



**SCHOOL OF LAW**  
TEXAS A & M UNIVERSITY

## Texas Wesleyan Law Review

---

Volume 5 | Issue 2

Article 2

---

3-1-1999

### Geophysical "Trespass" Revisited

Owen L. Anderson

Follow this and additional works at: <https://scholarship.law.tamu.edu/txwes-lr>

---

#### Recommended Citation

Owen L. Anderson, *Geophysical "Trespass" Revisited*, 5 Tex. Wesleyan L. Rev. 137 (1999).

Available at: <https://doi.org/10.37419/TWLR.V5.I2.1>

This Article is brought to you for free and open access by Texas A&M Law Scholarship. It has been accepted for inclusion in Texas Wesleyan Law Review by an authorized editor of Texas A&M Law Scholarship. For more information, please contact [aretteen@law.tamu.edu](mailto:aretteen@law.tamu.edu).

# GEOPHYSICAL “TRESPASS” REVISITED†

Owen L. Anderson‡

INTRODUCTION .....	137
I. THE RIGHT TO EXPLORE IS A VALUABLE PROPERTY RIGHT .....	140
II. CAUSES OF ACTION FOR UNLAWFUL EXPLORATION ....	141
III. OWNERSHIP OF THE RIGHT TO EXPLORE .....	144
A. <i>Severed Mineral Interests</i> .....	144
B. <i>Surface-Related Exploration</i> .....	146
C. <i>Minerals Owned in Cotenancy</i> .....	150
D. <i>Minerals Owned in Succession</i> .....	156
E. <i>Mineral Ownership Divided by Depth</i> .....	157
F. <i>Mineral Ownership Divided by Substance</i> .....	158
G. <i>Minerals Under Lease or Other Agreement</i> .....	159
H. <i>The Exploration of Adjacent and Nearby Tracts</i> ....	162
1. The Basic Problem .....	162
2. Assumpsit .....	164
3. Loss of Speculative Value .....	164
4. Trade Secrets .....	165
5. The Related Problem of Aerial Surveys .....	167
6. Misappropriation .....	169
7. My “Modest Proposal” .....	170
IV. MEASURE OF DAMAGES FOR ACTIONABLE GEOPHYSICAL “TRESPASS” .....	176
V. SURFACE-USE LIMITATIONS ON THE RIGHT TO EXPLORE .....	180
CONCLUSION .....	184

## INTRODUCTION

The yearly increase in 3D seismic data collection has accelerated to the point that this wonderful new technology has significantly dropped the price per barrel to find oil. It has also resulted in surprising increases in the production of oil from existing fields. Perhaps the solution to the impending push to get more oil to market, faster, will come not from increased exploration success, but from

---

† This article updates the trespass portion of an earlier article that discusses 3D seismic technology and its legal ramifications. See Owen L. Anderson and John D. Pigott, *3D Seismic Technology: Its Uses, Limits, & Legal Ramifications*, 42 ROCKY MT. MIN. L. INST. 16-1 (1996). Professor Pigott prepared the technical portion of the article and Professor Anderson prepared the legal portion of the article. All but the trespass portion of this article has been deleted from this update.

‡ Mr. Anderson is the Eugene Kuntz Professor in Oil, Gas & Natural Resources at The University of Oklahoma College of Law and a consultant in domestic and international natural resources law. He is licensed to practice law in North Dakota, Oklahoma, and Texas.

new uses of 3D seismic data that maximize recovery efficiencies from existing oil and gas fields.<sup>1</sup>

Although one might adequately describe a three-dimensional object by studying a series of two-dimensional photographs taken from every conceivable angle, studying the object in its three dimensions both externally and internally would be infinitely more accurate and more informative than hundreds of two dimensional photographs. This is the essential difference between conventional 2D seismic and modern 3D seismic. Because of this difference, 3D seismic has revolutionized the petroleum industry during the past 25 years. Presently, 3D seismic operators comprise a multimillion-dollar industry that uses this technology both offshore and onshore in a variety of regions worldwide for both exploration and development. Indeed, 3D seismic promises to become the exclusive seismic tool for future field development, allowing the ability to image snapshots of the extent and movement of reservoir fluids through time (sometimes called 4D seismic). Not surprisingly, as use of 3D seismic technology expands and becomes routine within the petroleum industry, the potential legal ramifications of 3D seismic increasingly becomes of interest. One of the more troublesome issues, geophysical trespass, is actually a very old issue that manifested itself with conventional 2D seismic operations; however, the trespass issue is more complicated with 3D seismic operations.

The basic legal concern for a geophysical operator is to obtain permission from the owner of the exploration right to avoid what is commonly called "geophysical trespass." Proper permitting minimizes the possibility that a geophysical operator will be sued for trespass or other tort.<sup>2</sup> Although this basic concern is the same for all seismic

---

1. Wei He et al., *4D Seismic Monitoring Grows as Production Tool*, OIL & GAS J., May 20, 1996, at 41.

2. Legal commentators have written extensively on geophysical trespass and the unauthorized disclosure of geophysical information. For treatise commentary, see RICHARD W. HEMINGWAY, *THE LAW OF OIL AND GAS* §§ 4.1, 4.2 (3d ed. 1991); EUGENE KUNTZ, *OIL AND GAS* § 12.7 (1987); HOWARD R. WILLIAMS & CHARLES J. MEYERS, *OIL AND GAS LAW* § 230 (1995); W. L. SUMMERS (JOHN S. LOWE), *THE LAW OF OIL AND GAS* §§ 660-62 (1962).

For articles, see Harry L. Blomquist III, *Geophysical Trespass? The Guessing Game Created By The Awkward Combination of Outmoded Laws and Soaring Technology*, 48 BAYLOR L. REV. 21 (1996); Earl A. Brown, Jr., *Geophysical Trespass*, 3 ROCKY MTN. MIN. L. INST. 57 (1957); Joseph R. Dancy & David Humphreys, *Legal Considerations Involved in the Geophysical Exploration for Oil and Gas*, 57 OKLA. B.J. 1802 (1986); Wallace Hawkins, *The Geophysical Trespasser and Negligent Geophysical Explorer*, 29 TEX. L. REV. 310 (1951); Joseph L. Hull, Jr., *Oil and Gas Lessee v. Seismograph Licensee*, 21 OKLA. B. ASS'N J. 1503 (1950); Kendor P. Jones, *Restrictions on Access and Surface/Subsurface Trespass Involving Exploration and Production Technologies*, 40 ROCKY MTN. MIN. L. INST. 20-1 (1994); Kendor P. Jones & Robert C. Faber, *Subsurface Trespass and Seismic Options*, STATE BAR OF TEXAS 11TH ANN. ADV. OIL, GAS, & MIN. L. COURSE, Paper J (1993); Scott D. Marrs, *Geophysical Trespass and Advanced Geophysical Exploration Techniques*, 58 TEX. B.J. 128 (Feb. 1995); Richard G. Martin, *Geophysical Exploration on Severed Mineral Interests in Oklahoma*, 36 OKLA. B. ASS'N J. 1889 (1965); Robert J. Rice, *Wrongful Geophysical*

operations, the concern is quantitatively larger for a 3D seismic operator than for a conventional seismic operator. The reasons for this greater concern include the facts that: large land areas may be involved; 3D surveys require more intense surface use; targeted acreage of a 3D survey may include tracts that are not actually used and occupied by the geophysical operator; and some tracts used and occupied by the 3D operator may not be targeted acreage. Moreover, because 3D seismic is often regarded as highly reliable, favorable information can be very valuable to those who have it, and unfavorable information can greatly lower the speculative value of "wildcat" acreage. Thus, a geophysical trespasser and its principals can be liable for potentially large direct and consequential damages.<sup>3</sup>

Geophysical operations conducted without permission from the "owner" of either occupied or targeted land raises several fundamental issues, including: Will the law recognize and protect the right to explore as a valuable property right? If so, what possible causes of action are available to protect this right? Who owns the right to ex-

---

*Exploration*, 44 MONT. L. REV. 53 (1983); Henry M. Shine, Jr., *Measure of Damages in Suits Relating to Geophysical Operations*, 29 NOTRE DAME LAW. 49 (1953); Jack M. Wilhelm, *Legal Problems Related to Geophysical Operations*, 42ND MINERAL LAW INST., Louisiana State University Law Center, March 30-31, 1995.

For student commentary, see Mark D. Christiansen, Note, *Oil and Gas: Improper Geophysical Exploration—Filling in the Remedial Gap*, 32 OKLA. L. REV. 903 (1979); James W. Griffin, Comment, *Protectable Property Rights, Trade Secrets, and Geophysical Data After City of Northglenn v. Grynberg*, 71 DENV. U. L. REV. 527 (1994); James R. Rogers, Comment, *Liability for the Invasion of a Landowner's Rights by Geophysical Exploration*, 18 CAL. W. L. REV. 460 (1982); Scott S. Slater, Note, *The Surreptitious Geophysical Survey: An Interference With Prospective Advantage*, 15 PAC. L.J. 381 (1984); Thomas M. Warner, Jr., Note, *Oil and Gas: Recovery for Wrongful Geophysical Exploration—Catching Up With Technology*, 23 WASHBURN L.J. 107 (1983).

A recent article addresses trespass issues concerning hydraulic fracturing: Norman J. Hyne and Laura H. Burney, *Hydraulic Fracturing: Stimulating Your Well or Trespassing Theirs?*, 44 ROCKY MT. MIN. L. INST. 19-1 (1998).

3. From the perspective of the surface owner, the stated concern is whether seismic operations will cause actionable damage to the surface. Often, the real concern is to receive compensation for the use of the surface—whether or not there is a legal entitlement to compensation.

From the perspective of the mineral owner, the concern is whether the 3D seismic operations will be conducted without permission and without payment for the privilege. Moreover, unfavorable 3D seismic data can serve to "condemn" the property for leasing and development. Accordingly, should 3D seismic become a widely used wildcat exploration tool, unleased mineral owners can be expected to seek greater compensation for 3D seismic operations because of their concern that unfavorable seismic data will eliminate further interest in the property, thereby damaging a tract's speculative mineral value. However, regarding fee acreage, most oil and gas companies would not commonly commission proprietary 3D seismic surveys unless the subject acreage is wholly or partly under lease.

There are other perspectives as well. For example, an environmentalist might be concerned about the impact of 3D seismic on the environment—especially fish and wildlife. On balance, however, wider use of 3D seismic should be an environmental plus because fewer dry or unnecessary wells will be drilled.

plore? What if the targeted property is owned in cotenancy or in succession? What if the mineral ownership has been horizontally divided? What if the mineral ownership is divided by substance? What if the property is subject to an oil and gas lease or other agreement? Can the surface of one tract be used to secure subsurface information from another tract? These questions are briefly addressed in the following subsections.

### I. THE RIGHT TO EXPLORE IS A VALUABLE PROPERTY RIGHT

Fundamentally, the right to conduct geophysical operations is a valuable property right, and the law will safeguard this right against trespass and related torts.<sup>4</sup> This is true regardless of the oil and gas "ownership theory" recognized in a particular state.<sup>5</sup> The right to conduct geophysical operations is traditionally secured by obtaining permission from the "owner" of the right to explore.

Permission may take several forms, including: a "prospecting" permit, a prospecting permit coupled with an option to acquire an oil and gas lease, or an oil and gas lease.<sup>6</sup> In the case of a prospecting permit, used most commonly by a geophysical operator doing a "speculative survey"<sup>7</sup> for licensing to oil and gas companies, the operator is given a fixed period of time to engage in geophysical operations. The owner of the right to explore might be paid nothing, paid a flat or per-acre sum of money, paid according to the operations on the subject property,<sup>8</sup> paid by the acreage explored, or paid on some other basis. In the case of a prospecting permit coupled with a lease option, generally used by a geophysical operator under contract to an oil and gas com-

---

4. See *Franklin v. Arkansas Fuel Co.*, 51 So. 2d 600, 601 (La. 1951); *Wilson v. Texas Co.* 237 S.W.2d 649, 650 (Tex. Civ. App.—Fort Worth 1951, writ ref'd n.r.e.). See also LA. REV. STAT. ANN. § 30:217 (Supp. 1998).

5. In *Ohio Oil Co. v. Sharp*, 135 F.2d 303, 310 (10th Cir. 1943) (Phillips, J., concurring)—after recognizing that Oklahoma follows the non-ownership theory of oil and gas, and yet still recognizes the tort of geophysical "trespass"—commented that "it is difficult for me to see how there can be a trespass upon an incorporeal hereditament."

6. A prospecting permit is most commonly used to explore wildcat acreage. Under its terms, the geophysical operator is given the right (but has no obligation) to explore the subject acreage for a fixed period of time (e.g., one year). A lease option or oil and gas lease is more commonly acquired in areas that are more favorable for oil and gas development.

Detailed discussion of these agreements is beyond the scope of this article. For further information, see A. W. Walker, Jr., *Pitfalls in Shooting Options and Selection Leases*, 1 ROCKY MTN MIN. L. INST. 239 (1955).

7. A speculative survey is one done by a geophysical operator for the purpose of licensing the data to multiple oil and gas companies for their assessment. Profits are earned by selling multiple licenses of the data to multiple companies. In contrast, a "proprietary survey" is one done by a geophysical operator for a specific client who pays for the exclusive rights to the data.

