

SUMMARY FOR PAPER#9
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**PRELUDE TO THE FUTURE OF SHALE GAS DEVELOPMENT:
THE FAYETTEVILLE SHALE PLAY IN ARKANSAS**

by

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I. INTRODUCTION

The Fayetteville Shale spans across Arkansas in a belt running from the north to central part of state that encompasses 9000 square miles.

The deposition is an unconventional “tight sand” resource. It is as “tight as a tick” with permeability measured by nanodarcies as opposed to millidarcies. The horizontal well, as opposed to the customary vertical well, along with cutting edge fracing, holds the key to enhanced production from Fayetteville Shale wells.

The first Fayetteville shale well was drilled in Arkansas in 2004 and there are currently over 1000 producing shale wells in the state. Like the Barnett Shale in Texas, its progenitor, the Fayetteville Shale will be one of the major gas producing fields in the United States.

Shale gas and other unconventional gas resources now contribute 46% of total gas production in the United States. By 2011, 50% to 60% of new discovered reserves will come from shale gas reservoirs.

II. HISTORY OF THE REGULATION OF OIL AND GAS PRODUCTION IN ARKANSAS (CONVENTIONAL OIL AND GAS RESERVOIRS)

A. The Rule of Capture and Common Pool Exploitation

The development of oil and gas resources in the State in the early days of the industry was governed by the rule of capture, which permitted each landowner the unrestricted right to drill and produce from wells located on-tract without incurring liability for off-tract drainage. Because oil and gas is produced from subsurface reservoirs which may, and frequently do, underlay numerous separately owned tracts, the rule of capture simply mandated the classic “common pool exploitation” of the reservoir in which each tract owner, to ensure recovery of her “fair share” of the reservoir, was encouraged to produce as much oil and gas from the “common pool,” i.e., the “common source of supply,” as fast as possible. The resultant “race” to the depletion of the reservoir wasted oil and gas reserves, as well as

economic resources, and jeopardized property rights.

B. The Arkansas Oil and Gas Conservation Act of 1939

The Arkansas Oil and Gas Conservation Act was enacted in 1939 to control and regulate the production of oil and gas. The Act is representative of the numerous state oil and gas conservation acts enacted in the 1930's to remedy the evils associated with "common pool exploitation" by modifying the rule of capture and regulating the drilling and production of oil and gas. The Act established the Arkansas Oil and Gas Commission (AOGC) to administer the production and conservation sections of the Act.

The purpose of the Act is to prevent waste and protect correlative rights.

C. Limiting the Density of Drilling: The Drilling Unit

Drilling units that permit only one (1) well in the reservoir for each drilling unit is the mechanism that avoids the unnecessary and uneconomical wells of the Rule of Capture.

As initially required by the Act, the AOGC established drilling units by determining the maximum area that one well would efficiently and economically drain based on the geologic characteristics of the reservoir. The AOGC delineated the geographic area of efficient and economic drainage on the surface of the earth and designated the area as a drilling unit.

Drilling units were fashioned as squares and rectangles that corresponded to the rectangular system of legal descriptions of land that applies exclusively in Arkansas.

Drilling units were based on a "simon pure" surface grid without regard to geological interpretation. Arkansas did not draw geologic drilling units or gerrymander the surface configuration of the drilling units to correspond to geologic interpretation.

D. Forced Integration

Forced Integration is ancillary to the establishment and operation of the drilling unit under the Act.

If the owners of the right to produce oil and gas from the drilling unit do not agree to voluntarily pool, the Arkansas Act mandates the AOGC, upon the application of any such owner to force integrate all tracts and interests for the unit development.

The election for the unleased mineral owner: participating by payment of costs, a free ride (carried interest) with a risk factor penalty plus a 1/8 royalty, and be leased for a bonus and a

competitive royalty. The election for the working interest owner: participate by payment of costs or the free ride with a risk factor penalty.

E. No Increased Density or Infill Wells in North Arkansas gas fields prior to 2003

640 acre drilling units were the norm in North Arkansas gas fields.

“Once Cup, One Straw or the unwritten “Rule of One” Law and Protection of Vested Rights.

F. The 2003 Legislative Amendment to the Well Spacing section of the Conservation Act

The inability to drill infill wells to recover gas not being drained by the unit, and problems in establishing separation of reservoirs where multiple reservoirs, sometimes vertically stacked, underlay a 640 acre drilling, made a mockery of the Rule of One’s well spacing regulations.

Consequently, in 2003, the legislature amended the well spacing regulations.

The amendment created a statutory presumption in favor of the 640 acre unit composed of a governmental section though it permitted the AOGC to establish a larger or smaller unit. The AOGC is specifically authorized to permit additional wells in the unit and regulate the spacing between the multiple unit wells.

Deleted from the Act is the requirement that drilling units be established on the basis of the maximum area that one well would efficiently and economically drain. Statutory guidance to the AOGC on the parameters to be used in drawing drilling units no longer appears in the Arkansas Conservation Act.

As opposed to hearing evidence on the acreage that a single well would economically and efficiently drain, the AOGC hears evidence on the “most effective and efficient manner of locating multiple wells for the effective, but cost-efficient, removal of the maximum amount of oil and gas from a square mile unit.”

Whatever one may think of the lack of statutory standards for delineating drilling units, it is difficult to argue that the amendment is not an improvement over the Rule of One.

III. WELL SPACING FOR THE FAYETTEVILLE SHALE

The AOGC draws prospective drilling units for Fayetteville Shale and other unconventional gas reservoirs in Arkansas. Each governmental section in each county in which the Fayetteville Shale is known or thought to exist is covered on a county by county basis.

The well bore for a horizontal well is defined as the entire perforated length of the

lateral section of the horizontal well.

Consequently, based on that definition, a horizontal well involves a long narrow cylinder of producing reservoir. Sixteen (16) horizontal wells may be drilled in the unit.

The cylinders may be arranged in such a fashion to achieve effective and cost efficient drainage of the reservoir.

In order to protect drilling units from drainage, a horizontal well must be set back a distance of 560 feet any unit boundary line or any other drilling unit's well.

The 560 foot set back actually creates a buffer zone of 1120 feet when adjoining drilling units are involved.

The AOGC permits horizontal wells to extend into more than one drilling unit when the majority in interest of working interest owners in the affected drilling units seek authorization from the Commission and voluntarily agree to the allocation of costs and the proceeds from production.

If either of the affected drilling units have previously been forced integrated, the costs and proceeds of production is allocated by drawing a "cylindrical unit" around the perforated well bore and allocating costs and the proceeds of production between each participating drilling unit based on the proportion of the cylindrical unit (the calculated area) that is located in each such drilling unit.