Geophysical Society of Houston

VOL. 35, NO. 3 NEWSLETTER OCTOBER 2000

Technical Luncheon

Title: Seismic Comparison of Deepwater Fields of the Gulf of Mexico and Offshore Brazil

Speaker: George A. Jamieson, Schlumberger Reservoir Evaluation Seismic

Date:	Tuesday, October 17, 2000
Time:	Register and Cash Bar 11:30 am Luncheon and Talk 12:00 am
Cost:	$20
Location:	H.E.S.S. Building 5430 Westheimer

The new exploration impetus provided by market-oriented reforms in Brazil has had a dramatic impact on new seismic data acquisition over the last year or so. This new acquisition phase has extended out into the deepwater offshore regions. In the Gulf of Mexico, the shelf region has been extensively covered by 2D and 3D data. In recent years this coverage has also extended off the shelf and into the deepwater.

In Brazil and the Gulf of Mexico, state-of-the-art seismic data acquisition and processing, both onshore and offshore, is dramatically improving data quality and reducing turnaround times. Extremely long streamers, up to 10 km long, large acquisition footprints and prestack time migration with higher-order normal moveout are now being increasingly employed.

This study compares five deepwater fields, Mars and Diana in the Gulf of Mexico and Roncador, Marlim and Albacora Leste in the deepwater Campos Basin, offshore Brazil. From large regional recently acquired 2D and 3D datasets the regional structural framework can be compared between these two regions as well as the seismic expression of the reservoirs themselves.

The main reservoirs of the offshore Brazil deepwater examples are in shelf derived turbiditic sands with mound geometry. This stratigraphic trapping mechanism is structurally augmented by large listric faults, which can fault bound the reservoirs, and also by salt withdrawal. The Gulf of Mexico deepwater examples occur in generally younger lowstand reservoirs of Plio-Miocene age in combined structural/stratigraphic traps involving pinchouts against salt-bounded minibasin flanks. In addition, the confining nature of these salt-bounded minibasins can allow significant reservoir stacking.

In all of the offshore Brazil field examples stacked turbidite sands with high porosity and permeability are a common characteristic of the reservoirs. Oil-bearing sands are encountered in the Upper Cretaceous, Eocene, Oligocene and Miocene sections. In many instances the oil and gas lowstand reservoirs produce high amplitude hummocky reflectors. In addition, bright spots, flat spots and AVO effects have also been identified seismically. In the Gulf of Mexico field examples relatively well resolved seismic images showing good seismic

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DATE CHANGE!

2000 GSH TENNIS TOURNAMENT

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Editor's Note

To insure your information reaches the GSH society members in a timely manner it must appear in the in the appropriate newsletter issue. Please note the following deadlines and plan your function's publicity strategy accordingly. Items must be received on or before the corresponding deadline date. Materials may be sent to pattyc@diamondg.com or faxed to 713/783-9780. If you have any questions please call Patty Cardwell at 713/783-7837.

2000 GSH Newsletter Deadlines

Issue ..... November 2000
Deadline .. October 13, 2000

The GSH would like to thank the following companies for being corporate members:

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Thank you for your supporting the GSH!

For information on how to become a corporate member or to endow a scholarship with an organization's name please contact the GSH office at (713) 785-6403.

Technical Breakfast

Topic: Advances in Pore Pressure Prediction
Speaker: Dr. Nader Dutta
Date: Wednesday, October 11
Time: 7:00-7:45 a.m. refreshments
7:45-8:15 a.m. talk
Location: Auditorium at Western Geophysical
10001 Richmond Avenue

The GSH Technical Breakfast for October 2000 will be hosted by Western Geophysical. This event is hosted with no charge for attendance, courtesy of Western Geophysical, in generous support of the GSH Technical Breakfast series. Visitors should enter the second driveway entrance on southbound Briarpark, and walk in through the main entrance. Refreshments will also be provided. To make a reservation, call the GSH reservation line at (713) 917-0218 code 607 or email reservations@hgs.org, as this one will fill up early!

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delineation of channel levee complexes and basin floor fans can often be seen in the minibasins containing these fields. Seismic sections across the Mars and Roncador fields are shown.

