



# Geophysical Society of Houston

VOL. 32, NO. 6

NEWSLETTER

APRIL 1997

## April Technical Luncheon

Date: Monday, April 21, 1997  
 Time: Register and cash bar, 11:30 AM  
 Luncheon and talk, 12:00 Noon  
 Location: The New H.E.S.S. Location  
 5430 Westheimer, "The Old Carlyle Restaurant" (between Alabama and Richmond)  
 Cost: \$17 to registered members  
 \$22 to walk-ins and guests  
 Reservations: Please call 917-0218 no later than 12:00 p.m. Friday, April 18, 1997 to make a reservation.

Speaker: William L. Abriel  
 Chevron USA  
 Production Company,  
 New Orleans  
 Topic: Production Effects  
 Observed From Seismic  
 Data

Abstract:  
 In the 1980's and 1990's, the oil and gas industry was revolutionized by the use of 3D seismic data. A consequently large drop in dry holes has been due to seismology's effective delivery of information about structure, faulting, stratigraphy, and sometimes fluids. On the present horizon, seismology is expected to predict reservoir monitoring information during production. Special 4D experiments and cases of 3D shot over produced fields show that the possibilities are good, but special complications arise in using this technology.

Good results have been documented with onshore 4D case histories for steam injection and thermal recovery projects. Many of the geophysical lessons learned from these examples applies to more conventional reservoirs. Although 3D seismic recordings predominantly show rock properties, time lapse (4D) data properly recorded and processed are designed to "divide out" the geology and show production effects. Some 4D cases show that commonly held wisdom on reservoir production conditions of fluid position, saturation and pressure are not true.

Conventional oil fields (i.e. Gulf of Mexico) that have been on production and then shot with seismic data have shown inferred seismic changes as well. Variations in gas saturation, oil saturation, and uneven drainage have been observed. However, a geologically

adequate reservoir model is required to fit all the observed well, production, and geophysical data.

The technical challenges for reservoir production monitoring with seismic data are high, and so are the economic challenges. 4D seismic data must be cost effective compared with conceptual and engineering reservoir models. Direct 3D seismic volume observations on production effects must provide significantly new information not possible by monitoring well production, pressure and chemistry. Seismic data can achieve this if we can see time lapse effects between wells for reservoir connectivity, uneven drainage, and bypassed hydrocarbons.

Bill is an employee of Chevron USA production company in New Orleans. Bill got his geology and geophysics BS and MS degrees from Penn State University in 1975 and 1978. He has since been involved with exploration, development, and research activities predominantly in the Gulf of Mexico. His involvement with seismic data during that time has included 3D design, acquisition, processing, interpretation and research. His activities in the past several years have included subsalt imaging, 3D AVO, and production effects as seen on seismic data.

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### In Memory of...

Former GSH Members:  
 M.L. Benke  
 C. Trent McComas  
 Robert Frederick Kast

## GEOPHYSICAL SOCIETY OF HOUSTON

**Joan Henshaw, Office Manager • 7457 Harwin Drive, Suite 301 • Houston, Texas 77036**

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**Event Reservations Number: (713) 917-0218**

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Shrimp Peel .....	Tim Hartnett .....	961-8500 .....	fax 961-8400	
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## GSH Technical Breakfast

Date: Tuesday, April 15, 1997, "Westside" Technical Breakfast.

Location: Amoco's Westlake Park Office, 501 Westlake Park Blvd.

Speaker: Chip Story of Amoco

Topic: "Port Hudson Reservoir Engineering Results"

Time: Breakfast at 7:30 am, Speaker at 8:00 am.

Charge: There is no charge to attend. This event is generously underwritten by Amoco Production Company.

Reservations: Reservations to the GSH office at 713.785.6403 by noon Monday, April 14.

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## GSH Data Processing SIG

Date: Wednesday, April 16, 1997,

Location: Western Geophysical Auditorium 10001 Richmond Ave. Houston, TX 77042

Parking: The Western Auditorium is in the five story building located at the corner of Richmond and Briarpark. Entrance to the parking lot is on Briarpark.