8. For example, compensation may be based upon the number of shot holes or geophones placed on the acreage, or on the number of miles of seismic lines.

pany who is not ready to acquire leases, the form of payment is likely to include an up-front payment for the lease option and an additional bonus if a lease is taken.<sup>9</sup> In the case of an oil and gas lease, the lessee will generally have the implied or expressed right to explore through the use of geophysical or other methods. In return, the lessor will be paid a bonus and probably annual rentals for the primary term of the lease.

## II. CAUSES OF ACTION FOR UNLAWFUL EXPLORATION

Depending on the specific facts and circumstances, the owner of the right to explore may have a cause of action against a party who conducts geophysical operations without permission on several theories. These include trespass, assumpsit, loss of speculative value, interference with the right to contract regarding exploration, invasion of privacy,<sup>10</sup> unlawful acquisition of a trade secret, and misappropriation. Thus, an "owner" who has suffered unlawful geophysical operations will have a choice of tort<sup>11</sup> remedies in the court of the jurisdiction where the wrongful survey occurred.<sup>12</sup> The choice of remedy will turn on the nature and circumstances of the plaintiff's injury and on the cause of action that, on balance, offers the best chance for recovery and the most lucrative damage award.<sup>13</sup>

If suit is brought for trespass by reason of an unlawful entry, the plaintiff will ordinarily recover for any injury to the land and to any

---

9. Seismic option periods range from one to three years. The lease option provision commonly references a lease with a primary term of three to five years.

10. This possible cause of action will not be discussed as the law of privacy has not evolved to embrace a right to privacy concerning one's mineral rights. *See generally* RESTATEMENT (SECOND) OF TORTS § 652A (1977). Nevertheless, invasion of privacy has been suggested as a possible means of recovery for wrongful acquisition of geophysical information.

11. Generally, case law classifies an action relating to an authorized geophysical survey as grounding in tort. *See, e.g.,* Iberville Land Co. v. Amerada Petroleum Co., 141 F.2d 384, 387 (5th Cir. 1944) (concerning Louisiana law and stating that an action for wrongful geophysical survey was grounded in tort, not quasi contract); Ohio Oil Co. v. Sharp, 135 F.2d 303, 307-08 (10th Cir. 1943) (suggesting that, under Oklahoma law, wrongful geophysical surveys are grounded in trespass); General Geophysical v. Brown, 38 So. 2d 703, 705 (Miss. 1949) (holding that a wrongful geophysical survey constitutes trespass).

12. *See* Shell Petroleum Corp. v. Moore, 46 F.2d 959, 962 (5th Cir. 1931) (holding that an action for a wrongful geophysical survey is not grounded in conversion; thus, the action must be brought in the jurisdiction where the land is located).

13. *See* Layne Louisiana Co. v. Superior Oil Co., 26 So. 2d 20, 24 (La. 1946) (holding that the owner of the right to explore was entitled to recover compensatory damages from a geophysical trespasser). *Cf.* Shell Petroleum Corp. v. Scully, 71 F.2d 772, 774 (5th Cir. 1934) (stating that a geophysical trespasser is liable for more than nominal damages); Thomas v. Texas Co., 12 S.W.2d 597, 598 (Tex. Civ. App.—Beaumont 1928, no writ) (awarding only nominal damages due largely to the plaintiff's lack of proof of actual damages); Burns v. Western Geophysical Co., No. 89-6259 (10th Cir. Dec. 12, 1990) (remanding a case involving the wrongful acquisition of geophysical information to determine whether an award of punitive damages was warranted).

improvements on the land, including timber and water.<sup>14</sup> Often, the owner of the right to explore will elect to waive the trespass and bring suit in assumpsit for the value of the exploration right that was wrongfully exercised.<sup>15</sup> An action for recovery of the value of the exploration right is theoretically possible even if an action in trespass is barred, such as where no physical entry occurred.<sup>16</sup>

In an action to recover damages for the value of the exploration right (or similar damages), an issue can arise regarding the type of "contract" the parties would have negotiated: a bare exploration permit,<sup>17</sup> a permit to explore coupled with a lease option,<sup>18</sup> or an oil and gas lease.<sup>19</sup> This dispute also involves the amount of acreage such a permit or lease would likely cover—the mineral owner's full acreage in the area, only the actual acreage explored, or some amount in between.<sup>20</sup> Today, one would ordinarily expect a mineral owner to seek damages measured by the oil and gas lease bonus typically paid for acreage typically leased because a lease is probably the most common arrangement negotiated with a mineral owner for the exercise of the exploration right.<sup>21</sup>

The lack of any actual physical damage to the property at issue, the defendant's willing disclosure to the plaintiff of any information ac-

---

14. See *Bynum v. Mandrel Indust.*, 241 So. 2d 629, 632 (Miss. 1970); *Magnolia Petroleum Co. v. McCollum*, 51 So. 2d 217, 218 (Miss. 1951); *General Geophysical v. Brown*, 38 So. 2d at 705.

15. See *Gulf Coast Real Estate Auction Co. v. Chevron Indust., Inc.*, 665 F.2d 574, 575, (5th Cir. 1982); *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 592 (5th Cir. 1957) (construing Texas law).

The damages available in an action for assumpsit or for the value of the exploration right may be criticized as inadequate for failing to punish the wrongful explorer in that recovery is generally based upon the compensation the explorer would have paid if he had negotiated a lawful right to explore. Thus, the trespasser pays damages as if a rightful entry had been made.

16. Consider *Gulf Coast Real Estate Auction Co. v. Chevron Indust., Inc.*, 665 F.2d at 575, where the only physical entry was the landing of an airplane which was used in flight to gather information about the property at issue.

17. In *Shell Petroleum v. Scully*, 71 F.2d 772, 774 (5th Cir. 1934), the court emphasized that in calculating damages the court must limit the damage award only to that which was wrongfully taken (*i.e.*, the right to explore, itself). See also *Holcombe v. Superior Oil Co.*, 35 So. 2d 457, 459 (La. 1948) and *Layne Louisiana Co., v. Superior Oil Co.*, 26 So. 2d 20, 24 (La. 1946).

18. See *Franklin v. Arkansas Fuel Oil Co.*, 51 So. 2d 600, 601 (La. 1951).

19. Cf. *Phillips Petroleum Co. v. Cowden*, 241 F.2d at 593; *Gulf Coast Real Estate Auction Co., Inc. v. Chevron Indust., Inc.*, 665 F.2d at 575.

20. See *Phillips Petroleum Co. v. Cowden*, 241 F.2d at 593, *after remand*, 256 F.2d 408, 409 (5th Cir. 1958) (affirming an award of damages for the market value of the exploration right over the entire 2,682-acre tract at issue, rather than the portion of the tract actually occupied by the defendant).

21. See *Burns v. Western Geophysical Co.*, No. 89-6259 (slip op.) (10th Cir. Dec. 12, 1990) (upholding the award of a full lease bonus). A Louisiana case permitted a landowner to recover lost lease bonus revenues against a surface lessee who had granted seismic permits to geophysical operators for all acreage explored that was not subsequently leased for oil and gas operations. See *IP Timberlands Operating Co. v. Denmiss*, 657 So. 2d 282, 296 (La. Ct. App. 1995).

quired, and the defendant's nondisclosure of the information to third parties may serve to limit the recovery of other damages.<sup>22</sup> On the other hand, the failure to complete a survey or the failure to secure useful or valuable information in the course of a wrongful survey will not serve to eliminate damages.<sup>23</sup> If a "trespassing" geophysical operator disseminates unfavorable information, the rightful owner may recover for the loss of speculative value or for interference with the right to contract regarding exploration.<sup>24</sup> Here, recovery is usually based upon any resulting depreciation in the value of the oil and gas interest.<sup>25</sup> And, in the case of an intentional wrongful exploration, a court could award damages for mental anguish<sup>26</sup> and even exemplary damages.<sup>27</sup> However, courts have rejected liability on the ground of conversion, which would, in the proper case, allow damages based

---

22. See *Shell Petroleum v. Scully*, 71 F.2d 772, 774 (5th Cir. 1934).

23. See *Phillips Petroleum Co. v. Cowden*, 241 F.2d at 593; *Franklin v. Arkansas Fuel Oil Co.*, 51 So. 2d 600, 601 (La. 1951). Cf. *Lableu v. Vacuum Oil Co.*, 132 So. 233, *on rehearing*, 132 So. 776 (La. 1931). In *Lableu*, the court reduced damages to \$100, noting that the wrongful entry was not done for the purpose of gathering information concerning the property at issue, that no useful information regarding such property had been obtained, and the plaintiff suffered no loss because he had refused all offers to lease the property.

24. In *Burns v. Western Geophysical Co.*, No. 89-6259 (10th Cir. Dec. 12, 1990), the court upheld a damage award for the value of the exploration right (based upon the bonus a lessee would have paid for a lease), plus a damage award for loss of speculative value for wrongful disclosure of the seismic data to third parties. The Court of Appeals rejected Western's argument that the total damage award constituted a duplicate recovery because Western had not challenged the jury instructions requiring a separate calculation of damages for the right to explore and for wrongful disclosure. In a non-geophysical context, see *Solberg v. Sunburst Oil & Gas Co.*, 246 P. 168 (Mont. 1926). For further information on the tort of interference with the right to contract see *J'Aire Corp. v. Gregory*, 24 Cal. 3d 799 (Cal. 1979).

25. See *Angelloz v. Humble Oil & Ref. Co.*, 199 So. 656, 658 (La. 1940). Dicta in *Layne Louisiana Co. v. Superior Oil Co.*, 26 So. 2d 20, 24 (La. 1946) and *Thomas v. Texas Co.*, 12 S.W.2d 597, 598 (Tex. Civ. App.—Beaumont 1928, no writ), suggests that further recovery for any established decline of the property's royalty interest value may also be appropriate.

26. See *Ard v. Samedan Oil Corp.*, 483 So. 2d 925, 928 (La. 1986) (recognizing mental anguish but reducing the award); *Lloyd v. Hunt Exploration, Inc.*, 430 So. 2d 298 (La. Ct. App. 1983) (rejecting award for mental anguish as abuse of discretion where there was no testimony supporting such an award); *Teledyne Exploration Co. v. Klotz*, 694 S.W.2d 109, 111 (Tex. App.—Corpus Christi 1985, writ ref'd n.r.e.) (affirming an award of \$50,000 for past and future mental anguish).

27. In *Kennedy v. General Geophysical Co.*, 213 S.W.2d 707, 709 (Tex. Civ. App.—Galveston 1948, writ ref'd n.r.e.), the court stated that punitive damages may only be recovered where actual damages were sustained. In *Burns v. Western Geophysical Co.*, No. 89-6259 (slip op.) (10th Cir. Dec. 12, 1990), the court ruled that the trial court could consider the award of punitive damages, even though the trespasser, in keeping with apparent custom and practice, had obtained permission from the surface owner (but not the mineral owner) to engage geophysical operations. In *Geophysical Serv., Inc. v. Thigpen*, 102 So. 2d 423, 424 (Miss. 1958), the court remanded a jury award for a new trial for the admission of defendant's good faith so as to avoid an award for punitive damages. On the other hand, several Louisiana cases state that punitive damages are not recoverable for geophysical trespass. See, e.g., *Angelloz v. Humble Oil & Refining*, 199 So. 656, 658 (La. 1940).



upon the value of the information to the defendant.<sup>28</sup> My views regarding the proper measures of damages are discussed in subsection IV. below.

### III. OWNERSHIP OF THE RIGHT TO EXPLORE

Who owns the right to explore? This basic question is somewhat misleading. Obviously, because the right to explore is a valuable property right that the law will protect, the sole fee simple owner of both the surface and mineral estate in Blackacre is the only party authorized to conduct geophysical operations directly on, and relating to, Blackacre.<sup>29</sup> But what if the property is held by a life tenant? What if the surface estate and mineral estate are severed? What if the minerals are owned by cotenants? What if one mineral owner owns the oil and gas rights and another mineral owner owns the other mineral rights? What if there has been a "horizontal" severance of the mineral rights by depth or by strata? What if subsurface information is acquired for a purpose other than mineral exploration? What if the mineral exploration is done to determine whether a particular surface use is suitable out of concern that such use would be incompatible with mineral development? What if the property is subject to an oil and gas lease? What if there are several oil and gas lessees who have acquired separate leasehold rights but have entered into a joint operating agreement respecting the property at issue? What if the property is subject to a voluntary pooling or unitization agreement? What if the property has been force pooled or force unitized? This section will address some of these questions.

#### A. *Severed Mineral Interests*

Where ownership of the surface and mineral interests have been severed, the right to conduct geophysical mineral operations rests with the mineral owner.<sup>30</sup> This principle is well established; although, his-

---

28. See *Phillips Petroleum Co. v. Cowden*, 241 F.2d at 593; *Shell Petroleum Corp. v. Moore*, 46 F.2d at 962 (5th Cir. 1931). Ordinarily, the mineral owner cannot recover the value of the geophysical information in the hands of the trespasser (such as in an action for mesne profits), perhaps because the trespasser's profits derived from the acquisition and possible sale of the information are not generated during the short time period of the trespass itself. Nevertheless, the benefits received by the trespasser may be relevant in determining damages due in an *assumpsit* action. *But see Franklin v. Arkansas Fuel Oil Co.*, 51 So. 2d 600 (La. 1951) (awarding damages based upon the value of geophysical information to the trespasser).

