the buried Ouachita Mountain overthrust belt. Gently
dipping surface strata of Permian, Pennsylvanian, and
Cretaceous rocks mask most of the deep subsurface
structure.

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Stratigraphy of Lower Pennsylvanian Gas-Bearing
Sediments of Eastern Bend Flexure

The lower Pennsylvanian formations which produce
oil and gas along the Bend flexure and in the Fort Worth
basin crop out in the Llano uplift area. These outcrops
have been studied extensively from both paleontological
and lithological viewpoints from which several conflict-
ing classifications have evolved. With the addition of
subsurface terminology, stratigraphic classifications
vary with individuals and companies.

From a regional subsurface study, it becomes ap-
parent that there are three lithologic units of lower
Pennsylvanian age which are of paramount economic
importance. These units are the Comyn, Marble Falls,
and Big Saline formations. These formation names were
used because of their prominence in published literature
and their descriptive nature.

The Comyn and overlying Marble Falls are very
similar, both in lithologic character and depositional his-
tory, but can be separated in the subsurface on the basis
of electric-log correlations. It is the contention of the
author that these units are equivalent to the undiffer-
entiated “Marble Falls” outcrops in San Saba, Llano,
and Burnett counties and that they are Morrowan in
age.

Hydrocarbon production from the Comyn has been
minor and appears to be limited to porosity traps near
its western edge in Eastland and Stephens counties.
The Marble Falls deviates from this pattern and pro-
duces gas from porosity development along its deposi-
tional axis in Comanche and Hamilton counties.

The Big Saline outcrops in McCulloch County are
believed to be Atokan in age due to rather wide litho-
logic variation and depositional history between it and
the underlying Morrowan units. This is substantiated
by paleontological evidence. The Big Saline is litho-
logically heterogeneous, with graded sediments in Jack
and Wise counties. Both limestone and coarse clastic
reservoirs are basically gas-bearing, but oil production
is commonly found in either lithologic type of rock.

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Boonesville Bend Gas Field of Wise County, Texas

The Boonesville Bend gas field is one of the largest
in North Texas, more than 470 wells producing from an
area of approximately 450 square miles, predominantly
in Wise County, at the north end of the Fort Worth
basin. A thin Cretaceous cover unconformably is under-
lying the Mississippian limestone which in turn is under-
lying the Ellenburger dolomite. The Boonesville pay
produces from stratigraphic traps in highly variable
lenses of fine- to coarse-grained, well cemented to porus
sandstones and fine, poorly sorted conglomerates. The
field is producing 5 billion cubic feet of gas per month.
Total ultimate recovery is estimated at one trillion cubic
feet of gas. The boundaries of the fields are fairly well
defined and drilling of inside locations will be the prin-
cipal future development in the field.

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Pottsville Gas Area of Hamilton and Comanche Coun-
ties, Texas

The Pottsville Gas Area, as it is defined in this paper,
is geographically located 90 miles southwest of Fort
Worth in Hamilton County and southern Comanche
County, Texas. Geologically, it is in the west part of
the Fort Worth basin approximately 20 miles east of the
Bend flexure. The Marble Falls limestone in the Atoka
series of the Middle Pennsylvanian is the gas-producing
formation of the area. This limestone occurs in an area
25–35 miles wide trending northeast from its outcrop on
the Llano uplift in San Saba County. Under the Potts-
ville gas area the Marble Falls limestone is deposited on
top of the Comyn limestone and is encountered at
depths ranging from 2,269 feet to 3,850 feet.

The Energy field of Comanche County and the Potts-
ville and South Pottsville fields of Hamilton County are
Marble Falls gas fields located in the west part of the
Pottsville gas area. These fields overlie adjacent anti-
clinal structures developed on a horst which was formed
by post-Marble Falls forces associated with the Llano
uplift. Structural relief on the Marble Falls in these
fields ranges from 300 feet in the Energy and South Pottsville fields to 500 feet in the Pottsville field with
synclinal troughs separating the individual features.

Exploration in the Pottsville gas area for undiscovered
fields of the Energy, Pottsville, and South Pottsville
type should be confined to the depositional limits of the
Marble Falls limestone. Seismograph work guided by
subsurface control appears to be the most efficient
method to explore for these traps.

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Pennsylvian System in Texas

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Geology of Gas Fields of Western Anadarko Basin,
Texas and Oklahoma Panhandles

The general area of this paper consists of the six most
northeastern counties of the Texas Panhandle, namely,
Hansford, Ochiltree, Lipscomb, Hutchinson, Roberts,
and Ampthill counties and the two eastern counties of
the Oklahoma Panhandle, or Texas and Beaver coun-
ties. This area is part of the Western Anadarko basin,
which is an asymmetrical sedimentary basin with its
main axis trending northwest and southeast. This
basin actively subsided during Pennsylvanian time.
Gas fields have been found scattered over much of this
area and these fields produce gas from rocks ranging in
age from Permian to the Mississippian with Morrow
(lower Pennsylvanian) sands furnishing the greatest
number of reservoirs. The depths of production range
from 2,600 feet to 13,600 feet. Most of these reservoirs
result from stratigraphic traps but structural anomalies
control, in part, the gas accumulation in a few fields.
Sandstone forms the principal reservoir rock. With rare
exceptions these reservoirs have moderate to low
pressures, and with few exceptions, the gas is fairly dry.
Generally accepted reserves estimates for these various
reservoirs range from 350 MCF per acre foot to more
than 300 MCF per acre foot. Several gas fields cover
large areas and comprise many individual reservoirs
which are separated both horizontally and vertically;
other fields consist of one, two or few wells. The sepa-
rate reservoirs of the multipay fields commonly com-
prise sand lenses each with separate but similar physical
characteristics. Dual and triple completions are not