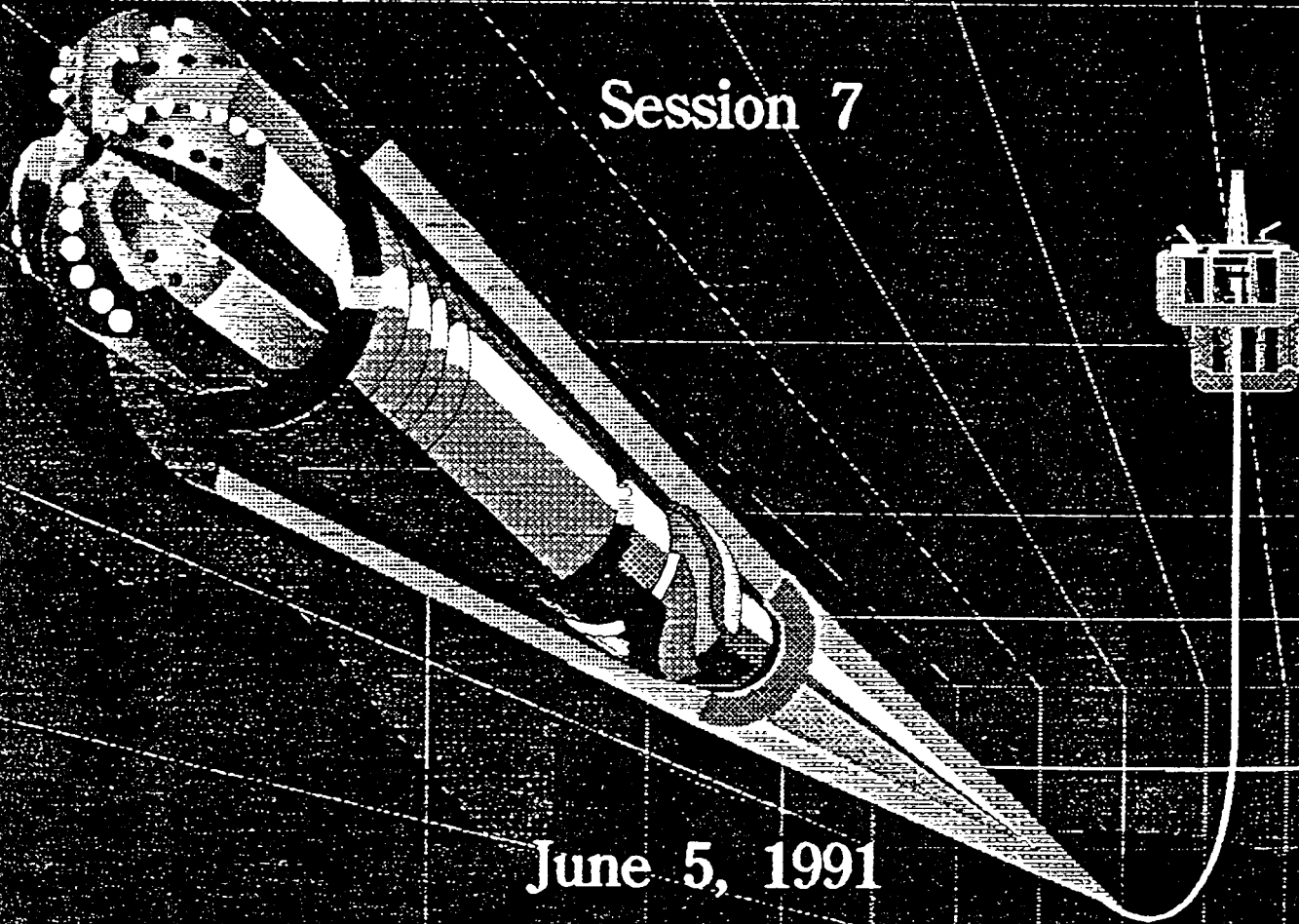


Case Study: Shallow Sands in Lafitte Field

By Clay Kimbrell
LOUISIANA STATE UNIVERSITY

Session 7

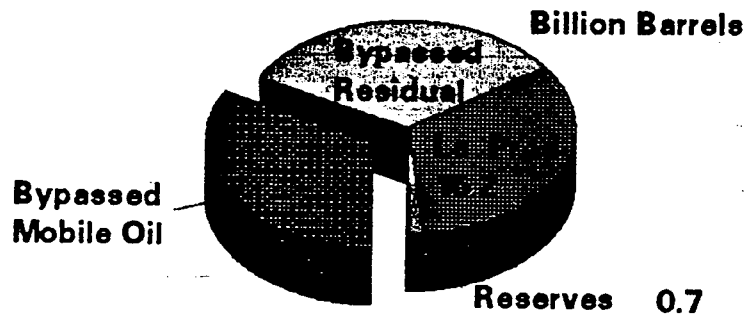


June 5, 1991

New Orleans Marriot Hotel, 555 Canal Street

Supported by LEQSF and U.S. DOE

How Much Oil is being Bypassed ? Estimates Vary Greatly !



Workshop on Horizontal Drilling in Louisiana

Notes:

Purpose of Lafitte Field Study

- **Estimate Magnitude of Bypassed Mobile Oil in a Mature Field nearing Abandonment.**
- **Provide an actual example to facilitate the development of LSU's Interdisciplinary Team.**
- **Assist in the development of a closer working relationship between Industry and Academia.**
- **Test concepts aimed at increasing recovery from Louisiana's Oil and Gas Reservoirs.**

Workshop on Horizontal Drilling in Louisiana

Notes:

Reservoirs Selected for Study

3900' North Sand
4300' Sand

3900' South Reservoir
4400' Sand

- Relatively shallow (reasonable drilling costs)
- Highly developed (avg of 10 acres / well)
- Multiple completion opportunities
- Strong natural water drive
