PBS-SEPM NEWSLETTER

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May 2008

President's Column

Thinking Out-of-the-Box

We hear this all the time in our business, but what does it really mean? Not accepting status quo or being a *contrarian.* I remember my days at ARCO when management talked about doing things "counter-cyclical". Saying and doing are two different things. Some of our famous wildcats like Michael Halbouty, Tom Brown, Clayton Williams, and George Mitchell are what I consider men in our field that have seen things differently.

I once heard if you have two geologists work on a project you get three answers. A geologist by nature is inquisitive. However, how many ever thought we would be thinking "shales" as reservoirs? I know I was always taught they were our source rocks. It is those brave souls that say "why not" that will discover the next Barnett Shale play. I have been asked if I think that the Permian will have a Barnett Shale play. I say yes. When I was at Tom Brown, Inc. we started looking at West Texas as the next "Barnett Shale" frontier. We had done the geochem work and started leasing in Culberson, Reeves and Pecos county back in 2004. EnCana bought us out and that broke up our exploration team. A number of wells have been drilled since then by EnCana, EOG, COG, Burlington, PetroHunt, Quick Silver, Southwest Energy, Chesapeake, and others. We now know there is a significant amount of gas in the Woodford, Barnett, Atoka and Wolfcamp shales in the Permian Basin. Who is going to break the code and make these shales commercial? Good question.

There have been those that have said we would only be able to produce gas from shales. Oil molecules are too big. Guess what --- we are seeing significant oil production from the Woodford in Oklahoma and Bakken in the Williston Basin. Wells that are producing over 2000 bopd.

Some of us are saying—let's throw out many of our old ideas or at least start challenging them. What do we know about the hydrocarbon systems? Looks like just about anything can produce under the right conditions. We still have to make it economic for us to pursue.

Another great example is the Spraberry-Wolfberry play in the Permian Basin. It's long been called the largest uneconomic oil field in the world. Operators like Henry Petroleum, Pioneer Resources, Patriot Resources and Manhattan Resources to name a few are beginning to turn heads. New hydraulic fracture technology and drilling techniques have helped make this a play with a future. Of course $100 per barrel oil doesn't hurt.

I challenge all of us to instead of saying "why"— say "why not." Start getting out-of-the-box. Don't be afraid to color outside the lines. We have a great future. It all depends on how we choose to paint it.

David J. Entzminger

PBS-SEPM Luncheon Schedule

May 20: Origin of Lower Ordovician Ellenburger Group Brecciated and Fractured Reservoirs in West Texas; Paleocave, Thermobaric, and/or Tectonic

Dr. Robert (Bob) G. Loucks

Sr. Research Scientist, Bureau of Economic Geology, University of Texas at Austin

Please contact Paula with your reservation at (432) 683-1573 or wtgs@basinlink.com

Updates can be found online at: www.pbs-sepm.org

Origin of Lower Ordovician Ellenburger Group Brecciated and Fractured Reservoirs in West Texas; Paleocave, Thermobaric, and/or Tectonic

Robert G. Loucks, Bureau of Economic Geology, The University of Texas at Austin, Austin, TX

Several origins have been suggested for the development of large-scale brecciation and fracturing in Ellenburger strata, including karst-related paleocave development and collapse, subsurface thermobaric dissolution and fracturing, and tectonic fracturing and brecciation. Most brecciation and fracturing in the Ellenburger Group resulted from near-surface, meteoric karst that developed at the Sauk Unconformity (~475 Ma before present) and was modified by later karst processes during Pennsylvanian exposure (~280–300 Ma before present). Some areas show a strong overprint of hydrothermal alteration and tectonic fracturing, suggesting all three processes affected Ellenburger strata, but at different times.

