

OCTOBER 2008

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3	4
5	6	7	8 Technical Breakfast	9 GSH Board Meeting	10	11 HMNS Family Energy Festival
12	13 Columbus Day	14	15 Rock Physics SIG	16	17	18
19	20	21 Technical Lunch Omni Palace	22 Technical Lunch Petroleum Club	23 Geoscience Day	24	25
26	27	28	29	30	31 Halloween	NOVEMBER 1

NOVEMBER 2008

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
2	3	4	5 Technical Breakfast	6 GSH Board Meeting	7	8

The Geophysical Society of Houston Newsletter (ISSN 1082-0817) is published monthly except in July by the Geophysical Society of Houston, 14811 St. Mary's Lane, Suite 250, Houston, TX 77079. Subscription to this publication is included in the membership dues of \$30 annually. Periodicals postage paid in Houston, Texas.

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Geophysical Society of Houston

VOL. 43, NO. 2

NEWSLETTER

OCTOBER 2008

Technical Luncheon

The Same Talk, Two Locations

Date 1

Date: Tuesday, Oct. 21, 2008
Time: 11:30 a.m.
Location 1: Omni Palace (Salon A)
12121 Westheimer Rd.
Houston, TX 77077

Date 2

Date: Wednesday, Oct. 22, 2008
Time: 11:30 a.m.
Location 2: Petroleum Club
800 Bell St. (43rd Floor)
Houston, Texas 77002
Downtown Houston

Register Online: www.gshtx.org

Cost: \$25/members pre-registered
\$30/members nonregistered
\$35/non-members

Title: "Aggressively Passive:
Microseismic Opportunities Over
an Oilfield's Life"



Speaker:
Peter M. Duncan
MicroSeismic, Inc.,
Houston, Texas

*Technical Luncheon
continued on page 17.*

Technical Breakfast

Date: Wednesday, October 8, 2008
Location: Fugro
6100 Hilcroft, Suite 100
Houston, TX 77274
Time: 7:00 a.m. Social
7:30 a.m. Presentation
8:00 a.m. Q & A
RSVP to: Liz Ivie at Fugro
713-369-5863 or
livie@fugro.com

Title: "Iterative Imaging for
Sub-Salt Interpretation
and Model-Building"

Authors:

Chuck Mosher,
Erik Keskula,*
Jeff Malloy,
Bob Keyes,
Haiyan Zhang,
ConocoPhillips
Shengwen Jin



Erik Keskula
speaker

Screen Imaging Technologies, Inc.

Abstract:

In today's environment of escalating costs where deep water wells can routinely top \$100M and leases can cost more than \$50M, reducing the uncertainty of our potential targets is imperative. In the deepwater GOM, good image quality below salt reduces the uncertainty for most

Technical Breakfast continued on page 10.

President's Column

by Mike Graul,
President Elect

Are You Being Served?



In the September issue of the newsletter, our esteemed leader, GSH President Frank Dumanior, reviewed a list of activities (and a few inactivities) available to the GSH membership. The litany of Good Works included Technical Lunches (2 venues), Technical Breakfasts, SIGs, SEG Distinguished Lectures and courses, GSH-SEG Spring Symposium, social activities (tennis, golf, sporting clays, saltwater tournament, Honors and Awards Banquet, Annual Meeting), joint activities with sister societies (HGS, SIPES, SPE), our communication media, the Newsletter and the web page, www.gshtx.org.

This month's column suggests a few new and a couple of resurrected ideas whose implementation may make your membership all the more valuable, and perhaps even attract a few new members. It is our hope that you will augment this paltry list with some pet ideas of your own. Anything from Earth-Shaking Concepts to cell phone vibrating thoughts will be

President's Column continued on page 9.

Are You

*Making
Waves?*

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Maps in Schools!

By Allison Henning and Lisa Buckner

USGS Tapestry of Time and Terrain Map



The Geophysical Society of Houston and the Houston Geological Society are excited to be part of the Maps in Schools project! The goal of the project is to “plant the seeds of geologic curiosity” in students by encouraging an interest in science in general and geology and geophysics in particular. We think that the USGS Tapestry of Time and Terrain (see figure) can do just that and we need your help!

With the recent approval of Earth Science as a fourth year of high school science in Texas, more students than ever before will be exposed to the geosciences. This is the perfect opportunity for the GSH to share its knowledge and enthusiasm for Earth Science with local students! This map offers a great entrée into local classrooms by providing a starting point for discussion.

