

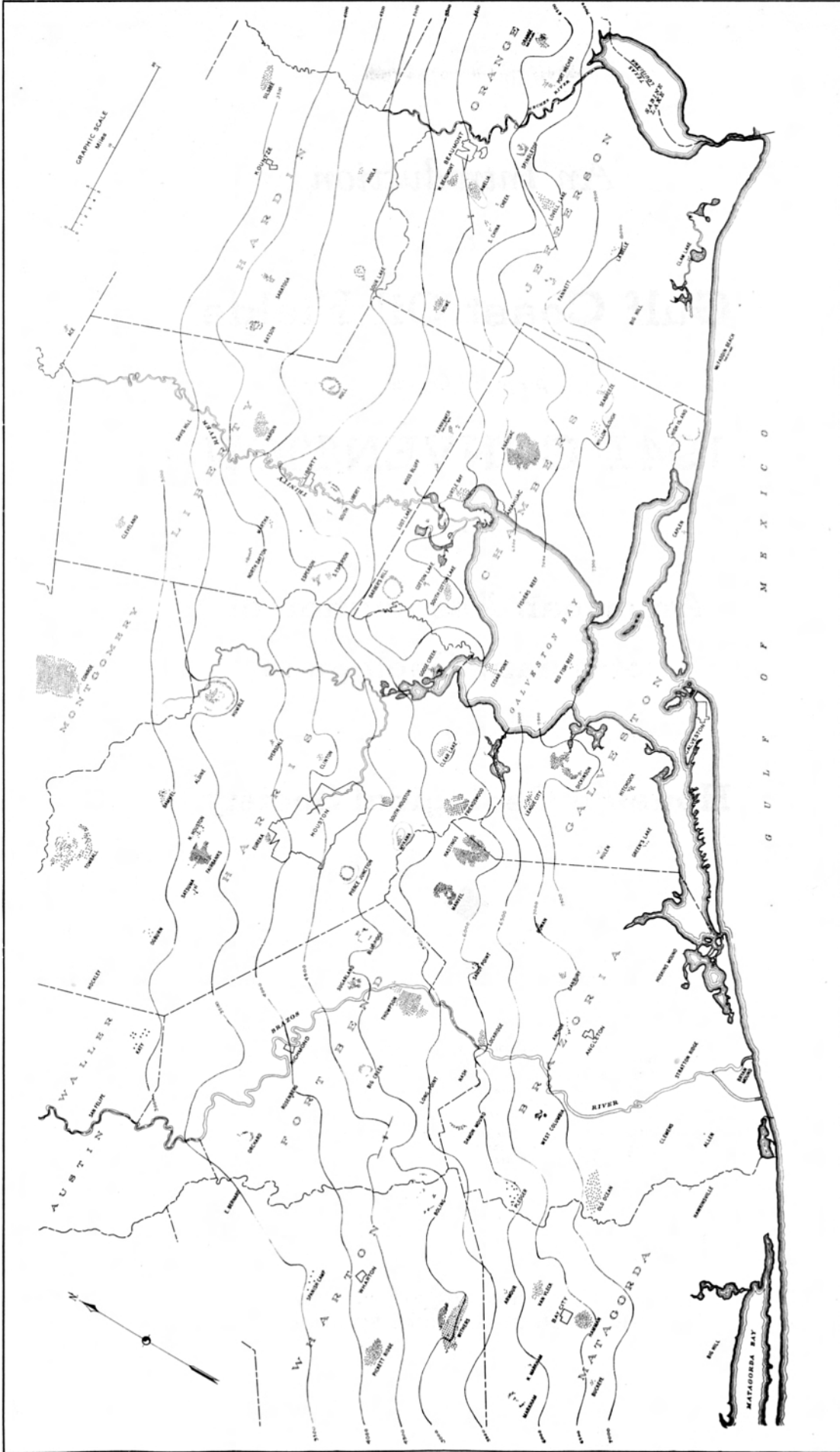
An Introduction
to
Gulf Coast Oil Fields
prepared for the
1941 CONVENTION
of the
**American Association of
Petroleum Geologists**
by the
Houston Geological Society



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The data from which this pamphlet was prepared were drawn freely from the Bulletin of the American Association of Petroleum Geologists and private sources.



Oil Field Map of the Houston District of the Texas Gulf Coast.
Five hundred foot contours on Heterostegina Zone.

Foreword

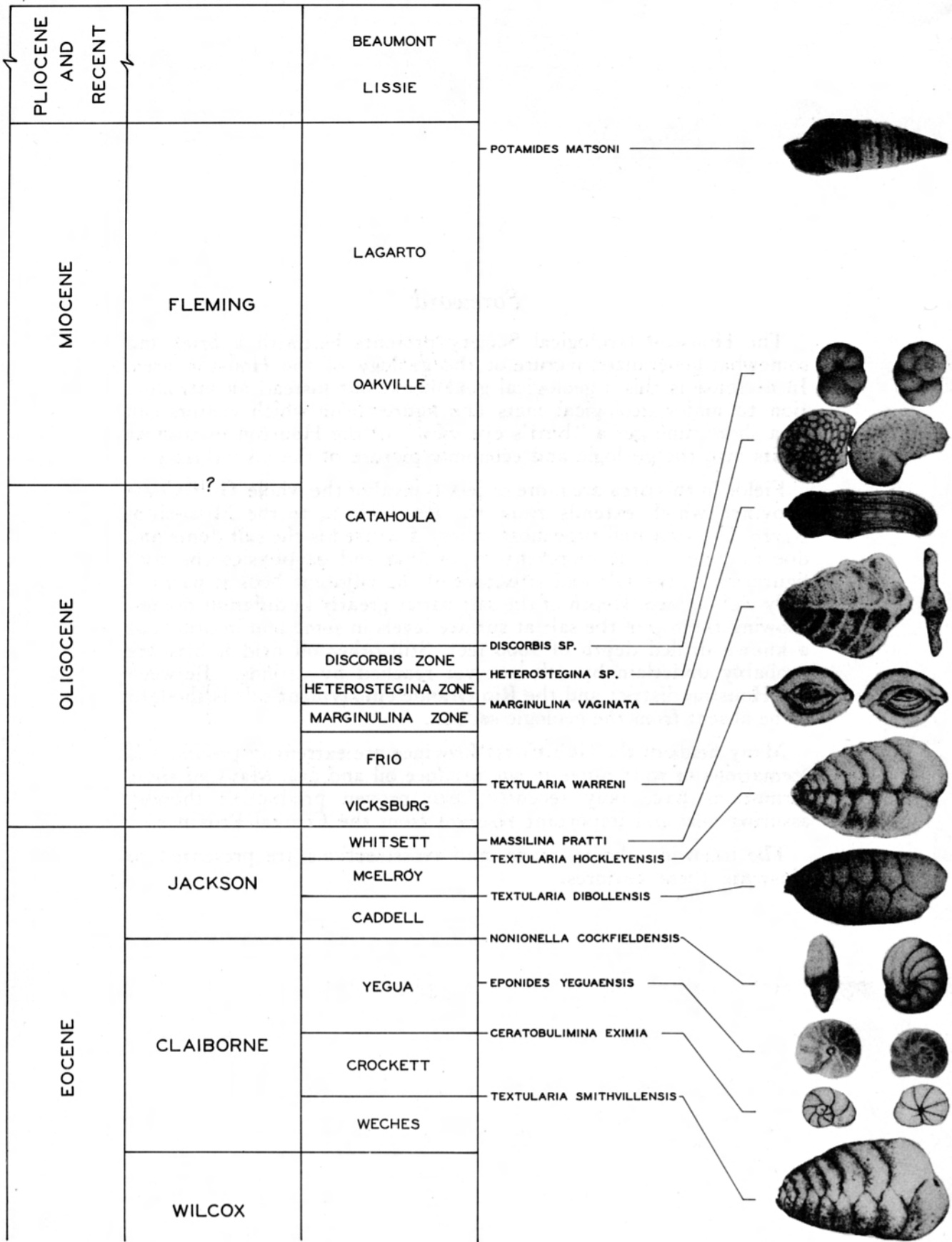
The Houston Geological Society presents herewith a brief and somewhat generalized picture of the geology of the Houston area. In no sense is this a geological guidebook, but instead an introduction to major geological facts and figures from which visitors can in a short time get a "bird's eye view" of the Houston district as it fits into the geologic and economic picture of the oil industry.