Early, widespread brecciation and fracturing in the Ellenburger Group have been well documented to result from subaerial exposure and associated meteoric cave formation and collapse. The collapse, starting at the surface contemporaneous with cavern formation, continued into the subsurface to at least 9,000 ft of burial. Cave formation is evidenced by (1) multiple types of water-lain, detrital cave-sediment fill in cavities and fractures, (2) Upper Ordovician to Mississippian conodonts in the sediment fill, (3) speleothems, and (4) lateral dimensions and patterns of brecciated bodies. Paleocave collapse is the origin of most brecciation and fracturing in Ellenburger strata. Boxwork structures and vugs along bedding planes and higher temperature coarse, to very coarse, crystalline saddle dolomite cements are evidence of a passive to aggressive hydrothermal overprint that occurred during the Ouachita Orogeny. Boxwork structure is composed of closely spaced, dolomite-filled fractures on the scale of decimeters to millimeters; the host rock is commonly dissolved, leaving an open dolomite boxwork. Saddle dolomite cements passively filled many voids created by cave processes, but they also appear to have filled some vugs associated with hydrothermal dissolution. Tectonic fractures cutting host rock, lithified breccias, and lithified sediment fills have relatively strong directional patterns in the Ellenburger Group where they have been mapped.

Because deciphering the origin of complex breccia and fracture systems, such as seen in Ellenburger strata, is commonly difficult, the complete paragenesis of a system must first be understood. Paleokarst is common at ancient, composite unconformities, as shown in the geologic record. The paleokarst pore network may therefore form the dominant conduit in these systems, and later fluids, such as subsurface-derived hydrothermal fluids, may migrate through these conduits and modify the strata either passively or aggressively. Passive modification occurs when hydrothermal cements precipitate in former voids and have no relationship to the origin of the voids. Aggressive modification occurs when fluids create voids and breccias and precipitate hydrothermal cements into these voids. Tectonic fractures can overprint any system at different times, and these events must be worked out by geoscientists first becoming familiar with tectonic and burial histories of individual regions. Therefore, all three processes (karst, thermobaric, and tectonic) have affected the Ellenburger strata.

Biography

Robert G. Loucks

Bob Loucks received his BA degree from the State University of New York at Binghamton in 1967 and his Ph.D. degree from the University of Texas at Austin in 1976. Before returning to the Bureau of Economic Geology, at The University of Texas at Austin, in July 2000, Bob had already gained 32 years of research, reservoir-characterization, and exploration experience with Texaco, Bureau of Economic Geology, Cities Service, and ARCO. At the ARCO Technology Center, where he worked for 17 years, he was a Senior Research Advisor conducting exploration and reservoir-characterization research. He is now a Senior Research Scientist and is a co-principal investigator on the Carbonate Reservoir Characterization Laboratory program (RCRL), the State of Texas Advance Resource Recovery Program, the Deep Shelf Gas Consortium, and the shale and mudrock systems program. His research interests cover carbonate, siliciclastic, and mudrock sequence stratigraphy, depositional systems, diagenesis, and reservoir characterization. Bob has worked in the Middle East, North Africa, Far East, West Texas, Texas Gulf Coast, Mexico, Alaska, and California.

Mark your Calendars

MAY

May 13 WTGS Luncheon Meeting

Speaker: **Tony D'Agostino**, OMNI Laboratories Weatherford Core Evaluation Svcs., Houston, TX

Topic: "Age, Sequences, Depo-Models, and Biofacies: U.S. Mississippian Shale-Gas Basins"

2007-08 Awards

Dedicated Service Award- Sam Samford
Volunteer Award- Gilbert Barrigan
Perryman Award-
Whiting Petroleum Corporation
Hon0rary Life Award- TBA

May 15: PBS-SEPM Board Meeting

May 20: *Dr. Robert (Bob) G. Loucks*
Sr. Research Scientist, Bureau of Economic Geology, University of Texas at Austin;
***Topic:* "Origin of Lower Ordovician Ellenburger Group Brecciated and Fractured Reservoirs in West Texas; Paleocave, Thermobaric, and/or Tectonic"**

May 22: WTGS Awards Dinner, Petroleum Club, 6:30pm. Please call the office for reservations no later than Tuesday, May 20.

JUNE

Robert White, Whitestar Corporation
Topic: "When Good Data Turns Bad"

JULY & AUGUST

TBA

WTGS 2007 Fall Symposium CDs are now available at the WTGS Office.

Let us tell your story of the

Permian Basin History

We are featuring a new item in the newsletter which includes a story from our "well-seasoned" geoscientists. These may be their favorite plays, that once-in-a-lifetime project or well, or stories about their fellow workers (the pictures could be very interesting). If you would like to write a story or know of someone that would like to contribute, please contact David Entzminger, 686-6741.