Salt plays an important role in the petroleum system of both regions. In the Santos and Campos Basins autochthonous salt generally thickens basinward. In the Gulf of Mexico salt has reacted to the sediment overburden differently in that extensive detachment of salt from its original stratigraphic position occurred forming a huge mosaic of amalgamated allochthonous canopies and associated minibasins.

There also seems to be differences in the nature of the migration pathways. The Brazil field examples are all associated with large listric or planar faults that breach the autochthonous salt in 'windows' between massive salt, i.e. in regions of primary welds. Migration can occur up these faults and into the overlying reservoirs. Hydrodynamic migration directly from the syn-rift to the reservoir is possible in areas where there are no salt structures.

George Jamieson biography

Graduated with B.Sc. degree in geology from Sheffield University and M.Sc degree in petroleum geology from Imperial College. For Schlumberger Geco-Prakla in London performed regional seismic interpretations offshore UK, Egypt and Cameroon and in Houston regional and prospect work offshore Gulf of Mexico, Argentina, Peru, Venezuela and Brazil.

GeoEvents Calendar

Make reservations by e-mail at reservations@hgs.org and include your member number (found on Bulletin mailing label), or use the phone reservation system at 713/917-0218.

Reservation Codes

Use these codes to make voice mail meeting reservations:

Technical Luncheon	**601**	Potential Fields SIG	**605**
Data Processing SIG	**602**	Environmental App. SIG	**606**
Interpretation SIG	**603**	Technical Breakfast	**607**
Reservoir SIG	**604**		

SIG Meeting Announcements

Near Surface SIG

Where: Fugro-South Building; 6100 Hillcroft, Conference Room #160
When: October 18; 6:00 p.m.

GEOPHYSICAL METHODS FOR ENGINEERING AND ENVIRONMENTAL SITE CHARACTERIZATION

Mustafa Saribudak, Ph.D.
Principal Geophysicist

The primary factor affecting the accuracy of any site characterization effort is the limited number sample borings, resulting in insufficient spatial sampling to adequately characterize the site. This is the primary reason for the application of surface geophysical methods.

There are a number of geophysical methods that are commonly applied to detailed shallow depth investigations. These methods are described as follows: electrical, electromagnetic, magnetic, gravity, seismic reflection and refraction, borehole logging, ground penetrating radar. Each geophysical method is useful for measuring the vertical and/or lateral distribution of subsurface bodies having differing geophysical properties.

The success of any surface geophysical survey is dependent upon many factors. One of most important is the competency of the person(s) responsible for carrying out the survey and interprets the data. An understanding of the theory, field procedures and methods for interpretation of data along with an understanding of the site geology is necessary to successfully complete a geophysical survey. Properly planned, conducted, interpreted and reported, a geophysical survey can provide a wealth of subsurface information that could not be obtained otherwise.

The other most important issue is the client-geophysicist relationship. The client should provide all the information related to site conditions and geological data prior to the geophysical survey. Both sides should identify the problem clearly, and know the expectations from the geophysical survey. The success of the geophysical survey is strongly dependent upon the two-way communications of the client and the geophysicist.

This presentation is a review of the capabilities and limitations of basic geophysical methods currently being employed in the engineering and environmental industries. In this presentation, several case studies from refineries, gas stations, old oil and gas platforms, and shopping centers will be included. The presentation will cover magnetic, gravity, conductivity, time-domain sounding, resistivity, borehole logging, and ground penetrating radar, seismic reflection methods.

Biographical Sketch

Mustafa Saribudak is a Principal in Environmental Geophysics Associates (EGA), which is located at 9406 Palm Shores Drive, Spring, TX 77379. He received a Master's degree in geology and a Doctorate in Geophysics from Istanbul Technical University, Turkey. He came to the University of Houston in 1989 to work on a project funded by the National Science Foundation. He worked for Tierra Environmental between 1990 and 1993, where he pioneered application of geophysical methods to environmental problems. He founded EGA in 1994 to provide near-surface geophysical services for engineering, environmental, and oil and gas industries, and real estate developers. During the last six years he has conducted geophysical surveys at more than 100 sites in the U.S. and Central America. He has published numerous papers and short notes in geophysical and environmental journals.

DATA PROCESSING SIG

Topic: Travel Time Computation for 3-D Prestack Depth Migration
Speakers: Mo Le Wei, Veritas
Antonio Pica, CGG

Date: Wednesday, October 18, 2000
Time: Social 4:30
Presentations 5:00 to 6:30 p.m.
Location: CGG, Park 10
Organizers: Kamel Siddiqui, CGG
Bee Bednar, ADS

Directions: Take the first exit west of Highway 6 on I10. Turn right on Park Ten Blvd. and left on Park Ten Place. The CGG sign on the building can be seen from the interstate. Sign in on the ground floor.

Paper 1: Travel time computation on the SEG/EAGE 3D salt model for prestack depth migration by Mo Le Wei

Paper 2: Fast and accurate finite-difference solutions of the 3D eikonal

Abstract 1: Travel time computation on the SEG/EAGE 3D salt model for prestack depth migration
by Mo Le Wei

In data processing prestack depth imaging, Kirchhoff integral migration is the prevailing method. In this method, travel time computation which governs the correct lateral/depth positioning and focusing of reflection events, is the most critical component in determining the quality of the migration images.

The controlled data set, SEG/EAGE 3D salt model, simulating environment of the Gulf of Mexico has been widely used by many people for research and has been used in the industry to benchmark data processing softwares. We use this data set to elaborate our method of travel time computation so as to improve the quality of Kirchhoff migration images. Practice shows that application of the travel time of the most energetic arrivals in Kirchhoff migration produces better focused and more continuous images with higher signal to noise ratio. We will present analysis to design a fast, accurate and stable method of ray tracing to compute traveltime. We analyze the energy decay mechanism of seismic waves to design a ray selection criterion of minimum velocity contrast (MVC) to select the most energetic arrival. A complete suite of data examples show that our procedure successfully obtains accurate and stable travel time of the most

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energetic arrival at both the near-field and far-field from the source in this complex and yet realistic geological model. Data processing prestack depth migrations show that our procedure produces more coherent sedimentary, salt top/ base and subsalt images than the old methods.

Abstract 2: Fast and accurate finite-difference solutions of the 3D eikonal equation parametrized in celerity
by Antonio Pica.

One major problem with 3D PSDM processing resides in the travel time computation step. Not only this travel time have to be accurate, but the speed of computation has to be high otherwise in certain cases there is a bottleneck in the overall processing turn around time. The algorithm proposed here for solving the 3D eikonal equation overcomes these two difficulties. A high speed of computation is obtained by using a coarse sampling, but the accuracy of the solutions is ensured by parameterizing the differential equation, not in time, but in celerity, which designes the average velocity appearing in the Dix hyperbolic equation. The computations are made on a Cartesian system of coordinates, but the wave-front curvatures are nevertheless implicitly taken into account. Usually, eikonal solutions represent the first arrival travel times. In the scheme presented here, the upgoing head-waves are naturally cancelled, as this method proceeds by extrapolating the travel times downward. As an option for some particular cases, the undesired downgoing refracted waves can be cancelled by imposing some geometrical constrains to the wave-front paths. The behavior of this kind of technique is tested and analyzed with the 2D Marmousi dataset example.

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D. G. (Peter)Lang 1926 - 2000

Douglas Gordon Lang , 74 of Bellaire, Texas died peacefully on the 25th of July at the M. D. Andersen Hospital, Houston.

Mr. Lang, "Peter" to a multitude of friends and colleagues, was born and lived in the city of Leeds, England. In 1941 at the age of 15 he enlisted in the in the British Merchant Navy as a Radio Cadet, rising to Ships Radar Officer and seeing service world wide during and immediately after World War II.

In 1949 he departed the services in search of a wider education at City of London Colleges while working for Decca Radar as an engineer/designer. During this time he compiled the book "Marine Radar" which was published by Pitman and became a standard Navy/ AirForce service manual.

His last company move was in 1956 when he was recruited by Ray Geophysical Co. as an instrument supervisor and spent the next ten years covering all five continents and all known instrumentation.

By 1965, he had become Manager of Technical Training and Houston was his de-facto home. He became an American citizen and acquired a home which he immediately filled with the artifacts of his primary hobby - antique navigation equipment - upon which he was a recognized authority.

After the merger of Ray and Petty to form Geosource in 1972 he served the new company in many operational and corporate positions before returning to his preferred discipline as manager of all training for Geosource, a position he held until his retirement from Halliburton Exploration Division in 1990.

During this time his perfectionist imprint covered every manual, specification and curriculum put out by the company on any subject. His video based training course on theoretical geophysics was internationally renowned in the early eighties

Peter was a long time member of SEG, GSH and numerous cartographic institutes and academic groups. He will be sorely missed by the Houston community and remembered as a gentle man of scholarship, humor and unfailing courtesy, willing to assist anyone in any endeavor.

Houston Geological Society presents

Deepwater Gulf of Mexico Dry Hole Seminar

November 8, 2000
Auditorium, Shell Plaza
910 Louisiana
8:00a.m - 4:30 p.m.

Are you interested in deepwater Gulf of Mexico? Explorationists representing 11 deepwater operators will evaluate dry holes and apply post-drill analysis and interpretation of well results against the pre-drill concepts. A variety of play concepts - e.g., subsalt, minibasin, and fold belt - will be represented. Each well analysis will address topics such as pre-drill objectives, seismic mapping, risk attributes, resulting changes to the interpretation, and reason(s) for outcome.

Participating companies include

AGIP **Conoco** **Kerr-McGee** **Phillips** **Texaco** **Amerada Hess**
Elf **Marathon** **Shell** **Unocal** **Chevron**

This course is intended for any upstream professional.

$ 75 ..... Members* and fulltime students, before November 3
$ 95 ..... Non-members
$125 ..... Registration after November 3 and at the door

(*Members in HGS, API Houston, GSH, HAPL, SIPES Houston, SPE Gulf Coast, SPEE Houston, and SPWLA Gulf Coast)

To reserve a seat, send a check payable to "HGS" and the registration below to:
HGS, 7457 Harwin, Suite 301, Houston, Texas 77036, Attn: Dry Hole Seminar

Name: _____

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❑ SPWLA Gulf Coast

Amount sent (US $) _____

SEG Continuing Education Courses Near You

The SEG Continuing Education program is offering several courses near you! Listed below is the course information. You can register online at http://ce.seg.org.

The tuition fee is $595 Member and $665 Non-Member.

Contact ce@seg.org with any questions.

October

Seismic Fundamentals
by Don Macpherson
October 17-18, Dallas, TX

Application and Interpretation of Converted Waves
by Rob Stewart & Jim Gaiser,
October 23-24, Houston, TX

October
Seismic Fundamentals
by Don Macpherson
October 17-18, Dallas, TX

This course is intended to be a thorough review of all the key geophysical concepts relevant to the interpretation of seismic data. It also contains a detailed description of technologies that have recently become "hot topics" in our industry such as 4-D seismic data. Additionally, the course attempts to provide the attendee with a clear understanding of technologies that have a significant impact on the economics of a project such as depth migration or AVO processing.

The course material is offered in a very graphic manner and therefore requires no prerequisite knowledge of concepts such as seismic migration. Although concepts such as seismic migration are discussed in detail, the total focus is on what the interpreter needs to know about these processes. The course contains very little mathematics. There are however several key equations (for example in the section on seismic velocities) that are relevant to seismic interpretation and are included because seismic interpreters should be comfortable with them.

Concepts such as wavelet tuning are illustrated with numerous PC programs that are free to participants. Several of these are extremely useful to the seismic interpreter such as the program for handling seismic velocities with the Dix equation.

Course Outline

- The nature of seismic data, what's propagating
- Seismic data acquisition, land and marine data
- Reflections at an interface, the reflection coefficient
- Wavelets in the seismic data
- Tuning and the thin bed response
- Overview of seismic data processing
- Seismic velocities, stacking velocities, interval velocities, converting to depth
- Overpressure and its effect on stacking velocities
- The imaging process, why we DMO and migrate the data
- 3-D migration
- Prestack migration in time and depth
- 3-D data and the concept of bin gathering
- Direct hydrocarbon indicators and AVO with a little rock physics
- 4-D seismic data

Who Should Attend

Geologists, Geophysicists, Reservoir Engineers, or anyone needing a thorough understanding of seismic data.

Instructor:

Don Macpherson is a Canadian from Edmonton, Alberta. He graduated from the University of Alberta in 1965 with an M.S. in Geophysics and Isotope Geochemistry. Upon graduation, he was employed by Mobil Oil Canada in Calgary where he worked for seven years. He has subsequently worked for Mobil in Dallas, New Orleans, London, and Vienna. He has been involved in all aspects of geophysical data acquisition, processing and interpretation. Throughout his career, Don has participated in teaching courses in the technical aspects of geophysics and has a keen interest in bringing clarity and understanding of the tools of the trade to the geophysicists that are using these techniques. For the last ten years, Don was with Mobil's Technical Training Department. He was the manager of the Training Department and also lectured in geophysical courses. He was the main instructor for courses on "Seismic Fundamentals," "Direct Hydrocarbon Indicators and AVO," and "A Graphic View of Seismic Migration." After retiring from Mobil in October 1998, Don Macpherson has been offering a number of topical geophysical courses to the petroleum industry and working as a geophysical consultant. Don Macpherson has been a member of SEG for over twenty five years and is also currently a member of the Dallas Geophysical Society.

Application and Interpretation of Converted Waves
by Rob Stewart & Jim Gaiser
October 23-24, Houston, TX

This course provides a thorough overview of the methods of multi-component (3-C and 4-C) seismic exploration from basic petrophysical analysis and survey design through 3-D converted-wave migration. Numerous examples and case histories show the design, application, and use of multi-component surveys. Both 2-D and 3-D surveys and analysis will be discussed. Marine surveys (up to 4C-4D measurements) and analysis are highlighted. Supporting measurements as dipole sonic

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logs and 3-C VSP are also included. Field case interpretation exercises reinforce concepts introduced by the instructors.

Topics discussed in this course include:

- Rock properties, logs, synthetic seismograms, VSP
  P and S velocity and density
  Acoustic and dipole sonic logs
  PP and PS AVO synthetics
  3-C VSP surveys and analysis
- Multi-component acquisition Sources, receivers Survey design, recording systems, logistics, costs
- PS and SS processing Statics, velocity analysis, DMO Stacking, migration, inversion Anisotropy considerations
- P- and S-wave interpretation Section correlation, synthetics, VSP support

Field data exercises including: channel sand delineation, dolomite/anhydrite changes, 4C marine cases, conglomerate reservoir identification

Instructors:

Robert R. Stewart holds a B.S. in physics with a minor in mathematics from the University of Toronto and a Ph.D. in geophysics from Massachusetts Institute of Technology. His career has included Chevron, ARCO, and Veritas Software where he worked in research, as a processing geophysicist, and as a senior research geophysicist concentrating on VSP and CDP software design. Dr. Stewart held the Chair in Exploration Geophysics at the University of Calgary from 1987 to 1997 and is currently a professor in the Department of Geology and Geophysics. He won the CSEG 1986 Best Paper Award and the SEG Best Poster Award in 1991; he is a past editor of the Canadian Journal of Exploration Geophysics, associate editor for signal processing in Geophysics and was awarded the CSEG Medal in 1992. He was president of the CSEG and a past director of the CREWES project, a university-industry research consortium of thirty-five companies. Dr. Stewart was the 1999 inaugural SEG Distinguished Educator.

James E. Gaiser holds a B.S. in geology/anthropology from Indiana University, and studied geology and geophysics at the Georg-August University in Gottingen, Germany before obtaining an M.S. in geophysics from the University of Utah. He holds a Ph.D. in geophysics from the University of Texas at Dallas. His career has included Exxon and ARCO where he worked in seismic exploration and data processing. Dr. Gaiser was a senior research geophysicist at ARCO from 1980 to 1992, where he concentrated on developing acquisition methodologies and software design for VSP and multicomponent surface seismic exploration. Currently he is a principal research geophysicist at Western Geophysical in Denver, Colorado, working on 3-D converted wave software design. He was co-author of the SEG Best Presentation Award in 1981 and won Honorable Mention for his 1993 SEG presentation. He was District 2 Representative for the SEG Council from 1994 to 1997 and is an active member of the SEG Development and Production Committee.

Join the Geophysical Auxiliary of Houston!

The Geophysical Auxiliary of Houston invites the wife of any present or past member of the GSH or SEG, the widows of former members of the GSH or SEG, and women members of the GSH or SEG to join us for our 2000-2001 events.

Thursday, November 16 we will tour Rienzi Collection and Gardens at 1406 Kirby Drive in River Oaks.

Yearly dues are only $15.00. Call Marinell Williams at 713-467-4517 or Donna Parrish at 281-589-8088 for information on how to join. For more information about the programs and to offer suggestions, please call Georgeann Massell at 281-353-4517.

The GAH encourages social relationships among its members, donates money to the GSH scholarship fund and assists the GSH in any manner possible.

"Strangers are just friends waiting to happen."
We look forward to having you join us!

Scholarship Recipients

The GSH would like to congratulate the following students for qualifying and receiving scholarships from the SEG with money contributed by the GSH.

Jessica Marie Arnoldi;
Texas A&M University
Jane Killingsworth;
Texas A&M University
Jennifer McGuire;
Texas A&M University
Sean O'Brien; University of Texas
Constantinos Tzimeas;
Texas A&M University

Contributions are made by the GSH to the SEG scholarship fund. If you or your company would like to contribute via the GSH as a memoriam or as a personal or business donation, please contact Joan Henshaw at the GSH office (713)785-6403. All donations will be acknowledged in the GSH newsletter and are tax deductible.

Houston Geological Society
Continuing Education Committee

Presents

GEOPRESSURES

A WORKSHOP

Date: October 12, 2000
Time: 7:30 AM to 5:00 PM
Venue: Shell Auditorium, One Shell Plaza, 910 Louisiana, Houston.

This is an all-day workshop for geoscientists and engineers dealing with geopressures. It is an opportunity to understand and review some of the fundamental aspects of geopressure phenomena at different scales and their possible solutions. The topics covered include the following:

- Geopressures as drilling hazards as well as valuable clues for exploration.
- Dominant causes
- Special considerations for deepwater exploration.
- Geophysical methods, rock physics, and underlying assumptions and models, which are used analyze geopressures before, during, and after drilling, at basinal to prospect scales.
- Case histories.

REGISTRATION AND COSTS

HGS Members* Pre-registration: ..... $ 70.00 - before October 6, 2000,
Non-Members* Pre-registration: ..... $ 85.00 - before October 6, 2000,
Late Registration..... $ 95.00 - after October 6, 2000, and at the door.

(*) Membership prices are extended to any member of a Houston Energy Council Society, i.e. API Houston, GSH, SPE Gulf Coast, SPEE Houston, SIPES Houston, SPWLA Gulf Coast.

Contact for further information:
Sharma Dronamraju, C.P.G., (713) 773-5643 • sdronamraju@fugro.com

To register, complete the Registration Form and mail it along with a check payable to HGS,
To: Joan Henshaw
HGS, 7457 Harwin, Suite 301
Houston, TX 77036-6402 Attn: Geopressures Workshop

HGS Membership Number:_____ If Non-Member affiliation if any: _____

Name:_____

Company: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ E-mail: _____

Check Number:_____Amount Enclosed: _____ Date: _____

(Receipts will be available at the door)

2000 GSH TENNIS TOURNAMENT

FRIDAY, OCTOBER 13, 2000

Chancellors Tennis Club

$30.00 per person

Play will began promptly at 1:00pm and conclude by 5:00pm. Lunch will begin serving at 11:30am. Cold drinks will be available and we will have a keg for the COOLING DOWN TIME.

This will be a half day A and B Scramble Tournament. A player will play with all other players in his group. Ladies will be teamed with partners in the A or B groups as they choose. In addition to TROPHIES there will be a drawing for a generous group of DOOR PRIZES.

To ensure the proper amount of court space, food and drinks, complete and send in the entry form as soon as possible, but no later than October 2, 2000. We need more players and encourage you to contact your associates to participate in the tournament. We are again inviting players in the Geological Society to join with us so as to have more players and more fun. For information call Bill Steiner 713/789-7250 or Joe Jones 281/438-5626.