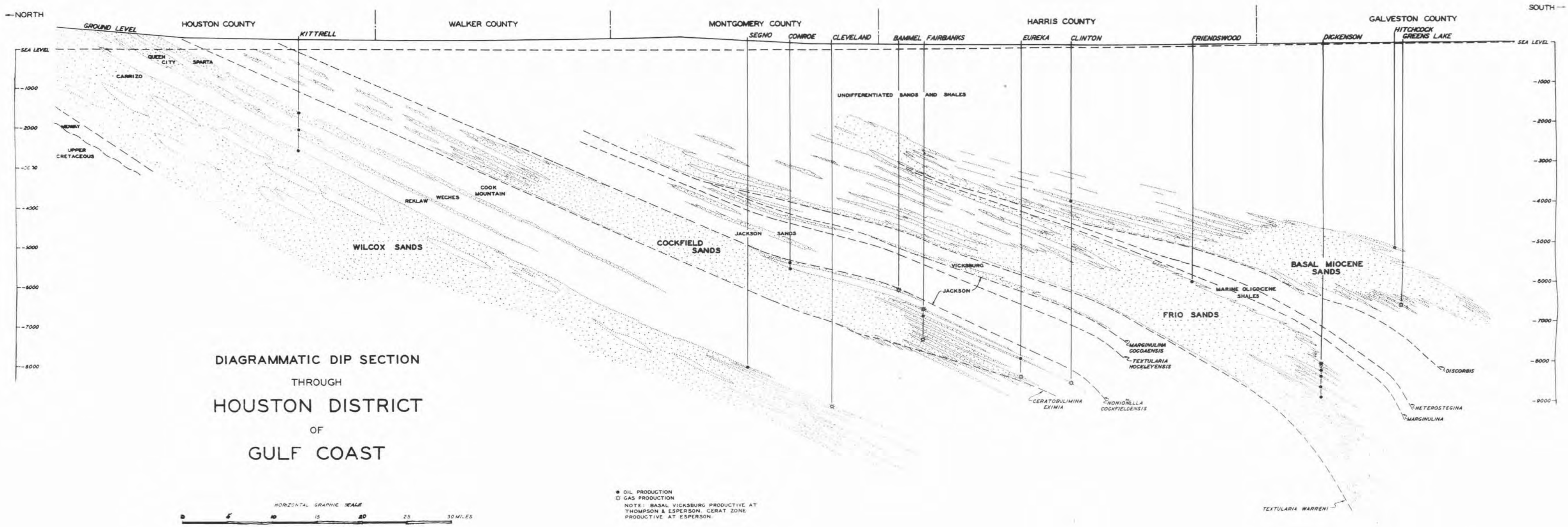
Fields in this area are more or less typical of the whole Gulf Coast Province which extends from the Rio Grande to the Mississippi River. The structural type most widely discussed is the salt dome and due to intensive development by drilling and geophysics the configuration of the salt and structure of the adjacent beds is particularly well known. Depth of the salt varies greatly in different domes, showing the top of the salt at surface levels in some and in others at a known drilled depth of 9800 feet. Still other oil field uplifts are probably underlain by salt not yet reached by drilling. Between the Houston district and the Rio Grande embayment salt is thought to be absent from the geologic section.

Many fields of the Gulf Coast Province are extremely prolific and formations of wide range in age produce oil and gas. Many of these formations have only recently been proven productive thereby assuring new and important reserves from the Coastal Province.

The following charts, maps, and cross-sections are presented to illustrate these features.

GUIDE FOSSILS OF THE TEXAS GULF COAST



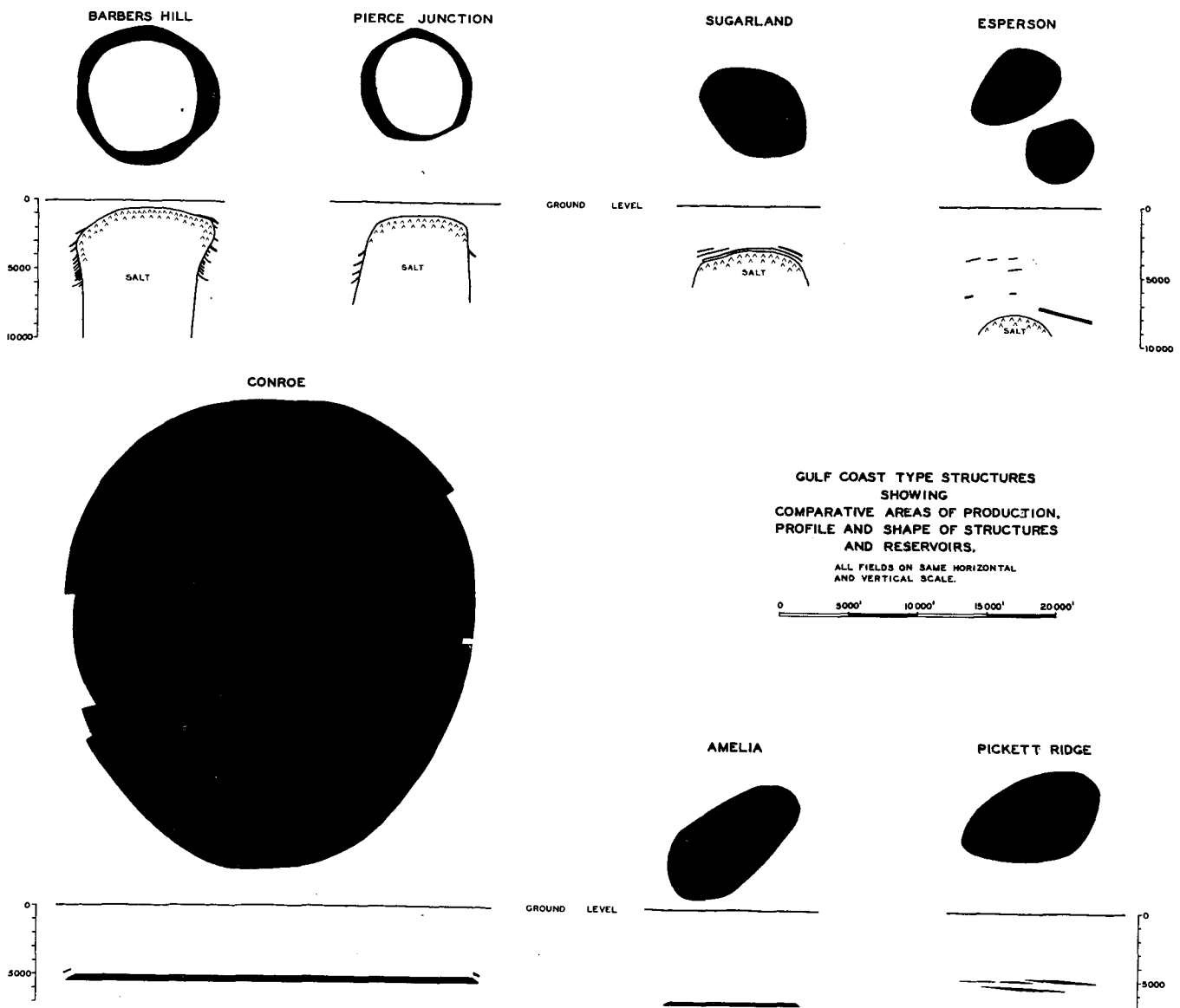


THIS SECTION SHOWS THE
 REGIONAL STRUCTURE AND
 RELATION OF NUMEROUS
 PRODUCING HORIZONS OF
 THE GULF COAST

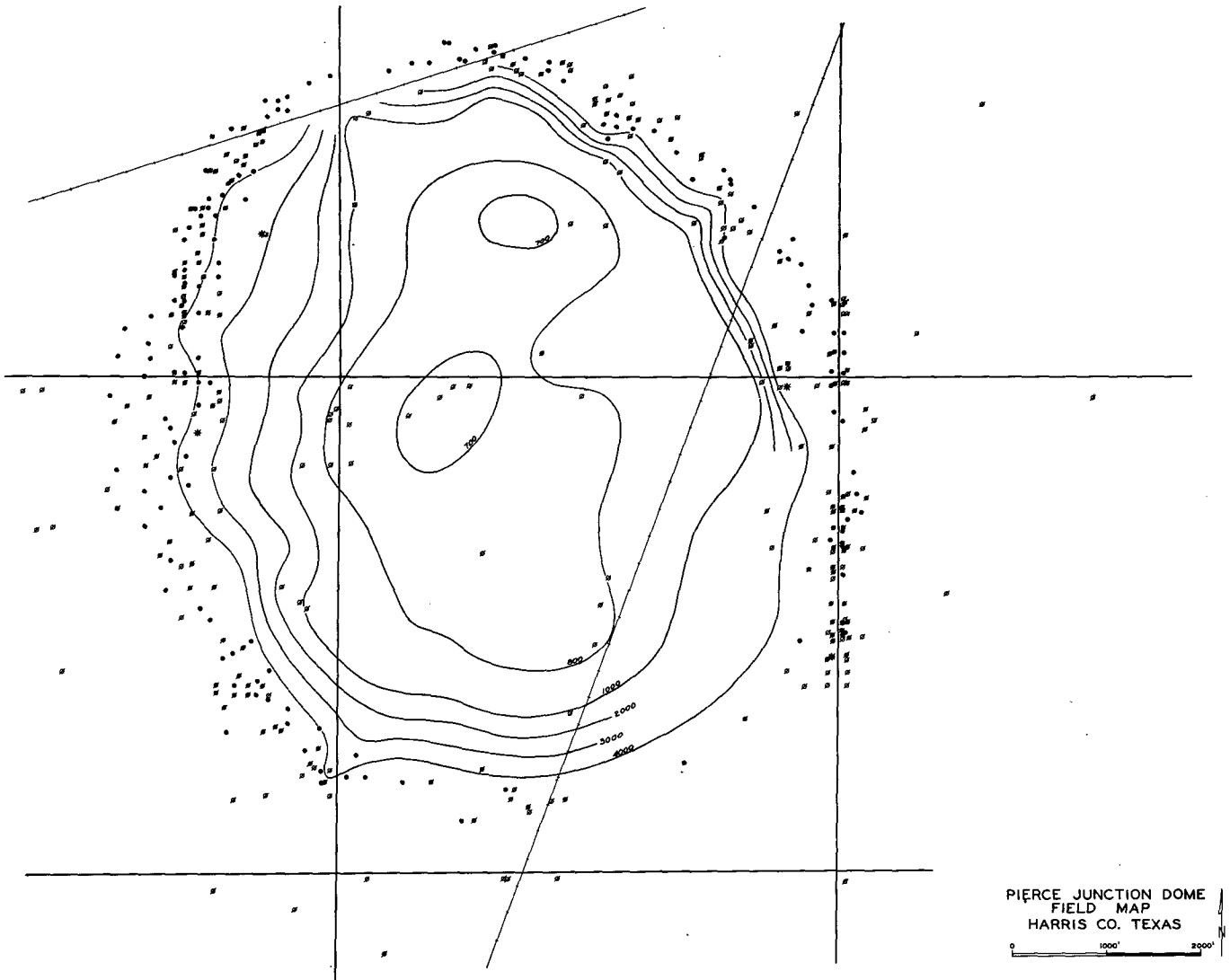
REPRESENTATIVE, OIL FIELD TYPES

On the following pages are shown maps and cross-sections of seven oil fields, selected to show type structures and accumulation. It is thought that practically all of the oil fields of the Houston district are represented by some of these types or some combination of them.

