Buried hills form important traps
The Renqiu Field, Bohai Bay basin, China, led to the revitalization of the buried hill play or paleo-topographic highs on old land surfaces covered by younger sediments. This play hosts over 50% of the proven oil in-place in the Jizhong subbasin. Significant exploration potential still exists..............................1

Permeability and compaction bands
Permeability from high angle compaction bands is significantly lower than permeability from adjacent host rocks while bed-parallel compaction band permeability is much closer. Because of this significant variability, evaluations should be made on a case by case basis.................................................................27

The importance of kink bands
The Alleghanian shortening of the Appalachian Plateau décollement sheet was accommodated by kink bands, fore-thrusts, and kink-banded folds. Recognizing this type of deformation can improve the accuracy of horizontal well placement.................................................................51

Mapping salinity variations
Mapping total dissolved solids in McMurray Formation water across the Athabasca oil sands region, Alberta, Canada, will help to gain a better understanding of the regional hydrogeological flow system and to improve the efficiency of oil sands operations.................................................................77

Understanding GOM pore pressures
Regional pore pressures in the Gulf of Mexico are estimated based on geostatistical analysis of initial reservoir pressures and drilling mud weights. Four provinces of internally consistent pressure regimes were defined: three south of Louisiana and one off the Texas coast.................................................................91

Reserve estimation and production forecasting
This study estimates reservoir quality and free-gas storage capacity of the Barnett Shale, Fort Worth basin, by mapping log-derived thickness, porosity, and porosity-feet. Log-derived porosity-feet maps are a good method for evaluating reservoir quality and natural gas.................................................................119

Dealing with flowback brines
Understanding the provenance of brine salts in Marcellus Shale horizontal wells is necessary in order to develop economic methods of brine disposal. The authors investigate how much salt is present in the Marcellus as brine and how salt might enter flowback and production fluids.................................................................143

Geochemical profiling
Chemostratigraphy or the change in elemental composition from whole rock inorganic geochemistry to define stratigraphic frameworks, is applied to Permian fluvial sediments of the Karoo Basin in South Africa and is in close agreement with chronostratigraphic correlations.................................................................155
AAPG BULLETIN STAFF

Editorial
Technical Publications Supervisor/Paula Sillman
Technical Editor/Andrea Sharrer
Bulletin Production Coordinator/Anne B. Pinkey
Phone: (918) 560–2625
(800) 364–2274 (U.S. and Canada)
Fax: (918) 560–2632
E-mail: bulletin@aapg.org

* Production
Cover/Matt Randolph
Production/Lumina Datamatics
Ashland, Ohio
Printing/Sheridan - Dartmouth Printing Company
Hanover, New Hampshire

* Subscriptions

Members Nonmembers
Membership Dept. Accounting Dept.
Phone: (918) 584–2555 (918) 584–2555
Fax: (918) 560–2694 (918) 560–2652
Toll Free: (800) 364–2274 bulletinsubscriptions@aapg.org
(U.S. and Canada)

AAPG grants permission for a single photocopy of an item from the AAPG Bulletin for personal use. Authorization for additional photocopies of items from the AAPG Bulletin in any form (hardcopy, digital/electronic scanning, or other digital transformation into computer-readable and/or transmittable form) for personal or corporate use is granted provided the appropriate fee is paid directly to the Copyright Clearance Center, 222 Rosewood Drive, Danvers, Massachusetts 01923, http://www.copyright.com. For circumstances occurring outside authorization of Copyright Clearance Center contact permissions@aapg.org.

The AAPG Bulletin (ISSN 0149–1423) is published monthly by the American Association of Petroleum Geologists. Offices are located at 1444 South Boulder Avenue, Tulsa, Oklahoma 74119–5604. Periodicals postage paid at Tulsa, Oklahoma, and at additional mailing offices.

POSTMASTER: send change of address to AAPG Bulletin, P.O. Box 979, Tulsa, Oklahoma 74101–0979.

SUBSCRIPTIONS
Institutional subscriptions are $490 U.S. by surface mail; $630 non-U.S. by Airmail. AAPG member subscriptions included are in the dues. Single copies: $35 member, $45 nonmember. Prices subject to change without notice. Claims for nonreceipt of any issue, if reported within three months of the date of publication, will be filled gratis. Back issues, if available, may be ordered from the Association.

