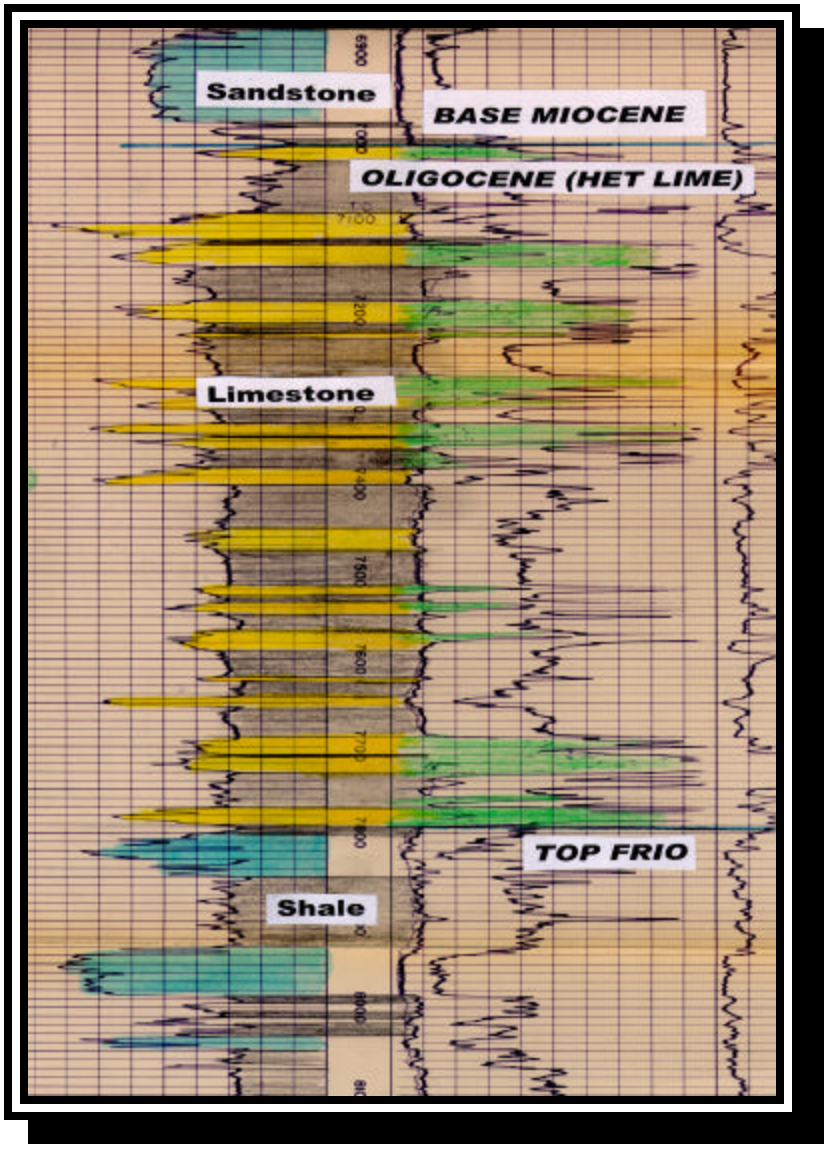
Quick Look Handbook
Onshore Louisiana
Petroleum Producing Formations



Donald A. Goddard

Louisiana State University
Center For Energy Studies

QUICK LOOK HANDBOOK
ONSHORE LOUISIANA
PETROLEUM PRODUCING FORMATIONS

Introduction

The purpose of this handbook is to provide rapid, reliable access to the names of the onshore petroleum producing formations, their location in North and South Louisiana, generalized characteristics of the reservoirs within the producing units, and a list of pertinent publications that can be referenced for more detailed information. Examples of selected e-logs are presented for all the producing intervals. The objective was to provide logs with stratigraphic names and with oil/gas shows where possible. The reader will observe that the producing areas of the State have been divided into a northern and a southern region. The reason for doing this is that both regions possess three fundamental differences that influence the exploration/exploitation methodologies that must be applied and thus their economics. These differences are: 1) the age and lithologies of the producing formations, 2) the hydrocarbon fluids that are produced, and 3) the depth of the reservoirs.

With respect to the first point, in North Louisiana the producing formations, with the exception of the Paleocene Wilcox, are older (Jurassic and Cretaceous in age), and contain both clastic (sandstone) and carbonate (chalk, limestone, marl) reservoirs. In South Louisiana the formations are younger (Tertiary in age) and the reservoirs are predominantly clastic in nature. Regarding the second point, the northern reservoirs produce oil and abundant gas with large areas producing free gas (e.g. Monroe Gas Field). In south Louisiana the reservoirs tend to be more oil prone. Finally, in the north the reservoirs are shallower, averaging 6000 feet in depth. In the southern parishes of the State, except for earlier shallow production associated with salt domes, they tend to be much deeper, averaging 12,000 feet in depth.

Although considered extremely important and useful information, reserve estimates and cumulative production figures by formation are not included in the handbook. During the preparation of this document it was possible to find estimates of reserves for the entire state (Figure 1). However, because of the large number of oil fields and reservoirs that exist in Louisiana that are operated by hundreds of independent producers, reserves by field and by reservoir are extremely difficult to obtain. Nevertheless, production figures are reported and can be found in the public records of the Louisiana Department of Natural Resources. Since it is beyond the scope of the handbook to provide detailed reserve and production data, a list of publications and online information systems are mentioned that will guide the reader in their search for this data.

Brief History

The date that is given for the initiation of the petroleum industry in Louisiana is 1866. At this time, only seven years after Colonel Drake's oil discovery on August 28, 1859, in Pennsylvania, the first exploratory well was drilled by hand in Calcasieu Parish. However, it was not until 1901 that the first commercial production began at Jennings in South Louisiana, with the drilling of the Scott Heywood well. In North Louisiana, the first oil production began in Caddo Parish in 1906. The huge Monroe Gas Field was discovered in 1916 near Monroe and covers parts of Union, Morehouse, and Ouachita Parishes. Drilling of the first well far offshore in the Gulf of Mexico, south of Morgan City, did not occur until 1947. Details of these and other events regarding Louisiana's petroleum history have been well documented. Perhaps the two most interesting and thorough accounts about Louisiana's earlier developments in our industry can be found in the following publications:

French, T. M. and M. Lam, (1986), "Oil and Gas Production Industry In Louisiana, A Short History With Long Term Projections:" Louisiana Department of Natural Resources, Energy Division, Technology Assessment Division, 42 pp.

Lindstedt, D. M., L. L. Nunn, et al (1991), "History of Oil and Gas Development in Coastal Louisiana:" Louisiana Geological Survey, Resource Information Series No. 7, 131 pp.

Available Information Systems

There are several online information systems containing oil and gas databases (wells, fields, production, etc.) that are easily accessible. Those considered to be the most complete for Louisiana are the following:

Department of Natural Resources "SONRIS 2000 Integrated Applications." Production data is from 1977 to the present. It functions well with Internet Explorer's web browser, but with difficulty using Netscape. The web site is http://sonris-www.dnr.state.la.us

Central Gulf Region/Petroleum Technology Transfer Council (CGR/PTTC) web site: http://www.cgrpttc.lsu.edu. In the Tech Transfer Section, oil and gas information for Louisiana is listed with production data reported from 1977 to 1999.

"Louisiana Desk Top Well Reference (version 1999)," a CD that was prepared by the Louisiana Department Of Natural Resources, LSU Center For Energy Studies and LSU Basin Research Sector of the Louisiana Geological Survey. This CD can be purchased for $200 from the Central Gulf Region PTTC located at LSU.

A National Data Base Of Geological Engineering, Production and Ultimate Recovery Data For U.S. Oil And natural gas Reservoirs, 1997: The Department of Energy's Gas information System (GASIS).

Publications and Reports

Information regarding Louisiana's petroleum producing formations and reservoirs is well documented in numerous technical publications and reports. The most important of these, and the sources of most of the data provided herein are the following:

Transactions of The Gulf Coast Association of Geological Societies (GCAGS), 1951 – 2000.

Reports of the Lafayette Geological Society: "Typical Oil and Gas Fields of Southwestern Louisiana," vol 1, 1964; vol. 2, 1970; vol. 3, 1989.

Reports of the New Orleans Geological Society: "Oil and Gas Fields of Southeast Louisiana," vol 1, 1965; vol. 2, 1967; vol. 3; 1983.

Reports of The Shreveport Geological Society: "Reports of Selected Oil and Gas Fields of North Louisiana and South Arkansas," Vol. III, no.1, 1951; Vol. III, no. 2, 1953; Vol. IV, 1958; Vol. V, 1963; Vol. VI, 1980; vol. VII, 1987.

Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, 1992, Sponsored by the Gas Research Institute and coordinated and edited by the Bureau of Economic Geology at The University of Texas at Austin. 88 pp.

DOE publication DOE/ID 12842-1 "Pilot Oil Atlas for Louisiana, Final Report," 1993, by A. D Bourgoyne, C. Kimbrell and W. Gao, Louisiana State University, 89 pp.

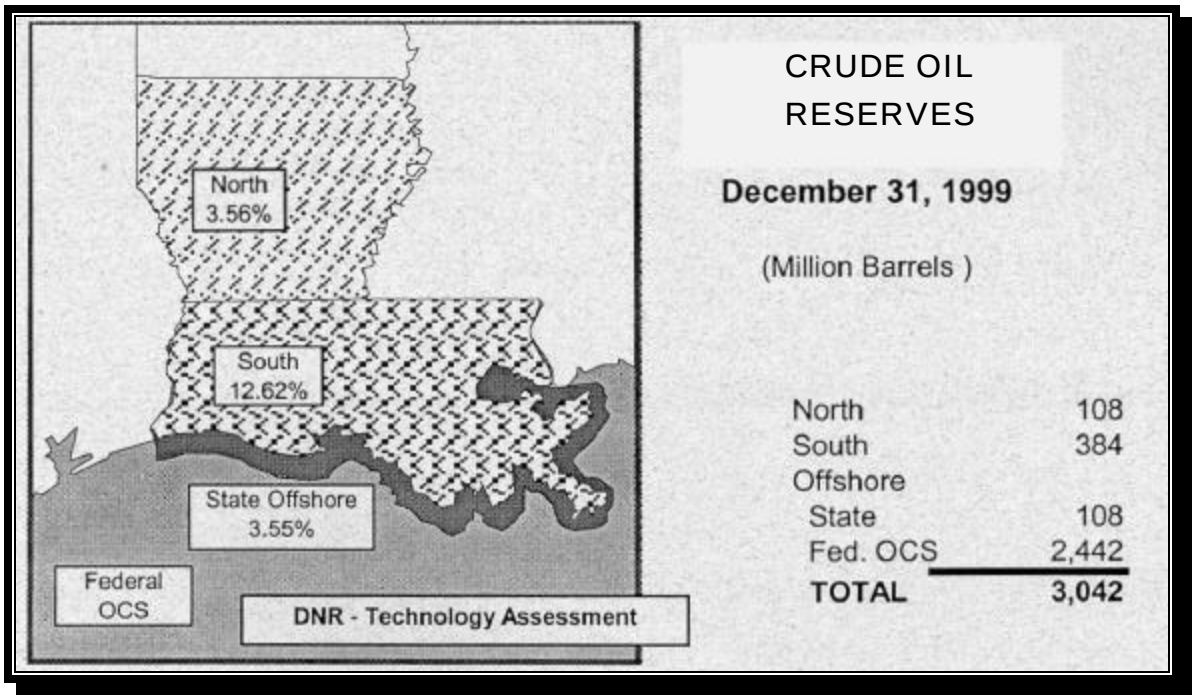
Bulletins of the American Association Of Petroleum Geologists.

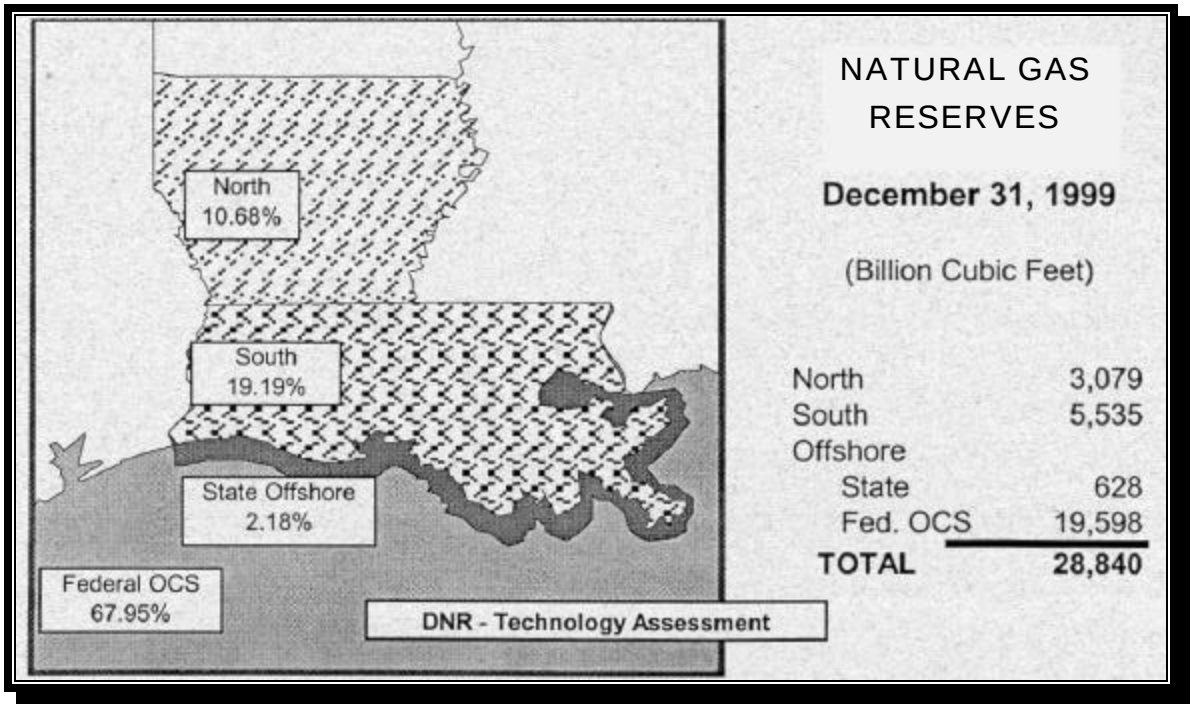
Reserve Estimates

After more than one hundred years of petroleum activity, Louisiana today is the country's largest producer of crude oil and condensate at 1.53 million barrels per day (MMBPD). Texas produces 1.42 MMBPD and Alaska approximately 1.0 MMBPD (Oil & Gas Journal, 06/15/2001). The natural gas resource base for the Gulf Coast States, including Louisiana, as of April 2001, was approximately 260 TCF. The oil resource base in this region was estimated to be 100 billion barrels (MMS National Assessment). Between 1960 and 2000, oil and gas reserve estimates for Louisiana have fluctuated widely. Reserve figures as high as 5.7 billion barrels of oil and 88 trillion cubic feet (TCF) of natural gas have been reported. As of the year 2000, conservative estimates of 3 billion barrels of oil and 29 TCF of gas are believed to exist in Louisiana (Figure 1). Because of the limitations with the reporting method of oil and gas produced, it is no easy task to obtain accurate estimates for cumulative production by field, or even by Parish.

LOUISIANA CRUDE OIL & NATURAL GAS RESERVES

Figure 1





From: Louisiana Energy Facts Annual 1999-2000.
Department of Natural Resources, Technology Assessment Division, November 2000.

Maps

Available regional maps containing field and reservoir information are the following:

- ***Oil & Gas Map of Louisiana,* 1981. Published by the Department of Natural Resources and compiled by the Louisiana Geological Survey. Scale 1:380,160 (1 inch = 6 miles).**

- ***Geomap Company Executive Reference Maps, 1995, 1996.***

1) Map 303, SW Louisiana, 1995. Scale: 1" = 28,000'

2) Map 304, SE Louisiana, 1995. Scale: 1" = 28,000'

3) Map 310, S. Arkansas & N. Louisiana, 1996. Scale: 1" = 32,000

Acknowledgements

Louisiana State University Center for Energy Studies and the Central Gulf Region Petroleum Technology Transfer Council (CGR/PTTC) provided financial support for the publication of the document. The author is especially grateful to Ron Zimmerman from the Louisiana Geological Survey's Basin Research Energy Section for his valued personal communications and discussions held during the preparation of the manual. Although the author is responsible for the contents of the manuscript, critical review and suggestions by Barbara Kavanaugh and Ron Zimmerman were very helpful in the organization of the text and of the data presented.

NORTH LOUISIANA FORMATIONS

NORTH LOUISIANA

ERA	SYSTEM	SERIES	GROUPS/FORMATIONS (Oil Producer ● Gas Producer ☼)	FACIES	ENVIRONMENTS
CENOZOIC	Q				
	TERTIARY	PLIOC.			
	NEOGENE	MIOCENE			
	PALEOGENE	OLIG.			
		EOCENE	Cockfield Cook Mountain Sparta Cane River	ARENACEOUS FACIES Sandstone, interbedded siltstone & shale	DELTAIC TO SHALLOW MARINE
		PALEO.	Regional Seal Wilcox (Carrizo) ● ☼ Midway (Porters Creek)	TRANSITIONAL SHALY FACIES shale, mudstone & siltstone	PRODELTA
MESOZOIC	CRETACEOUS	UPPER	Regional Seal Navarro GP. ● ☼ (Gas Rock, Arkadelphia, Nacatoch) Taylor GP. ● ☼ (Saratoga, Marlbrook, Annona, Ozan) Austin GP. ● ☼ (Tokio, Austin Chalk) Eagle Ford GP. Tuscaloosa GP. ● ☼	CALCAREOUS FACIES marl, chalk, limestone &shale ARENACEOUS FACIES	SHALLOW MARINE FLUVIAL-DELTAIC TO SHALLOW MARINE
		LOWER	Washita-Fredricksburg ☼ Paluxy ● ☼ U. Glenrose: Mooringsport, ● ☼ Ferry Lake Anhydrite ☼ L. Glenrose: Rodessa ● ☼ James ● ☼ Pine Island ● ☼ Sligo (Pettet) ● ☼ Hosston (Travis Peak) ● ☼	CALCAREOUS FACIES Limestone, chalk & marl (Minor Sandy Facies) ARENACEOUS FACIES	SHALLOW MARINE FLUVIAL-DELTAIC TO SHALLOW MARINE
	JURASSIC	UPPER	Cotton Valley: Schuler ● ☼ Bossier Shale Haynesville/Buckner ● ☼ Smackover ● ☼ Regional Source Rock Norphlet	ARENACEOUS FACIES (Minor Limestone Facies) CALCAREOUS FACIES	SHALLOW MARINE SHELF, REEF, LAGOON
		MID.	Louann Salt		
	TR	L	Werner Eagle Mills GP.		
PZ			PALEOZOICS		

EROSION & NON-DEPOSITION

SERIES: PALEOCENE

GROUP/FORMATION

WILCOX

PARISHES (North Louisiana)

Caldwell
La Salle
Tensas
Catahoula
Concordia
Franklin
Caldwell
Winn

LITHOLOGIC DESCRIPTION

Very fine-to-fine grained sandstone interbedded with shale, carbonaceous shale, and lignite.

