KANSAS GEOLOGICAL SOCIETY

BULLETIN

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Grand Teton peak in far left of photo

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 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

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- .

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"The Second Half of Plate Tectonics: Finding the Last 200 Ma of Subducted Lithosphere and Incorporating it into Plate Reconstruction"

October 11 *Woody Leel, President of KSU Alumni Association* *TBA*

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President's Letter

Greetings to all KGS Members!

A hint of Fall in the air? Likewise, the upward swing in drilling activity has leveled off somewhat. The improved society's economic standing partly the result of steady business, and stock market bullishness.

Tammy Nichols is the interim manager, and has been focusing on the continuing saga of data integration. This is in conjunction with the Kansas Geological Foundation, and the Kansas Geological Survey. She and her staff of three (Rhonda, Angela, and Janice) have continued to provide the membership with quality service that we are all accustomed.

Angela Forrest (library employee) will again have a booth this coming October in Oklahoma City at the AAPG sectional meeting. She completed a successful mission to Houston in early April, attending the 100th AAPG anniversary at its national convention, manning the KGS booth. She expertly engaged the many visitors as she promoted the library status and that of Kansas exploration in general.

Other upcoming events include the KGS golf tournament on September 18th organized by Robert Patton. The fishing tournament will be on September 15th organized by Jon Christianson. The shooting tournament will be in October, organized by Larry Richardson. Also in October, there might be a belated KGS picnic at some unknown location.

May this season bring you good results in your exploratory endeavors. Thank you for your continued support.

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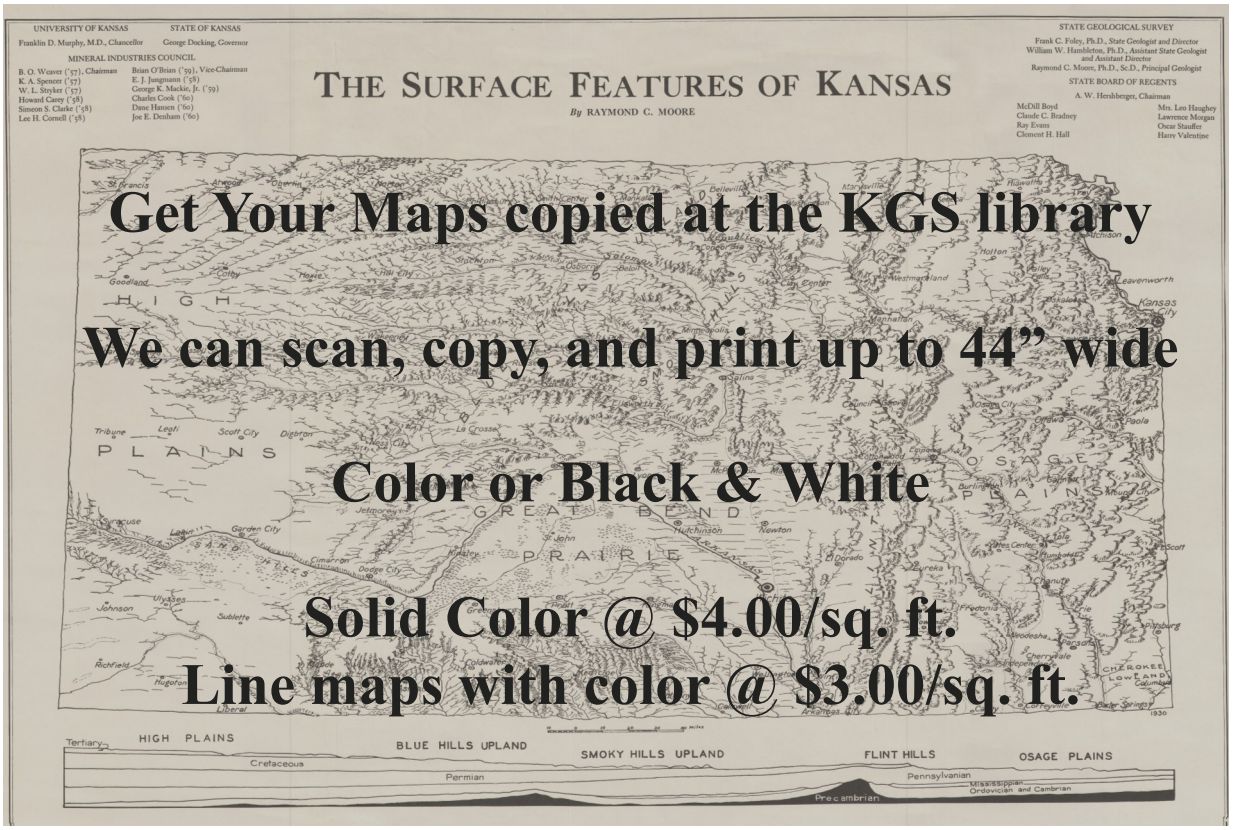

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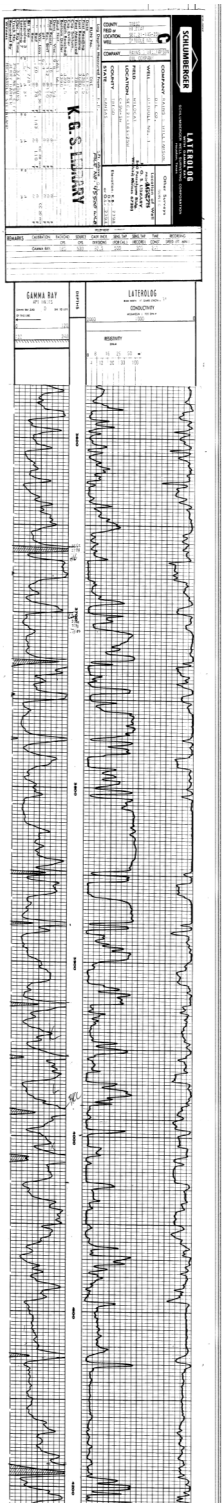

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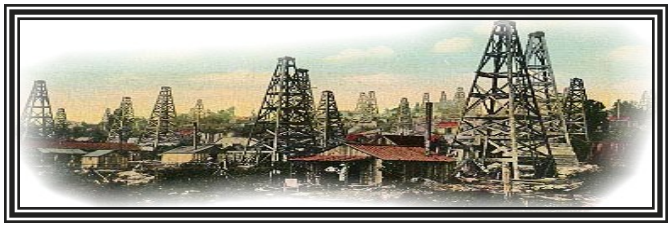
Missing reference books and periodicals from the KGS Resource Room

I'm channeling the spirit of my dear departed friend Bob Slamal. Bob was determined to organize all of the text books, survey bulletins and various publications that are in the resource room at the KGS Library. He spent countless hours on his own time to accomplish this task. Many years back, before his untimely death, he instituted a checkout policy for these materials. Cards were filled out with the borrowers name and publication, then placed in an envelope on the shelf where the publication was removed.