The AAPG Bulletin is also available on CD-ROM through Datapages, Inc., P.O. Box 979, Tulsa, Oklahoma 74101. Phone (918) 560–9429, fax (918) 560–9418, e-mail: rhart@aapg.org

Copyright © 2015 by the American Association of Petroleum Geologists. All rights reserved. Phone (918) 584–2555, fax (918) 560–2632, e-mail: bulletin@aapg.org

CANADA SUBSCRIPTIONS
Canada Post Agreement Number 40035618. Send change of address information and blocks of undeliverable copies to P.O. Box 1051, Fort Erie, ON, L2A 6C7, Canada.

The American Association of Petroleum Geologists (AAPG) does not endorse or recommend any products or services that may be cited, used or discussed in AAPG publications or in presentations at events associated with AAPG.

AAPG Editor
MICHAEL SWEET
ExxonMobil Upstream Research Company
Houston, Texas

SENIOR ASSOCIATE EDITORS
Richard Groshong, University of Alabama, Tuscaloosa, Alabama
Christopher A. Jackson, Imperial College, London, United Kingdom
Barry Katz, Chevron Corporation, Houston, Texas
Colin P. North, University of Aberdeen, Aberdeen, Scotland
Terrilyn Olson, EOG Resources, Denver, Colorado
Stephen Ruppel, Bureau of Economic Geology, The University of Texas at Austin, Austin, TX

ASSOCIATE EDITORS

E&P Notes
F. E. (Rick) Abegg (2015), Moon Township, PA, Eastern Section
Arthur E. Bermann (2015), Sugar Land, Texas, Gulf Coast Section
Stuart D. Harker (2015), Aberdeen, Scotland, European Region
Marcio R. Mello (2015), Rio de Janeiro, Brazil, Latin America Region
David G. Morse (2015), Champaign, Illinois, Eastern Section

Spatial
Bret J. Fossum, ConocoPhillips, Houston, TX

2014–2015
Patricia F. Allenard, ConocoPhillips, Houston, TX
Peter Baille, Geodata Ventures, Singapore
Janok P. Bhattacharya, University of Houston, Houston, TX
Timothy N. Diegs, Shell International E&P, Houston, TX
Barrett T. (Bret) Dixon, Anadarko Petroleum Corp., The Woodlands, TX
Julia W. Gale, University of Texas at Austin, Austin, TX
Fang Hao, China University of Petroleum, Beijing, China
Nicholas B. Harris, University of Alberta, Edmonton, AB, Canada
Brian W. Horn, ION Geophysical/Geoventures, Houston, TX
Stephen M. Hubbard, University of Calgary, Calgary, AB, Canada
Alain-Yves Huc, Institut Français du Pétrole, Rueil-Malmaison, Cedex, France
Dale A. Leckie, Nexen Inc., Calgary, AB, Canada
Christopher K. Morley, PTTEP, Bangkok, Thailand
Bradford E. Prather, Shell Upstream Americas, Houston, TX

2015–2016
Mohammed S. Ameen, Saudi Aramco, Dhahran, Saudi Arabia
Donna S. Anderson, DOD Resources Inc., Golden, CO
Marc Aurell, Universidad de Zaragoza, Zaragoza, Spain
David N. Awaller, ExxonMobil, Houston, TX
Linda M. Bonwell, Geoscoot, LLC, Austin, TX
Kent A. Bowker, Bowker Petroleum, LLC, The Woodlands, TX
Caroline M. Burberry, Department of Earth & Atmospheric Science, University of Nebraska-Lincoln, Lincoln, NE
Stephen P. Cumella, Bill Barrett Corp., Denver, CO
William D. DeMilo, Southwestern Energy, Houston, TX
David E. Eby, EBI Petrography and Consulting, Inc., Denver, CO
Peter Eichkubi, Bureau of Economic Geology, The University of Texas at Austin, Austin, TX
Ursula Hammes, Bureau of Economic Geology, The University of Texas at Austin, Austin, TX
Peter Henning, ConocoPhillips, Houston, TX
William A. Hill, BP, Houston, TX
Alexander A. Kitchka, Centre for Aerospace Research of the Earth at Institute of Geological Sciences (CASRE), Kiev, Ukraine
Alfred Lacazette, Global Geophysical Services, Denver, CO
Andres Mora, Instituto Colombiano del Petróleo-ICP, Colombia
Joyce E. Neilson, University of Aberdeen, Aberdeen, Scotland
Kenneth E. Peters, Schlumberger and Stanford University, Mill Valley, CA
Dave A. Pink, Apache Energy, Perth, Australia
Matthew J. Pranter, University of Oklahoma, Norman, OK
Atle Rotenveten, University of Bergen, Bergen, Norway
Andres Serra, Serra GeoConsulting LLC, Bellaire, TX
Carl F. Steffensen, BP America Inc., Houston, TX
Peter D. Warwick, U.S. Geological Survey, Reston, VA
Horst Zwingmann, CSIRO, Australia
The American Association of Petroleum Geologists