Are you a PBS-SEPM member?

Applications on the website: www.pbs-sepm.org

PBS-SEPM- elections

There are only a few days left; please take time to send in your ballots for the 2008-09 slate of officers. I would encourage you to get involved by voting. The society only gets stronger with your participation.

If you would be interested in a position on a committee or have a presentation, please contact any of the current board members.

PERMIAN BASIN SECTION – SEPM OFFICER CANDIDATES

2008/2009

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Fred H. Behnken Kinder Morgan Production Company, L.P.

Biographic Information

Staff Geologist
Kinder Morgan Production Company, L.P.
Previously consulting as FHB Stratigraphic Services, ARCO Permian, ARCO Exploration Co., Mesa Petroleum, Union Oil of California, Asst Prof. (Geol) at Augustana College, IL and Texas Tech University, Lubbock.
Augustana College - BA Geol 1967
University of Wisconsin, Madison -MS Geol 1969 and Ph.D. Geol 1972
PBS-SEPM 1970-
PBS-SEPM Treasurer, 2nd VP, 1st VP, President-Elect, and President.
National SEPM Member 1969-
Gulf Coast Section SEPM
WTGS Member 1970-
AAPG Member 2006-
Roswell Geological Society 1985-
SPE Member
Paleontology Society 1968-2007
Texas Licensed Professional Geologist

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Hollie Lamb Stanolind Oil and Gas Corp.
432-688-4250 hlamb@stanolind.com

Biographic Information

Geo Engineer – Stanolind Oil and Gas Corp.
Lakehead University – BS – Engineering (Civil)
Northern College – Survey Technician & Architectural Technician
WTGS Member – 2005 –
WTGS Luncheon Coordinator July 2007 -
SEPM Member – 2005 –
SEPM Field Trip Committee 2007
SPE Member – 2005 –

2nd VICE PRESIDENT

Terri McGuigan Independent

Biographic Information

Previously Land Manager – Endeavor Energy Resources, LP
University of Texas of the Permian Basin – BS Geol 2005 and currently obtaining MS Geol
SEPM Member - 2004
PBS-SEPM Member – 2003 -
PBS-SEPM Treasurer – 2007-2008
AAPG Member - 2002
WTGS Member – 2003 -
WTGS Fall Symposium Co-Chair Moderators and Judges – 2006, 2007
WTGS Delegate to SWS – AAPG – 2007-2010
AAPL Member 1998
Certified Professional Landman - 1999
PBLA Member 2006

TREASURER

Debrah S. Gann ARCADIS US, Inc.

Biographic Information

Project Scientist / Geologist
ARCADIS U.S. Inc.
University of Texas of the Permian Basin - BS Geol 1992 and MS Geol 2000
PBS-SEPM Member 1996-
PBS-SEPM 2nd Vice President 2007-2008
WTGS Member 1996-
WTGS Continuing Ed. Chairman 2006-2008
AAPG & AAPG-DEG Member 2000-
AAPG-DEG Health & Safety Committee 2006-2007
SWS-AAPG: DEG Advisory Board Member 2003-2004
SWS-AAPG 2004 State Conference – Environmental Session Technical Committee & Moderator
Business & Professional Women Member 2004-
BPW Corresponding Secretary 2006-2008
BPW Communications Chair 2004-2008
NGWA Member 1996-
SPE-ESG Member 1996-
Texas Licensed Professional Geoscientist
Tennessee Registered Professional Geoscientist

Louis J. Mazzullo, CPG Mazzullo Energy Corp.

