

**RULES DONE RIGHT
HOW ARKANSAS BROUGHT ITS OIL AND GAS LAW INTO A HORIZONTAL WORLD**

BY THOMAS A. DAILY¹

I. INTRODUCTION

The United States oil and gas industry is over a century and a half old.² The Mansfield Gas Field in Sebastian and Scott Counties in Arkansas was discovered in 1902,³ while the El Dorado, Arkansas oil boom started with the blowout of the Busey-Armstrong No. 1 Well on January 10, 1921.⁴ Those early discoveries were seminal events, to be sure. They led to a century of conventional oil and gas production which, in Arkansas, by the year 2000, had largely devolved to a few still-producing but depleted reservoirs.

Then, at the beginning of the twenty-first century that all changed with the Shale Boom. Now we foresee exploitation of vast reserves of hydrocarbons in unconventional rock formations, such as shales. Newly-perfected horizontal well drilling techniques, in combination with multiple stage hydraulic fracturing within those wells provided a true game-changer, transforming our domestic oil and gas outlook from bleak to bright. This is an article about how one state—Arkansas—successfully transitioned its regulation of the oil and gas industry to accommodate those changes in the business itself while preserving fidelity to the rationale for such regulation in the first place.⁵ It will be, in part, a history, written by a personal observer and sometimes participant in the process.⁶ On another level it may serve as an example for other states engaged in the same transition.

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²“Colonel” Edwin Drake’s first oil well, near Titusville, Pennsylvania was drilled in 1859.

³ *Ahne v. Reinhart & Donovan Co.*, 240 Ark. 691, 693, 401 S.W.2d 565, 567 (1966).

⁴ Buckalew, A. R. and B. B., “The Discovery of Oil in South Arkansas, 1920-1924”; *Arkansas Historical Quarterly* 33 (Autumn 1974): 195-234.

⁵ See Phillip E. Norvell, *Prelude to the Future of Shale Gas Development: Well Spacing and Integration for the Fayetteville Shale in Arkansas*, 49 WASHBURN L.J. 457 (2010) (providing an excellent, objective (less personal) view on the same subject).

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This article will start at the beginning, which, for the study of oil and gas law, is the Common Law Rule of Capture. It was, after all, the implosion of the oil industry—triggered by the kind of destructive competition which is a natural consequence of the Rule of Capture—which led to government regulation of the industry. The article then follows the history of Act No. 105 of 1939, Arkansas’s Oil and Gas Conservation Act, which began Arkansas’s modern regulation of oil and gas production. It will then move to a discussion of how subsequent legislation amended Act 105 to facilitate the regulatory changes to come. Last, it explains how the Arkansas Oil and Gas Commission (“A.O.G.C.”) has used its authority under the amended statute to enact regulations (primarily its General Rule B-43) to control the horizontal well development of the Fayetteville Shale Play in Central Arkansas. All of which was accomplished while holding true to the underlying purposes of the original act—the prevention of waste, concurrent with the protection of the correlative rights of all owners.

II. BEFORE REGULATION, YOU COULD CAPTURE OR BE CAPTURED FROM

Oil and gas are fugacious⁷ minerals. Thus, their ownership is governed by the ancient Common Law Rule of Capture.⁸ The Rule of Capture has long been a part of Arkansas law. In the 1912 case of *Osborn v. Arkansas Territorial Oil & Gas Co.*,⁹ the Arkansas Supreme Court, quoting from an earlier United States Supreme Court Decision,¹⁰ stated:

Petroleum, gas, and oil are substances of a peculiar character. *** They belong to the owner of land, and are part of it so long as they are part of it or in it or subject to his control; but, when they escape and go into other land or come under another's control, the title of the former owner is gone. If an adjoining owner drills his own land and taps a deposit of oil or gas extending under his neighbor's field, so that it comes into his well, it becomes his property.¹¹

⁷ Of an unsubstantial nature: lasting a short time...not fixed in a certain place: WANDERING. WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (1968).

⁸ See Dylan O.Drummond, Lynn Ray Sherman, and Edmond R. McCarthy, Jr., *The Rule of Capture in Texas—So Misunderstood After all These Years*, 37 TEX. TECH L. REV. 1 (2004) (providing an interesting history of the ancient origins of the Rule of Capture); Bruce M. Kramer & Owen L. Anderson, *The Rule of Capture—an Oil and Gas Perspective*, 35 ENVTL. L. 899 (2005) (offering a thorough discussion of the application of the Rule of Capture to Oil and Gas Production).

⁹ 103 Ark. 175, 199, 146 S.W. 122, 124 (1912).

¹⁰ *Brown v. Spilman*, 155 U. S. 665 (1895).

¹¹ *Osborn*, 103 Ark. at 199, 146 S.W. at 124 (1912).

More simply stated, every well's owner had a legal right to keep everything his well could produce as long as it did not physically cross over onto a neighboring tract, but, as a corollary, the neighbor had a legal right to drill her own wells and capture from him as well.¹²

The trouble is that the Rule of Capture, left to run amuck in that fashion leads to a pretty dreadful end:



Competition among drillers for limited oil and gas reserves inevitably led to an intolerable situation as the above 1903 photograph of Spindletop's Boiler Avenue near Beaumont, Texas graphically shows. Not only were there far more wells drilled than those needed to produce the recoverable oil, excessively rapid production actually damages the underground reservoir, reducing the ultimate recovery and causing large amounts of oil to be lost forever. Of even greater concern to the industry itself was the resultant glut of oil, which led to a freefall in the price of oil. However, the industry was powerless to save itself.

¹² The latter is called the "offset drilling" rule.

III. WHAT THIS PICTURE NEEDS, IS SOME GOVERNMENT INTERVENTION

In his history of oil in the world's economic development, author Daniel Yergin wrote:

But who would control production? Was it to be done voluntarily or under the government's aegis? By the Federal government or by the States? Even within individual companies there were sharp debates. A major split developed within Jersey Standard, with Teagle in favor of voluntary control, while Farish, the head of the Humble subsidiary, concluded that the government had to be involved. 'The industry is helpless to help itself,' Farish wrote to Teagle in 1927. 'We must have government help, permission to do things we cannot do today, and perhaps government prohibition of those things (such as waste of gas) that we are doing today.' When Teagle suggested that 'practical men' from the industry should develop a program of voluntary self-regulation, Farish replied sharply, 'There is no one in the industry today who has sense enough or knows enough about this to work out this plan.' He added, 'I have come to the conclusion that there are more individual fools in the petroleum industry than in any other business.'¹³

The governments of Texas and Oklahoma each attempted to place controls on oil production with limited success. Oklahoma's statute, enacted in 1915, empowered the Oklahoma Commerce Commission to "regulate oil production to match the market's demand, a power that was very explicitly denied to the Texas Railroad Commission."¹⁴ Thus most of Texas' efforts were declared invalid by Federal Courts. "At one point the Railroad Commission itself was held in contempt of court."¹⁵

During that time the world had sunk into the great depression. In 1933, Franklin Roosevelt became president of the United States. Roosevelt's New Deal included oil price and production controls. The National Industrial Recovery Act, enacted in 1933, gave the president the power to promulgate a Code of Fair Competition for the Petroleum Industry.¹⁶ Roosevelt did just that, but his executive orders were declared by the Supreme Court to be the result of an unconstitutional

¹³ Daniel Yergin, *THE PRIZE—THE EPIC QUEST FOR OIL, MONEY & POWER* 206 (Free Press Trade Paperback ed. (2008)).

¹⁴ *Id.* at 323.

¹⁵ *Id.*

¹⁶ Pub. L. No. 67, 73rd Congress, June 16, 1933.

delegation by Congress of its legislative authority.¹⁷ Later, in a 1935 decision, the Supreme Court held most of the remainder of the National Industrial Recovery Act to be unconstitutional for the same reason, as well as because it purported to regulate interstate commerce, but, in reality, regulated intrastate commerce.¹⁸ Thus, regulation of oil and gas production became the province of the individual states.