Speakers: David Kessler, CGG Phil Schultz, ADS

Time: Social, 4:30 pm, Presentations, 5:00 pm.

Topic:

### Construction of Velocity Models for Prestack Depth Migration-Practical Aspect

David Kessler, CGG American Services  
As depth processing becomes a

more standard practice In preparing seismic data for interpretation, the methods and tools used in production environment should be examined more closely. Three main subjects will be discussed in this presentation: interval velocity analysis, enhanced imaging by model based techniques, and confirmation of velocity models.

Two main techniques are commonly used for developing the depth domain interval velocity field, kinematic and dynamic analysis. The kinematic tools are usually based on ray tracing algorithms and are applied locally or as a global inversion procedure. The dynamic analysis is usually based on prestack depth migration and creation Or common image gathers. Even though these techniques are different in nature, in order to produce a reliable Velocity model they should be applied in a similar manner, by following the structure Or the subsurface layers. We will explain the usage of the above techniques as initial, major and residual velocity analysis, and demonstrate as well how prestack depth migration can be sped up for use as velocity analysis tool.

Having a final velocity model, the prestack data is first migrated, and then sorted and stacked to obtain the final depth section. Having a depth model, model based processing techniques can be applied. One useful technique, controlled stacking is used for correct muting of partial images, resulting in superior final image. We will present the method and demonstrate its usage.

The earth models that are developed for imaging of the subsurface contain two basic ingredients: Interval velocities and layer geometries. Interval velocities are the result of the velocity analysis process, and layer geometrics are defined by interpretation of the depth section. The depth model must be verified. The reason for that is that a geologically valid depth section can be generated only if a geologically correct velocity model was used in the migration process. The tool to confirm the validity of the geological model is geological restoration. This process of geological modeling ensures the correctness of the layer geometries that we use for processing of the seismic data.

The above methods are used In

developing the depth interval velocity model and migration. Correct construction of velocity models for prestack depth migration leads to improved imaging and more reliable depth sections.

Biography:

David, Kessler is Manager of Depth Processing Services for CGG American Services. He received his M.Sc. and Ph.D. degrees in Geophysics from Tel Aviv University. He is a member of SEG, GSH, and AAPG. His professional interests include seismic signal processing, wave propagation and links between processing and interpretation of seismic data.

### The Changing Economics of 3D Prestack Seismic Imaging in Depth

Philip S. Schultz, Vice President, Development  
Advanced Data Solutions, Inc.

Prestack depth migration has long been regarded as a specialty product, to be tried only in extreme situations of severe lateral velocity variations. Until recently, it was never even considered as a possibility for 3D data, because of the high cost, poor turnaround time, unclear methodology, and the unpredictability of the outcome. The economics are changing quickly, and in dramatic fashion. Now, questions such as, "When does it make economic sense to do 3D prestack migration?" or "How can I tell to what degree the process will improve the data?" demand a new basis for evaluating cost versus benefit.

The economics of seismic depth imaging have undergone, and continue to undergo, a consistent and relentless trend: the cost has fallen, the turnaround time has dropped, and reliability of the methodology has increased. The direction and intensity of the trend has been controlled by the convergence of four primary factors: hardware architectures and performance, software environments, seismic data quality, and imaging methodology.

We can now imagine reaching the situation where 3D prestack depth migration is the standard. But, how approachable is this process? Even though costs are going down, they are still not

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zero, and how will I know if there is sufficient benefit? This presentation will address both the costs and the benefits. The discussion will also focus on an important tool in evaluating benefits of 3D prestack depth migration on a case-by-case basis: the "staged approach" to depth imaging. Within this methodology, milestones and checkpoints are reached as evaluation and decision points on the road to a full prestack 3D depth migration.

Biography:

Phil Schultz is Vice-president, Development for Advanced Data Solutions. He held engineering management positions with Schlumberger in Tokyo, London, and Paris, and worked as a research geophysicist for Digicon in Houston. Phil received a Ph.D. in Geophysics from Stanford University, where he participated in the Stanford Exploration Project. A member of the SEG, GSH, and SPE, he is a recipient of the SEG's Outstanding Presentation Award, and served as Associate Editor of GEOPHYSICS.

### Environmental Applications SIG at Rice Environmental Conference

The 1997 Rice Environmental Conference innovatively integrated the fine arts, sciences, engineering and social sciences. Students at Rice selected a theme and organized the annual event. Their 1997 theme was Environmental Solutions Today for Tomorrow. The conference was held on campus Saturday 1 February. It was open to the public at no charge. The GSH Environmental Applications SIG was represented by Stephanie Hrabar, who presented The Need for the Application of Appropriate Non-Intrusive Geophysical Methods in Environmental Studies at Session II: Environmental Solutions, Technical Solutions. During the afternoon Stephanie publicized the SIGs activities in the Expo area, while enjoying the complimentary Ben & Jerry's ice cream. The Expo was held from 1-4 pm at the Grand Hall in the Ley Student Center.

### 13th Annual Gulf Coast SEG Meeting/ 1997 GSH Spring Symposium

The theme of the meeting is "The three E's of 3D: Efficiency, Effectiveness, and Economics". This symposium will be of practical utility to seismic interpreters

Each speaker will speak for 40 minutes and will then receive questions for 20 minutes. To keep things going, we will have two feisty moderators: Dave Monk of Energy Innovations and Malcolm Lansley of Western Geophysical. The speakers will sit on a panel and be a (hopefully) prime source of questions in the Q&A period.

Speakers and topics are:

1. Paul Leibman — Petrie Parkman and Co.  
Title: "Current trends in the economics of oil and gas exploration and development"

2. Michael Reblin — UNOCAL  
Title: "Seismic Acquisition: What's It Got to do with Processing and Interpretation?"
3. Dave Ridyard — I/O  
Title: "Equipment reliability and 3D crew efficiency"
4. Jim Thomson — Fugro-McClelland and Earl Doyle — Shell Deepwater Development, Inc.  
Title: "Offshore GeoHazard Assessment using 3D seismic workstations: Lessons learned in the Gulf of Mexico Deepwater Arena"
5. Tracy Stark and Geoff Dorn — ARCO  
Title: "Visualization and Interpretation Tools for 3D Seismics"
6. Jim Allen, Chip Betz, and Ron Krenske — Mayne & Mertz  
Title: "Why you need two different processors for your 3D seismic data"
7. Mike Saunders and Peter Duncan — 3DX  
Title: "Case Study of Depth Imaging in the Gulf of Mexico"
8. Gary Ruckgaber — AMOCO  
Title: "4D Seismics at an Offshore Gas Field on the Gulf of Mexico Shelf"

For more information contact:

GSH, 7171 Harwin, Suite 314, Houston, Texas 77036, (713) 785-6403 or Dan Ebron, Technical Program Chair (713) 954-6252.

#### GSH Aux News

Wednesday, April 9, 1997, Spring Bus Tour. This year is a Day Trip to Austin including a tour of the Governor's Mansion.

There is also a Duplicate Bridge Group that meets at 7:30 pm on the 2nd Friday of each month at the Bridge Studio, 6640 Harwin.

If you are interested in attending any or all of the auxiliary functions as a guest or would like to join our organization, contact Barbara Thigpen, GSH Liaison, at 281.497.3299. Cost is \$5.00 for membership for the remainder of the year.

**GSH  
SPRING  
SYMPOSIUM  
REGISTRATION  
FORM  
ON  
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## Candidates for the GSH 1997/98 Executive Committee

### President Elect:

Bob Tatham  
Pat Peck

### First Vice President:

Joe Alcamo  
John Sumner

### Second Vice President:

Scott Sechrist  
Don Herron

### Secretary:

Phil Inderwiesen  
Diana Shaw

### Treasurer:

Richard Verm  
Jock Drummond

### Editor:

Dennis McMullin

## Biographies:



### Bob Tatham

Bob Tatham served as GSH First Vice President for 1994-95, during which time a new Special Interest Group in Reservoir Geophysics was instituted. He was technical program chairman for the 1992 Gulf Coast SEG meeting, and has been an active and participatory member of the SEG research committee and organized numerous research seminars on applications of emerging technologies. He is an associate editor for GEOPHYSICS and chairman of the SEG Research Committee. Bob is currently managing the Subsurface Imaging Portfolio with Texaco's Exploration and Production Technology Department.

Bob Began his career in geophysics upon completion of his BS degree in 1967 in processing and interpreting land seismic data with Texaco in Bellaire, Texas. While expanding his experience in exploration geophysics, he completed an MS degree (1970) in Applied Geophysics at the University of Houston. A year later, he took a

leave of absence to complete his Ph.D. (1975) in Seismology at Columbia University and the Lamont-Doherty Geological Observatory. After another five years at Texaco in Houston and five years with Geosource, a major international contractor, he returned to Texaco EPTD and is currently the Portfolio Manager for Subsurface Imaging. He also advises graduate student research as an adjunct professor at the University of Houston,.



### Pat Peck

Pat Peck received a B. S. in Geology from the University of Akron in 1973. After graduation, he joined Western Geophysical as a Geophysical Technician. Pat advanced to Junior Analyst, Geophysical Analyst and then Supervisor of four Marine Processing Groups before his transfer to Dallas as a Project Manager in 1982. He returned to Houston in 1985 and was promoted to Center Manager for Onshore Data Processing in 1986. In 1993 Pat was transferred to Australia as the Area Manager, Data Processing Far East and Australia. He returned to Houston in 1996 and is currently the Center Manager of Houston Land Data Processing. Pat is an active member of the SEG, GSH and PESA. He served as a member of the Continuing Education Committee for the Dallas Geophysical Society from 1983-1985. He was Continuing Education Chairman for the GSH from 1985-1988 and Treasurer from 1988-1989. He was elected 1st Vice president of the GSH in 1993 and performed that duty until his transfer to Australia cut short his term. In Australia he was an active member of the ASEG as well as PESA.



### Joe Alcamo

Joe Alcamo is currently a staff geophysicist with Pluspetrol International, Inc. responsible for 2-D and 3-D projects in Africa, as well as for evaluation of new exploration and production opportunities worldwide.

He received his B.S. in Geology in 1970 from Southern Illinois University, studied Geophysics at the University of Houston and received his M.B.A. in Finance from the University of Houston in 1981.

Joe began his exploration career in 1970 with Texaco, Inc., Los Angeles, working as a geophysicist in the Alaska Division, then transferred to the Latin America group in Houston where he received data processing training to prepare for expanded exploration responsibilities in Colombia, South America. Upon returning to the United States, Joe joined Pennzoil Company to explore for oil and gas in Alaska, Australia, China, and the North Sea. He continued his international exploration career by working on 3D exploration and development projects in the North Sea, China, Colombia, the Gulf Coast, and the Gulf of Mexico for Tenneco, Inc. After leaving Tenneco, Joe worked and/or consulted for several other oil and gas exploration/production companies before joining Pluspetrol.

Joe has served the GSH and HGS societies in many capacities over the years. He was co-chair then chair of the HGS/GSH Bass Tournament from 90-92, he was elected Treasurer of the GSH for the 1992-93 term, and served as Finance Committee chair and co-chair for the 1993-94 and 1994-95 terms, respectively. Joe accepted the charge to serve as Second Vice President during the 1995-1996 term when the elected officer was transferred to London, England.

Joe has been actively involved with the SEG, AAPG, GSH and HGS throughout his career.

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### John Sumner

John Sumner began his geophysical career in 1966 collecting gravity and magnetic data in the western United States for Superior Oil Co., Minerals Division. Following this summer of field work, he attended Stanford University where he received an M.S. (1968) and Ph.D. (1971) in geophysics. He was a professor of geophysics at the University of California, Santa Cruz (1971-72) and Lehigh University (1972-77) before joining Exxon Production Research Company in 1977.

At EPR, John took part in research on seismic stratigraphy, seismic modeling and the direct detection of hydrocarbons. Other assignments at Exxon include exploration advisor at Esso REP (Bordeaux, France, 1984-86), and various technical and supervisory positions at Exxon Company International, Exxon Exploration Company, a EPR. He presently is supervisor of the salt and complex structures section at EPR.

John has been an SEG member since 1968 and has served on the Research Committee (1982-84) and the Annual Meeting Advisory Committee (1994-1997). He was the Technical Program Chairman for the 1995 International SEG meeting in Houston and is presently coordinating the "Best of the SEG" session for the 1998 AAPG meeting.

In the GSH, John served on the Continuing Education Committee from 1990-94 and chaired the committee from 1992-93. During his tenure, he co-sponsored (with Don Frye) the symposium "Interpretation at the Well-Tie" and compiled and co-edited the proceedings volume with David Forel.

### Scott C. Sechrist

Scott C. Sechrist studied Geology at Trinity University, received a B.A. Degree in Geography/Remote Sensing from Southwest Texas State University, and a B.A. Degree in Communication/Broadcast Media from Stephen F. Austin Texas State University. He has over 20 years of experience in all phases of petroleum geophysics. He joined Neidell and Associates in 1996 as a geophysical advisor specializing in 3D seismic field acquisition, seismic data processing, seismic inversion, hydrocarbon attribute interpretation, prospect mapping for well locations and reservoir volumetrics, reservoir petrophysical characterization, differential GPS navigation and surveying, and applied geoscience problems in petroleum development or exploration.

Scott is a member of national and local chapters of AAPG, SEG, SIPES, and SPE. He is extremely active in the Geophysical Society of Houston, including the following Committees: Company Contacts, Directory, Electronic Communications, Publicity, and Technical Breakfasts.

During his career he has designed and managed seismic field acquisition programs, including international marine and land frontier 3D seismic surveys. He has designed and supervised a number of advanced technology regional seismic surveys in the onshore Texas Gulf Coast. These include some of the first broad bandwidth, high resolution land 2D and 3D Vibroseis surveys that are associated with significantly contributing to the development of notable South Texas Wilcox fields, including Shell's Duval County Rosita field, and the Zapata County Bob West-Lopeno field complex.

His technical interests include the analysis and compensation of 3-D seismic acquisition footprint in land and OBC program design, Vibroseis source effort optimization, 3D seismic data processing and depth imaging techniques, and workstation interpretation including prospect mapping for well locations and reservoir

volumetrics; and hydrocarbon attribute analyses including amplitude, AVO, Acoustic Impedance inversion, and other seismic or petrophysical attributes.



### Donald A. Herron

Donald A. Herron received his bachelor's degree in geology from Brown University (1971) and his master's degree in geology from the California Institute of Technology (1973). His career as a seismic interpreter began in 1973 and includes four years with Texaco, seven years with Gulf, and the last thirteen years with Sohio/BP Exploration. He was chairman of the GSH Continuing Education Committee from 1994-1996, and currently is General Chairman for the upcoming GSH Spring Symposium and SEG 13th Annual Gulf Coast Technical Meeting. He also has been a co-instructor for the SEG Continuing Education course entitled "The Interpretation Problem" since 1995. He is currently working on prospects in the Mississippi Canyon and Atwater Valley protraction areas in BP's deep water Gulf of Mexico exploration program. He is a member of AAPG, SEG and Sigma Xi.



### Phil Inderwiessen

Phil began his geophysical career with Texaco in 1978 as a seismic data interpreter in the Houston Division with assignments including the East Texas Salt Dome Basin, Texas Shallow Water Bays, Offshore Gulf of Mexico, and the South China Sea, PRC. In 1981 Phil became Houston Division's seismic processing supervisor for routine and special projects. He joined Texaco's research lab in 1984 specializing in borehole geophysics, mainly VSP and crosswell seismic. Phil received Texaco's General Manager's

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Outstanding Contributor Award (1990) and Technical Innovation Award (1993) for his contributions in crosswell seismology, and more recently, Texaco's Denver Division's 1996 Outstanding Contributor Award for work in geostatistics.

Phil has a BS in Physics (1974) from the University of Central Florida, MA's in Astronomy (1978) and Geophysics (1979) from Indiana University, and a Ph.D. in Applied Geophysics (1987) from the University of Houston. He is co-author of SEG Monograph No. 6: Fundamentals of Seismic Tomography and is currently a member of the SEG, AGU, and GSH. Phil has previously served as the Reservoir Geophysics SIG chair with the GSH.



#### **Diana Shaw**

Diana has been employed by Western Geophysical since 1987, and has been a member of the

Spec Data Sales and Marketing Department at Western since 1989, currently working as a Senior Account Representative. A continual member of the GSH since 1992, Diana has volunteered her time for numerous GSH events including technical luncheons, Gulf Coast SEG registration and audio/video operations, SEG sign committee, GSH Shrimp Peel registration, and GSH Golf Tournament registration. Diana is also a member of the Coastal Bend Geophysical Society.



#### **Richard Verm**

Richard Verm is Manager of Exploration Projects at Geophysical Development

Corporation. He has been involved in the development of AVO and VSP technology for the past 10 years. Prior to joining Geophysical Development Corporation, he worked at the Allied

Geophysical Laboratories at the University of Houston where he was a co-director of the Image Processing Laboratory. His career in geophysics started at Geosource where he worked in the Research Department of Petty-Ray Geophysical.

Richard is a member of the SEG, GSH and the ACM. He served on the Technical Program Committee for 1991 SEG Annual International Meeting and was the Vice-Chairman for the 1995 SEG Annual meeting. Currently he is a member of the SEG Computer Applications Committee and the SEG Online Governing Board.

Richard Verm received a BA degree in mathematics from Rice University and Masters and Ph.D. degrees in geophysics from the University of Houston.



#### **Jock Drummond**

Jock started his career in the energy industry in 1972 with Ray Geophysical where he witnessed many

changes in ownership through Geosource and ending with Halliburton Geophysical Services. His career has taken him through many varied positions both in technical and management arenas, including team member of Geosource's 3-D seismic acquisition and processing development group in the early 1980's and manager of HGS's Houston data processing operations. His interests are extremely varied but are generally focused on finding means of improving reservoir analysis through the continued advancement of technology and integration of the disciplines required for reservoir development.

Jock received a Bsc (Hons) from Queens University in Northern Ireland and a Masters in Geophysics from the University of Newcastle upon Tyne in Britain. He has been a member of the Geophysical Society of Houston since the early 80's and served as the Coordinator of the Geophysical Technical Seminars for several years.

He has worked in the service industry for twenty three years including

the position of marketing director for CogniSeis. Presently Jock is the Geoscience Supervisor for Anadarko Petroleum Corporation and is responsible for assisting their worldwide exploration activities.



#### **W. Dennis McMullin**

Dennis is the senior product communications geoscientist for the seismic products

marketing group with Landmark Graphics Corporation in Houston. He develops and coordinates internal and external seismic product communication strategies; develops print, video and multimedia marketing and sales collaterals, publishes internal technical articles, and has developed a product and market knowledge management system for Landmark. In addition to product marketing, Dennis instituted Landmark's University Partnership Program to facilitate technology transfer between the university geoscience departments and the geoscience computing industry.

Prior to his nine years with Landmark, Dennis spent 12 years as a E&P geologist with both major and independent oil and gas companies. Dennis earned his BS and MS degrees in geology from the University of Cincinnati and The University of Texas at Arlington respectively, and his MBA degree from Houston Baptist University. Dennis holds active membership in both the AAPG and the SEG professional associations.