29. See *Wilson v. Texas Co.*, 237 S.W.2d 649, 650 (Tex. Civ. App.—Fort Worth 1951, writ ref'd n.r.e.).

30. See *id.* at 650. See also *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 590 (5th Cir. 1957); *Holcombe v. Superior Oil Co.*, 35 So. 2d 457, 459 (La. 1948); *Burns v. Western Geophysical Co.*, No. 89-6259 (10th Cir. Dec. 12, 1990). In a recent Louisiana case, a surface lessee was found liable to the underlying landowner for issuing seismic permits to geophysical operators. See *IP Timberlands Operating Co. v. Denmiss*, 657 So. 2d 282, 295 (La. Ct. App. 1995).

torically, in Oklahoma, for example, some oil and gas operators conducted geophysical operations with only the surface owner's permission.<sup>31</sup> No case law supports this historical practice—at least where the geophysical operations were conducted in furtherance of oil and gas exploration or development. Accordingly, no prudent operator would engage in geophysical mineral operations based upon permission from someone who owned only a surface interest.<sup>32</sup>

The basis for recognizing that the right of exploration rests with the mineral owner is discussed in *Layne Louisiana Co. v. Superior Oil Co.*<sup>33</sup>

It is a well-known and accepted fact . . . that the right to geophysically explore land for oil, gas or other minerals is a valuable right. Large sums of money are annually paid landowners for the mere right to go upon their land and make geophysical and seismograph tests. The information obtained as the result of such tests is highly valuable to the person or corporation by whom they are made. If the information thus obtained be favorable, it can be used and is used in dealing with the landowner for his valuable mineral rights. If the information be unfavorable, the fact quickly becomes publicly known and thus impairs the power of the landowner to deal advantageously with his valuable mineral rights. The average landowner is without means or funds to secure geophysical or seismograph information. Where that information, which is exclusively his by virtue of his ownership of the land, is unlawfully obtained by others, the landowner is clearly entitled to recover compensatory damages for the disregard of his property rights.<sup>34</sup>

However, the mineral owner's exclusive right to conduct geophysical operations is subject to several caveats.

First, the initial severance instrument must be examined to determine whether the exploration right has been expressly addressed by the terms of the instrument. For example, perhaps the severance instrument may reserve in the surface owner the right to consent to exploration, to control the manner of exploration, or to be compensated for the use of the surface.

---

31. See *Burns v. Western Geophysical Co.*, No. 89-6259.

32. An important exception to this well-established principle is that a geophysical operator may explore federally-owned severed minerals with permission of the overlying surface owner. See generally BUREAU OF LAND MANAGEMENT, MANUAL H-3150-1, RELEASE 3-289, ONSHORE OIL AND GAS GEOPHYSICAL EXPLORATION SURFACE MANAGEMENT REQUIREMENTS 1 (1994).

33. 26 So. 2d 20 (La. 1946).

34. *Id.* at 22. The Louisiana Mineral Code currently provides that where the surface is burdened by a mineral servitude, the right of exploration rests with the owner of the mineral servitude. LA. REV. STAT. ANN. § 31:21 (West 1989). *But see* *Jeanes v. G.F.S. Co.*, 647 So. 2d 533, 535 (La. Ct. App. 1994), *cert. denied*, 650 So. 2d 255 (La. 1995) (stating, under LA. REV. STAT. ANN. § 30:217 (West 1989), that a geophysical operator must have permission from landowner, not just the owner of a mineral servitude). The holding in the *Jeanes* case, however, has been made moot by a statutory amendment. See LA. REV. STAT. ANN. § 30:217 (West Supp. 1998).

Second, while the initial mineral severance ordinarily grants the exclusive exploration right to the mineral owner, an oil and gas lease, depending on its express terms, may or may not grant the *exclusive* exploration right to the lessee. This is true whether the lease is taken from the fee owner or from a severed mineral owner.<sup>35</sup>

Third, the surface owner should be regarded as having implicitly retained the right to engage in subsurface exploration and testing necessary to the lawful use and development of the surface.<sup>36</sup> There is, however, no direct case authority to support this assertion.

Fourth, the mineral owner's right of surface use is not unlimited. At a minimum, such use must be reasonable, necessary and non-excessive.<sup>37</sup>

Fifth, geophysical trespass may include an unlawful entry onto the surface. In this case, the surface owner would be entitled to recover for the surface trespass.<sup>38</sup>

### B. *Surface-Related Exploration*

Cases that recognize that the exploration right rests with the mineral owner (rather than with the surface owner) all deal with geophysical operations conducted for the purpose of locating favorable geologic structures for possible further oil and gas exploration and development. The question remains as to whether geophysical activity, core sampling, or other acquisition of subsurface information can be conducted by or through a surface owner where such activity is conducted for a purpose directly related to surface management and development.

By analogy, consider the case of *Grynberg v. City of Northglenn*.<sup>39</sup> Grynberg held an unrecorded coal lease from the State of Colorado, the mineral owner.<sup>40</sup> Grynberg sued the City of Northglenn for damages resulting from the City's drilling of a test hole without Grynberg's permission and from the publication of the test results in a public filing submitted to the State Engineer. The test hole and public filing revealed that the coal beneath the property was not commercially recoverable. Hence, Grynberg brought suit to recover the resulting lost market value of his coal lease, alleging trespass, assumpsit, wrongful appropriation of geologic information, interference with prospective business advantage, negligence, and inverse condemnation.

---

35. For further discussion, see *infra* § III.G.

36. For further discussion, see *infra* § III.B.

37. For further discussion, see *infra* § IV.

38. *Cf. Holcombe v. Superior Oil Co.*, 35 So. 2d 457, 459 (La. 1948); *Layne Louisiana Co. v. Superior Oil Co.*, 26 So. 2d 20, 24 (La. 1946); *Thomas v. Texas Co.*, 12 S.W.2d 597, 598 (Tex. Civ. App.—Beaumont 1928, no writ).

39. 739 P.2d 230 (Colo. 1987).

40. *See id.* at 234.

Although the City had no actual notice of the unrecorded Grynberg lease, a search of record title did reveal that the State of Colorado owned the mineral estate and that Coors held a prior coal lease that was still within its primary term. Upon inquiry of Coors, the City was informed that Coors had abandoned the lease after Coors determined that any coal beneath the property was not economically recoverable. Prior to drilling the test hole, the City never sought or obtained permission from the State of Colorado, in its capacity as owner of the severed mineral interest, but it did have permission from the surface owner. The court held that only the mineral owner (in this case, either the State or Grynberg)<sup>41</sup> could authorize geological testing, noting that "[t]he recognition of the exclusivity of the right of the mineral owner to consent to such exploration is based upon the central importance of information concerning mineral deposits to the value of the mineral estate."<sup>42</sup> The court further held that, because the City had not sought permission from the State as record owner of the coal, the City was not entitled to the protection of the recordation act for Grynberg's failure to record his coal lease.

If the court is correct that only the State or Grynberg could have authorized geological testing, then the court's holding that the City was not entitled to the protection of the recordation act is undoubtedly correct. Recordation acts protect bona fide purchasers, not trespassers who have failed to deal with the apparent record owner. Thus, consistent with the court's analysis, one could argue that the State (as mineral owner) or Grynberg (as the State's lessee), not the surface owner, has the right to control mineral exploration on the ground that such exploration is an invasion of the mineral estate. I submit, however, that a mineral owner should not be free to bar any and all sub-surface activity by a surface owner.

Surely, a surface owner has the right to drill a well on the property in search of water without having to secure the permission of the mineral owner. A water well may be drilled quite deep, and well cuttings might reveal the absence of coal deposits, just as in *Grynberg*. Moreover, a surface owner, who is contemplating extensive surface development, may have a legitimate need to drill test holes to be assured of continuing subjacent support.

Of course, a court could recognize a surface owner's right to drill a geologic test hole for a legitimate surface-related purpose, but still prohibit the surface owner from generally publicizing the results in a

---

41. Regarding the matter as irrelevant, the court did not discuss the possibility that the State of Colorado, as severed mineral owner, could have authorized the exploration. The court, after noting that the City did not seek the State's permission, stated that the answer to this question depended upon the terms of Grynberg's lease (*i.e.*, whether the lease gave Grynberg the "exclusive" right to explore). Such permission would have to be obtained from the State Board of Land Commissioners, as custodian of state-owned minerals, not from the State Engineer, a regulatory official.

42. *Grynberg v. City of Northglenn*, 739 P.2d at 235.

manner that causes unnecessary harm to the speculative value of severed mineral rights. Even here, however, not all disclosure should be prohibited. For example, the surface owner should be permitted to disclose the results of a test to a prospective purchaser of the surface who may be concerned about the possibility of future mineral development on the property.

In *Grynberg*, the City drilled the test hole in the course of purchasing the surface to ascertain the presence or absence of recoverable coal reserves. This testing was apparently necessary to secure state and local government approval for the construction of a wastewater reservoir on the property.<sup>43</sup> The results of the test became public upon submission to the State Engineer, as required by law. Although the Colorado statutes could have been drafted to require the State Engineer to keep the test results confidential, as a practical matter, any subsequent change in zoning, followed by construction of the reservoir, would have signaled the lack of commercial coal deposits to anyone familiar with the underlying statutes. Thus, under the circumstances, the construction of a reservoir would undoubtedly damage the speculative value of *Grynberg's* coal lease. Nevertheless, I would view any such damage, resulting from intense surface development in a *Grynberg* situation, as analogous to the resulting damage that occurs when wildcat oil and gas property is surrounded by dry holes drilled on adjacent land.<sup>44</sup>

The drilling of the test well in *Grynberg* was actually mandated by Colorado law for the protection of mineral owners because governmental land-use authorities could not permit surface development that would unduly hinder the recovery of commercial coal deposits.<sup>45</sup> If drilling to test for the possibility of recoverable coal reserves is a necessary prerequisite to intense surface development, should not the surface owner be authorized to drill? Or stated another way, could the mineral owner prohibit the surface owner from drilling such a hole? I submit that the answers to these questions should be, respectively, yes and no. The court in *Grynberg* recognized that, in resolving tensions between surface and mineral owners, the "broad principle . . .

---

43. Colorado statutes require the State Engineer and local governments to identify and locate valuable mineral deposits in heavily populated counties. Local zoning authorities are prohibited from zoning in a manner that would prevent the possible extraction of commercially valuable mineral deposits. COLO. REV. STAT. §§ 34-1-301 to 34-1-305 (1997). Although these statutes directly affect the ability of a surface owner to develop the surface estate, the court held that these statutes do not alter the exclusive right of the mineral owner to authorize mineral exploration.

44. As another analogy, consider the situation where the owner of the oil and gas rights drills a well at a location that indicates an absence of coal or of fresh water. Such a well would damage the speculative value of both the coal rights and the surface rights, but neither owner should have a cause of action for damage to speculative value.

45. See *Grynberg v. City of Northglenn*, 739 P.2d at 234 (discussing COLO. REV. STAT. §§ 34-1-301 to 34-1-305 (1997)).

is that each owner must have due regard for the rights of the other in making use of the estate in question."<sup>46</sup> If this broad principle is truly a two-way street, how could the mineral owner prevent drilling done as a precaution against intense surface development that might actually hinder mining? If the mineral owner can prevent anyone from testing for the presence of a commercial deposit of coal, then the mineral owner can inhibit (and, because of the Colorado statutes, effectively bar)<sup>47</sup> surface development on acreage that contains no coal. Such power would give the mineral owner too much leverage in negotiating with the surface owner about permission to drill a test hole.<sup>48</sup>

To sum up, the *Grynberg* decision<sup>49</sup> essentially held that, if the purpose of exploration is to gather data on subsurface geology, the mineral owner or his lessee has the right to control such activity, regardless of the specific reason for gathering the data. This seems to broaden the mineral owner's right of surface use beyond what the common law has traditionally allowed. At common law, the mineral owner's use of the surface must relate to the enjoyment of the mineral estate. For example, a mineral owner would exceed the scope of common law surface-use rights by entering the surface to drill holes for the purpose of determining whether the property is suitable for use as a wastewater reservoir because this is unrelated to mineral exploration and development. While, in this instance, a court might decide that the right is correlative, thereby requiring permission from both the surface and mineral owners, such a rule would be inefficient and would raise the cost of conducting such tests due to the strategic behavior of the parties in negotiating the necessary permission. Thus, on balance, the holding in *Grynberg* is desirable public policy. The holding is particularly troublesome in states where surface and mineral es-

---

46. *Id.*

47. COLO. REV. STAT. §§ 34-1-301 to 34-1-305 (1997).

48. Perhaps, if the mineral owner denied permission, the land-use authorities would allow surface development on the presumption that no commercial coal deposits are present beneath the property. The risk, however, is that this solution could result in the waste of coal deposits or the waste of a surface investment, depending upon whether mining was later allowed.