On February 16, 1935 six states¹⁹ endorsed “An Interstate Compact to Conserve Oil and Gas,” which was consented to by Congress on August 27, 1935.²⁰ A delegate of Arkansas’s governor represented the state in the original 1935 formation of the Compact, and recommended that Arkansas join, which it officially did by the enactment of Act No. 86 of 1941.²¹ One of the first projects of the compact was the drafting of a model conservation act for enactment by member states.

That model act, and the conservation acts of the several states which patterned their own acts on that model, approached regulation of the oil and gas industry more expansively than mere production or price controls. Instead, such acts modify the Rule of Capture itself, by authorizing a state conservation agency to create drilling units, each originally intended to contain a single well, and thus limit the number of wells drilled to the number of wells needed. All owners within such a unit are required to share the costs and production from the unit well, thus obviating the need for a rule permitting offset drilling. Conservation agencies were also empowered to control the location and spacing of unit wells to minimize uncompensated drainage between units. Such laws were expressly intended to prevent waste and to protect the correlative rights of the owners within a common pool of oil and/or gas.

The correlative right of an owner to share a unit well is the statutory substitute for the right of offset drilling which she enjoyed under Common Law. Her Common Law absolute right to drill her own well—to capture back—contributed to the problem to begin with and, if preserved, would have

¹⁷ *Panama Refining Co. v. Ryan and Amazon Petroleum Corporation v. Ryan* (consolidated), 293 U.S. 388(1933).

¹⁸ *A.L.A. Schechter Poultry Corporation v. U.S.*, 295 U.S. 495(1935).

¹⁹ Oklahoma, Texas, New Mexico, Illinois, Colorado and Kansas.

²⁰ 49 Stat. 939-941 (1935).

²¹ ARK. CODE ANN. §§ 15-72-901through904 (Repl. 2009).

undermined the statutory intent of preventing unnecessary wells. However, it would be unconscionable, and likely an unconstitutional taking, to deny her that right without giving her a new correlative right to own a fair share of the unit well.

There are two broad types of waste to be prevented. Clearly physical waste of oil and gas was occurring, but what about economic waste? An excessive number of wells results in excessive costs. Producing oil or gas far in excess of market demand, thus depressing prices, may also be characterized as economic waste. In that case, the waste's measure is the difference between the depressed sale price and the true value of the commodity.

Arkansas's own Oil and Gas Conservation Act²² was enacted as Act No. 105 of 1939. It is currently codified as Ark. Code Ann. §§ 15-72-101 through 407.²³ It is similar to the original Interstate Oil and Gas Compact Model Act. The Conservation Act created a State Administrative Agency, the A.O.G.C., with authority to regulate all aspects of oil and gas production.²⁴

The act's preamble sets out its objectives:

AN ACT to Prevent Waste, Foster, Encourage and Provide Conservation of Crude Oil and Natural Gas, and Products Thereof and Protect the Vested, Co-Equal or Correlative Rights of Owners of Crude Oil or Natural Gas . . .

Those objectives are then reiterated in the Act's Section 1:

DECLARATION OF POLICY: In recognition of past, present and imminent evils occurring in the production and use of oil and gas, as of result of waste in the production and use thereof in the absence of co-equal or correlative rights of owners of crude oil or natural gas in a common source of supply to produce and use the same, this law is enacted for the protection of public and private interests against such evils by prohibiting waste and compelling ratable production.

"Waste" was defined by Section 9 of the Act to *include* "physical waste" and, indeed, Subsections 9(I)(1) through 9(I)(11) list various examples of physical waste which the act was intended to

²² Sometimes referred to herein as the "Conservation Act" or, simply, the "Act."

²³(Repl. 2009).

²⁴ Act No. 105 of 1939, §11, now codified, as amended, as ARK. CODE ANN. § 13-72-110 (Repl. 2009). The lone statutory exception to the Commission's authority to regulate is contained within § 14 B. of the Act, exempting those pools which prior to the effective date of the act (February 20, 1939) had been developed to the extent that it would have been impracticable to use a drilling unit from the Act's § 14.

prevent.²⁵ Section 9 does not mention economic waste. However, Section 11 of the Act granted the A.O.G.C. the authority to “limit and prorate the production of oil or gas or both.” Section 14 makes it clear that one purpose of the act was to prevent the drilling of unnecessary wells. So at least in those respects, the act targets economic waste as well.

The 1939 Act has seen numerous amendments. One of those was accomplished by Act No. 964 of 2003. That act is of particular importance to our discussion because it radically changed Section 14’s definition of a drilling unit, giving statutory legitimacy to that which has followed. Section 14 of the Act deals with the formation of drilling units.²⁶

Appendix I is the text of that statute, redlined to show the effect of the 2003 change. As you see, Arkansas’s 1939 statutory language defined a drilling unit as the “maximum area which may be efficiently and economically drained by one (1) well.” This kind of statutory language inserts a geological element into the unit formation process. Certainly, the determination of drainage area, if done correctly, would require a thorough understanding of the geology and reservoir characteristics of the productive formation. Even then, geologic interpretation once thought correct, is often proven erroneous by later wells and newer data.

Such geology-based unit creation has never actually been done in North Arkansas. North Arkansas contains the Arkoma Basin, once a prolific source of high quality dry natural gas, but no liquid hydrocarbons. Its geology is locally complex, so drilling units were typically formed long before there was sufficient geological and engineering information available to properly make the statutorily required determination of unit size and placement. To further complicate the issue, significant portions of the Arkoma Basin are underlain with multiple separate reservoirs at different depths beneath the surface. These multiple reservoirs exhibit different porosities, permeabilities, and physical boundaries, requiring different unit configurations at different depths if the former statutory requirement had truly been observed.

²⁵ Section 9 is the definition section of the Act.

²⁶ §14 is now codified as ARK. CODE ANN. § 15-72-302 (Repl. 2009).

Instead, the A.O.G.C formed simple square units to cover all depths beneath the surface, which arguably failed to comply with the statute as it read at that time.²⁷ Nevertheless, those square units facilitated the commingling of multiple pay-zones within depleted wellbores, thus extending the life of those wells and preventing waste of gas caused by premature well plugging.²⁸

The units mostly coincided with Arkansas's approximately 640 acre governmental sections. They underlay the surface so that the boundary of each coincides with the boundary of the next. The A.O.G.C. has long displayed a strong aversion to leaving open acreage between units, which it often refers to a "windows."

The 2003 statutory amendment legitimized those governmental section units. Because of that amendment, geology no longer is related to unit size or shape. Now units are officially 640 acre governmental sections. Drainage area is immaterial. Exceptions are permitted, but only upon request of an owner, "as defined in § 15-72-102." That code section defines "owner" as a "person having the right to drill and produce."²⁹

Just as significant, the 2003 statutory amendment expressly empowered the A.O.G.C. to authorize multiple unit wells,³⁰ and regulate their locations within units. The previous statutory reference to "a single well" suggested that such authority may not have existed,³¹ though the A.O.G.C. was permitting some increased density wells, particularly in highly faulted areas or reservoirs lacking reservoir permeability. Since the A.O.G.C. is now empowered to permit and control the locations of multiple unit wells, it can regulate unit drainage as the geological and

²⁷ See, e.g. *Gatti v. State ex. rel. Dept. of Conservation*, 2014 WL 3517548 (La. Ct. App. 2014) (reversing summary dismissal of a challenge by mineral owners to the formation, by the Louisiana Department of Conservation, of 640 acre governmental section units with multiple wells permitted for production of natural gas from the Haynesville Shale Formation, which they contended violated an almost identical "one well" provision in Louisiana's Conservation Act) (*rev'd on other grounds*). That decision of the Louisiana Court of Appeals was later reversed by the Louisiana Supreme Court on procedural grounds, so the issue, in Louisiana, never reached adjudication on the merits. *Gatti v. State ex. rel. Office of Conservation*, 2014 WL 4376223 (La. 2014).