EXECUTIVE COMMITTEE 2014–2015
President: RANDI MARTINSEN
Sections Vice President: STEVE BRACHMAN
Regions Vice President: JOHN KALDI
President-Elect: JOHN HOGG
Secretary: RICHARD W. BALL
Treasurer: JIM TUCKER
Editor: MICHAEL SWEET
Chair, House of Delegates: DAVID A. DOLPH

ADVISORY COUNCIL, 2014–2015
Ex-Officio
LEE KRYSKINIK, Chair
PAUL WEIMER
TED BEAUMONT
FRANCES J. HEIN
JEFFREY G. PAINE
RICHARD D. FRITZ
LAWRENCE H. WICKSTROM

Elected
PETER MACKENZIE, Eastern Section
WILLIAM WHITING, Gulf Coast Section
JOHN JORDAN, JR., Gulf Coast Section
MICHAEL F. MCCGowan, Mid-Continent Section
JON SCHWALBACH, JR., Pacific Section
JON ROBINSON, Rocky Mountain Region
ROBERT E. WEBSTER, Southwest Section
NOSA OMORODION, Africa Region
TBA, Asia/Pacific Region
CLINTON R. TIPPETT, Canada Region
ANDREA MOSCARIELLO, European Region
MIGUEL RAMIREZ, Latin America Region
TBA, Middle East

AAPG BOARDS
ROBERT RYAN, Corporate Advisory Board
RICHARD D. FRITZ, Datapages Board
PETER MACKENZIE, GEO-DC Governance Board
JEFFREY W. LUND, IP LLC Board

AAPG COMMITTEE CHAIRS
STEVE SONNENBERG, 100th Anniversary (Ad Hoc)
(Part-Chair)
PAUL WEMER, 100th Anniversary (Ad Hoc) (Part-Chair)
JOHN HOLBROOK, Academic Liaison
BOB COUNTRYMAN, Association Group Insurance
JAMES REILLY, Astrogeology (Co-Chair)
BILL AMBROSE, Astrogeology (Co-Chair)
JIM TUCKER, Audit
JIM TUCKER, Budget Review & Finance
CRAGH SHIPP, Distinguished Lecture (Co-Chair)
MATT JACKSON, Distinguished Lecture (Co-Chair)
LORI SUMMA, Education
KAY PITTS, Ethics
DAVID STORY, Field Safety
HUYEN BUI, Geophysical Integration
R. RANDY RAY, GEV
JIM MCDONALD, GIS Publication
ANDY KLEIN, Grants-In-Aid
ROGERS HARDY, History of Petroleum Geology
DAVID COOK, Imperial Barrel (Co-Chair)

CHUCK CAUGHEY, Imperial Barrel (Co-Chair)
TERRY HOLLRAH, Investments
DWIGHT “CLINT” MOORE, Membership Career Services
DAVID HAWK, Membership Coordination & Communication
STEVE GOOLSBY, Membership Recruitment (Co-Chair)
BILL STEPHENS, Membership Recruitment (Co-Chair)
TBD, Membership Survey (Ad Hoc)
MEREDITH FABER, Membership Young Professional (Co-Chair)
JON ALLEN, Membership Young Professional (Co-Chair)
STEVE ALLEN, Preservation of Geoscience Data (Co-Chair)
SARAH RAMDEEN, Preservation of Geoscience Data (Co-Chair)
LEE AVARY, Professional Women in Earth Sciences (Co-Chair)
BARBARA TILLOTSON, Professional Women in Earth Sciences (Co-Chair)
COLIN NORTHC, Publications
JON BLICKWEDE, Publications Pipeline
REBECCA DODGE Public Outreach
JEAN-YVES CHATELIER, Research (Co-Chair)
JOHN SUITER, Research (Co-Chair)
TBA, Reservoir Development
RUSTY RIESE, Resource Evaluation
STEVEN SCHAMEL, Sections
BRYANT FULK, Student Chapters
CECILIA RAMIREZ, Student Expo
ROBBIE GRIES, Visiting Geoscientists Program (Co-Chair)
ANDRAS NEMETH, Visiting Geoscientists Program (Co-Chair)
KATHERINE HERLEMAN, Youth Educational Activities

