AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS 1917

AAPG
An International Geological Organization
BULLETIN
VOLUME 86 • NUMBER 1 • JANUARY 2002

REGULAR FEATURES

E & P NOTES

ARTICLES

DISCUSSION AND REPLY

ON COVER–Jabal Salakh outcrop in the northern Oman Mountains. The outcrop shows well-bedded carbonates of the Natih Formation, which were deposited in intrashelf basin and ramp type environments. These rocks are of Cenomanian/Turonian (Upper Cretaceous) age and are outcrop analogs of the nearby Natih and Fahud oilfields. The Natih Formation will be visited during an AAPG field seminar (see Education Calendar) to be held April 10–14, 2002. *The photo was taken by Frans van Buchem.* See related paper by F. S. P. van Buchem, P. Razin, P. W. Homewood, W. H. Oterdoom, and J. Philip beginning on p. 21 of this issue of the *Bulletin.*

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REGULAR FEATURES

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DISCUSSION AND REPLY

ON COVER—Microphotograph in reflected, fluorescence-inducing blue light of a large orange-fluorescing resinite body surrounded by yellowish fluorescing cutinites. The photo is from the unusual petroleum-prone Middle Jurassic coals on Kuhn Ø, northeast Greenland. *Photo by Henrik Petersen, Geological Survey of Denmark and Greenland, Copenhagen, Denmark.* See related paper by H. I. Petersen, J. A. Bojesen-Koefoed, and H. P. Nytoft beginning on p. 233 of this issue of the *Bulletin.*

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VOLUME 86 • NUMBER 3 • MARCH 2002

REGULAR FEATURES

ERRATUM—In the February 2002 issue of the *Bulletin,* only two of the three nominees for AAPG Treasurer were presented. All three are presented in this issue on pages viii–x.

ON COVER—Background is a Bouguer gravity map of the Temir area of western Kazakhstan, which lies at the eastern edge of the Precaspian salt basin. Insets are prestack depth migration velocity models for two seismic lines in the Temir block. See the paper by Jean-Pierre Barde, Peter Gralla, Josef Harwijanto, and Juergen Marsky, beginning on p. 399 of this issue of the *Bulletin,* for more information on recent exploration in the Precaspian basin.

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REGULAR FEATURES

ON COVER–Photo of the production platform complex at the Sleipner Øst (East) field, Block 15/9, Norwegian sector of the North Sea. Esso discovered the Sleipner Vest (West) field in 1974. Twelve exploration wells were drilled until production drilling commenced in 1996. Statoil discovered the Sleipner Øst field in 1981. Four exploration wells were drilled prior to production start in 1993. Combined production from the two fields is near 43 million Sm^3 of gas/day, and 27,000 Sm^3 of condensate/day. The Sleipner gas is transported to European buyers via sea-floor pipelines to Zeebrügge, Belgium and Emden, Germany, whereas the condensate is piped directly to Kårstø, Rogaland, Norway. The geological cross section shows the principal sedimentary units, petroleum migration pathways, and oil and gas accumulations in this part of the South Viking Graben. *Photo by Øyvind Hagen, Statoil.* See related paper by G. H. Isaksen et al. beginning on page 557 of this issue of the *Bulletin.*

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REGULAR FEATURES

ON COVER—Photos of the nearly exhumed Pennsylvanian phylloid algal mound complex exposed in the Hembrillo Canyon of the San Andres Mountains, southern New Mexico. The amplitude of the mound core exceeds 100 m, and the complex comprises multiple high-frequency sequences. This is one of several biohermal complexes in this region. These mounds formed within the late Paleozoic Orogrande basin, and are potential analogs for productive reservoirs of many regions (see related article by Doherty et al. beginning on p. 779 of this issue). *Photos by L. Soreghan.* Range visitation and photography were permitted thanks to the assistance of R. Myers, T. Ladd, and D. Downs (White Sands Missile Range). These photos, as well as those in the article by Doherty et al., were approved for public release by the Army and WSMR in July 1997.

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DISCUSSION AND REPLY

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VOLUME 86 • NUMBER 6 • JUNE 2002

REGULAR FEATURES

STRUCTURE AND STRATIGRAPHY OF RIFT SYSTEMS

ARTICLE

ON COVER–The image shows the structure map for the (top synrift) base Cretaceous seismic marker in the East Shetland Basin of the Northern North Sea. The map covers an area in excess of 15,600 km^2 (120 × 130 km) and is the result of a merge of 3-D seismic surveys. Warm colors define the structural highs; cool colors highlight the basin depocentres. The image has been illuminated from the west to highlight the main easterly-dipping extensional fault systems that were active during the last stages of Late Jurassic synrift activity. The tilted fault-block structures collectively define the Brent Province, the most prospective petroleum province in northwest Europe. AAPG Special Issue co-editors, John Underhill and Bruce Trudgill, acknowledge the help of Amerada Hess in reproducing the image.

