



# Geophysical Society of Houston

VOL. 31, NO. 9

NEWSLETTER

MAY 1996

## Letter from the Assistant Editor

With any luck at all, this is one of the last officer reports all of you will see and read on the front page of our society's newsletter. As the present assistant editor and the newsletter editor for the coming year, I intend to continue the trend of the last few years to improve the quality and format of the newsletter.

The biggest change I hope to implement will be the replacement of the monthly officer reports posted on the front page. In their place will be articles discussing geophysics. Hey, what a concept, huh?

This should make at least two groups happy. The first group is the officers who have to write them. The second group is the members who have to read them. For those members who live and die for the monthly arrival of the newsletter to read about treasury activity, you will just have to call or e-mail for an update.



**Cliff Kelley**  
Schlumberger Well Services

It is my goal to stir the blood of the society a little. I want you to look forward to receiving the newsletter for its information value, not just a calendar of meetings and events. My plan right now is to have a topic a month, then have one or two articles about the subject. Not necessarily articles with opposing positions on the subject, but articles with good solid information, data and value on the subject. It would be fun if they disagreed, wouldn't it? In the first issue next Fall, I plan to print a tentative list of topics, by the month, for the rest of the year. This list will be flexible, so that a new hot topic could be covered sooner rather than later. Since this is really your society and your newsletter, let me know your thoughts on the topics. The input I get now will have a strong impact on the initial list. I have my favorites and prejudices, so let me know yours or you'll get mine. There will be a few other changes to the overall format and appearance, but they will be minor.

By now I hope you are thinking this is okay, I like the sound of this. But you all know that there is no such thing as a free lunch.

Many of you may have already guessed what this means. I will be out there hounding you for articles. I know who all of you are. I know where you get your mail. I know where and when all the geophysical and geological meetings are in town. I will be there, watching and waiting. So, just give up now and start writing articles.

I look forward to a challenging and hopefully exciting year as your editor.

## Honors and Awards Banquet

Wednesday, May 8 at Lakeside Country Club  
(See page 7 for details)

## Annual Meeting and Bar-B-Que

Thursday, May 16 at Knights of Columbus Hall  
Newly elected officers will be announced!  
(See page 9 for details)

## GSH Auxiliary Business Luncheon

Tuesday, May 7 at Sweetwater Country Club  
(See page 6 for details)

## Offshore Technology Conference

May 6-9 at the Houston Astrodome

INSIDE

GSH Meetings _____	
Data Processing SIG .....	3
Interactive Workstation SIG .....	5
Potential Fields SIG .....	4
Reservoir Geophysics SIG .....	4
Technical Breakfast .....	3
Joint Meeting-Fractured Reservoir Evaluation .....	5
Articles and Comments _____	
GSH Photographs .....	10
IAGC Elects New Leaders .....	8
Indonesian Seminar .....	8
Letter from the Assistant Editor .....	1
Meetings and Events .....	11
Member News .....	5
SEG Executive Committee Nominees .....	10
Social Events _____	
Annual Meeting & Barbeque .....	9
GSH Auxiliary .....	6
Honors & Awards Banquet .....	7

## GEOPHYSICAL SOCIETY OF HOUSTON

Margaret Blake, Office Manager • 7171 Harwin Drive, Suite 314 • Houston, Texas 77036-2190

(713) 785-6403 • Fax (713) 785-0553 • Office Hours 7 a.m. - 4 p.m.