AAPG SECTION OFFICERS
Eastern Section
JOAN CROCKETT, President
LARGHORNE “TAURI” SMITH, Vice President
CRAIG ECKERT, Secretary
JOHN HICKMAN, Treasurer
JAMES MCDONALD, Past President

Gulf Coast Section (GCAGS)
CHARLES STERNBACH, President
BRENT HOPKINS, Vice President
LARRY D. BARTELL, 2015 GCAGS Convention General Chairman
STEVE H. HILL, GCAGS Treasurer
MARY BROUSSARD, Past President

Mid-Continent Section
DONALD G. BURDICK, President
H.W. PEACE, II, Vice President
DOUG DAVIS, Jr., Secretary
SARAH FLYNN, Treasurer
ERNEST R. MORRISON, Past President

Pacific Section
JOHN WILLIAMS, President
JON ALLEN, Vice President

KURT NEHER, President-Elect
CAMERON CAMPBELL, Treasurer
REBECCA GREENBERG DeMARois, Treasurer-Elect
MALCOLM ALLAN, Secretary
VAUGHN THOMPSON, Editor-in-Chief
DAN SCHWARTZ, Past President

Rocky Mountain Section
SUZANNE “SUE” CLUFF, President
CATHERINE “CAT” CAMPBELL, President-Elect
JULIA LEMASTER, Secretary-Treasurer
CHARLES “ELMO” BROWN, II, Past President

Southwest Section
JEFFERY RITCHIE, President
DARRELL MAULDIN, President-Elect
NIC BRISSETTE, Vice President
CURTIS HELMS, JR., Secretary
JESSICA L. PONTIFF, Treasurer
DAVID J. ENZTMINGER, Past President

AA PG REGION OFFICERS
Africa Region
DAVID BLANCHARD, President
ADEGEBNGA “EMI” ESAN, Vice President
WILLIAM BOSWORTH, President-Elect
ANTONIO M. N. INGLES, Secretary
AIBOLA OYEBAHII, Treasurer
GILBERT E. ODOR, Past President

Asia Pacific Region
TBA, President
TBA, Vice President
TBA, Secretary
TBA, Treasurer
PETER BAILE, Past President

Canada Region
FRANCOIS C. MARECHAL, President
MAREN BLAIR, Vice President/Treasurer
ANNE HARGREAVES, Secretary/Foreman
ROSS CLARK, Past President

European Region
KEITH GERDES, President
JONATHAN CRAIG, President-Elect
HELEN CROMIE, Secretary
KNOT JAKOBSSON, Treasurer
VLASTIMILA DVARAKOVA, Past President

Latin America Region
VICTOR RAMIREZ, President
PASTRICO MARSHALL, Vice President
VICTOR VEGA, President-Elect
PEDRO ALARCON MEDINA, Treasurer
MIGUEL RAMIREZ, Past President

Middle East Region
SA’ID A. AL-HAJRI, President
TBD, Vice President
TBD, President-Elect
TBD, Secretary
TBD, Treasurer
ABDURRAHMAN S. AL-SHARHAN, Past President
ENERGY MINERALS DIVISION
FRANCES J. HEIN, President
BOB TREVAL, President-Elect
ANNE DRAUCKER, Vice President
BRUCE T. MITCHELL, Secretary
CHARLES M. BOYER II, Treasurer
JEREMY BOAK, Past President

Councillors
Eastern Section, JACKIE STRANGE
Gulf Coast Section, TBD
Mid-Continent Section, TBD
Pacific Section, TBD
Rocky Mountain Section, TBD
Southwest Section, PAUL THOMAS