The sketch below is a comparison as to size and profile of the aforementioned fields.

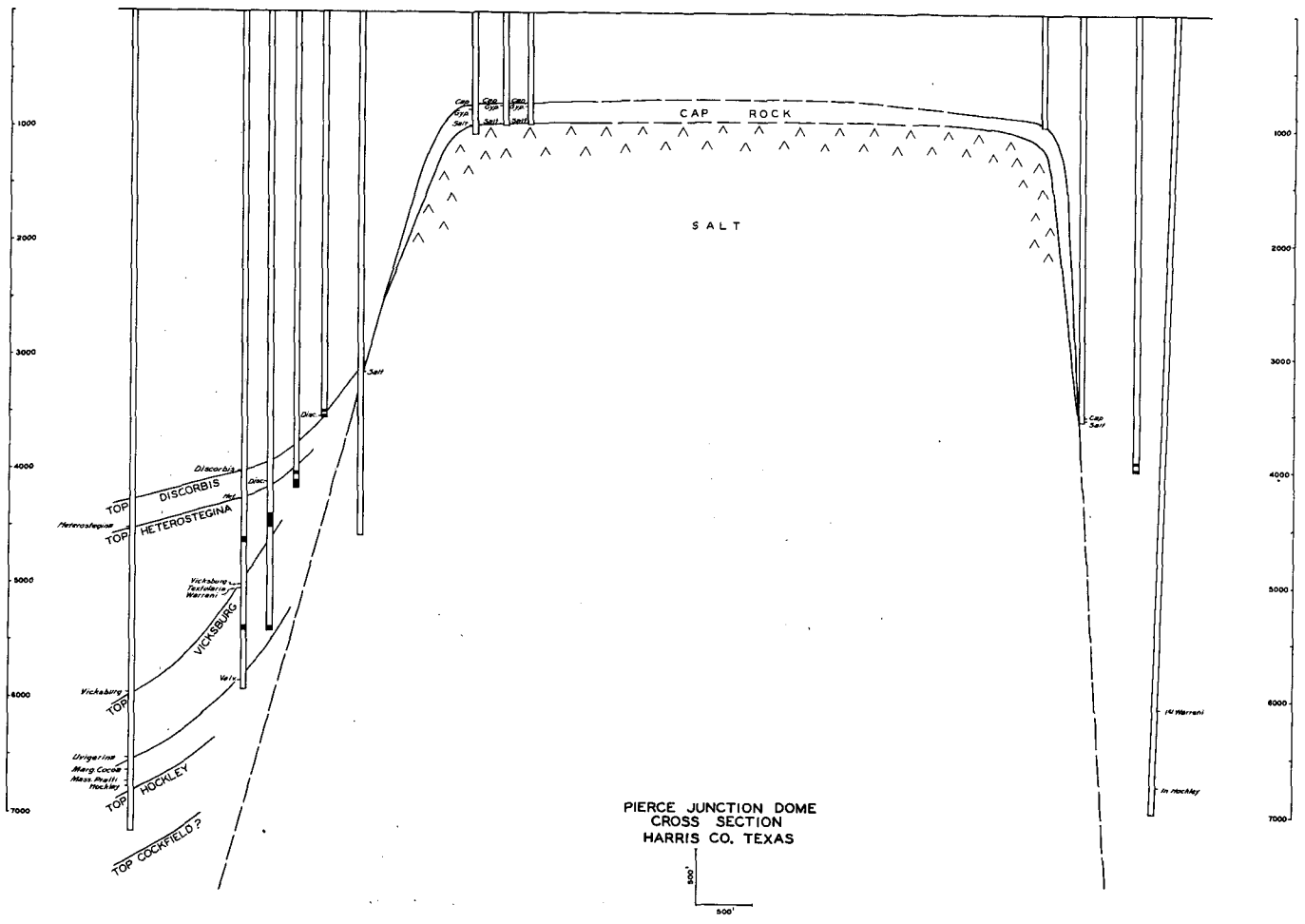


PIERCE JUNCTION DOME



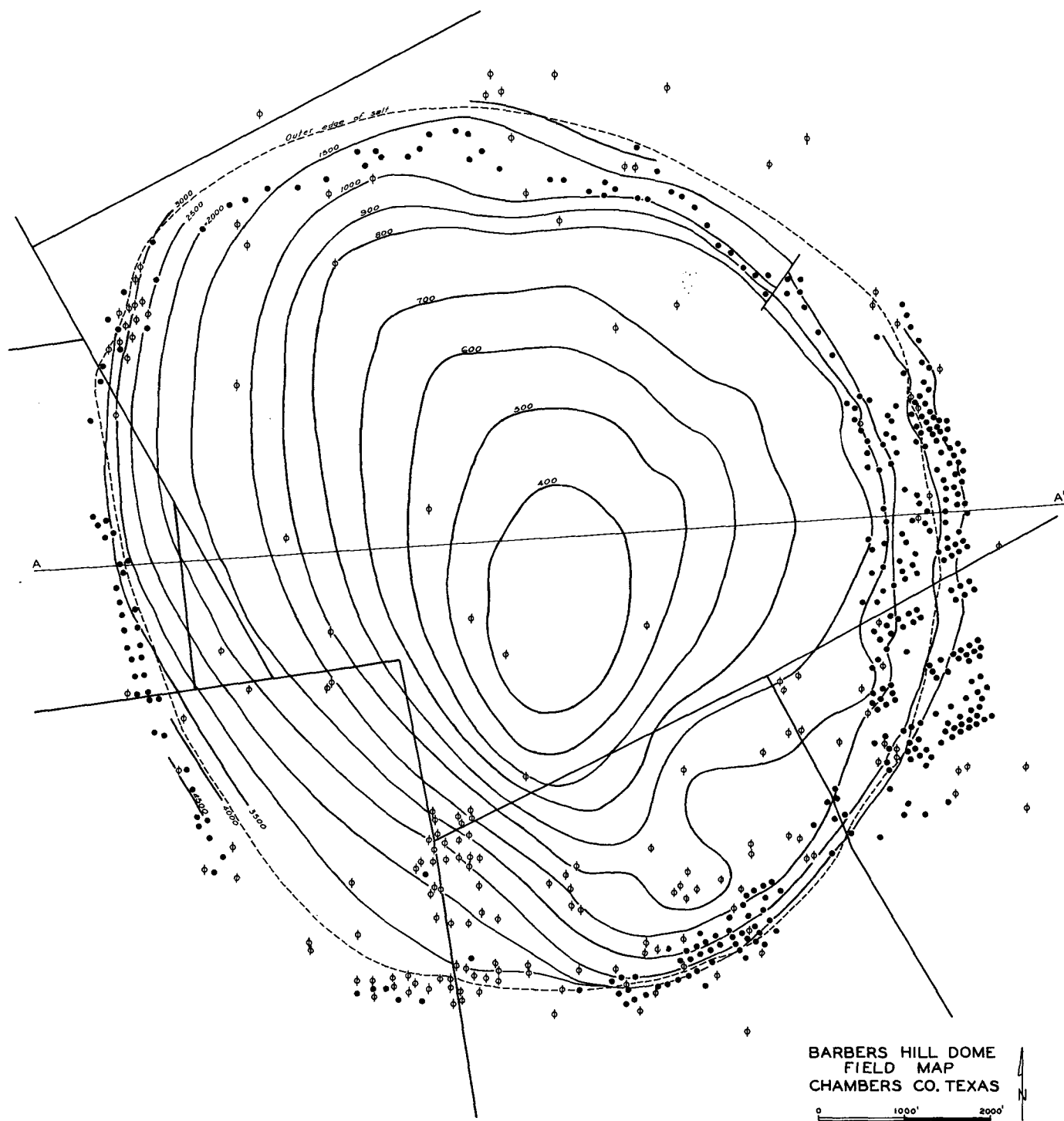
Shallow salt dome with flank production represented by Pierce Junction, Harris County, Texas.