²⁸ To corrupt a phrase from a former United States First Lady, and Texan, "let no molecule be left behind."

²⁹ I.e., a working interest owner.

³⁰ Sometimes called "increased density wells."

³¹ As contended by the Plaintiffs in *Gatti*, 2014 WL 3517548 at *2. .

engineering understanding of a unit develops, rather than guessing on the front end what a single well might drain.

Another important part of Act No. 105 of 1939 was Section 15, which enabled the integration of non-consenting owners, a process called “force-pooling” in many other jurisdictions where it is permitted by statute. The original 1939 Act merely provided that an operator, through integration, could recover the costs attributable to a non-consenting party’s interest from production prior to that party having a right to participate in the unit’s well(s). That limitation no longer exists because a 1963 amendment substantially rewrote the act’s integration sections.³² The statutory authority for the integration process is now codified as Ark. Code Ann. §§ 15-72-303 through -304.

So, to summarize, from and after February 20, 1939, Arkansas oil and gas production has been regulated by its Oil and Gas Commission, operating under a statute that became effective that date. That process has been helped along by amending statutes, particularly those adopted in 1963 and 2003.

Then, suddenly, something really big happened.

IV. WELCOME TO THE FAYETTEVILLE SHALE PLAY

In 1939, or for that matter even in 1989, oil and gas professionals assumed that all recoverable oil and gas was trapped in porous permeable reservoirs, usually composed of sandstones or limestones. If one drilled a well vertically into a propitious spot in one of those reservoirs, oil and/or gas would flow into your well and, figuratively, into your wallet. Indeed, that plan worked pretty well for a long time, but, alas, we inevitably began running out of undrilled propitious spots.

Fortunately, all was not lost. The oil and gas business recently learned a new and wonderful word —“unconventional.” Unconventional means shale, or some other extremely

³² Act No. 536 of 1963.

dense rock which is rich in hydrocarbons.³³ The critical characteristics of an unconventional reservoir are high organic content, conducive to the formation of oil and/or gas, but very low permeability. Scientists have long theorized that immense reserves of oil and gas were locked within unconventional rocks, but lacked the ability to produce those reserves with conventional vertical-well technology, making their exploitation commercially impractical. Science then came to the rescue. Around the start of this century, the drilling industry perfected two processes, horizontal drilling and multiple stage hydraulic fracturing (fracking). The recovery of oil and gas from unconventional rock formations, using those techniques, has set off a genuine boom in United States domestic exploration and production.

A recent morning headline read: **Despite turmoil, oil prices falling—Crude ample on U.S. output.**³⁴ The article went on to note the actual shooting wars ongoing in four of the world's prolific oil and/or gas producing nations, along with a growing, oil-consuming U.S. economy as reasons why we might expect crude oil and gasoline prices to be soaring, yet the opposite has occurred.³⁵ Then the article explained “[w]hat’s changed is the shale fracking boom.”³⁶ In other words, greatly increased U.S. domestic output is making our economy near immune to such mostly external forces. The same article concluded with this summary from Adam Sieminski, the head of the Energy Information Administration: “It’s a very positive story for consumers.”³⁷

Arkansas was not left out of this new game. A band of acreage which lies in an east-west line roughly north of Little Rock is underlain by a rock named the Fayetteville Shale.³⁸

³³ For example, I am told that the Eagleford “Shale,” in South Texas is actually not a true shale, but rather is a dense organically rich limestone.

³⁴ ARKANSAS DEMOCRAT GAZETTE, August 14, 2014, at 1.

³⁵ *Id.*

³⁶ *Id.*

³⁷ *Id.* The article identifies the Energy Information Administration as the statistical arm of the U. S. Department of Energy. *Id.*

³⁸ Thus named because it outcrops at the surface near the City of Fayetteville, Arkansas. Curiously, Southwestern Energy Corporation, which was, at the time, located in Fayetteville, discovered that the Fayetteville Shale had productive potential and is, today, its leading producer.

Like the rest of North Arkansas productive reservoirs, the Fayetteville Shale contains only natural gas without liquid hydrocarbons. Current natural gas prices are lower than oil prices per equivalent heating value, so the Fayetteville Shale is somewhat less attractive than similar formations from which oil may be recovered, but it has nevertheless proved profitable for the companies which have learned to produce from it efficiently.

For example, according to its earnings report for the second quarter of 2014, Southwestern Energy Company, the largest gas producer from the Fayetteville Shale, reported that it sold 243 billion cubic feet of Fayetteville Shale natural gas during the first half of that year.³⁹ During the same period, its average realized gas price was \$3.98 per thousand cubic feet.⁴⁰ That calculates to gross revenue of nearly a billion dollars, earned in only half of the year.⁴¹ If royalties are a mere one-eighth⁴² of gross revenue, royalty owners in these Arkansas wells were paid more than \$120,000,000 on that production. Meanwhile, the same company reported that it paid taxes,⁴³ which averaged \$0.11 per thousand cubic feet during the six-month period.⁴⁴ Assuming that Arkansas received a proportionate share of those taxes, the state treasury's half-year share from this one company exceeded twenty-five million dollars. Not bad for a little Ozark Mountain gas play. As we will see below, the A.O.G.C.'s modern unconventional production rules contributed mightily to this success. In turn, the A.O.G.C. was enabled by good old Act 105 of 1039, as amended by Act No. 964 of 2003. Here is how it happened.

V. GENERAL RULE B-43

As noted above, Arkansas's 1939 Oil and Gas Conservation Act created the A.O.G.C. Thus, similar to virtually every regulated oil and gas producing jurisdiction, Arkansas's actual hands-on

³⁹Press Release, Southwestern Energy, Southwestern Energy Announces Second Quarter 2014 Financial and Operating Results (July 31, 2014) available at http://www.swn.com/investors/Press_Releases/2014/2Q_2014EarningsRelease.pdf.

⁴⁰*Id.*

⁴¹\$967,140,000, to be exact.

⁴²They are actually somewhat higher.

⁴³The lion's share of these are severance and gross production taxes, and excludes income taxes.

⁴⁴*See* Southwestern Energy, *supra* note 41.

regulation is done by that administrative agency, empowered to so regulate by the 1939 act as well as more recent legislative enactments.⁴⁵ The A.O.G.C. regulates most aspects of the oil and gas exploration and production processes. We will concentrate on that aspect of its regulation which relates to the unconventional production from the Fayetteville Shale Play.

Prior to the advent of the Fayetteville Shale Play, unit configurations, well set-back requirements, and other requirements pertaining to drilling and production in Arkansas were contained within “Field Rules”. Field Rules are simply a collection of those A.O.G.C. orders which created drilling units in response to specific discoveries of oil and/or gas. Shortly after making a discovery of a previously unknown reservoir, an operator applied to the A.O.G.C. for the establishment of a field.⁴⁶ Each order issued in response to such an application created a new field. Subsequent orders then sometimes have supplemented or amended those field rules. Those orders specified the lands to be included within the field, the size and pattern of the field’s units, well location provisions within the units and other regulations applicable to wells within the field.

Figure 1, Standard Township and Range to demonstrate field rule extensions

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

⁴⁵ Administrative agencies are creatures of statutes and are without authority to regulate beyond that specific authority granted by statutes. *See, e.g., Dobson v. Arkansas Oil and Gas Commission*, 218 Ark. 160, 235 S.W.2d 33 (1951) (holding that an A.O.G.C. order combining several producing units into a single field-wide unit for a secondary recovery unit exceeded its statutory authority under the Conservation Act). That problem was then remedied by Act No. 105 of 1951 which supplied the missing authority.

