
NORTH AMERICAN EXPLORATIONISTS

HGS NORTH AMERICAN EXPLORATIONISTS GROUP DINNER MEETING—NOVEMBER 17, 1992

Social Period, 5:30 p.m.,
Dinner and Meeting, 6:30 p.m.
Post Oak Doubletree Inn

LYDIA DENTON CHAMBERS—Biographical Sketch



Lydia Chambers, originally from Providence, R.I., received her undergraduate degree in geology from Dartmouth College in 1982. She completed her Master's degree in geology in 1986 at the University of Colorado. Her thesis was entitled "Hydrocarbon Trapping Mechanism for the Muddy Sandstone Reservoir, Amos Draw Field, Powder River Basin, Wyoming", a sub-surface field study integrating

stratigraphic, petrographic, and geochemical data. She joined Shell Western E&P, Inc. in 1986 to work in the Michigan Basin on development and reservoir characterization of several Prairie du Chien fields: Kawkawlin, Essexville, Rose City, and Conners Marsh. In 1990 she was re-assigned to develop south Texas Vicksburg fields, McAllen Ranch and Javelina/McCook. She is currently supporting an active development program in Javelina/McCook Field, utilizing 3-D seismic data and newly acquired core data.

JOHN W. HARRIS—Biographical Sketch



John W. Harris currently is a Senior Geologist for Shell Western E&P Inc., Onshore Exploration Division, New Ventures. John received B.S. and M.S. degrees in geology from the University of Kansas in 1982 and 1985. He spent 3-1/2 years as a research and graduate research assistant at the Kansas Geological Survey prior to joining Shell in 1985. Previous Shell assignments include regional stratigraphic and sedimentologic interpretation of the Cambro-Ordovician in the Michigan basin and the Springer-Morrow of the deep Anadarko basin. John's current assignment with the New Ventures group involves evaluation of plays and prospects in the Paleozoic and Mesozoic throughout the lower 48.

igraphic and sedimentologic interpretation of the Cambro-Ordovician in the Michigan basin and the Springer-Morrow of the deep Anadarko basin. John's current assignment with the New Ventures group involves evaluation of plays and prospects in the Paleozoic and Mesozoic throughout the lower 48.

CATHERINE D. McRAE—Biographical Sketch



Cathy McRae is employed by Shell Western E&P Inc., Continental Division, as a Senior Geological Engineer. She received a B.S. in Geological Engineering from Michigan Technological University in 1983. During the last nine years as a production geologist, Cathy has utilized geophysics, petrophysics, geological, reservoir, and production data to better characterize reservoirs in both exploratory and devel-

opmental phases of field appraisal/life. After working six years in the Michigan Basin developing both Silurian Niagaran and Ordovician Prairie du Chien fields, her current assignment includes working on several South Texas Oligocene Vicksburg Asset Management Teams and applying 3-D seismic technology with a multi-disciplinary approach to develop, explain, and enhance reservoir performance.

CHARLES A. STERNBACH—Biographical Sketch



Charles A. Sternbach currently is a Senior Geologist for Shell Western E&P, Inc., Onshore Exploration Division, West Texas. Charles was born in New York City and educated in geology at Columbia (A.B. 1980) and Rensselaer Polytechnic Institute (M.S. 1981), Ph.D. 1984). He joined Shell on graduation (1984) and since then he has evaluated plays and prospects for Shell in Michigan, Illinois, Arkoma,

Black Warrior, West Texas and Permian basins.

DEEP GAS EXPLORATION IN MIDDLE
ORDOVICIAN PRAIRIE DU CHIEN AND
ST. PETER FORMATIONS IN THE
MICHIGAN BASIN WITH ROSE CITY FIELD
AS A CASE STUDY

During the 1980's, deep gas exploration in the Michigan basin targeted middle Ordovician sandstones in the Prairie Du Chien and St. Peter formations. Deeper-pool gas discoveries occur in simple closures associated with drape-fold anticlines interpreted to overlie reactivated, oblique-slip basement faults. The Prairie Du Chien and St. Peter formations consist of up to 1300 feet (400 m) of interbedded sandstones and shaly dolomites that pinch out along the southern margin of the basin. Tight, shaly tidal-flat shales within the St. Peter provide good source rocks and multiple top seals found in many fields. Clean, cross-bedded and *skolithos*-burrowed sandstones capping shelf sand bar or prograding shoreface sequences produce the best reservoirs.

A multi-disciplinary study of the Rose City Field, a deeper-pool field discovered in 1985, served as an analogue for development and production of Shell's other fields. The depositional environments of the sandstones were found to have significantly influenced their subsequent diagenesis and ultimately their present reservoir characteristics. The geologic model and calculated log values were combined with seismic structural interpretations to characterize the reservoir system and map the distribution of hydrocarbon-bearing pore volume ($S_g\phi H$). Volumetric and material balance estimates of OGIP agree within 10%, which is considered excellent. This approach was applied to other multi-well fields to help ensure equity and improve ultimate recovery.