The Role of Mineral Rights In The Future of North Carolina's Hydraulic Fracturing

Preston H. Dole

Introduction

Over the past few years, the United States has experienced an increase in the use of hydraulic fracturing for gas extraction over a diverse spectrum of geographic regions and geologic formations.[1] Hydraulic fracturing is one way of accessing natural gas–specifically shale gas–which will likely play a key role in the United State's clean energy future.[2] In North Carolina, the practice of horizontal drilling and hydraulic fracturing necessary to economically extract shale gas was prohibited until the enactment of Session Law 2012-143.[3] These prohibitions were effectively removed on August 1, 2012; however, the issuance of permits for these activities is prohibited, pending subsequent legislative action.[4] The purpose of this paper is to explore the role that mineral rights will play in the future of hydraulic fracturing in North Carolina and to analyze the political and economic advantages and disadvantages of allowing landowners to lease the mineral rights to their land.

What is shale gas and how do you obtain it?

Natural gas reservoirs are placed into two distinct categories, conventional natural gas and unconventional natural gas.[5] Conventional natural gas reservoirs form when gas migrates towards the Earth's surface from organic-rich source rock, becomes trapped by a layer of

[1] *Hydraulic Fracturing Research Study*, ENVTL. PROT. AGENCY (2010), *available at* http://www.epa.gov/safewater/uic/pdfs/hfresearchstudyfs.pdf.
[2] *Id*. at 1.
[3] Alexander Elkan & Daniel F. E. Smith, *North Carolina Mineral Rights/Access to Shale Gas*, BROOKS, PIERCE, MCLENDON, HUMPHREY & LEONARD LLP 6 (2012), *available at* http://www.brookspierce.com/assets/htmldocuments/AE_Fracking.pdf.
[4] N.C. GEN. STAT. § 113-423 (2012).
[5] Sarah K. Adair et al., *Considering Shale Gas Extraction in North Carolina: Lessons from Other States*, 22 DUKE ENVTL. L. & POL'Y F. 257 (2012).

impermeable rock, and forms a reservoir.[6] Conventional natural gas is easier to access than unconventional natural gas.[7] To access a conventional natural gas reservoir producers drill vertical wells into the area where the gas is present, which allows it to flow to the surface.[8]

Shale gas is an unconventional natural gas.[9] Unlike a conventional natural gas reservoir, shale gas does not migrate out of the source rock to form a reservoir that is easy to access; instead, shale gas remains enclosed in the impermeable source rock making it much more difficult to access.[10] Hydraulic fracturing–commonly called fracking–is an economically viable technology that has allowed natural gas to be extracted from impermeable source rock.[11] There are three major components to hydraulic fracturing: the injection of the fluid into the shale under high pressure, the horizontal drilling, and the proprietary drilling fluids that are used.[12]

To drill and fracture a shale gas well, operators combine vertical and horizontal drilling techniques.[13] First, the operators drill down vertically until they reach the shale formation.[14] Second, the operators create a lateral well by drilling horizontally into the shale rock.[15] Horizontal drilling technologies have advanced to the point that lateral pipes can be used to access shale formation thousands of feet below the earth's surface and may extend for more than a mile horizontally.[16] "Once the laterals are drilled as far as intended, the horizontal pipe is perforated to allow fluid injected under high pressure to flow into the shale where it creates and

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[6] *Id*.
[7] *Id*.
[8] *Id*.
[9] *Id*.
[10] *Id*.
[11] Theodore A. Feitshans & Brandon King, *Shale Gas in North Carolina: Issues in Law, Economics and Policy*, NC STATE ECONOMIST, 1 (May/June 2012), *available at* http://ag-econ.ncsu.edu/sites/ag-econ.ncsu.edu/files/economist/2012/may12_shale_gas.pdf.
[12] *Id*. at 1.
[13] Adair, *supra* note 5.
[14] *Id*.
[15] *Id*.
[16] Feitshans, *supra* note 11.