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REGULAR FEATURES

ON COVER—Photograph of a reservoir-scale fault in the aeolian Jurassic Aztec Sandstone, Valley of Fire State Park, southern Nevada. A wide zone (about 2 m) of fault rock (white material) is featured in the central foreground of the photograph. Bounding and crossing the fault rock are red-colored slip surfaces. This fault offsets the contact between the red oxidation band in the background and the multicolored bands in the foreground by approximately 170 m in the left-lateral sense. Photo by Eric Flodin, Stanford University, Stanford, California. See related paper by Hervé Jourde, Eric Flodin, Atilla Aydin, Louis Durlofsky, and Xian-Huan Wen beginning on p. 1187 of this issue of the *Bulletin.*

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REGULAR FEATURES

ON COVER—Landsat Thematic Mapper (TM) image, band 7, 4, 2, (R, G, B) of the Casper Mountain area, central Wyoming. Five miles south of Casper (along the North Platt River), the dark triangle-shaped area in the middle of the image is the Precambrian-cored, fault-related, Casper Mountain uplift. In the northwest quarter of the image, the northwest-trending Emigrant Gap and Oil Mountain/Iron Creek anticlines are abruptly terminated on the southeast against the east-west trending Casper Mountain fault zone. These are coeval Laramide structures. (**Courtesy of Earth Satellite Corporation**) Left Inset: Steeply southwest-dipping hogback of Cretaceous Frontier Sandstone in a fault-bordered, "pop-up" structure along the southeast plunge of the Iron Creek anticline. Right inset: Speas Dome, a local structural closure along the west plunge of the Casper Mountain uplift (looking west across the North Platt River). At the ground level are Permaian Goose Egg red shales with carbonate and evaporite lenses at the center of the closure, above which is a cliff of Triassic Chugwater red siltstones and shales, followed by Jurassic darker-colored sandstones and shales, and capped by Cretaceous Lakota Sandstone at the top of the ridge. See related article by Donald S. Stone beginning on page 1417 in this issue.

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REGULAR FEATURES

ON COVER—Aerial photo of the Big Hole fault, Utah, looking northeast. This north-dipping, normal fault offsets the eolian Navajo Sandstone (cliff former) against the Carmel Formation marine limestones and marls (slope former). Where the Navajo Sandstone is juxtaposed against itself, low permeability deformation band faults have been created. The cliff in the center of the photo is 70 ft high. *Photo by Zoe K. Shipton, Trinity College, Dublin, Ireland.* See related paper by Z. K. Shipton, J. P. Evans, K. R. Robeson, C. B. Forster, and S. Snelgrove on p. 863 of the May 2002 issue of the *Bulletin.*

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ON COVER—Caprinid rudist rudstone of the Shuaiba Formation in the giant Bu Hasa field of Abu Dhabi, United Arab Emirates. Production of more than 40,000 bbl per day from a single well has been linked to such caprinid rudstones with permeability greater than 1 d. Small-scale textural heterogeneity, such as illustrated in this core photograph in a highly oil-productive Shuaiba interval can be effectively characterized in uncored wells using an innovative methodology based on a neural network analysis of small-scale resistivity and conductivity variations on dipmeters and image logs, along with conventional wireline logs. The methodology identifies distinct reservoir rock types and provides estimations of permeability. See related article by S. Duffy Russell, Mahmoud Akbar, Badarinadh Vissapragada, and Gordon M. Walkden on p. 1709 of this issue of the *Bulletin*. *Photo by Shantha Weerasinghe and Duffy Russell, Abu Dhabi Company for Onshore Oil Operations.*

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ON COVER—The background image is a type log of the Lewis Shale, San Juan basin; see Figure 15 in the article by J. B. Curtis. The inset at the upper left corner shows locations of known and inferred gas hydrate occurrences in the oceanic sediment of outer continental margins and permafrost regions; see Figure 2 in the article by T. S. Collett. The second inset is downhole log data from Ocean Drilling Program Site 889, located off the west coast of Vancouver Island; see Figure 7 in the article by T. S. Collett. The third inset is a structure map of the Huerfanito Bentonite Bed in the San Juan basin and location of the Fruitland coalbed methane producing fairway; see Figure 7 in the article by W. B. Ayers. The cross section on the right shows spatial distribution of basin-centered gas accumulations superimposed on structure through the Washakie basin; see Figure 6 in the article by B. E. Law.

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ON COVER—Background photo is of calcite concretions (reddish brown) in Cretaceous Frewens sandstone of the Frontier Formation near Kaycee, Wyoming. The upward-coarsening Frewens sandstone is interpreted to be a tide-influenced delta deposit. *Photo by Brian J. Willis, Texas A&M University, College Station, Texas.* Flow modeling demonstrates that similar concretions in reservoirs would reduce permeability and influence flow paths. Insets are (top) distribution of shale beds (black) and concretions (green) in a dip-parallel outcrop wall that was modeled in 2-D; (middle) flow simulation including shales but not concretions; and (bottom) simulation including both shales and concretions. Cemented regions make the flow path more tortuous and reduce effective permeability by about one-half. See related paper by S. P. Dutton, C. D. White, B. J. Willis, and D. Novakovic beginning on page 2007 of this issue of the *Bulletin*.

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