- Nearing abandonment
- Unitized reservoir / Single operator
- Interested operator (Share data; Test Prospects)

See W. E. Gibson on Horizontal Drilling in Louisiana

Notes:

Approach Used

- Collect available data from public sources and operator.
- Obtain oil & water samples for geochemical analysis.
- Obtain public domain computer simulation software and modify for efficient use of LSU's IBM computer.

Workshop on Horizontal Drilling in Louisiana

Notes:

- Reinterpret basic data to develop structure maps, isopach maps, porosity maps, permeability maps, and initial saturation maps with input from geologists, geochemists, and engineers on team.
- Estimate remaining oil volume and distribution using reservoir simulation software.
- Investigate economics of various schemes for recovering mobile oil using reservoir simulation software.
- Develop recommendations for operator.

Workshop on Horizontal Drilling in Louisiana

Notes:

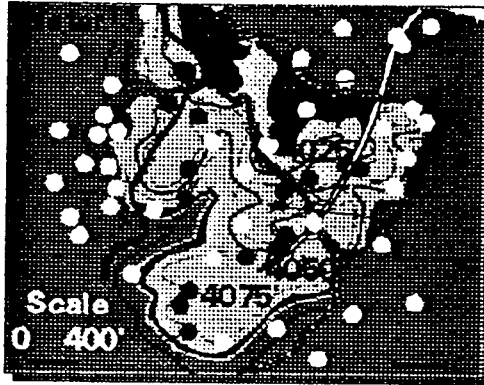
Areal Photograph of Surface Location

Workshop on Horizontal Drilling in Louisiana

Notes:

**Top of Sand
Structure Map**

3900' Sand



North Reservoir

46 Acres

8 Completions

3.1 MM STB IP

South Reservoir

64 Acres

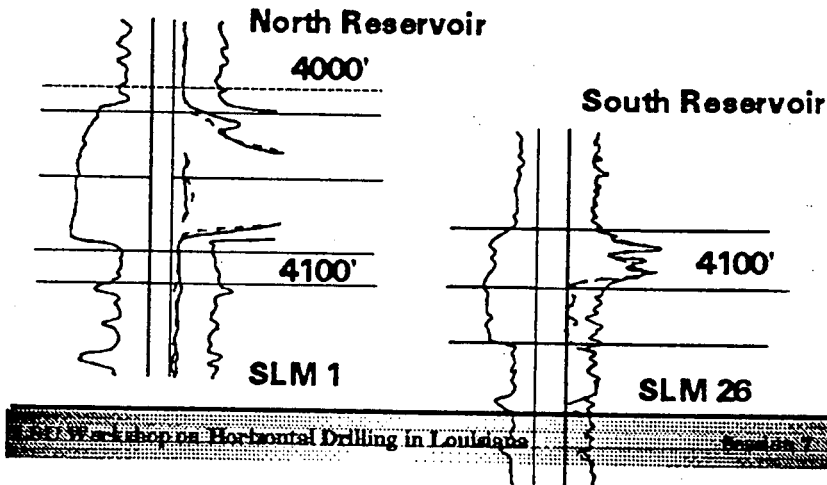
11 Completions

3.2 MM STB IP

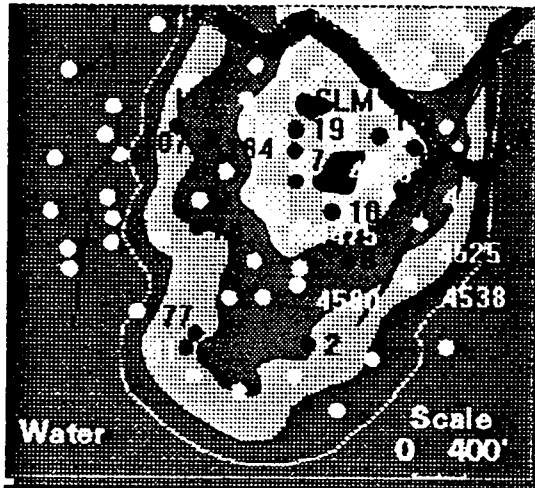
© 1991 Schlumberger Well Services, Houston, Texas

Notes:

Type Logs - 3900 ft Sand



Notes:



4300 ft Sand

**Top of Sand
Structure Map**

150 Acres

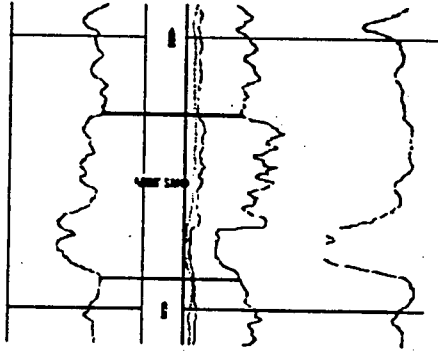
13 Completions

4.4 MM STB IP

SECO Workshop on Horizontal Drilling in Louisiana

Notes:

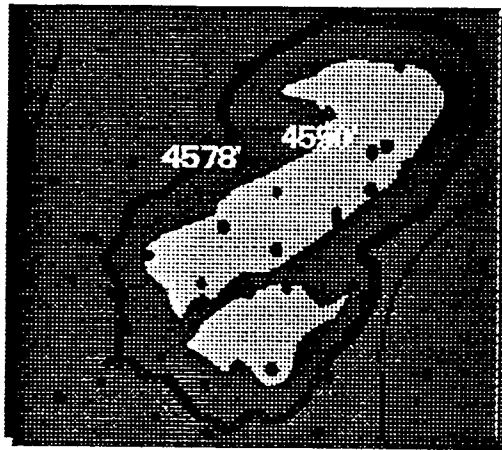
Type Log - 4300' Sand



LLE 107

1992 Workshop on Horizontal Drilling in Louisiana

Notes:



4400' Sand
Top of Sand
Structure Map

115 Acres

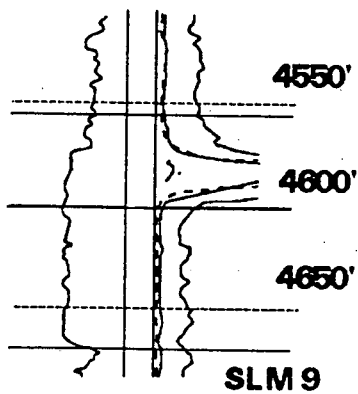
10 Completions

4.0 MM STB IP

98 Workshop on Horizontal Drilling in Louisiana

Notes:

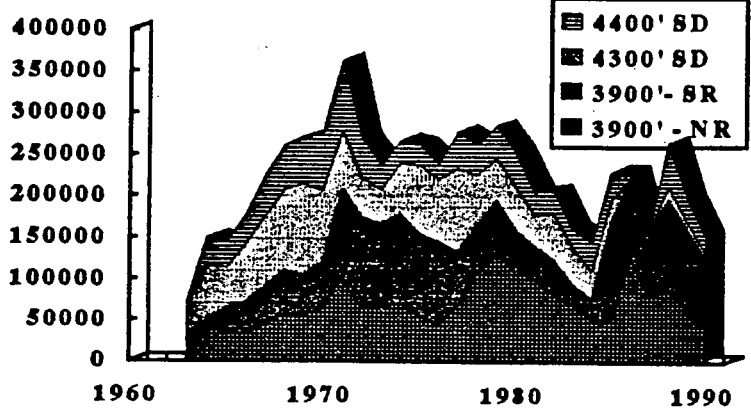
Type Log - 4400' Sand



Workshop on Horizontal Drilling in Louisiana

Notes:

Annual Oil Production



Workshops Horizontal Drilling in Louisiana

Notes:

Estimated Bypassed Oil, MMSTB

Reservoir	Original OIP	Oil Prod	Resid Oil	Reserves	Bypas Oil
3900' NR	3.1	1.8	0.9	0.3	0.1
3900' SR	3.2	1.8	0.9	0.3	0.2
4300' Sand	4.4	1.5	1.5	-	1.5
4400' Sand	4.0	1.0	1.1	0.1	1.9
Total	14.7	5.9	4.4	0.7	3.6

1987 Workshop on Horizontal Drilling in Louisiana

Notes:

Reservoir Rock & Fluid Properties

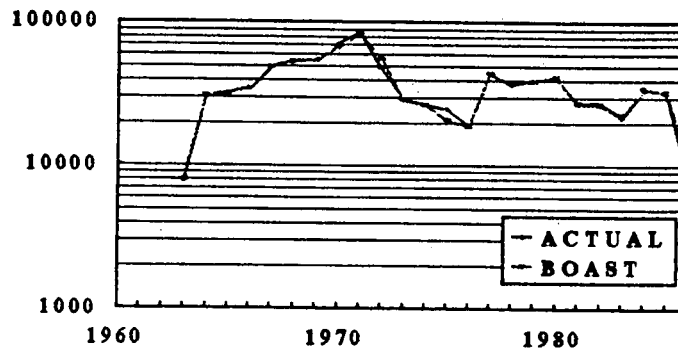
Reservoir	Porosity %	Avg Perm md	Avg Swi %	API Grav api	Avg GOR scf/stb
3900' NR	0.34	1600	0.17	25	150
3900' SR	0.33	2100	0.15	25	150
4300' Sand	0.29	590	0.27	25	410
4400' Sand	0.29	570	0.12	25	490

200 Workshop on Horizontal Drilling in Louisiana

Notes:

Example History Match - 4400' Sand

Oil Production Rate STB/D

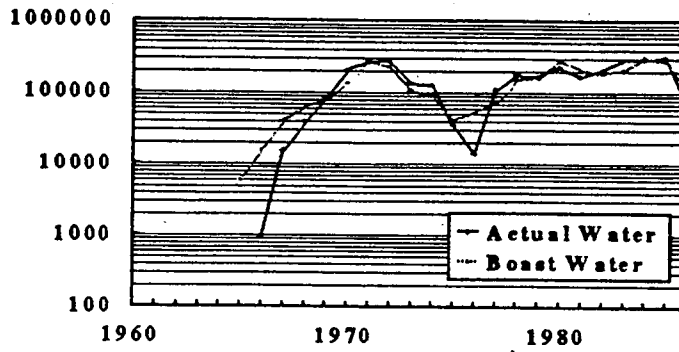


Workshop on Horizontal Drilling in Louisiana

Notes:

Example History Match - 4400' Sand..