Recently I noticed many of these envelopes on the shelves and began to peruse them. Many items have been gone for years. I'm asking that each member check your reference materials for these missing items. I'm sure they will be marked as KGS property.

Please help me in this endeavor.

Wes Hansen
Editor



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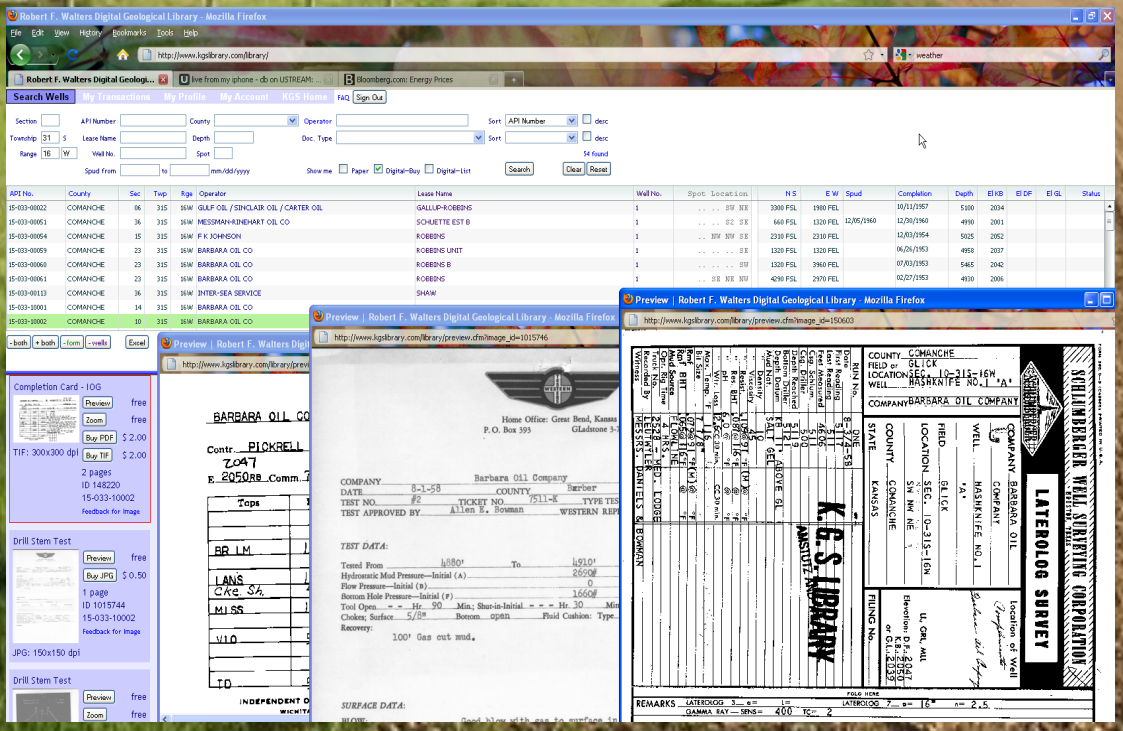

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WORKING WITH WELL AND LOG DATA Part 1:

Porosity and Cross Plot Analysis of a Mississippian Interval from Mcpherson County, South Central KS

Hendratta N. Ali, Fort Hays State University

The Mississippian interval was studied using well log data from gamma, neutron porosity, density porosity, photoelectric and bulk density logs. Log data was obtained from the Canton #1-36 SWD well in the Bitikofer field in Mcpherson, KS. Part of the logged interval was cored between ~2990 ft and ~2992 ft MD. This interval is first analyzed for select petrophysical properties. Known lithologic characteristics of the interval is typical of the Mississippian "Chat" (http://www.kgs.ku.edu/PRS/Poster/2002/2002-50/P2-01.html) a heterogeneous units composed of variable mixtures of siliceous, argillaceous and carbonate rocks with highly porous and some tight intervals.

Thin sections from the interval show the presence of different types of porosity expression from nil, single, dual to triple porosity types observed through the cored sections (Figure1).