⁴⁶ A.O.G.C. General Rule B-38 requires that an application be submitted for the establishment of field rules governing a new discovery no later than the earlier of six months following the initial completion of the discovery well or after the drilling of three wells into the new reservoir.

Often, field rules provided for the field to consist of the units containing the discovery well(s) and “extensions thereto.” That so-called “automatic extension” provision causes the field to expand, Scrabble-board style, as future development occurs. It works like this. Assume that the initial field rule order provides for 640 acre governmental section units, the first of which, Section 15 of a standard township and range, contains the discovery well. As is shown in Figure 1, Section 15 is directly offset by Sections 10, 14, 22 and 16, with four corner offsets consisting of Sections 9, 11, 21, and 23. Each of those offsetting sections is a potential extension, and thus is eligible to become part of the field, if and when a well is completed in that offset. For example, assume that the next well is drilled in Section 11, a corner offsetting extension to Section 15. That well completion will then create a new group of eligible extensions (Sections 1, 2, 3, 12 and 13, which are offsets to Section 11). Of course, Sections 10, 14 and 15 are also offsets to Section 11, but Section 15 was already within the field and Sections 10 and 14 were already extensions. In the same fashion, as additional wells are completed, the field grows, as does the list of eligible extensions.

Sooner or later, when development in the area is dense, fields may grow so close together that some governmental sections become potential extensions to more than one field. Because the field rules of those fields were issued in response to individual applications pertaining just to the field then at issue, those rules lack complete uniformity.⁴⁷ Thus, in some cases, an operator may be motivated to select one adjoining field over another because of some perceived advantage of one set of field rules over another. Even more of a concern is the absence of certainty as to what rules will govern the next discovery until after-discovery field rules are established.

This whole field rule business is long on tradition, but short on good regulatory sense. It certainly is not mandated by statutory law. Rather, it is what it is now because that is the way it was before, and no one bothered to change it. Fortunately, the A.O.G.C. found a better way for the

⁴⁷ If one needs to better understand the substance of the field rules of a particular well or prospective well, the Field Rules Summary tab on the A.O.G.C. website (<http://www.aogc.state.ar.us>) is the place to go. However, it should only be used as a gateway to the actual field rule orders (also available on the website) since the “summaries” are prepared by non-lawyer staff members and may be incomplete or misleading.

Fayetteville Shale Play. The A.O.G.C. anticipated the potential of that new resource development, and chose to depart from the field rule model in favor of General Rule B-43,⁴⁸ which regulates nearly every aspect of unconventional resource development.

General Rule B-43 was first adopted on October 16, 2006, shortly after the first commercial discoveries within the Fayetteville Shale area. It remains somewhat of a work in progress, having already been amended five times since its enactment. It differs from the field rules of the past in that it provides a single source for the consistent regulation of an entire resource play, instead of the piecemeal well-by-well approach of the past. We will examine General Rule B-43, section-by-section.

The rule begins by defining “unconventional” and “conventional” sources of supply. Unconventional sources are the Fayetteville Shale, the Moorefield Shale and the Chattanooga Shale.⁴⁹ Conventional sources are defined as everything else.⁵⁰

The rule then defines “Section (c) Lands”⁵¹ and “Section (d) Lands.”⁵² Section (c) lands are all occurrences of either conventional or unconventional sources of supply in certain enumerated counties. Those counties are every county in Arkansas where one of the three shale formations enumerated in Section (a) was thought to exist in the subsurface.⁵³ Section (d) lands are lands in four additional counties, where the rule only applies to unconventional sources of supply.⁵⁴

Section (e) of the rule abolished those fields within the Section (c) lands which had been established for Fayetteville Shale production prior to the effective date of General Rule B-43, and deleted any mention of Fayetteville Shale from any field rules within Section (d) lands where that

⁴⁸ All A.O.G.C. rules, including General Rule B-43, are available on line from the A.O.G.C. website (<http://www.aogc.state.ar.us>).

⁴⁹ A.O.G.C. General Rule B-43 (a).

⁵⁰ A.O.G.C. General Rule B-43 (b).

⁵¹ A.O.G.C. General Rule B-43 (c).

⁵² A.O.G.C. General Rule B-43 (d).

⁵³ This section appears, in hindsight, to be overly optimistic. Only about half of the listed counties actually contain commercial shale wells, to date,

⁵⁴ In those counties (Crawford, Franklin, Johnson and Pope) considerable conventional production, covered by existing field rules, had already occurred.

formation had been added to previously existing field rules.⁵⁵ That clearly makes sense. It is illogical to create a general rule to cover all production within the Section (c) lands and unconventional production within the Section (d) lands and to then leave fragmented remnants of field rules within the same areas.

Section (f) of the rule establishes drilling units to be uniformly comprised of single governmental sections, approximately 640 acres each.⁵⁶ These units apply to all oil and gas production within the Section (c) counties and to unconventional production within the Section (d) counties. Of course, sizing units in this manner is in perfect harmony with the amended Oil and Gas Conservation Act.⁵⁷ Section (f) also differentiates between an “exploratory drilling unit” and an “established drilling unit.” This distinction was made in deference to Section (e) of the amended Oil and Gas Conservation Act, which was added by Act No. 881 of 1985 to permit the establishment and integration of exploratory (wildcat) units prior to production.⁵⁸ Section (f) defines an established drilling unit as a unit which either contains a completed well or is contiguous to a unit containing such a well. Exploratory drilling units are all those remaining units which are not yet established drilling units.⁵⁹

The reason that Section (f) distinguishes between exploratory and established drilling units is because Act No. 881 of 1985.⁶⁰ This act, which amended the Conservation Act to permit the formation and integration of exploratory drilling units, contains a requirement that an integration application for such a unit be supported by owners owning a minimum of 50% of the right to drill and produce from the proposed exploratory unit. Thus, General Rule B-43 bifurcates its treatment of

⁵⁵ A.O.G.C. General Rule B-43 (e).

⁵⁶ A.O.G.C. General Rule B-43 (f).

⁵⁷ ARK. CODE ANN. § 15-72-302 (b)(2)(a) (Repl. 2009).

⁵⁸ ARK. CODE ANN. § 15-72-302 (e) (Repl. 2009).

⁵⁹ ARK. CODE ANN. § 15-72-302 (e) does not actually define the term “exploratory drilling unit,” apparently leaving that determination to the A.O.G.C. Historically, the A.O.G.C. has considered any unit not containing a well or contiguous to a unit containing a well to be exploratory, which makes sense since units containing completed wells were required to be covered by field rules shortly after completion and those field rules regularly applied to extensions to the producing units within the field as discussed in connection with Figure 1, *infra*.

⁶⁰ ARK. CODE ANN. § 15-72-302 (e) (Repl. 2009).

the integration process into Sections (g) and (h), with the former pertaining to the integration of exploratory units and the latter pertaining to established units, both as defined in Section (f).

As far as the integration itself is concerned, Sections (g) and (h) are almost identical. The single difference is that Section (g) contains the statutorily required 50% support as a prerequisite to filing an integration application in an exploratory unit, while Section (h) permits the application to be filed by any person or persons owning the right to drill and produce, without making any minimum acreage requirement.

Sections (g) and (h) contain an identical Subsection (1). Those subsections require that an applicant for integration must state in its application that it has sent written notice thereof to all working interest owners of record within the drilling unit, as well as a well proposal and AFE⁶¹. The remaining subsections of Sections (g) and (h) set out the process for the determination by the A.O.G.C. of who will be named unit operator, in the event the owners fail to agree. These provisions differ slightly between Sections (g) and (h), but, essentially, the meaning is the same. In any event, a party having the backing of a majority of support ownership within the unit is entitled to be named its operator. The two sections then differ slightly because, in the case of the exploratory unit, there is already a 50% support requirement for filing the application, so an applicant who meets that requirement will only lack a majority in the event of a tie. Should that occur, the A.O.G.C. would determine operatorship after consideration of the evidence and “the factors it deems relevant.”