### **Texas Geoscience Registration**

The GSH has recently been made aware of pending legislation for registration of Texas Geoscientists. The proposed bill plus additional information can be found on the web at:

<http://rampages.onramp.net/~wkc/texasgeo.html>

# Geophysical Society of Houston

## February Technical Luncheon



*Christopher Ross, PGS Tensar (Speaker)  
Dave Agarwal, I.I.T*



*Mark Brokaw, Chevron  
Jorge Mendigunena, Chevron*



*Bonnie Snyder, Consultant  
John Adamick, TGS*



*Bill Fahmy, EEC  
Ganj Mohler, EPR  
Mike Gurch, EPR*



*Chris Khion, EPR  
Rosemary Mullin, N.S. Neidell & Assoc.  
Dave Johnson, EPR*



*John Stevens, Consultant  
Don Robinson, Panther Tech  
Shawna Traweek, Panther Tech  
Tom Fulton, Seismic Solutions*

# GSH 1997 Spring Symposium and SEG 13th Annual Gulf Coast Technical Meeting

April 23, 1997 BP Plaza Houston, TX

**“The Three E’s of 3D — Efficiency, Effectiveness, Economics”**

## Second Announcement and Pre-Registration

This year the Geophysical Society of Houston is sponsoring the SEG 13th Annual Gulf Coast Technical Meeting in joint session with its Spring Symposium. The meeting will be held on Wednesday, April 23 at BP Plaza, 200 WestLake Park Boulevard, Houston (this location is on the southeast corner of the intersection of Interstate 10 and Texas Highway 6 in far west Houston). The technical session, consisting of approximately eight presentations on the efficiency, effectiveness and economics of 3D seismic surveys, will be moderated by Malcolm Lansley (Western Geophysical) and Dave Monk (Energy Innovations). Selected SEG Continuing Education short courses will be offered at BP Plaza on the days preceding and following the meeting:

Tuesday, April 22: “Geophysics in Risk Management”  
8:00 AM - 5:00 PM Instructor: Laura Ethetton

Thursday, April 24: “Planning and Executing a Marine 3D Survey”  
8:00 AM - 5:00 PM Instructor: Malcolm Lansley

Please use the following course registration form to enroll in either or both of these courses (if registering for a course and the general meeting, please submit both the course and meeting registration forms together).

Advance registration for the general meeting is available using the following form. Pre-registrations must be received in the GSH Business Office on or before Wednesday, April 9. There will be on-site registration on the day of the meeting.

Contacts: Don Herron  
General Chairman  
(281) 560-3778

Dan Ebrom  
Technical Program Chairman  
(713) 954-6252

### Short Course Registration Form

**GSH 1997 Spring Symposium and  
SEG 13th Annual Gulf Coast Technical Meeting  
BP Plaza Houston, TX**

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

Company: \_\_\_\_\_

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

Phone: (daytime) \_\_\_\_\_

(evening) \_\_\_\_\_

Please check the course(s) in which you are enrolling:

Tuesday, April 22: “Geophysics in Risk Management”

Thursday, April 24: “Planning and Executing a Marine  
3D Survey”

Tuition is \$125.00 per course, \$225.00 if enrolling in  
both courses (tuition includes morning and afternoon  
refreshments).

Please send this completed form with a check or money  
order for tuition to: Geophysical Society of Houston, 7171  
Harwin, Suite 314, Houston, TX 71036.

Each course is limited to 40 students, so pre-registration  
is strongly suggested (there will be registration on a space  
available basis only on the day of each course).

### Registration Form

**GSH 1997 Spring Symposium and  
SEG 13th Annual Gulf Coast Technical Meeting  
April 23, 1997 BP Plaza Houston, TX**

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

Company: \_\_\_\_\_

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

Phone: (daytime) \_\_\_\_\_

(evening) \_\_\_\_\_

Please provide the following supplemental information:

Discipline (circle one): geophysics geology  
engineering other

Years of experience (circle one): < 1 year  
1 - 5 years  
> 5 years

Primary interest (circle one):  
exploration exploitation  
environmental other

Please send this completed form with a check or money  
order for \$60 (GSH members, unemployed and students  
— send proof of full-time enrollment) or \$80 (non-  
members) to: Geophysical Society of Houston, 7171  
Harwin, Suite 314, Houston, TX 77036.