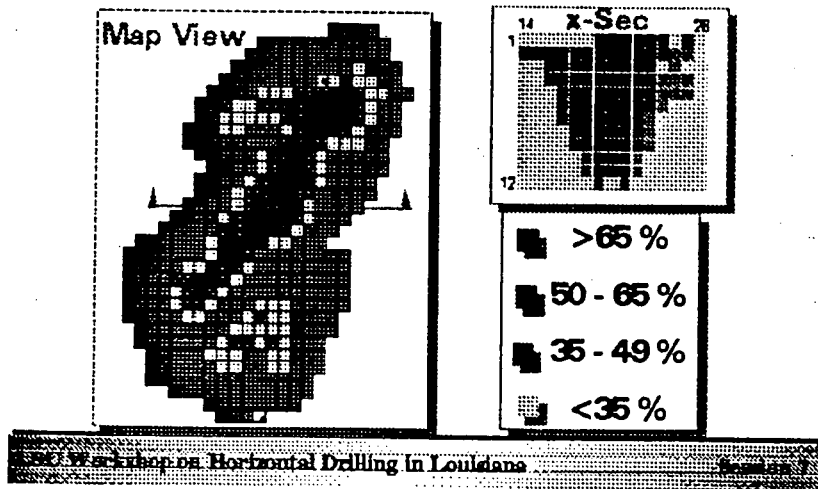
Water Production Rate, STB/D



Workshop on Horizontal Drilling in Louisiana

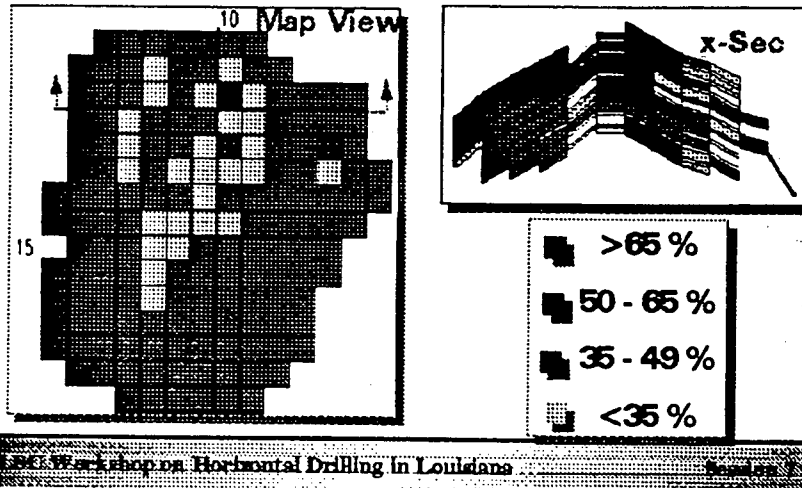
Notes:

4400' Sand Current Oil Saturations



Notes:

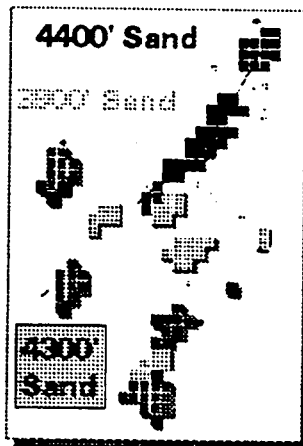
4300' Sand Current Oil Saturations



Notes:

Map View

Predicted
Bypassed
Oil



Notes:

Preliminary Economics

- Predicted Cash Flow is Very Favorable
- Payout in less than one Year
- Next Step Meetings with operator to discuss field test.

Workshop on Horizontal Drilling in Louisiana

Notes: