awarded to winners in all age groups. Golf: the Golf Tournament will be held at two locations, Corpus Christi Country Club and Padre Island Country Club. Tennis: there will be a ladies' tournament at Corpus Christi Country Club and a men's tournament at the T-M Tennis Club.

Wednesday, 6-8:30 p.m., Ice Breaker Cocktail Party. Assembly/Banquet Room of the Convention Center, featuring open bar with light snacks.

Thursday, Corpus Christi Goes Country & Western! Wear those western duds, if you choose, for dinner and dancing in the Assembly/Banquet Room of the Convention Center. Bar opens at 7 p.m., seated dinner begins at 7:30 p.m., and music by Ray Price is from 9 p.m. to 1 a.m. Come enjoy great food and great musical entertainment by one of the all-time greats in the field of Country & Western music.

Ladies' Activities

On Thursday, October 22, the ladies will have two choices: (1) a trip up the coast to Rockport, a thriving art center and resort community on the Gulf Coast, with enough time for shopping in the unique shops and art galleries; (2) an all-day trip to Old Mexico—you will walk across the border from Brownsville to Matamoros and enjoy browsing in the shops.

On Friday, October 23, there will be a champagne brunch at the Corpus Christi Country Club with an informal fashion show and a dramatic presentation.

Field Trips

Modern Depositional Environments of Sands in South Texas, Tuesday and Wednesday, October 20 and 21—A 2-day trip to Padre and Mustang Islands, Corpus Christi Bay, Laguna Madre, Nueces River, Baffin Bay, and the south Texas eolian system; participants will examine eolian, fluvial, deltaic, bay-lagoon, and barrier island environments with emphasis on deposition of sands. Leaders will be Gerald Shideler, John Russell, and Chuck Stelting.

Gulf Coast Uranium, Saturday and Sunday, October 24 and 25—A 2-day trip into the south Texas uranium mining area, with stops at open pit and in-situ leach uranium mining operations. The geology of uranium deposits and production technology will be examined. Leaders are Robert J. Finley and representatives of uranium operations visited on the trip.

Geology of Peregrina and Novillo Canyons, Ciudad Victoria, Mexico, Friday evening through Monday, October 23-26—A 4-day trip to Peregrina and Novillo Canyons in the Sierra Madre Oriental near Ciudad Victoria, Mexico, to examine geologic structures and Mesozoic, Paleozoic, and Precambrian stratigraphy; emphasis will be on outcrops of Jurassic and Cretaceous units which have subsurface Gulf Coast equivalents.

GCAGS Abstracts

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Gilmer Limestone: Oolite Tidal Bars on Sabine Uplift

Studies of cores, cuttings, and sample logs have shown that the Cotton Valley Limestone, also known as the "Gilmer Limestone," consists of a linear belt of oolitic and pelletal grainstones and packstones along the margin of the Sabine uplift. This belt extends from Gilmer field in Upshur County southward at least as far as Overton field in Smith County. The oolite grainstone sequences with leached, "chalky" porosity are restricted to the north-south trend and are replaced by lime-muddy, nonporous rocks to the east and west.

The high percentage of ooids, the abundant festoon and tabular cross-beds in the grainstone belt, and the linear-shoal anatomy of the unit suggest that the Gilmer Limestone is an ancient analog of the tidal bars in the modern Bahamas. The Gilmer grainstones formed as a series of submarine bars which accumulated in the shallow, agitated water along the flanks of a peninsular shoal (the Sabine uplift). Because the rocks formed as a series of tidal bars, local variations in thickness and lithic character are along the trend.

The Gilmer Limestone reservoir exhibits "chalky" porosity that resulted from leaching during regressive cycles in the Cotton Valley. Oomoldic porosity and dolomite are rare to absent, and permeability is low because most of the voids are intragranular rather than intergranular. The leaching appears to have been most extensive along the tops of the thickest oolite shoals.

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Depositional and Diagenetic Cycles in Smackover Limestone-Sandstone Sequences, Lincoln Parish, Louisiana

The Jurassic upper Smackover Formation in Lincoln Parish, Louisiana, consists mainly of nonskeletal grainstones, argillaceous, anhydritic dolomitic mudstones to wackestones, and bioturbated to graded siliciclastics. Two shoaling-upward cycles, the "A and B limes" of local stratigraphers, were identified. These grainstone deposits accumulated as tidal bars on east-west trending paleo-highs ("salt structures") which parallel regional depositional strike. The salt ridges originated during middle Smackover deposition along the northern rim of the north Louisiana salt basin and produced a "slope-break" on the regional Smackover ramp.

Between the salt ridges in the study area is an inter-ridge trough or withdrawal basin. The strike-trending trough was filled episodically with mixtures of grain carbonates, sandstones, siltstones, and shales. The siliciclastics include fining-upward litharenites and graded, alternating grainstone-sandstone bedsets. The textural grading probably reflects strong but intermittent wave drift or storm surge currents that moved from east to west along the flanks of the salt highs. The finer grain rocks occur in the withdrawal basin center.

Diagenetic products observed in thin sections indicate that the Smackover carbonates were exposed to early marine, meteoric phreatic, and subsurface diagenesis. Marine diagenesis included micritization and isopachous aragonite rim cementation. Freshwater diagenesis included leaching of allochems and cements, and precipitation of blocky calcite rim and mosaic cements. Subsurface diagenesis included precipitation of pore-filling and replacement anhydrite, silicification, and stylolitization. The distribution of early diagenetic effects basically follows the trend of the salt ridges.

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Waveland Field, an Analyses of Facies, Diagenesis, and Hydrodynamics in Mooringsport Reservoirs

Although Waveland field was discovered in 1965, only in the last few years has development changed this once insignificant field into a 24,000-acre (9,600 ha.) producing area flowing nearly 4 Bcf of gas per month. Part of the reason for the field's unusual growth rate is found in a host of reservoir disguises related to carbonate facies, diagenesis, and fracturing.

All of the field wells to date have penetrated a uniform sequence of back-reef and lagoonal deposits in the Mooringsport (lower Albian) producing interval. Miliolid and pellet

packstones, mollusk and echinoid mudstones, and orbitolinid packstones and grainstones make up this sequence. The producible reservoir beds are curiously correlative only to the orbitolinid facies, despite the fact that log analyses and standard core analyses do not discriminate between facies with regard to reservoir properties.

Petrographic studies and special core analyses have identified a unique style of diagenetic recrystallization which yields water-free gas production from high-water saturation reservoirs. However, in updip parts of the field where porosity and permeability have been enhanced by solution diagenesis, both gas and water are produced in subeconomic proportions.

The complex association of a discretely layered reservoir, which demonstrates untraditional fluid dynamics within layers, is further complicated by a dual system of vertical fractures. This fracture system, which is probably a function of gulfward subsidence coincident with drape across the Hancock ridge, has been demonstrated to be an important factor controlling the prolonged and prolific production at Waveland field.

BARIA, LAWRENCE R., Tideway Oil Co., Jackson, MS, PAUL M. HARRIS, Gulf Research and Development Co., Houston, TX, DAVID L. STOUDT, Mosbacher Production Co., Houston, TX, et al

Late Jurassic Reefs of Smackover Formation—Preliminary Report

Algal and coral reefs are recognized in conventional cores of the upper Smackover Formation from southwestern Arkansas eastward into the panhandle of Florida. Although only one known reef has produced commercial hydrocarbons, attractive porosities and permeabilities (mean ϕ of 15%, mean K of 20 md) result from freshwater leaching, fracturing, or dolomitization. In addition, the reefs may have provided a positive structural aspect to localized areas during later Smackover deposition and diagenesis.