PIERCE JUNCTION CROSS SECTION



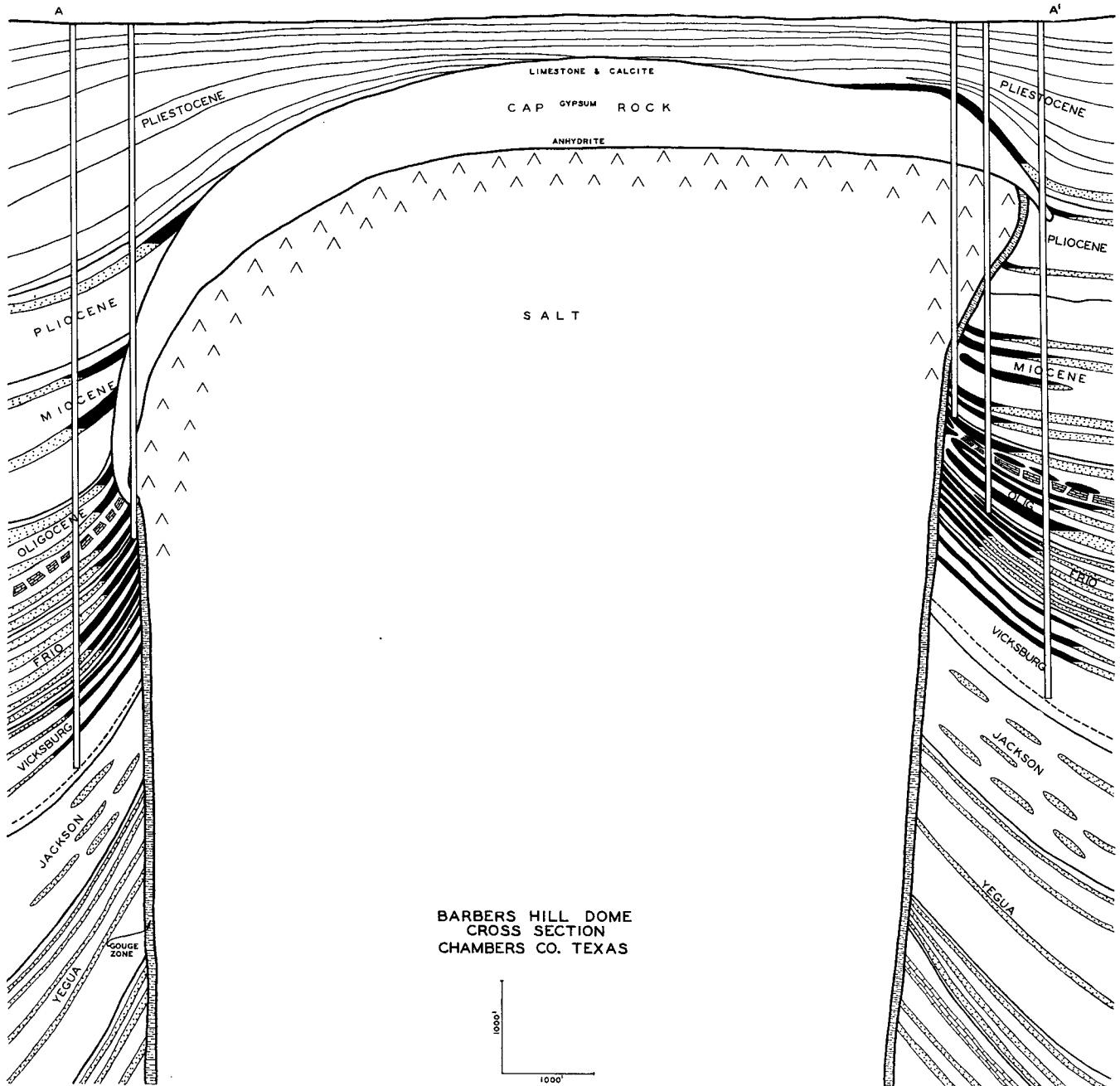
Other domes of the same general character are Spindletop, Orchard, and Hoskins Mound. These latter two produce sulphur from the cap rock.

BARBERS HILL DOME



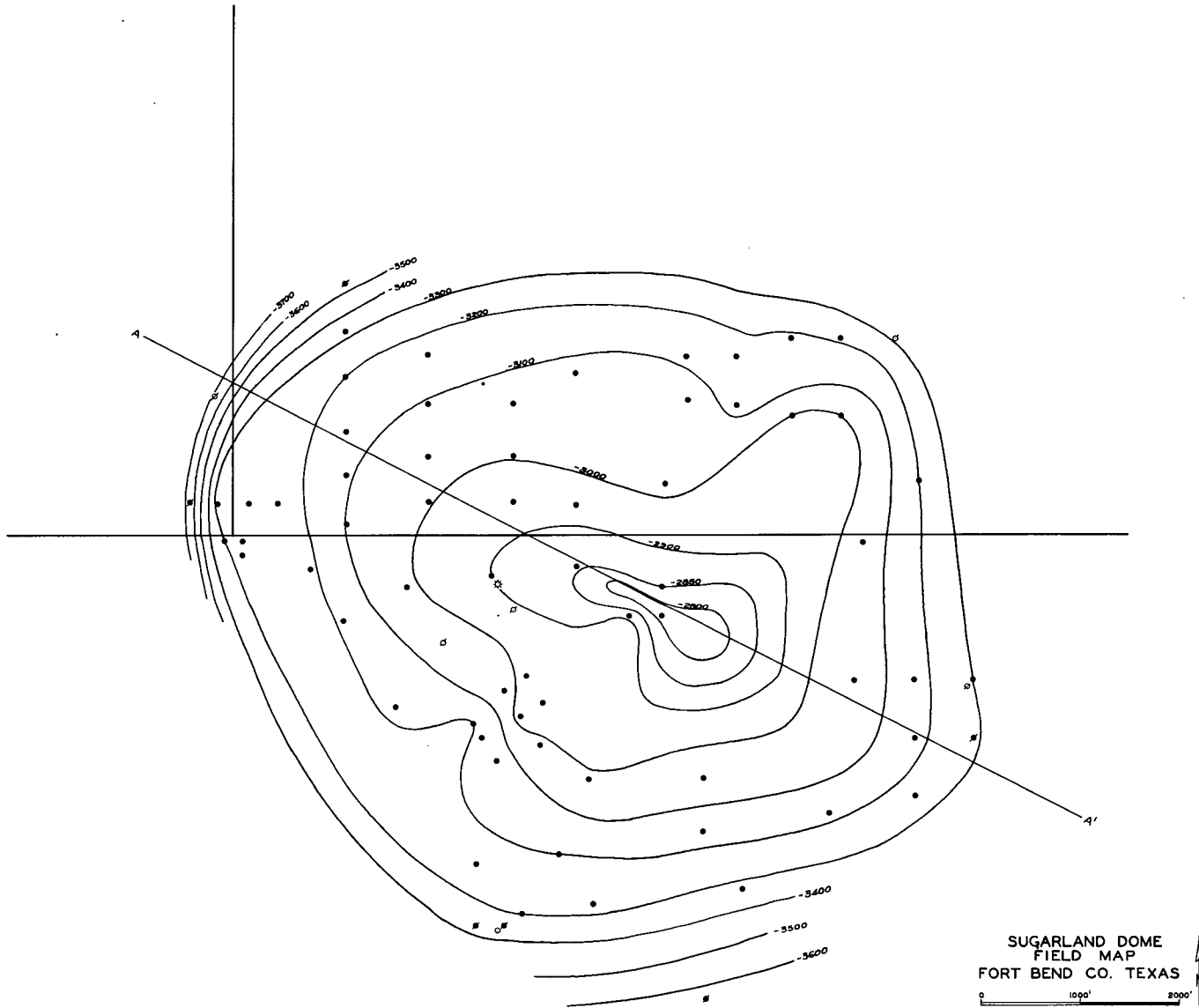
Shallow salt dome with overhanging cap rock and flank production represented by Barbers Hill, Chambers County, Texas.

BARBERS HILL CROSS SECTION



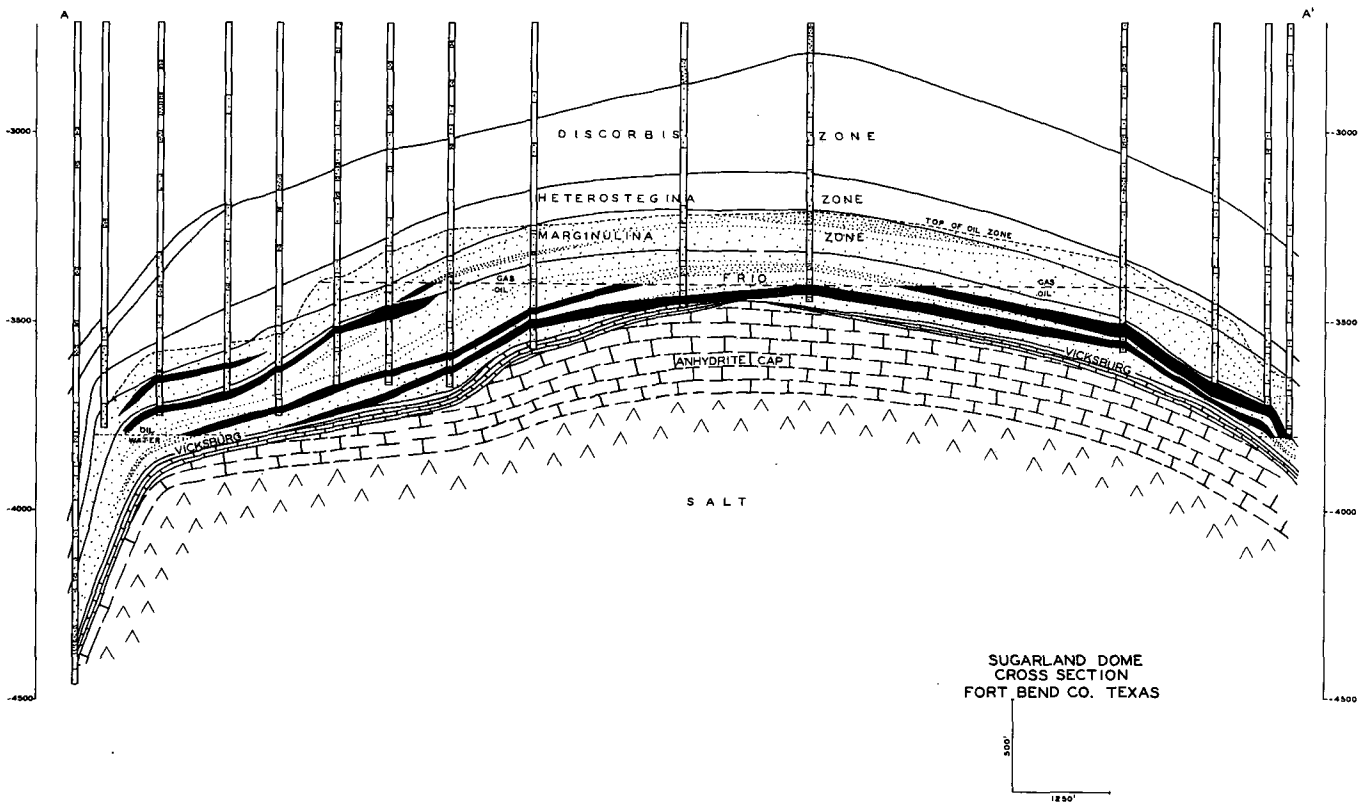
Other domes with known overhang include High Island and Allen domes in Texas and Vinton dome in Louisiana.

SUGARLAND DOME



Medium depth salt with super cap production represented by Sugarland field, Fort Bend County, Texas.

SUGARLAND CROSS SECTION



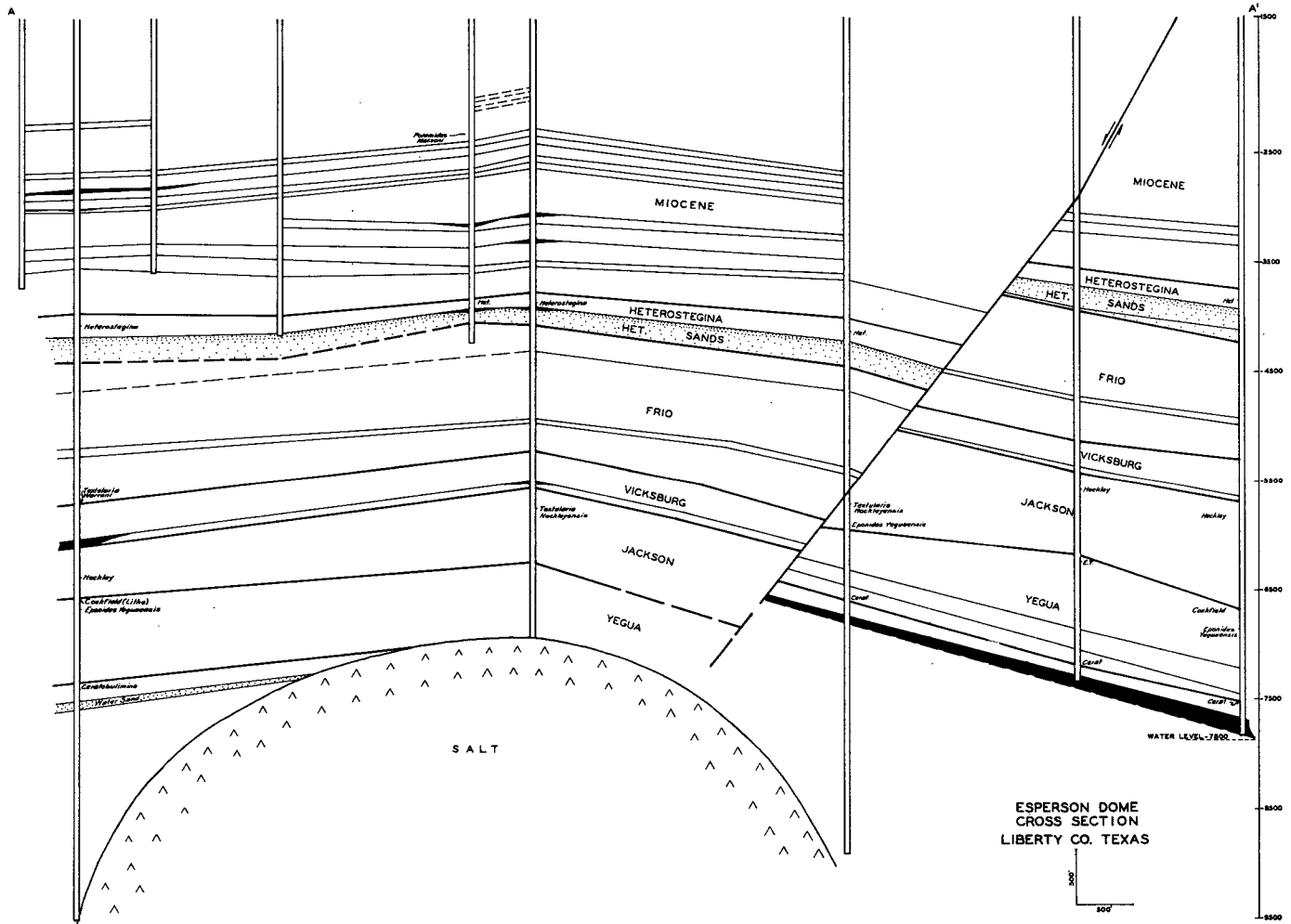
Other domes of this type include South Houston, San Felipe, and Danbury.

ESPERSON DOME



Deep-seated salt with production above and on the flank of the salt plug, illustrated by Esperson Dome, Liberty County, Texas.

ESPERSON CROSS SECTION



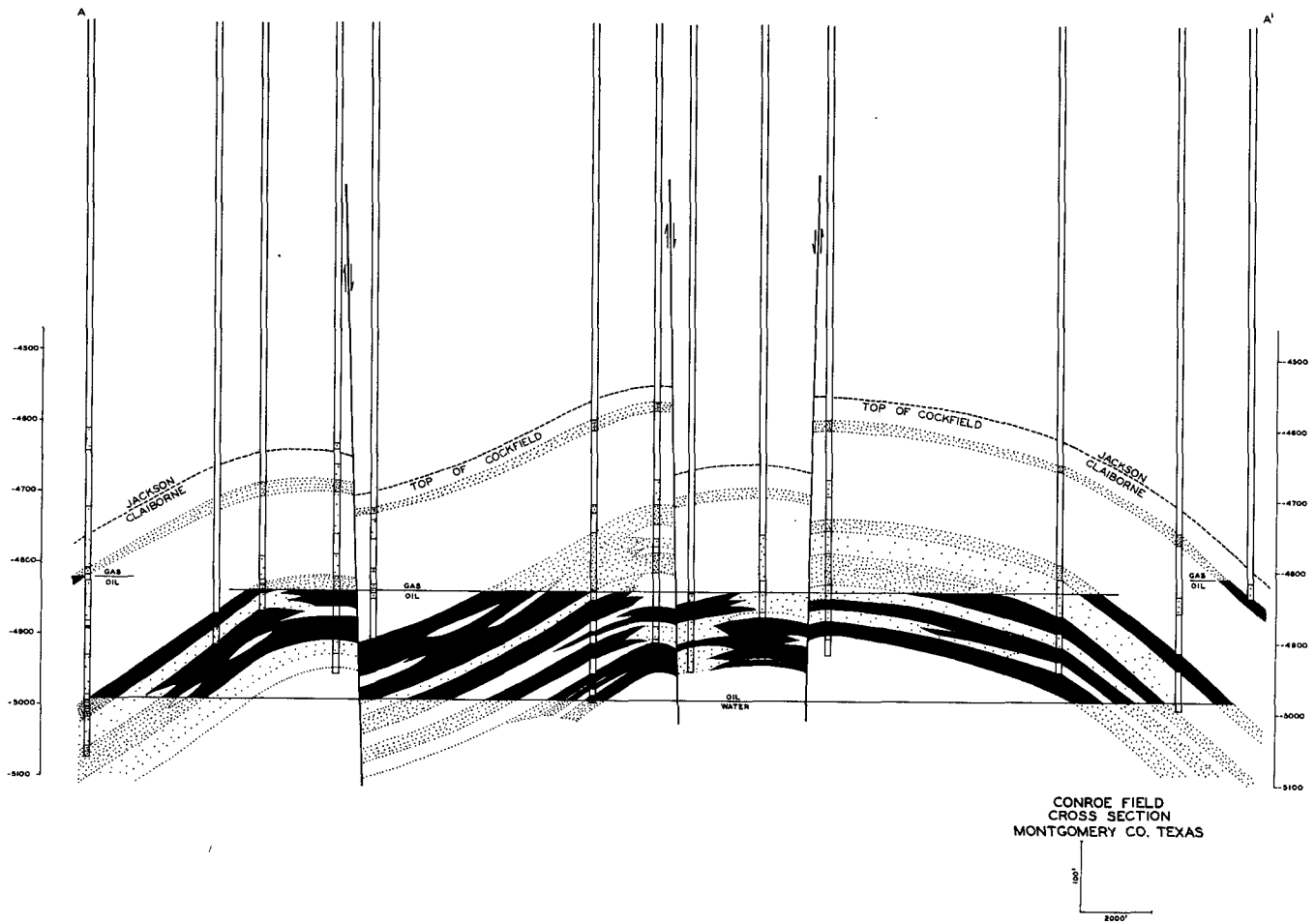
While the flanks of this dome are still only partially developed, the accompanying map and cross-section illustrate the complexity of the structure. Other fields in which salt has been found at comparable depth are Hankamer, Port Neches, and Orange.

CONROE FIELD



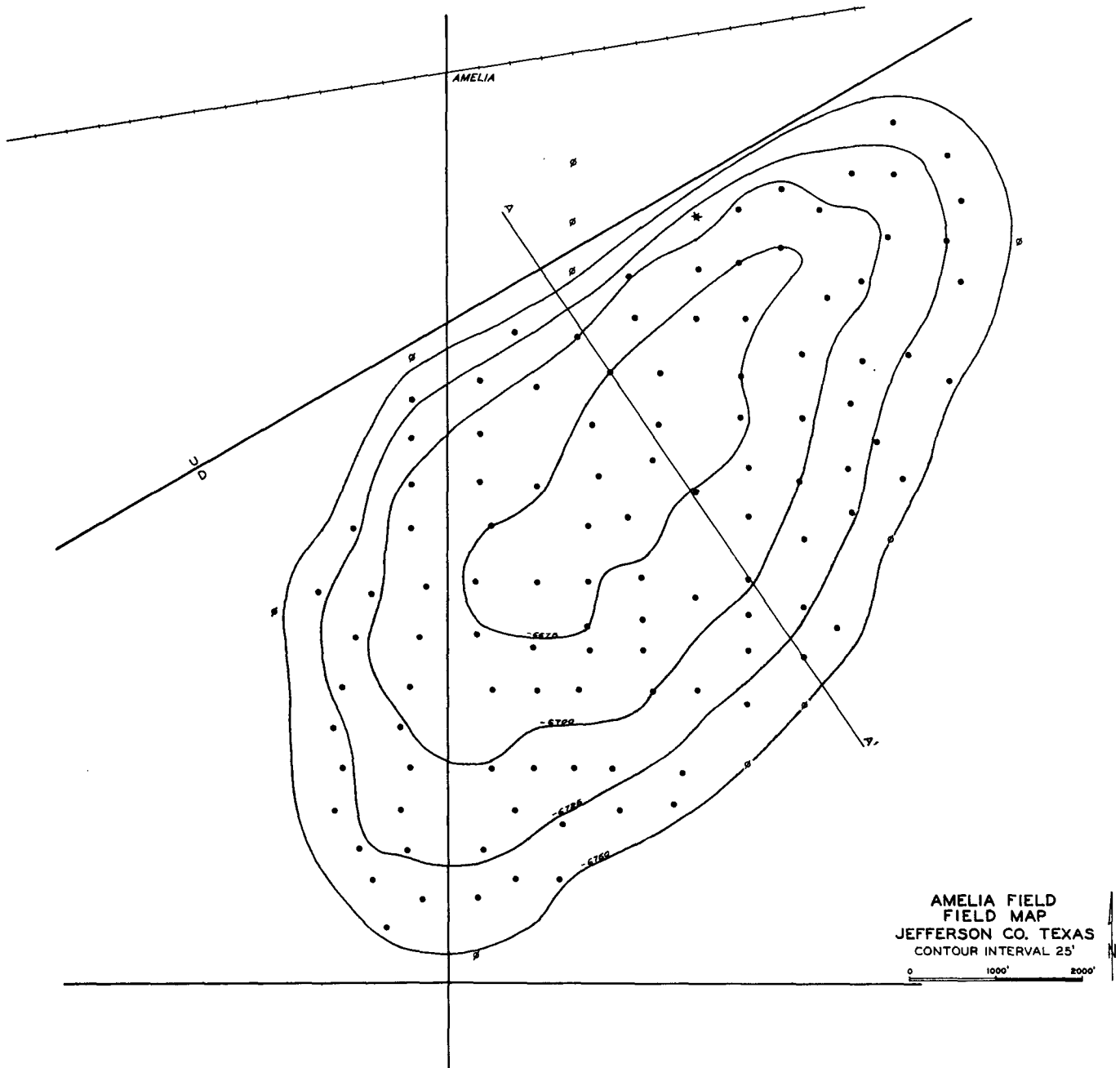
Deep seated structure with central graben and radial faults represented by Conroe Oil Field, Montgomery County, Texas.

CONROE CROSS SECTION



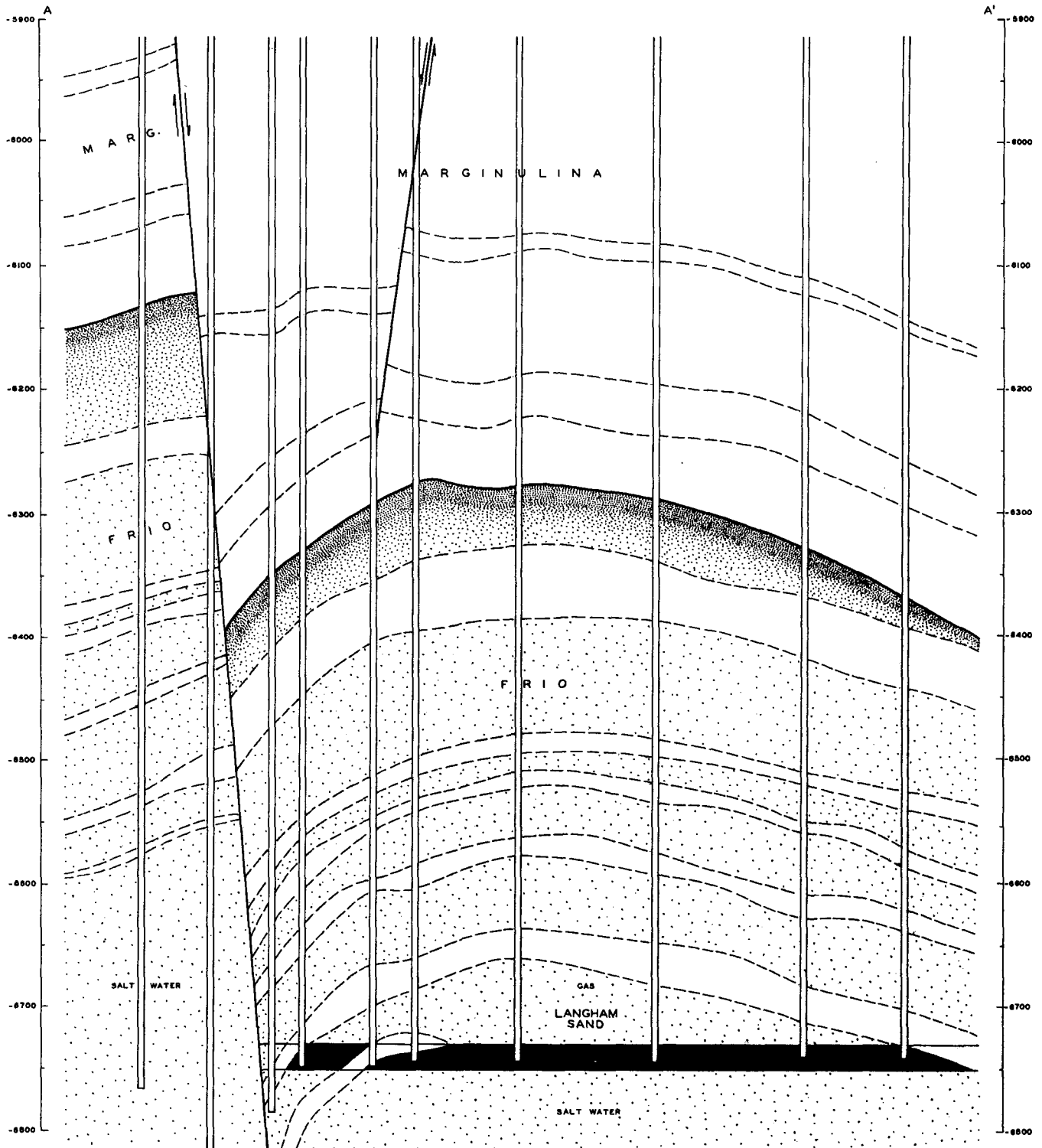
This type of structure is also represented by such oil fields as Hastings, Anahuac, and Raccoon Bend.

AMELIA FIELD



Low relief structure with production on south and downthrown side of fault, represented by Amelia field, Jefferson County, Texas.