In the case of an established unit, there is no minimum support requirement to file an application, so there is no assurance that any party will be supported by a majority of working interest ownership. So in Section (h) it is provided that the person with the support of a plurality of working interest, but less than a majority thereof, receives a rebuttable presumption in favor of being named operator, subject to being rebutted should the A.O.G.C. so decide after considering the

⁶¹ An AFE (Authorization for Expenditure) is a detailed estimate of anticipated drilling and completion costs for the proposed well.

evidence and “the factors it deems relevant.” Sections (g) and (h) also contain identical provisions⁶² requiring that the person chosen as operator must then commence operations within twelve months from the date of the order or risk being replaced.

The integration process extends beyond General Rule, B-43, of course, because it is utilized for both conventional and unconventional drilling throughout the state. The total process is governed by a combination of two statutes,⁶³ other A.O.G.C. General Rules,⁶⁴ and the provisions of the individual integration orders entered by the A.O.G.C. to the extent that an issue is not expressly dealt with in General Rule B-43.

In every such case, the integration order will require each non-consenting owner to make an election.⁶⁵ Unleased mineral owners get three options:

- (a) lease to the unit operator on terms determined to be fair and reasonable by the A.O.G.C.;
- (b) participate in the cost of drilling, equipping and producing the well; or
- (c) receive a 1/8 royalty on their proportionate interest in the well until and unless the other 7/8 of the well’s revenue equals a sum which is determined as follows: Drilling and equipping costs times X% plus operating costs times 100% (“X” is usually 400% or 500% as determined by the A.O.G.C., to compensate the operator for taking the financial risk of drilling the well).⁶⁶

Under the final option, after this sum is recovered, each non-consenting owner becomes a participant in the well, proportionately entitled to share in future revenue and proportionately liable for future well costs.⁶⁷ This option is called “going non-consent.”

If an unleased mineral owner fails to affirmatively elect from the above options, she will be deemed to have selected option one (i.e, the lease).⁶⁸ If a non-consenting working interest owner fails to affirmatively elect one of the three options, he will be deemed to have gone non-consent.⁶⁹

⁶² Sections (g)(5) and (h)(6), respectively.

⁶³ ARK. CODE ANN. §§ 15-72-303-4.

⁶⁴ *E.g.*, General Rules A-1 and A-2 which set out procedural requirements for hearings in general and additional requirements for certain hearings.

⁶⁵ See ARK. CODE ANN. § 15-72-304 (Repl. 1994).

⁶⁶ ARK. CODE ANN. § 15-72-301(b)-(d) (Repl. 1994).

⁶⁷ See ARK. CODE ANN. § 15-72-305 (d)(1) (Repl. 1994).

⁶⁸ The lease, generally on the same terms, including bonus, as the most favorable terms contracted for by any owner within the unit who leased in an arms-length transaction.

⁶⁹ The above discussion of integration alternatives assumes that, at the time of the hearing on the integration application, there is no well that is capable of commercial production within the unit and, thus, the integration is authorized under

The A.O.G.C.'s integration order will require that operations be conducted pursuant to an Operating Agreement ("JOA") approved by the A.O.G.C. The A.O.G.C.'s approved JOA is similar to an A.A.P.L Form 610-1982 Agreement, but has been substantially amended to include many of the provisions of the A.A.P.L.'s 1989 JOA form.⁷⁰ Integrated unleased mineral owners who either affirmatively elect to lease or are deemed to have leased, by default, are deemed to be bound by a form of oil and gas lease which is Exhibit B to that approved JOA. Likewise, non-consenting owners are bound by the provisions of this JOA, and treated as though they elected to be carried non-consent pursuant to its provisions.⁷¹

Sections (i) and (j) of General Rule B-43 govern well spacing and well density within the Section (c) and Section (d) lands. Such regulation was enabled by the 2003 amendment to the Act which gave the A.O.G.C. "continuing authority to...[d]esignate the number of wells that may be drilled and produced within a drilling unit and...[r]egulate the spacing among multiple wells drilled and produced within a drilling unit."⁷² In the case of unconventional sources of supply,⁷³ wells are required to be at least 560 feet from unit boundaries.⁷⁴ Unconventional wells are also required, in most instances, to be at least 560 feet distant, at all points along their completed horizontal intervals, from all other wells completed within the same common source of supply.⁷⁵ Finally, Section (i) contains a limitation of 16 "wells" per unit, per unconventional common source of supply. That

ARK. CODE ANN. § 14-72-304 (b). If there is such a completed well within the unit, ARK. CODE ANN. § 15-72-304 (c) applies. In that case, any option to execute an oil and gas lease is merely voluntary on the part of the integrated unleased mineral owner and the default, should she fail to elect, is to be deemed non-consent. Additionally, it has recently become the practice of the A.O.G.C. to award the applicant only 100% recovery of costs from non-consenting interests as to those wells completed prior to its hearing, allowing the recovery of additional risk-factor penalty only on wells drilled subsequently.

⁷⁰ That form of agreement, including the lease exhibit, is currently available on line from the A.O.G.C. website (<http://www.aogc.state.ar.us>).

⁷¹ Article VI.b of the 1982 form JOA which pertains to operations conducted by less than all parties.

⁷² ARK. CODE ANN. § 15-72-302 (b)(2)(B) (Repl. 2009).

⁷³ Section (i).

⁷⁴ This provision is mostly obviated by the ability of producers to drill shared, cross-unit wells, however. Cross-unit wells will be discussed in connection with Section (o), *infra*.

⁷⁵ That limitation upon spacing offsets between wells may be waived by approval of 100% of persons with the right to drill in any of the affected wells.

provision has caused some problems of late because of the way that the A.O.G.C. interprets “wells,” but the discussion of that matter must logically wait until after our discussion of cross-unit wells.

General Rule B-43, Section (j) permits only one conventional well completion per unit, per conventional common source of supply, and requires all such conventional wells to be at least 1,120 feet distant from all unit boundaries, unless a location exception is granted to permit a closer encroachment. Exceptions to both the density and encroachment provisions of Section (j) may be granted by the A.O.G.C. after a hearing.

Sections (k), (l), (m), and (n) of the Rule are mostly housekeeping provisions. Section (k) adopts the surface casing requirements set out elsewhere in the rulebook⁷⁶ for wells drilled under General Rule B-43. Section (l) provides that conventional wells drilled on Section (c) and Section (d) lands are subject to A.O.G.C. General Rule B-16’s provisions relating to annual well testing. Unconventional wells are generally exempt from testing requirements. Testing is required in order to calculate production allowables for those wells whose production is restricted by the A.O.G.C. For the most part, unconventional wells are entitled to produce without any allowable restriction.⁷⁷ Section (m) permits commingling of unconventional and conventional zones within a wellbore, if approved pursuant to General Rule D-16, though that would then subject the commingled flow to a restricted production allowable if the previously separated conventional well was subject to such restriction prior to commingling. Section (n) subjects all wells within the B-43 area to the requirement to file monthly production reports, pursuant to General Rule D-8.

General Rule B-43 Section (o), dealing with shared cross-unit wells, is discussed in detail below. In Section (p) the A.O.G.C. retained jurisdiction to combine multiple governmental sections into a single larger unit, if requested to do so by a majority of working interest owners therein. An important example of that is the Ozark Highlands Unit, which is a large Federal Unit within the B-43

⁷⁶ A.O.G.C. General Rule B-15.

⁷⁷ It is possible, however, that the A.O.G.C. would approve a location exception for an unconventional well to be located closer than 560 feet from a unit boundary and, as a condition thereof, restrict its production allowable. In that case, the Rule D-16 testing and reporting rules would apply to that well. Such cases are rare.

area containing mostly Ozark Natural Forest owned by the United States, but also some scattered private tracts.