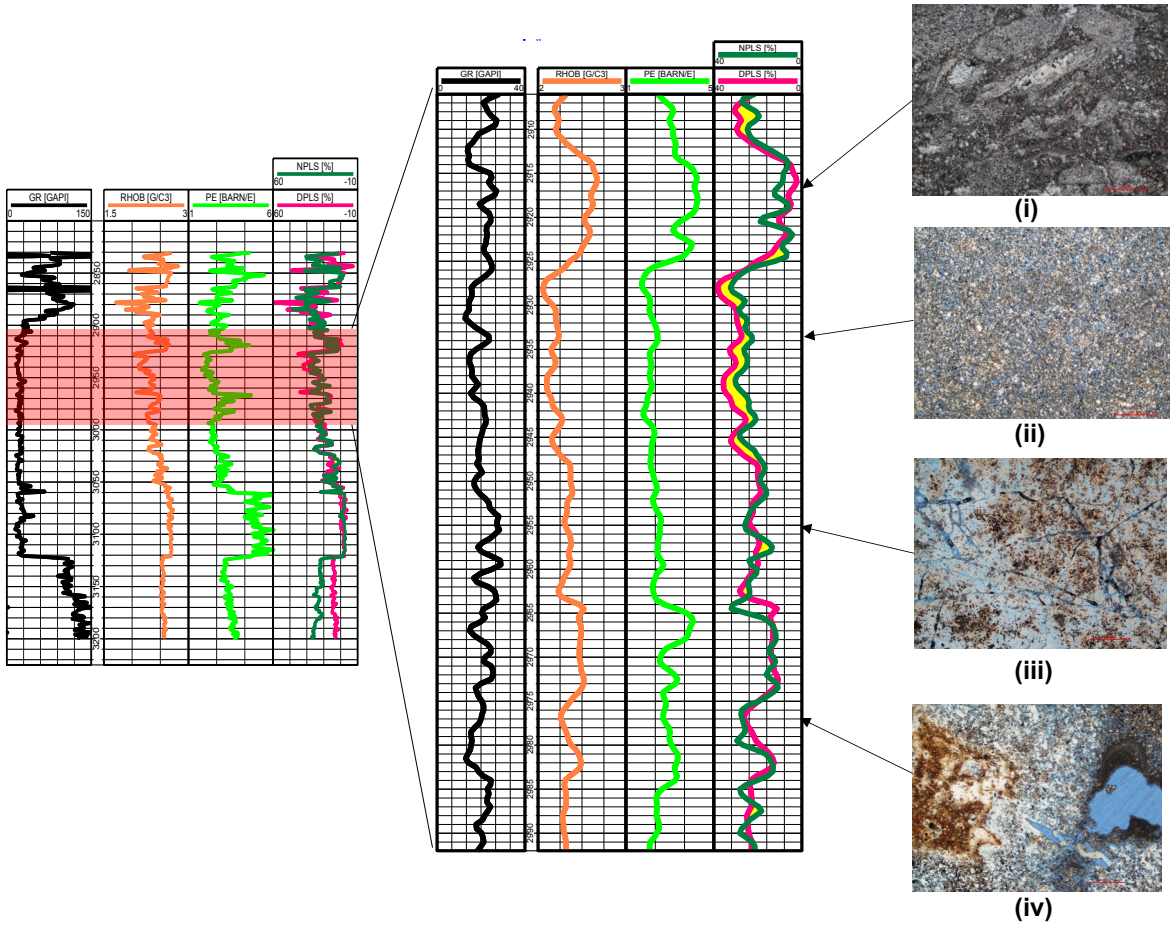

Figure 1: Log curves from Canton #1-36 well showing the cored interval shaded red (a.) with relatively lower GR values averaging 30 GAPI black curve), RHOB (orange curve) between 2.06 g/cm^3 and 2.67 g/cm^3, PE (bright green curve) between 1.72 and 4.26 b/e, DPLS and NPLS porosity (dark green and pink curves respectively) with average porosity values between <5% and 36%. Thin section images at 4 different depths (c.) show (i) relatively tight section, (ii) interparticle porosity, (iii) fracture and interparticle (iv) vuggy porosity

The thin sections show (i) a very low (tight) porosity section, from an interval with relatively higher bulk density (RHOB) and higher photoelectric (PE) factor; (ii) a highly porous, mostly single porosity type section with primary interparticle microporosity zone and relatively lower RHOB and PE values; (iii) a porous dual porosity section, with abundant fractures and interparticle porosity and similar RHOB and PE values as (ii) and (iv) a highly porous triple porosity section with porosity zones characterized by fracture, vuggy and interparticle porosity.

Porosity cross plots

Cross plots are scatter charts generated from porosity and other log (RHOB, DT, NPLS, DPLS and PE) data. They compare the porosity data obtained by one type of measurement (e.g. RHOB) to porosity data obtained by another type of measurement (e.g. neutron porosity) to interpret mineral facies, lithofacies and other petrophysical characteristics of the interval. This interval has density and neutron log data but no DT (sonic log data) for cross plot analyses.

Density Porosity log

Density porosity is determined from the bulk density log. Formation bulk density is the overall density of a formation with all its constituents. Bulk density is a function of: *matrix density* (this is the density of the solid particles and grains that make up the rock), *porosity* (the volume of pore spaces between the grains in the rock), the *type of fluid* in the pores (i.e. oil, gas, formation water or drilling mud) and the *fluid saturation* (amount of each type of fluid) in the rock. These components also control other formation properties and make the density logs potentially useful for identifying other useful formation characteristics *such as gas bearing* zones (in combination with the neutron log), the presence of *heavy minerals* (e.g. anhydrite), or *facies* characteristics (combined with other logs e.g. NPLS and PE). Bulk density is typically acquired in combination with the PE log.

Neutron Porosity log

Neutron porosity is determined from the neutron log. The neutron log basically measures the amount of *hydrogen (H)* atoms present in a formation. This is because most of the hydrogen in rocks is mostly found in the fluid (fluids include liquids and gases) components of the rock. For example, *water (H_2O)* contains two atoms hydrogen, *natural gas* e.g. *methane (CH_4)* contains four atoms of hydrogen and *higher hydrocarbons* such as octane (C_8H_{18}) a component of gasoline contains even more hydrogen atoms and so forth. Thus, with very few exceptions, the presence of hydrogen atoms in a rock indicates that there are fluids which means that the rock has pores. Therefore, by measuring the amount of hydrogen atoms (hydrogen index) in a rock, the information is then used to estimate the amount of porosity in the rock. In the presence of clays, the hydrogen in the bonded water can be miscalculated as part of the pores and falsely increases the porosity reading in the formation from its actual porosity value. This is common in rocks containing clays and known as the *shale effect*.

Neutron -Density Cross Plots

Neutron porosity vs. density porosity (or bulk density) cross plots are best used in intervals with the absence of natural gas. This is because gas saturation skews density porosity by increasing the density porosity readings and decreasing the neutron porosity reading from actual porosity values. This is known as the hydrocarbon *gas effect*.

However, if there are some clays in the formation, the neutron porosity reading maybe skewed and the data point will plots higher porosity than the actual porosity values (*shale effect)*. Therefore when density porosity and neutron porosity are plotted together (Figure 2), data points show deviations from the 1:1 line due to these effects (the presence of gas,

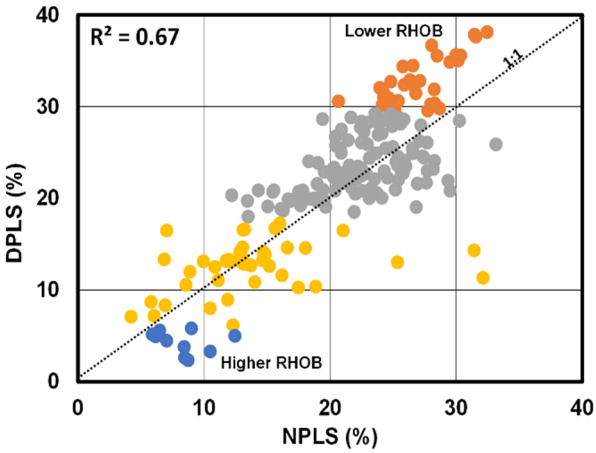

Figure 2: density and neutron porosity crossplot showing deviation from a 1:1 line . The colors show samples of different bulk densities.

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clays or and/or heavy minerals). On figure 2, gas influenced zones typically plot above the equality 1:1 line where density porosity values are higher than the neutron porosity values. In clay influenced zones, points plot below the equality line where neutron porosity values read higher than density porosity values. Denser minerals plot closer to the zero porosity value as opposed to low density particles. If the formation contained unusually heavy minerals (i.e. their density is greater than that of the mineral used to calibrate the porosity log data), the density porosity values will read lower than actual porosity or even read negative values (i.e. less than zero porosity). This is known as the *heavy mineral effect*. In this case, intervals above the line are generally higher in gas and intervals below the line are higher in clays (shaly).

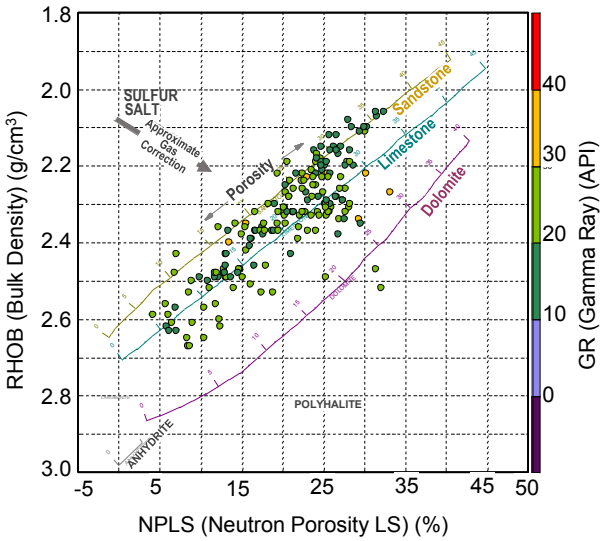

Figure 3: Neutron-density cross plot lithology overlay for the study interval. Gamma ray ranges are color coded on the plot.

Cross plot overlays

When a lithology overlay of sandstone, limestone and dolomite is added to the neutron porosity vs. bulk density cross plot (Figure 3), most of the data points plot between the sandstone-limestone lines. Fewer points plot between the limestone-dolomite lines. Other points plot above the sandstone (gas) and below the dolomite line (shales). Thus figure 3 suggest that the interval is mostly composed of calcareous-sandstone facies with some dolomitic limestone, shaly and gas bearing zones.

Given that the data points mostly fall between and not on the lithology lines, further investigation to determine relative mineral phases follows. This is especially likely due to variations in PE log values that are mostly outside the known values for the pure lithologies on figure 3. For example, quartz the mineral in sandstones has a PE value of 1.81 b/e, calcite the mineral in limestone has a PE of 5.08 b/e, dolomite has a PE of 3.14 b/e. Clays have different PE values (between 1.8 to >6.0 b/e) although shales typically average around 4.0 b/e.

A cross plot of apparent matrix density (RHO_{maa}) and apparent matrix volumetric photoelectric factor (U_{maa}) overlay with the ternary mineral chart for quartz-calcite-dolomite is shown on figure 4. In this case, most of the data points plot in the high quartz –dolomite and feldspar zone with fewer points in the zones representing high % calcite. The dominant minerals phases in the interval are quartz, feldspar, dolomite and to a lesser extend calcite. Note that the portion of the samples representing feldspars plot outside and above the ternary chart field.

The U_{maa}-RHO_{maa} cross plot overly therefore suggest a more dolomitic–silicate (quartz, feldspars, clays) facies, which somewhat conflicts with observations from the neutron porosity vs. bulk density cross plot lithology overlay that showed a more calcareous-siliceous facies. These slight discrepancies are attributed to the fact that formations are not "clean" (i.e. composed on only pure mineral types), as well as the presence and variation in fluid types and fluid saturation.

Combining analyses from figure 3 and 4, and taking into account GR values and visual core observations four mineral facies groups are identified for the interval.

1. Siliceous facies (quartz and amorphous silica)
2. Arkosic facies / feldspathic wackes (feldspars)
3. Argillaceous facies (clay minerals)
4. Carbonate facies (dolomite and calcite)

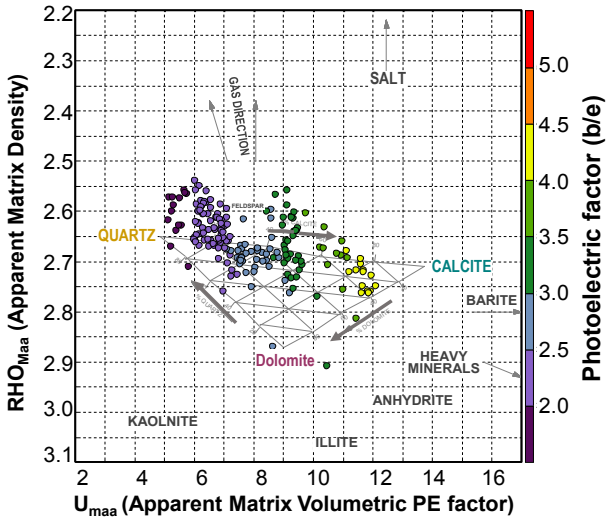

Figure 4: Umaa-RHOmaa cross plot overlay with a matrix identification plot of three major minerals (quartz-dolomite-calcite) with color codes

Additional geochemical measurements of X-ray diffraction and X-ray fluorescence and thin section analyses of additional characterization of the interval will be presented in a later segment to this article.

For further questions or comment contact: *hnali@fhsu.edu*

Acknowledgment:

I want to thank Orca Resources LLC for donating Core samples and funding for core analyses

Useful References:

Asquith, George B., Daniel Krygowski, and Charles R. Gibson. *Basic well log analysis*. Vol. 16. Tulsa: American association of petroleum geologists, 2004.

Johnson, David Earl, and Kathryne E. Pile. *Well logging in nontechnical language*. PennWell Books, 2002.

Martin K. Dubois and W. Lynn Watney. *Mid-Continent Core Workshop: From Source to Reservoir to Seal*. Kansas Geological Survey/Kansas Geological Society, Ed. Julie Tollefson, pp.236, Mid-Continent Section AAPG, 2013.

AAPG Section Meeting Updates

Eastern - Morgantown W. VA - Sept. 24-27

Mid-Continent - Oklahoma City, OK - Sept. 30-Oct. 3

Gulf Coast San Antonio, TX - November 1-3

Please plan to attend the AAPG Mid-Continent Section Meeting

It will be educational and a great opportunity to meet old friends and create new contacts during these downtimes.

EDITOR'S NOTE:

In the far distant past, there was an effort to get the membership to agree to receiving the Bulletin online on the KGS website in pdf format. I, as well as the vast majority of the membership, opted to continue getting a mailed hard copy. In my current capacity as treasurer of the KGS, it has become apparent to me that we need to really consider going to online only or possibly assessing a surcharge to cover the printing and mailing costs of the Bulletin. Our current costs of printing and mailing the Bulletin are not covered by our declining advertising revenue. I welcome input from the membership on this matter.

My email is *whansen4651@sbcglobal.net.*

I will endeavor to come up with some hard numbers for the next issue. Obviously, no changes will occur prior to the end of the current calendar year.

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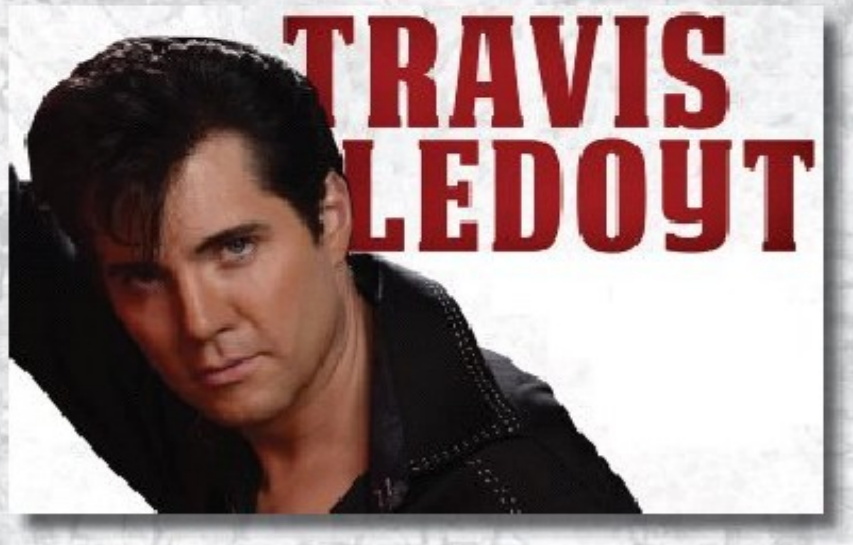

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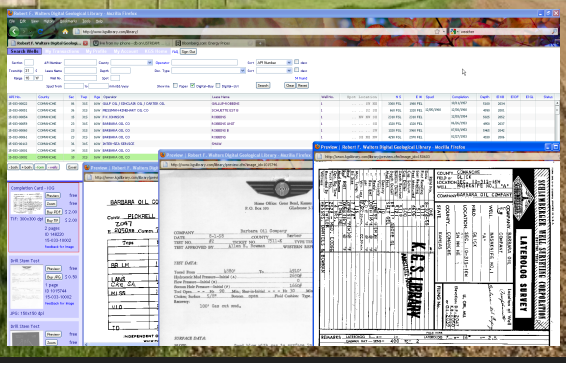

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GOALS:

- promote geology and earth science
- preserve geological records
- establish memorials and endowments
- support field trips and seminars
- financial aid and grants to students

PLEASE HELP SUPPORT THE FOUNDATION

Kansas Geological Foundation Services

The Kansas Geological Foundation provides the following services as a part of the organization's commitment to educate the public regarding earth science.

Speaker's Bureau

A list of speakers available to talk about various aspects of geology may be obtained by contacting Janice Bright at the KGS Library, 265-8676. This service is free to the public.

DVD/Videotape Library

The KGF maintains a DVD & videotape library focused primarily on the various fields of earth science. These tapes may be checked out without charge by the public. To obtain a list of tapes, please contact the KGS Library, 212 N. Market, Ste. 100, Wichita, KS 67202, or call Janice Bright at 265-8676.

The Kansas Geological Foundation was founded in March, 1989 as a not-for-profit corporation under the guidelines of section 501(c)(3) of the tax code to provide individuals and corporations the opportunity to further the science of geology. It is dedicated to providing charitable, scientific, literary and educational opportunities in the field of geology for the professional geologist as well as the general public.

KGF can receive in-kind donations through which the donor may receive a tax deduction. Of equal importance, the KGF provides the financial resources to sort, process and file this data at the KGS library. If you have a donation to make, please contact the KGF at 265-8676.

Your tax-deductible membership donation helps to defray the cost of processing donations and to support public education programs about the science of geology. Annual membership begins at $50.00 per year. Donations of $100.00 or more are encouraged through the following clubs:

Century Club	$ 100 to $ 499
$500 Club	$ 500 to $ 999
Millennium Club	$1000 to $5000
President's Club	$5000 and over

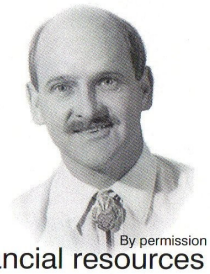
Kansas Geological Foundation
Cornerstone

Kansas Geological Foundation News

Fall 2017 Scholarship Recipients

Mikaela Rader	Kansas State University	$500.00
Amy Olson	University of Kansas	$500.00
Robert Baker	Wichita State University	$500.00
Jonathan Woods	Wichita State University	$500.00
Stacy Hendricks	University of Kansas	$500.00
Logan Behr	Fort Hays State University	$500.00
Isaac Allred	University of Kansas	$500.00
Larissa Howard	Fort Hays State University	$500.00
Kathleen Graham	University of Kansas	$500.00

The Kansas Geological Foundation Needs You!



By permission

The KGF provides the financial resources to sort, process and file, in-kind donations of geological data at the KGS library. Due in large part to the KGF this unique and rare well of information is being made available to all. Please consider telling your company management and colleagues about the benefits of a library that continues expanding in part because of the KGF.

We very much value and need your financial support.

KGF Officers and Board Members

President- Larry Richardson
Vice President - Marc Summervill
Treasurer - Wes Hansen
Secretary - Ken Wallace

Board Members

Monica Williams
Bryce Bidleman
Brian Fisher
Ken Leblanc
David Doyel

Kansas Geological Foundation News

Students: The KGF awards scholarships each December and May. Check with your department chairs for applications. You must submit complete applications by the deadline.

Applications for the Spring semester will be due by December 1, 2017. At the December KGF meeting the recipients for Spring 2018 scholarships will be determined.

Grants to help with research on Kansas related geology are also considered for aid.

Currently, the Foundation has four students working on well log integration: Kyle Lawson, Helen Cruz, Shuyao Li (a.k.a. Emily) and David Bruce. They work between ten and thirty hours per week. More than a dozen other part-time integrators have worked on the project since 2010.

Between 2011 and 2016, the integration project compared 131,811 well logs to holdings on Walters Digital Library (WDL). Of these, 45,814 (34.8%) were not in WDL and were subsequently added to the library holdings. Additionally, 1,173 of the donated logs were re-scanned to replace poor images on WDL.

In the first seven months of 2017, 7,210 donated logs were compared to WDL. 1,110 (15.4%) new logs were added to WDL, with 263 rescans. Funding donated to the Foundation by the Society for increasing integrators' hours has greatly increased production. Thank you!"

Recent donations of data have been donated by Vincent Oil Corp., Don Beauchamp and Falcon Exploration, Inc."

Kansas Geological Foundation
Video / DVD Collection

The KGF has an extensive collection of videos available for check-out at no charge.
Only pay for shipping back.

These are ideal for classroom or general public viewing.

See the web for titles & descriptions
www.kgfoundation.org

Call 316-265-8676
Ask for Janice to check out videos

AAPG Needs You!
Professional geoscientists, share your world!

The Mid Continent Section has **17 AAPG Student Chapters**, but only **3 Visiting Geoscientists**...which makes it almost impossible to have a professional geoscientist visit to each school at least once a year or even once every two years. The aim of AAPG's program is to give students a flavor of a professional life in energy resources. It also hopes to encourage dialog between industry and academia.

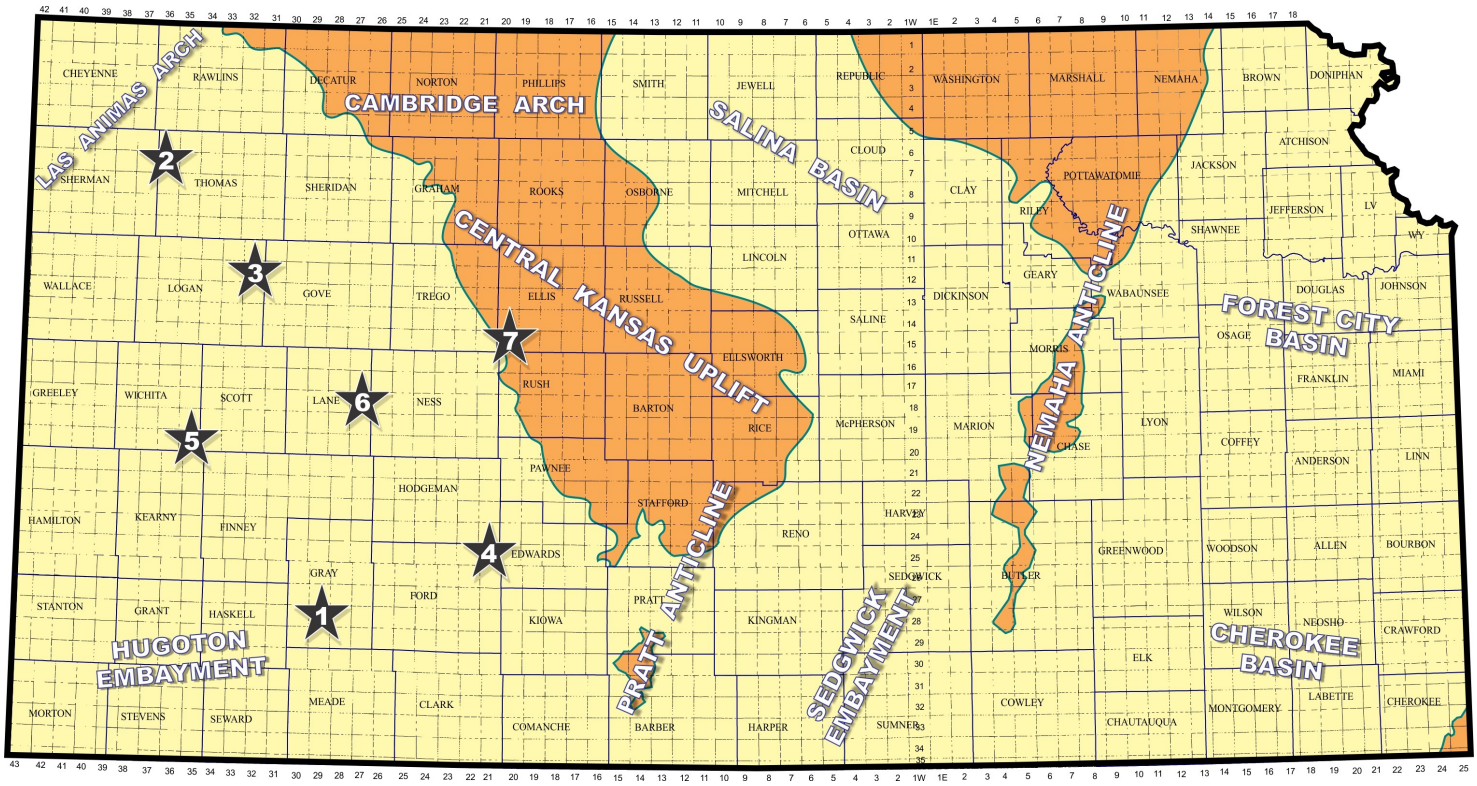
To be a Visiting Geoscientist bearing the AAPG flag, you are asked to have at least 5 years of experience and make at least one visit per year to a university. It can be a school with an AAPG Student Chapter, or a college/university without one. Your choice.

The Mid Continent schools with Student Chapters are: Missouri University, Fort Hays State University, Iowa State University, Kansas State University, Missouri State University, University of Nebraska, Northwest Missouri State University, Oklahoma State University, University of Oklahoma, University of Arkansas, University of Iowa, University of Kansas, University of Missouri, Columbia University of Tulsa and Wichita State University.

Contact Robbie Gries, co-Chair VGP committee, Denver, if you are interested in learning more. rrgries@aol.com

Exploration Highlights

By John H. Morrison, III
Independent Oil & Gas



Map courtesy of Marc Summervill

McCoy Petroleum Corporation, Wichita (KS), has successfully completed a new pool discovery well in southwestern Gray County, about 1.25 miles south of the town of Montezuma. The #1-36 Reed Trust A, drilled in the northeast corner of section 36- T28s- R29W, is producing an unknown amount of crude from the Mississippian formation. Sterling Drilling rig was used to bottom the well at a total depth of 5501 ft. The remote wildcat lies over 6 miles from closest known production in the county. the new field name is Montezuma Townsite. (API 15-069-20498)

Gulf Exploration LLC, Oklahoma City (OK), has discovered new Cherokee oil reserves at the #1-9 Carpenter Trust, spotted in the NE/4 of section 9- T7s- R36W, in Thomas County. The 5500-ft deep well establishes new field production over 2 miles northwest of the Guise Field (1979, Marmaton oil) and is nearly 4 miles from other known Cherokee production in the vicinity. Field area is located 6.5 miles north and 1.5 miles east of the town of Brewster. The new field has been named Barrett Township. (API 15-193-20987)

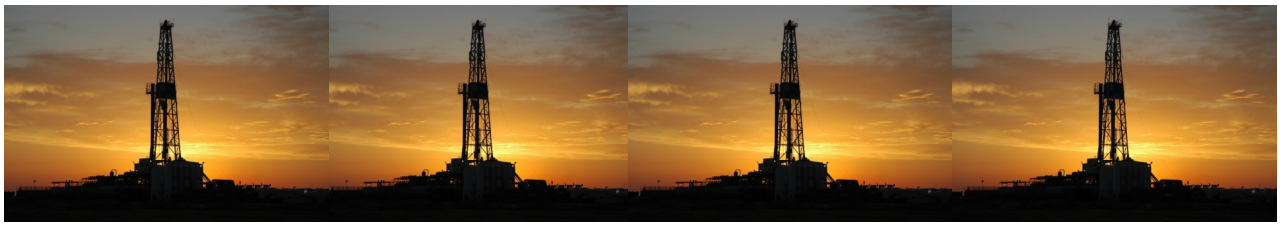
King Oil Operation, of Ellis (KS), is producing 33 bbl of water-free oil per day at the #1-12 Engel - Boyd Unit in Logan County. The well establishes the new Sky

Chief South oil field in the NE/4 of section 12- T12s- R32W, about 6.5 miles south and 1.5 miles east of the town of Oakley. The well found productive Cherokee zone at a depth of 4593 to 4597 ft. Total depth was obtained at 4700 ft. Discovery site lies about one mile south of the Sky Chief Field (2012). (API 15-109-21490)

Cobalt Energy LLC, Wichita (KS), has established a new oil-producing area in Ford County with the completion of the #1-36 Herrmann Unit 'A'. The wildcat well is giving up 14 bbls of oil per day, no water, with commingled pay coming from the Cherokee formation at a depth of 4648 to 4671 ft., as well as a Mississippian zone from 4705 to 4711 ft. Total depth is 4800 ft. The new Fored Southwest pool discovery was drilled at location in the NE/4 of section 36- T25s- R21W, about 3.5 miles south of the town of Offerle, Kansas. (API 15-057 -20977)

Lario Oil & Gas Company, Wichita (KS), has discovered oil deposits in the upper Marmaton and Pawnee formations at the #1-12 Lang in Wichita County. The new Langwich pool opener lies in the NW/4 of section 12- T20s- R35W, about 10.5 miles south and 4 miles east of Marienthal, Kansas. The well found the new reserves over 3 miles north of the White Woman North Field (1997) where the Marmaton formation also has produced. Operator bottomed the #1-12 Lang at a total depth of 5100 ft. (API 15-203-20316)

Knighton Oil Company, Inc., Wichita (KS), has successfully completed their #1 Goodman exploratory well in Lane County. The well is producing an undisclosed amount of crude oil from the Lansing-Kansas City 'K' (Swope) formation