Event Reservations Number: (713) 917-0218

### 1995-96 Officers and Committee Chairpersons

<b>President (SEG Rep)</b> .....	<b>CHERYL S. STEVENS, Western</b> .....	<b>963-2123</b> .....	<b>Fax 963-2030</b>
	P.O. Box 2469, Houston, TX 77252-2469		
Corporate Relations .....	Art Ross, Exxon .....	423-5476 .....	Fax 423-5202
Historian .....	Tom Fulton, Seismic Solutions .....	464-1300 .....	Fax 464-1615
Honors & Awards .....	Art Ross, Exxon .....	423-5476 .....	Fax 423-5202
Museum .....	Bill Gilchrist, Exploration Consultant .....	782-5909 .....	Fax 782-2626
Nominating .....	Cheryl Stevens, Western .....	963-2123 .....	Fax 963-2030
Tellers .....	Ken Russell, EarthView Associates .....	358-7981 .....	Fax 722-8003
<b>President Elect (SEG Rep)</b> .....	<b>WULF F. MASSELL, EPIC Geophysical</b> .....	<b>650-3820</b> .....	<b>Fax 650-3822</b>
	1221 Lamar #605, Houston, TX 77010		
Academic Liaison .....	Dale Sawyer, Rice University .....	285-5106 .....	Fax 285-5214
Advisory .....	Lee Lawyer .....	531-5347 .....	Fax 531-5347
Employment Referrals .....	Sam Leroy, EarthView Associates .....	722-8002 .....	Fax 722-8003
Finance .....	Joe Stevens, Union Texas .....	968-2416 .....	Fax 968-2417
Office .....	David Forel, Western .....	963-2493 .....	Fax 963-2490
Volunteers .....	Wulf Massell, EPIC .....	650-3820 .....	Fax 650-3822
<b>First Vice President</b> .....	<b>PATRICK J. STARICH, Exxon</b> .....	<b>423-7234</b> .....	<b>Fax 423-7917</b>
	233 Benmar, Ste. 837, Houston, TX 77060		
Continuing Education .....	Don Herron, BP .....	560-3778 .....	Fax 560-8114
SIGS (Special Interest Groups):			
Reservoir Geophysics .....	Phil Inderwiesen, Texaco .....	954-6244 .....	Fax 954-6113
Data Processing .....	Jozica Gabitzsch, Consultant .....	668-6036 .....	Fax 668-0120
Interpretation Workstation .....	Larry Godfrey, Energy Dev. .....	750-7544 .....	Fax 750-7584
Potential Fields .....	Brian Anderson, LCT .....	558-8383 .....	Fax 558-8384
Environmental Applications .....	Stephanie Hrabar, GEMS <sup>2</sup> .....	683-0638 .....	Fax 683-0638
Speakers .....	Pat Starich, Exxon .....	423-7234 .....	Fax 423-7917
Technical Breakfasts .....	Dave Agarwal, Interactive Interpretation & Trng. .....	650-0325 .....	Fax 650-3822
Technical Luncheons .....	Phil Hoseman, Consultant .....	655-9838 .....	Fax 655-7301
Technical Advisory .....	Bob Tatham, Texaco .....	954-6027 .....	Fax 954-6113
Technical Transfer .....	Dan Ebrom, Univ. of Houston .....	743-9144 .....	Fax 743-9164
<b>Second Vice President</b> .....	<b>JOSEPH L. ALCAMO, Pluspetrol Int'l</b> .....	<b>513-4533</b> .....	<b>Fax 961-1097</b>
	5599 San Felipe #1000, Houston, TX 77056		
Annual Meeting .....	Jim Moulden, Energy Graphics .....	659-2201 .....	Fax 659-2301
Awards Banquet .....	Merry Lynn Southers, Business Archives .....	840-8282 .....	Fax 599-9110
Bass Tournament .....	Greg Doll, Weeks Exploration .....	975-3700 .....	
Christmas Party .....	Lorinda Driskill, Western Atlas Software .....	972-4693 .....	Fax 666-9439
Golf Tournament .....	George Lauhoff, Digicon .....	630-4011 .....	Fax 630-4311
Shrimp Peel .....	Joe Stevens, Union Texas .....	968-2416 .....	Fax 968-2417
Sporting Clays .....	Robert Perez, Geotrace Technologies .....	497-8440 .....	Fax 497-4619
Tennis Tournament .....	Joe Jones, Bartrum .....	438-5626 .....	Fax 961-1535
<b>Secretary</b> .....	<b>KENNETH RUSSELL, EarthView Associates</b> .....	<b>358-7981</b> .....	<b>Fax 722-8003</b>
	2807 Valley Way, Kingwood, TX 77339		
Directory .....	Scott Sechrist, EnTec .....	464-8200 .....	Fax 856-7445
GSH Membership .....	Steve Starr, Petroleum Technology .....	498-7008 .....	Fax 498-0913
Ladies Auxiliary .....	Carol Gafford .....	370-3264 .....	Fax 366-7564
OTC Representative .....	Alf Klaveness, Klaveness Research .....	468-5123 .....	Fax 468-0900
SEG Membership .....	Jill Floto, Jill Floto & Associates .....	974-0822 .....	Fax 974-1928
<b>Treasurer</b> .....	<b>DAVID FOREL, Western Geophysical</b> .....	<b>963-2493</b> .....	<b>Fax 963-2490</b>
	P.O. Box 2469, Houston, TX 77252-2469		
Student Loans .....	Don Ashabranner, Phillips .....	669-3782 .....	Fax 669-3725
<b>Editor</b> .....	<b>PAMELA M. MOORE, New World Horizon</b> .....	<b>773-2627</b> .....	<b>Fax 773-9620</b>
	P.O. Box 740099, Houston, TX 77274		
Assistant Editor .....	Cliff Kelley, Schlumberger Well Services .....	368-8103 .....	Fax 368-8184
Company Contacts .....	Scott Sechrist, EnTec .....	464-8200 .....	Fax 856-7445
Electronic Publishing .....	Victor H. Koosh, New World Horizon .....	773-2627 .....	Fax 773-9620
Houston Events Calendar .....	Jock Drummond, Anadarko .....	873-3901 .....	Fax 873-1359
Photography .....	John Freeland, Exxon .....	423-7223 .....	Fax 423-7801
Publicity .....	Scott Sechrist, EnTec .....	464-8200 .....	Fax 856-7445
Technical Training Notices .....	Lloyd Weathers, Mobil .....	775-2453 .....	Fax 775-4123
<b>Past President (SEG Rep)</b> .....	<b>ARTHUR H. ROSS, JR., Exxon</b> .....	<b>423-5476</b> .....	<b>Fax 423-5202</b>
<b>Prior Past President (SEG Rep)</b> ...	<b>THOMAS K. FULTON, Seismic Solutions</b> .....	<b>464-1300</b> .....	<b>Fax 464-1615</b>
SEG Section Representative .....	Bill Gafford, Amoco Production .....	366-7873 .....	Fax 366-7569
SEG Section Representative .....	Hugh Hardy, Consultant .....	729-9208 .....	Fax 726-0456
SEG Section Representative .....	Lee Lawyer .....	531-5347 .....	Fax 531-5347
SEG Section Representative .....	Don Robinson, InDepth Technology .....	395-2749 .....	Fax 395-5149
Alt. SEG Section Rep. ....	Brian Anderson, LCT .....	558-8383 .....	Fax 558-8384
Alt. SEG Section Rep. ....	Ralph Baird, Baird Petrophysical .....	461-1784 .....	Fax 461-0914
Alt. SEG Section Rep. ....	Merry Lynn Southers, Business Archives .....	840-8282 .....	Fax 599-9110

The Geophysical Society of Houston Newsletter (ISSN 1082-0817) is published monthly except July and August by the Geophysical Society of Houston, 7171 Harwin, Suite 314, Houston, Texas 77036. Subscription to the Geophysical Society of Houston Newsletter is included in the membership dues (\$20.00 annually). Second-Class Postage Paid in Houston, Texas.

POSTMASTER: Send address changes to Geophysical Society of Houston Newsletter, 7171 Harwin, Suite 314, Houston, TX 77036-2190.