AMELIA CROSS SECTION

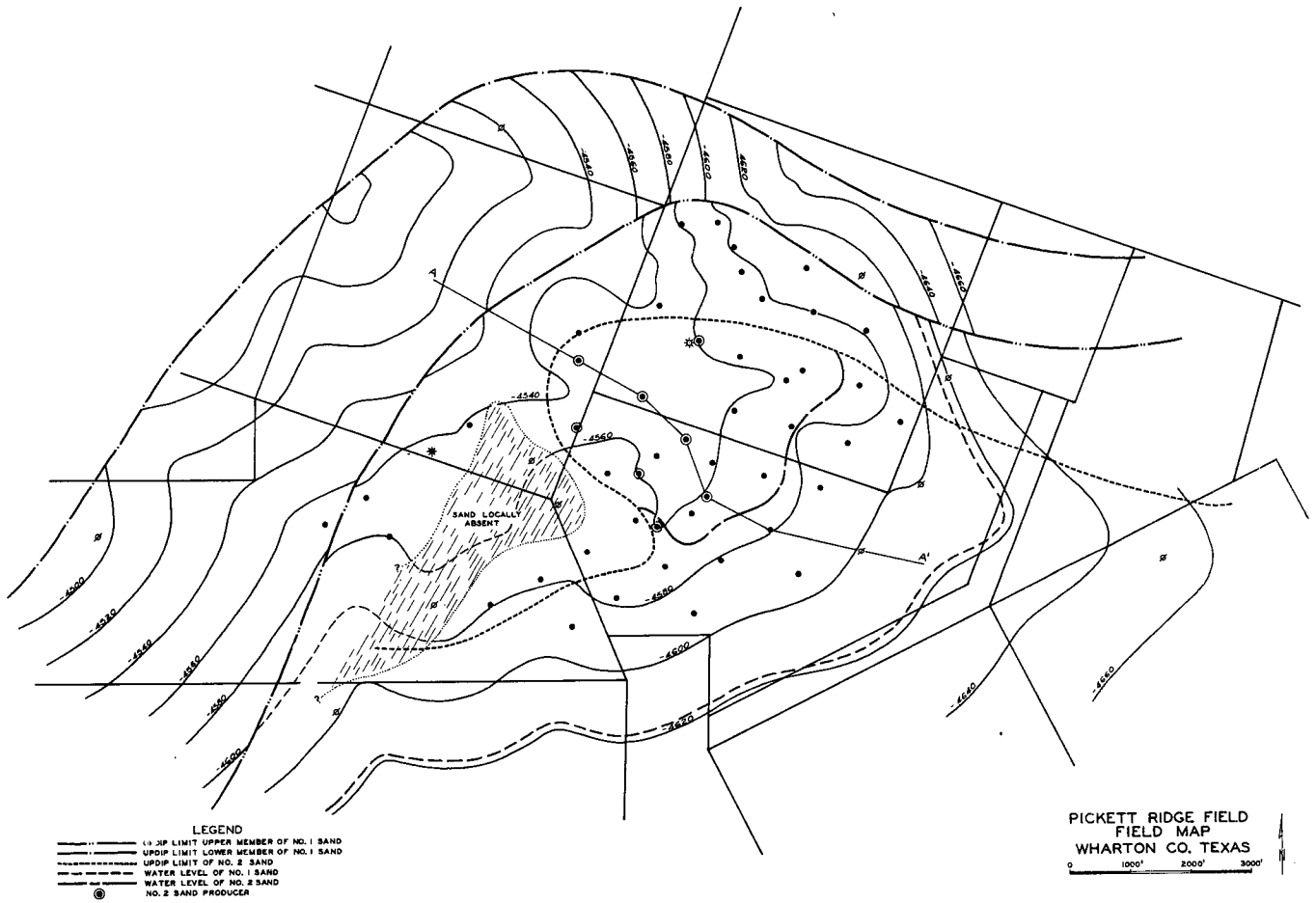


AMELIA FIELD
CROSS SECTION
JEFFERSON CO. TEXAS



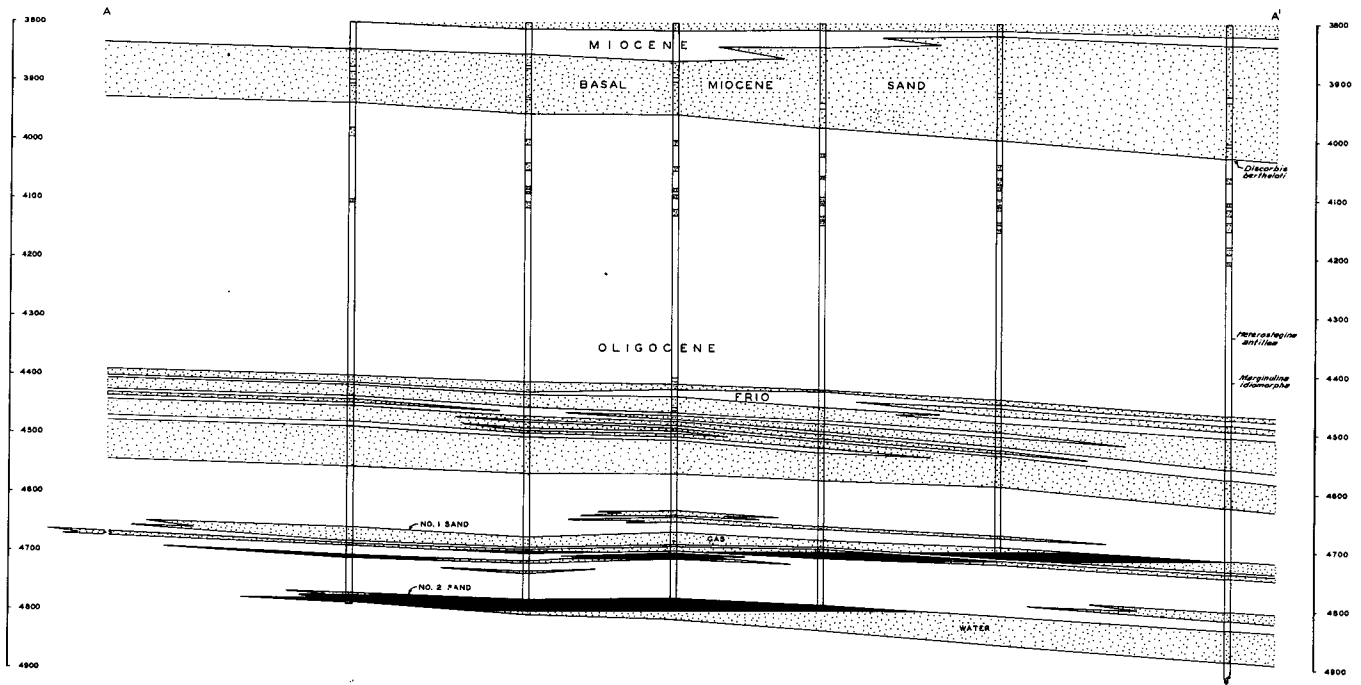
Other similar type structures are represented by Lovells Lake and Silsbee in Texas and Tepetate in Louisiana.

PICKETT RIDGE FIELD



Stratigraphic trap showing sands pinching out up-dip across low relief structure represented by Pickett Ridge, Wharton County, Texas.

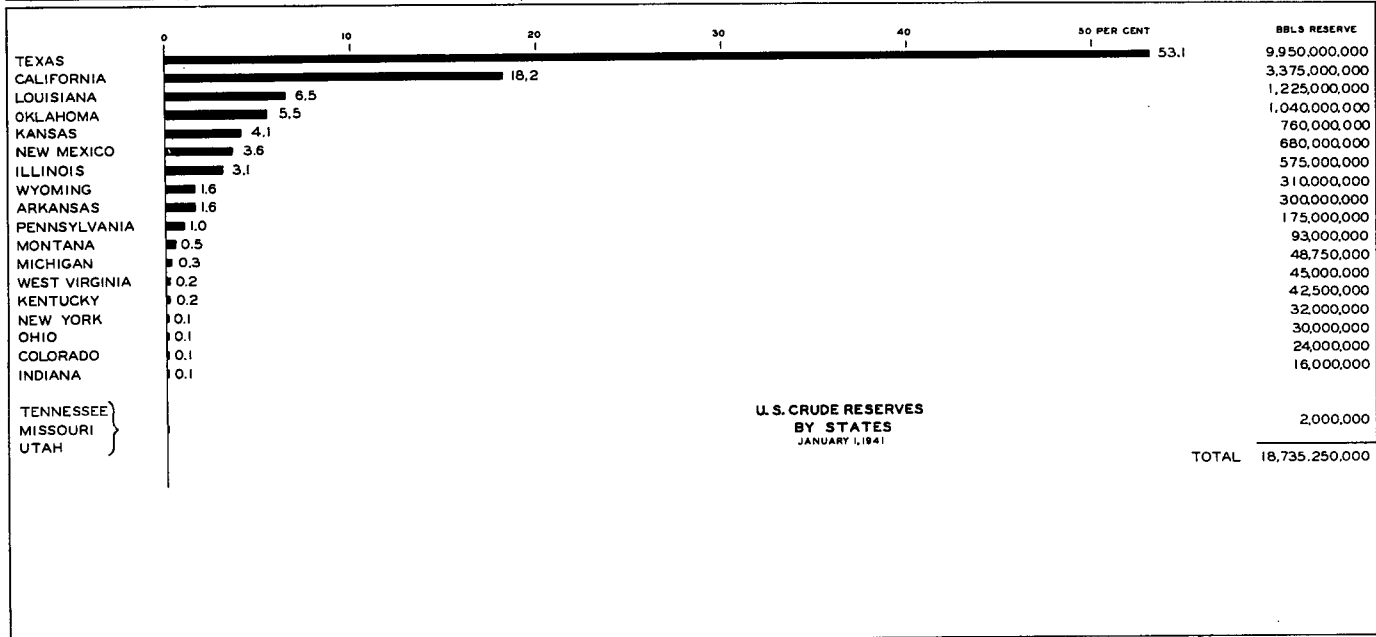
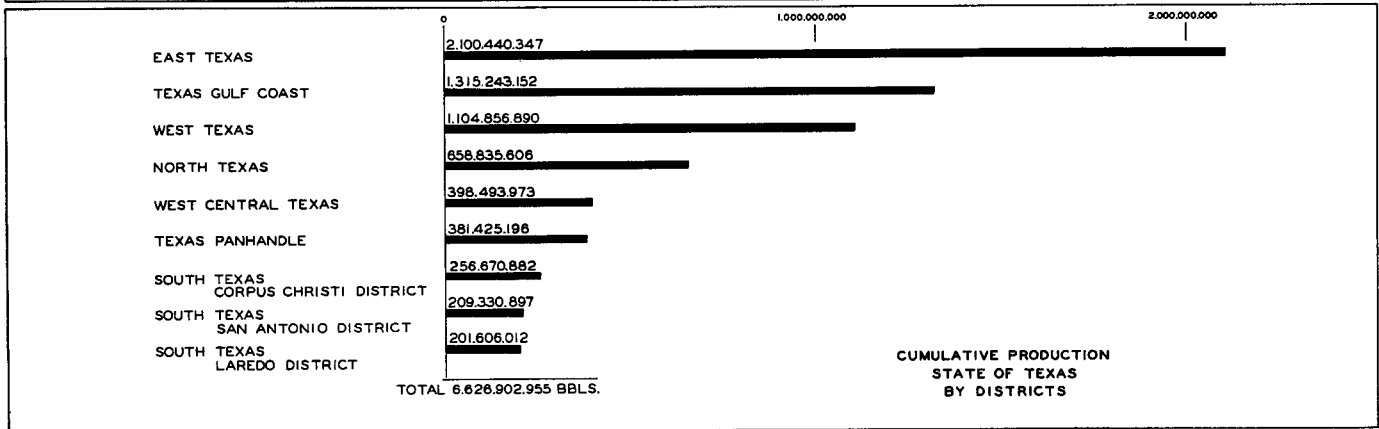
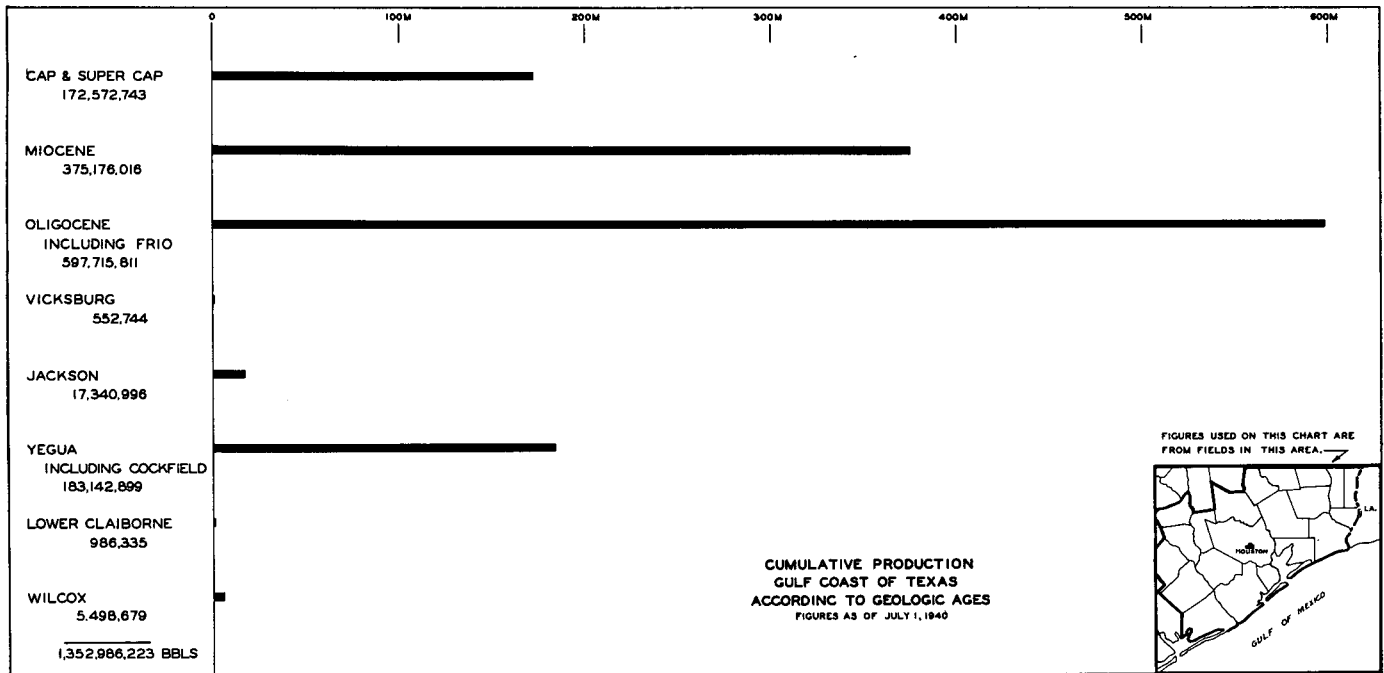
PICKETT RIDGE CROSS SECTION



PICKETT RIDGE FIELD
CROSS SECTION
WHARTON CO. TEXAS

Although stratigraphic irregularities account for limited amounts of production in numerous Gulf Coast fields, Pickett Ridge is the only outstanding example near Houston. Further southwest, particularly in the Laredo District, this type of trap is most common.

SOME GRAPHIC COMPARISONS OF PRODUCTION AND RESERVES



TEXAS HAS 53.1% OF NATION'S OIL RESERVES

Texas has 9,950,000,000 barrels of reserves, as of January 1, 1941, or 53.1% of the total United States reserves.

Texas' daily average production in December, 1940, was 1,289,050 barrels. This is 36.3% of the United States daily average production.

9,735 wells were drilled in Texas in 1940, with an initial oil production of 4,801,227 barrels.

7,107 oil wells
291 gas wells
2,337 dry wells
<hr/>
9,735 Total

Texas has a total of 95,440 oil wells, as of December 1940, or 24.3% of the total in the United States.

East Texas, discovered in 1930, is the only billion barrel individual pool in the world. In 1940 it produced 140,851,200 barrels, and total cumulative production is now 1,588,672,984 barrels. At one time it produced over 1,000,000 barrels of oil in 24 hours. It consists of a single reservoir spreading out continuously over 132,000 acres in five counties, and is 3 to 8 miles wide and 40 miles long.

During 1940 the state of Texas produced 53,710.4 barrels of oil per hour.

Footage drilled in Texas in 1940 was 36,604,646 feet, or 87.5% of the distance through the earth. Footage drilled in the United States in 1940 was 93,937,717 feet, which is a little more than twice the distance through the earth. Illinois was second with 9,573,034 feet.

NEARLY 300,000 RESIDENTS OF THE GULF COAST depend for their entire living upon petroleum. The figure is based upon a survey of the Gulf Coast area recently completed by statisticians for the Texas Mid-Continent Oil and Gas Association.

“Figures gathered from individual operators and companies in the 29 counties comprising the Gulf Coast proration district show that 294,816 persons this area depend upon the oil and gas and oil supply industries for their livelihood,” according to the Association's report. “This is based upon the employment of 73,704 Gulf Coast workers in these industries, and using an average of four persons to a family.

Spent At Home “The wage-earners of this group receive the huge sum of \$91,065,285, or not far short of \$100,000,000 a year, in wages and salaries. Gulf Coast farmers and ranchers receive over a fifth as much in lease and royalty payments which total \$20,953,759 additional. Together, Gulf Coast workers and farmers receive the huge sum of \$112,019,044 a year, virtually all of which is spent and respent with Gulf Coast retail merchants, professional men, insurance and savings institutions, landlords and others of our section.

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Two Hundred Million “In addition the Gulf Coast petroleum industry pays out \$20,476,021 a year in State and local taxes, NOT counting the gasoline taxes paid by the individual motorists. Thus petroleum now pays almost as much in State and local taxes in our section as it does to our farmers and ranchers and almost one-fourth as much as to the workers. Counting Federal taxes and the reinvestment of the industry in field developments and plant expansions, the petroleum industry spends in the Gulf Coast the tremendous sum of \$210,000,000 a year. That’s \$17,500,000 a month for every month in the year.”

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Oil Empire A survey of the tax rolls of all 29 Gulf Coast counties shows a total assessed value for all kinds of properties of \$926,072,641 of which oil properties alone represent \$320,744,127, or over one-third. A check of Gulf Coast land under lease reveals that 6,796,764 acres have been leased for oil and gas development, and that 417,440 acres have already been proved productive.