expands fractures."[17] In order to ensure that the fractures remain open, a proprietary mix of water, sand, surfactants, and other chemicals is injected into the shale formation.[18] The process of hydraulic fracturing typically involves millions of gallons of fluid.[19] Approximately ninety-nine percent of fracturing fluid is water; however, some of the chemical additives included in the proprietary mix can be friction reducers, surfactants, gelling agents, scale inhibitors, acids, corrosion inhibitors, antibacterial agents, and clay stabilizers.[20] Operators are able to re-fracture a well multiple times in order to further stimulate the flow of gas from the same formation.[21] "Hydraulic fracturing substantially increases the extraction of natural gas from unconventional sources" and is estimated to be more than two to three times more effective than conventional vertical wells.[22]

What are mineral rights?

In the United States, mineral rights emerged from the common law doctrine that established the rights of a landowner in regards to surface land.[23] The history of the common law is the source of a basic legal presumption: "the owner of the surface land is presumed to own all the minerals beneath it."[24]

The doctrine of estate severance was first developed under English law; it allowed a landowner to separate the surface land from the underlying minerals.[25] In the United States, the

[17] *Id*.
[18] *Id*.
[19] Robert B. Jackson et al., *Research and Policy Recommendations for Hydraulic Fracturing and Shale-Gas Extraction*, DUKE NICHOLAS INST. FOR ENVTL. POLICY SOLUTIONS, 1 (2011), *available at* http://nicholasinstitute.duke.edu/climate/policydesign/researchandpolicyrecommendationsforhydraulic-fracturingandshale2010gasextraction#.UnKdXhaTP_Q.
[20] *Id*. at 1–2.
[21] Adair, *supra* note 5.
[22] Jackson, *supra* note 19, at 2.
[23] Elkan, *supra* note 3, at 6.
[24] Vance v. Guy, 27 S.E.2d 117, 120 (N.C. 1943); Hoilman v. Johnson, 80 S.E. 249, 250 (N.C. 1913).
[25] Elkan, *supra* note 3, at 6.

emergence of estate severance occurred during the Industrial Revolution.[26] "[I]ndustries and railroads needed large quantities of coal, iron, and other minerals to support manufacturing and transportation infrastructure."[27] Alternately, individual landowners did not have the wealth or the means to mine the quantities of coal, iron, and other minerals that were needed to support the industries and railroads.[28] The solution was to use the estate severance doctrine to separate the surface rights and the mineral rights.[29] This separation created an opportunity that allowed for the landowner to create a profit from selling the mineral rights, which he or she was unable to access, and for mining entrepreneurs, who purchased the mineral rights, to extract the coal, iron, and other minerals needed to sustain the Industrial Revolution.[30]

In North Carolina, the issue of mineral rights "resurfaced" in 2009 when the North Carolina Geological Survey (NCGS) announced the existence of shale gas underlying the Deep and Dan River basins in twelve of North Carolina's counties, including Lee, Chatham, and Moore.[31] Following NCGS's initial announcement, energy companies, including Charlotte-based Tar Heel Natural Gas, Denver-based WhitMar Exploration, and others, began to purchase the mineral rights to the underground natural gas.[32] Energy companies began to mail ready-to-sign contracts to property owners that included ready-to-cash bonus checks to serve as an added incentive.[33] Several issues arose from this land rush, including stipulations in the contracts that would leave the property owners legally responsible for the cleanup costs if an environmental accident occurred that contaminated neighboring properties or drinking water and terms that

[26] Elkan, *supra* note 3, at 6.
[27] *Id*. at 7.
[28] *Id*.
[29] *Id*.
[30] *Id*.
[31] John Murawski, *Natural Gas Rights Going Fast in Lee County*, NEWS AND OBSERVER (January 26, 2010), *available at* http://www.newsobserver.com/2010/06/26/552175/gas-rights-going-fast-in-lee.html.
[32] *Id*.
[33] *Id*.

economically exploited property owners who were strangers to the esoteric field of energy exploration.[34]

Are there any relevant statutes that protect lessors who want to part with their mineral rights?

In 2012 the North Carolina General Assembly created General Statute §113-423, which sets forth required lease terms in regards to the relationship between potential lessors and surface owners.[35] The required terms address most, if not all, of the issues that arose following the initial land-rush.

Section (b) of the statute addresses the maximum duration of a lease.[36] Any lease that separates the mineral rights to oil or gas from the surface property shall expire at the end of a ten-year period from the day the lease is executed.[37] The exception to this rule is that if gas is being produced for commercial purposes at the end of the ten-year period, then production can legally continue.[38] However, if commercial production halts for a period of six months or more any time after the ten-year period, then all rights to oil or gas revert to the owner of the surface rights.[39]

Section (c) of the statute addresses the minimum royalty payments.[40] "Any lease of oil or gas rights or any conveyance of any kind separating rights to oil or gas from freehold of estate of surface property shall provide that the lessor shall receive a royalty payment of not less than twelve and one-half percent."[41] Gas developers and operators are not allowed to utilize pre-

[34] *Id*.
[35] N.C. GEN. STAT. § 113-423 (2012).
[36] *Id*. at § 113-423 (b).
[37] *Id*.
[38] *Id*.
[39] *Id*.
[40] *Id*. at § 113-423 (c).
[41] *Id*.

production or post-production, fees, or other charges to diminish the value of the landowner's royalty payment.[42]

Section (d) of the statute addresses bonus payments.[43] The lessee shall pay any bonus payment or other initial payment to the lessor within 60 days of execution of the lease.[44] If the bonus payment is not paid within this time frame, then the lessor is entitled to an interest rate of 10% per annum on the unpaid amount.[45]

Section (e) of the statute addresses the use of resources on the landowner's property and the associated payments that shall result from that use.[46] The statute specifically addresses the issue of water use, stating that permission of the surface owner is required and that an estimate of the amount of water that will be withdrawn from the property is needed in the initial lease.[47] Surface owners shall receive full compensation for the water used at a rate that is not less than the market value.[48] Further, the statute states that the developer or operator cannot use an amount of water that would limit the supply of water for domestic use.[49]

Section (f) of the statute addresses pre-drilling testing of water supplies.[50] All mineral rights leases are required to include clauses that require the developer or operator to test all water supplies that are within 5,000 feet of the wellhead.[51] The test must be done at least 30 days prior to the initial drilling.[52] The Department of Environment and Natural Resources (DENR) is

[42] *Id*.
[43] *Id*. at § 113-423 (d).
[44] *Id*.
[45] *Id*.
[46] *Id*. at § 113-423 (e).
[47] *Id*.
[48] *Id*.
[49] *Id*.
[50] *Id*. at § 113-423 (f).
[51] *Id*.
[52] *Id*.

required to locate these water supplies and the landowner has the option to allow the DENR to test the water supplies in lieu of the developer or operator.[53]

What are some advantages of mineral rights?

The major advantage of mineral rights is that it allows both the landowner and the operator or developer to benefit economically. As was the case with coal, iron, and other minerals during the Industrial Revolution, present day landowners do not have an economically viable means of extracting shale gas and developers and operators do not have an economically viable way to purchase the amount of land required to extract shale gas. The most obvious advantage of mineral rights is that it benefits both parties and allows each to take advantage of the other.

In North Carolina, parties to a contract are governed by the default principle that the parties are largely able to include whatever terms they deem appropriate.[54] "The general freedom to contract is limited in two ways: (1) contract provisions that are contrary to public policy will not be enforced (e.g., contracts to commit murder or other illegal acts); (2) contract provisions that are prohibited by statute will not be enforced."[55] North Carolina General Statute § 113-423.1(a) (2012) recognizes this inherent principle.[56] In regards to surface activities the statute states, "The developer or operator and the surface owner may enter into a mutually acceptable agreement that sets forth the rights and obligations of the parties with respect to the surface activities conducted by the developer or operator."[57]

As detailed above, North Carolina statutes place limitations on the contractual provisions that are possible between a developer or operator and the surface owner, but an advantage to the

[53] *Id.*
[54] Elkan, *supra* note 3, at 24.
[55] *Id.*
[56] N.C. GEN. STAT. § 113-423.1 (a) (2012).
[57] *Id.*

North Carolina statutes is that the limitations still recognize the general freedom to contract. This freedom to contract allows the parties to reach a unique agreement that is beneficial and fair to both parties. One example of this freedom is demonstrated with respect to royalties. The minimum in North Carolina is 12.5%; however, landowners in other states have previously been able to negotiate terms as high as 20%.[58]

What are some disadvantages of mineral rights?

Most of the concerns that arise when a property owner sells his or her mineral rights to a developer or operator come from the inherent risk that is involved in the process of hydraulic fracturing. The purpose of this paper is not to analyze these risks individually. The environmental concerns, particularly reservations about the danger to water supplies, is demonstrated on a world wide scale by the slow pace that Europe has taken in adopting the practice.[59] On October 11, 2013, France's highest court upheld a government ban on hydraulic fracturing. Similarly, Bulgaria has banned hydraulic fracturing and Britain and Germany have not been receptive to the practice.[60] Their apprehension demonstrates the significance of the environmental concerns that are a fundamental principle of the hydraulic fracturing technique.

In order for landowners and developers or operators to enter into a lease that is fair to both parties and that addresses the risk involved in hydraulic fracturing it is imperative to consider a number of important issues. When considering the current and potential future use of both surface and subterranean land, both parties should realize that under North Carolina law every matter of a lease is negotiable as long as it does not interfere with the provisions of a North Carolina statute.

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[58] Elkan, *supra* note 3, at 26.
[59] David Jolly, *France Upholds Ban on Hydraulic Fracturing*, N.Y. TIMES (October 11, 2013), *available at* http://www.nytimes.com/2013/10/12/business/international/france-upholds-fracking-ban.html?_r=1&.
[60] *Id*.

North Carolina General Statute §113-423 sets forth required lease terms, but both parties would be wise to address additional environmental issues and to solidify specific terms that are beneficial to all involved. Both parties can protect themselves by reaching a mutual understanding of the specific terms of use with respect to the surface lands and environmental resource; this includes the use of groundwater and surface water, reclamation, and well abandonment.[61] Concerns over water contamination can be specifically addressed by reaching an understanding on whether storage wells can be used for wastewater and if wastewater is not placed in storage wells, then how will wastewater be managed.[62] Both surface owners and developers or operators should enter into an agreement only if they have considered the risk of liability and indemnity.[63] A major disadvantage of leasing mineral rights arises when contract terms are unclear on who is to be held responsible in the case of an environmental disaster.[64] The disadvantages of leasing mineral rights can mostly be mitigated by clear communication at the outset of the agreement, foresight with respect to liability and indemnity, and precise terminology on the specific details of the lease agreement.

Conclusion

North Carolina's shale gas resources are relatively modest when compared to the totality of shale gas resources available nationally.[65] Total shale gas reserves in North Carolina are estimated to equal 0.2% to 0.4% of the estimated national reserves.[66] North Carolina currently consumes approximately 1.5% of the total annual national consumption.[67] "Much work remains to take the next step to develop a workable regulatory regime to allow for efficient and effective

[61] Elkan, *supra* note 3, at 26.
[62] *Id.*
[63] *Id.*
[64] *Id.*
[65] *Id.* at 5.
[66] *Id.*
[67] *Id.*

shale gas exploration and development in North Carolina in a manner that protects the public and the environment."[68] Mineral rights can provide a legal framework that allows for landowners and developers or operators to enter into an agreement that is economically beneficial and fair to all parties who are involved in leases that pertain to hydraulic fracturing.

[68] *Id*. at 27.