International Councillors
Africa, TBD
Asia/Pacific, BARRY A. GOLDSTEIN
Canada, TBD
Europe, TBD
Latin America, JOSE ABELARDO SANCHEZ ARAIZA

Chairs, Committees
WILLIAM AMBROSE, Coal
JEFF LEVINE, Coalbed Methane
JEREMY B. PLATF, Energy Economics & Technology
ART JOHNSTON, Gas Hydrates
NEIL FISHMAN, Shale Gas & Liquids
DEAN ROKASH, Gas (Tight) Sands
PAUL MORGAN, Geothermal
JACK PASHIN, Honors & Awards
JEREMY BOAK, Nominations
STEVE SCHAMEL, Publications
VALARY SCHULZ, Past President

DIVISION OF ENVIRONMENTAL GEO SCIENCES
JEFFREY G. PAINE, President
JEFFREY B. ALDRICH, President-Elect
DIRK A. NIEUWLAND, Vice President
STEVEN P. TISCHER, Secretary/Treasurer
MICHAELE COONEY, Publications
DOUGLAS WYATT, Past President

Advisory Board Members
Chair, DIRK A. NIEUWLAND
Eastern Section, TIM MURIN
Gulf Coast Section, TBD
Mid-Continent Section, QUIN M. BABER
Rocky Mountain Section, TBD
Southwest Section, MICHAEL A. JACOBS
Pacific Section, ALLEN WAGGONER
Asia-Pacific Region, TBD
Canada Region, TBD
European Regions Coordinator, TBA
At-Large Members, MARY K. HARRIS,
GERALD BLOUNT, NANCY J. (ANNE) FIX

Chairs, Standing Committees
E. CHARLOTTE SULLIVAN, CO2 Sequestration
LAURIE A. white, Environmental Geophysics
DIRK A. NIEUWLAND, Honors and Awards
GENE L. MURRAY, Hydrogeology
TBD, Membership
DOUGLAS WYATT, Nominating
MICHELE L. COONEY, Publications
TBA, Website
DOUG PETERS, ACE 2015 (Denver)

DIVISION OF PROFESSIONAL AFFAIRS
RICHARD D. FRITZ, President
MICHAEL CANICH, President-Elect
GREG HEBERTSON, Vice President
TERENCE G. OHARE, Secretary
CONNIE MANGOLD, Treasurer
VALARY SCHULZ, Past President

Council Members
Eastern Section, JAY G. HENTHORNE,
(HANNES E. LEETARU)
Gulf Coast Section, LARRY L. JONES,
MARY L. VAN DER LOOP, JAMES M. GRUBB,
RALPH W. BAIRD, CHANDLER T. WILHELM
(DIANNA PHU, RICK L. ERIKSEN)
Mid-Continent Section, JUSTIN BELLAMY,
DON G. BURDICK (MICHAEL D. ALLISON)
Pacific Section, JOHN T. WILLIAMS (KURT E. NEHER)
Rocky Mountain Section
DONNA S. ANDERSON, ROBERT F. GARVIN,
(CLIFFORD C. CLARK, MARGARET "PEGGY"
WILLIAMS, DAVID A. WAREK,
JEFFREY "JEFF" W. Brame)
Southwest Section, MARGO J. LISS,
DAVID ENTZMINGER (STEVEN ZODY)
Africa Region, BAYO Akinpelu (WASIU ODUFISAN)
Asia-Pacific Region, ROBERT SHOUP,
(Abulhasanat "shams" shamsuddin)
Canada Region, WILLIAM J. HASKETT,
(Sanjeet S. Thakur)
European Region, JOHN BROOKS, (IAN P. WRIGHT)
Latin America Region, FAVIO JUAREZ FEIJO,
(HECTOR SAN MARTIN)
Middle East Region, MOUSTAPHA M. R. ELBAZ
(Dave L. Cantrell)

Chairs, Standing Committees
RICK L. ERIKSEN, Board of Certification
MICHAEL CANICH, Bylaws Committee
ROBERT C. SHOUP, Continuing Education
JOEL A. ALBERTS, Conventions
PAUL W. BRITT, Governmental Affairs
VALARY SCHULZ, Awards Committee
GREG HEBERTSON, Membership
VALARY SCHULZ, Nominating
SARAH STANLEY, Publications
ELEAZAR BENEDETO-PADRON, Reserves & Resources
DAVID C. RENSINK, State Registration
DIANNA PHU, Website
STEVE GOOLSBY, ACE 2015 (Denver)