49. After remand, plaintiff *Grynberg* dropped all tort claims and proceeded on a theory of inverse condemnation. After trial, the jury awarded *Grynberg* nearly \$650,000, plus attorney fees. The Colorado Court of Appeals affirmed, *Grynberg v. Northglenn*, 829 P.2d 473, 477 (Colo. Ct. App. 1991), but the Colorado Supreme Court reversed, holding that no "taking" of the severed mineral estate had occurred, either as a result of the City's acquisition of the surface estate from the surface owner or as a result of the drilling of the test hole in question, even though the value of *Grynberg's* coal lease may have been depreciated. See *City of Northglenn v. Grynberg*, 846 P.2d 175, 185 (Colo. 1993).

The court also addressed whether a "trade secret" had been "taken" from *Grynberg*. Although the court stated that it was not deciding whether geophysical information in general may be a trade secret, it concluded that "*Grynberg's* access to the information [concerning the coal deposits] was not sufficiently exclusive to qualify as a trade secret" because of other publicly available information concerning the amount of coal beneath the property. See *id.* at 184 n.17.

tates are commonly severed, where intense surface development and mining are incompatible, and where surface owners, prior to constructing major surface improvements, wish to detect and avoid geologically unstable areas, such as fault lines or old, abandoned mine shafts.

### C. Minerals Owned In Cotenancy

Under the well-established majority view, a cotenant may exploit the minerals without the consent of other cotenants, subject to a duty to account for net profits.<sup>50</sup> Accordingly, where mineral rights are held in cotenancy, a party, desirous of conducting geophysical operations, can obtain the necessary permission from any one of the cotenant mineral owners, regardless of how small such cotenant's fractional interest may be.<sup>51</sup>

Under the minority view, followed in West Virginia and a few Eastern states,<sup>52</sup> the exploitation of minerals by fewer than all cotenants is viewed as waste.<sup>53</sup> Although case law concerning exploration in minority-view jurisdictions is scarce, case law in West Virginia permits one cotenant to engage in mineral exploration.<sup>54</sup> The apparent distinction between development and exploration is that exploration does not involve the permanent extraction of minerals.

By statute, in Louisiana, the concurrent holders of 80% of the mineral rights (either through full ownership, mineral servitude, or both) must consent to both exploration and development.<sup>55</sup> If the minerals are under lease by multiple lessees, the practice of geophysical opera-

---

50. See *Prairie Oil & Gas Co. v. Allen*, 2 F.2d 566, 569 (8th Cir. 1924); *Burnham v. Hardy Oil Co.*, 147 S.W. 330, 335 (Tex. 1912).

51. See generally *Enron Oil & Gas Co. v. Worth*, 947 P.2d 610 (Okla. App. 1997) (noting that owner of undivided, unleased mineral interest can authorize third party to conduct seismic exploration activities without consent of surface owner or other mineral owner cotenants).

52. This view is followed in Illinois, Louisiana, Michigan, Virginia, and West Virginia; however, it has been modified by statute in at least the first three. See *Oil and Gas Rights Act*, SMITH HURD ILL. COMP. STAT. ANN. ch. 765 §§ 520/0.01 to 520/0.10 (1993); LA. STAT. ANN.—REV. STAT. §§ 31:174 - 31:177 (West 1984); MICH. COMP. LAWS ANN. §§ 319.101 - 319.110 (West 1989).

53. See generally *Law v. Heck*, 145 S.E. 601 (W. Va. 1928) (holding that owner of a 1/768 interest may enjoin drilling and production by other cotenants).

54. In *Smith v. United Fuel Gas Co.*, 166 S.E. 533, 534 (W. Va. 1932) the court stated:

Each cotenant had the right to enter on the land himself or by lessee and explore for gas and market the gas if found. But when that right was exercised and the common property was taken, the other cotenants or tenants in common are entitled to an accounting as for a waste committed.

55. See LA. REV. STAT. ANN. §§ 31:164, 31:166, 31:175 (1989 & Supp. 1998). The practice in Louisiana is to obtain the consent of all co-owners. The co-owner of a mineral servitude or a co-owner's lessee or permittee, seeking to explore or develop, must show that a good faith effort was made to contact co-owners and to offer to contract with them on substantially the same basis as with other co-owners. See *id.* §§ 31:166, 31:175 (Supp. 1998). A co-owner holding less than an 80% interest may act

tors in Louisiana is to obtain the consent of all lessees.<sup>56</sup> Thus, except for Louisiana, a cotenant of a small fractional interest can apparently authorize mineral exploration without liability for waste. This is so even though, in some situations, the exploring party may gain valuable and favorable information that would be very useful to the non-consenting cotenants in negotiating development rights and, in other situations, gain information that greatly reduces the land's speculative value. In monetary terms, the party seeking to explore can acquire the right to gather valuable geophysical information by negotiating an exploration right with a cotenant who is willing to take the least compensation for granting the right.

While this same scenario can occur regarding the acquisition of drilling and development rights, operators who intend to drill have a big incentive to acquire the full working interest prior to drilling. This is so because the operator must account to other cotenants for the net profits of development, as required by case law.<sup>57</sup> In contrast, a geophysical operator, who wishes only to acquire seismic data, has little, if any, incentive to acquire a prospecting permit from all cotenants because the geophysical operator would want to acquire data as cheaply as possible.<sup>58</sup> No modern reported case addresses a situation where non-consenting cotenants have filed suit to bar exploration, for an accounting for net profits realized through the sale or use of the acquired geophysical data, for the recovery of the reasonable value of the exploration right, or for the recovery of the loss of speculative value.

Given no direct case authority regarding a duty to account for exploration net profits, given the reliability of 3D seismic, and given the fact that unfavorable data may eliminate affected property from further exploration and leasing activity, the oil and gas industry should anticipate that cotenant mineral owners may seek relief.<sup>59</sup> How *will*

---

without the necessary permissions when necessary to prevent waste, destruction, or extinction of the mineral servitude. *See id.* § 31:177 (1989).

56. Telephone interview with a Louisiana oil and gas lawyer, May 1996.

57. Under the majority view, a cotenant owning a 10% interest in the mineral rights would assume 100% of the risk of drilling a dry hole or unprofitable well but would only be entitled to 10% of any net profits. *See, e.g., Prairie Oil & Gas Co. v. Allen*, 2 F.2d 566, 569 (8th Cir. 1924). Thus, most operators wish to acquire the full working interest prior to drilling a well.

58. An oil and gas operator, who is interested in developing the area if favorable geophysical information is acquired (in contrast with a geophysical company who might be shooting an area on speculation), does have an incentive to acquire lease options or leases up front from all cotenants. Cotenants who are aware that seismic operations have occurred may drive a very hard lease bargain. Moreover, they may insist on reviewing seismic information prior to executing a lease. A prospective lessee who, in the course of lease negotiations, falsely denies having seismic information could face a fraud claim. In other words, acquiring the seismic information as cheaply as possible may prove to be "penny wise, but pound foolish."

59. This point is also discussed by Blomquist *supra* note 2, at 35-40. Regarding the duty of one cotenant to account to other cotenants, see 2 AMERICAN LAW OF PROP-



courts rule? Although I have no prediction,<sup>60</sup> one commentator believes that courts might side with cotenant mineral owners.<sup>61</sup> How *should* courts rule? I submit that courts should deny relief. Nevertheless, to guard against a contrary ruling, I agree with Mr. Blomquist's suggestion that a prudent geophysical operator may wish to acquire an oil and gas lease from one cotenant, rather than rely solely on a bare seismic permit.<sup>62</sup>

My reasoning is as follows: Because a cotenant can, in most jurisdictions, lawfully develop and produce oil and gas without the consent

---

ERTY § 6.14 (A James Casner, ed., 1952). Generally, the duty to account is based upon actual receipts of the cotenant, not on the fair market value of the rights conferred.

Regarding the authority of less than all cotenants to explore for and, in most jurisdictions, to exploit minerals, consider, by analogy, the "one-stock rule" which governed the exploitation of certain profits at common law. Under the one-stock rule, the right to exploit a profit must be exercised jointly and for the benefit of all co-owners of the profit. See *Mountjoy's Case*, 1 And. 307, 1 Godbolt 17, 4 Leonard 147, Moore 174, 2 Coke on Littleton 164b, 165a (C.P. 1583). See also *Stanton v. T. L. Herbert & Sons*, 211 S.W. 353, 355 (Tenn. 1919); *Harlow v. Lake Superior Iron Co.*, 36 Mich. 105, 110 (1877). Among co-owners, a one-stock rule would assist in preventing the waste that results from exploitation of the common pool—such as occurs when there is unfettered development under the rule of capture. The one-stock rule also avoids litigation among co-owners concerning their obligation of accounting. The rule's chief disadvantage, however, is that transaction costs would be high. The greater the number of co-owners, the harder the task of successfully negotiating a joint operating agreement. For example, the rule would invite strategic behavior by the owners of small interests who would often "hold out" for payments that greatly exceed the actual value of their interests. See, e.g., *Law v. Heck*, 145 S.E. 601, 602 (W. Va. 1928) (where the owner of an undivided 1/768 mineral interest held out for compensation greatly in excess of its proportionate value). One means of countering this tendency would be to provide for a more efficient action for partition by sale than is generally available where fractional mineral interests are involved. See generally *HEMINGWAY supra* note 2, § 3.3. Nevertheless, even in jurisdictions that classify an oil and gas lease as a profit, the one-stock rule of *Mountjoy's Case* has been rejected in the context of oil and gas operations. Courts reason that, because the oil and gas lease grants the exclusive right to fully exploit oil and gas to the lessee, the lessee may make multiple transfers of various interests to third parties. See, e.g., *Hinds v. Phillips Petroleum Co.*, 591 P.2d 697 (Okla. 1979); *Chandler v. Hart*, 119 P. 516, 520-22 (1911). Moreover, the typical oil and gas lease almost always expressly allows the lessee the right to make whole or partial lease assignments.

60. As previously discussed, Louisiana has decided this question by statute. Accordingly, my comments are related to jurisdictions other than Louisiana.

61. Blomquist *supra* note 2, at 37, suggests that courts may have some problems recognizing the right of a geophysical operator to shoot seismic based upon a bare exploration permit from fewer than all cotenants. Blomquist bases this concern on the general rule that a seismic permit is like an easement or a license which Blomquist contends cannot be granted by fewer than all cotenants. See *id.* Moreover, Blomquist argues that courts may be reluctant to allow one cotenant to issue a permit that could result in a seismic survey that could destroy or seriously harm the value of the mineral estate. See *id.* at 39.

62. Blomquist *supra* note 2 offers this advice so that the geophysical operator can assert all of the status and rights of a cotenant. See *id.* at 40.

of other cotenants,<sup>63</sup> it necessarily follows that a cotenant can explore for oil and gas without the consent of other cotenants. Moreover, because a cotenant may develop the oil and gas through a lessee, I submit that a lessee may engage in exploration for the same reasons that a cotenant may do so.<sup>64</sup> And since a cotenant is free to engage in exploration, a cotenant should be able to permit a geophysical operator to do so. In other words, because a cotenant or cotenant's lessee may explore, it is logical that a geophysical company should be entitled to engage in seismic surveying with permission from a cotenant or a cotenant's lessee<sup>65</sup> without having to secure the consent of other cotenants. When I initially reached this conclusion, there was no case authority directly on point; however, there was the following general principle: an individual cotenant can give a license or permit to a third party "to use and enjoy the property in the same manner as the tenant, himself, provided an ouster of his cotenants is not involved."<sup>66</sup> Since then, the Oklahoma Court of Appeals has expressly held that one cotenant may permit a third party to explore the property through seismic operations without the consent of other cotenants.<sup>67</sup> The court expressly held that the right to explore the mineral interest and the right to use the surface for seismic exploration may be separately transferred, apart from other incidents of the mineral estate, by a mineral owner.<sup>68</sup>

What about cotenants who seek an accounting for net profits, if any, or file an action for the reasonable value of the exploration right or

---

63. See *Prairie Oil & Gas Co. v. Allen*, 2 F.2d 566, 569 (8th Cir. 1924); *Burnham v. Hardy Oil Co.*, 147 S.W. 330, 335 (Tex. 1912).

64. My argument is consistent with established majority-view doctrine. And as discussed above, the limited case law in minority view jurisdictions, which view mineral development by one cotenant as waste, nevertheless recognizes that a cotenant has the right to explore. See *Smith v. United Fuel Gas Co.*, 166 S.E. 533, 534 (W. Va. 1932) (stating that a cotenant may explore without the joinder of other cotenants).

65. Regarding an oil and gas lessee's authority to issue a geophysical permit, note that the exploration should arguably be in furtherance of the object of the lease (i.e., exploration, drilling, and development). Accordingly, a lessee may not have the authority to permit a geophysical operator to conduct a survey for speculation if the lessee (or at least a prospective purchaser of the lease) is not going to acquire the seismic data. For further discussion, see *infra* § III.G.