By Section (p) of General Rule B-43, the A.O.G.C. retains authority to form units which omit lands that are owned by a governmental agency which has refused to lease its interest. The A.O.G.C. lacks the constitutional power to regulate the United States or the State of Arkansas. Thus, if the State or Federal Government owns lands which it will not lease, those interests cannot be integrated by the A.O.G.C. and would potentially be open interests within units. The solution is to “space-out” the uncooperative government’s interest. That process has been applied recently to remove the bed of Greers Ferry Lake, owned in fee by the United States, from units containing portions of the lake which the government refuses to even discuss leasing.

VI. SHARED CROSS-UNIT WELLS—THINKING OUTSIDE OF THE BOX

Ark. Code Ann. § 15-72-302 (c)⁷⁸ requires that all wells be drilled at locations that are in conformity with A.O.G.C. rules, and authorizes the A.O.G.C. to make an exception to those rules if such exception “is likely to prevent waste or protect correlative rights of owners within the unit, or both.” It then provides that the commission shall take action to offset any advantage that the person securing the exception may have over other producers as a result thereof. In other words, while there is no express right of offset drilling under the act, if the A.O.G.C. permits one unit’s well to encroach upon an adjoining unit, the A.O.G.C. must do something to prevent any unfair drainage from one unit to another. For decades the A.O.G.C. handled the problem by penalizing the production allowable of any well which encroached upon the neighboring unit, thus theoretically reducing or eliminating offset drainage. It also often permitted that other unit’s operator to drill an approximately equidistant offsetting well.

Because of the nearly nonexistent native permeability of the Fayetteville Shale, virtually all wells within the General Rule B-43 area are horizontal wells. The “location” of a horizontal well, for

⁷⁸ Section 14.A. of the 1939 Conservation Act, as amended.

spacing purposes, is defined by A.O.G.C. General Rule B-3 as every point along the well's completed interval.⁷⁹ General Rule B-43, Section (i) requires unconventional well locations, as thus defined, to be at least 560 feet apart⁸⁰ and at least 560 feet from all unit boundaries. That spacing restriction would never allow many of the horizontal wells of today, some of which are almost two miles in length. Moreover, a 560 foot offset from all unit boundaries, observed on both sides of the common unit line requires wells separated by that line, to be, at minimum 1,120 feet apart, a distance likely to leave considerable gas stranded along the unit boundary. That gas would then be unrecovered, thus wasted, in violation of a principal purpose of the Oil and Gas Conservation Act. Of course, the A.O.G.C. could grant location exceptions for penalized equidistant encroaching wells to be drilled on either side of the unit line, but some of those would likely be unnecessary wells. What is really needed is a well drilled right on the unit line.

Fortunately, General Rule B-43(o) satisfies the statutory requirement in a better way, permitting the drilling and production of cross-unit wells, which are then shared by the units affected by them. Cross-unit wells are very good things. They are located where they need to be located in order to maximize total recovery from the reservoir, while fully protecting the correlative rights of the owners in all affected units. We should be proud that they were invented in Arkansas and that much of the economic success of the Fayetteville Shale Play can be attributed, at least in part, to their wide use.

Here is how the cross-unit well works. Notwithstanding the above-discussed 560-foot unit boundary setback, a well which encroaches upon, or even crosses, a unit boundary will be permitted as a shared cross-unit well. In order to determine the sharing formula between the participating units we draw an elongated circle-like figure⁸¹ which is exactly 560 feet from the horizontal well bore, as defined by the rule. The resultant figure somewhat resembles a Band-Aid, so the picture has been

⁷⁹ I.e., the line connecting the heel perforation with the toe perforation, and every point in between.

⁸⁰ Wells which do not cross or encroach upon unit boundaries are allowed to be 448 feet apart under General Rule B-43 (i)(3), but, as discussed below, only a small percentage of wells drilled today neither encroach upon nor cross unit boundaries.

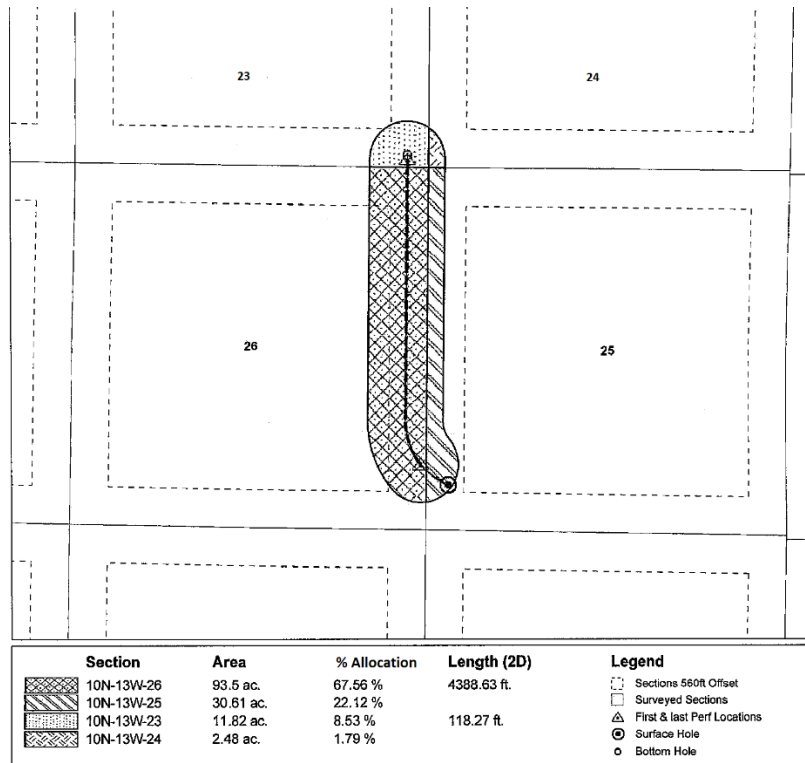
⁸¹ Technically called an ellipse.

given the name “Band-Aid Map.” Next, engineers calculate the entire acreage within the Band-Aid as well as the acreage within that Band-Aid which is within each affected unit. Finally, simple division of each unit’s acreage within the Band-Aid by the Band-Aid’s total acreage yields that unit’s share of the costs and production of the cross-unit well. This is illustrated by Figure 2, below, which is an actual Band-Aid map on file with the A.O.G. C. The well depicted in Figure 2 is drilled from a surface location in the extreme Southwest Corner of Section 25, to a final bottom-hole location just barely inside the Southeast Quarter of Section 23. The well’s heel perforation is in the Southeast Corner of Section 26 (there are no actual perforations in Section 25). The horizontal wellbore then traverses a line which is barely inside Sections 26 and 23, almost touching the boundary between Sections 25 and 26 and between Sections 23 and 24. This well could not be drilled in conformance with General Rule B-43 (i) but is authorized as a cross-unit well by General Rule B-43 (o). The well’s total perforated interval length⁸² is 4,388.63 feet. Figure 2 shows the well’s Band-Aid, along with its 560 foot radius. The Band-Aid’s calculated area is 138.41 acres, which is the sum of the total acreage within each of the four units which contribute to the Band-Aid, allowing us to make our simple divisions and calculate the percentage allocation of the well among the four units.⁸³

⁸² The distance from the first (toe) perforation of the casing back to the last (heel) perforation.

⁸³ Note that the cross-unit well is shared, according to the sharing formula, among the units overlain by the Band-Aid. Unit owners outside of the Band-Aid share in that units portion of the well, along with owners within the Band-Aid, proportionate to their respective unit interests. The Band-Aid area does not become a down-sized unit for the well. Thus, the process is in compliance with ARK. CODE ANN. §15-72-302 (b)(2)(A) (Repl. 2009), which states that a unit, once formed will constitute a unit for as long as there is commercial production therefrom.