Smackover reefs formed in the Late Jurassic during periods of maximum marine transgression (good circulation, clear water, normal marine salinity) in three major paleogeographic settings: (1) the margins of Paleozoic highs protruding into the Smackover basin, i.e., Vocation field in Alabama; (2) upthrown basement fault blocks, i.e., Melvin field in Alabama; and (3) the seaward edges of upthrown salt-cored fault blocks, i.e., Walker Creek field in Arkansas, Hico Knowles and North Haynesville fields in Louisiana, and West Paulding field in Mississippi. The buildups are commonly elongate, 3 to 40 m thick and generally cover an area of several square kilometers. The reefs appear higher (younger) in the stratigraphic section downdip. Also, the reefs are younger and have a more diverse biota in Arkansas and Louisiana than they do in Alabama and Florida.

Smackover reefs in Alabama and Florida were constructed by algae. Vertical relief on the reef surface during growth may have been a few meters. Similar reefs in southern Arkansas and northern Louisiana exhibit a vertical zonation suggesting an evolving reef community. These buildups are *Tubiphytes*-stromatolitic algal boundstones containing scattered corals toward the base; diversity increases upward with the addition of abundant corals (*Actinastrea, Complexastrea, Thamnasteria,* and others), sponges, skeletal algae, and byrozoans. The reefs are commonly underlain and overlain by subtidal peloidal lime packstones containing oncolites and scattered fossils, and they can develop in close proximity to subtidal quartz sands.

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Deep-Water Reservoir Sandstones of Texas Gulf Coast

Core studies have revealed that many downdip sandstones in the Texas Gulf Coast are turbidites. These sandstones are found in several distinct depositional settings, and each is characterized by different reservoir morphologies. Submarine fans are present in the upper Wilcox at Katy field, and bed associations observed in cores show stacked-channel, middle-fan, and outer-fan facies. Fans also are represented in the upper Wilcox at Northeast Thompsonville field. Constructional channel-fill sandstones are found in the lower Vicksburg at McAllen Ranch field. Submarine canyons in the outer shelf are shale filled and form truncation traps at Yoakum and Valentine fields. Channel sandstones within canyon fill are reservoirs in Oligocene Hackberry fields. Channel sandstones on unstable slopes are found in the Upper Cretaceous Woodbine in Seven Oaks field, and in a slumped, lower Wilcox section at South Hallettsville field. In both areas, slope instability was controlled by Lower Cretaceous carbonate-shelf margins. Turbidite deposition was controlled by growth faults in Frio sandstones at Nine Mile Point field and by a shale diapir in lower Vicksburg sandstones at McAllen Ranch field.

Recognition of turbidite reservoirs, and their different modes of occurrence, is important in exploration. Abundant evidence for turbidity current transport indicates that even the deepest parts of the Gulf Coast basin may contain reservoir sandstones.

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Petrographic Analysis of Pettet Porosity in Kerlin Oil Field, Columbia County, Arkansas

The Kerlin field in southwest Arkansas produces from secondary moldic porosity in the Pettet "A" zone of the Lower Cretaceous Sligo Formation. Three associated lithic units were delineated on the basis of a petrographic analysis of cores from approximately 20 wells. The three lithofacies identified are: oolite-skeletal grainstone, oolite-skeletal packstone, and the skeletal-packstone facies. The depositional model delineated by the facies distribution indicates an elongate offshore shoaling complex. The oolite-skeletal grainstone facies represents the shoal and the oolite-skeletal packstone facies represents the fringing spillover facies. The shoaling complex migrated over a basic substrate of the skeletal-packstone facies.

Production from the Kerlin field is from approximately 5 to 10 ft (1.5 to 3 m) of porosity in the oolite-skeletal grainstone facies. However, the adjacent oolite-skeletal packstone facies is nonproductive. Secondary moldic porosity in the oolite-skeletal grainstone facies is the basic porosity type and averages 13% in the producing horizon. Porosity was formed in the productive grainstone facies by selective dissolution of the aragonite shell fragments in the vadose and freshwater phreatic zones. Depositional interparticle porosity, which accounts for only a minor percentage of the total field porosity, was reduced by cementation. Present average permeability in the Pettet zone is 7.78 md.

Original permeability in the nonproductive oolite-skeletal packstone facies was reduced by the increased carbonate-mud content which inhibited the dissolutioning of aragonite skeletal material. Thus, moldic porosity was poorly developed in this facies.

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