Pre-registrations must be received by April 9, 1997.

# ANNUAL HONORS AND AWARDS BANQUET

Thursday, May 8, 1997

## Lakeside Country Club

6:30 p.m. - Cash Bar

7:15 p.m. - Dinner

Music by Marshall Maxwell

### **GSH LIFE MEMBERS**

Lee C. Lawyer • Merry Lynn Southers

### **GSH HONORARY MEMBERS**

Stuart W. Fagin • Robert W. Mitchum, Jr.

### **SEG 50 YEAR HONOREES**

Nelson C. Steenland • Robert M. Tesar

### **SEG 25 YEAR HONOREES**

Alan Berger	Karl Schneidau
James Weldon Buelow	Bobbye L. Silva
John Gavin Butler	Joe Dan Parker
Robert C. Edmiston	Youngsun Shin
Donal P. Heitzman	Lewis Anderson Van Coutren
Surrinder Kapoor	Frederick Joseph Wells
Alexander G. MacKeon	Charles T. Contrino
Robert Alan Miller	Donald R. Heider
Scott Edward Moravec	George J. Jungels
Ashoke Kumar Nath	Emil A. Nakfoor
Raymond L. Noel	James R. Orgill
William G. North	Patrick L. Prout

The GSH is pleased to announce its

# ANNUAL HONORS AND AWARDS BANQUET

Thursday, May 8, 1997

Lakeside Country Club  
100 Wilcrest Drive

As in years past, our special guests are your friends who have 50 and 25 years of membership in the SEG along with this year's GSH Honorary and Life Members. We hope that you and your spouse or guest will join us for cocktails (cash bar) at 6:30 and then for an elegant seated dinner and music by Marshall Maxwell at 7:15 pm.

SEG President Elect Rutt Bridges, will give the Presidential Address and assist GSH President, Wulf Massell, in presenting the awards.

The cost for the dinner is \$30.00 per person. Reservations must be **pre-paid** and received no later than **April 30<sup>th</sup>**, to accommodate the guarantee requirements of Lakeside Country Club.

Please make your check payable to the GSH and send it to:

**C. H. Comis, c/o Double Precision, 9182 Old Katy Road, Ste. 102, Houston, Texas 77055**

## Menu

*Lemon Artichoke Soup*  
*Tossed Green Salad*  
*Chicken Tarragon*  
*Saffron Rice*  
*Vegetable Medley*  
*Assorted Breads*  
*Peppermint Meringue*

I-10 KATY FREEWAY		
	MEMORIAL	
LAKESIDE COUNTRY CLUB	BRIAR FOREST	BELTWAY 8
	WESTHEIMER	

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## ANNUAL HONORS AND AWARDS BANQUET

Reservation Card

Name: \_\_\_\_\_  
(as it should appear on name tag)

Guest: \_\_\_\_\_  
(as it should appear on name tag)

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

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

Check No.: \_\_\_\_\_ Please reference "**Awards Banquet**" on your check No. Of Attendees: \_\_\_\_\_

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1	2	3	4	5
6	7	8	9 GSH Aux Spring Bus Tour	10	11	12
13	14	15 GSH Technical Breakfast Amoco's Westlake Park Office	16 Data Processing SIG Western Geophysical Auditorium	17	18	19
20	21 GSH Technical Luncheon HESS	22	23 GSH Spring Symposium and SEG Annual Gulf Coast Technical Meeting	24	25	26
27	28	29	30	Submittals and suggestions should be sent to the GSH Editor at 7457 Harwin, Suite 301, Houston, TX 77036, or call Cliff Kelley, Editor, at 368-8103, or Fax to 368-8182. Deadline for submission is the 1st of the month preceding publication: e.g., September 1 for the October issue. Digital or electronic submittals required.		
<b>APRIL 1997</b>						

**GEOPHYSICAL SOCIETY OF HOUSTON**

7457 HARWIN DRIVE, SUITE 301  
HOUSTON, TEXAS 77036  
(713) 785-6403



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