AAPG FOUNDATION
Board of Trustees
JAMES A. GIBBS, Chairman
JOHN J. AMORUSO, Vice Chairman
M. RAY THOMASSON, Secretary
WILLIAM E. GIPSON, Treasurer
PAUL M. STRUNK, Trustee
LEE BACKSEN, Trustee
DAVID K. CURTIS, Executive Director
DAVID LANGE, Deputy Executive Director
TBD, Administrative Manager

HEADQUARTERS STAFF
Executive Director: DAVID K. CURTIS
Accounting Manager: BRYAN HAWS
Information Systems Manager: JERRY THIBODEAU
Office Services & Facilities Manager: JAMES E. BRIGGS
Member Services Manager: VICKI BECHIE

Communications Director: TBD
Explorer Managing Editor: VERN STEFANIC
Website Manager: JANET BRISTE

Education Director: SUSAN SMITH NASH
Education Manager: DEBBI BOONSTRA

Global Development and Conventions
Director: ALAN T. WEGENER
Corporate Events Specialist: RANDA REEDER-BRIGGS
Events Marketing Manager: SAMANTHA KNOWLTON
Exhibition Sales Manager: MIKE TAYLOR
Exhibition Manager: KENDRA MCCOLLOCH

Geoscience Director: JAMES B. BLANKENSHIP
Datapages Manager: RONALD L. HART
Managing and Commissioning Editor: BEVERLY MOLYNEUX

Africa Region Representative: DELIA KUYE
Asia-Pacific Representative: ADRIENNE PEREIRA
European Office Director: JEREMY RICHARDSON
Latin America Representative: EMILY SMITH LLINAS
Middle East & India Office Director: ABEER ALZUBAIDI
GEO-DC Director: EDIE ALLISON
AAPG HOUSE OF DELEGATES

Deadline for this section is three months prior to publication.

OFFICERS

Chair:
David Dolph
(Calgary, Canada)

Chair-Elect:
Robert Shoup
(Houston, TX)

Secretary/Editor:
Thomas C. Anderson
(Salt Lake City, UT)

DELEGATES

*Group Chair

ABILENE
J. A. Jones

ALASKA
M. A. Wartes

ALBUQUERQUE (NM)
J. C. Lorenz
M. A. C. Rogers

APPALACHIAN (WV)
E. M. Rothman

ARDMORE (OK)
M. D. Allison

ASIA-PACIFIC
TBD

AUSTIN (TX)
D. B. Dunlap
P. R. Rose
S. A. Tiller
W. W. Tinkle

BATON ROUGE (LA)
W. H. Schramm

BROOKLYN (NY)
H. F. Hare

CALIFORNIA
P. E. Babcock*

CANADA
M. L. Blair
D. E. Brown
R. A. Clark
D. A. Dolph
P. J. English
K. F. Hansen
A. C. Hargreaves
R. T. Lemiski
F. C. Marechal
D. A. Scott
G. D. Wach

COAST (CA)
TBD

CORPUS CHRISTI (TX)
D. O. Moore

DALLAS (TX)
M. E. Bengston
J. R. Davis*
M. J. Gallagher
R. L. Grubbs
C. D. Klenk
T. G. O’Hare
W. C. Stephens, Jr.
R. E. Webster

EAST TEXAS
R. L. Adams

EL PASO
R. Langford

EUROPE
J. R. V. Brooks
P. Burri
D. R. Cook
G. Couples
D. R. Cook
J. Craig
G. D. Couples
D. R. Cook
P. Burri