Figure 2—Cross-Unit Well Band-Aid Map

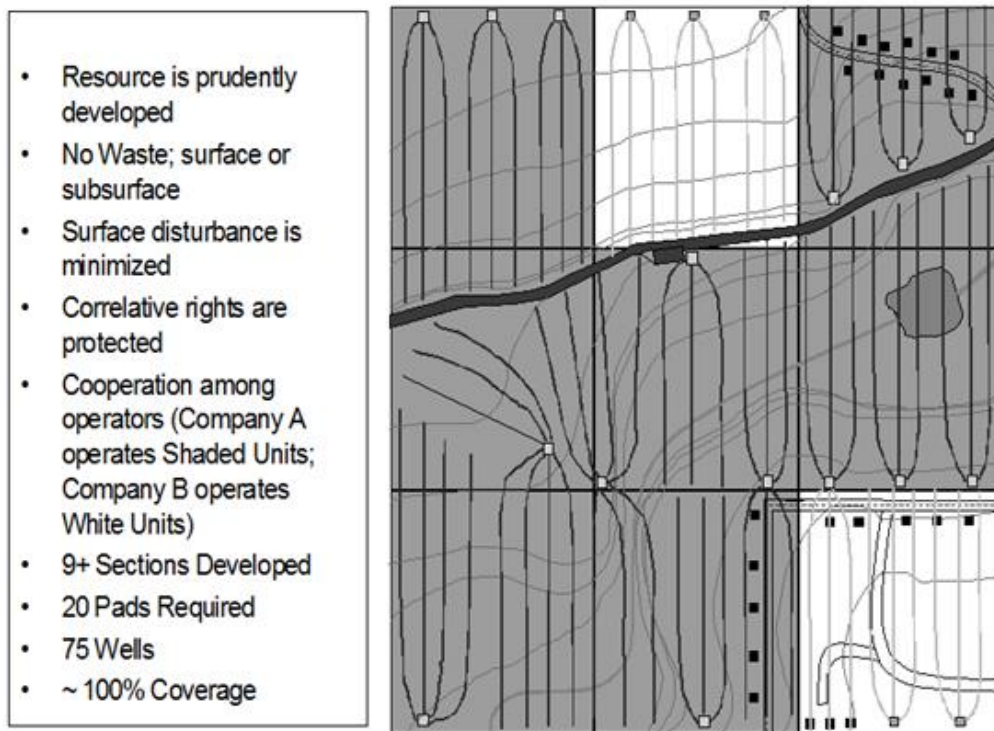


Since the adoption of General Rule B-43, other states have begun to authorize cross-unit wells. However, most of those calculate the sharing formula based upon a simple proration of the line of the wellbore, rather than by basing allocation upon an allocated Band-Aid. It is submitted that the Arkansas method is superior. The line-based cross-unit method permits a unit line to be crossed, but does not deal with non-line-crossing encroachments. If we were to use a proration of only the line traversing the perforated interval in Figure 2, no allocation would be given to Section 24 or 25. Then, because of the well's extreme encroachment upon a unit boundary, the well would violate spacing rules. We would be stuck trying to conform our wells, not to subsurface geology and/or surface topography and cultural considerations, but rather to an artificial spacing pattern designed to keep them away from boundaries. It is submitted that wells need to be located where they do the most good, in an engineering sense, with the least adverse impact on the surface estate. The Band-Aid does it better.

Similarly, line-based sharing of cross-unit wells only works at all when wells are drilled with near-polar orientation, either North-to-South or East-to-West. Some geologists and engineers believe that due to natural fracture patterns in shales in certain areas, a different orientation, like Northwest-to-Southeast, results in better production. That is easy with the Band-Aid but not so with the line.

It is obvious that in Arkansas, the cross-unit well is a great invention that is here to stay. According to the A.O.G.C. records, more than 85% of all wells permitted to be drilled in the Fayetteville Shale Play today are cross-unit wells. Figure 3 shows what the result looks like.

Figure 3--The end of the game picture.



VII. THE SIXTEEN WELL PROBLEM—NOTHING IS PERFECT

A.O.G.C. General Rule B-43 is in most respects a model of intelligent modern regulation of today's shale boom, but it is not quite perfect. In the above discussion of Section (i) of General Rule B-43, the part relating to its limit of sixteen wells per unit, per common source of supply was deferred since we needed to discuss cross-unit wells first. Moreover, the 16-well problem is complicated. General Rule B-43 Section (i) defers to Section (a)(2) of General Rule B-3 for the

definition of a well's location. As noted above, the "location," as defined there, means every point along a well's perforated interval. That would not be a problem if we did not have cross-unit wells, but of course we do have them and cross-unit wells are good things to have. However, each of those cross-unit wells will be counted against the 16-well limit in every one of the units penetrated by its perforated interval. Incongruously, only the actual perforated wellbore is considered. The Band-Aid is ignored altogether in the process of counting wells.

Thus, the well shown in Figure 2, which has its perforated interval mostly within Section 26, but has a short segment within Section 23, is counted against the sixteen-well limit of both of those sections. However, it is not counted at all against Section 25, which owns 22.12% of the well's production or Section 24, which owns a much smaller share.

Clearly the A.O.G.C. has the statutory authority to limit the number of wells to be drilled within a unit,⁸⁴ but does the 16-well limitation of General Rule B-43(i) either prevent waste or protect correlative rights? At first blush it might be viewed as a rule which prevents excessive well density, but is it? General Rule B-43 (i)(2) already requires well bores to be 560 feet apart unless a location exception is granted. Viewed as a limitation upon well density, the 16-well rule is redundant. Moreover it is arbitrary because it punishes units which are developed by multiple short segments of shared horizontal wells, for no good reason. The well in Figure 2 is a perfect example of that. The perforated wellbore extends only a few feet into Section 23, yet it counts against that section's limit of sixteen.

Nor does the 16-well rule appear to protect anyone's correlative rights. Even though it is accepted that protection of the surface is within the power of the A.O.G.C., the rule has nothing to do with surface use. A well is counted as one of the sixteen, whether its surface location is in the unit or not.

⁸⁴ ARK. CODE. ANN. § 15-72-302 (b)(2)(b) (Repl. 2009).

The A.O.G.C. has declined to consider changing or abolishing this rule, regardless of its apparent lack of valid purpose. Fortunately, however, it has granted exceptions to the rule when it has been shown that a significant portion of a unit would otherwise go undeveloped.

VIII. OTHER IMPORTANT A.O.G.C. RULES

General Rule B-43 is certainly not the only place where the A.O.G.C. has revised its rulebook to deal with unconventional production or horizontal wells. Indeed, it has recently reviewed all of its rules and has made amendments to many so that they now apply appropriately to horizontal development. Several of those have already been discussed here.

Another is General Rule B-19 which regulates fracking. This relatively new rule requires hydraulic fracturing treatments to be performed only by A.O.G.C. licensed contractors. That rule also regulates each frack job, requiring that it be designed to protect fresh water supplies. It also requires that the person conducting the frack job file a list of all additives which will be included within frack fluids. Trade secret composition of frack fluid is held confidential, except in the case where exact and complete information might be needed for medical treatment of a person who may have been injured by contact with any frack fluid or component thereof.

Hydraulic fracture treatments require the injection of large quantities of water, with additives, into a wellbore. When this water is then recovered during early production, it must be recycled for use in future fracking or disposed of. Recycling is good, of course, but some of this used water remains and must be disposed of. Most often it is returned to the deep subsurface by what are known as Saltwater Disposal (S.W.D.) Wells. These are regulated by A.O.G.C. General Rules H-1, H-2 and H-3. General Rule H-1 covers the permitting process for all S.W.D. wells. Importantly, it also defines a Moratorium Zone where S.W.D. wells are prohibited, due to suspected minor earthquake activity associated with certain deep faults which might be stimulated by deep saltwater injections immediately above, and could thus create earthquake activity.⁸⁵

⁸⁵ A.O.G.C. General Rule G-1(s).