---

## Technical Breakfast

**Date:** Tuesday, May 7, 1996  
**Time:** 7:30 - 9.00 a.m., Technical Presentation will start at 8.00 a.m.  
**Place:** Anadarko Petroleum Corporation, 8th Floor Training Facility, 17001 Northchase Drive, Greens Point, next to Wyndham Hotel  
**Cost:** NO CHARGE (underwritten by Paradigm Geophysical)  
**Topic:** **Solving the Fault Shadow Problem - Case History from Wilcox, South Texas**  
**Speaker:** Stuart Fagin, Paradigm Geophysical  
**Organizer:** Dave Agarwal, Interactive Interpretation & Training

**Advance reservations urged** — The host company needs an accurate head count. Please call GSH at **917-0218** prior to Friday, **May 3**.

Imaging distortions in the footwall of faults in the Wilcox trend of South Texas are shown to be caused by velocity effects associated with the truncation of overlying high-velocity Queen City sandstone and low velocity Reklaw shale. The thinning of these units by extension across the fault gives rise to velocity sags and pull-ups which are likely to be interpreted as fault-independent closures. In addition this thinning also gives rise to non-hyperbolic reflections from underlying surface. When stacked these create disrupted reflections which are likely to be interpreted as fault splay closures. The only imaging solution which is free of these artifacts is prestack depth migration. A synthetic example is used to demonstrate fault shadow imaging artifacts, and also their elimination by prestack depth imaging. Identical artifacts are identified on real data from the Wilcox trend where two major faults set up fault shadow problems. Prestack depth imaging is shown to eliminate the problem on the real data as it does on the synthetic.

*Dr. Stuart Fagin is the Vice President of Technology for Paradigm Geophysical Corporation. In his role, Dr. Fagin facilitates the transfer of model-based depth imaging technology to the petroleum industry through the presentation of workshops, lectures and technical articles. As Vice President of Technology, he guides the development of new model based depth imaging products and services. Dr. Fagin is the author of the SEG volume, Seismic Modeling of Geologic Structures. Dr. Fagin has 12 years of experience, having worked for Exxon Production Research Company and Exxon Exploration Company. His research at Exxon involved investigation of the seismic definition of geological structures with particular emphasis on seismic modeling. He received his Ph.D in geology from the University of Texas in 1983.*

---

## Data Processing SIG

**Date:** Wednesday, May 15, 1996  
**Time:** Social, 4:30 p.m. Presentations, 5:00 p.m.  
**Place:** Marathon Oil Company, 5555 San Felipe, Parking free after 5 p.m.  
**Topic:** **Velocities From Seismic Versus Well Information - Part II**  
**Organizers:** Jozica Gabitzsch  
**Speakers:** David C. DeMartini; Melvan D. Carter

### **Seismic Moveout Velocities Compared with Well Velocities**

David C. DeMartini, Shell E&P Technology

Seismic wave propagation velocity determines the distance a wave travels in a given time and thus its vertical component, most frequently estimated from well velocity surveys, determines the depth to a seismic reflection event imaged at a particular time.

Reflection moveout velocity or the stacking velocity required to properly image seismic reflection events from multi-trace gathers involves an integration over the propagation path of the wave and, in an earth with vertical velocity variation, is in general different from the mean or average of the vertical propagation velocities. In an earth consisting of isotropic media with vertically varying velocities, the travel time versus shooting distance moveout curve may often be well-approximated by a hyperbola with an apparent velocity related to the travel-time weighted rms of the propagation velocities. The error in this approximation increases with shooting distance and dispersion in the propagation velocity distribution and as a result, the depth to a reflector at given time can not be accurately estimated without some assumption about how the velocities are distributed. If the velocities do not vary laterally, structural variation is properly indicated by a map of the arrival times.

In an anisotropic but homogeneous earth, the seismic moveout velocity also differs from the vertical component of the propagation velocity so that in this case, too, the depth to a reflector can not be accurately estimated without some further assumption concerning the magnitude and character of the anisotropy. It follows that lateral variation in the velocity anisotropy parameters can affect structure interpretation from moveout velocities even when there is no lateral variation in the vertical component of velocity. Numerical examples of these effects are instructive.

Macro layering of different isotropic media produces an effective anisotropic medium for disturbances with wavelengths long compared to the dimension of the layers. Alternatively, some typical sedimentary rocks such as shales may be intrinsically anisotropic. Observed magnitudes of anisotropy from field data as well as laboratory measurements on specific rock samples indicate that intrinsically anisotropic rocks exist and cause much of the anisotropy which affects seismic interpretation.

*Continued on page 6*

---

## Potential Fields SIG

**Date:** Thursday, May 16, 1996  
**Time:** Social Hour, Dinner, and Program at 5:30, 6:30, and 7:30 p.m. respectively  
**Place:** H.E.S.S. Building, 3121 Buffalo Speedway  
**Cost:** \$20 (Make checks payable to GSH)  
**Topic:** **Continent-Wide Integrated Interpretation of Magnetic and Gravity Data of Africa** (Afif Saad\*, Doug Dresser, and Steve Gabbert, UNOCAL)  
**Speaker:** Dr. Afif H. Saad

**Please make reservations** by calling Brian Anderson or Sarah Murphy at **558-8383** no later than noon Monday, **May 13**. H.E.S.S. has changed their policy for reservations and has moved the date up for a total count. No shows will be billed.

This talk describes the methodology used to obtain a Depth to Magnetic Basement Structure Contour Map of the continent of Africa using both magnetic and gravity data. The magnetic and gravity data sets were available through Unocal's sponsorship of Leeds University's (GETECH) multi-company continental scale projects; the African Magnetic Mapping Project (AMMP) and the African Gravity Project (AGP).

The purpose of this study was to delineate sedimentary basins, sub-basins and rifts. The project actually consisted of two phases. The first phase involved magnetic depth estimations, fault/lineament interpretation based on magnetic and gravity data, computer-contoured depth map, and a comprehensive report. This work was outsourced to LCT, and completed by Afif Saad, then a consultant to LCT. The second phase of the project was completed in-house and involved integration of the results and data from the first phase with the regional structural, lithologic, and well information to provide a consistent continent-wide hand-contoured structure map of Africa.

Considering the large volume, variable quality of the GETECH African data, short time (60 days for phase 1) and low budget constraints of the project, the 2-D grid spectral analysis method with moving/overlapping windows was recommended and used successfully to interpret these data sets. The size and step of the windows were carefully selected, and the method was semi-automated to obtain accurate and meaningful results within the short time framework of the project. The radially-averaged logarithmic power spectrum was computed from the magnetic data for each window and was used to obtain average depth to magnetic basement and other shallower sources within that window area. Over 3000 basement depth estimates were obtained, gridded and contoured at 1 km interval.

The spectral analysis approach was supplemented by

---

## Reservoir Geophysics SIG

The Reservoir Geophysics Special Interest Group is an interdisciplinary forum for the discussion of reservoir geophysics topics of interest to geophysicists and geologists, and expanded interchange with the reservoir engineering community.

**Date:** Tuesday, May 21, 1996  
**Time:** 4:30 p.m.  
**Place:** Amoco Production Company  
501 Westlake Park Blvd. (turn north on Westlake Park Blvd. from Memorial between Eldridge and Highway 6. Use visitor's area in parking garage. Meet in Westlake Building 1, Room 14.132. Note: 40 seat limit.)  
**Cost:** NO CHARGE  
**Topic:** **Continuity Mapping of Reservoirs: Techniques and Case Histories**  
**Speaker:** Walter Turpening, Reservoir Imaging, Inc.  
**Coordinator:** Phil Inderwiesen, Texaco  
**Organizer:** Chip Story, Amoco

**Please make reservations** by calling Connie Lewis at **366-7861**.

Continuity mapping is a seismic crosswell imaging technology which maps the interwell continuity of the geologic formations using conventional crosswell survey methods and existing downhole source/receiver systems. The technique has also been extended by using the drill bit as a seismic source (connectivity mapping while drilling). Analysis of the transmission characteristics of crosswell seismic signals determines reservoir continuity between source and receiver wells.

Continuity mapping measures transmissivity of the seismic energy based on wave guide principles. A well-defined wave guide can transmit higher levels of energy over a wider range of frequencies in comparison to formations that do not act as wave guides. Quality of the wave guide can be determined by analyzing its transmissivity function in the frequency domain. The spectrum attributes of the transmitted signal provide useful information related to the interwell reservoir.

**Walter Turpening** received a BA in Physics in 1970 from Oakland University and earned an MS in geology/geophysics in 1973 at Michigan State University. He began his career with Gulf Oil where he worked for 11 years and then worked with BP/Sohio for 9 years where he did research in borehole geophysics. In 1992 he co-founded Reservoir Imaging, Inc. in Stafford, Texas, and is currently president. His current interest is in the application of crosswell seismology to reservoir/engineering/environmental problems.

*Continued on page 6*

---

## Interactive Workstation SIG

**Date:** Wednesday, June 5, 1996  
**Time:** 4:30 PM  
**Place:** Western Geophysical Auditorium  
10001 Richmond at Briarpark  
**Cost:** NO CHARGE  
**Topic:** **A Look Down the Road on Interactive Workstations — A Panel Discussion**  
**Format:** Panel of 6 or 7 workstation users with a moderator  
**Panelists:** Consist of workstation application users who do it for a living every day. The panel will be composed of users from majors oil companies, independents, and consultants.

**Please make reservations** by calling the GSH reservation number 917-0218 prior to noon Monday, **June 3**.

A meeting of the SIG Steering Committee will be held at 3:30 PM prior to the presentation. All committee members are urged to attend.

Each panelist will have 5-6 minutes to discuss what applications, tools, enhancements, concepts they would like to see implemented over the next 2 to 3 years. This can address both hardware and software. They will discuss what each needs to do their job more accurately, faster, and easier. Also, what new technology needs to be introduced or improved upon. Innovation and imagination are encouraged.

The panel will be composed of users from major oil companies, independents, and consultants. As a result a wide spectrum of views on the future needs of users should emerge.

This should produce a lively and informative discussion among the panelists, moderator, and audience. Time will be allotted for audience participation.

We have a few slots open for panelists. If you care to participate on the panel, please contact Larry Godfrey at (713)750-7544 or FAX (713)750-7584. Suggestions are welcome.

**Come out and join the discussion.  
It should be a lively affair!**

---

## Member News

**Bruce Moriarty** has moved Digitec Seismic Inc. from Denver, Colorado to Conroe, Texas, and has joined GSH. Digitec is a seismic acquisition contractor specializing in 2D and small 3D seismic surveys. Bruce can be reached at (409) 441-7800, fax (409) 756-7810, or e-mail Digiseis@AOL.com. [ed. Bruce is a former president of the Denver Geophysical Society and GSH welcomes him!].

**Shawn M. Porche**, formerly the Production Manager at Petrophysics, Inc., has joined Automated Information Management (AIM) as Technical Services Manager. AIM's service department offers processing of well log & seismic data, such as synthetic seismograms, well log plotting, AVO analysis, inversion & modeling, etc. Shawn can be reached at AIM, phone: (713) 589-8200 or email:shawnp@tbaaim.com.

---

## GSH/HGS/SPWLA Joint Meeting on Fractured Reservoir Evaluation

**Date:** Monday, June 24, 1996  
**Time:** Lunch/Afternoon/Evening  
**Place:** Petroleum Club, Downtown Houston  
**Cost:** \$35.00 (includes Catered Lunch, Joint Meeting, and Social Hour)  
**Organizers:** GSH: Phil Inderwiesen, Texaco EPTD (Reservoir Geophysics SIG)  
HGS: Charles Sternbach, Shell Western E&P Inc.  
SPWLA: Steve Solomon, Conoco

Reservations will begin May 1. Please call Kathy King at **972-4223**.

The joint meeting consists of six invited papers given by well-known people of varied backgrounds in the area of fractured reservoirs. After each presentation a distinguished panel will lead the audience in lively discussion with emphasis on new technology and the need for an integrated approach to fractured reservoir evaluation. The titles and authors for the invited papers are:

**Prediction of Fractured Reservoir Properties and Performance in Folded and Faulted Carbonates**

Jim DeGraff, Exxon

**Geologic Setting of the Unconventional Antrim Shale Gas Play**

Bruce Cain, Shell

**Seismic Characterization of a Naturally Fractured Gas Reservoir**

Heloise B. Lynn, Lynn Inc.

**Predicting Flow Performance from Fractured Reservoirs**

Dan Hartmann, Consultant

**Lithologic and Stratigraphic Controls on Reservoir Quality and Target Selection for Horizontal Drilling in the Austin Chalk Trend**

Lee Krystinik, UPR

**Geosteering**

Nathan Meehan, UPR

Dan Hartmann (Consultant), Ronald A. Nelson (Amoco), Bill Riser (Conoco), and Bob Withers (ARCO) will serve as the distinguished panelists.

Following the meeting is a social hour for one-on-one discussions. Schlumberger will have a Geosteering Demo and limited sponsored bar. Also, Western Geophysical will have a poster session on "Determination of the Principal Directions of Azimuthal Anisotropy from P-wave Data" and Blackhawk Geosciences and Lynn Inc. will represent DOE in a poster session on the "Department of Energy Reservoir Characterization Program on Naturally Fractured Gas Reservoirs."



---

## Data Processing SIG

*Continued from page 3*

### Pitfalls in Depth Conversion

Melvan D. Carter, Velocity Analysts, Inc.

The conversion of seismic two-way reflection times into depth values which tie the wells can be extremely difficult. There are two commonly used methods of depth conversion for areas where velocity variations cause severe problems. The first is the "layer cake" pseudo-well velocity technique where values of interval velocity for each layer are obtained from well depths and seismic times. The second is the average velocity method where values of average velocity are derived from seismic velocities. The resulting seismic depth map is then calibrated to the wells to obtain a final depth map which ties the well control.

The "layer cake" pseudo-well velocity technique has good accuracy at the wells, but usually poor sampling. The lack of adequate calibration values or well control points is the main pitfall for this technique. To obtain a reliable value between well locations, the problems of pseudo-velocity, intra-well interpolation, and compaction determination must be solved.

The average velocity method is usually sufficiently sampled, but the accuracy is questionable. The technique used to solve this problem divides the time to depth transformation into three or four phases. Initially, the statistical problem which is controlled by the collection parameters is optimized. Next, the systematic problems are examined and removed by comparing the well depths and seismic depths. Finally, the residual error can be gridded and removed.

The key to successful time into depth conversion with both methods is in the interval velocity domain. By proper study and analysis, the interval velocity information for each geologic layer will yield a correspondence with the geologic conditions within that layer. Once the correlation is obtained, the integration of the interval velocity into an average velocity will produce reliable depth maps after calibration.

**David DeMartini** joined Shell Research in Houston in 1969 after completing his BS at the University of Notre Dame and PhD at the Ohio State University. He has worked for Shell for more than 26 years almost entirely in research on a variety of topics including rock properties, borehole geophysics, shear wave prospecting, anisotropy and AVO.

**Melvan D. (Mel) Carter** received a B.S. and M.A. degree in Mathematics from the University of Oklahoma in 1958 and 1959 respectively. After a brief outing with the United States Marine Corps., he joined Geophysical Services, Inc. from 1961 until 1974. He then co-founded Energy Analysts, Inc. and served as President until 1987 when the company merged with Landmark Graphics Corporation. In 1992, he founded Velocity Analysts, Inc. which specializes in depth conversion and velocity data base analysis. He has authored and presented many papers on velocity and currently teaches two velocity courses through the S.E.G. He is a member of the S.E.G., E.A.E.G., and D.G.S.

---

## Potential Fields SIG

*Continued from page 4*

detailed profile analysis with LCT's MAGPROBE on selected lines extracted from the original magnetic grid. In addition, qualitative interpretation of the total magnetic intensity, Bouguer gravity, and derivative maps was made to delineate structural trends, faults and lineaments, and to outline sedimentary basins and rifts. This was assisted by available geologic and well information. Areas of basement outcrops and known geology were used to calibrate the method and guide the interpretation.

The results obtained from both quantitative and qualitative interpretation of magnetic and gravity data correlate rather well with known geology, subsurface drill information and tectonics of the continent. These results were incorporated into the final Depth to Magnetic Basement Structure Contour Map of Africa.

**Dr. Afif H. Saad** is presently a Senior Advising Geophysicist with the Potential Fields Group at UNOCAL, specialized in integrated geophysical interpretation worldwide. Before joining Unocal in September 1994, Dr. Saad spent nineteen years with Gulf R&D Co. in Harmarville, PA., Gulf Oil E&P Co. in Houston, and Chevron E&P Services Co. in Houston. In 1993, Afif took early retirement from Chevron and accepted a position with LCT in Houston as Director of Interpretation. He later became an independent consultant working with LCT on several interpretation projects worldwide, including the subject Unocal project. Dr. Saad received a B.S. degree in geology from Alexandria University, Egypt, an M.S. degree in geology/geophysics from Missouri School of Mines, and a Ph.D. in geophysics from Stanford University. He is an active member of the SEG, and a member of the SEG Gravity and Magnetism Committee. His other affiliations include EAEG, AAPG and AGU.

---

## GSH Auxiliary

### Annual Business Luncheon

Kristy Sechelsky will be our guest speaker at our annual business luncheon. She will present an informative program on the benefits of Aromatherapy which is the use of herbal and floral potions to soothe the body and soul.

**Date:** Tuesday, May 7, 1996

**Time:** 11:30 a.m. Cash Bar, 12:00 p.m. Lunch

**Place:** Sweetwater Country Club  
4400 Palm Royal Boulevard, Sugar Land

Call Carol Gafford, GSH Liaison, at 370-3264 or Phyllis Winborn at 729-3732 for more information.