DEPOSITIONAL ENVIRONMENT

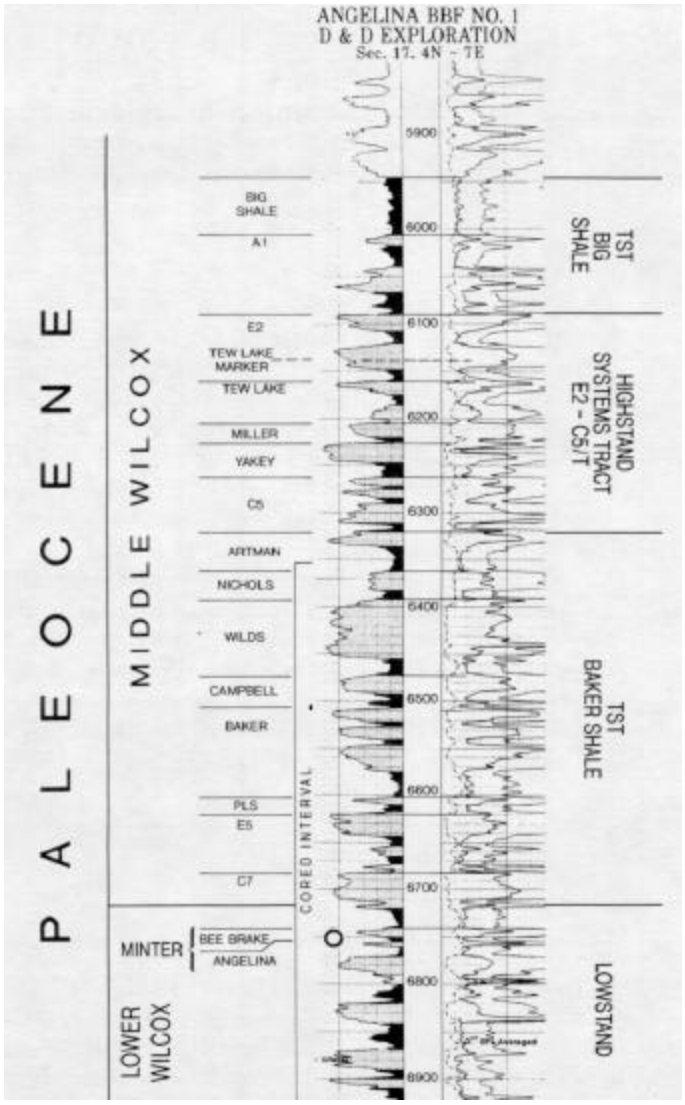
Fluvial-deltaic.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 2000' – 7000'
Net pay: 5' – 30'
Porosity (Ø): 15 – 35 %
Permeability (k): 200 – 600 md
Drive Mechanism: water drive
API Gravity: 35º , condensate, gas

SELECTED LOG

Concordia/ Bee Brake Field



PERTINENT PUBLICATIONS

Echols, J. B., 1991, Sea level high stand shales and thin-stacked deltas, Paleocene Middle Wilcox of Central Louisiana and Mississippi: GCAGS Trans., v. 41, p. 221-236.

Echols, J. B. and D. A. Goddard, 1992, Sea level fluctuations, Paleocene Middle Wilcox stratigraphy and hydrocarbon distribution in east-central Louisiana: GCAGS Trans., v.42, p. 333-340.

Galloway, W. E., 1968, Depositional systems of the Lower Wilcox Group, North-Central Louisiana Gulf Coast Basin: GCAGS Trans., v. 18, p. 275-289.

Glawe, L. N. L. M. Young, and H.H. Roberts, 1999, Petrology, paleontology, and paleoenviromnments of Wilds and Lower Nichols sands; Paleocene Wilcox units of Louisiana: GCAGS Trans., v. 49, p. 265-273.

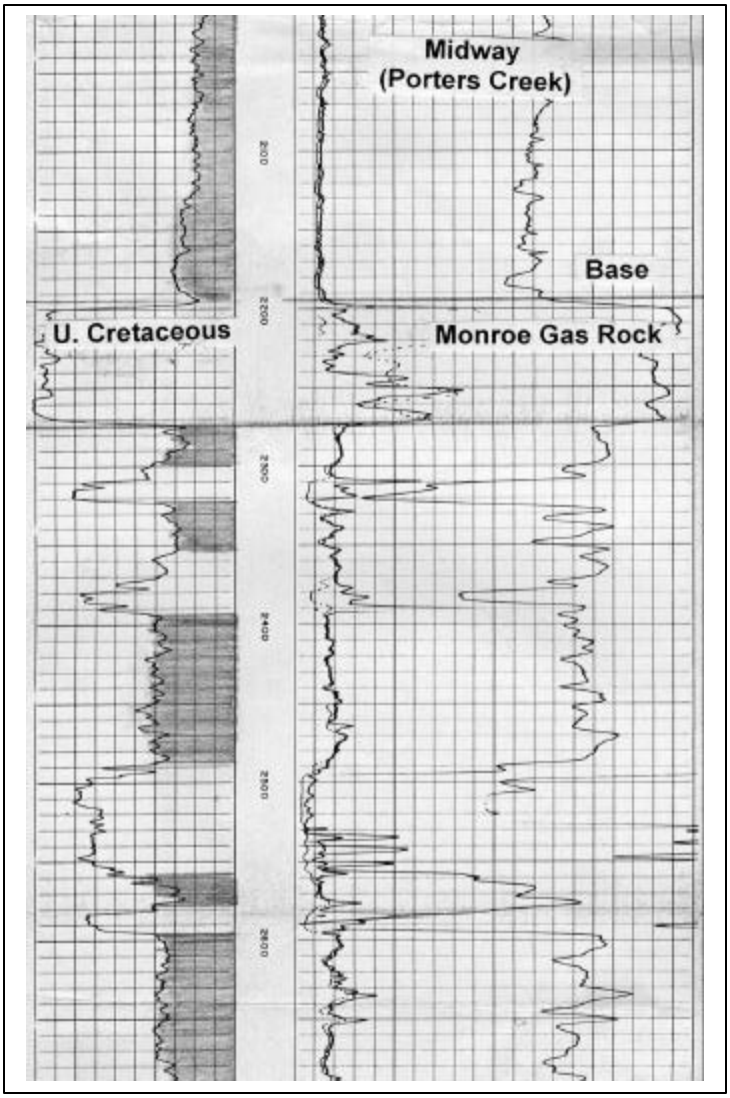
Goddard, D. A. and J.B. Echols, 1993, Miller reservoir; depositional facies, trapping styles, and reserve estimates – Middle Wilcox, East – Central Louisiana: LSU Basin Research Institute Bulletin, v. 3, p. 3-33.

Nelson, R. E., 1993, Colgrade Field, Winn Parish Louisiana: GCAGS Trans., v. 13, p. 3-7.

SERIES: UPPER CRETACEOUS

SELECTED LOG

Morehouse/ Monroe Gas Field



GROUP/FORMATION

NAVARRO/GAS ROCK

PARISHES

Union
Morehouse
West Carroll
East Carroll
Ouachita
Richland

LITHOLOGIC DESCRIPTION

Hard, white and gray sandy chalk.

DEPOSITIONAL ENVIRONMENT

Shallow marine to deeper shelf.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 2000' – 2500'
Net pay: 10' – 70'
Porosity (Ø): 5 – 25 %
Permeability (k): as high as 500 md
Drive Mechanism: Water drive, gas cap
Hydrocarbon: Gas

PERTINENT PUBLICATIONS

Bebout, D. G., C. M. Garrett, et al, 1992, Upper Cretaceous Gas Rock – Louisiana and Mississippi: Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 51.

Fergus, P., 1935, Monroe Gas Field, Louisiana: in Ley, H. A., (ed.) Geology of Natural Gas, AAPG, p. 741-772.

Zimmerman, R. K. and R. Sassen, 1993, Hydrocarbon pathways from Smackover to younger reservoir traps in the Monroe Gas Field, Northwest Louisiana: GCAGS Trans., v. 43, p. 473-480.

SERIES: UPPER CRETACEOUS

GROUP/FORMATION

NAVARRO/ARKADELPHIA

PARISHES

Caddo
Bossier
Webster
Claiborne
Union
Morehouse
Ouachita

LITHOLOGIC DESCRIPTION

Light gray chalk/marl with calcareous, micaceous sandstone, and minor volcanic ash.

DEPOSITIONAL ENVIRONMENT

Shallow marine.

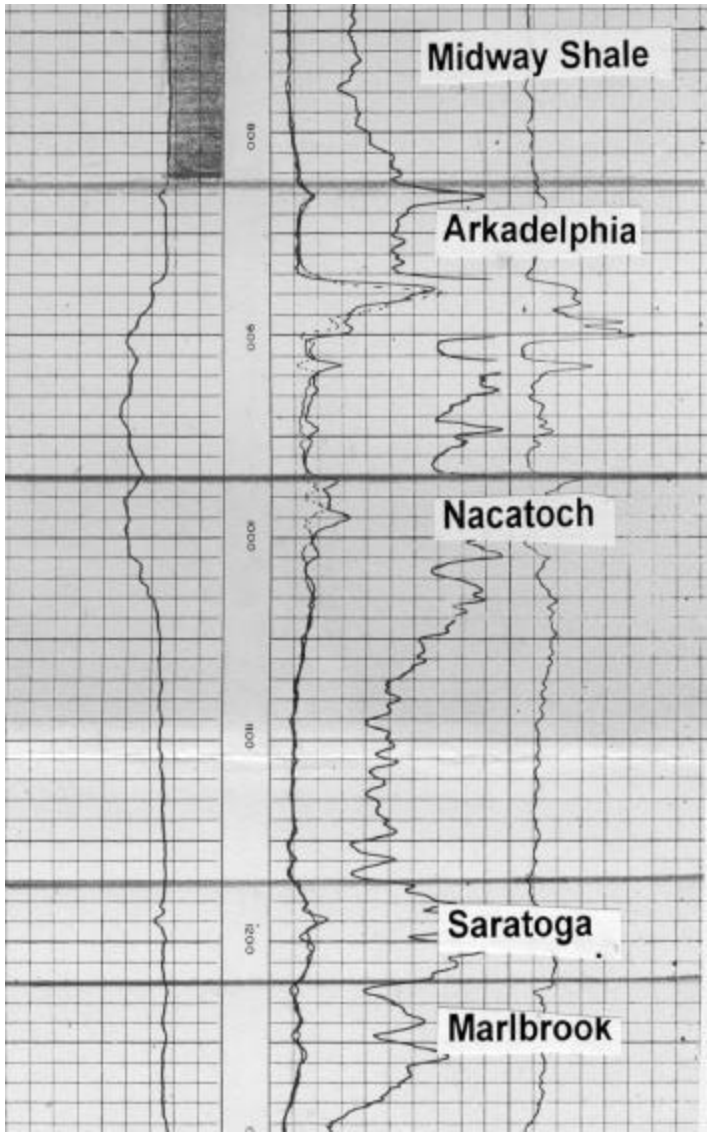
RESERVOIR CONSIDERATIONS

Depth to top of pay: 2200'
Net pay: 10'
Porosity (Ø): 14 % (average)
Permeability (k): 1 md
Drive Mechanism: Water, solution gas, gravity segregation
API Gravity: gas

PERTINENT PUBLICATIONS

SELECTED LOG

Bossier/Sligo Field



White, W. A., M. Woodward, and C. M. Garrett, 1992, Austin – Taylor - Navarro Groups Shallow – Marine Sandstone – ARKLA Region: Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 44-45.

SERIES: UPPER CRETACEOUS

GROUP/FORMATION

NAVARRO/NACATOCH

PARISHES

Caddo
Bossier
Webster
Caiborne
Union

LITHOLOGIC DESCRIPTION

Medium to fine grained unconsolidated quartz sandstone, sandy limestone, clay, marl and shale. Sandstones are glauconitic, ashy and argillaceous.

DEPOSITIONAL ENVIRONMENT

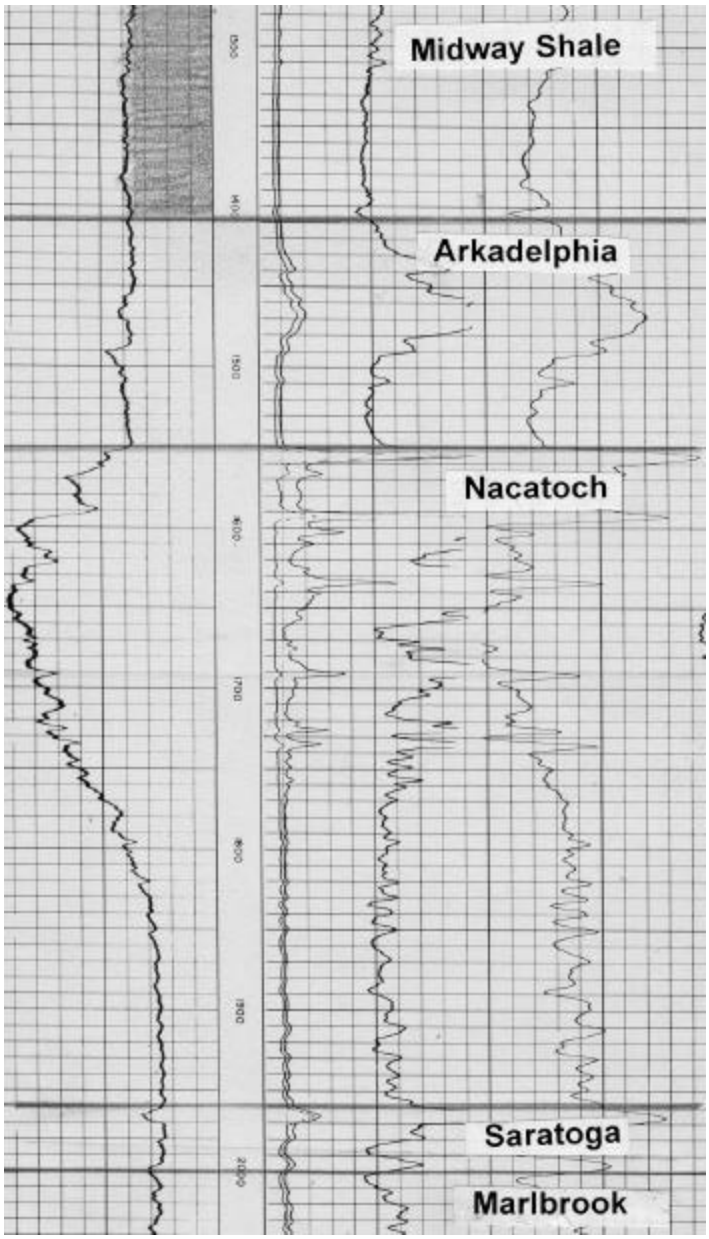
Shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 800' – 2700'
Net pay: 15' – 50'
Porosity (Ø): 28 % (average)
Permeability (k): 200 – 2500 md
Drive mechanism: water, solution gas
API Gravity: gas

SELECTED LOG

Bossier/Simpson Lake Field



PERTINENT PUBLICATIONS

Cullum, T. M., 1963, Shreveport Field, Caddo and Bossier Parish, Louisiana: Shreveport Geological Society; Report on Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 184-188.

White, W. A., M. Woodward, and C. M. Garrett, 1992, Austin – Taylor - Navarro Groups Shallow – Marine Sandstone – ARKLA Region: Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 44-45.

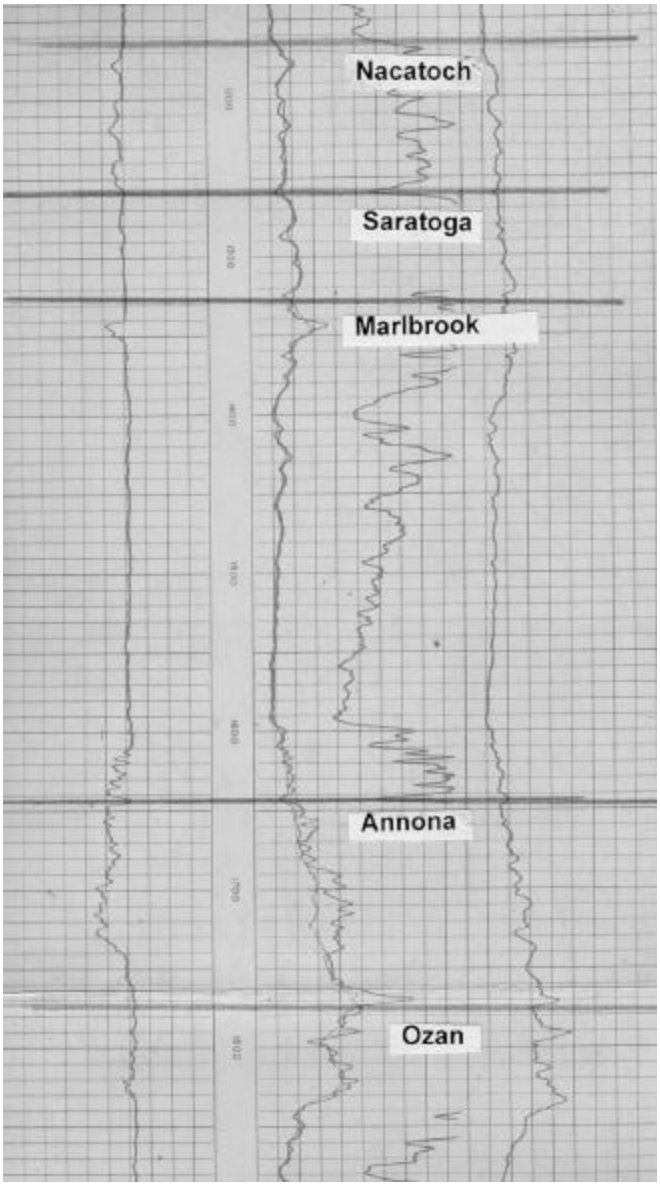
SERIES: UPPER CRETACEOUS

SELECTED LOG

GROUP/FORMATIONS

TAYLOR/Saratoga, Marlbrook
Annona, Ozan

DeSoto/Logansport Field



PARISHES

Caddo
Bossier
Webster
Claiborne
De Soto
Red River
Sabine

LITHOLOGIC DESCRIPTION

Hard, gray glauconitic fossiliferous chalk, calcareous shale, marl, fine sandstone and siltstone.

DEPOSITIONAL ENVIRONMENT

Shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 1250' – 3100'
Net pay: 10' – 60'
Porosity (Ø): 20 – 33 %
Permeability (k): 100 – 1000 md
Drive Mechanism:
API Gravity: 42º , condensate, gas

PERTINENT PUBLICATIONS

Cameron, L. G., 1963, Pendleton – Many - Ft. - Jesup Field, Sabine Parish Louisiana: Shreveport Geological Society; Report 0n Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 160-176.

White, W. A., M. Woodward, and C. M. Garrett, 1992, Austin – Taylor - Navarro Groups Shallow – Marine Sandstone – ARKLA Region: Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 44-45.

Woods, D. J., 1963, Fractured chalk oil reservoirs, Sabine Parish, Louisiana: GCAGS Trans., v. 13, p. 127-138.

SERIES: UPPER CRETACEOUS

GROUP/FORMATION

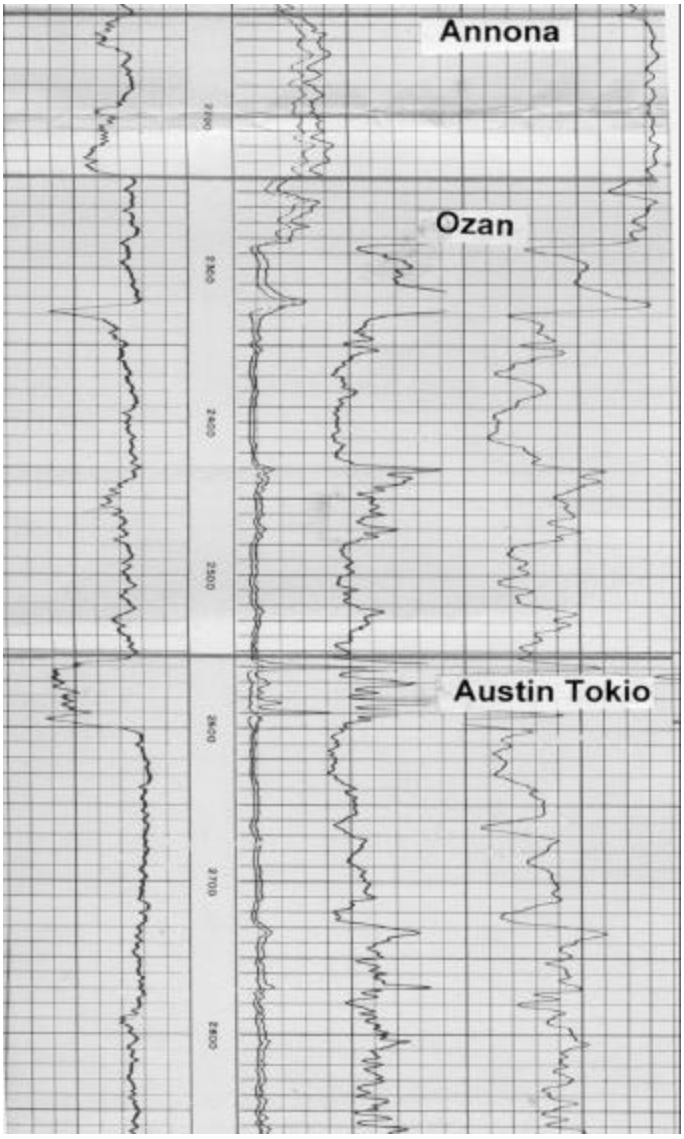
AUSTIN/TOKIO

PARISHES

Caddo
Bossier
Webster
Claiborne
Union
Ouachita
Morehouse

SELECTED LOG

Bossier/ Simpson Lake Field



LITHOLOGIC DESCRIPTION

Medium to coarse-grained glauconitic sandstone, carbonaceous and argillaceous in part, and alternating with chalky, shaly and silty sequences.

DEPOSITIONAL ENVIRONMENT

Shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 2700' – 3100'
Net pay: 10' – 12'
Porosity (Ø): 20 – 25 %
Permeability (k):
Drive Mechanism: 200 – 450 md
API Gravity: 39º , condensate, gas

PERTINENT PUBLICATIONS

Ogier, S. H., 1963, Stratigraphy of the Upper Cretaceous Tokio Formation, Caddo Parish, Louisiana: Shreveport Geological Society; Report on Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 97-107.

Forgotson, J. M., 1958, The basal sediments of the Austin Group and the stratigraphic position of the Tuscaloosa Formation of Central Louisiana: GCAGS Trans., v.13, p. 117-125.

White, W. A., M. Woodward, and C. M. Garrett, 1992, Austin – Taylor - Navarro Groups Shallow – Marine Sandstone – ARKLA Region: Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 44-45.

SERIES: UPPER CRETACEOUS

GROUP/FORMATION

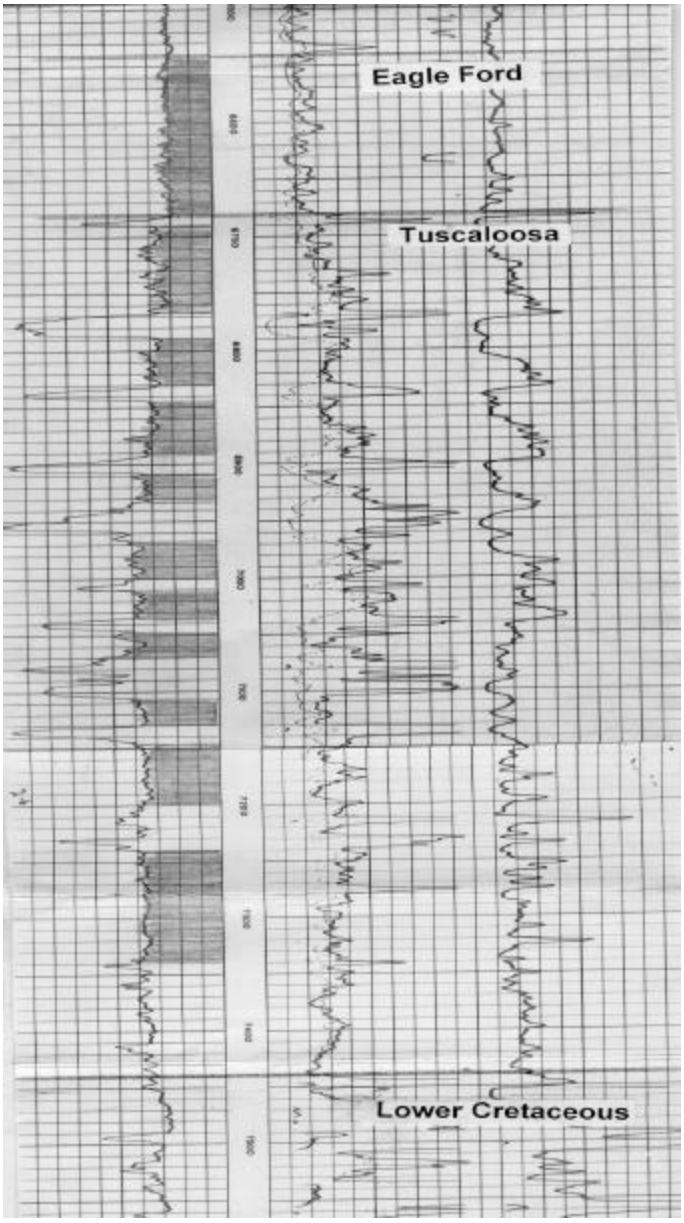
WOODBINE/TUSCALOOSA

PARISHES

Bienville
Richland
Franklin
Tensas
Concordia

SELECTED LOG

Franklin/Wildcat



LITHOLOGIC DESCRIPTION

Fine to medium to coarse-grained quartz arenites and fossiliferous clays. Ashy sands, red beds, gray shales, and minor chert gravels in NW Louisiana.

DEPOSITIONAL ENVIRONMENT

Fluvial-deltaic to shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 3100' – 9250'
Net pay: 10' – 40'
Porosity (Ø): 25 – 30 %
Permeability (k): 200 – 2000 md
Drive Mechanism: water & dissolved gas
API Gravity: 24º – 46º , condensate, gas

PERTINENT PUBLICATIONS

Morrow, E.H., 1958, Topy Creek Field, Bienville Parish, Louisiana: Shreveport Geological Society Reference Report of Certain Oil and Gas Fields, vol. lV, p. 117-119.

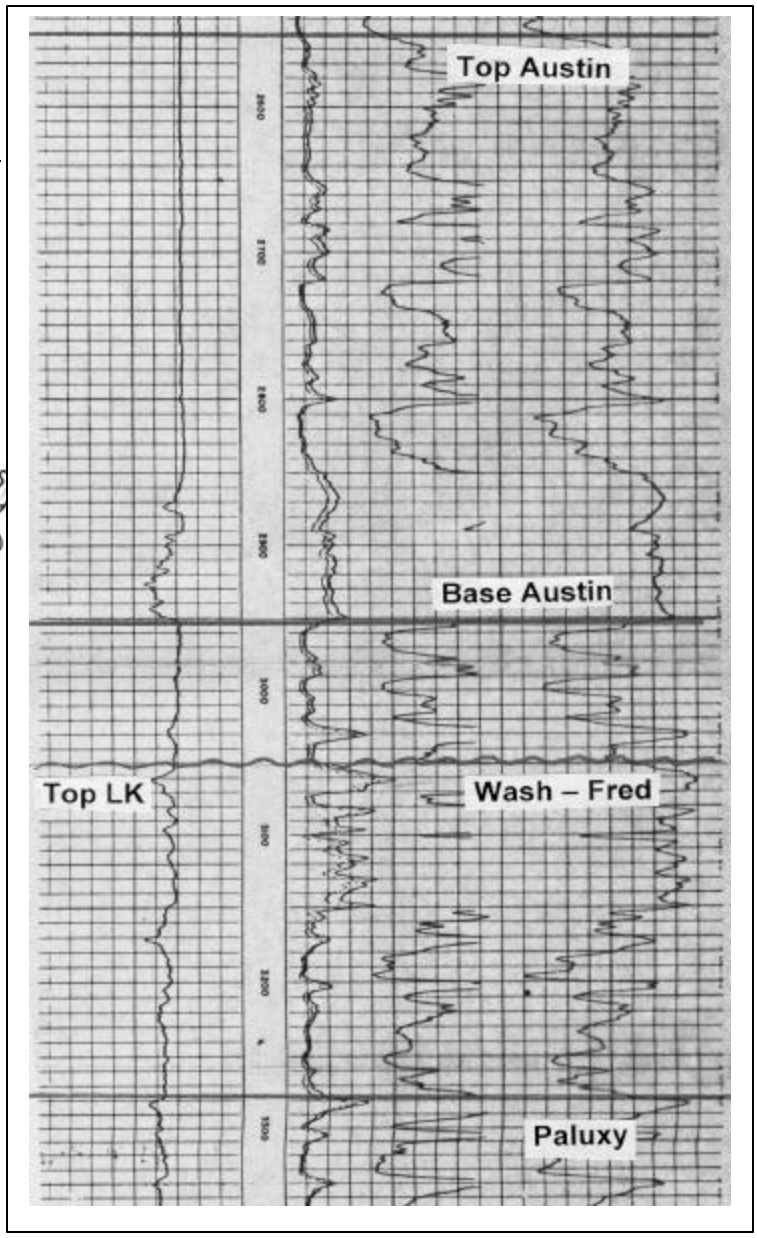
Lenert, H. A. and M. K. Kidda, 1958, Baskinton Field, Franklin Parish Louisiana: Shreveport Geological Society Reference Report of Certain Oil and Gas Fields, vol. lV, p. 120-122.

Rogers, R. L., 1958, Killens Ferry Field, Franklin and Tensas Parishes, Louisiana: Shreveport Geological Society Reference Report of Certain Oil and Gas Fields, vol. lV, p. 137-140.

SERIES: LOWER CRETACEOUS

SELECTED LOG

Sabine/Converse field



GROUP/FORMATION

WASHITA-FREDRICKSBURG

Minor scattered production below the Wash-Fred subcrop.

PARISHES

Caddo
De Soto
Sabine
Franklin
Tensas

LITHOLOGIC DESCRIPTION

Fine-grained sandstone and marine shale with minor calcareous sandstone and shale.

DEPOSITIONAL ENVIRONMENT

Shallow marine

RESERVOIR CONSIDERATIONS

Depth to top of pay: 3000’ – 6000’
Net oil sand: 10’ – 30’
Porosity (Ø): 10 – 20 %
Permeability (k): Low
Drive Mechanism: pressure depletion
API Gravity: mostly gas

PERTINENT PUBLICATIONS

Granata, W. H., 1963, Cretaceous stratigraphy and structural development of the Sabine Uplift area, Texas and Louisiana: Shreveport Geological Society; Report on Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 50-95.

Wheeler, C. T., 1963, Producing horizons of North Louisiana oil and gas fields: Shreveport Geological Society; Report on Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 1- 8.

SERIES: LOWER CRETACEOUS

GROUP/FORMATION

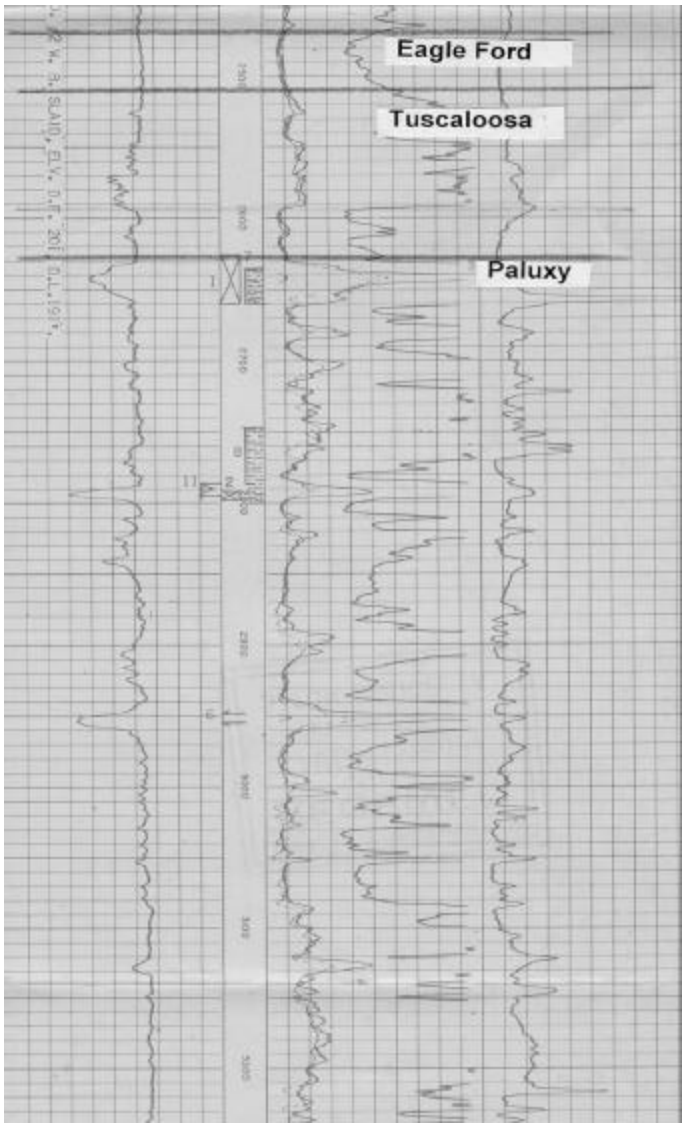
TRINITY/PALUXY
(Bostwick, Parker, Brown, Mira and Dominick sands)

PARISHES

Caddo
Bossier
De Soto
Tensas
Red River

SELECTED LOG

Desoto/Logansport Field



LITHOLOGIC DESCRIPTION

Fine-grained calcareous sandstones, shales and gray limestones.

DEPOSITIONAL ENVIRONMENT

Shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 2500' – 8500'
Net pay: 10' – 40'
Porosity (Ø): 24 – 30 %
Permeability (k): 150 – 600 md
Drive Mechanism: water & dissolved gas
API Gravity: 32º -46º , condensate, gas

PERTINENT PUBLICATIONS

Tilleux, H.O., 1951, Logansport Field, De Soto Parish, Louisiana, Panola and Shelby Counties, Texas: Shreveport Geological Society; Reference Report on Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. 1, p. 31-41.

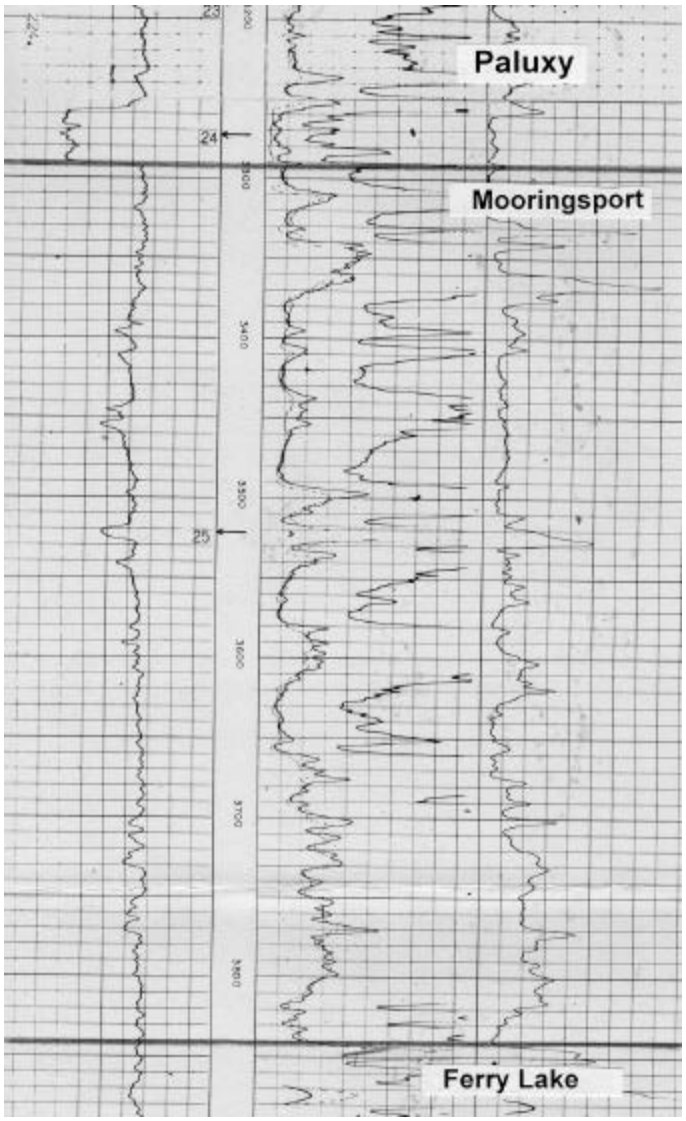
Valerius, C. N., R. A. Caskie, and J. M. Law 1963, East Vivian, Mira, Miller's Bluff and Simpson Lake Fields, Caddo and Bossier Parishes, Louisiana: Shreveport Geological Society; Report on Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 127- 137.

Duckworth, J., S. G. Dowty, and D. G. Bebout, 1992, Trinity Group Sandstone – Mississippi Interior Salt Basin, Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 53.

SERIES: LOWER CRETACEOUS

SELECTED LOG

Desoto/Logansport Field



GROUP/FORMATION

TRINITY/MOORINGSPORT

PARISHES

Caddo
Bossier
De Soto
Red River
Lincoln

LITHOLOGIC DESCRIPTION

Crystalline fossiliferous limestones, with sandstones, red beds, anhydrite, and shales.

DEPOSITIONAL ENVIRONMENT

Shallow marine (transgressive).

RESERVOIR CONSIDERATIONS

Depth to top of pay: 3000’ – 5000’
Net pay: 10’ – 30’
Porosity (Ø): 10 –20 %
Permeability (k): 10 – 500 md
Drive mechanism; gas expansion
API Gravity: gas

PERTINENT PUBLICATIONS

Bebout, D. G. and C. M. Garrett, 1992, Trinity Group Carbonate – Sabine Uplift: Atlas of Major Central and Eastern Gulf Coast Gas Reservoirs, Bureau Of Economic Geology, University of Texas, p. 58-59.

Forgotson J. M., 1956, A correlation and stratigraphic analysis of the formations of the Trinity Group of the Comanchean Cretaceous of the Gulf Coastal Plain; and genesis and petrography of the Ferry lake Anhydrite: GCAGS Trans., v. 6, p. 91-108.

McNamee, D. F., 1969, The Glen Rose Reef Complex of East Texas and Central Louisiana: GCAGS Trans., v. 19, p. 11-21.

SERIES: LOWER CRETACEOUS

SELECTED LOG

Caddo/Caddo Pine Island Field

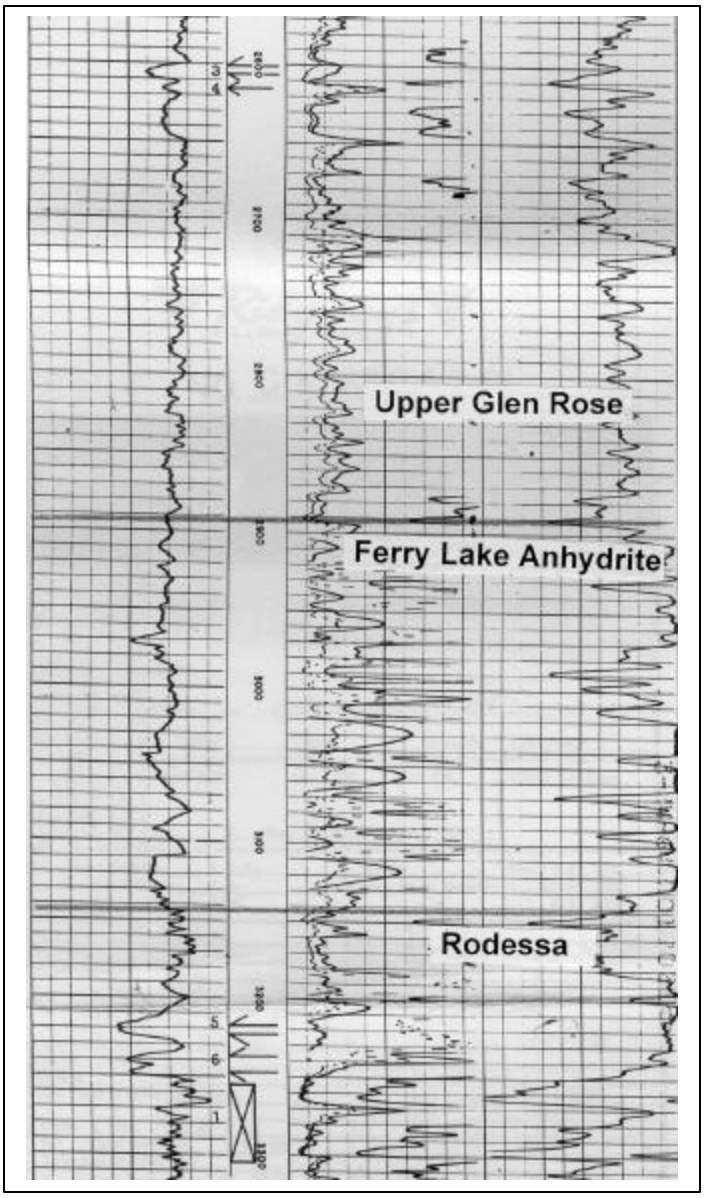
GROUP/FORMATION

TRINITY/FERRY LAKE ANHYDRITE

(Minor production from fractured intervals)

PARISHES

Caddo
De Soto
Bossier



LITHOLOGIC DESCRIPTION

White to gray finely crystalline anhydrite, with minor black shale, dense limestone, and dolomite.

DEPOSITIONAL ENVIRONMENT

Restricted lagoon.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 2500' - 3000'
Net pay: 20' – 50'
Porosity (Ø): minor fracture porosity
Permeability (k): low
Drive Mechanism: gas expansion
API Gravity: oil, gas

PERTINENT PUBLICATIONS

Forgotson J. M., 1956, A correlation and regional stratigraphic analysis of the formations of the Trinity Group of the Comanchean Cretaceous of the Gulf Coastal Plain; and the genesis and petrography of the Ferry lake Anhydrite: GCAGS Trans., v. 6, p. 91-108.

Kimball, C. E., E. G. Anderson, A. A. Sartin, and L. M. Young, 1989, Petrology and hydrocarbon potential of the Ferry Lake Anhydrite, Caddo Pine Island Field, Caddo Parish, Louisiana: GCAGS Trans., v. 39, p. 141-151.

Pitman, J. C., 1985, Correlation of beds within the Ferry Lake Anhydrite of the Gulf Coastal plain: GCAGS Trans., v.35, p. 251-260.

SERIES: LOWER CRETACEOUS

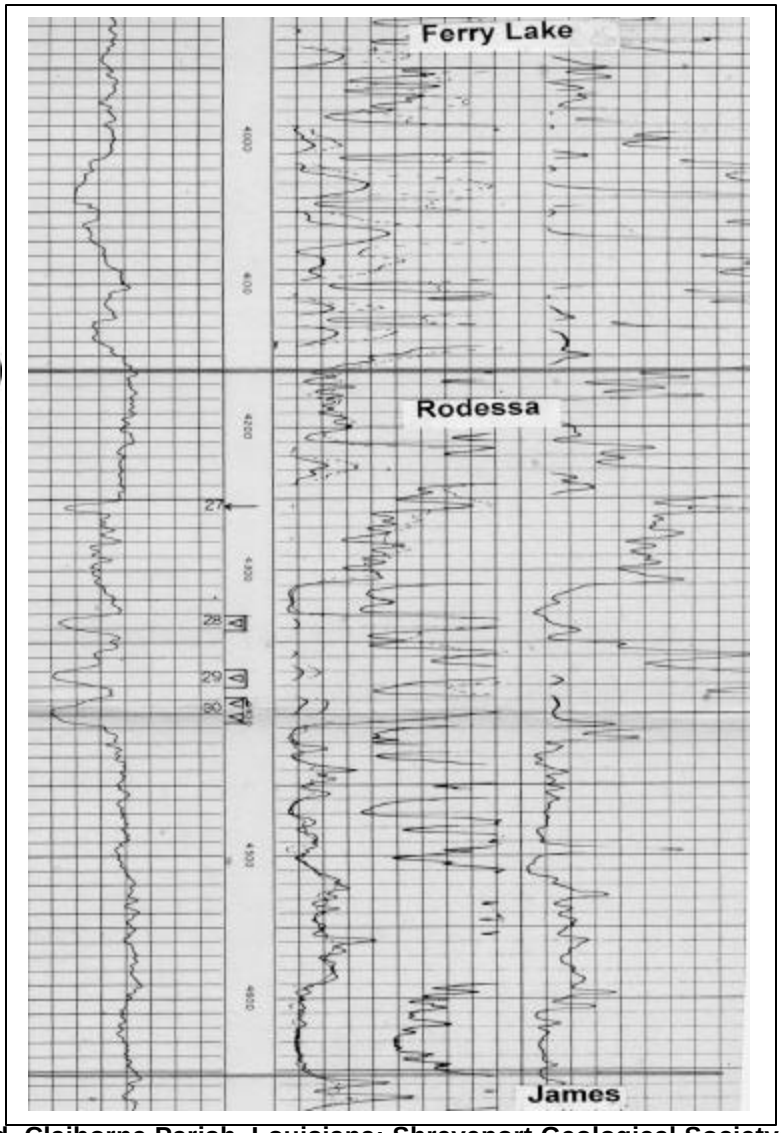
GROUP/FORMATION

TRINITY/RODESSA
(Reservoirs: Jeter, Gloyd, Fowler, Hill)

PARISHES

Caddo
Bossier
Webster
Claiborne
Lincoln
Bienville
De Soto

SELECTED LOG
Bossier/Sligo Field



LITHOLOGIC DESCRIPTION

Oolitic and crystalline limestones, lenticular fine-grained sandy limestone, anhydrite, coquinoid limestones and gray shales.

DEPOSITIONAL ENVIRONMENT

Shallow marine (transgressive).

RESERVOIR CONSIDERATIONS

Depth to top of pay: 4100' –6000'
Net pay: 10' – 30'
Porosity (Ø): 10 – 26 %
Permeability (k): 10 – 650 md
Drive Mechanism: water, gas expansion, solution gas.
API Gravity: 34º -41º , condensate, gas

PERTINENT PUBLICATIONS

Beckman, M.W. and P.A. Bloomer, 1953, Athens Field, Claiborne Parish, Louisiana: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. 2, p. 41-53.

Frizzel, L G., 1987, North Shongaloo - Red Rock Field, Hill Sand (Rodessa), Webster Parish, Louisiana: Shreveport Geological Society Report on Selected Oil and Gas Fields, ARK-LA-TEX and Mississippi, vol. Vll, p. 80-84.

Harris, R. A., 1951, Ada Field, Bienville and Webster Parishes, Louisiana: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. 1, p. 9-12.

Hennessy, R. B. and V. Provenza, 1984, The formulation of a development strategy for a Rodessa gas play in Eastern De Soto Parish, Louisiana: GCAGS Trans., v. 34, p. 63-66.

Roberts, J. L. and B. E.Lock, 1988, The Rodessa Formation in Bossier Parish Louisiana: lithofacies analysis of a hydrocarbon productive shallow water clastic-carbonate sequence: GCAGS Trans., v. 38, p. 103-111.

SERIES: LOWER CRETACEOUS

GROUP/FORMATION

TRINITY/JAMES

PARISHES

Bossier
Webster
Claiborne
Lincoln
De Soto
Bienville
Jackson

LITHOLOGIC DESCRIPTION

Sandy and chalky fossiliferous limestones and medium to fine-grained sandstones, interbedded with gray shales.

DEPOSITIONAL ENVIRONMENT

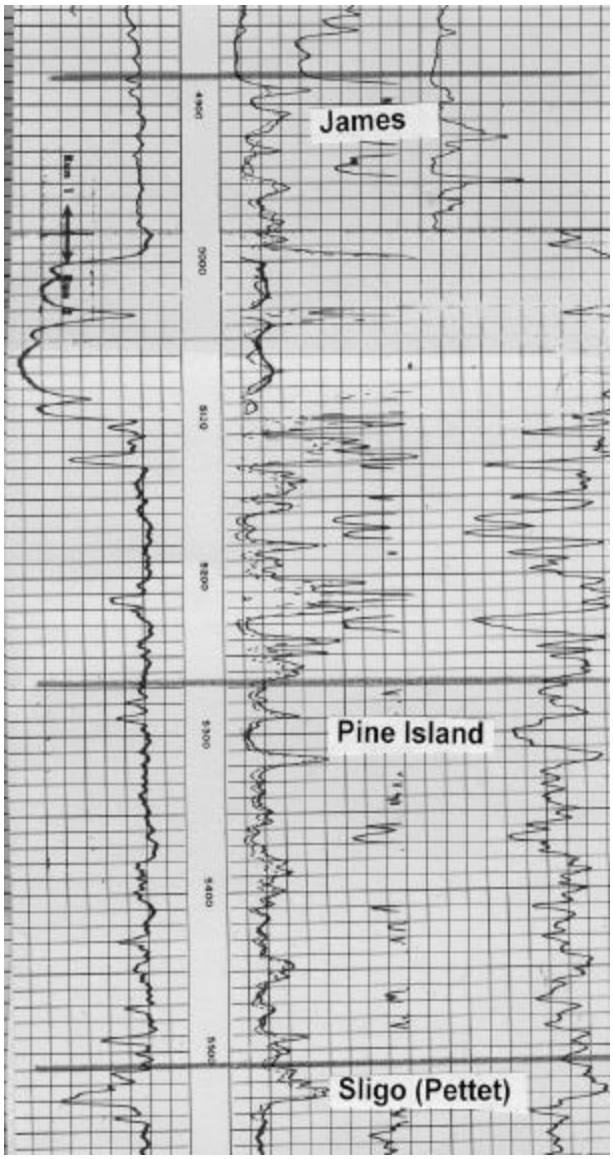
Shallow marine reef to deep stable shelf.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 4700' – 6000'
Net pay: 30' – 60'
Porosity (Ø): 10 – 15 %
Permeability (k): 6 - 100 md
Drive Mechanism: Dissolved gas
API Gravity: condensate, gas

SELECTED LOG

Bossier/Sligo Field



PERTINENT PUBLICATIONS

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Forgotson, J. M. 1957, Stratigraphy of the Comanchean Cretaceous Trinity Group: AAPG Bulletin, v. 41, p. 2328-2363.

Pollard, C. D., 1987, Regional depositional framework of the lower Cretaceous James limestone and its relationship to hydrocarbon accumulations in East Texas: Shreveport Geological Society Report on Selected Oil and Gas Fields, ARK-LA-TEX and Mississippi, vol. VII, p. 95-113.

SERIES: LOWER CRETACEOUS

GROUP/FORMATION

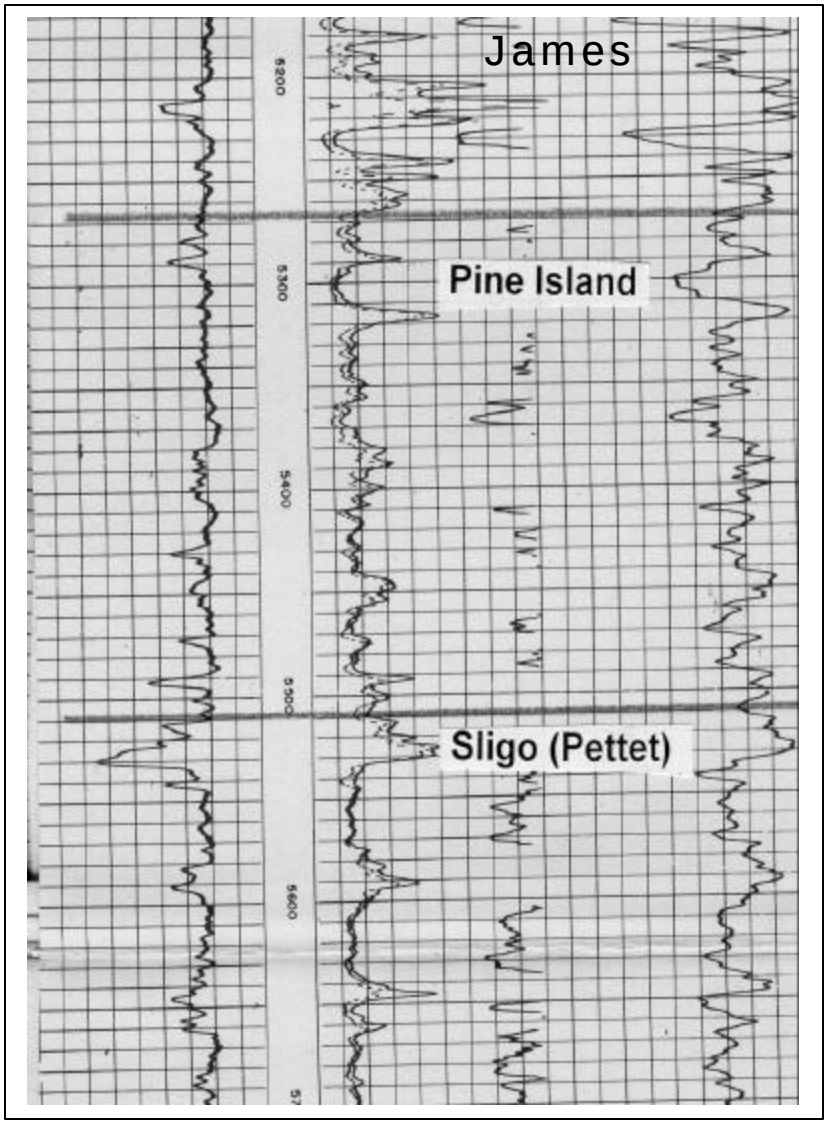
TRINITY/PINE ISLAND (Produces from the basal Causey, Hogg and Woodruff sand reservoirs)

PARISHES

Union
Lincoln
Jackson
Ouachita

SELECTED LOG

Bossier/Sligo Field



LITHOLOGIC DESCRIPTION

Calcareous black shale with interbedded fine-grained sandstone and minor crystalline limestone layers.

DEPOSITIONAL ENVIRONMENT

Lagoonal to nearshore marine

RESERVOIR CONSIDERATIONS

Depth to top of pay: 4000' - 7000'
Net pay: 30' – 60'
Porosity (Ø): 10 - 15 %
Permeability (k): 10 - 200 md
Drive Mechanism: water, dissolved gas.
API Gravity: 24º -30º , condensate to gas.

PERTINENT PUBLICATIONS

Breedlove, R. L., J. P. Jones and A. M. Jackson, 1953, Ruston Field, Lincoln Parish, Louisiana: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. lll, no.2, p. 87-94.

Whitfield, M., 1963, A subsurface study of the Pine Island Formation of North Central Louisiana: Shreveport Geological Society; Report on Selected North Louisiana and South Arkansas Oil and Gas Fields, vol. V, p. 19-49

Crump, J. H., 1953, Hico Field, Lincoln Parish: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. lll, no.2, p. 75-81.

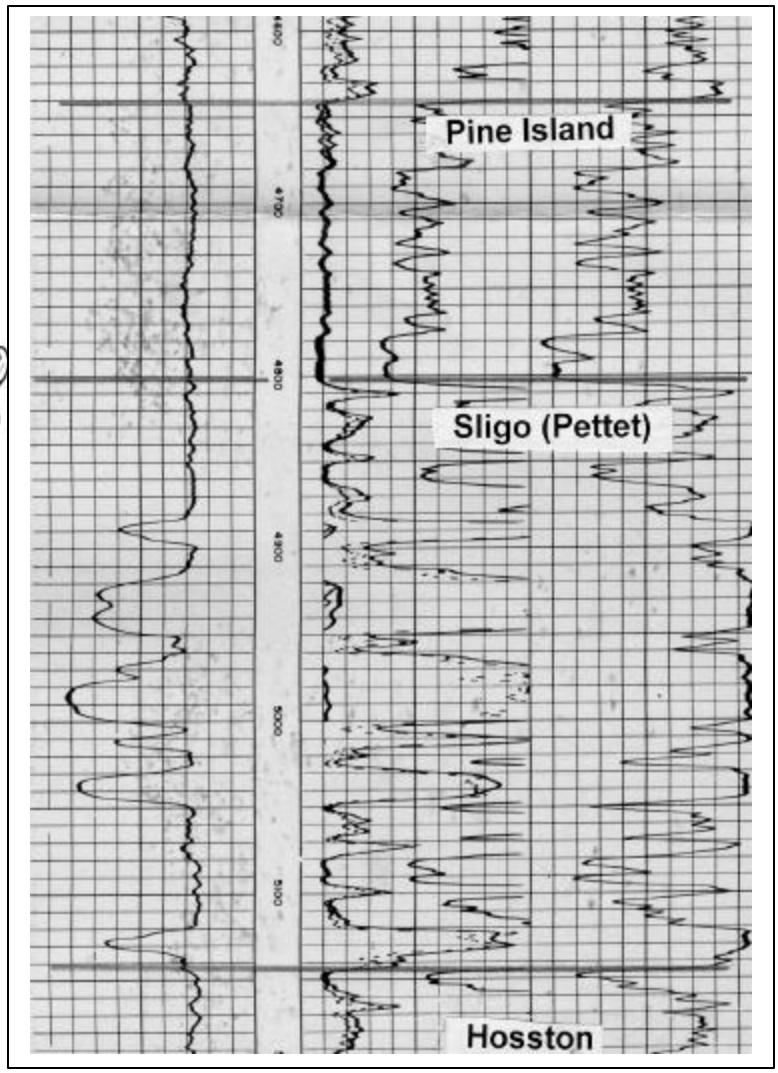
SERIES: LOWER CRETACEOUS

FORMATION

SLIGO/Pettet(13 reservoirs)

SELECTED LOG

Bossier/Sligo Field



PARISHES

Caddo, Bossier
Webster, Claiborne,
Lincoln
De Soto, Bienville
Natchitoches, Winn

LITHOLOGIC DESCRIPTION

Crystalline to oolitic limestone, calcareous sandstone, fossiliferous shale and anhydrite layers.

DEPOSITIONAL ENVIRONMENT

Shallow marine transgressive.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 5000' – 9000'
Net pay: 10' – 140'
Porosity (Ø): 16 – 20 %
Permeability (k): 9 – 100 md
Drive Mechanism: water, gas expansion
API Gravity: 25º - 44º , condensate, gas

PERTINENT PUBLICATIONS

Ahrnsbrak, S. L., 1983, The Sligo Formation (Lower Cretaceous), Panther Creek Field, Claiborne Parish Louisiana-deposition, porosity, development, and diagenesis: Louisiana State University, Master's Thesis.

Baily, J., 1978, Black Lake Field, Natchitoches Parish, Louisiana: GCAGS Trans., v. 28, p. 11-24.

Mitchell Tapping, H. J., 1981, Petrophysical properties of the Sligo formation of Northern Louisiana and Arkansas: GCAGS Trans., v. 31, p. 155-166.

Beckman, M.W. and P.A. Bloomer, 1953, Athens Field, Claiborne Parish, Louisiana: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. 2, p. 41-53.

Breedlove, R.L. and R. H. Ogden, 1955, A study of the Crain trend of the Pettet Formation in the Bethany area of Texas and Louisiana: GCAGS Trans., v. 5, p.

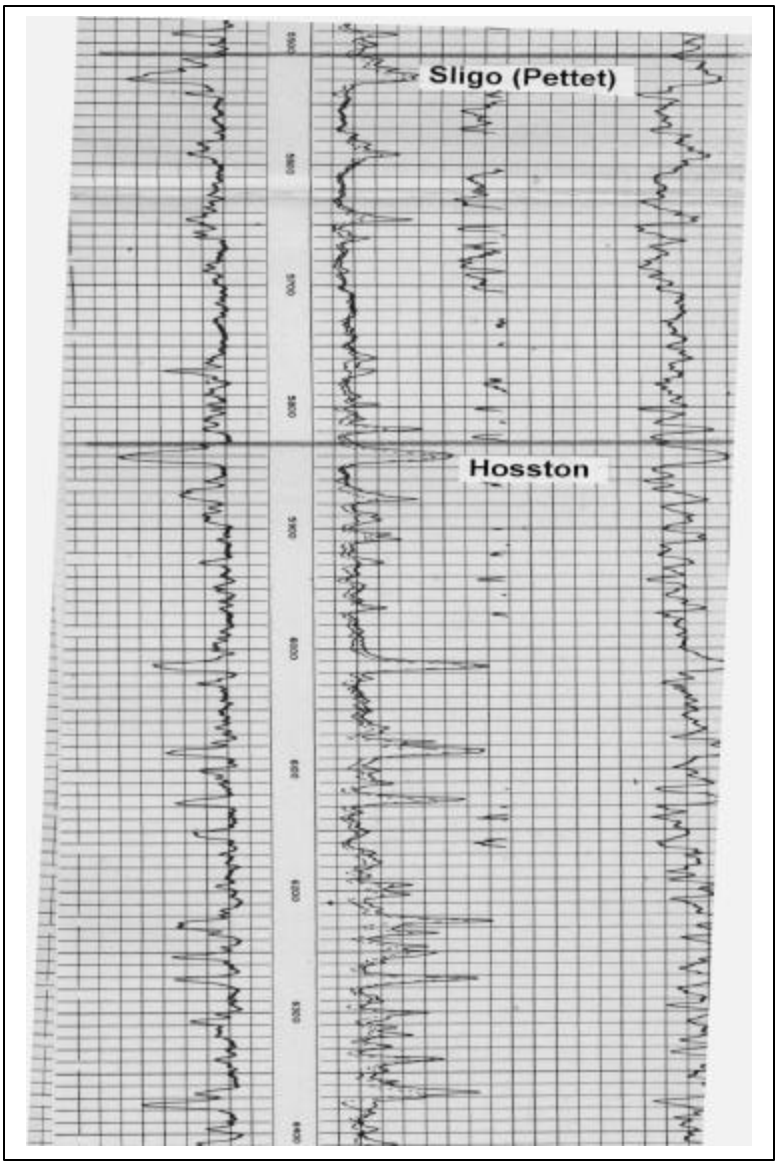
Nichols, J. L. 1958, Sligo stratigraphy of North Louisiana, Arkansas and East Texas: Shreveport Geological Society Reference Report on Certain Oil and Gas Fields, vol. IV, p. 1-24.

SERIES: LOWER CRETACEOUS

FORMATION

HOSSTON (Travis Peak of Texas)
(Approx. 40 reservoirs)

SELECTED LOG
Bossier/Sligo Field



PARISHES

Caddo, Bossier
Webster, Claiborne
Union, Lincoln
De Soto, Bienville,
Red River, Jackson
Ouachita, Caldwell

LITHOLOGIC DESCRIPTION

Alternating fine grained sandstones, siltstones, shales, silty sands, marine shales and limestone.

DEPOSITIONAL ENVIRONMENT

Fluvial-deltaic to shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 5000' – 12,000'
Net pay: 20' – 80'
Porosity (Ø): 10 – 26 %
Permeability (k): 10 – 250 md
Drive Mechanism: Gas expansion & Depletion drive
API Gravity: 30º - 37º , condensate, gas

PERTINENT PUBLICATIONS

Beckman, M.W. and P.A. Bloomer, 1953, Athens Field, Claiborne Parish, Louisiana: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. lll, no.2, p. 41-53.

Garner, N., C. Franks and J. Livingston, 1987, Cotton Plant Field-Hosston, T13N-R2E, Caldwell Parish Louisiana: Shreveport Geol. Soc., Report on Selected Oil & Gas Fields, v. 7, p. 62-65.

Gorrod, H. M., 1980, Clear Branch Field-Hosston, T-14 & 15N, R-1 & 2W, Jackson Parish, Louisiana: Shreveport Geol. Soc., Report on Selected Oil & Gas Fields, v. 6, p. 58-62.

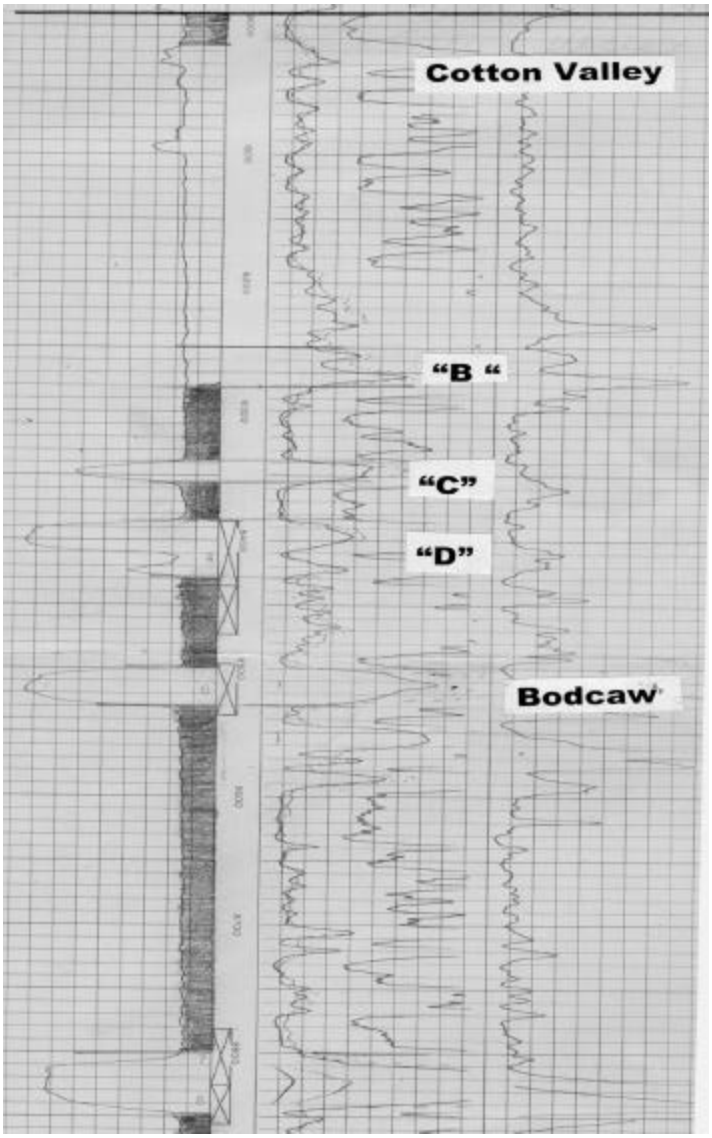
Saucier, A. E., R. J. Finley and S. P. Sutton, 1985. The Travis Peak (Hosston) Formation of East Texas and North Louisiana: SPE Paper # 13850, SPE/DOE Conference on low permeability reservoirs, Denver, p. 15.

SERIES: UPPER JURASSIC

GROUP/FORMATION

COTTON VALLEY/SCHULER
(45 RESERVOIRS)

SELECTED LOG
Webster/Cotton Valley Field



PARISHES

**Caddo, Bossier
Webster, Claiborne
Lincoln, Union,
Ouachita, De Soto,
Bienville, Winn**

LITHOLOGIC DESCRIPTION

Medium to fine-grained hard, fossiliferous sandstones and oolitic limestones.

DEPOSITIONAL ENVIRONMENT

**Shallow marine.
(Blanket sands and massive barrier bars)**

RESERVOIR CONSIDERATIONS

**Depth to top of pay: 7200' – 14,500'
Net pay: 10' – 60'
Porosity (Ø): 9 – 18 %
Permeability (k): 1 – 300 md
Drive Mechanism: Dissolved gas
API Gravity: 41º , condensate, gas**

PERTINENT PUBLICATIONS

Coleman, J. L. and C. J. Coleman, 1981, Stratigraphic, sedimentologic and diagenetic framework of the Jurassic Cotton Valley Terryville massive sandstone complex, North Louisiana: GCAGS Trans., v. 31, p. 71-80.

Collins, S. E., 1980, Jurassic Cotton valley and Smackover reservoir trends, East Texas, North Louisiana, and South Arkansas: AAPG Bulletin, v.64, no. 7, p. 1004-1013.

Eversull, L.G., 1985, Depositional Systems and distribution of Cotton Valley blanket sandstones in northern Louisiana: GCAGS Trans., v. 35, p. 49-57.

Mann, C. J. and W. A. Thomas, 1964, Cotton Valley Group (Jurassic) nomenclature, Louisiana and Arkansas: GCAGS Trans., v. 14, p. 143-152.

Zimmerman, R. K., 2000, Predicting a North Louisiana Jurassic pinnacle reef trend from palinspastic reconstruction: Basin Research Institute Bulletin, v. 9, p. 1-17.

SERIES: UPPER JURASSIC

GROUP/FORMATIONS

LOUARK/HAYNESVILLE-BUCKNER

PARISHES

Bossier
Webster
Claiborne
Lincoln

LITHOLOGIC DESCRIPTION

Fine-grained sandstones, shales, bedded anhydrite, and oolitic limestones.

DEPOSITIONAL ENVIRONMENT

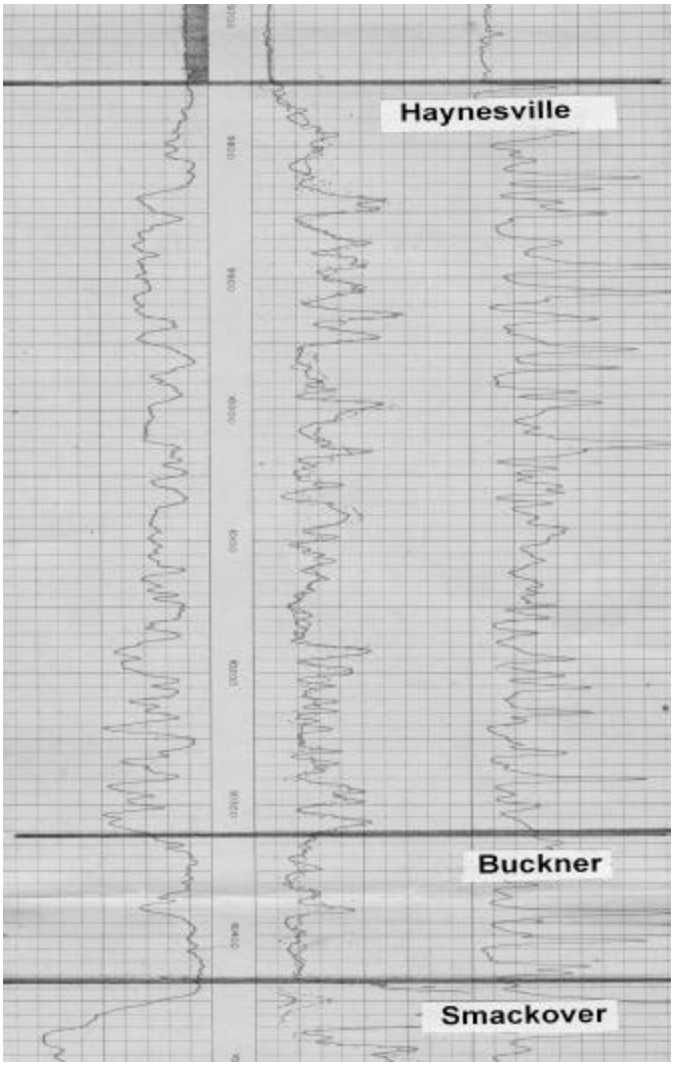
Shallow marine to deep-water submarine fan.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 9700' – 10,500'
Net pay: 30' – 45'
Porosity (Ø): 9 – 16 %
Permeability (k): 50 – 400 md
Drive mechanism: gas expansion, dissolved gas
API Gravity: 42º , condensate, gas

SELECTED LOG

Claiborne/Haynesville Field



PERTINENT PUBLICATIONS

Bishop, W. F., 1971, Geology of the upper member of Buckner Formation, Haynesville Field area, Claiborne Parish, Louisiana: AAPG Bulletin, v. 55, no. 4, p. 566-580.

Crow, N. B., 1958, Antioch Field, Claiborne Parish, Louisiana: Shreveport Geological Society Reference report of certain Oil and Gas Fields, vol. IV, p. 189-192.

Chapman, R. T., 1951, Haynesville Field, Claiborne Parish Louisiana; Jurassic developments: Shreveport Geological Society; Reference Report 0n Certain Oil and Gas Fields of North Louisiana, South Arkansa, Mississippi and Alabama, vol. 1, p. 18-27.

Palmer, J. T., 1953, East Haynesville Field Claiborne Parish, Louisiana: Shreveport Geological Society; Reference Report on Certain Oil and Gas Fields of North Louisiana, South Arkansas, Mississippi and Alabama, vol. lll, no.2 p. 63-73

Sartor, C. L., 1980, Northwest Colquitt Field, Buckner and Smackover Formations, Claiborne Parish, Louisiana: Shreveport Geological Society; Report on Selected Oil and Gas Fields of North Louisiana, South Arkansas, vol. Vl, p. 85-95.

SERIES: UPPER JURASSIC

GROUP/FORMATION

LOUARK/SMACKOVER (A, B, C, & Gray)

PARISHES

Bossier
Webster
Claiborne
Lincoln
Union

LITHOLOGIC DESCRIPTION

Oolitic and pisolitic limestone (mudstone, wackestone, packstone) with minor silty calcareous sandstone.

DEPOSITIONAL ENVIRONMENT

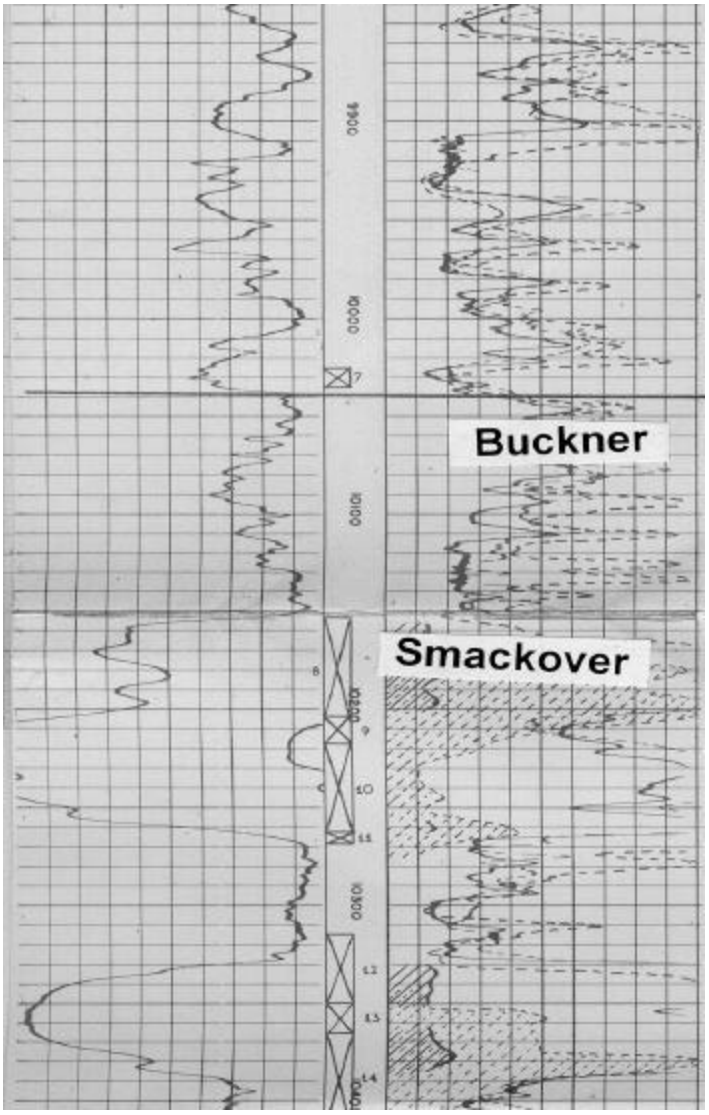
Shallow marine (beach, shoreface) to deep marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 10,000 – 12,500'
Net pay: 20 – 120'
Porosity (Ø): 11 – 22%
Permeability (k): 1 – 100 md.
Drive mechanism: dissolved gas
API Gravity: 42º -53º , condensate, gas

SELECTED LOG

Claiborne/Haynesville Field



PERTINENT PUBLICATIONS

Bishop, W. F., 1968, Petrology of the upper Smackover Limestone in north Haynesville Field, Claiborne Parish, Louisiana: AAPG Bulletin, v. 52, p. 92-128.

Dickenson, K. A., 1969, Upper Smackover carbonate rocks in northeastern Texas, and adjoining parts of Arkansas and Louisiana: GCAGS Trans., v. 19, p. 175-187.

Ellison, L. F., and M. Russo, 1976, South Serepta Field, (Smackover Gray Sand), Bossier and Webster Parishes, Louisiana: GCAGS Trans.: v. 26, p. 30-34.

Imlay, R. W., 1943, Jurassic Formations of the Gulf Region: AAPG Bulletin, v. 27, p. 1407-1533.

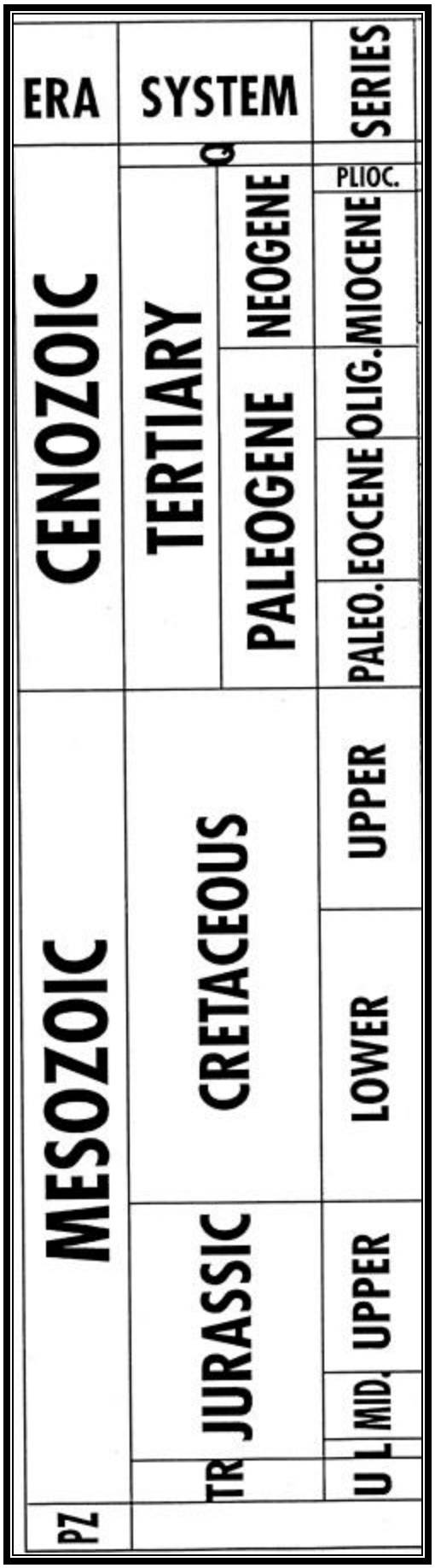
Moore, C. H., and Y. Druckman, 1981, Burial diagenesis and porosity evaluation, upper Jurassic Smackover: AAPG Bulletin, v.65, p. 587-628.

Zimmerman, R. K., 1992, Fractured Smackover Limestone in northeast Louisiana, implication for hydrocarbon exploitation: GCAGS Trans., v. 42, p. 249-260.

SOUTH LOUISIANA FORMATIONS

SOUTH LOUISIANA

Oil Production • **Gas Production** ☼



GROUPS FORMATIONS	FACIES	ENVIRONMENT
Citronelle(Goliad) • ☼		
Upper Miocene • ☼ Middle Miocene • ☼ Lower Miocene • ☼	ARENACEOUS FACIES (Sand & interbedded siltstone &, shale)	DELTAIC TO SHALLOW MARINE
Anahuac • ☼ Frio • ☼ Vicksburg Jackson Cockfield • ☼ Cook Mountain Sparta • ☼ Cane River	ARENACEOUS FACIES Sandstone & minor limestone	DELTAIC TO SLOPE
Wilcox (Carrizo) • ☼ Midway	ARENACEOUS SHALY	FLUVIAL-DELTAIC PRODELTA
Navarro Gp. Taylor Gp Austin Gp. • ☼	CALCAREOUS FACIES (Chalk, limestone)	SHALLOW MARINE
Eagle Ford Gp. Tuscaloosa Gp. • ☼	ARENACEOUS FACIES	

TRINITY GROUP: Paluxy, Mooringsport, Ferry Lake, Rodessa, James, Pine Island

NUEVO LEON GROUP: Sligo (Pettet), Hosston

COTTON VALLEY GROUP

LOUARK GROUP

LOUANN GROUP

PALEOZOIC

NO PRODUCTION IN THE LOWER CRETACEOUS AND JURASSIC INTERVALS IN SOUTH LOUISIANA

SERIES: PLEISTOCENE/PLIOCENE

GROUP/FORMATION

CITRONELLE/GOLIAD (30 reservoirs)

Index Fossils

1. Angulogerina
2. Lenticulina
3. Buliminella
4. Textularia x

PARISHES

Terrebonne
St. Martin
Iberia
Lafourche
Plaquemines

LITHOLOGIC DESCRIPTION

Interbedded sandstones and shales, in some areas interfingered with carbonate sequences.

DEPOSITIONAL ENVIRONMENT

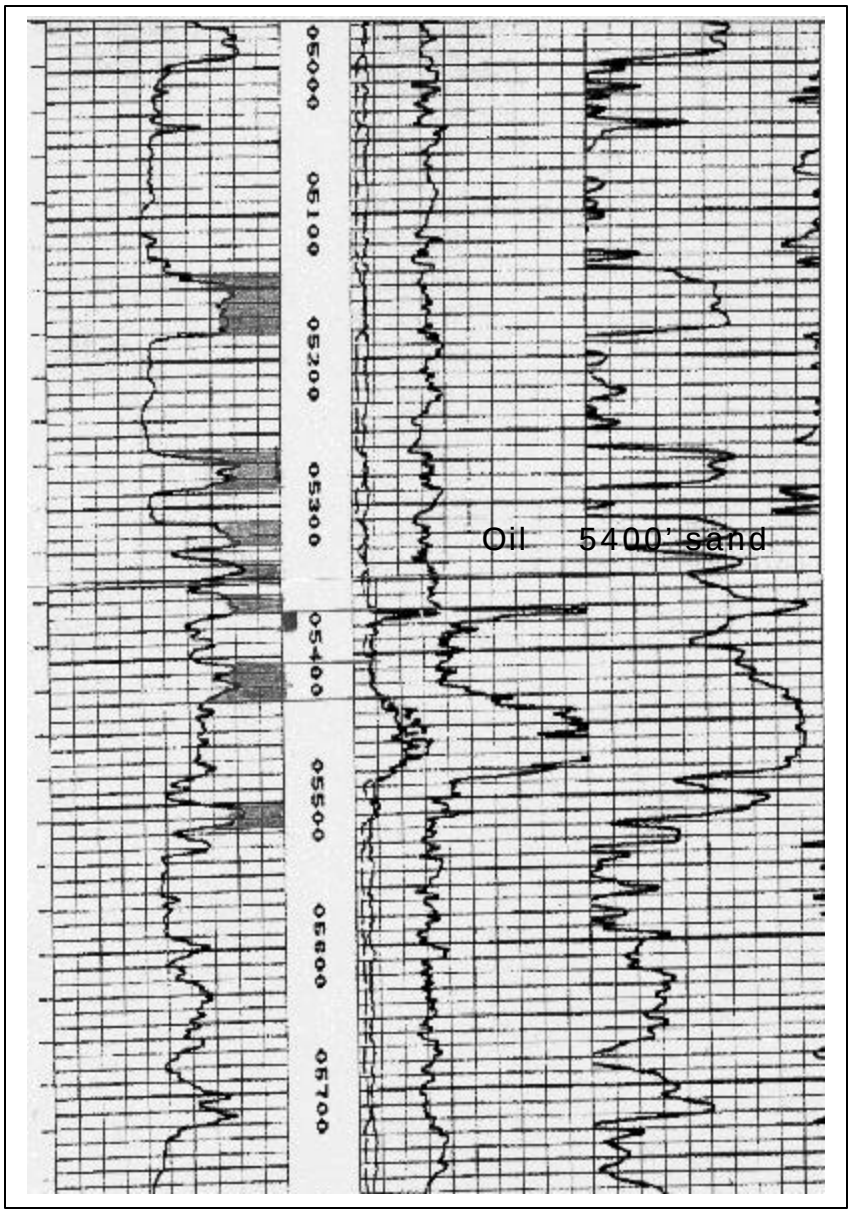
Alluvial, deltaic to shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 1500' – 8000'
Net pay: 10' –120'
Porosity (Ø): 27 – 34%
Permeability (k): 600 – 2200 md.
Drive Mechanism: Water drive
API Gravity: oil, condensate, gas

SELECTED LOG

Terrebonne/ Caillou Island Field



PERTINENT PUBLICATIONS

Akers, W. H. and Holck, A. J., 1957, Pleistocene beds near the edge of the continental shelf, southwestern Louisiana: GSA Bulletin, v. 68, p. 983-992.

Powell, L. C. and H. O. Woodbury, 1970, Possible future petroleum provinces in the United States Western Gulf Basin Province: GCAGS Trans., v. 20, p. 63-65.

Sabate, R. W., 1968, Pleistocene oil and gas in coastal Louisiana: GCAGS Trans., v. 18, p. 373-386.

Self, R. P., 1986, Depositional environments and gravel distribution in the Plio-Pleistocene Citronelle Formation of southeastern Louisiana: GCAGS Trans., v.36, p. 561-573.

Stringfield, V. F. and P. E. La Moreaux, 1957, Age of the Citronelle Formation in the Gulf Coastal Plain: AAPG Bulletin, v. 41, p. 742-746.

SERIES: MIOCENE

GROUP/FORMATION

Upper Miocene (Clovelly)

Index Fossils

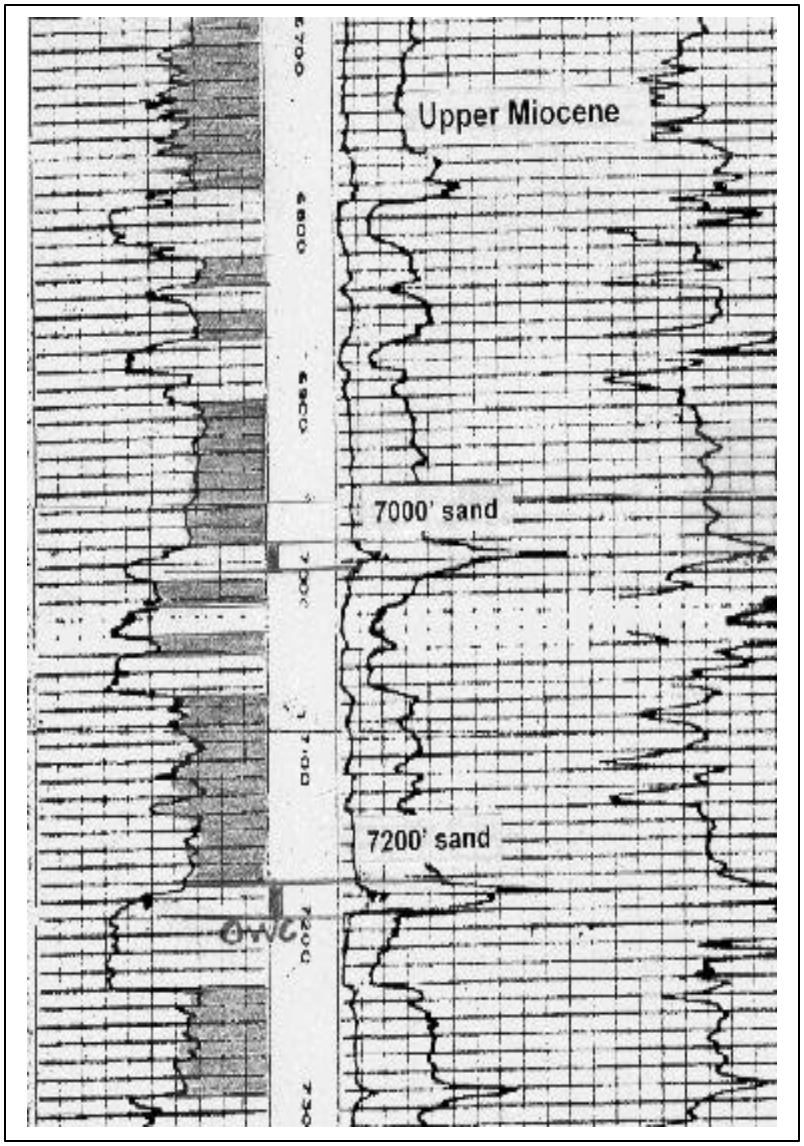
1. Rob E.
2. Big A
3. Cris K
4. Amph E
5. Cyclam 3

PARISHES

St. Mary
Terrebonne
Lafourche
Plaquemines
Iberia
Vermilion

SELECTED LOG

Plaquemines/ Bastion Bay Field



LITHOLOGIC DESCRIPTION

Alternating sandstones and shale.

DEPOSITIONAL ENVIRONMENT

Proximal and distal deltaic.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 5000' – 16,500'
Net pay: 10' – 80'
Porosity (Ø): 19 – 30 %
Permeability (k): 100 – 1000 md
Drive Mechanism: water, pressure depletion
API Gravity: Oil, condensate, gas

PERTINENT PUBLICATIONS

Curtis, D. M., 1970, Miocene deltaic sedimentation, Louisiana Gulf Coast: SEPM Special publication no. 15, p. 293-308.

Limes, L. L. and J. C. Stipe, 1959, Occurrence of Miocene oil in southern Louisiana: GCAGS Trans., v. 9, p.77-90.

Meltzer, l. H., 1966, The geology of the West Bastion Bay Field, Plaquemines Parish, Louisiana: GCAGS Trans., v. 16, p.199-210.

Spencer, J. A., T. K. Gillham, A. T. Kutch and A. D. Lombard, 1995, Improved efficiency and cost savings; horizontal drilling, south Florence Field, Vermilion Parish Louisiana: GCAGS Trans., v. 45, p.537-540.

Smith, R. and T. T. Tieh, 1984, Deposition, compaction, and mineralogical alteration of Miocene sandstones, south Louisiana: GCAGS Trans., v. 34, p. 247-254

SERIES: MIOCENE

GROUP/FORMATION

Middle Miocene (Duck Lake)

Index Fossils

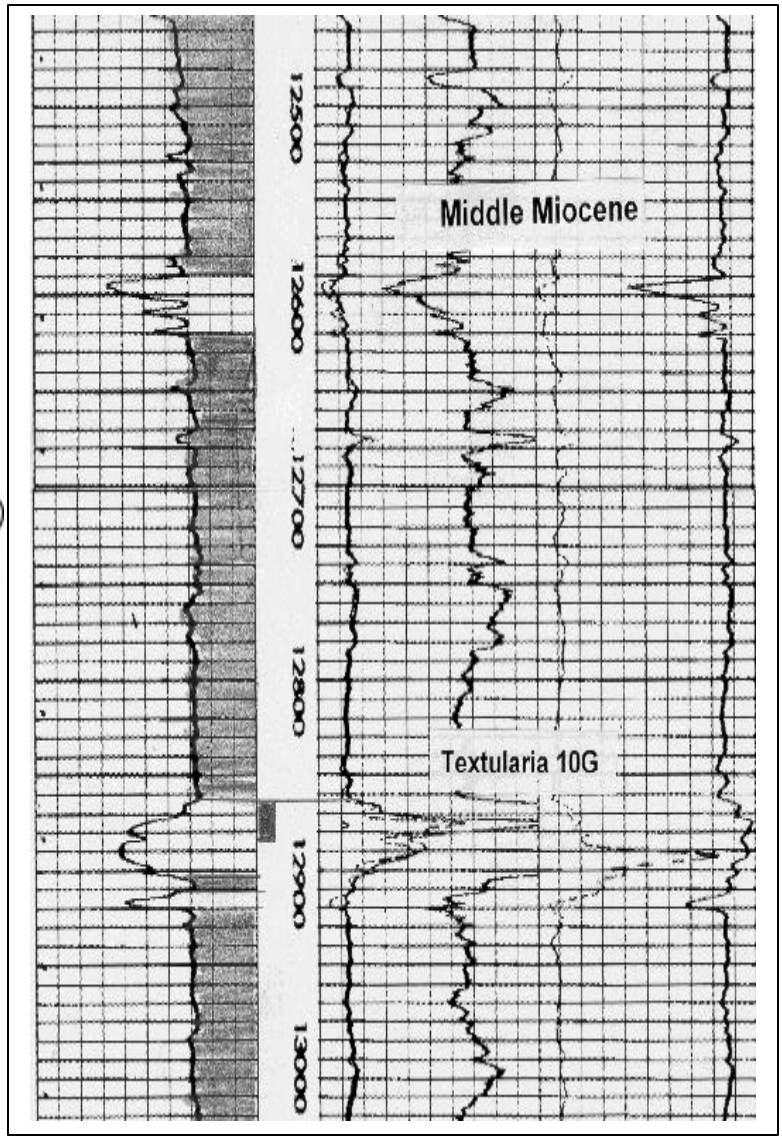
1. Big 2	5. Cib op
2. Tex W	6. Amph b
3. Big hum	7. Rob 43
4. Cris I	8. Operc

PARISHES

Cameron, Vermilion
Lafayette, Iberia
St. Mary, St. Charles
Jefferson Davis
Plaquemines
Lafourche,
Terrebonne

SELECTED LOG

Lafourche/ Lake Raccourci Field



LITHOLOGIC DESCRIPTION

Alternating thick sandstones and shales.

DEPOSITIONAL ENVIRONMENT

Proximal to distal deltaic.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 6500' – 18,000'
Net pay: 10' – 150'
Porosity (Ø): 20 – 35 %
Permeability (k): 300 – 1100 md
Drive Mechanism: Water drive
API Gravity: oil, condensate, gas

PERTINENT PUBLICATIONS

Bates, F. W., R. P. Copeland, and M. W. Bates, 1970, Belle Isles Field, St. Mary Parish: Typical Oil and Gas Fields of Southwest Louisiana, vol. II, p. 5–5c.

Rainwater, E. H., 1964, Regional stratigraphy of the Gulf Coast Miocene: GCAGS Trans., v. 14, p. 81-124.

Thorn, K. L., R. K. Novell, and G. C. Flowers, 1991, Middle Miocene stratigraphic traps, southwest Manila Village Field, Louisiana: GCAGS Trans., v. 41, p. 611-626.

Thorsen, C. E., 1964, Miocene lithofacies in Southeastern Louisiana: GCAGS Trans., v. 14, p.193-201.

SERIES: MIOCENE

GROUP/FORMATION

Lower Miocene (Napoleonville)

Index Fossils

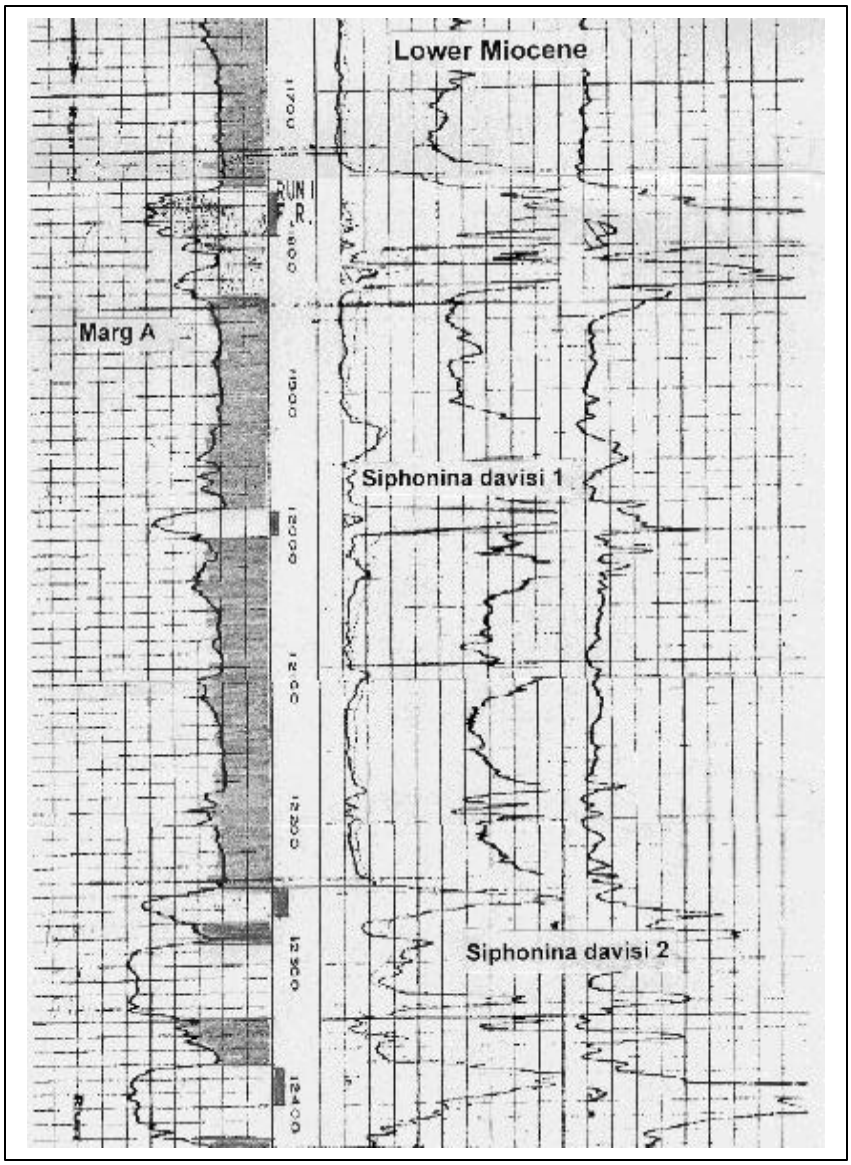
1. Disc B
2. Rob chambersi
3. Marg A
4. Siph dav
5. Plan palm
6. Liebusella

PARISHES

Cameron
Vermilion
Iberia
St. Martin
St. Mary
Assumption
St. James
Iberville

SELECTED LOG

St. Mary/ Jeanerette Field



LITHOLOGIC DESCRIPTION

Thick sandstones and alternating shales.

DEPOSITIONAL ENVIRONMENT

Proximal to distal deltaic to slope.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 10,000' – 17,500'
Net pay: 10' – 150'
Porosity (Ø): 22 – 30 %
Permeability (k): 100 – 2500 md
Drive Mechanism: Water drive
API Gravity: Oil, condensate, gas

PERTINENT PUBLICATIONS

Boriskie, P. E., 1960, Lac Blanc Field, Vermilion Parish, Louisiana: GCAGS Trans., v., 10, p. 93-105.

Edwards, M. B., 1994, Enhancing sandstone reservoir prediction by mapping erosional surfaces, lower Miocene deltas, south Louisiana Gulf Coast Basin: GCAGS Trans., v. 44, p. 205-215.

Green, H. C., 1959, Sedimentation and structure of the Planulina Abbeville trend South Louisiana, GCAGS Trans., v. 9, p. 91-103.

Sloane, B. J., 1971, Recent developments in Miocene Planulina gas trends of South Louisiana: GCAGS Trans., v. 21, p. 199-210.

Steinhoff, R.O., 1964, The West White lake field, Vermilion Parish Louisiana and its relationship to alignments of oil and gas fields in South Louisiana: GCAGS Trans., v. 14, p. 153-178.