Kansas Geological Foundation Memorials

KGS Member	Date Deceased	Memorial Est.
Dan Bowles	09/89	1990
John Brewer	10/89	1990
George Bruce	08/89	1990
Robert Gebhart	01/90	1990
Ray Anderson, Jr.	11/90	1990
Harold McNeil	03/91	1991
Millard W. Smith	08/91	1991
Clinton Engstrand	09/91	1991
M.F. "Ted" Bear	10/91	1991
James & Kathryn Gould	11/91	1991
E. Gail Carpenter	06/91	1993
Benton Brooks	09/92	1992
Robert C. Armstrong	01/93	1993
Nancy Lorenz	02/93	1993
Norman R. Stewart	07/93	1993
Robert W. Watchous	12/93	1993
J. George Klein	07/94	1994
Harold C.J. Terhune	01/95	1995
Carl Todd	01/95	1995
Don R. Pate	03/95	1995
R. James Gear	05/95	1995
Vernon Hess	06/95	1995
E. K. Edmiston	06/95	1995
Jack Rine	07/95	1995
Lee Cornell	08/95	1995
John Graves	10/95	1995
Wilson Rains	10/95	1995
Heber Beardmore, Jr.	09/96	1996
Elmer "Lucky" Opfer	12/96	1996
Raymond M. Goodin	01/97	1997
Donald F. Moore	10/92	1997
Gerald J. Kathol	03/97	1997
James D. Davies	08/88	1997
R. Kenneth Smith	04/97	1997
Robert L. Dilts	05/97	1997
Delmer L. Powers	06/72	1997
Gene Falkowski	11/97	1997
Arthur (Bill) Jacques	01/98	1998
Bus Woods	01/98	1998
Frank M. Brooks	03/98	1998
Robert F. Walters	04/98	1998
Stephen Powell	04/98	1998
Deane Jirrels	05/98	1998
William G. Iversen	07/98	1998
Ann E. Watchous	08/98	1998
W.R. "Bill" Murfin	09/98	1998
Donald L. Hellar	11/98	1998
Joseph E. Rakaskas	01/99	1999
Charles W. Steincamp	02/99	1999
Robert and Betty Glover	10/96	1998
Howard E. Schwerdtfeger	11/98	1999
W. W. "Brick" Wakefield	03/99	1999
V. Richard Hoover	01/00	2000
Warren E. Tomlinson	01/00	2000
James A. Morris	01/00	2000
Eric H. Jager	03/00	2000
Kenneth W. Johnson	03/00	2000
Dean C. Schaake	03/00	2000
Fred S. Lillibridge	05/00	2000
Jerry A. Langrehr	07/00	2000
Clark A. Roach	07/00	2000
Floyd W. “Bud” Mallonee	10/00	2000
Ralph W. Ruuwe	09/00	2000
Robert L. Slamal	02/01	2001
Jerold E. Jesperson	06/01	2001
William A. Sladek	06/01	2001
Harlan B. Dixon	06/01	2001
Edward B. Donnelly	08/01	2001
Richard P. Nixon	02/02	2002
Robert W. Frensley	12/01	2002
Gerald W. Zorger	01/02	2002
Don L. Calvin	03/02	2002
Claud Sheats	02/02	2002
Merle Britting	2002	2002
Harold Trapp	11/02	2002
Donald M. Brown	11/02	2003
Elwyn Nagel	03/03	2003
Robert Noll	09/03	2003
Benny Singleton	09/03	2003
Jay Dirks	2003	2003
J. Mark Richardson	02/04	2004
John “Jack” Barwick	02/01	2004
Richard Roby	03/04	2004
Ruth Bell Steinberg	2004	2004
Gordon Keen	03/04	2004
Lloyd Tarrant	05/04	2004
Robert J. “Rob” Dietterich	08/96	2004
Mervyn Mace	12/04	2004
Donald Hoy Smith	04/05	2005
Richard M. Foley	06/05	2005
Wayne Brinegar	06/05	2005
Charles B. Moore	09/96	2005
Jack Heathman	05/06	2006
Charles Kaiser	09/06	2006
Rod Sweetman	08/06	2006
Karl Becker	10/06	2006
Frank Hamlin	10/06	2006
Marvin Douglas	12/06	2006
Robert W. Hammond	04/07	2007
Eldon Frazey	04/07	2007
Pete Amstutz	05/07	2007
Charles Spradlin	05/07	2007
Donald R. “Bob” Douglass	09/07	2007
Vincent Hiebsch	11/07	2007
Glen C. Thrasher	03/08	2008
Peg Walters	06/08	2008
Theodore “Ted” Sandberg	07/08	2008
James Ralstin	11/08	2008
Earl Brandt	04/09	2009
Walter DeLozier	05/09	2009
Don D. Strong	01/10	2010
John Stone	02/10	2010
Craig Caulk	03/10	2010
Joseph E. Moreland, Jr.	03/10	2010
Gene Garmon	03/10	2010
James F. Dilts	05/10	2010
Jerry Pike	05/10	2010
Donald Hollar	06/10	2010
Delbert Costa	08/10	2010
John Tanner	08/10	2010
William (Bill) Owen	09/10	2010
Harold (Hal) Brown	10/10	2010
Edmund G. Lorenz	11/10	2010
Thomas E. Black	05/11	2011
Wayne E. Walcher	07/11	2011
Henry F. Filson	07/11	2011
Thomas Ray	07/11	2011
Edgar E. Smith	09/11	2012
Marilyn Messinger	06/13	2013
Micheal Mitchell	09/13	2013
Orvie Howell	11/13	2013
James Thompson	11/13	2013
Dick Rowland	09/13	2014
Robbie Thompson	12/13	2014
Kris Kennedy	04/14	2015
Annette Hedke	02/15	2015
James Devlin	04/15	2015
Robert Gensch	09/15	2015
Jerald Rains	05/16	2016
Max Houston	05/16	2016
Robert “Gus” Messenger	01/17	2017
Jimmy Wayne Gowens	04/17	2017

Kansas Geological Society & Library
212 North Market, Suite 100
Wichita, Kansas 67202

CHANGE SERVICE REQUESTED

KGS BULLETIN
September-October 2017

September 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
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10	11	12 KGS Board	13	14	15 KGS Fishing Tourney	16
17	18 KGS Golf Tourney	19	20 KGF Board	21	22	23
24	25	26	27	28	29	30

October 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10 KGS Board	11	12	13 KGS Shooting Tourney	14
15	16	17	18 KGF Board	19	20	21
22	23	24	25	26	27	28
29	30	31	30			