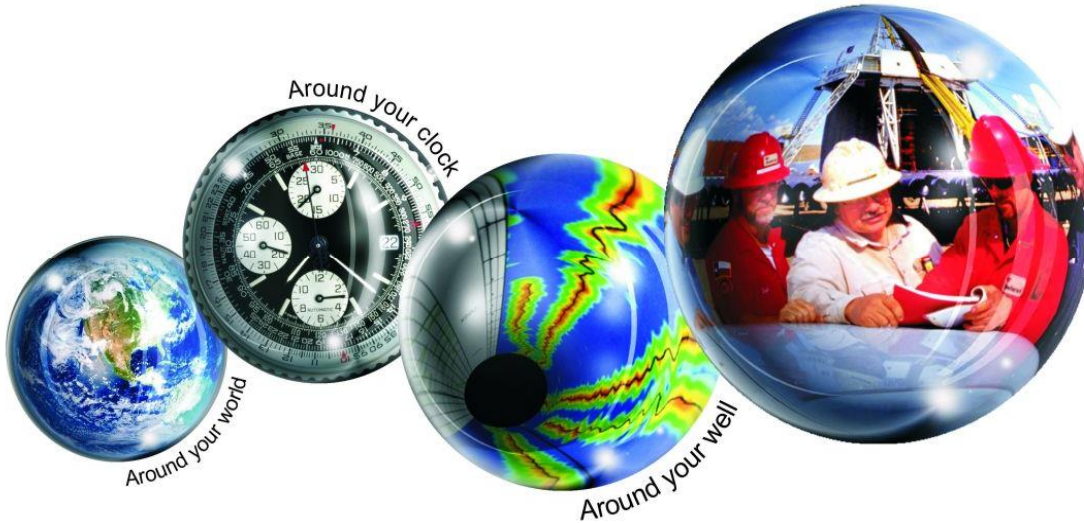
NOTE: wells 1-10 were also published in the last issue. Pardon our repetition.