SERIES: OLIGOCENE

FORMATION

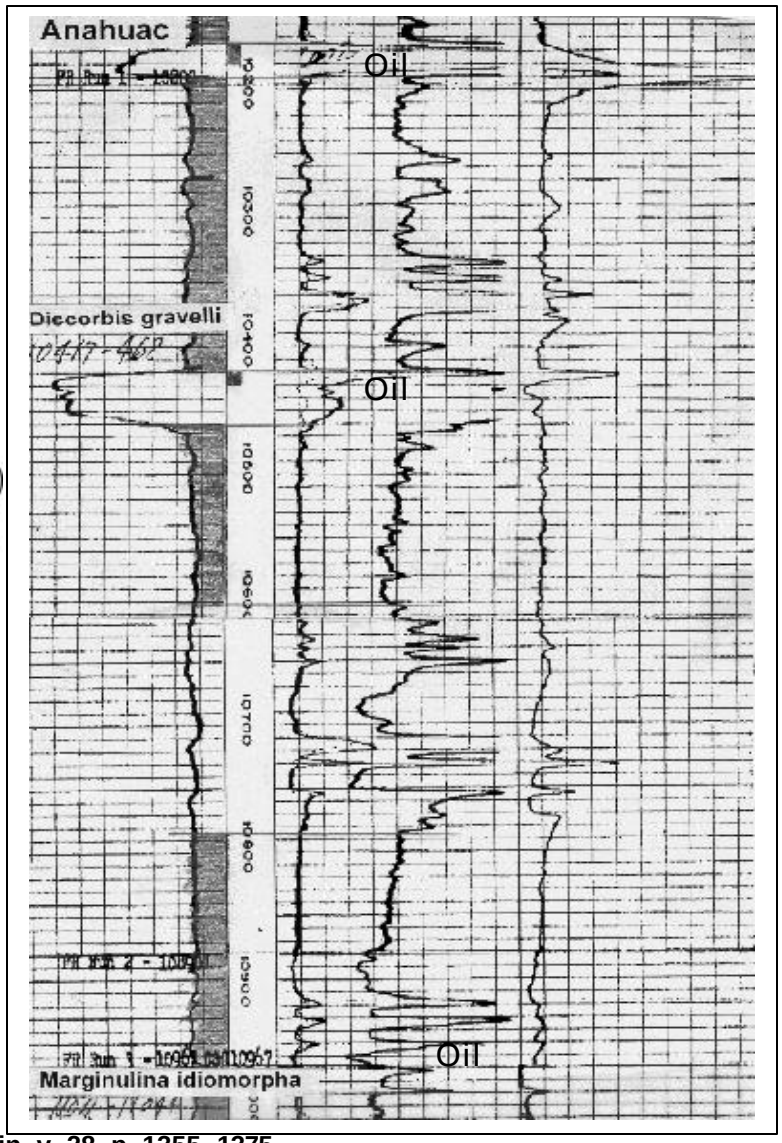
ANAHUAC (73 reservoirs)

Index Fossils

1. Disc gravelli
2. Het
3. Bol perc
4. Marg idi
5. Marg vag
6. Marg 7 howei

SELECTED LOG

Lafayette/ Duson Field



PARISHES

Cameron
Jefferson Davis
Vermilion, Acadia
St. Landry, Lafayette
St. Martin, Iberia
Iberville, Assumption
Ascension

LITHOLOGIC DESCRIPTION

Alternating sandstones and shale.

DEPOSITIONAL ENVIRONMENT

Proximal and distal deltaic to slope.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 6600' – 15,000'
Net pay: 10' – 75'
Porosity (Ø): 20 –30 %
Permeability (k): 100 – 2800 md
Drive Mechanism: Water, pressure depletion
API Gravity: oil, condensate, gas

PERTINENT PUBLICATIONS

Ellisor, A. C., 1944, Anahuac Formation: AAPG Bulletin, v. 28, p. 1355- 1375.

Brunhild, S. R., 1984, Depositional and structural reconstruction of southwestern Louisiana Oligo-Miocene strata: a temporal-spacial approach: GCAGS, Trans., v. 34, p.9-31.

Burke, R. A., 1958, Summary of oil occurrence in Anahuac and Frio Formations of Texas and Louisiana: AAPG Bulletin, v. 42, no. 12, p. 2935-2950.

Krutack, P. R. and P. Beron, 1990, Heterostegina zone – a shallow Anahuac (Late Oligocene – Early Miocene) oil frontier in southern Louisiana and Mississippi: GCAGS Trans., v.40, p. 397-409.

Prescott, M. P., 1988, The south Lake Arthur Field, and the occurrence of buried structures along the Oligocene trend of southwestern Louisiana: GCAGS Trans., v. 38, p. 19-25.

Warren, A. D., 1957, The Anahuac and Frio sediments in South Louisiana: GCAGS Trans., v. 7, p. 221-237.

SERIES: OLIGOCENE

FORMATION

UPPER FRIO (55 reservoirs)

Index Fossils

1. Cam A
2. Miogyp
3. Cibb hazz
4. Cris H (Hays)

PARISHES

Calcasieu
Cameron
Vermilion
Jefferson Davis
Acadia
Lafayette
St. Martin

LITHOLOGIC DESCRIPTION

Alternating sandstones and shales with occasional limestone beds.

DEPOSITIONAL ENVIRONMENT

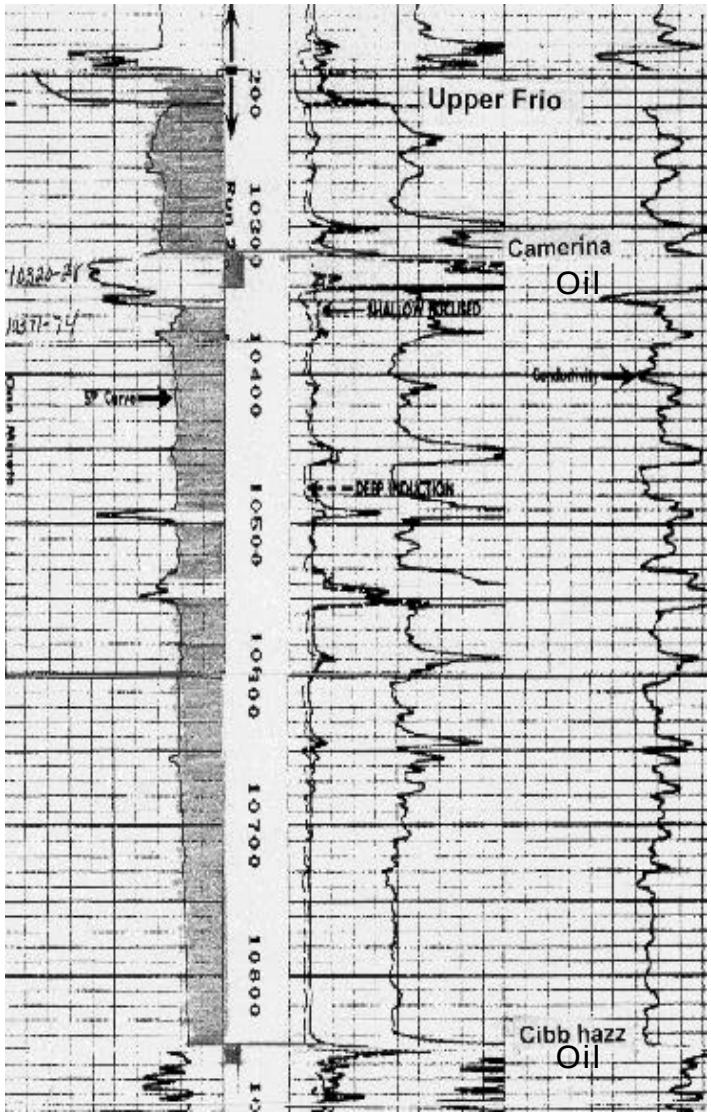
Distal deltaic to slope.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 9800 – 17,000'
Net pay: 15' - 200'
Porosity (Ø): 18 – 30 %
Permeability (k): 130 – 500 md
Drive Mechanism: gas cap, pressure deplet.
API Gravity: oil, condensate, gas

SELECTED LOG

Acadia/ Midland Field



PERTINENT PUBLICATIONS

Coffrey, G. H., 1975, Frio Stratigraphic traps in Krotz Springs Field, southwest Louisiana: GCAHS Trans., v. 25, p. 305-314.

Harrison, S. W. and R. A. Anderson, 1966, A sub-regional report of the Camerina zone in southwest Louisiana: GCAGS Trans., v. 16, p. 7-12.

Lafayette Geological Society Study Group, 1962, The Camerina and Cibicides hazzardi stratigraphic intervals of southwest Louisiana: GCAGS Trans., v. 12, p. 47-61

Smith N. E., 1990, The Camerina A – Miogypsinoides A deposited patterns of southwest Louisiana: GCAGS Trans., v. 40. p. 797-805.

Spillers, J. P., 1965, Distribution of hydrocarbons in South Louisiana by types of traps and trends-Frio and younger sediments: GCAGS Trans., v. 15, p. 37-39.

SERIES: OLIGOCENE

FORMATION

MIDDLE FRIO (approx. 39 reservoirs)
(Hackberry Fm.)

Index Fossils

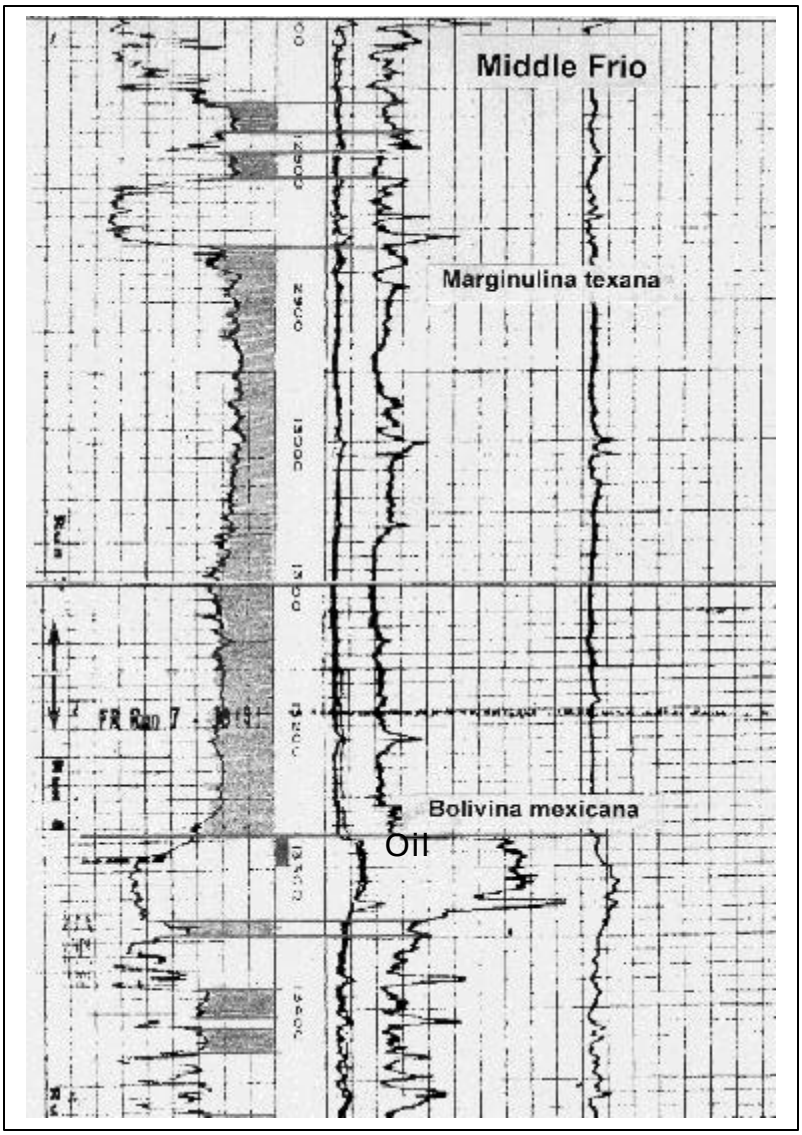
1. Marg tex
2. Bol mex
3. Uvig israel

PARISHES

Calcasieu
Cameron
Vermilion
Jefferson Davis
Acadia
St. Landry
St. Martin
Pointe Coupee

SELECTED LOG

Lafayette/ Duson Field



LITHOLOGIC DESCRIPTION

Alternating sandstones and shales.

DEPOSITIONAL ENVIRONMENT

Distal deltaic to slope.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 7500' – 15,000'
Net pay: 10' – 100'
Porosity (Ø): 21 –32 %
Permeability (k): 100 – 1200 md
Drive Mechanism: solution gas
API Gravity: 33º , condensate, gas

PERTINENT PUBLICATIONS

Benson, P. H., 1971, Geology of the Oligocene Hackberry trend, Gillis English Bayou – Manchester area, Calcasieu Parish, Louisiana: GCAGS Trans., v. 21. p. 1-14.

Bread, S. Q., A. D. Callender and M.J. Nault, 1999, Foraminiferal biofacies, local zonation and paleobathymetry of the Hackberry sequence (Middle Oligocene Frio) of southwestern Louisiana: GCAGS Trans., v. 49, p. 122-131.

Cassey, S. P. and R. E. Jacobs, 1992, Oligocene Hackberry Formation of southwest Louisiana, sequence stratigraphy, sedimentology, and hydrocarbon potential: AAPG Bulletin, v. 76, no. 5, p. 589-606.

Harrison, F. W. Jr., 1995, The Lafayette Bol Mex Basin, recent exploration and drilling activity: GCAGS Trans., v. 45, p. 245-250.

Paine W. R., 1971, Petrology and sedimentation of the Hackberry sequence of southwest Louisiana: GCAGS Trans., v. 21. p. 37-55.

SERIES: OLIGOCENE

FORMATION

LOWER FRIO (Approx. 34 reservoirs)

Index Fossils

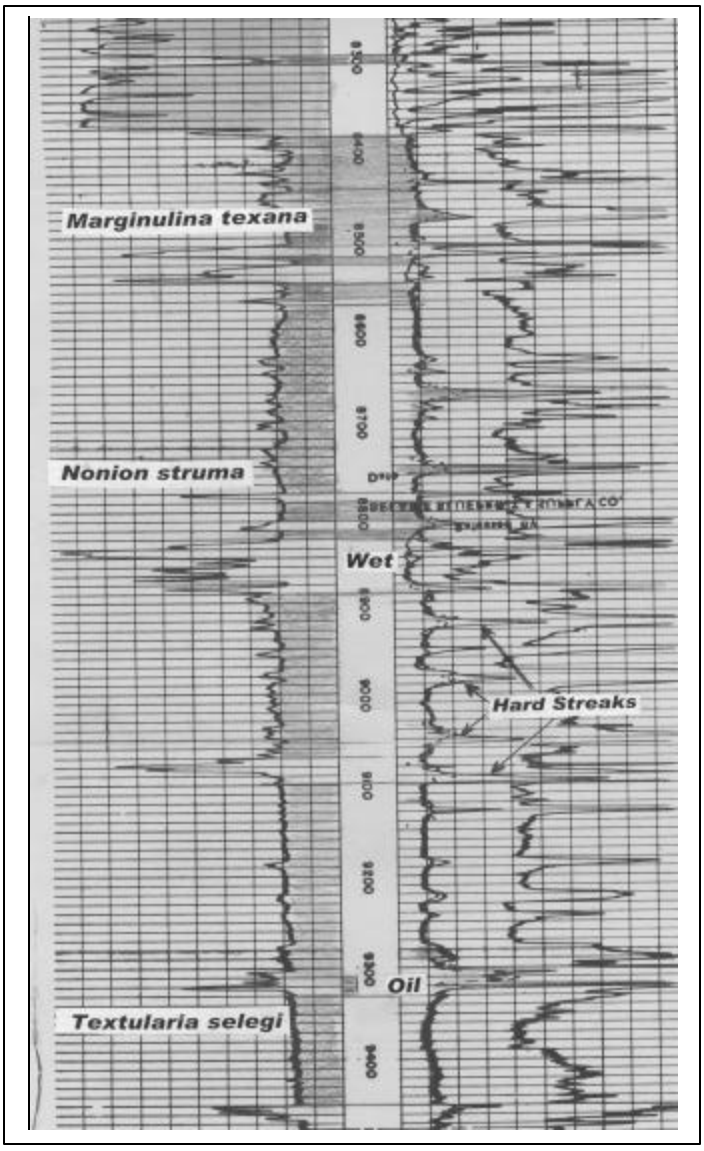
1. **Nonion struma**
2. **Nodosaria blan**
3. **Disc D**
4. **Tex selegi**

PARISHES

Jefferson Davis
Acadia
Lafayette
St. Landry
Iberville
Pointe Coupee

SELECTED LOG

West Baton Rouge/ Lobdell Field



LITHOLOGIC DESCRIPTION

Alternating sandstones and shales.

DEPOSITIONAL ENVIRONMENT

Distal deltaic to slope.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 8000' - 14,600'
Net pay: 10' – 150'
Porosity (Ø): 15 – 33 %
Permeability (k): 100 – 2500 md
Drive Mechanism: water, solution gas
API Gravity: 34º , condensate, gas

PERTINENT PUBLICATIONS

Coffrey, G. H., 1975, Frio Stratigraphic traps in Krotz Springs Field, southwest Louisiana: GCAHS Trans., v. 25, p. 305-314.

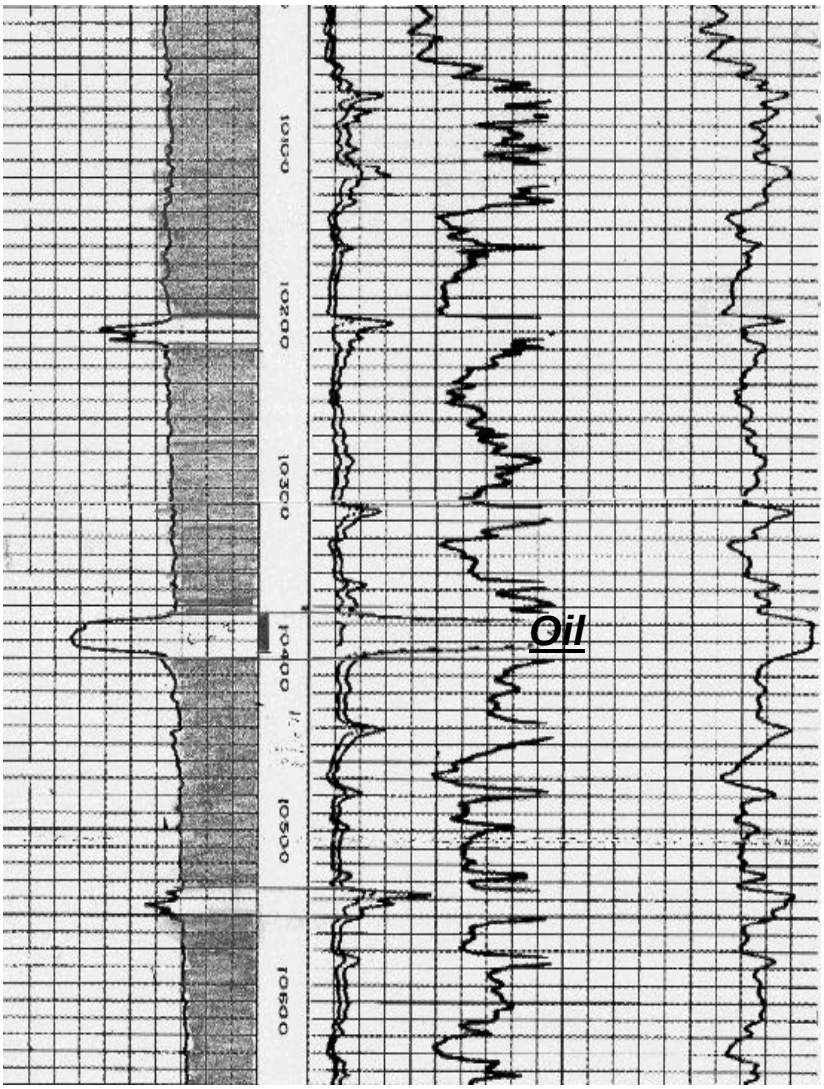
Paine, W. R., 1956, The Nonion struma Lower Frio wedges of Acadia Parish: GCAGS Trans., v. 6, p. 153-160.

Paine, W. R., 1958, Frio sedimentation patterns in Acadia and Jefferson Davis Parishes of Louisiana: GCAGS Trans., v. 8, p. 101-105.