66. 2 AMERICAN LAW OF PROPERTY § 6.12 at 51 (A. James Casner, ed. 1952) (citing *Eagle Oil & Refining Co. v. James*, 126 P.2d 880 (Cal. Ct. App. 1942)). This seminal treatise distinguishes licenses from easements. Although all cotenants must consent to an easement because the dominant easement would interfere with the ownership rights of all cotenants, there is no similar interference where a license is granted which authorizes a use of the property that would be a lawful use by an individual cotenant. Accordingly, I question Harry Blomquist's concern that courts may require a geophysical operator to secure permission from all cotenants to engage in geophysical operations.

67. See *Enron Oil & Gas Co. v. Worth*, 947 P.2d 610, 613-14 (Okla. Ct. App. 1997) (citing *Earp v. Mid-Continent Petroleum Corp.*, 27 P.2d 855, 858 (Okla. 1933) and *Knox v. Freeman*, 78 P.2d 680 (Okla. 1938)).

68. See *id.* at 613 (citing *Hinds v. Phillips Petroleum Co.*, 591 P.2d 697 (Okla. 1979)).

for loss of speculative value? While it is true that a cotenant or a cotenant's oil and gas lessee must account for the net profits of mineral development, absent an ouster, neither they nor a geophysical permittee should be obliged to account to other cotenants for the net profits of seismic information. Moreover, the other cotenants should not have a cause of action to recover either the reasonable value of the exploration right or the loss of speculative value.

Consider the following analogies: While a cotenant, who has a special expertise in horizontal well drilling and production, would have to account to cotenants for the net profits of production, if any,<sup>69</sup> that same cotenant should not be obliged to disclose special horizontal-drilling expertise to the other cotenants.<sup>70</sup> And a cotenant, who tries, in good faith, to secure production by drilling a well, would not be liable for lost land values when the well is completed as a dry hole.<sup>71</sup>

---

69. The details of the law relating to a cotenant's general duty of accounting are confusing. At common law, a cotenant in sole possession had no duty to account in the absence of an ouster. The common law, however, was changed by the Statute of Anne, Stat. 4 Anne, c.16 § 27 (1704), which, as interpreted, required a cotenant to account for any rents and profits received from third persons in excess of her just proportion. After passage of the Statute of Anne, in England, a cotenant was even allowed to mine a fair share of coal from cotenancy property without having to account to other cotenants. See *Job v. Patton*, L.R. 20 Eq. 84 (1872).

The Statute of Anne survives in most states by statute or common law; however, in most states a cotenant must account for any net profits derived from mineral exploitation. See, e.g., *White v. Smyth*, 214 S.W.2d 967, 974 (Tex. 1948). The gathering of seismic information should be privileged under the majority view as no minerals are being extracted.

In a minority of states, there is a broader duty to account for rents, net profits, or reasonable rental value. However, a cotenant has no duty to account for income derived from improvements that the cotenant placed on the land. See, e.g., *Larmon v. Larmon*, 191 S.W. 110 (Ky. 1917). In minority-view states, while a cotenant might have to account for rents received from a geophysical operator, that cotenant would not ordinarily receive (and thus would have no duty to account for) profits from the sale of the seismic data by the geophysical operator. By analogy, a cotenant who cash-rents farmland might have to account for the rents received, but neither that cotenant, nor the farm tenant, would have to account to the other cotenants for a share of the crops. The only issue might be whether the cotenant received a reasonable rental value. This latter concern may prompt cautious geophysical operators to pay a reasonable price vis-à-vis the consenting cotenant's fractional interest and be prepared to pay the same proportionate sums to other cotenants who complain.

70. The Fifth Circuit Court of Appeals has ruled that the lessee of a cotenant does not have to disclose information about a gas well to other unleased cotenants because there is no fiduciary relationship among cotenants. See *Mitchell Energy Corp. v. Samson Resources Co.*, 80 F.3d 976, 985 (5th Cir. 1996). This same case held that an operating cotenant who fails to account to other cotenants for net profits is liable for an accounting, but not for conversion. See *id.* at 982-84.

71. If a cotenant drills both a dry hole and a producing well, most courts have held that the producing cotenant must account for net profits on a well-by-well basis. See, e.g., *McMillan v. Powell*, 362 S.W.2d 721, 722 (Ark. 1962); *Davis v. Sherman*, 86 P.2d 490, 493 (Kan. 1940); *Williamson v. Jones*, 27 S.E. 411, 423-24 (W. Va. 1897). But see *Connette v. Wright*, 98 So. 674 (La. 1923). In calculating net profits on a well-by-well basis, the producing cotenant may recoup the costs of drilling the producing well but may not recoup the costs of a dry hole. In other words, the developing cotenant must

Another confusing, and potentially troublesome aspect of cotenancy law, is the notion that one cotenant owes a fiduciary duty to other cotenants. In discussing the cotenant's duties to account to each other, and to not commit waste or be hostile to each other, some courts have a bad habit of characterizing the cotenancy as a fiduciary relationship.<sup>72</sup> Perhaps the most common situation where courts characterize cotenancy as a fiduciary relationship occurs when one cotenant acquires an outstanding *adversarial* claim to the cotenancy property that it asserts exclusively for itself rather than for the benefit of the entire cotenancy.<sup>73</sup> On the other hand, concerning a cotenant's own interest, the cotenant may freely transact with strangers and may acquire the interests of another cotenant without offering to share the acquisition with other cotenants.<sup>74</sup> Although tenants by the entirety have a fiduciary relationship,<sup>75</sup> other concurrent interest owners generally do not, absent some independent relationship or agreement.<sup>76</sup> Accordingly, a cotenant who issues a prospecting permit for seismic operations relating to her undivided interest should not be in violation of a fiduciary obligation to other cotenants.<sup>77</sup>

---

absorb the full cost of the dry hole. In this circumstance, it would be punitive to also require the developing cotenant to compensate the non-consenting cotenants for lost land values that resulted from the drilling of the dry hole on one portion of the property. Even if accounting were permitted on a property or tract basis, a rule that required compensation for lost land values resulting from dry holes would greatly discourage exploration and would be tantamount to adopting a rule that viewed any exploration activity as waste.

Under cotenancy law, the only basis for liability for loss of speculative value would appear to be waste. The Statute of Westminster, 13 Edw. I, c. 22 (1285), provided that a cotenant was liable for waste. This statute has counterparts in most states. Nevertheless, in England, the courts continued to recognize that a cotenant in fee had the same rights as a sole fee owner to use and enjoy land. And, as previously discussed, in most American states, a cotenant can exploit minerals and need only account for net profits, if any. There is no authority for holding a cotenant liable for "net losses" except where the cotenant has maliciously or recklessly harmed the property itself, such as by destroying an improvement on the land that lowers the property's value. See generally ROGER A. CUNNINGHAM ET AL., *THE LAW OF PROPERTY* § 5.8, at 222 (Law. ed. 1984).

72. This also frequently happens in oil and gas cases. Courts sometimes use the term fiduciary to characterize the duty owed by an operator to non-operators, by an executive rights holder to a non-executive mineral interest owner, or by a lessee to a lessor under the pooling clause. In such cases, it is doubtful that the court really means fiduciary in the trustee sense.

73. See *supra*, note 66, § 6.16, at 67-69 (A. James Casner, ed. 1952). Even here, however, a fiduciary duty does not exist automatically by reason of cotenancy itself. Generally, to have a fiduciary relationship, the cotenants must have acquired their interest through a common inheritance, will, or deed. See *id.*

74. See 4 THOMPSON ON REAL PROPERTY § 1801, at 164 (1979).

75. See *id.* at 160.

76. See *id.* at 161-65.

77. In *Mitchell Energy Corp. v. Samson Resources Co.*, 80 F.3d 976, 985 (5th Cir. 1996), the Fifth Circuit Court of Appeals held that an oil and gas lessee of one cotenant does not owe a fiduciary duty to the other cotenants. See also *Matter of Fender*, 12 F.3d 480, 486 (5th Cir. 1994) (holding that, under Texas law, cotenants do not stand

#### D. Minerals Owned In Succession

Where the mineral ownership is divided between a life tenant and remainderman, permission for mineral development from the remainderman is insufficient because the remainderman has no current right of access to the property.<sup>78</sup> On the other hand, a life tenant may not develop the minerals, because the extraction and removal of minerals from the property would constitute waste.<sup>79</sup> Accordingly, one wishing to develop minerals needs permission from both the life tenant and the remainderman.

Arguably, however, geophysical activity does not constitute waste—at least in the traditional sense—because nothing is extracted. By analogy to cotenancy, even—under the minority view—where the actual extraction of minerals by one cotenant is viewed as waste, mere exploration is not viewed as waste.<sup>80</sup> Thus, one could argue that the life tenant could authorize geophysical operations without risk of an injunction or a damages suit by the remainderman. No case law directly addresses this question, but the oil and gas industry should anticipate that a remainderman may seek an answer in the future, and the oil and gas industry should not assume that the answer will be the same as in the case of cotenants.

Most courts adhere to the common law of waste where successive interests are concerned. Because a life tenant may not unilaterally develop minerals (except perhaps to prevent drainage), there is little reason to permit a life tenant to unilaterally authorize mineral exploration.<sup>81</sup> Accordingly, the oil and gas industry should not anticipate

---

in a fiduciary relationship absent a specific agreement). *But see* Smith v. Bolen, 261 S.W.2d 352 (Tex. Civ. App.—Fort Worth 1953), *aff'd in part, rev'd in part*, 271 S.W.2d 93 (Tex. 1954); Hardman v Brown, 88 S.E. 1016 (W. Va. 1916).

78. *See* Welborn v. Tidewater Assoc. Oil Co., 217 F.2d 509, 511 (10th Cir. 1954) (construing Oklahoma law).

79. *See id.* In the proper circumstance, a life tenant may have to permit mineral exploitation to prevent waste caused by the drainage of oil and gas by wells drilled on adjacent or nearby property. Also, if a life tenant can assert the "open mine doctrine" (*see, e.g.*, White v. Blackman, 168 S.W.2d 531 (Tex. Civ. App. 1942, writ ref'd w.o.m.)), or if the instrument creating the life estate provides that the life tenant holds "without impeachment for waste," then the life tenant may exploit the minerals for his own account.

80. *See* Smith v. United Fuel Gas Co., 166 S.E. 533, 534 (W. Va. 1932) (stating that a cotenant may explore without the consent of, and without accounting to, other cotenants).

81. One could argue that the life tenant should be permitted to explore to further the public policy of encouraging mineral exploration and ultimate development. If allowed, presumably the life tenant could exercise this right itself or through a permittee. If exercised through a permittee who paid for this privilege, then the question would arise as to whether the life tenant could retain the payment or would have to hold the payment in trust for the remainderman. By analogy to oil and gas leases, most states treat lease bonuses as corpus to be held in trust for the remainderman with the interest earned on the bonus being paid to the life tenant. *See, e.g.*, Sewell v. Sewell, 1 N.E.2d 492 (Ill. 1936). *But see* Franklin v. Margay Oil Corp., 153 P.2d 486 (Okla. 1944) (awarding the lease bonus to the life tenant).

that a court will permit a life tenant to unilaterally authorize exploration.<sup>82</sup> However, the life tenant does control direct access (and may, in the proper case, have a duty to permit access to prevent waste). Regarding cotenant remaindermen, they should have the same rights with respect to each other as cotenants in possession. Accordingly, as in the case of oil and gas lessees, geophysical operators will ordinarily have to deal with both the life tenant and one cotenant remainderman.

#### E. Mineral Ownership Divided By Depth

Occasionally, mineral rights are horizontally severed. For example, one party may own the "shallow" development rights, and another interest owner may own the "deep" rights. Horizontal severance raises the question of whether a party wishing to engage in geophysical operations must have permission from both the shallow owner and the deep owner. Since the deep-rights owner has the implicit right to drill through the shallow strata, it necessarily follows that the deep-rights owner can "shoot" seismic through the shallow strata. Nevertheless, one commentator has suggested that a cautious geophysical operator "should consider blocking out any unpermitted shallow data not essential to its interpretation of the deep structures."<sup>83</sup> Then, citing *Phillips Petroleum Co. v. Cowden*<sup>84</sup> as analogous authority, the commentator suggests that the shallow-rights owner has no right to gather and interpret data concerning the deep rights.<sup>85</sup> I have no quarrel with his advising cautious geophysical operators to block out data obtained from "unpermitted" strata. However, I submit that a horizontal severance situation is more analogous to *Kennedy v. General Geophysical Co.*,<sup>86</sup> wherein the court acknowledged that the incidental gathering of information regarding lands adjacent to the targeted lands does not constitute a geophysical trespass of the adjacent lands.

Because I will argue that the gathering of information regarding adjacent and nearby lands should be lawful,<sup>87</sup> I also conclude that both shallow-rights owners and deep-rights owners should be free to gather geophysical information from all depths. In other words, the owner of a horizontally-severed interest should assume the risk that owners of other strata may gather geophysical information from all depths. A

---

82. Statutes in several states, however, authorize courts to appoint receivers or trustees to execute leases of contingent future interests. *See, e.g.*, COLO. REV. STAT. § 38-43-101 (1997); NEB. REV. STAT. § 57-222 (1993); N. D. CENT. CODE § 38-10-12 (1987); Tex. Civ. Prac. & Rem. Code Ann., § 64.092 (Vernon 1997).

83. Blomquist *supra* note 2, at 42.

84. 241 F.2d 586 (5th Cir. 1957).