The Tapestry of Time and Terrain depicts both the topography and geology of the United States. It is the most detailed and accurate portrait of the U.S. land surface and the ages of its underlying rock formations yet displayed in the same image. The map resembles traditional 3-D perspective drawings of landscapes

with the addition of a fourth dimension, geologic time, which is shown in color. In mutually enhancing the landscape and its underlying temporal structure, this digital tapestry outlines the geologic story of continental collision and break-up, mountain-building, river erosion and deposition, glaciation, volcanism, and other events and processes that have shaped the region.

GSH and HGS will be distributing maps to schools through our various outreach programs, but we also want all our members to get involved. We encourage each and every one of you deliver a map to a school. It could be your kids’ school, your neighborhood school, or the school near your office. Maps are available at the GSH & HGS office. If you need help finding a school or need tips for presenting the map in a classroom, please contact Lisa Buckner at lbuckner@hess.com.

The Maps in Schools project was initiated by Owen Hopkins of the Corpus Christi Geological Society and is funded by the Gulf Coast Association of Geological Societies (GCAGS) and the Houston Geological Society (HGS).

Editor’s Note

To ensure your information reaches the GSH society members in a timely manner it will appear in the appropriate newsletter issue. Please note the following deadlines and plan your location’s publicity strategy accordingly. Issues must be received on or before the corresponding deadline date. Please send any abstracts or extended articles of recently discovered results to GSH@hess.com. If you have any questions please call or email Lisa at 713/463-8568.

2008 GSH

Newsletter Deadlines

Issue..... November 2008
Deadline..... October 1, 2008

Issue..... December 2008
Deadline..... November 3, 2008

Announcements

Technical Breakfast

Wed., October 8, 2008

Technical Breakfast 2

Wed., November 5, 2008

Rock Physics SIG

Wed., October 15, 2008

Technical Lunch

@ Omni

Tues., October 21, 2008

Technical Lunch

@ Petroleum Club

Wed., October 22, 2008

GeoScience Day

Thurs., October 23, 2008

Technical Breakfast November

Date: Wednesday, November 5, 2008

Location: Fugro
6100 Hilcroft, Suite 100
Houston, TX 77274

Time: 7:00 a.m. Social
7:30 a.m. Presentation
8:00 a.m. Q & A

RSVP to: Liz Ivie at Fugro
713-369-5863 or livie@fugro.com

Title: “Modeling Case Study of a Subsalt Exploration Concept”

Authors: John Sinton*, Jim Blackerby, and Steve Whitney, ConocoPhillips,
Steve Sloan, University of Kansas *speaker

Abstract:

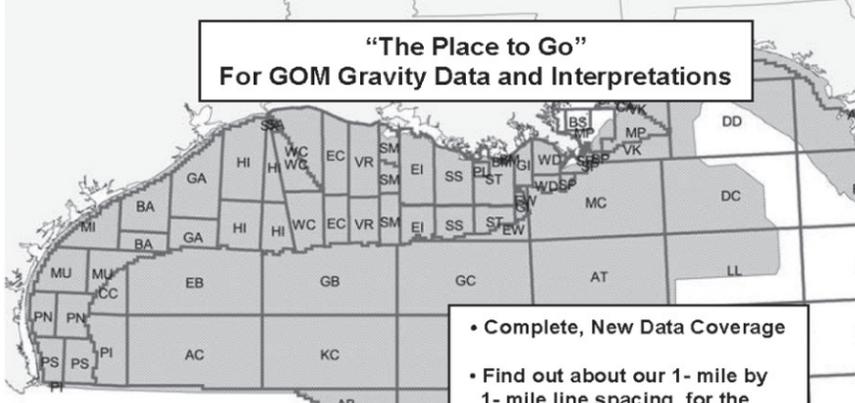
A modeling study of a subsalt exploration problem was used to help understand imaging issues and to help plan solutions to those issues. By comparing images from various acquisition geometries ranging from wide (WATS) to narrow (NATS) one can say WATS and certain XWATS geometries should resolve most of the subsalt imaging problems for the area of interest. Despite these improvements subsalt illumination remains an issue for all types of acquisition geometries as demonstrated by interpreting images and creating amplitude maps. WATS geometries seem to be more robust when faced with velocity model inaccuracies.

This study confirms as other authors have found that modeling can be used to provide quantitative information to influence the exploration decision process. Modeling is, relative to field acquisition, a cost effective method to estimate critical acquisition parameters and imaging decisions. One should expect to spend weeks to months on a modeling study depending on the complexity of the geology and the type of information available. Although not discussed in the paper it is possible to use the results of the modeling study in a value-of-information exercise to further quantify a decision making process.

Technical Breakfast November continued on page 9.