SERIES: EOCENE

SELECTED LOG

St. Landry/ Opelousas Field



FORMATION

COCKFIELD (Yegua of Texas)

PARISHES

Beauregard
Allen
Evangeline
St. Landry
Pointe
Coupee

LITHOLOGIC DESCRIPTION

Alternating fossiliferous sandstone and shales.

DEPOSITIONAL ENVIRONMENT

Shallow marine-shelf.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 9600' – 11,300'
Net pay: 20' – 40'
Porosity (Ø): 20 – 30 %
Permeability (k): 125 – 500 md
Drive Mechanism: water drive
API Gravity: Oil, condensate, gas

PERTINENT PUBLICATIONS

Bornhauser, M., 1950, Oil and gas accumulation controlled by sedimentary facies in Eocene Wilcox to Cockfield Formations, Louisiana Gulf Coast: AAPG Bulletin, v. 34, p. 1887-1896.

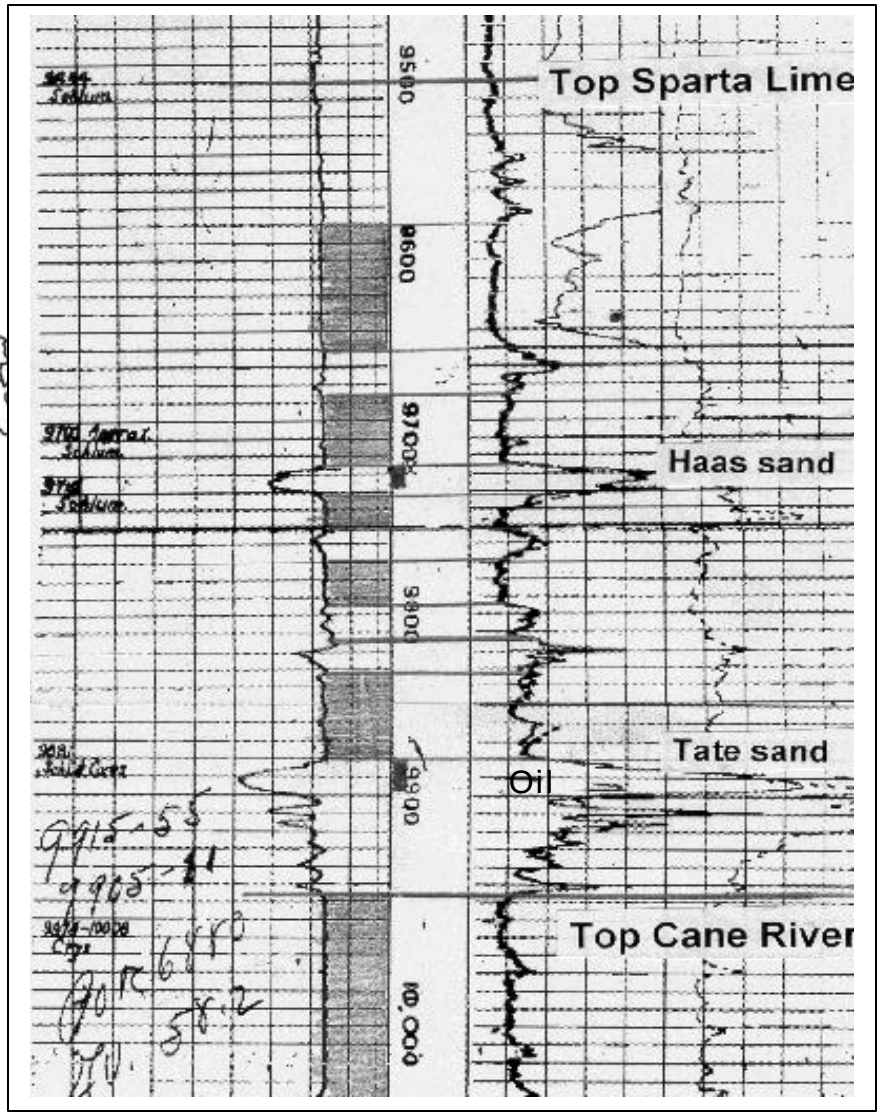
Lautier, J., 1981, Geology of the subsurface Eocene Cockfield Formation in southern Allen Parish, Louisiana: GCAGS Trans., v.31, p. 125-131.

Lock, B. E., and S. L. Voorhies, 1988, Sequence stratigraphy as a tool for interpretation of the Cockfiled/Yegua in southwestern Louisiana: GCAGS Trans., v. 38, p. 123-131.

SERIES: EOCENE

SELECTED LOG

Evangeline/ Redell Field



FORMATION

SPARTA

PARISHES

Beauregard
Allen
Evangeline
St. Landry
Pointe Coupee

LITHOLOGIC DESCRIPTION

Alternating fossiliferous sandstones and shales.

DEPOSITIONAL ENVIRONMENT

Shallow marine to shelf.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 11,000' – 12,000'
Net pay: 10' – 30'
Porosity (Ø): 22 – 25 %
Permeability (k): 200 – 300 md
Drive Mechanism: water drive
API Gravity: 42°, condensate, gas

PERTINENT PUBLICATIONS

Krutack, P.R., and W. C. Kimbrell, 1991, Sparta B sandstone (Eocene), Fordoche Field, Pointe Coupee Parish, Louisiana: GCAGS Trans., v. 41, p. 383-404.

Lemione, R. C., C. Moslow, T. F. Sassen, and R. Ferrell, 1988, Sparta sandstones, future exploration in South – Central Louisiana: AAPG Bulletin, v. 73, no. 3, p. 379.

SERIES: PALEOCENE

GROUP/FORMATION

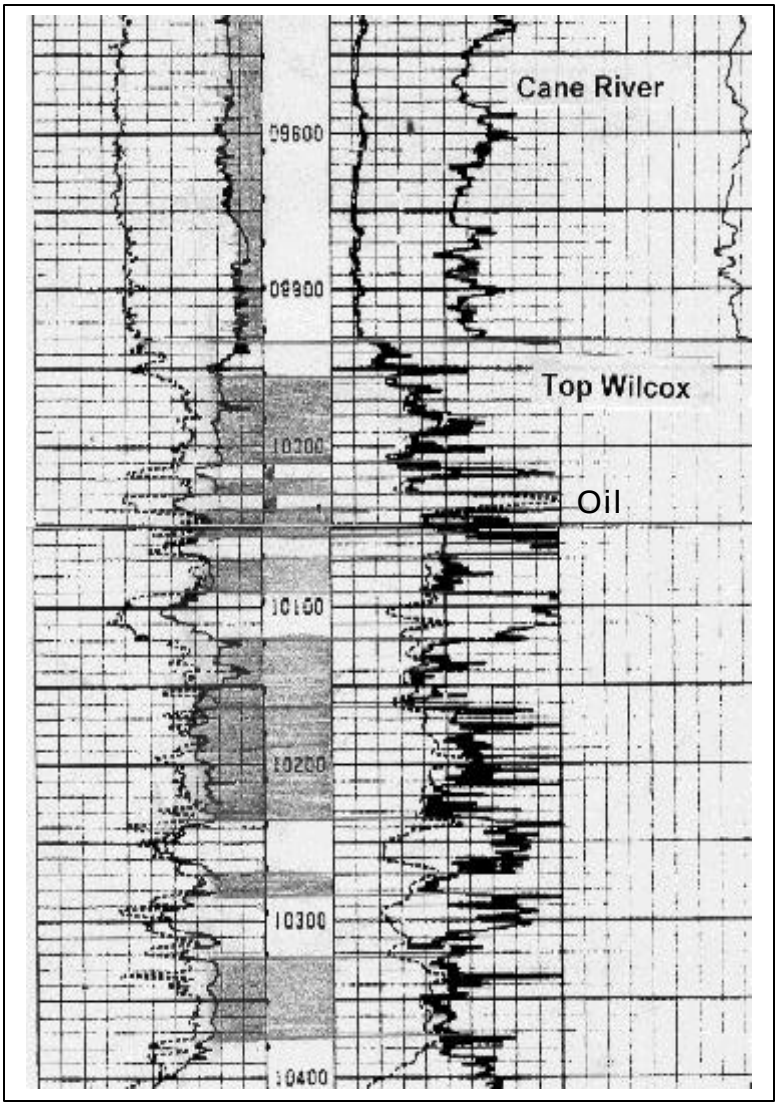
WILCOX (Approx. 11 reservoirs)

Index Fossils

1. Globorotalia wx
2. Cytheridea sab
3. Globorotalia pseudo

SELECTED LOG

Evangeline/ Ville Platte Field



PARISHES

Beauregard
Evangeline
St. Landry
Pointe Coupee
Livingston

LITHOLOGIC DESCRIPTION

Alternating very fine to fine grained sandstone and shale.

DEPOSITIONAL ENVIRONMENT

Shallow marine.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 10,000' – 14,000'
Net pay: 12' – 25'
Porosity (Ø): 15 – 27 %
Permeability (k): 100 – 600 md
Drive Mechanism: Dissolved gas
API Gravity: 45º , condensate, gas

PERTINENT PUBLICATIONS

Berg, C. R. and R. R. Berg, 1996, Water saturations in Wilcox shaly sandstone, Fordoche Field, Pointe Coupee, Parish, Louisiana: GCAGS Trans., v. 46, p. 41- 45.

Fillon, R. H., P. N. Lawless, and R. G. Lyfton, 1998, Chronostratigraphy of the expanded Lower Paleogene wedge in southern Louisiana: an identity crisis for the Wilcox: GCAGS Trans., v. 48, p. 53-65.

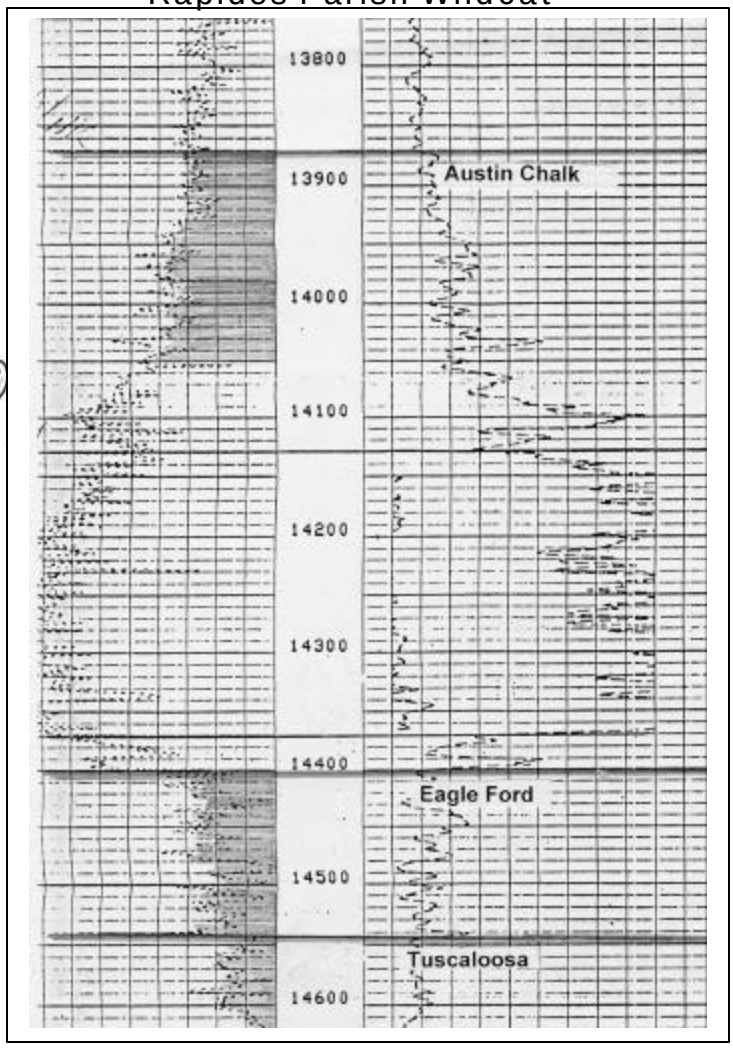
Howe, H. H., 1962, Subsurface geology of St. Helena, Tangipahoa, Washington and St. Tammany Parishes, Louisiana: GCAGS Trans., v. 12, p. 121-155.

Self, G. A., S. Q. Bread, H. P. Rael, et. Al., 1986, Lockhart Crossing Field: new Wilcox trend in southeast Louisiana: AAPG Bulletin, v.70, p. 501-515.

SERIES: UPPER CRETACEOUS

SELECTED LOG

Rapides Parish Wildcat



GROUP/FORMATION

AUSTIN/AUSTIN CHALK

PARISHES

Vernon, Rapides
Avoyelles
Pointe Coupee
West/East Feliciana
East Baton Rouge
Livingston,
Tangipahoa
St. Tammany

LITHOLOGIC DESCRIPTION

Interbedded massive chalk, dark colored foraminiferal biomicrite, and bentonitic marl

DEPOSITIONAL ENVIRONMENT

Restricted to basinal ramp setting.

RESERVOIR CONSIDERATIONS

Depth to top of pay: 12,000' – 17,000'
Net pay: 50' – 140'
Porosity (Ø): 2- 5%
Permeability (k): 0.05 – 2 md
Drive Mechanism: water, solution gas
API Gravity: oil, condensate, and gas

PERTINENT PUBLICATIONS

Koen, A.D., 1996, Horizontal technology helps spark Louisiana's Austin chalk trend: Oil & Gas Journal, v.94, no. 18, p. 15-19.

Corbett, K. P., M. Friedman, and J. Spang, 1987, Fracture development and mechanical stratigraphy of Austin Chalk, Texas: AAPG Bulletin, v. 71, p. 17 –28.

Zimmerman, R. K., 1993, Fracture genesis in the Austin chalk of Central Louisiana; implications for hydrocarbon exploration (abs): AAPG Annual Convention Proceedings, New Orleans, Louisiana.

Zimmerman, R. K., 1997, General aspects of probable fracture genesis in the Austin chalk of Louisiana's Florida Parishes: Basin Research Institute Bulletin, v. 7, p. 25-39.

Zimmerman, R. K., 1998, Chronology of oil generation in Louisiana's Fractured Austin Chalk deep horizontal drilling trend: GCAGS Trans., v. 48, p. 517-525.

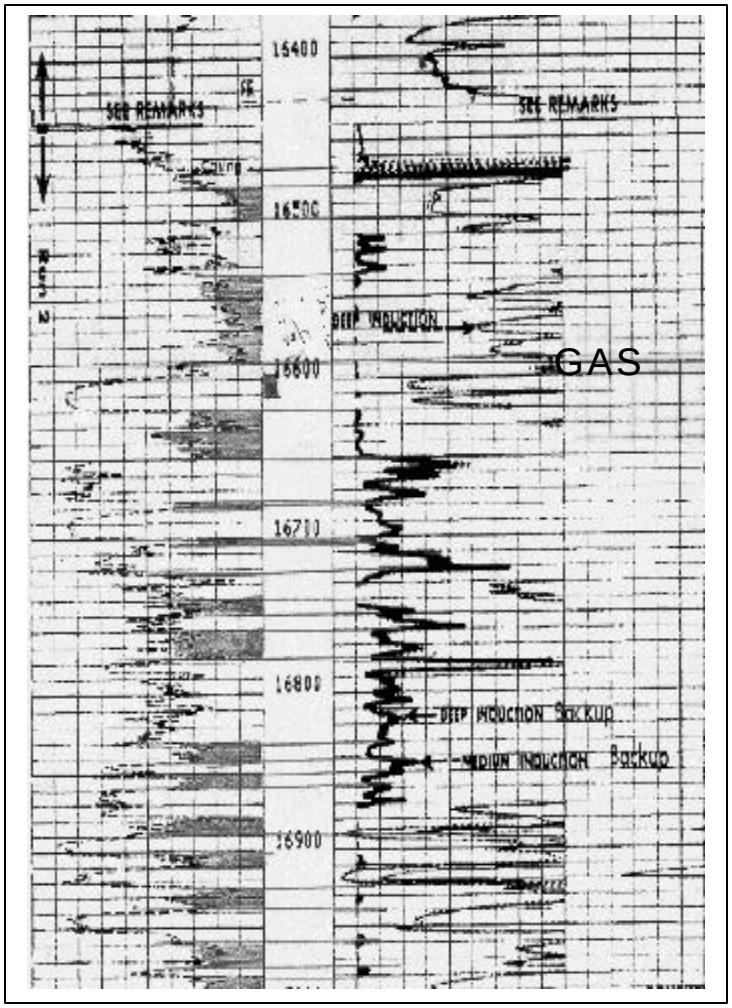
SERIES: UPPER CRETACEOUS

SELECTED LOG

FORMATION

LOWER TUSCALOOSA (21 reservoirs)

St. Landry/ Montcrief Field



PARISHES **(South Louisiana)**

West Baton Rouge
East Baton Rouge
Pointe Coupee
Livingston
St. Helena

LITHOLOGIC DESCRIPTION

Fine to medium grained sandstone (quartz arenite), mudstones and well-laminated shales.

DEPOSITIONAL ENVIRONMENT

Fluvial-deltaic to shallow marine (offshore bars).

RESERVOIR CONSIDERATIONS

Depth to top of pay: 16,500' – 20,000'
Net pay: 30' – 200'
Porosity (Ø): 12 – 25 %
Permeability (k): 35 – 800 md
Drive Mechanism: Water, gas expansion
API Gravity: oil, condensate, gas

PERTINENT PUBLICATIONS

Corcoran, M. K., C. P. Cameron, and M. A. Meyland, 1993, The Lower Tuscaloosa Formation in the Greensburg Field and Joseph Branch field areas, St. Helena Parish, Louisiana: GCAGS Trans., v. 43, p. 87-96.

Franks, D. A., 1980 (abs.), Origin of porosity in deeply buried Tuscaloosa sandstones, False River Field, Louisiana: SEPM Annual Research Conference Gulf Coast Section, p. 10.

Miller R. S. and J. L. Groth, 1990, Depositional environment and reservoir properties of the lower Tuscaloosa "B" sandstone, Baywood Field, St. Helena Parish, Louisiana: GCAGS Trans., v. 40, p. 601-605.

Thomson, A., 1979, Preservation of porosity in the deep Woodbine/Tuscaloosa trend, Louisiana: GCAGS Trans., v.29, p. 396-403.

Weedman, S.W., S. L. Bentley, and T. Engelder, 1992, Pore pressure variation within the Tuscaloosa trend – Morganza and Moore-Sams Fields, Louisiana Gulf Coast: Journal of Geophysical Research, v. 97, p. 7193-7202.

Author's Biography

Donald A. Goddard is an Associate Professor at Louisiana State University's Center For Energy Studies (CES). He serves as the Coordinator of the Central Gulf Region, Petroleum Technology Transfer Council (PTTC). In this capacity, with the help of the CGR/PTTC Producer Advisory Group (PAG), Dr. Goddard is responsible for identifying and transferring upstream technologies to Louisiana independent producers. He performs his duties as the PTTC coordinator in collaboration with LSU's Petroleum Engineering Department (PETE), and Louisiana Geological Survey's Basin Research Energy Section.

Prior to joining LSU's Center For Energy Studies he worked for four years as a petroleum consultant to international companies interested in Venezuela's upstream activities. As Assistant Professor-Research at LSU's Basin Research Institute (1991-1996), his research involved the characterization of Tertiary reservoirs in Central Louisiana, and participated on projects in basin analysis of the Gulf Coast Region. Dr. Goddard began his career in 1965 with Gulf Oil Co. (Mene Grande) in Eastern Venezuela. He has over twenty-five years of petroleum industry experience, both in exploration geophysics and production geology, having attained managerial positions in Maraven S. A., an affiliate of Petroleos de Venezuela (PDVSA).

He obtained a B.S. degree in geology from Florida State University in 1965. Dr. Goddard later studied at the University of London where he obtained M.Sc. and PhD degrees in marine geology and geophysics. He also has a geological engineering degree from the Universidad Central de Venezuela. Dr. Goddard is a member of the American Association of Petroleum Geologists (AAPG), the Baton Rouge Geological Society (BRGS), the Venezuelan Geological Society (SVG), and the Society of Petroleum Engineers (SPE).

Phone: (225) 578-4538 E-mail: dgodda1@lsu.edu

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