85. *See* Blomquist *supra* note 2, at 42 (citing *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586 (5th Cir. 1957)).

86. 213 S.W.2d 707 (Tex. Civ. App.—Galveston 1948, writ ref'd n.r.e.).

87. *See infra* § III.H.7.

contrary rule is too difficult to enforce, unnecessarily increases transactions costs, and causes waste to the extent that gathered data from a "non-permitted" formation would have to be purged from the geophysical operator's records.<sup>88</sup> Owners of horizontally severed interests who do not like my suggested assumption-of-the-risk rule could specifically contract around it.

#### F. *Mineral Ownership Divided By Substance*

Where ownership of the mineral estate has been divided by substance (e.g., Able owns the oil and gas rights, and Baxter owns the coal rights),<sup>89</sup> the objective of the exploring party (whether in search of oil and gas, or coal) should determine the party from whom permission must be secured. Recognize, however, that exploration activities (e.g., wildcat drilling for oil or gas) could incidentally reveal the presence or absence of other substances (e.g., coal).<sup>90</sup>

In this and similar instances, I submit that the coal owner should assume the risk that other lawfully conducted activities could result in the loss of the speculative value of the property for coal development. Moreover, such a loss should not give rise to a cause of action unless the acquiring party intentionally disclosed such information to prospective coal developers where disclosure was not required by law.<sup>91</sup> A more liberal recognition of a cause of action would be inefficient and invite strategic behavior by both oil and gas owners and coal owners in the negotiation of exploration permits. Again, owners who do not like my view could specifically contract around it.

The Colorado Supreme Court recently issued a ruling consistent with my views. In *Mallon Oil Co. v. Bowen/Edwards Assoc., Inc.*,<sup>92</sup> the court ruled that a geologist did not commit a geophysical trespass against an oil and gas lessee by testing the coal reserves for the presence of coalbed methane gas because the testing of coal for coalbed methane gas was viewed as "incidental" to the coal lessee's right to

---

88. I further develop my views *infra* § III.H.7.

89. Throughout the West, oil and gas rights and coal rights are often under separate ownership. In the Texas Panhandle, oil rights and gas rights are often under separate ownership. See, e.g., *Amarillo Oil Co. v. Energy-Agri Prod., Inc.*, 794 S.W.2d 20 (Tex. 1990).

90. Likewise, the exploration and development of coal resources may often reveal the presence of commercially recoverable coal-bed methane gas, thereby triggering a dispute over the ownership of the gas. See, e.g., *United States Steel Corp. v. Hoge*, 468 A.2d 1380 (Pa. 1983). In *Sinclair Oil & Gas Co. v. Masterson*, 271 F.2d 310, 315 (5th Cir. 1959), the drilling of gas wells by the gas lessee revealed shows of oil which led to litigation over the oil lessee's duty to explore.

91. In many states, core samples from oil and gas wells must be submitted to a public core sample library. See, e.g., N. D. CENT. CODE § 38-08-04(1)(k) (Supp. 1997). See also *Grynberg v. City of Northglenn*, 739 P.2d 230 (Colo. 1987). *Grynberg* is discussed *supra* § III.B.

92. 965 P.2d 105 (Colo. 1998) (en banc).

explore for coal.<sup>93</sup> Moreover, the court held that a party who later employed the geologist and acquired the results of the testing which showed that the coal contained commercial quantities of coalbed methane gas did not have to disclose this information to the oil and gas lessee when purchasing the lessee's interest.<sup>94</sup> Interestingly, the court reached its holdings without expressly addressing the issue of ownership of the coalbed methane gas.

### G. Minerals Under Lease or Other Agreement

If the property is subject to an oil and gas lease, the lessee will ordinarily have the implied right to engage in geophysical exploration.<sup>95</sup> In most modern leases, this right will be expressly conferred. However, in the absence of an express lease provision granting the *exclusive* right to explore to the lessee, the lessor may retain a concurrent right to explore.<sup>96</sup>

---

93. *See id.* at 110.

94. *See id.* at 112.

95. *See Yates v. Gulf Oil Corp.*, 182 F.2d 286, 291 (5th Cir. 1950) (construing Texas law). For a detailed discussion of this topic see E.C. Crowley, Annotation, *Application of Rule of Strict Liability in Tort to Person Rendering Services*, 29 A.L.R.3d 1425.

96. For example, in *Shell Petroleum Corp. v. Puckett*, 29 S.W.2d 809 (Tex. Civ. App.—Texarkana 1930, writ ref'd), a lessee was denied recovery for an alleged geophysical trespass because the lease granting clause, which conferred access to the leasehold "for the sole and only purpose of mining and operating for oil and gas," did not expressly grant the "exclusive" right to explore. *See also* Mustang Prod. Co. v. Texaco, Inc., 549 F. Supp. 424 (D. Kan. 1982), *aff'd*, 754 F.2d 892 (10th Cir. 1985); Roye Realty & Developing, Inc. v. Southern Seismic, 711 P.2d 946 (Okla. Ct. App. 1985). In *Ready v. Texaco, Inc.*, 410 P.2d 983, 986-87 (Wyo. 1966), the Wyoming Supreme Court held that a lessee, under a federal oil and gas lease (and under a State of Wyoming oil and gas lease), did not have the exclusive right to explore.

This matter is a bit muddled in Louisiana. In *Lloyd v. Hunt Exploration, Inc.*, 430 So. 2d 298 (La. Ct. App. 1983), the court stated that the landowner retains the right to protect the property against a seismic trespass even when the property is subject to an oil and gas lease. In this suit, the seismic operator had obtained permission from the oil and gas lessee; however, the lessee's permission expressly required the seismic operator to obtain from the surface owners "all additional approvals . . . which may be necessary." *See id.* at 300. The court appears to have cited this provision solely to indicate the lessee's understanding of Louisiana law because the court's holding seems to be based on a general Louisiana statute that allows a landowner to protect its mineral rights against trespass. *See* LA. REV. STAT. ANN. § 30:12 (West 1989). Another Louisiana trespass statute expressly prohibits geophysical surveying without permission of the "owner of the party or parties authorized to execute geological surveys, leases, or permits." LA. REV. STAT. ANN. § 30:217 (Supp. 1998). "Owner" is defined as *not* including a mere surface owner or surface lessee, language asserted by amendment to moot *Jeanes v. G.F.S. Co.*, 647 So. 2d 533, 535 (La. Ct. App. 1994). A federal district court, citing *Lloyd*, has recently ruled that this statute prohibits an oil and gas lessee from conducting seismic operations without the consent of the "owner," including the consent of a lessee's own lessor. In reaching this conclusion, the court reasoned that the right to conduct seismic operations is not an implied right emanating from the general right of a lessee to explore and develop the leased premises. Moreover, the court ruled that seismic data collected without this requisite permission belongs to the "owner," not the lessee. *See Musser-Davis Land Co. v. Union Pac. Resources*, Civ. No. 98-0407 (W.D.La. 1998) (unpublished case). This case is



Because oil and gas lessees desire the exclusive right to explore, modern oil and gas leases commonly expressly provide that the lessee acquires the exclusive exploration right. Where the exploration right is "exclusive" to the lessee, the lessor cannot lawfully authorize a third party to engage in exploration.<sup>97</sup> Nevertheless, if a geophysical trespass occurs and the lessee holds the "exclusive" exploration right, the surface owner could still recover for any surface damage,<sup>98</sup> and the oil and gas lessor may be able to recover for any resulting loss in value to the retained royalty interest and underlying mineral interest.<sup>99</sup>

The lessee's right to explore, whether implicit, explicit, or exclusive, is limited by the scope of the lessee's general operational rights. In this regard, I raise two concerns: First, a lessee's right to use the surface of the leasehold is generally limited to exploration and development of the leased property, not adjoining property. This concern will be discussed later.<sup>100</sup>

Second, a lessee is entitled to engage in operations that relate to the mutual and underlying objectives of the lessor and lessee (*e.g.*, to engage in all activities reasonably necessary to the lessee's development of oil and gas on the leasehold). When pursuing the underlying lease objectives, the lessee (or its successors) would necessarily have the right to explore. However, the lessee may not have the sole authority to authorize a geophysical operator to do a "speculative survey" for licensing to third parties if the results are not shared with the lessee. Although no case law directly addresses this particular situation, a court may view such a survey as beyond the scope of the lessee's rights. Arguably, this type of shoot has no relation to the lease objectives. Accordingly, a prudent lessee should require the geophysical operator to either share the information or obtain the consent of the

---

currently under appeal and hopefully will be reversed. An oil and gas lessee should have the implied authority to conduct seismic operations. Surely, the above statutes were intended to address an outright seismic trespass by an operator who has no lease or other permission from the mineral owner.

97. See *Wilson v. Texas Co.*, 237 S.W.2d 649 (Tex. Civ. App.—Fort Worth, 1951, writ ref'd n.r.e.). In *Tinsley v. Seismic Explorations*, 117 So. 2d 897 (La. 1960), the court assumed, but did not decide, that the lessee had the exclusive right to explore; however, the court denied any recovery against a seismic operator who had entered the property with the lessors' permission on the ground that the lessee failed to prove any actual compensable damages.

For a discussion of surface-related exploration, see *supra* § III.B.

98. See *Moity v. Petty-Ray Geophysical, Inc.*, 369 So. 2d 225 (La. Ct. App. 1979); *Wilson v. Texas Co.*, 237 S.W.2d 649 (Tex. Civ. App.—Fort Worth, 1951, writ ref'd n.r.e.) (denying landowner the right to recover for geophysical trespass where the property in question had been leased under granting clauses that conferred the "exclusive right to . . . explore;" however, the landowner did not seek recovery for surface damages and use).

99. *Cf. Wilson v. Texas Co.*, 237 S.W.2d 649 (denying recovery); *Thomas v. Texas Co.*, 12 S.W.2d 597, 598 (Tex. Civ. App.—Beaumont 1928, no writ) (*dicta* suggesting that recovery is possible).

100. See *infra* § III.H.7, note 159.

lessor. Likewise, if the information is not shared with the lessee, a prudent geophysical operator should acquire the consent of the lessor as well as the lessee.

A related concern could be raised about a lessee who does seismic exploration of a particular leasehold, then lets the lease expire, and later sells the seismic information to a third party. Here, however, I submit that the lessee should be permitted to sell the information. The lessee would argue that it had acquired the seismic information in fulfillment of the lease objectives and sold the information in an effort to recoup some of its sunk costs.

Cotenant lessees should ordinarily be treated the same as cotenant mineral owners regarding mineral exploration.<sup>101</sup> However, if various lessees (or other working interest owners) have entered into a mining partnership, a joint venture, a joint operating agreement, or a voluntary pooling or unitization agreement, the terms of such agreements should be consulted to determine whether the parties may have addressed exploration.<sup>102</sup> And in the case of compulsory pooling or unitization, the terms of all relevant conservation orders and underlying agreements should be consulted. Many of these agreements and orders are likely to be silent on the matter of exploration.

Finally, "operators" under these types of agreements or orders should be alert to the issue of whether exploration information must be shared with non-operators because of a possible fiduciary duty owed by the operator to non-operators.<sup>103</sup> Only one reported case, *Frankfort Oil Co. v. Snakard*,<sup>104</sup> deals with seismic surveying in this context. Although the court found that the operator owed a fiduciary duty to the non-operator, the operator did not have to share seismic data with the non-operator because their written agreement did not require the sharing of such information.<sup>105</sup>

---

101. See *supra* § III.C. In Louisiana, however, the practice is to secure consent from all cotenant lessees from a single mineral servitude.

102. The typical operating agreement does not address geophysical exploration. See, e.g., A.A.P.L. FORM 610—MODEL FORM OPERATING AGREEMENT (Am. Ass'n of Petroleum Landmen 1982).

A typical unit agreement unitizes all oil and gas rights (including the right to explore) and governs all unit operations regarding the unitized substances produced from the unitized formation within the unit area. See *id.* at art. 1.1-1.3, 1.14, and 3.1. The unit operator has the exclusive right to conduct unit operations. See *id.* at art. 4.1. Accordingly, the typical unit agreement would not govern the exploration of non-unitized formations.

103. Whether a fiduciary duty is owed is beyond the scope of this article. For more information regarding an operator's duty to non-operators, see, e.g., Howard L. Boigan, *Liabilities and Relationships of Co-Owners Under Agreements For Joint Development of Oil and Gas Properties*, 37 OIL & GAS INST. 8-1 (1986) and Ernest E. Smith, *Duties and Obligations Owed by an Operator to Non-Operators, Investors, and Other Interest Owners*, 32 ROCKY MTN. MIN. L. INST. 12-1 (1986).

104. 279 F.2d 436, 442 (10th Cir. 1960).

105. See *id.* at 443.

H. *The Exploration of Adjacent & Nearby Tracts (With a Brief Digression on Aerial Surveying)*

1. The Basic Problem

For 3D seismic operations to accurately image a structure, such as an anticline or dome, seismic data must be gathered from alongside the structure. In these situations, if either the surface or mineral ownership for the acreage alongside the structure differs from the acreage above the structure, special trespass concerns are encountered. Consider the following hypothetical problem:

Assume that the targeted area for 3D seismic operations is a geologic dome located largely beneath Blackacre and that the best way to image this dome is to conduct the geophysical operations from nearby Whiteacre. If Baker owns the surface estate and Baxter owns the mineral estate of Blackacre, and if Walsh owns the surface estate and Wilson owns the mineral estate of Whiteacre, from whom must permission to engage in geophysical operations be obtained?

Conventional wisdom suggests that permission should be obtained from Baxter and Wilson. Baxter is the owner of the targeted minerals. Thus, to recover data on the dome beneath Blackacre, a prudent geophysical operator would secure Baxter's consent.<sup>106</sup> Further, because geophysical equipment will be placed directly above Wilson's minerals in Whiteacre, existing case law requires that permission be secured from Wilson.<sup>107</sup> And, if obtaining information about Whiteacre is not an objective of the survey (*e.g.*, because the operator already knows, from a 2D seismic survey, that the dome is not beneath Whiteacre), then permission must also be obtained from Walsh, because Wilson's right to use the surface of Whiteacre is most likely limited to exploring for, and developing, minerals beneath Whiteacre (not Blackacre). With the exception of the need to obtain permission from Walsh if Whiteacre is not an objective of the survey,<sup>108</sup> this subsection will re-evaluate this conventional wisdom.

Advocates on either side of this permission issue would most likely cite the same case law in support of their positions. Based upon a Texas case, *Kennedy v. General Geophysical Co.*,<sup>109</sup> one could argue that geophysical trespass requires a physical surface entry by the geo-

---

106. See *supra* § III.A.

107. See *id.*

108. It is well established that the surface estate is burdened by the mineral owner's right of reasonable and necessary use of the surface. See, *e.g.*, *Hunt Oil Co. v. Kerbaugh*, 283 N.W.2d 131 (N.D. 1979) (dealing with seismic operations). However, a mineral owner's right of surface use is limited to uses that directly relate to the exploration and development of minerals beneath the burdened tract. This right does not include the use of the surface in furtherance of exploration and development of minerals on other tracts, unless the severance instrument specifically confers such right. See, *e.g.*, *Mountain Fuel Supply Co. v. Smith*, 471 F.2d 594 (10th Cir. 1973).

109. 213 S.W.2d 707 (Tex. Civ. App.—Galveston 1948, writ ref'd n.r.e.).

physical operator within the boundaries of the land at issue.<sup>110</sup> This same proposition can be surmised from a Louisiana case involving aerial surveying.<sup>111</sup> Further, the court in *Kennedy* stated that gathered data could be used to extrapolate the geology of adjacent acreage without liability.<sup>112</sup> Moreover, the court held that a subsurface concussion, caused by geophysical surveying, is not actionable in the absence of a physical invasion or an actual injury to the adjacent land.<sup>113</sup>

In *Kennedy*, the geophysical operator did not enter upon the plaintiff's adjacent acreage at issue, but the operator did place shot points and receivers along a public road that was adjacent to this acreage.<sup>114</sup> Although the court held that the defendant was not liable, the court, in dictum, emphasized the facts that the operator had made no physical entry onto the plaintiff's acreage and had not disclosed any information about the plaintiff's acreage to its principal (Skelly Oil Company).<sup>115</sup> Moreover, the court noted that the plaintiff failed to prove that the surveyor obtained any valuable or useful information about the acreage at issue<sup>116</sup> and that no receivers and shot points were placed so that a straight line connecting a shot point and receiver would cross the plaintiff's acreage. Moreover, the land was not physically injured in any way by concussion.<sup>117</sup>

Thus, the court's dictum suggested that, if valuable and useful information had been intentionally gathered from beneath the plaintiff's acreage, the plaintiff might have prevailed.<sup>118</sup> Although most commentators acknowledge that no physical trespass occurred, most argue that a cause of action should exist in this situation on a variety of theories. These include assumpsit for the reasonable value of the exploration right, loss of speculative value, wrongful acquisition of a trade secret, or misappropriation of the right to explore. No appellate court, however, has squarely ruled that a tort has occurred in the context of facts similar to my hypothetical problem.

---

110. *See id.* at 709.

111. *See Ratliff v. Beard*, 416 So. 2d 307 (La. Ct. App. 1982), *writ denied*, 422 So. 2d 154 (La. 1982).

112. *See Kennedy*, 213 S.W.2d at 709.

113. *See id.*

114. *See id.*

115. *See id.*

116. Whether an operator would obtain useful information in such a case depends upon the purpose for locating the shot points and receivers adjacent to a plaintiff's property. For example, to obtain sufficient fold for making dynamic and static corrections in a corner or at the boundary of an area, gathering of seismic data must extend beyond the corner or boundary. Nevertheless, no useful information is obtained as to the subsurface beyond the corner or boundary. Moreover, migrated seismic yields useful information covering a smaller area than the area from which the raw seismic data are initially gathered.

117. *See Kennedy*, 213 S.W.2d at 709-13.

118. A similar view can be surmised from dicta in *Ohio Oil Co. v. Sharp*, 135 F.2d 303, 306-09 (10th Cir. 1943) (involving an allegation of geophysical trespass, but mineral owners were not parties to the suit).

## 2. Assumpsit

Regarding assumpsit, in *Phillips Petroleum Co. v. Cowden*,<sup>119</sup> the Court of Appeals for the Fifth Circuit held that a mineral owner who had suffered a direct geophysical trespass could waive the tort of trespass and sue in assumpsit for the reasonable value of the exploration right. While this case provides authority for recovery on an assumpsit theory, it provides no authority for a cause of action concerning the indirect acquisition of seismic data through the use of nearby lands.

## 3. Loss of Speculative Value

Regarding loss of speculative value, the landmark case is *Humble Oil & Refining Co. v. Kishi*.<sup>120</sup> In this case, Humble, acting presumably in good faith, erroneously contended that it had a valid and subsisting lease from Kishi. Humble entered upon Kishi's property and drilled a dry hole. Because Kishi's cotenant lessor consented to Humble's entry, Humble was not a trespasser. Nevertheless, Kishi was allowed to recover, because Humble had wrongfully asserted that it had a valid lease from Kishi. Although Kishi did not prove loss of a specific bargain, the court awarded Kishi the loss of speculative value measured by the difference between the lease bonus value of Kishi's interest immediately before and immediately after the drilling of the dry hole.<sup>121</sup>

A similar conclusion was reached in *American Surety Co. v. Marsh*.<sup>122</sup> As a result of defendant's wrongful claim that it held a valid lease on plaintiff's land and the drilling of a dry hole on adjacent land during the course of defendant's wrongful claim, plaintiff lost a specific bargain to issue a new lease. The court granted damages for loss of speculative value measured by the plaintiff's loss of a specific bargain. In *Marsh*, there was no physical trespass or other entry onto the plaintiff's property; however, in both *Marsh* and *Kishi*, the defendant wrongfully claimed to hold a valid lease from the plaintiff.

Both *Kishi* and *Marsh* are factually distinguishable from my seismic hypothetical problem. First, both cases involved the drilling of a dry hole, not geophysical operations. Second, in *Kishi*, Humble physically entered the disputed acreage, while in my hypothetical problem, there is no physical entry onto Blackacre. Third, the defendants in both *Kishi* and *Marsh* wrongfully asserted that they had a valid lease to the

---

119. 241 F.2d 586, 590 (5th Cir. 1957) (construing Texas law).

120. 276 S.W. 190 (Tex. Comm'n App. 1925, judgm't adopted). *Kishi* was distinguished in *Byrom v. Pendley*, 717 S.W.2d 602, 605 (Tex. 1986).

121. On second motion for rehearing, the court agreed to remand the case to determine whether an undivided 3/4 interest in land should be reasonably expected to receive a lease bonus equal to 3/4 of the bonus that would be paid for a full interest lease. See *Humble Oil & Refining Co. v. Kishi*, 291 S.W. 538 (Tex. Comm'n App. 1927).

122. 293 P. 1041 (Okla. 1930).

acreage, while in my hypothetical problem, there is no wrongful assertion of an invalid interest in Blackacre. Fourth, in *Marsh*, the plaintiff proved the loss of specific bargain. These distinctions, however, are not critical. The real distinction lies in the basic underlying issue in my seismic problem: whether a geophysical operator needs to secure permission from Baxter to conduct geophysical operations on Whiteacre that target Baxter's mineral rights in Blackacre.

Cases concerning recovery for loss of speculative value do not address this question. Courts have awarded damages for the loss of speculative value where there has been an actual physical trespass onto the plaintiff's acreage by a geophysical operator.<sup>123</sup> Accordingly, if it were wrongful to intentionally gather geophysical information from Blackacre without Baxter's permission by operations conducted on Whiteacre, an award for loss of speculative value or other appropriate relief would logically follow. Moreover, if Baxter had denied the geophysical operator permission to make a direct entry, some courts might even entertain an award for exemplary damages if this conduct is viewed as wrongful. The threshold issue, however, is whether it is "wrongful" to intentionally gather geophysical information from Blackacre without Baxter's permission by means of seismic operations conducted on Whiteacre. The cases on speculative value do not directly address this issue.

#### 4. Trade Secrets

An informative student note suggests that principles underlying trade-secret law could be used to fill the "remedial gap" where seismic data from a plaintiff's acreage are gathered by a geophysical operator from adjacent or nearby lands without the plaintiff's permission.<sup>124</sup> While the wrongful acquisition or use of confidential seismic data and interpretations would undoubtedly violate trade-secret law,<sup>125</sup> no court has expressly held that the initial wrongful gathering, creation, processing, or interpretation of seismic data by geophysical operations

---

123. See *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 593 (5th Cir. 1957) (construing Texas law and finding liability based upon a theory of assumpsit); *Angelloz v. Humble Oil & Refining Co.*, 199 So. 656, 658 (La. 1940).

124. See Christiansen, *supra* note 2. Because the author speaks of a remedial gap where seismic data are gathered without physical entry on the plaintiff's land, the note implicitly views such conduct as wrongful.

125. In *Laird v. Amoco Production Co.*, 622 N.E.2d 912 (Ind. 1993), the defendants acquired a map of an oil prospect from a disgruntled employee of the plaintiff. The plaintiff had identified this prospect by means of a microwave radar survey and had taken steps to assure the confidentiality of the information. The court held that the plaintiff was entitled to protect this information as a trade secret. In *Pre-Cam Exploration & Dev. Ltd. v. McTavish* [1966] S.C.R. 551, the Supreme Court of Canada held that a defendant, hired to do exploration work for purposes of acquiring additional mining claims within an area, breached a fiduciary duty when the defendant used the information to acquire favorable claims nearby the plaintiff's area of interest.

constitutes the unlawful acquisition of a trade secret.<sup>126</sup> In this latter context, because the plaintiff is more interested in protecting her exclusive right to gain information about the mineral content of the property (rather than in preventing physical injury to the property), the argument is that trade-secret law provides a more appropriate remedy than trespass.<sup>127</sup>

Courts may determine whether a party has wrongfully appropriated a trade secret based upon whether the acquiring party has violated "generally accepted standards of commercial morality and reasonable conduct."<sup>128</sup> For example, in *E. I. duPont de Nemours & Co. v. Christopher*,<sup>129</sup> the Fifth Circuit Court of Appeals concluded that a trade secret had been wrongfully acquired when defendant's agent took aerial photographs of a plant construction site to gain information about a special process that the plant owner had developed as a trade secret. The fact that the photographs had been taken from an airplane flying within public airspace was deemed irrelevant. Rather, the court's decision turned on the defendant's devious conduct in acquiring a trade secret that the plaintiff had no practical means of concealing during the course of plant construction.<sup>130</sup>

While *Christopher* has been cited by commentators as analogous to the situation posed in my hypothetical problem,<sup>131</sup> I submit that *Christopher* is not particularly helpful nor relevant to the question of whether mineral owners have the right to protect the geology of their subsurface from discovery by means of operations from nearby lands. One difference lies in the threshold issue of whether the geology of a tract can qualify as a trade secret. In *Christopher*, the plaintiff had developed a particular processing technique that it had carefully safeguarded from discovery. In the mineral exploration context, the plaintiff mineral owner (Baxter, in my seismic problem) has developed nothing. Indeed, intellectual property is not involved. In essence, to prevail, Baxter would have to successfully argue that Baxter has the exclusive right to obtain information that Baxter wishes to keep secret—information that is so secret that Baxter does not even

---

126. The Supreme Court of Colorado refused to find that a trade secret had been misappropriated in the drilling of an unauthorized test hole that revealed unfavorable information about the presence of recoverable coal because other publicly available information concerning the amount of coal beneath the property was already available so that the plaintiff's "access to the information [concerning the coal deposits] was not sufficiently exclusive to qualify as a trade secret." See *City of Northglenn v. Grynberg*, 846 P.2d 175, 184 n.17 (Colo. 1993). The court prefaced this conclusion by stating that "we do not decide here whether geophysical information in general may or may not be a 'trade secret.'" *Id.*

127. See Christiansen, *supra* note 2, at 908.

128. RESTATEMENT OF TORTS § 747 (1939).

129. 431 F.2d 1012, 1015 (5th Cir. 1970).

