

June 1980

## Ownership of Coalbed Gas: United States Steel Corp. v. Hoge

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### Recommended Citation

Richard H. Lorensen, *Ownership of Coalbed Gas: United States Steel Corp. v. Hoge*, 82 W. Va. L. Rev. (1980).

Available at: <https://researchrepository.wvu.edu/wvlr/vol82/iss4/57>

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## CASE COMMENT

### OWNERSHIP OF COALBED GAS UNITED STATES STEEL CORP. V. HOGE

#### I. INTRODUCTION

Clarification of coalbed gas ownership is an issue of increasing importance.<sup>1</sup> For years coal operators have vented into the atmosphere the coalbed gas which was liberated as the coal was mined.<sup>2</sup> Now because of improved drilling techniques<sup>3</sup> and a ready market,<sup>4</sup> coalbed gas has become economically exploitable;<sup>5</sup> accordingly, its ownership is now considered a valuable property right.

Coalbed gas could be a substantial supplement to present natural gas supplies,<sup>6</sup> but questions surrounding its ownership when a fee simple estate has been severed and several owners exist have been a deterrent to its development as an energy source.<sup>7</sup>

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<sup>1</sup> Several scholarly articles have been written concerning this question. See generally McGinley, *Legal Problems Relating to Ownership of Gas Found in Coal Deposits*, 80 W. VA. L. REV. 369 (1978); Craig & Meyers, *Ownership of Methane Gas in Coal Beds*, 24 RCKY. MT. MIN. INST. 767 (1978); Olson, *Coalbed Methane: Legal Considerations Affecting Its Development As An Energy Resource*, 13 TULSA L. J. 377 (1978); Note, *On Leasing Gas From Coal Seams*, 47 W. VA. L. Q. 211 (1941).

<sup>2</sup> When coal is mined, coalbed gas is released into the working area. The Federal Coal Mine Health and Safety Act, as amended, 30 U.S.C. §§ 801-961 (1976), contains regulations requiring the dilution of coalbed gas to forestall explosions from ignition of this gas. See 30 U.S.C. §§ 863, 877 (h) (1976).

<sup>3</sup> For an excellent cursory description of these procedures, see McGinley, *supra* note 1, at 373-74.

<sup>4</sup> Olson, *supra* note 1, at 381-82, suggests that the late development of coalbed gas might be attributed to the fact that conventional natural gas from high volume wells has, until recently, been sufficient to satisfy demand.

<sup>5</sup> See Olson, *supra* note 1.

<sup>6</sup> Professor McGinley notes that an estimated seventy-five billion cubic feet of coalbed gas is ventilated from underground coal mines in the United States each year, and that such an amount of gas could meet the natural gas needs of much of New England. See McGinley, *supra* note 1, at 372.

<sup>7</sup> Obviously, no ownership problem would be present where land is owned in

Commentators have suggested several possible theories upon which rights to this valuable energy source may be assigned.<sup>8</sup>

In *United States Steel Corp. v. Hoge*,<sup>9</sup> (hereafter "Hoge") decided recently by the Court of Common Pleas of Greene County, Pennsylvania, we have the very first judicial analysis of the coalbed gas ownership problem.

The trial court held ownership of coalbed gas to be in the lessor and lessee of the gas rights,<sup>10</sup> as a result, the owner of the coal seam legally could not prevent the drilling into and extraction of coalbed gas from within such a seam.

*Hoge* was a case decided after extended litigation by parties who fully aired the complex technical and legal issues. Thus, as the case of first impression dealing with coalbed gas ownership questions it will undoubtedly import on the course of judicial analysis as similar cases wind their way through courts of other jurisdictions. This is so notwithstanding the fact that *Hoge* is a trial court decision which will undoubtedly be appealed.

## II. A HISTORY OF THE DISPUTE AND THE CONTENTIONS OF THE PARTIES

The plaintiff, United States Steel Corporation, obtained a tract of Pittsburgh vein coal<sup>11</sup> from a predecessor in title, who had acquired ownership by a 1920 severance deed.<sup>12</sup> The defen-

fee simple or where the gas and coal rights are owned by the same person.

<sup>8</sup> See Craig & Meyers, *supra* note 1, at 786-89; McGinley, *supra* note 1, at 380-92; Olson, *supra* note 1, 382-92.

<sup>9</sup> No. 78-682 (C. P., Greene Co., Pa., March 24, 1980). This decision dissolved an injunction issued in *United States Steel Corp. v. Hoge*, No. 78-682 (C. P., Greene Co., Pa., Jan. 9, 1978) (order granting preliminary injunction). Coalbed gas is also called methane gas, firedamp, and coal gas. The definition of coalbed gas was a major point of contention between the parties to this action.

<sup>10</sup> *United States Steel Corp. v. Hoge*, No. 78-682 (C. P., Greene Co., Pa., Jan. 9, 1978) at 40-42. The case did not involve the existing rights between lessors and lessees of the gas rights. See text accompanying note 48 *infra*.

<sup>11</sup> Pittsburgh Vein coal is also called River Vein coal. Coal rights are sold in horizontal strata known as coal seams. A tract of land may have more than one coal seam underlying it, each of which could be conveyed to a separate party. Note, *Horizontal Divisions of Land*, New Series, Vol. 1 Am. L. Reg. 577 (1861-62).

<sup>12</sup> Judge Toothman in his findings of fact in *United States Steel Corp. v. Hoge*, No. 78-682 (C. P., Greene Co., Pa., March 24, 1980), noted that the conveyance of the Pittsburgh Vein coal to the plaintiff's predecessor in title contained

dants,<sup>13</sup> owners of other rights in this tract of land, leased all oil and gas rights in 1976 to a M. L. Cunningham.<sup>14</sup>

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language common to severance deeds of the Pittsburgh Vein coal generally. The plaintiff's deed contained the following clause:

All the coal of the Pittsburgh or River Vein underlying all that certain tract of land situated in Whiteley and Franklin Townships, Greene County, Pennsylvania, bounded and described as follows, to-wit: (Here follows course and distance description for 242.5842 acres).

Together with all the rights and privileges necessary and useful in the mining and removing of said coal, including the right of mining without leaving any support for the underlying strata and without liability for any injury which may result to the surface from the breaking of the strata or anything therein or thereon, the right of ventilation and drainage and the access to the mines for men and materials; the shafts or openings for such purposes, however, to be in the ravines or waste places upon said land and not any nearer than twenty rods of the principal buildings thereon; also the right of mining, ventilating, draining and transporting the coal of other lands through the mines and openings in and upon the lands of the parties of the first part.

The parties of the first part hereby reserve the right to drill and operate through said coal for oil and gas without being held liable for any damages.

Together with all and singular the improvements, ways, waters, water courses, rights, liberties, privileges, hereditaments and appurtenances, whatsoever thereunto belonging or in anywise appertaining, and the reversions and remainders, rent issues and profits thereof; and the estate, right, title, interest, property, claim and demand whatsoever of the said parties of the first part, in law, equity or otherwise, howsoever, of, in and to the same and every part thereof.

<sup>13</sup> Harry A. Murdoch and Doris M. Murdoch, who conveyed a gas lease to Klinlock Development Corp., were also subject to an injunction action by the plaintiff. Their case, containing the same issues and facts, is treated in the decision as a companion case.

<sup>14</sup> Judge Toothman observed that the following gas lease to the defendant, M. L. Cunningham, was a typical lease. It provided in pertinent part:

Witnesseth, that the Lessor in consideration of the sum of One Dollar, the receipt of which is hereby acknowledged, and the covenants and agreements hereinafter contained, does hereby grant unto the Lessee all of the oil and gas and all of the constituents of either in and under the land hereinafter described, together with the exclusive right to drill for, produce and market oil and gas and their constituents and of storing gas of any kind in any formation underlying the land, and also the right to enter thereon at all times for the purpose of drilling and operating for oil, gas and water, laying pipelines, erecting tanks, machinery, powers and structures, and to possess, use and occupy so much of said premises as is necessary and convenient for said purposes and to convey the above-named products therefrom or thereto by pipelines or otherwise,

The plaintiff operated a coal mine near the defendants' tract. The defendant, Cunningham, drilled into the plaintiff's coal seam to extract the entrapped coalbed gas. In response United States Steel sought an injunction to prevent both the surface rights owners and the oil and gas lessees from drilling into and removing gas from the coal seam. In addition, United States Steel sought to quiet title to the ownership of the gas located within the coal seam.

The plaintiff argued that the conveyance of the coal in the coal seam at issue included title to the gas in the seam because the parties were aware that the gas existed when the transaction was made, and that the right to ventilate the coalbed gas, expressly granted in the deeds, necessarily implied ownership of it.<sup>15</sup> Cunningham, the defendant, argued that the right to extract all gas underlying the tract she leased included the gas contained in coal seams. The defendants also argued that plaintiff's failure to object to the defendant's applications for state drilling permits estopped the company from subsequently judicially attacking the defendant's drilling operation.<sup>16</sup>

In a decision filed January 9, 1978,<sup>17</sup> Judge Toothman responded to these contentions by granting a temporary injunction and delaying permanent action until

[a]fter a hearing where testimony of the most skilled and scientific nature can be presented by (scientists) who can pinpoint with as much accuracy as the present state of our knowledge will allow, in such a fashion as to prove or disprove

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said land being . . .

2. . . .

3. The Lessee shall deliver to the credit of the Lessor free of cost, in the pipeline to which he may connect his wells, the equal one-eighth ( $\frac{1}{8}$ ) part of all oil produced and saved from the leased premises, and shall pay Lessor the equal one-eighth ( $\frac{1}{8}$ ) part of all methane gas as well as for all gas and casing head gas produced and sold from the premise . . . .

<sup>15</sup> See Craig & Meyers, *supra* note 1, at 771-72.

<sup>16</sup> *Id.* at 772. These drilling permit proceedings are mandated by the Gas Operations Well-Drilling Petroleum and Coal Mining Act, codified at *Pa. Stat. Ann.* tit. 52, §§ 2102-2602 (Purdon 1966 & Supp. 1979-80).

<sup>17</sup> *United States Steel Corp. v. Hoge*, No. 78-682 (C. P., Greene Co., Pa., Jan. 9, 1978) (order granting preliminary injunction).

to what category or classification methane gas belongs to.<sup>18</sup>

In an opinion and order on plaintiff's motion for a permanent injunction<sup>19</sup> filed March 24, 1980, the court in *Hoge* further considered the issues and contentions of the parties in light of extended expert testimony pertaining to the coalbed gas ownership issue.

The plaintiff argued that it owned everything within the coal seam and that any drilling into the seam to remove gas therefrom constituted a violation and diminishment of property rights. Coalbed gas, the plaintiff argued, traditionally has not been commercially viewed as a natural gas. The plaintiff also contended that the use of hydrofracking<sup>20</sup> to remove coalbed gas could make it more hazardous and expensive to later mine the coal. The defendants argued to the contrary; contending the coalbed gas is a natural gas, and its removal with or without artificial stimulation (i.e. hydrofracking) does no harm to the coal.

### III. THE COURT'S HOLDING AND RATIONALE

The court held that "[c]oalbed gas is a natural gas by scientific definition and must be considered by such legal definition . . . ."<sup>21</sup> The court reasoned that in all probability the "land-

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<sup>18</sup> *Id.*, as quoted by Craig & Meyers, *supra* note 1, at 773.

<sup>19</sup> No. 78-682 (C.P., Greene Co., Pa., March 24, 1980).

<sup>20</sup> Hydraulic stimulation is often referred to as hydrofracturing or "hydrofracking." This technique utilizes a small diameter vertical borehole which is drilled from the surface into the coal bed and cased. Existing fractures in the coal bed (natural fracturing of the coal seam is common) are expanded by the application of hydraulic pressure and controlled injection of water into the coal. Sand grains in the injected fluid "prop" the fractures open when the pressure is released. The use of hydrofracking can increase, in some cases, the gas flow from a coal seam by twenty times. McGinley, *supra* note 1, at 373.

<sup>21</sup> The court developed the following explanation and definition of coalbed gas:

- (a) Coal bed gas was formed over the millions of years in the coalification process as a result of a series of biochemical and geochemical reactions that transformed plant material into hydrocarbon gases, and thereby, with some slightly different technical variations, it was formed in the same way as other natural gases.
- (b) The component ingredients chemically of coal bed gas and other natural gases is quite similar if not identical, methane being a chief component of each.
- (c) Existing in its natural state as it was formed and created, it is a

owner intended to sell the coal to one purchaser and the gas and gases to another."<sup>22</sup> The fee simple owner therefore retains the rights to coalbed gas until such time as he grants or leases gas rights. The court, however, held further that drilling practices could not cause unreasonable damage to the coal seam or prevent the use of modern mining techniques.<sup>23</sup> The court noted that coalbed gas drilling must conform to provisions of Pennsylvania's Gas Operations Well Drilling Petroleum and Coal Mining Act, as amended,<sup>24</sup> and notice must be given to the coal operator before a permit can issue.<sup>25</sup> The court then concluded that "the coal owner and operator cannot and must not, in the grant or issuance of drilling permits, suffer any deprivation or diminishment, or the unreasonable taking of his coal without just compensation therefor. . . ." <sup>26</sup>

A rather unusual conclusion of law reached by the court in-

gaseous substance, the same as other natural gases, and retains its character when initially captured, and continues to do so until and unless changed by some artificial method of transformation or modification.

(d) It is absorbed in the cracks, crevices, fractures, and micropores of the coal seam, but is not absorbed by the coal, and while even the slightest particle of coal emits and diffuses coal bed gas, and it is a part of the important constituent of coal, that of volatile matter, it always retains its separate identity by chemical definition and recognition as a gas.

(e) While it is, being a gas, like all gases, of an essentially fugitive nature, and even though it is found mainly and mostly in the close proximity of a coal seam, it is capable of and in some instances does escape its natural habitat to other strata or horizons, by its very nature and without the necessity of any artificial stimuli.

(f) Having been long condemned to wasting in the coal industry and having until recent years been thought to have no redemptive qualities nor capability for commercially advantageous recovery, this historic disdain does not in and of itself change its nature, its chemical characteristics, nor the legal background for the determination of ownership, the same as other natural deposits found beneath the earth's surface, irrespective of its relative worth.

United States Steel Corp. v. Hoge, No. 78-682 (C.P., Greene Co., Pa., March 24, 1980) at 16-17.

<sup>22</sup> *Id.* at 17.

<sup>23</sup> *Id.* at 19-20.

<sup>24</sup> *Pa. Stat. Ann.* tit. 52, §§ 2102-2602 (Purdon 1966 & Supp. 1979-80).

<sup>25</sup> United States Steel Corp. v. Hoge, No. 78-682 (C.P., Greene Co., Pa., March 24, 1980) at 20.

<sup>26</sup> *Id.*

volves the coal operator's right to capture<sup>27</sup> the gas within his coal seam and his right to ventilate gas from his mine:

The right of the owner of coal to ventilate the mine is that and nothing more. It gives the coal owner the right to bring fresh air into the mine and to draw stale air, gases and fumes out of the mine, and to waste the coal bed gas or capture it, as its pleasure, in the course of mining, but this creates no property right by reason thereof in the coal bed gas, except that the coal owner, if he chooses, could capture the gas released in the course of the mining operation and make separate sale of it.<sup>28</sup>

It is not clear from the opinion whether the coal company would be required to pay a royalty to the gas lessor if the coal operator "captures" and "makes a separate sale" of the coalbed gas. Also unclear is the method by which the coal operator can remove the coalbed gas and how far in advance of the actual removal of coal he can remove the gas to be considered within the "course of the mining operation".

The court, in arriving at these conclusions, began its analysis by considering two very old cases, "both which are bench marks in the law as it applies to the origin and development of ownership rights and duties on the subject of coal and . . . gas."<sup>29</sup> The court cited *Westmoreland & Cambria Natural Gas Co. v. De-*

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<sup>27</sup> The rule of capture basically holds that an owner of a tract of land acquires full title to oil and gas obtained through a well on his own tract despite the fact that he may be siphoning oil and gas from another tract of land. Olson, *supra* note 1, at 390. The court, when using the term "capture," does not indicate whether it refers to it as a term of art or in its ordinary meaning.

<sup>28</sup> *United States Steel Corp. v. Hoge*, No. 78-682 (C.P., Greene Co., Pa., March 24, 1980) at 17-18.

<sup>29</sup> *Id.* at 24. The court also noted the existence of a recent State Attorney General's decision on point, 53 Op. Att'y Gen. (Pa. 1974). That opinion concluded that:

Since methane gas is a natural gas, only those owners and grantees of gas rights have the right of access to, and, therefore, economic control of methane gas. Any attempt by the owners or grantee of coal rights to convert methane to profitable use could be challenged by those individuals who have acquired the gas rights. This being the case, I must conclude that only those persons who own or have obtained the right to extract gas have the right to assert legal title thereto.

The court also noted that although some State agencies may have relied on this opinion, the Pennsylvania Attorney General's opinion does not have the status of legal precedent.

witt<sup>30</sup> for the proposition that gas is a mineral which is *ferae naturae*<sup>31</sup> and thus owned by the landowner who brings its wandering existence under control. The other case, *Chartiers Block Coal Co. v. Mellon*,<sup>32</sup> held that the grantor of coal rights reserved rights to enjoy an easement through the strata wherein the coal rights lie and to pass below that strata to obtain other minerals below.

The court noted that these cases were not dispositive of the present issue but illustrated the distinctly different nature of coal and gas.<sup>33</sup> In fact, as the court indicated, *Chartiers Block* dealt with ownership of gas found in a different strata than the coal. In *Hoge* the inquiry was directed to ownership of gas<sup>34</sup> found in the same strata as the coal. Yet, the fact that coal and coalbed gas shared a common residence did not dissuade the court from its determination that the two substances were separate entities.<sup>35</sup> Instead, the court bottomed its opinion on the totally different physical properties of these chemical substances.

The main thrust of the plaintiff's argument was that the owner of the coal seam owned all minerals within the coal seam; that its right of ownership to coalbed gas was coextensive with its

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<sup>30</sup> 130 Pa. 235, 18 A. 724 (1889).

<sup>31</sup> The doctrine of *ferae naturae*, which literally translated means of a wild nature, was applied at common law to the flow of water and the hunting of wild animals which wandered across the boundaries of various property owners. A qualified claim could be made to the wild animals by either owning land which they may be on, or by having a special privilege to hunt them. Olson, *supra* note 1, at 383 n.28. Because of a lack of knowledge concerning the occurrence and movement of oil and gas from one tract of land to another, courts adapted the *ferae naturae* concept to the ownership of these substances. The use of a *ferae naturae* analogy to oil and gas may be inappropriate, however. One commentator notes that although capable of transmigration, oil and gas are not freemoving but amenable to the laws of physics. The system is essentially static until a reservoir is pierced by drilling or disturbed by natural occurrences. HEMINGWAY, *THE LAW OF OIL AND GAS* 12 (1971). Another commentator notes that a major economic impetus in the development of coalbed gas is its relatively fixed location within coal seams where locations have been documented. Thus, the cost of exploration is much lower. McGinley, *supra* note 1, at 376. Given these considerations, the use of a *ferae naturae* analogy is rather inappropriate.

<sup>32</sup> 152 Pa. 286, 25 A. 597 (1893).

<sup>33</sup> *United States Steel Corp. v. Hoge*, No. 78-682 (C. P., Greene Co., Pa., March 24, 1980) at 26.

<sup>34</sup> *Id.* at 38.

<sup>35</sup> *Id.* at 27.

ownerships rights to the coal.<sup>36</sup> The court refuted this contention, relying on *Lillibridge v. Lackawana Coal Co.*<sup>37</sup> and *Webber v. Vogel*,<sup>38</sup> which held that an estate in coal terminates with exhaustion of the coal.

By analysing the intent of the parties to the coal severance, the court determined that coalbed gas was not included in the plaintiff's estate in coal.<sup>39</sup> The court held that as to the grantee of coal, the subject matter of the conveyance was the coal.<sup>40</sup> The court cursorily dismissed plaintiff's assertion that the right to ventilate the coalbed gas, expressly granted in the deed, was an intention to convey the coalbed gas; rather the court viewed it as an "understanding by the surface owner and the coal purchaser alike, that in the mining and removal there is a constant need to draw the lethal substance, then known as methane gas, to insure the safety of the mine and miners."<sup>41</sup>

The court continued:

Coal bed gas then, as it has been in coal mining operations in America, ever since, or at least until the last decade, was the ugly, unwanted and unembraced scourge of the coal pits, and to say that the coal purchasers wanted it or that he intended to purchase it is illogical, and unrealistic in the light of prevalent attitudes and ideas surrounding the subject at that time.<sup>42</sup>

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<sup>36</sup> *Id.* at 28.

<sup>37</sup> This case held that ownership of the coal implied ownership of the space in which the coal was located. This decision was limited by a subsequent case, *Webber v. Vogel*, 189 Pa. 156, 42 A. 4 (1889), cited in text accompanying note 38, which held that the space that the coal occupied reverted to the landowner after the coal was exhausted. See also *Kormuth v. United States Steel Co.*, 397 Pa. 365, 108 A.2d 907 (1934).

<sup>38</sup> 189 Pa. 156, 42 A. 4 (1889).

<sup>39</sup> The court noted that following Pennsylvania precedent, the grant of coal to the plaintiff "must be construed by the viewing the language as it would have been ordinarily viewed in the context of the time when it was made or given." *Id.* at 30. However, "[t]hese rules of construction, even by the most exacting application of the instant coal deed, cannot change, enlarge, nor diminish the conveyance of the coal tract." *Id.* at 31.

<sup>40</sup> *United States Steel Corp. v. Hoge*, No. 78-682 (C.P. Greene Co., Pa. March 24, 1980) at 31. The court, quoting *Random House Dictionary*, defined coal as "A black or dark brown combustible mineral substance consisting of carbonized vegetable matter used as fuel." *Id.*

<sup>41</sup> *Id.*

<sup>42</sup> *Id.* at 31-32.

Another contention raised by the plaintiff, and quickly dismissed by the court, was that allowing the lessee of the gas rights to capture coalbed gas is a violation of the property rights of the coal owner as the coalbed gas resides in the pores and crevices of the coal.<sup>43</sup> The court noted that by the very conveyance of the coal, there was expressly retained by the present landowner's predecessor in title the right to drill through the coal.<sup>44</sup> The court indicated that even if plaintiff's contention presented a valid argument, the best drilling technique now utilized is performed by drilling the well hole to the *bottom* of the coal seam.<sup>45</sup> Thus, the court inferred that the lessee's capture of coal gas does not violate the integrity of the coal owner's property right.

The court, however, was responsive in *dicta* to the plaintiff's contention that certain extraction procedures such as hydrofracturing could cause damage to the coal owners' mining operations, "[t]here is a real and reasonable expectation of damage being done to the seam which can and, in many instances, will cause the mining operation to be more expensive, will slow production, and will increase hazard in the recovery of coal. . . ."<sup>46</sup>

The court thus indicated that the right to drill, without consent of the coal owner, does not give any driller the privilege of hydrofracturing the coal seam.<sup>47</sup> Such a procedure is "incompatible with the essential qualities of property ownership at law."<sup>48</sup>

The opinion does emphasize that there was no evidence offered at trial from which it could be inferred that the removal of coalbed gas by routine or normal drilling will interfere with the coal mining operation.<sup>49</sup> The court further recognizes the realities of drilling operations as they are presently conducted, asserting that gas companies have been doing this for years without "any controversy as to source of the gas or specific nature of it."<sup>50</sup> If coalbed gas is properly removed prior to the commencement of the mining operation, the court emphasized, "twenty to thirty

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<sup>43</sup> *Id.* at 36.

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

<sup>46</sup> *Id.* at 10.

<sup>47</sup> *Id.* at 38-39.

<sup>48</sup> *Id.* at 39.

<sup>49</sup> *Id.* at 38.

<sup>50</sup> *Id.* at 37.

percent of the coalbed gas can be removed which logically alleviates the usual, much heavier demand for ventilation."<sup>51</sup> The court in *dicta*, indicates that further protection of Pennsylvania coal owners is offered by the State Gas Operations Well Drilling Petroleum and Coal Mining Act;<sup>52</sup> the coal owner must be given notice of the driller's intention and an opportunity to enter objections before a competent tribunal if drilling would hamper the coal owners' mining operations.

#### IV. LIMITATIONS OF THE HOGE OPINION

Although the decision does not constitute even state-wide authority, and is likely to be appealed to the Supreme Court of Pennsylvania, it is currently the only precedent on an issue which may be litigated in every state in the coal regions of the United States.

It should be noted that this case did not present to the court the opposing interests which may develop between gas grantors or lessors and gas grantees or lessees. More specifically, a dispute between the lessor and lessee of gas rights as to whether the lessee's extraction of coalbed gas was contemplated by the lease agreement.

Perhaps the most important aspect of the opinion which culminates in an order dismissing a preliminary injunction against gas right owners are the myriad issues left unsettled. When can a coal operator degasify a mine prior to mining? Can the coal operator sell such gas? Must the gas owner or surface owner be compensated? At what point can hydrofracking be considered a viable technique for extracting coalbed gas? Can hydrofracking be used to extract coal from extremely deep coal seams currently considered unminable? If a coal seam is harmed by conventional (non-hydrofracking) drilling and extraction, what is the measure of damages? To what extent does the coal operator have a duty to capture coalbed gas rather than waste what is a valuable property to the gas owner? How can coalbed gas extraction technically be conducted if a coal operator, without advancing a specific mining plan, states that sometimes, perhaps ten or twenty years in the future, it will use the "longwall" method to

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<sup>51</sup> *Id.* at 38.

<sup>52</sup> PA. STAT. ANN. tit. §§ 2102-2602 (Purdon 1966 & Supp. 1979-80).

extract its coal.

These are but a few of the questions that remain to be resolved in the aftermath of the *United States Steel Corporation v. Hoge*. The opinion seems to raise more questions than it answers.

*Richard H. Lorensen*