Biographic Information

President, Mazzullo Energy Corp., Midland
Previously Senior Exploration Geologist, Brigham Oil & Gas; Mediterranean Resources (both Austin); Petroleum Geological Consultant for 24 years; previously Uranium Exploration & Development geologist, Phillips Petroleum Co. and Energy Resources Corp.
Brooklyn College, CUNY - BA Geol 1973
State University NY, Stony Brook- MS Earth & Space Sciences, 1975
University of Chicago- MS Geophysical Sciences, 1976
PBS-SEPM 1988-89, President
Various committees and field trip planning
WTGS Member 1981- present
Various committees
Dedicated Service Award, 1992-93
AAPG Member 1977- present
Wyoming Registered Geologist
AAPG Certified Petroleum Geologist
Levorsen Award Recipient, 1990 & 1999, Southwest Section AAPG
Cheney Science Award, 2005- Southwest Section AAPG

SECRETARY

James L. Hawkins Schlumberger

Biographic Information

Borehole Geologist/Horizontal Well Placement Engineer
Schlumberger – Data Consulting Services
University of Texas of the Permian Basin – BS 1993
University of Texas of the Permian Basin – MS 2005
18 Years Oil & Gas Experience in Permian Basin
AAPG Member 1991-
DEG & EMD
PBS-SEPM Member 1993-
SEPM National Member 2007-
WTGS Member 1993-
APGE Member 1997-
GSA Member 2007-

Jesse Garnett White Kinder Morgan
Jesse_white@kindermorgan.com

Biographic Information

Staff Geologist, Yates Team
Kinder Morgan Production Company LLC
University of Alaska Fairbanks - MS Geol 2007
University of Idaho - BS Geol 2003
GSA Member - 1999
AAPG Member - 2000
SEPM Member - 2003
ALASKA MINERS ASSOCIATION - 2003
ALASKA GEOLOGICAL SOCIETY - 2003
IAS Member - 2006
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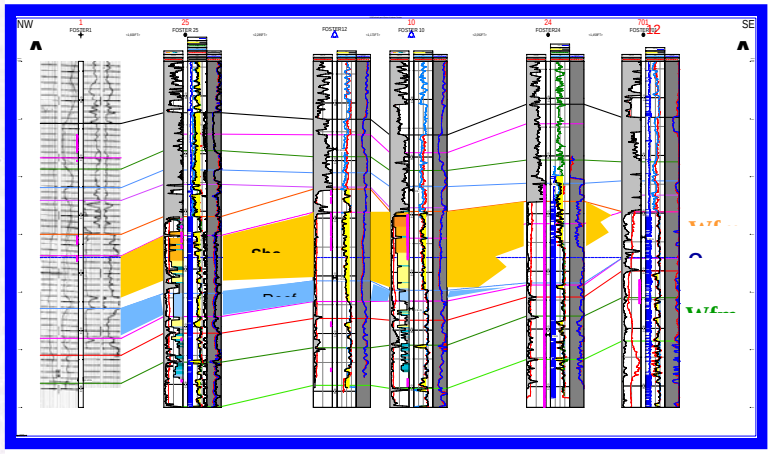
PBS-SEPM 2008 Summer Intern / New Hire Field Trip

Date: June 12 - 15, 2008

The Permian Basin Section of SEPM is planning a four-day field trip to the Guadalupe Mountains for engineering, land, and geology interns and new hires in June, 2008. This is an exceptional opportunity for companies to expose their interns and new hires to world-class outcrops that are direct analogues to producing fields in the Permian Basin. The trip will be led by Dr. Robert Trentham and Dr. Emily Stoudt from The University of Texas of the Permian Basin, who have a combined 55 years experience in research, exploration, and production in the basin. Morning outcrop studies will cover shelf to basin deposits, and will be supplemented with afternoon exercises on sequence stratigraphy, log correlation, seismic interpretation, and production data analysis. The goal of this field trip is to educate participants in combining outcrop data with industry exploration techniques from a multi-disciplinary perspective.

Participants will leave Midland on June 12th and will be staying at the Stevens Inn in Carlsbad, NM. The costs for the field trip will vary from $600 to $800 per person depending on number of attendees and single versus double occupancy. Included in the costs: round trip transportation from Midland, three nights lodging, three breakfasts, three lunches, refreshments in the field, guidebook and handouts. Registration forms will be available on May 15th and will be accessible on the PBS-SEPM website (www.pbs-sepm.org). For additional information contact: PBS-SEPM office (432) 683-1573, Teri McGuigan (432) 770-7099 or Rachel Aisner (432) 638-5502. Limited space is available so first to register will be given priority.



PBS-SEPM DIGITAL PUBLICATION PROJECT

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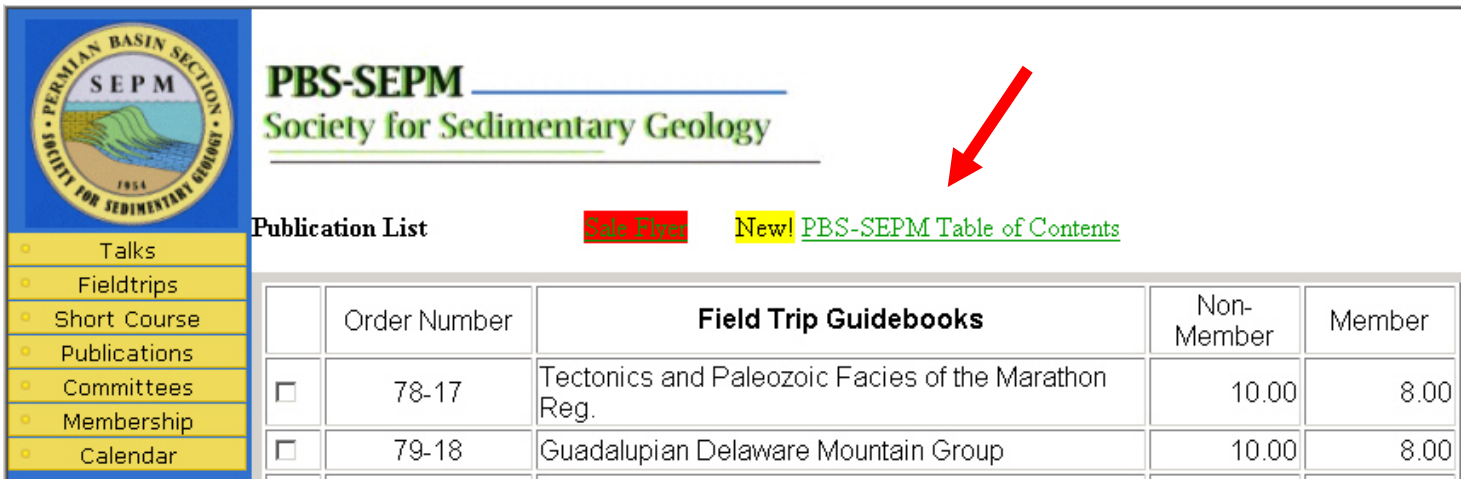

The compilation of all the Tables of Contents is a quick reference to all PBS-SEPM publications. Since this file has been OCR, one can use **word searches** to find a publication, article, subject or author. On the Toolbar, you will find a binocular "search", click on it and you will get the search menu (Figure 1, p. 7). By simply typing in the information you would like to find, and clicking the search key, you will be shown to all the places that have that word or words (Figure 2, p. 7).

All publications have been **Bookmarked** and put into three categories: Publications, Special Publications or Core Workshops (Figure 3, p. 7). By simply clicking on any of these categories, they will expand to the publication list. "Click" on the desired publication and you will be taken directly to that page. All publications have a "Table of Contents" associated with them and by going to the next page(s), you will be able to view all the articles in that publication. You can also get to any of the "Tables of Contents" from the bookmarks by expanding any of the individual publications and "clicking" on the Table of Contents below the publication of choice.