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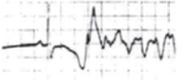
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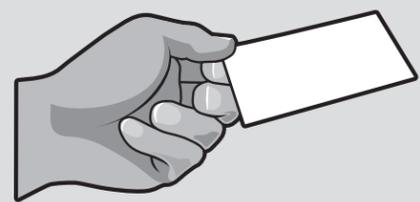
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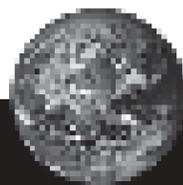


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**Earth Science Week Activities
in Celebration of
The International Year of Planet Earth
October 11 - 18, 2008**

**Annual Family Energy Festival • Houston Museum of Natural Science
Saturday, October 11, 2008 • 11:30 a.m. - 4:00 p.m.**

Join us for the annual Family Energy Festival at the Houston Museum of Natural Science celebrating the International Year of Planet Earth. The festival will include hands-on demonstrations, Scout badge activities, and other great programs. Please join us and bring your family and friends!
Cost: Included in the price of the regular museum admissions ticket. No need to sign up ahead of time.

General Information: please contact Martha McRae at esw@hgs.org

**Public Geology Field Trip: High Island, Texas
Saturday, October 18, 2008
10:00 a.m. - 3:00 p.m.**

Visit our beach location any time between 10am and 3pm to learn about salt domes, oil, beach processes, and ice age fossils. Birding and shell collecting are abundant. Free and open to public. Children welcome.
No facilities. No need to sign up before hand.

**General Information: please contact Neal Immega
at n_immega@swbell.net**

For all the details on the Family Energy Festival or the High Island Field Trip, go to the HGS website: <http://www.hgs.org>

Volunteers are needed to help with hands-on activities at the museum and to help with the field trip. If interested, please contact Martha McRae at esw@hgs.org.



For more information about the organizing sponsors and more planned activities occurring throughout the year:
<http://www.yearofplanetearth.org>
<http://www.geosociety.org/IYPE>
<http://www.earthsciweek.org/whatisesw/>



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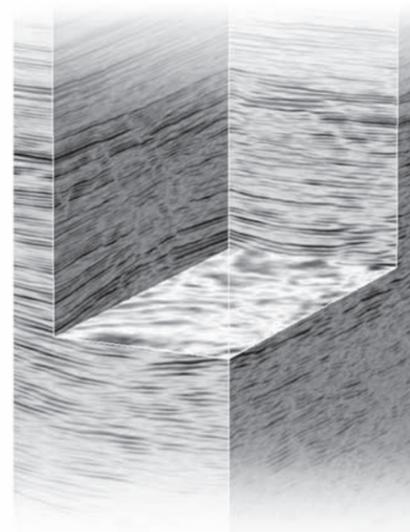
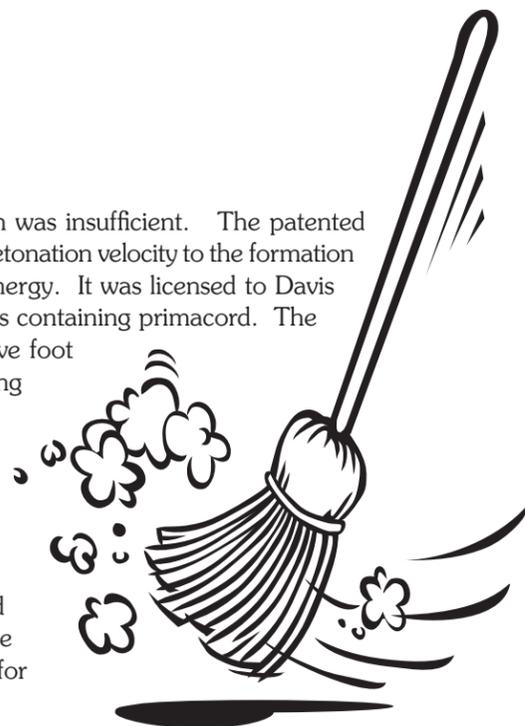
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Item of Interest...

By Tom Fulton

Lee Lawyer's description of the BROOMSTICK CHARGE last month was insufficient. The patented (Dan Silverman and others) Amoco invention matched the downward detonation velocity to the formation to enhance high frequency, decrease ground roll, and attenuate ghost energy. It was licensed to Davis Equipment and composed of five foot lengths of sticks with spiral grooves containing primacord. The spacing of the grooves determined the detonation velocity. Individual five foot long "broom sticks" were screwed together to form charges of 50 feet long or greater, dependent on energy need. The charge satisfied all three objectives. Its use was discontinued due to the high cost of drilling and the advent of both deconvolution and CDP shooting.