2000 GSH TENNIS TOURNAMENT ENTRY FORM

NAME _____

Phone No. _____ Company _____

Flight Preferred: A _____ B _____ Ladies _____

Make check payable to: GSH Tennis Tournament
MAIL TO: Joe Jones • 3802 Pecan Valley Drive • Missouri City, Texas 77459

3rd Annual Seismic Softball Tournament

Benefiting The SEG Foundation charity

October 14, 2000

All games will be played at Houston Sportsplex located at 12631 South Main, Houston, Texas 77035.

GCAGS 2000 Annual Convention

Houston, Texas

Short courses will be held October 23rd through October 29th. For more information, visit the GCAGS website at www.gcags.org/convention2000/calendar. Priority will be given to GCAGS registrants, so sign up early!

IAGC/IPAAS Conference

The International Association of Geophysical Contractors (IAGC) and Independent Petroleum Association of America (IPAA) will hold the second in a series of day-long conferences on non-exclusive geophysical data at the HESS Building (5430 Westheimer) in Houston, Texas on Tuesday, October 31st.

The conference is especially appropriate and beneficial for independent oil company people - owners, exploration managers, geologists, geophysicists, landmen, attorneys and others - who wish to learn about how to gain the greatest benefit from this low-cost but powerful oil and gas finding too.

The dramatic growth of the "spec" data business has greatly enhanced wildcat drilling success rates and allowed large numbers of oil companies affordable access to 3-D seismic technology, which is changing dramatically due to sweeping changes created by the internet.

More information on the conference, including registration material is available from IAGC at iagc@wt.net or by calling 713-957-8080. The registration deadline is October 10, 2000.

HGS/GSH

Shrimp Peel

Friday, November 3, 2000

5:30 p.m. until 10:00 p.m.

SAM HOUSTON RACE PARK

7575 N. SAM HOUSTON PKWY WEST
(Beltway 8 between Hwy 290 & I-45 N)

TICKETS $25.00 Advance / $35.00 At The Door

- Advance ticket sales through October 20th
- Tickets mailed to you beginning October 2nd
- Event held on the Infield (weather permitting)
- No refunds

2000 SHRIMP PEEL TICKET ORDER FORM

NAME _____

COMPANY _____

ADDRESS _____

PHONE _____ E-MAIL _____

NUMBER OF TICKETS _____

Make checks payable to: HGS / GSH SHRIMP PEEL

Mail to: Subsurface Consultants & Associates
Attn: Lee Shelton
2500 Tanglewilde, Suite 120 • Houston, Texas 77063

For more information call 713/789-2444 or e-mail: LShelton@scacompanies.com

Shrimp • Beer & Beverages • Horse Races • Live Music

OCTOBER 2000

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	**2**	**3**	**4**	**5**	**6**	**7**
8	**9** **EARTH SCIENCE WEEK!**	**10**	**11** **GSH Technical Breakfast** Auditorium at Western Geophysical 10001 Richmond Avenue 7:00 a.m.	**12** **Geopressures Workshop** Shell Auditorium One Shell Plaza **HGS Workshop** 910 Louisiana	**13** **Tennis Tournament** Chancellor's Tennis Club 11:30 Lunch 1:00 Tournament **NEWSLETTER DEADLINE**	**14** **3rd Annual Seismic Softball Tournament** Houston Sportsplex 12631 South Main
15	**16**	**17** **GSH Technical Luncheon** H.E.S.S. 5430 Westheimer **SEG Continuing Education** *Seismic Fundamentals* Dallas, TX	**18** **Near Surface SIG** Fugro-South Building **Data Processing SIG** CGG, Park 10 **SEG Continuing Education** *Seismic Fundamentals* Dallas, TX	**19**	**20**	**21**
22	**23** **SEG Continuing Education** *Application and Interpretation of Converted Waves* Houston, TX **GCAGS 2000 Annual Convention** Houston, Texas	**24** **SEG Continuing Education** *Application and Interpretation of Converted Waves* Houston, TX **GCAGS 2000 Annual Convention** Houston, Texas	**25** **GCAGS 2000 Annual Convention** Houston, Texas	**26** **GCAGS 2000 Annual Convention** Houston, Texas	**27** **GCAGS 2000 Annual Convention** Houston, Texas	**28** **GCAGS 2000 Annual Convention** Houston, Texas
29 **GCAGS 2000 Annual Convention** Houston, Texas	**30**	**31** **IAGC Conference** HESS Building				

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