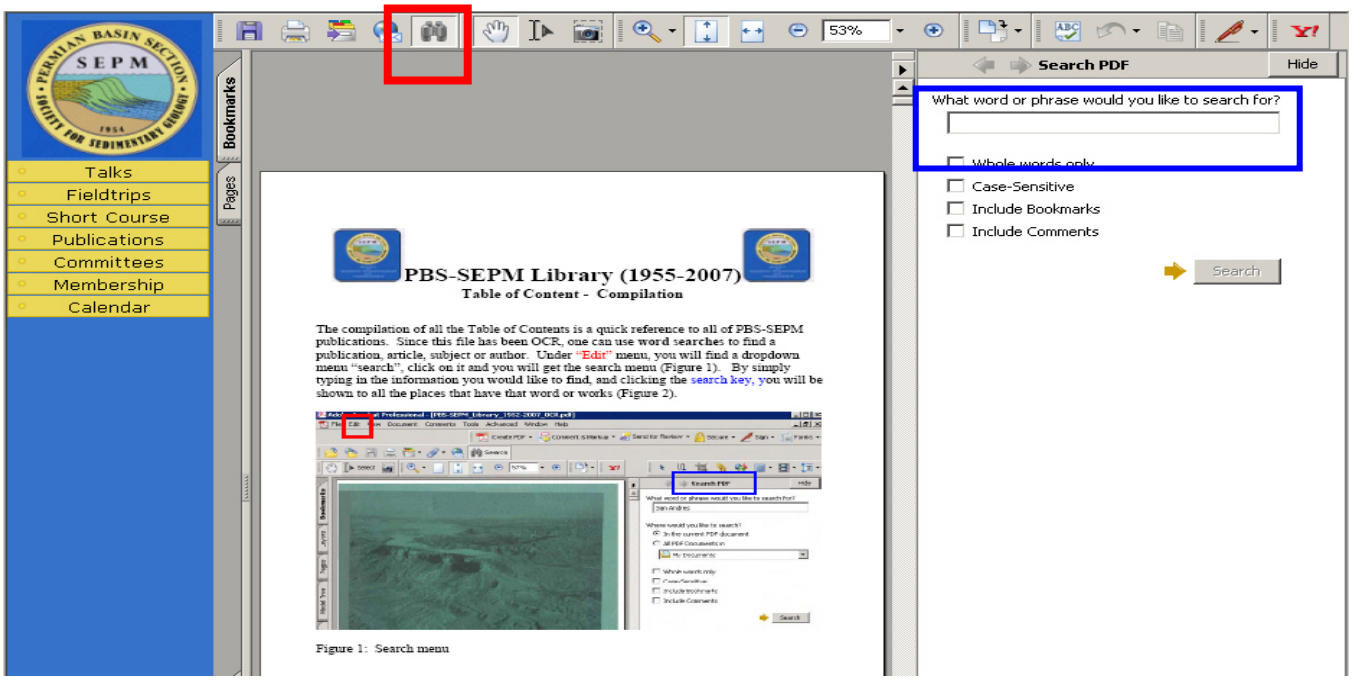

Figure 1: Search menu

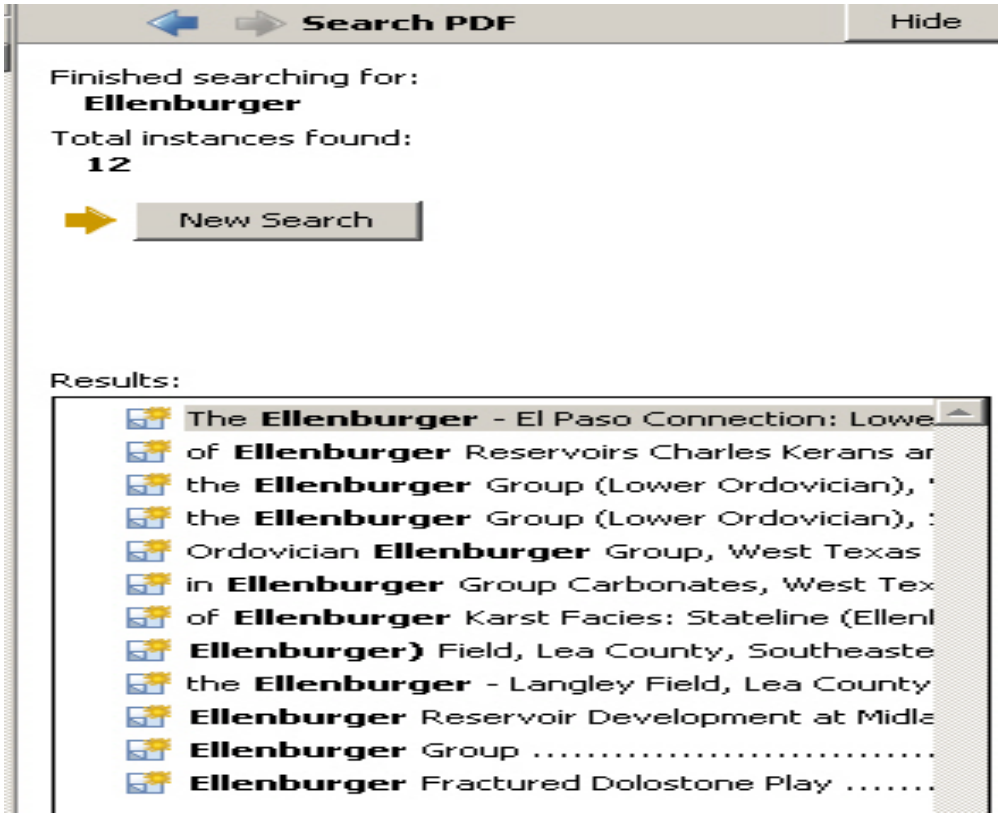

Figure 2: Search retrieval

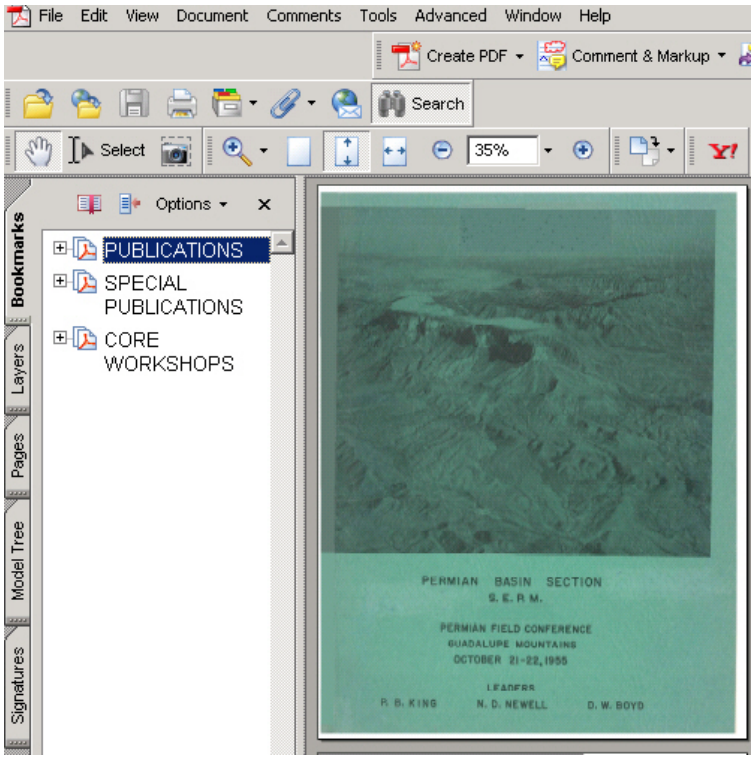

Figure 3: Bookmarks

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Treasurer:	Teri McGuigan	Independent	(432) 684-9333	tmcguigan1@suddenlink.net
Executive Dir.	Paula Mitchell	PBS-SEPM	(432) 683-1573	wtgs@basinlink.com

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Honorary Life	Emily Stoudt	UTPB	(432) 552-2244	stoudt_e@utpb.edu
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One Day Field Trip	Gilbert Barragan	Whiting Petroleum Inc.	(432) 686-6754	Gilbert.Barragan@whiting.com
Publications	Richard Blackwell	Consultant	(432) 683-4971	rcbgeol@nts-online.net
Publicity	Rick Doehne	University Lands	(432) 684-4404	rdoehne@utsystem.edu
Scholarship	David Farmer	Stanolind Oil & Gas Corp.	(432) 688-4250	dfarmer@stanolind.com
Stratigraphic	Bob Trentham	Director- CEED	(432) 552-2432	trentham_r@utpb.edu
Webmaster	Wendy Savage	Whiting Petroleum Inc.	(432) 686-6750	wendy.savage@whiting.com

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Spring Field Trip

Picture courtesy- Jesse White

Special thanks to Dr. Charlie Kerans, Dr. Xavier Janson, and Dr. Ted Playton for leading this fantastic trip. Mike Senich did a great job of coordinating and organizing. We appreciate our trip sponsors Suttles Logging, Western Geophysical and Dawson Geophysical.

We are grateful to our special contributors that made it possible to allow six geologic college students to attend the field trip.

"The Rocks - Rule"