# ANNUAL HONORS AND AWARDS BANQUET

Wednesday, May 8, 1996

On Wednesday, May 8, 1996 the GSH will host its Annual Honors and Awards Banquet in the Grand Ballroom of the Lakeside Country Club. Our special guests will be your friends who have 50 or 25 years of membership in the SEG along with this year's GSH Honorary and Life Members. Bring your spouse or guest and enjoy cocktails (cash bar) from 6:30 - 7:15 p.m. in the Pine Lake Room. Then at 7:15 p.m., enjoy an elegant seated dinner and music by Marshall Maxwell. SEG President Dr. Gordon Greve, will give the Presidential Address and assist GSH President, Ms. Cheryl Stevens, in presenting the awards.

The cost for the dinner is \$30.00 per person, with pre-paid reservations necessary to accommodate the guarantee requirements of Lakeside Country Club. Make your check payable to the GSH and forward it by **April 30th** to M. L. Southers, Petroleum Information, 5333 Westheimer Road, Suite 100, Houston, Texas 77056. Please indicate on your check that it is for the Awards Dinner.

## Menu

- Roasted Garlic Soup
- House Salad
- Breast of Chicken New Orleans
- Red New Potatoes
- Green Beans Almondine
- Ice Tea
- Breads/Butter
- Apple Cinnamon Cake Ebi

I-10 Katy Fwy.		
	Memorial	
Lakeside Country Club	Briar Forest	Belt
Willcrest	Westheimer	West

---

## ANNUAL HONORS AND AWARDS BANQUET

Wednesday, May 8, 1996

Lakeside Country Club

Name: \_\_\_\_\_  
(as you want it to appear on name tag)

Guest: \_\_\_\_\_  
(as you want it to appear on name tag)

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Check No.: \_\_\_\_\_ Amount: \_\_\_\_\_ No. Of Attendees: \_\_\_\_\_

---

## INDONESIA

### Upstream Petroleum & Geothermal Sectors

#### A One-Day Seminar

**Date:** Thursday, May 9, 1996  
**Time:** 9:00 am - 5:00 p.m.  
**Place:** Westin Galleria Hotel  
5060 W. Alabama  
**Cost:** NO CHARGE

Officials from the Indonesian State Oil & Gas Company PERTAMINA will discuss exploration and production opportunities and current terms & conditions for foreign participation.

- Geology and petroleum prospects updated
- New geothermal exploration opportunity
- Legal arrangements for foreign participation:
  - PSC (Production Sharing Contract)
  - TAC (Technical Assistance Contract)
  - Other current contractual arrangements
- Present tax & fiscal regimes highlighted

PERTAMINA officials will be available for one-on-one discussions after the seminar.

*Organized by*

**PERTAMINA Representative Office for the Americas**

2121 Avenue of the Stars, Suite 2000  
Los Angeles, CA 90067  
Phone: 310/277-3721  
Fax: 310/553-9550 or 286-0643

----- detach and return -----

**INDONESIAN PETROLEUM UPSTREAM  
& GEOTHERMAL SECTORS**

**Registration Form**

Name \_\_\_\_\_

Position & Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

Name preferred for tag \_\_\_\_\_

---

## IAGC Elects New Leaders

IAGC announced the election of new leaders at its 25th anniversary meeting in Houston, March 19. New Chairman of the Board is Walter D. Pharris, President of Fairfield Industries. Richard F. Miles, CEO of Syntron, Inc. has been elected Vice Chairman and Chairman-elect. Both are based in Houston.

Elected to new, two-year terms on the Board of Directors are: L. Decker Dawson of Dawson Geophysical Company; Louis I. Schneider, Jr. of Edison Chouest Offshore; Jeremy D. Thornton of Exploration Consultants Ltd.; Lynn D. Chenault of Grant Geophysical, Inc.; Gary D. Owens of Input/Output, Inc.; Brian S. Anderson of LCT, Inc.; Nils-Erik Jacobsen of PGS Exploration (U.S.) Inc.; P.C. Havens of Seismic Exchange, Inc.; Richard F. Miles of Syntron; and Michael J. Pawelek of Universal Seismic Associates, Inc.

IAGC Directors with a year to serve during their current terms are Jonathan D. Miller of CGG American Services, Inc.; Stephen J. Ludlow of Digicon Inc.; Walter D. Pharris of Fairfield Industries; David Meeh of Geco-Prakla; H.H. Hamilton, III of TGS-CALIBRE Geophysical Co.; and Robert E. Lowe of Western Geophysical.

Continuing to serve resolving terms on the Board are the chairmen of IAGC's four international chapters: Andrew C. Clark of Grant Geophysical (Europe, Africa and Middle East Chapter); Steve Pickering of Western Geophysical (Australian Chapter); Roger Wait of Digicon (Far East Chapter); and Will Forrest of Western Geophysical (Latin America Chapter).

Charles F. Darden is full-time President of the association, and director Brian Anderson of LCT also serves as Secretary/Treasurer.

IAGC is an international trade association founded in 1971 with its headquarters in Houston and offices in Sevenoaks (London), Kent, England. Its membership comprises the service companies that perform the majority of the petroleum exploration and production geophysics worldwide. Geoscience departments of the integrated oil companies, geophysical equipment manufacturers, data processing centers, data brokerage and exchange firms, geophysical consultants, and other suppliers of products and services to the industry also are members of the association.