I was involved in the development of the charge to verify the velocity and the attempt to negate the change in wood properties under water pressure. As the grooves became closer together for lower velocity the charge would revert to the velocity of primacord (22,000 ft./sec.). We impregnated the wood with paraffin, wrapped the stick with tape, etc., with little success for the lowest velocities.



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Emeritus	57
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Lifetime	31
Total	1211

New Members

Active - 2
 Upendra Tiwari
 Laura McAllan

Associate - 5
 Angela Green-Garcia
 Serge Merland
 Richard Barren
 Mark Carrigan
 Steve Knapp

Item of Interest...

By Tom Fulton

WAVELET VELOCITY

Sometimes simple explanations escape us. A seismic wavelet has a finite length and often several peaks and troughs, all having the same normal moveout but NOT the same apparent velocity. At a Symposium honoring John Sherwood, a SEG President asked why velocity, as a function of time, appeared to decrease for each grouping of events associated with boundaries. No one in the august group of our legends responded, perhaps out of courtesy, as the answer is simple.

As a slow, timid thinker, I chatted with him in private. Deconvolution and other compression schemes fail to solve the problems, often because their operators are too short (my opinion).

Apparent velocity is a function of delta T of moveout and reciprocal time thus decreases with time for the same delta T.

PGS

Owls have unique, sensitive ears to locate prey. When they hear a noise, they can tell its direction because of the minute time difference in which the sound is perceived in the left and right ear. The translation of left, right, up and down signals are combined in the owls brain to create a mental image of the space where the sound source is located.

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Book/Subject Review of Sequence and Seismic Stratigraphy

(Part 1) By Dan Heinze

The explanatory and predictive power of sequence stratigraphy is now well established in the literature and competing models are currently being integrated into more comprehensive views that define their proper domain of applicability. As evidence of this, several quality textbooks on the subject are now available. Among them are: *Sequence Stratigraphy*, Emery and Myers, 1996; *Principles of Sequence Stratigraphy*, Catuneanu, 2006; *Seismic Stratigraphy, Basin Analysis and Reservoir Characterisation*, Veeken, 2007.

Sequence stratigraphy is based on the predictability of the rock-types being deposited across a basin, based on process-response relationships as well as environmental factors such as water depth, sediment supply, climate, etc. Typically the rock-type being deposited changes gradually across a basin, except of course where the basin is experiencing erosion. Thus as environmental factors change, the vertical sequence of rock-types being deposited locally, typically also changes gradually, until that locale experiences erosion. Thus a stratigraphic sequence is defined by Mitchum (1977, AAPG Memoir 26) as 'a relatively conformable succession of genetically related strata bounded by unconformities or their correlative conformities'.

As in many fields, interdisciplinary efforts are generating significant new gains for all the involved disciplines, in this case: crustal imaging, geology, and inversion for rock properties.

Sequence/seismic stratigraphy is rapidly modifying the way subsurface imaging is interpreted. Additional benefit is likely to accumulate rapidly in both directions as

*extensive 3D subsurface imaging interpretations provide additional ground truth for fleshing out and detailing the modes of occurrence and interaction of stratigraphic sequences and

*insight into sequence stratigraphy on the part of geophysical interpreters results in more detailed, more geologically rationalized, and more reliable interpretations.

Sequence stratigraphy constraints on the lateral and vertical rock-type variations within sequences also have significant potential to constrain and improve full waveform inversion and similar processes. Work presented at the GSH Rock Physics SIG by Ezequiel Gonzalez of Shell (Rock physics and multiple-point geostatistics for seismic inversion, 21 February 2007) exhibited some of the opportunities of using such constraints in inversions for rock-type.

*In his study, Ezequiel developed a restricted set of rock types in a depth interval around a field from well logs. It is possible that sequence stratigraphy could produce this set of rock types or further restrict or qualify it.

*More directly, Ezequiel's rock-type inversion utilized a joint probability distribution which was the likelihood of the neighboring rock-type in the geologic column, given the current rock-type. Given some limited information about the local basin depositional environment, sequence stratigraphy would at least provide some constraints on the determination of these joint probability distributions, or perhaps allow their direct calculation.

Part II of this review will survey some of the recent textbooks on sequence/seismic stratigraphy and their usefulness to geophysicists and geologists.



President's Column continued from page 1.

welcomed. You need not restrict yourself to events; ideas for organizational changes (VP-Elects), additions to the Newsletter or web page, for example, could be of interest to the general membership as well as the occupants of Mount Olympus. We'll show you how to share your notions at the end of the column.

Continuing Education. There was a time when the GSH put on short, sweet, and cheap CE courses on topics of immediate interest to the membership. The courses were truly tutorial, not intended to compete with SIG papers or formal presentations one might hear at the Technical Luncheons or Breakfasts. On the off-chance that there is a Houston geophysicist, who is not totally conversant with every aspect of seismic acquisition, processing, and interpretation, these little nugget courses might prove valuable to him or her. The mini-schools could, like the SIGs, be held after work hours, in venues convenient to residential locations. If preferred, the students could retain anonymity so that no one need ever discover that New Hire Hupplepfeiffer was (gasp!) not thoroughly checked out on reverse time migration or Tasmanian Retro-Deconvolution.

Enhanced Technical Content of the GSH Newsletter. What about printing an expanded abstract of any original papers delivered at the luncheons or breakfasts? Would these or other technical material be of use to our members as well as the shut-

Technical Breakfast November continued from page 3.

Specific to the subject area it was shown that WATS produces the highest quality image with certain types of XWATS a close second. The NATS geometry cannot image significant portions of the subsalt geology. Shot migration is preferred over Kirchhoff imaging if one can accept loss of steep dip information and afford the extra cost to generate migrated gathers. Reflection amplitudes under salt in the image volumes were strongly influenced by the overlying salt geometry. One should be very careful not to over interpret subsalt reflection amplitudes. Large scale

ins and other less fortunate geophysicists? In the September issue of the Newsletter, we saw an 'Item of Interest' dealing with the historic treatment of ghosting, as recounted by FTOS author, Lee Lawyer. Many of the Older Persons in this industry have a theory that there is much to be learned from the technology of the past.

Expanded Web Page Links and Features. Along the same lines as the idea immediately above, the GSH website could link to a Power Point presentation of luncheon talks, with corresponding audio. Not necessarily a polished professional work, but serviceable for those seeking information and knowledge. Links could also be provided to references and related topics.

Re-vitalized GSH Social Activities.

***Annual Meeting.** One of our most widely unattended events, this affair has been held the last few years at Jax Grill, on Shepherd Drive, and is slated next year for a phone booth at the corner of Westheimer and Hillcroft. What's the story? Is it the place? The time (after work on a Thursday)? The heat (early May)? Is it a silent protest against the new slate of officers? Geophysicists by nature are social animals, with great thirsts and hungers - even at a price. What do you want done to make the Annual Meeting an event you would attend?

***The Ice Breaker.** President Frank alluded to this event, which had, for many

years, been held in September of each GSH year. Shall we resurrect it with a new membership incentive package?

***Shrimp Boil, Christmas Dance** - Two more members of the Dead Party Society, both departed in the Late Cretaceous. Sounds like they could be fun — while we are still actively employed looking for grease and, as the House Speaker proclaimed, 'non-fossil fuels', such as natural gas.

How to Get in Touch and Send Us Your Thoughts

***Technical Luncheons Questionnaire/Suggestion Box.** Forms will be provided for you to submit ideas, complaints, and commentary. If you prefer, talk to one of the officers present. They are trained to be courteous and receptive to new ideas. Pay no attention to gnashing teeth.

***Letters to the Editor.** Glenn Bear is lonely, and would love to hear from you. Your ideas may even see the light of publication - if he likes them.

***Web page posting.** We'll try to implement an easy way for you to post graceful and thoughtful commentary.

While you are at it, if you would like to participate in any of the activities of the GSH, volunteers are treated with reverence and respect, and there is plenty to do. As it has been written, *Many Hands Make Light Work*, and alternatively, *Too Many Cooks Spoil the Broth*.

velocity errors do not significantly degrade WATS image quality, although subsalt reflections are misplaced which could alter an interpretation. Images with NATS data are much more sensitive to any type of errors in the salt geometry.

Biography:

John B. Sinton has a BSc in Geophysics from the Colorado School of Mines (1974) and a PhD from the University of Hawaii at Manoa (1982). He has worked at ConocoPhillips (and the former Conoco Inc.) from 1982 to the present in a variety

of jobs ranging from research scientist to Manager of Seismic Processing. In 2004, he shifted from management to research scientist in order to investigate wide azimuth towed streamer and land-based imaging issues. He is currently Principal Research Scientist at ConocoPhillips.

Along with his co-authors, John received the "1995 Best Paper Award in Geophysics." From 1988 through 1990 he was Video Series Editor for the Society of Exploration Geophysicists, Publications Committee.



elements of the petroleum system, and identifying and defining the shape of the salt geometry is the key factor influencing image quality. In recent years, a combination of wider azimuth data, improved imaging algorithms, increased computational speed, and integrated interpretation platforms have made it possible to use imaging in near real-time as an interactive aid in the salt model interpretation process. The availability of real-time feedback showing the effect of changes in the velocity model on the seismic image and salt interpretation can significantly improve image quality and reduce cycle times for model building and interpretation. In this study, we utilize a range of imaging algorithms that allow a trade-off between complexity and run time. These techniques range from simple vertical stretching to full two-way shot imaging. Fast, simple algorithms implemented as add-ins to the interpretation platform are used for testing incremental changes to the interpretation; beam migrations are

used for more extensive scenario testing, and reverse time migrations are used for final images.

Biography:

Erik Keskula graduated from Colorado School of Mines in 1996 with high scholastic honors and earned his MSc from Oklahoma State University. He has worked a variety of positions within ConocoPhillips in processing, imaging, AVO, inversion, interpretation, and visualization in Oklahoma, Alaska, and Texas. His most recent roles include Geophysics Team Lead and Prospect Maturation Team Lead in the Deepwater Gulf of Mexico.

His primary emphasis has been applying technology within the business units in exploration, appraisal, and production. In 2005, he co-authored one of the AAPG top 20 papers overall titled, "Chasing the Upper Jurassic Alpine-type: recent exploration success in the National petroleum Reserve, Alaska."

Making Waves

Frank Dumanoir has joined PGS Americas. He will be the Sales and Marketing Manager for the Data Processing group based in Houston. Frank brings over thirty years of experience in the Geophysical Exploration industry, having worked for a major oil exploration company as well as several geophysical service companies. He is the 2008-2009 President of the Geophysical Society of Houston.

Congratulations Frank!

Museum News *by Tom Fulton*



1920's German Photo Albums

Gene Trowbridge had a collection of photo albums that probably originally belonged to Dr. Hans and Mrs. Elise Schamder. Dr. Schamder arrived in Houston in 1925 and must have been associated with North American Exploration Company. Dick Conroy suggested in 2000 that Gene Trowbridge should give the photo albums to the GSH. While Gene took no action at the time, he did file Dick's note with the albums to be recently found by his Widow and Daughter. They called me and delivered the albums which contained exploration scenes from Sugar Land, Houston and around the world. The photos illustrate exploration with both Torsion Balance and the Mintrop seismic system. While the GSH and SEG have many examples of early instruments, they did not, to my knowledge, have pictures illustrating their use.

The case probably weighed some 150 pounds and was designed to be carried by two men. To go to the next station would require packing the delicate instrument in its case, moving its hut (likely requiring 3 men), moving the TB, unpacking, and allowing it to become stable before taking a measurement.

The limitation of the Mintrop system was that it used a relatively insensitive mechanical geophone. While adequate to locate enemy artillery, it required a large explosion as a seismic source (likely in excess of 100 pounds). It was most environmentally unfriendly. One photo shows a 14 meter deep crater and another large water-filled crater. The crew would shoot at distance in a straight line away from the shot point and increase the size of charge as they increased the distance. In many instances they would record the air blast with a Blast Phone to measure the distance and then a geophone (and larger charge) to record the refraction arrival. In the absence of a radio time break, they could use the air blast arrival to determine the time break.

As I reviewed the photos, I was immediately interested in a photo of the discovery well of the Sugar Land Dome (Sugarland Industries well #4). This and perhaps 20 other photos from Ft. Bend County will be used to illustrate the County's early role in geophysical exploration and to remind the next generation of explorers that both the first Salt Dome found by an expression of gravity (Nash Dome) and the first found with seismic (Moore's Orchard Dome) are in Fort Bend County. In 1932 there were about a dozen salt domes identified to be in the county.

Americans like Petty, Rieber and others realized that a geophone's signal could be electronically amplified and thereby allowed a great decrease in the power of the source. In all systems at this time a radio was necessary to communicate with the shooter as well as transmit a time break. The radio system was often larger than the seismic system.

The pictures also illustrate the difficulty of travel and the need for teams of mules or horses to pull cars out of the mud. One photo shows ferries being used to cross a river where bridges were lacking.

North American Exploration Company preformed the first Torsion Balance work for Gulf Oil in 1924. By 1929 Gulf had purchased the instruments (and crews) from North American (in 1927) and had 14 TB crews, 15 Magnetometer, 5 Seismograph, and 6 Electrical. At this time, they were likely second only to Humble in activity. Later, Hans and Gene (Charles E. Trowbridge) both worked for R. A. Callery, a company owned by Lehman Bros.

The pictures portray the difficulty of using a \$10,000 instrument, the Torsion Balance designed for the laboratory, in the field. It is little wonder that they could only occupy and record data at perhaps 6 stations a day. TBs had to be placed in their hut (about the size of a port-a-potty) from their carrying case of hardwood covered

Gary Servos' Ovation will scan the photos for the SEG/GSH so that a map/mural can be constructed of our exploration beginnings.

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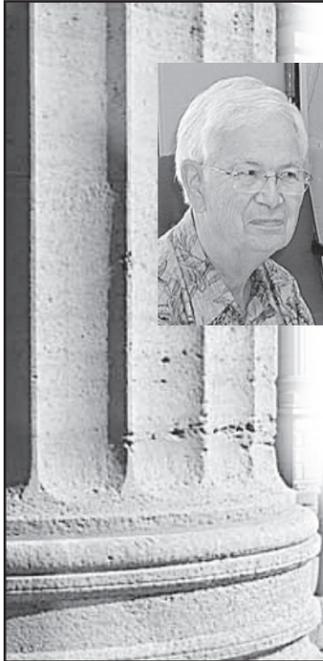
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North Harris College Display

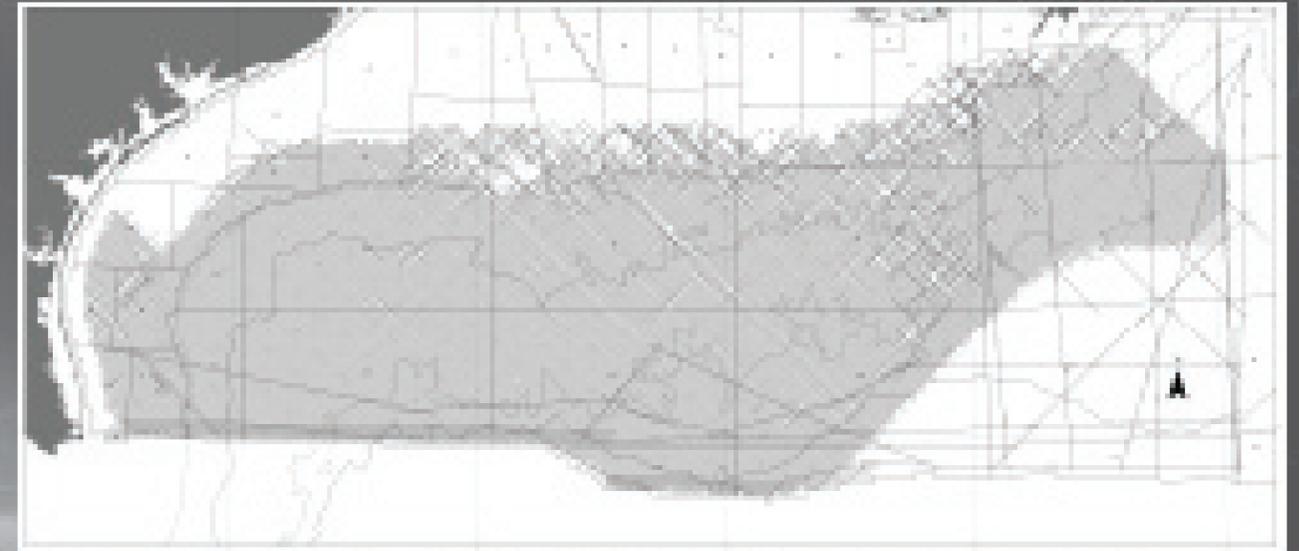
North Harris College contacted me regarding an agreement concerning our museum display placed there in early 1994 by Bill Gilchrist. The excellent display in the Windship Building is a tribute to his hard work and that of Bill Swart. The March 3 reception was attended by 81 including 32 from NHC. Fourteen presidents of the GSH and three of the SEG were included among the attendees.

While looking through Bill's files for the agreement, we found a cover letter signed by Jeanette Benbow (Honors & Awards Chair) to Reid Carter (Museum Chair) with his 1988 certificate signed by John DeVault. It was duly mailed and we are pleased that Reid remains, although not active, a member of the committee.

The request from NHC likely associated our museum with an entry of \$4 million for donated software. John Mouton gave us an email address of someone at Landmark Graphics who would know if it was their software.



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**GSH/HGS 2008 Saltwater Tournament
San Leon, Texas**

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Technical Luncheon continued from page 1.

Abstract:

Passive seismic, especially microseismic monitoring, is to conventional seismic as a stethoscope is to a sonograph. It is continuous 4D. It is accomplished by listening carefully to the sounds emanating from the earth and then diagnosing what is happening down there. Passive seismic techniques not only can create an image of the reservoir and its plumbing, but also shed light on how the fluid is flowing through the pipes.

Grasping the completeness of the passive science, one can see that it provides the opportunity to contribute over the lifetime of an oilfield from discovery to abandonment. Passive seismic can accomplish reconnaissance 3D exploration at an attractive cost and lead to new discoveries. Microseismic

monitoring of a hydrofrac can and does provide valuable information on completion and development strategy. Gas or fluid injection operations for primary or secondary recovery are prime candidates for passive monitoring to prove regulatory compliance, validate reservoir conformance, and estimate recovery efficiency.

This lecture will present a view on the history and development of passive seismic techniques, a discussion of state of the art through case histories, and a vision on where this technology will play a role in the smart oil field of the future.

Biography:

Peter M. Duncan is founding President of MicroSeismic, Inc., a Houston

based geophysical service company. He holds a Ph.D. in geophysics from the University of Toronto. He began his career as an exploration geophysicist with Shell Canada before joining Digicon Geophysical, first in Calgary then in Houston. In 1987, he helped Digicon found ExploiTech, Inc., an exploration and production consultancy. He was named President of ExploiTech when it became a subsidiary of Landmark Graphics in 1989. In 1992, he was one of three founders of 3DX Technologies Inc., an independent oil and gas exploration company where he served as Vice-President and Chief Geophysicist. Duncan was 2003-2004 President of the Society of Exploration Geophysicists (SEG).

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8th Annual GSH/HGS Saltwater Tournament Results Galveston Bay Complex Division June 13, 2008

Tournament Division Awards

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Second Place	James Allen	6.15 lbs
Third Place	Neal Conley	5.03 lbs
Heaviest Redfish		
First Place	Darrell Polemus	1.20 lbs
Second Place	Keith Montague	1.15 lbs
Heaviest Stringer		
First Place	Fritz Snyder	9.10 lbs
Second Place	Serge Merland	8.45 lbs
Third Place	Dennis Krigal	6.15 lbs

ROCK PHYSICS SIG

Date: Wednesday, October 15, 2008

Time: 5:30 p.m. ~ 6:30 p.m.

Location: CGG Veritas

10300 Town Park Dr.
Houston, TX 77072
(Visualization Center, 3rd Floor)

Authors: Ayato Kato* and Toru Nakayama

Title: "Elastic Property Changes Of Bitumen Reservoir During Steam Injection"



Ayato Kato*
*speaker

Abstract:

We measured and analyzed the ultrasonic velocities of heavy oil-saturated rock acquired from the SAGD operation area in Canada in order to understand the relationship between elastic properties and changes in temperature and pore pressure. As a result, we constructed the sequential rock physics model which allows us to predict velocity changes caused by any variations

of pore pressure, temperature, fluid saturation and fluid phase changes expected during the steam injection. We also discuss the velocity dispersion using VSP, sonic, and the core velocity measurement data and propose a practical method for calibrating the velocity dispersion. Finally, in accordance with the model, we predict elastic property changes induced by the steam injection

Biography of Ayato Kato:

Ayato Kato received his B.Sc. and M.Sc. in geophysics from Tohoku University, Japan in 1996 and 1998, respectively. Ayato started to work in JOGMEC (Japan Oil, Gas and Metals National Corporation, successor of JNOC) as a geophysicist in April of 1998. He had mainly been charged of seismic

research projects related with rock physics. Ayato enrolled in the Ph.D. course, University of Houston in August of 2007 and is currently studying with the rock physics laboratory, UH. Ayato's research interests are rock physics on heavy oil, time-lapse seismic and quantitative seismic interpretation.



**THIS SPACE IS BROUGHT TO YOU BY
HURRICANE IKE**

We hope all of you came through the storm safely, and we are keeping all of the Houston/Galveston and surrounding areas in our hearts as we move forward to recovery.

23rd Annual GSH Sporting Clays Tournament

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GSH 2008 Sporting Clays Tournament
American Shooting Centers
Houston, Texas

Thanks To Our Sponsors!

Another successful GSH Sporting Clays Tournament was held August 23 at American Shooting Centers. Breakfast, lunch, and beverages were served to a record crowd of 280 shooters. Prizes were awarded to winners in several classes and a total of 175 other registrants won door prizes of shotguns, hunting items, cash, and gift certificates.

Thanks to all the participants.

Special thanks to our Sponsors as well as to event chairs Steve Mitchell and Dietrich Landis plus Sandra Babcock for their efforts in getting the shoot underway. Of course thanks to American Shooting Centers, Tom Riley, Dusty Duran, Sandy Sawyers, Donna Kraker and Trey Hinson

Start thinking about your teams for the 2009 event!