Kansas Geological Foundation Memorials

KGS Member	Date Deceased	Memorial Est.	KGS Member	Date Deceased	Memorial Est.
Dan Bowles	09/89	1990	Edward B. Donnelly	08/01	2001
John Brewer	10/89	1990	Richard P. Nixon	02/02	2002
George Bruce	08/89	1990	Robert W. Frensley	12/01	2002
Robert Gebhart	01/90	1990	Gerald W. Zorger	01/02	2002
Ray Anderson, Jr.	11/90	1990	Don L. Calvin	03/02	2002
Harold McNeil	03/91	1991	Claud Sheats	02/02	2002
Millard W. Smith	08/91	1991	Merle Britting	2002	2002
Clinton Engstrand	09/91	1991	Harold Trapp	11/02	2002
M.F. "Ted" Bear	10/91	1991	Donald M. Brown	11/02	2003
James & Kathryn Gould	11/91	1991	Elwyn Nagel	03/03	2003
E. Gail Carpenter	06/91	1993	Robert Noll	09/03	2003
Benton Brooks	09/92	1992	Benny Singleton	09/03	2003
Robert C. Armstrong	01/93	1993	Jay Dirks	2003	2003
Nancy Lorenz	02/93	1993	J. Mark Richardson	02/04	2004
Norman R. Stewart	07/93	1993	John öJackö Barwick	02/01	2004
Robert W. Watchous	12/93	1993	Richard Roby	03/04	2004
J. George Klein	07/94	1994	Ruth Bell Steinberg	2004	2004
Harold C.J. Terhune	01/95	1995	Gordon Keen	03/04	2004
Carl Todd	01/95	1995	Lloyd Tarrant	05/04	2004
Don R. Pate	03/95	1995	Robert J. öRobö Dietterich	08/96	2004
R. James Gear	05/95	1995	Mervyn Mace	12/04	2004
Vernon Hess	06/95	1995	Donald Hoy Smith	04/05	2005
E. K. Edmiston	06/95	1995	Richard M. Foley	06/05	2005
Jack Rine	07/95	1995	Wayne Brinegar	06/05	2005
Lee Cornell	08/95	1995	Charles B. Moore	09/96	2005
John Graves	10/95	1995	Jack Heathman	05/06	2006
Wilson Rains	10/95	1995	Charles Kaiser	09/06	2006
Heber Beardmore, Jr.	09/96	1996	Rod Sweetman	08/06	2006
Elmer "Lucky" Opfer	12/96	1996	Karl Becker	10/06	2006
Raymond M. Goodin	01/97	1997	Frank Hamlin	10/06	2006
Donald F. Moore	10/92	1997	Marvin Douglas	12/06	2006
Gerald J. Kathol	03/97	1997	Robert W. Hammond	04/07	2007
James D. Davies	08/88	1997	Eldon Frazey	04/07	2007
R. Kenneth Smith	04/97	1997	Pete Amstutz	05/07	2007
Robert L. Dilts	05/97	1997	Charles Spradlin	05/07	2007
Delmer L. Powers	06/72	1997	Donald R. öBobö Douglass	09/07	2007
Gene Falkowski	11/97	1997	Vincent Hiebsch	11/07	2007
Arthur (Bill) Jacques	01/98	1998	Glen C. Thrasher	03/08	2008
Bus Woods	01/98	1998	Peg Walters	06/08	2008
Frank M. Brooks	03/98	1998	Theodore öTedö Sandberg	07/08	2008
Robert F. Walters	04/98	1998	James Ralstin	11/08	2008
Stephen Powell	04/98	1998	Earl Brandt	04/09	2009
Deane Jirrels	05/98	1998	Walter DeLozier	05/09	2009
William G. Iversen	07/98	1998	Don D. Strong	01/10	2010
Ann E. Watchous	08/98	1998	John Stone	02/10	2010
W.R. "Bill" Murfin	09/98	1998	Craig Caulk	03/10	2010
Donald L. Hellar	11/98	1998	Joseph E. Moreland, Jr.	03/10	2010
Joseph E. Rakaskas	01/99	1999	Gene Garmon	03/10	2010
Charles W. Steincamp	02/99	1999	James F. Dilts	05/10	2010
Robert and Betty Glover	10/96	1998	Jerry Pike	05/10	2010
Howard E. Schwerdtfeger	11/98	1999	Donald Hollar	06/10	2010
W. W. "Brick" Wakefield	03/99	1999	Delbert Costa	08/10	2010
V. Richard Hoover	01/00	2000	John Tanner	08/10	2010
Warren E. Tomlinson	01/00	2000	William (Bill) Owen	09/10	2010
James A. Morris	01/00	2000	Harold (Hal) Brown	10/10	2010
Eric H. Jager	03/00	2000	Edmund G. Lorenz	11/10	2010
Kenneth W. Johnson	03/00	2000	Thomas E. Black	05/11	2011
Dean C. Schaake	03/00	2000	Wayne E. Walcher	07/11	2011
Fred S. Lillibridge	05/00	2000	Henry F. Filson	07/11	2011
Jerry A. Langrehr	07/00	2000	Thomas Ray	07/11	2011
Clark A. Roach	07/00	2000	Edgar E. Smith	09/11	2012
Floyd W. öBudö Mallonee	10/00	2000	Marilyn Messinger	06/13	2013
Ralph W. Ruuwe	09/00	2000	Micheal Mitchell	09/13	2013
Robert L. Slamal	02/01	2001	Orvie Howell	11/13	2013
Jerold E. Jespersion	06/01	2001	James Thompson	11/13	2013
William A. Sladek	06/01	2001	Dick Rowland	09/13	2014
Harlan B. Dixon	06/01	2001	Annette Hedke	02/15	2015



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KGS BULLETIN
 May - June 2015

May 2015						
SUN	MON	TUE	WED	THU	FRI	SAT
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3	4	5	6	7	8	9
10	11	12	13 KGF Spring Mixer	14	15	16
17	18 Tech Talk	19	20	21	22	23
24	25	26 Tech Talk	27	28	29	30
31						

June 2015						
SUN	MON	TUE	WED	THU	FRI	SAT
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AAPG Convention Denver						
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