FORT SMITH (AR)
TBD

EVERGLADES (FL)
TBD

FORT SMITH (AR)
T. M. Shields

FORT WORTH (TX)
C. C. Blair, Jr.
J. P. Dugan, Jr.
J. H. Hope
R. L. Yates

FOUR CORNERS
S. A. Hines

GEORGIA
D. Bulger

GRAHAM (TX)
C. L. Craig

GRAND JUNCTION (CO)
H. E. Schoenstein

HOUSTON (TX)
R. J. Ardell
P. E. Babcock*
L. B. Backsen
S. M. Barber
M. C. Barnes
K. C. Bennett
S. H. Brachman
P. W. Britt
D. M. Butler
M. M. Cassidy
M. H. Deming
C. Desforges
C. M. Dingler
J. Dombrowski
L. G. Eubanks
S. L. Getz
T. Y. Ghazi
G. M. Gillis
L. K. Goetz
P. T. Gordon
J. M. Grubb
W. F. Howell
J. E. Jordan
A. Kahn
B. J. Katz
R. L. Keller
S. D. Levine
N. C. Lian
A. L. Parsons
D. M. Moore
R. L. Nagy
W. D. Neville
A. L. Parsons
R. E. Pledger
J. V. Richards
W. C. Riese
D. K. Sacrey
P. A. Santogrossi
S. M. Sartain
M. L. Shields
S. G. Stanley
C. A. Sternbach
L. R. Sternbach
D. M. Stone
J. W. Tucker
J. Vandenbrink
M. S. Winsten

IDAHO
D. H. Hawk

ILLINOIS
H. E. Leetaru

INDIANA
TBD

INDIANA-KENTUCKY
J. T. Smith

KANSAS
D. V. Davis, Jr.
E. R. Morrison

KENTUCKY
P. J. Gooding

LAFAYETTE (LA)
T. A. Helms
G. K. P. Munson, Jr.

LATIN AMERICA
C. L. Archie
K. Bayer
G. Bayona
G. J. Carstens
J. M. de Armas Pedraza
F. T. Goncalves
F. Monroy-Santiago
X. R. Moonan
F. M. Seminario

LOS ANGELES (CA)
D. D. Clarke
W. T. Long

MICHIGAN BASIN
R. H. Gieseglie, Jr.
W. B. Harrison, III

MIDDLE EAST
TBD

MISSISSIPPI
M. N. Birdwell

MISSOURI
W. Yang

MONTANA
R. P. Diedrich

NEBRASKA
P. C. Grew

NEVADA
A. D. Hanson

NEW MEXICO
M. E. Dowse

NEW ORLEANS
E. C. McDade
S. A. Waters
W. M. Whiting*

NEW YORK
S. A. Epstein
L. B. Smith

NORTH DAKOTA
J. M. Levy

NORTH TEXAS
C. W. Reynolds

NORTHERN CALIFORNIA
J. R. Gilbert, Jr.
D. W. Lewis
R. G. Lindblom

NORTHERN OHIO
TBD

NORTHWEST (OR/WA)
J. M. Armentrout

OHIO
L. H. Wickstrom
S. P. Zody

OKLAHOMA CITY
G. D. Campbell

OKLAHOMA CITY
TBD

ORLANDO
W. M. Whiting*

PANHANDLE (TX)
J. F. O’Connell

PITTSBURGH (PAPG)
R. A. Treval

PITTSBURGH (PGS)
D. A. Billman
A. A. Reynolds

ROCKY MOUNTAIN (CO)
S. Cluff
S. P. Cumella
J. J. Cozza
E. D. Dolly
J. E. Harris
L. A. M. Johnson
W. E. Johnson
B. S. Kelso
S. G. Kirkwood
C. J. N. Knight
S. M. Landon
J. C. Mullankey
S. A. Sonnenberg

ROSWELL (NM)
D. B. Coddin

SACRAMENTO (CA)
S. T. Hector

SAN ANGELO (TX)
B. R. Swartz

SAN JOAQUIN (CA)
A. C. Draucker
L. C. Knauer
S. Mazzoni

SHREVEPORT (LA)
O. R. Berg

SOUTH TEXAS
T. J. McCovern
B. R. Weise
M. A. Younger

SOUTHEASTERN (FL)
TBD

TULSA (OK)
D. G. Burdick
N. J. Hyne
K. L. Luchtel Ferguson
J. S. McGay

UTAH
T. C. Anderson

WASHINGTON (DC)
J. F. Allan
C. A. Doolan
C. S. Siewey

WEST TEXAS
R. T. Dickey
D. J. Jenzinger
R. S. Nall
M. A. Raines

WYOMING
L. D. W. George
L. M. Kozimko

H. W. Peace, II
M. W. Smith

DEADLINE FOR THIS SECTION IS THREE MONTHS PRIOR TO PUBLICATION.