# ANNUAL MEETING

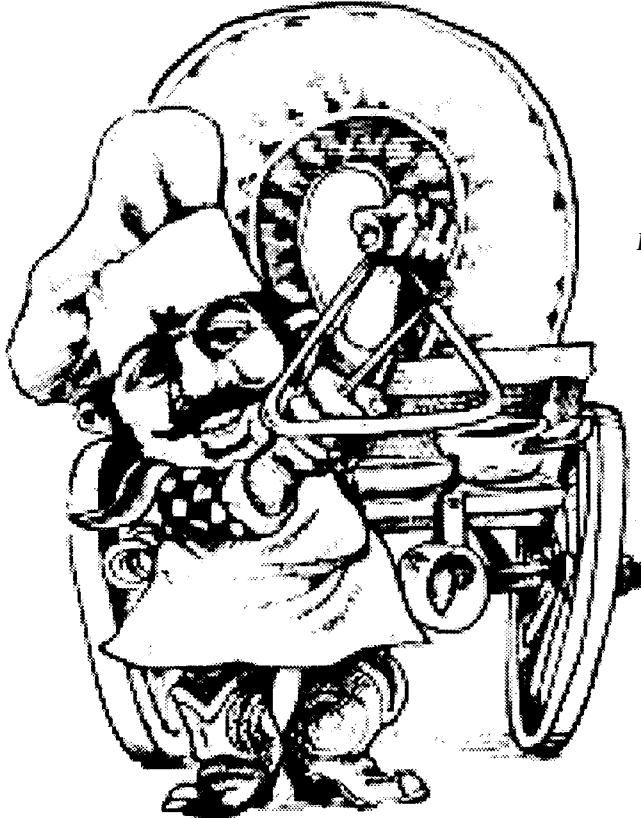


**RAIN  
or  
SHINE**

## and **Bar-B-Que**

5:00 p.m. to 8:00 p.m. on Thursday, May 16, 1996  
at the Knights of Columbus Hall, 607 East Whitney

**Come Enjoy A Great Evening  
Welcome The New GSH Officers**



### **Tickets:**

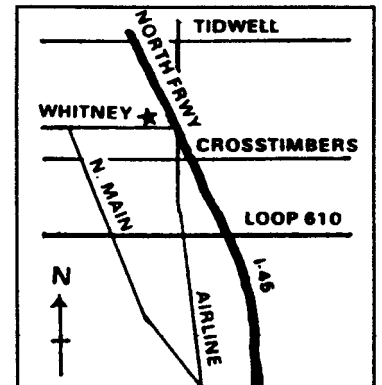
Only \$12.00 Each  
If Purchased By May 14, 1996  
\$17.00 Each At The Door

### **Note:**

We Have To Guarantee The Number  
Of Dinners, So You Must Prepay To  
Be Guaranteed Your Meal.

### **WE WILL BE SERVING**

- ☞ Bar-B-Que Brisket
- ☞ Sausage
- ☞ Chicken
- ☞ Beans
- ☞ Cole Slaw
- ☞ Bread
- ☞ Pickles
- ☞ Onions
- ☞ Draft Beer
- ☞ Wine
- ☞ Soft Drinks
- ☞ Iced Tea



## **Annual Meeting and Bar-B-Que**

Thursday, May 16, 1996 Knights of Columbus Hall

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Number Tickets Desired: \_\_\_\_\_ X \$12.00 Each = \$ \_\_\_\_\_

Enclose Check Payable To: Geophysical Society of Houston

And Mail To: Jim Moulden, c/o Legacy Data  
16810 Barker Springs Road, Suite 204  
Houston, TX 77084  
713-398-0118

Tickets Will Be Held At The Door. If Your Company Is Purchasing A Block Of Tickets - Please Indicate Names On The Form To Eliminate Any Confusion At The Door.

**Ticket Orders Must Be Received By May 14, 1996 to Obtain \$12.00 Price.**

---

## SEG Executive Committee Nominees 1996-97 Slate of Candidates

**President-Elect:** S. Rutt Bridges, Landmark Graphics  
Ian G. Jack, BP

**Vice-President:** Wafik Beydoun, Elf Aquitaine  
Ingebret Gausland, Statoil

**1st Vice-President:** W. Rodney Cotton, Western  
Kay Dautenhahn Wyatt, Phillips

**Secretary/Treasurer:** Glenn R. Breed, Information Store  
Brian R. Spies, Schlumberger

**2nd Vice-President:** Raymundo Aguilera-Ibarra, Pemex  
Eulogio Del Pino, Corpoven

Biographies and photos of these candidates will be published in the June 1996 issue of *TLE*. The 1996-97 Executive Committee will also include Fred Hilterman, the current President-Elect, and Sven Treitel, who will be completing a two-year term as Editor.

---

### GSH Photographs

The following photographs were taken by our own GSH Photographer, John Freeland (Exxon). John has been tirelessly snapping away at our GSH events this year to catch you all in your best light! All the smiles certainly indicate we're having fun! Thanks for the great mug shots, John, and keep up the good work!



*Wulf Massell, EPIC Geophysical and GSH President-Elect; Ann Martin, Tertiary Trend Exploration and HGS Vice-President*



*Americo Korompai, Coastal Oil & Gas; Margaret Johnson, Geotrace; John Sadler, Geotrace; John Dickinson, EPR*



*Lloyd Weathers, Mobil and GSH Chairman of Technical Training Notices Committee; David Forel, Western and GSH Treasurer; Jozica Gabitzsch, GSH Chairman of Data Processing SIG*



*Walt Richie, Western; Al Paprick, Norcen Explorer*



*Davey Einarsson, GSI; Walt Thomsen, GSI; Marvin Wagoner, retired*



*Kathy McManus, Exxon; Bill Metner, Exxon*



*Al Krejci; Tim Ronsladt, Schlumberger; Peter Allen, Schlumberger*



*Don Robinson, InDepth Technology; Dan Ebrom, U of H*

---

## Houston Meetings

**All Reservations and Cancellations for GSH and HGS Meetings call 917-0218, unless otherwise noted.**

May 7

### **GSH Technical Breakfast**

*Solving the Fault Shadow Problem*

Stuart Fagin

Anadarko Petroleum, 17001 Northchase Dr.

7:30 a.m. – Reservations by Friday, May 3

May 8

### **HGS Environmental/Engineering Geologists Dinner Meeting**

*Prospects for Environmental Programs*

Carol E. Dinkins

Steak & Ale, 8135 Katy Freeway

Dinner 6:00 p.m., Meeting 7:00 p.m.