IX. CONCLUSION

Arkansas's early regulatory development was fairly typical of that in a number of other oil and gas producing jurisdictions. Like many of those jurisdictions it was largely based upon an early-adopted conservation act, the provisions of which were not always rigidly adhered to. However, unlike some other states, Arkansas providently amended its own act in time to enable its regulators to keep pace with changes in the regulated industry. Most importantly, the 2003 amendment of Ark. Code. Ann. § 15-72-302 redefined the unit and expressly authorized multiple unit wells. Then, when the Fayetteville Shale Play began, the A.O.G.C. acted promptly to take its regulation in a different direction from that used for previous conventional drilling and production and, in so doing, designed General Rule B-43, which is a model worth copying elsewhere.

The shared cross-unit well, done Arkansas style with a Band-Aid, is a legal invention that is nearly as important as the scientific developments that inspired it. Incorporating an operating agreement and default lease terms into an integration order, rather than leaving the parties as Common Law co-tenants, is another example of improved regulation. All in all, Arkansas's regulation of the unconventional, while not yet perfect,⁸⁶ is very good.

As was observed at the beginning of this article, oil and gas development is constantly changing, as its technology advances. While regulation of the industry will remain vital tomorrow, that regulation must have the ability to adapt. Otherwise, we risk allowing our rules to hamper this technology. For the most part, Arkansas has become a leader in the transition of its regulatory environment to accommodate the industry's shift to unconventional reservoir development. Inevitably, the future will see more technological advances. The challenge will be to continue to adapt its regulation to exploit, rather than hamper, those future developments whatever they turn out to be, while still preventing waste and protecting the correlative rights of all interested parties.

⁸⁶ E.g., the 16-well problem discussed *infra*.

APPENDIX 1—ARK. CODE ANN. § 15-72-302 (REDLINED TO HIGHLIGHT 2003 AMENDMENT)

**§ 15-72-302 Just and Equitable Shares - Preventing Waste,
Avoiding Risks, Etc. - Drilling Units.**

(a) Whether or not the total production from a pool is limited or prorated, no rule, regulation, or order of the Oil and Gas Commission shall be such in terms or effect:

(1) That it shall be necessary at any time for the producer from or the owner of a tract of land in the pool, in order that he or she may obtain the tract's just and equitable share of the production of the pool, as the share is set forth in this section, to drill and operate any well or wells on the tract in addition to the well or wells as can without waste produce the share; or

(2) As to occasion net drainage from a tract unless there is drilled and operated upon the tract a well or wells in addition to the wells thereon as can without waste produce the tract's just and equitable share, as set forth in this section, of the production of the pool.

(b) (1) For the prevention of waste and to avoid the augmenting and accumulation of risks arising from the drilling of an excessive number of wells, after a hearing the commission shall establish a drilling unit or units for each pool except in those pools that, prior to February 20, 1939, have been developed to an extent and where conditions are such that it would be impracticable or unreasonable to use a drilling unit at the present stage of development.

~~(2) As used in this subchapter, unless the context otherwise requires, "drilling unit" means the maximum area which may be efficiently and economically drained by one (1) well, and the unit shall constitute a developed unit as long as a well is located thereon which is capable of producing oil or gas in paying quantities.~~

(2)(A) As used in this subchapter, "drilling unit" means a single governmental section or the equivalent unless a larger or smaller area is requested by an owner, as defined in § 15-72-102, within the drilling unit to be established and a larger or smaller area is established by order of the commission. The drilling unit shall constitute a developed unit as long as a well is located thereon that is capable of producing oil or gas in paying quantities.

(B) The commission shall have the continuing authority to:

(i) Designate the number of wells that may be drilled and produced within a drilling unit; and

(ii) Regulate the spacing among multiple wells drilled and produced within a drilling unit.

~~(c) Each well permitted to be drilled upon any drilling unit shall be drilled approximately in the center thereof, with such exception as may be reasonably necessary where it is shown, after notice and upon hearing, and the commission finds, that the unit is partly outside the pool or, for some other reason, a well approximately in the center of the unit would be nonproductive or where topographical conditions are such as to make the drilling approximately in the center of the unit unduly burdensome. Whenever an exception is~~

~~granted, the commission shall take action to offset any advantage which the person securing the exception may have over other producers by reason of the drilling of the well as an exception, and so that drainage from developed units to the tract with respect to which the exception is granted will be prevented or minimized and the producer of the well drilled as an exception will be allowed to produce no more than his just and equitable share of the oil and gas in the pool, as such share is set forth in this section.~~

(c) (1) Each well permitted to be drilled upon any drilling unit shall be drilled at a location that is in compliance with rules adopted by the commission, with such exception as may be reasonably necessary where it is shown, after notice and upon hearing, and the commission finds that a well drilled at a different location is likely to prevent waste or protect correlative rights of owners within the unit, or both.

(2) Whenever an exception is granted, the commission shall take action to offset any advantage that the person securing the exception may have over other producers by reason of drilling the well as an exception, and so that drainage from developed units to the tract with respect to which the exception is granted will be prevented or minimized and the producer of the well drilled as an exception will be allowed to produce no more than his or her just and equitable share of the oil and gas in the pool, as the Share is set forth in this section.

(d) (1) Subject to the reasonable requirements for prevention of waste, a producer's just and equitable share of the oil and gas in the pool, also sometimes referred to as a tract's just and equitable share, is that part of the authorized production for the pool, whether it is the total that could be produced without any restriction on the amount of production or whether it is an amount less than that which the pool could produce if no restriction on amount were imposed, which is substantially in the proportion that the quantity of recoverable oil and gas in the developed area of the producer's tract in the pool bears to the recoverable oil and gas in the total developed area of the pool, insofar as these amounts can be practically ascertained.

(2) To that end, the rules, regulations, permits, and orders of the commission shall be such as will prevent or minimize reasonably avoidable net drainage from each developed unit, that is, drainage that is not equalized by counter drainage and will give to each producer the opportunity to use his or her just and equitable share of the reservoir energy.

~~(e) The commission may, after public hearing held pursuant to notice given as required by law and by any rules or orders of the commission, establish a drilling unit as defined in subsection (b) of this section for an exploratory well to be drilled therein. Any drilling unit so established shall be comprised of a governmental section or the equivalent thereof determined by the commission to be prospective of oil or gas, or both, and the commission shall have the authority to integrate separately owned tracts embraced therein when the owners thereof fail or refuse voluntarily to do so, provided that persons who own at least an undivided fifty percent (50%) interest in the right to drill and produce oil or gas, or both, from the total proposed unit area agree thereto. However, any such order of the commission and drilling unit established for exploratory purposes thereunder shall remain in force for a period no longer than the later of one (1) year following the effective date thereof or one (1) year following the cessation of drilling operations or production within the unit, whereupon the order of the commission and the provisions thereof shall automatically terminate.~~

(e)(1) After public hearing held pursuant to notice given as required by law and by any rules or orders of the commission, the commission may establish a drilling unit as defined in subsection (b) of this section for an exploratory well to be drilled therein.

(2) Any drilling unit so established shall be composed of a governmental section or the equivalent thereof unless a larger or smaller area is requested by an owner, as defined in § 15-72-102, within the drilling unit to be established and a larger or smaller area is established by order of the commission, determined by the commission to be prospective of oil or gas, or both. The commission shall have the authority to integrate separately owned tracts embraced therein when the owners thereof fail or refuse voluntarily to do so provided that persons who own at least an undivided fifty percent (50%) interest in the right to drill and produce oil or gas, or both, from the total proposed unit area agree thereto.

However, any such order of the commission and drilling unit as established for exploratory purposes thereunder shall remain in force for a period no longer than the later of one (1) year following the effective date thereof or one (1) year following the cessation of drilling operations or production within the unit, whereupon the order of the commission and the provisions thereof shall automatically terminate.