Reservations by noon, Monday, May 6

May 13

### **HGS Dinner Meeting**

*Translation of Salt Sheets by Basal Sheer*

Holly Harrison, Bradley Patton

Post Oak Doubletree, 2001 Post Oak Blvd.

Social Period 5:30 p.m., Dinner & Meeting 6:30 p.m.

Reservations by noon, Friday, May 10

May 15

### **GSH Data Processing SIG**

*Velocities from Seismic Versus Well Information - Part II*

David C. DeMartini; Melvan D. Carter

Marathon, 5555 San Felipe

Social Period 4:30 p.m., Presentations 5:00 p.m.

May 15

### **SIPES Seminar**

*Legal, Tax, and Trade Considerations for the Independent*

Exxon, 8:00 a.m.-5:00 p.m.

May 16

### **GSH Potential Fields SIG**

*Continent-Wide Integrated Interpretation of Magnetic and Gravity Data of Africa*

Dr. Afif H. Saad

HESS, 3121 Buffalo Speedway

Social Hour, Dinner, and Program at 5:30, 6:30 and 7:30 p.m.

Reservations by Monday, May 13 (558-8383)

May 16

**SIPES Luncheon**, Petroleum Club, 11:30 a.m.

May 20

### **HGS International Explorationists Dinner Meeting**

*A Comparative Analysis of the Contractual and Commercial Aspects of Conducting Exploration and Production Operations in Select South American Countries*

Alan Cunningham

Post Oak Doubletree, 2001 Post Oak Blvd.

Social Period 5:30 p.m., Dinner & Meeting 6:30 p.m.

Reservations by 10:00 a.m., Monday, May 20

May 21

### **GSH Reservoir Geophysics SIG**

*Continuity Mapping of Reservoirs: Techniques and Case Histories*, Walter Turpening

Amoco Production Co.

4:30 p.m. – For reservations call 366-7861

May 28

### **HGS North American Explorationists Dinner Meeting** *Petroleum Potential and Lithostratigraphy of the Rough Creek Graben, Illinois Basin*

Gordon W. Fielder III, David L. Brewster, Lisa K. Goetz

Post Oak Doubletree, 2001 Post Oak Blvd.

Social Period 5:30 p.m., Dinner & Meeting 6:30 p.m.

Reservations by noon Friday May 24

May 29

### **HGS Luncheon Meeting**

*Lopeno and Bob West Fields: Historical Relationship and Geology of Two Significant Upper Wilcox Gas Fields in South Texas*

Richard W. Debus

Houston Club, 811 Rusk

Social Period 11:30 a.m., Lunch and Meeting 12:00 noon

Reservations by noon, Monday, May 26

June 5

### **GSH Interactive Workstation SIG**

*A Look Down the Road on Interactive Workstations — A Panel Discussion*

Western Geophysical Auditorium, 10001 Richmond at Briarpark

4:30 p.m. – Reservations by Monday, June 3

June 24

### **GSH/HGS/SPWLA Joint Meeting**

*Fractured Reservoir Evaluation*

Six invited papers

Petroleum Club, 800 Bell, Downtown

Lunch, Afternoon, Evening

For reservations call Kathy King at 972-4223

---

## Events

May 6-9

### **Offshore Technology Conference**

Houston Astrodome

May 7

### **HGS Emerging Technologies/GSH Potential Fields Joint Study Group**

*A Marine Magnetotelluric Method for Petroleum Exploration*

AGIP, 4:30-6:00 p.m.

May 7

### **GSH Auxiliary Annual Business Luncheon**

Sweetwater Country Club

May 8

### **GSH Annual Honors and Awards Banquet**

Lakeside Country Club

May 9

### **Indonesian Upstream Petroleum & Geothermal Sectors**

Free Seminar – Westin Galleria Hotel

May 16

### **GSH Annual Meeting and Bar-B-Que**

Knights of Columbus

May 17

### **ECH Annual Meeting**

Buckeyballs - A New Type of Carbon

HESS, RSVP Gloria Wells, 869-3433

May 19-22

**AAPG Annual Meeting**, San Diego, CA

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
<b>May 1996</b>			<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>5</b>	<b>6</b>	<b>7</b> GSA BUSINESS LUNCH  GSH TECH BREAKFAST 7:30 A.M. ANADARKO	<b>8</b> HGS ENV./ ENG.DINNER  GSH HONORS & AWARDS BANQUET 6:30 P.M. LAKESIDE C.C.	<b>9</b>	<b>10</b>	<b>11</b>
<b>12</b>	<b>13</b> HGS DINNER	<b>14</b>	<b>15</b> SIPES SEMINAR  DATA PROCESSING SIG 4:30 P.M. MARATHON	<b>16</b> SIPES LUNCH  POTENTIAL FIELDS SIG 5:30 P.M. - HESS  ANNUAL MEETING & BAR-B-QUE 5:00 P.M. - K.O.C.	<b>17</b>	<b>18</b>
<b>19</b>	<b>20</b> HGS INT'L EXPL. DINNER	<b>21</b> RESERVOIR GEOPHYSICS SIG 4:30 P.M. AMOCO	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
<b>26</b>	<b>27</b>	<b>28</b> HGS N.AMER. EXPL. DINNER	<b>29</b> HGS LUNCH	<b>30</b>	<b>31</b>	
Submittals and suggestions should be sent to the <b>GSH Editor</b> at 7171 Harwin, Suite 314, Houston, TX 77036-2190, or call <b>Pam Moore, Editor, at 773-2627</b> , or Fax to 773-9620. Deadline for submission is the 1st of the month preceding publication: e.g., May 1 for the June issue. Digital or electronic submittals required. (e-mail:nwh@neosoft.com).						

## GEOPHYSICAL SOCIETY OF HOUSTON

7171 HARWIN DRIVE, SUITE 314  
HOUSTON, TEXAS 77036-2190  
(713) 785-6403



ADDRESS CORRECTION REQUESTED

Second Class  
U.S. Postage  
PAID  
Houston, Texas