130. See RESTATEMENT OF UNFAIR COMPETITION § 43 cmt., illus. 3 (illustrating the basic facts in *Christopher* as an example of conduct that would be actionable).

131. See Blomquist, *supra* note 2, at 33; Christiansen, *supra* note 2, at 910.

know what the secret is! In other words, Baxter is trying to prevent unknown information from becoming known information. While trade-secret law will protect a valuable secret known by one who wishes to keep it a secret, I submit that trade secret law does not contemplate protecting against the acquisition of information that is unknown.<sup>132</sup> While "ignorance is bliss," it should not be protected as intellectual property. Moreover, commentators who have advocated trade secret law as a remedy for geophysical "trespass" do so on the assumption that the gathering of information about Blackacre by geophysical operations on Whiteacre is inherently "wrongful." My disagreement with this fundamental assumption will be discussed below.<sup>133</sup>

### 5. The Related Problem of Aerial Surveys

The facts in *Christopher* are closer to the problem of aerial mineral exploration, such as an aerial magnetic survey.<sup>134</sup> While aerial mineral exploration is beyond the scope of this article, a brief discussion of the propriety of such surveying is in order. While most commentators have argued that a mineral owner should have an exclusive right to control geophysical operations, little commentary has been offered regarding aerial magnetic surveys. Based upon the reasoning of most geophysical cases (that the right of exploration is a valuable property right that the law will protect) and upon the reasoning in *Christopher*

---

132. See UNIFORM TRADE SECRETS ACT § 1(4), 6 U.L.A. 499 (1985) (defining a trade secret); RESTATEMENT OF TORTS, § 757 (1939) (defining a trade secret). The Uniform Act displaces an adopting state's common law regarding tort claims but not contract claims. See UNIFORM TRADE SECRETS ACT § 7 (1985). See also RESTATEMENT OF UNFAIR COMPETITION § 39 (defining trade secret as valuable and secret information that can be used in the operation of a business or other enterprise). See generally AME'DE'E E. TURNER, LAW OF TRADE SECRETS 12-13 (1962).

Although I conclude that geophysical trespass does not qualify as the wrongful acquisition of a trade secret, the various measures of damages used in trade secret law are instructive of the type of relief a court might consider in the case of geophysical trespass. For wrongful acquisition of a trade secret, damages, inter alia, may be measured by the value of the secret to the plaintiff where the defendant has destroyed its value by publication (*cf.*, where geophysical trespasser publishes the information), by the loss of a specific bargain where the defendant has not published the secret, and by the reasonable value of the benefits derived by the defendant in using the secret where the plaintiff has suffered no specific injury. See *University Computing Co. v. Lykes-Youngstown Corp.*, 504 F.2d 518, 536 (5th Cir. 1974). Equitable relief may include enjoining the use or disclosure of the secret, imposing a constructive trust, granting an accounting, and compelling the defendant to surrender the information that comprises the secret. See S. CHESTERFIELD OPPENHEIM, ET AL., UNFAIR TRADE PRACTICES AND CONSUMER PROTECTION 315-16 (4th ed. 1983).

133. See *infra* § III.H.7.

134. A magnetic survey, which measures the strength of the earth's magnetic field and detects variations in the magnetic susceptibility of rocks, is used in oil and gas exploration to locate structures and to determine the depth of basement rocks. A surface magnetic survey provides more information than an airborne survey. See NORMAN J. HYNE, DICTIONARY OF PETROLEUM EXPLORATION, DRILLING & PRODUCTION 304 (PennWell 1991).



(that aerial photography can be wrongful if it violates generally accepted standards of commercial morality and reasonable conduct) a mineral owner could argue that a party who engages in aerial magnetic surveying without permission is liable for wrongful exploration.<sup>135</sup>

Because case law requires a geophysical operator to obtain the mineral owner's permission to engage in direct geophysical operations involving the use and occupancy of the surface overlying the targeted minerals, one could argue that aerial magnetic surveys should be subject to the same limitation.<sup>136</sup> Note that an aerial magnetic survey is distinguishable from my hypothetical seismic problem in that an aerial survey would often, but not always, involve a physical invasion of the airspace overlying the acreage at issue. This distinction arguably brings the aerial survey within the venerable common law maxim: *Cujus est solum, ejus est usque ad coelum et ad inferos*.<sup>137</sup>

While the general public may use the public airspace for travel, *Christopher* suggests that there is no public right to use public airspace for the purpose of wrongfully acquiring trade-secret information that an owner wishes to keep secret.<sup>138</sup> Thus, whether aerial surveying without permission is actionable may turn on whether a person's right to use navigational airspace is limited to travel and whether the acquisition of mineral information via an aerial survey is viewed as a "wrongful" invasion of the mineral owner's property rights. A court that agrees with *Christopher* in the context of a true trade secret might distinguish between what constitutes wrongful conduct in the adventurous world of oil and gas wildcatting<sup>139</sup> and what constitutes wrongful conduct among competing chemical or manufacturing companies. A court could also make a distinction between exploration via a physical entry onto the surface overlying a plaintiff's minerals and exploration via a physical entry into the navigational airspace overlying a plaintiff's minerals.

Regarding aerial surveying, I submit that the proper approach is balancing. Should public policy encourage aerial exploration as a

---

135. See also *United States v. Causby*, 328 U.S. 256, 261 (1946) (holding that landowner had suffered a "taking" when aircraft were permitted to fly at such a low altitude that the plaintiff's chicken farming operations were disrupted).

136. And if a geophysical operator cannot use Whiteacre to explore Blackacre without Baxter's permission, logic would seem to dictate that the operator cannot use Blackacre airspace for the same purpose without Baxter's permission.

137. To whomever the soil belongs, he owns also to the sky and to the depths. See e.g., *Del Monte Mining & Milling Co. v. Last Chance Mining & Milling Co.*, 171 U.S. 55 (1898).

138. See also *United States v. Cusumano*, 67 F.3d 1497, 1510 (10th Cir. 1995) (holding that law enforcement officers must obtain a warrant before scanning a home with thermal imagery used to detect possible presence of marijuana greenhouses).

139. Indeed, part of the oil and gas exploration and development business involves the gathering of information about prospective oil and gas plays through the searching of land records and the observation of exploration and drilling activity.

means of promoting more domestic oil development and the lessening of our country's reliance on foreign oil supplies? Can permission to conduct broad-based aerial surveys be efficiently acquired from all necessary mineral owners, or will transaction costs prove to be too high? As a practical matter, would a rule that bars aerial surveys without mineral owner permission be enforceable? Can aerial surveys be done safely without physical injury to persons or property? Can mineral owners who wish to prevent aerial surveys do so through the use of safe "blocking" technology that does not encroach on neighbors?

On balance, I submit that aerial surveys should be lawful without having to secure permission from affected mineral owners.<sup>140</sup> I base my conclusion on the grounds that a rule barring aerial surveys without permission from all affected mineral owners would further discourage domestic oil and gas activity, would result in very high transaction costs incurred to obtain the necessary multiple permissions, and would be very difficult to enforce. Moreover, a rule that aerial surveys are wrongful is too speculative in that it would be based upon a court's intuition of what is wrongful. Would all aerial surveying be wrongful? If so, even satellite photography and other forms of satellite imagery would be wrongful. On the other hand, if satellite imagery is permissible but aerial magnetic surveys are not, then what about other types of aerial surveys and uses of airspace?<sup>141</sup>

## 6. Misappropriation

In addition to trade-secret law, a few commentators have suggested that the independent tort of misappropriation might have application to the wrongful acquisition of geophysical information.<sup>142</sup> This tort, which is an expansion of conversion, has been defined as "the appropriation of the fruits of another's investment of money, time and intellectual effort,"<sup>143</sup> such as copying and reselling news stories initially

---

140. *But see* Gulf Coast Real Estate Auction Co. v. Chevron Indust., 665 F.2d 574, 577 (5th Cir. 1982) (holding that plaintiff failed to prove the value of the exploration right, but implicitly recognizing a right of protection from unauthorized aerial surveys).

I am aware of Texas litigation dealing with the propriety of aerial surveying. *See* BGM Airborne Surveys, Inc. v. Coppock, No. 92-CI-13993 (131st Dist. Ct., Bexar County, Tex., filed Oct. 6, 1992). While the trial court dismissed the landowner's claims on theories of trespass, wrongful acquisition of a trade secret, and misappropriation of the exploration right, the court was willing to allow the landowner to pursue relief on other theories. The case was settled out of court.

Although he fails to state his personal view on the merits of recognizing a cause of action for wrongful aerial surveying, Blomquist does conclude that the recognition of such a cause of action is "inevitable." *See* Blomquist, *supra* note 2, at 33.

141. For example, would a crop duster who flies over another's land in making a turn while spraying a crop need to have permission to use that airspace to make the turn? Presumably not, but where should the line be drawn?

142. *See* Christiansen, *supra* note 2.

143. CHARLES R. MCMANIS, UNFAIR TRADE PRACTICES 9 (3d ed. 1993).

gathered, written and distributed by another party.<sup>144</sup> Efforts to further expand this tort on a general "unjust enrichment" theory have largely failed.<sup>145</sup> Nevertheless, recovery has been allowed in situations where the defendant's conduct has destroyed or seriously diminished the plaintiff's primary opportunity to market a product or service.<sup>146</sup> Recovery is less likely if the defendant has improved the product or service or greatly enhanced its value.<sup>147</sup>

Regarding a seismic survey, a plaintiff mineral owner (such as Baxter in my hypothetical problem) has neither a "product" nor a "service" to protect. Rather, the mineral owner has title to real property and the right to exclude trespassers. Moreover, the geophysical defendant has not appropriated any data that the mineral owner has gathered. Rather, the geophysical defendant has gathered the raw data, processed and interpreted the data, and produced something of independent value. Finally, the plaintiff mineral owner and the defendant geophysical operator are not business competitors. Accordingly, a plaintiff who seeks recovery against a geophysical operator under the tort of misappropriation should face an uphill battle.

### 7. My "Modest Proposal"

Commentators on "geophysical trespass" reason that the right to explore is a valuable right that should be protected.<sup>148</sup> From this basic premise, all commentators agree that the gathering of seismic data by direct entry onto a target parcel (Blackacre) without permission of the mineral owner (Baxter) should be regarded as actionable trespass. Moreover, nearly all commentators argue that the intentional gathering of seismic data from a target parcel (Blackacre) solely through the use and occupancy of a nearby parcel (Whiteacre) without permission from a mineral owner of the target parcel (Baxter) also should be regarded as actionable trespass.<sup>149</sup> I agree that the right to explore for minerals is a valuable property right and that a mineral owner should have the right to control geophysical oil and gas operations that involve a direct entry onto or beneath such owner's parcel. I submit, however, that a mineral owner (including such owner's permittee) should be privileged to gather seismic data from a target parcel through the use and occupancy of such owner's land without having to obtain permission from a mineral owner of the target parcel. In other words, I submit that the mineral owner of a target parcel should have

---

144. A leading case is *International News Serv. v. Associated Press*, 248 U.S. 215 (1918) (enjoining INS, on the ground of unfair competition, from copying news gathered by the Associated Press and selling it to INS's customers).

145. See PETER B. KUTNER & OSBORNE M. REYNOLDS, JR., *ADVANCED TORTS* 348 (1989).

146. See *id.*

147. See *id.*

148. See sources cited *supra* note 2.

149. But see Jones & Faber, *supra* note 2.

no cause of action when seismic data are gathered from the target parcel solely through the use and occupancy of nearby parcels.<sup>150</sup> In short, I reject the argument that the intentional gathering of seismic data from a target parcel solely by geophysical operations conducted from nearby parcels is wrongful, immoral, unethical, and unreasonable (thereby constituting "geophysical trespass") if permission is not secured from a mineral owner of the target parcel. I reach these conclusions even though I concede that the use of 3D seismic techniques may often result in the gathering of information that geophysicists and their principals would regard as valuable, useful, and reliable.<sup>151</sup> Nevertheless, I submit that this manner of gathering seismic data should fall within the venerable rule of capture.

The rule of capture, one of the most fundamental and commonly understood principles of oil and gas law, provides that a mineral owner who is lawfully engaged in extracting oil and gas from his property is not liable to his neighbor for any resulting drainage.<sup>152</sup> In other words, although a mineral interest is a valuable property interest that

---

150. I would not regard sound waves that penetrate a target parcel as a use and occupancy of a nearby parcel. Rather, for an actionable trespass, I would require a direct physical entry onto or beneath the target parcel—such as the placing of a geophone on the surface of the target parcel or the drilling of a shot hole on or beneath the target parcel.

151. I concede that, in *Kennedy v. General Geophysical Co.*, 213 S.W.2d 707, 709 (Tex. Civ. App.—Galveston 1948, writ ref'd n.r.e.), the court emphasized, in dicta, that the defendant obtained no valuable or useful information regarding the plaintiff's minerals. I further concede that, in the case of a 3D-seismic survey targeted at a nearby parcel, the gathered information would most likely be very valuable and useful. Nevertheless, in partial response to the dicta in *Kennedy*, my view is supported in the concurring opinion of Justice Phillips in *Ohio Oil Co. v. Sharp*, 135 F.2d 303 (10th Cir. 1943):

I do not think that a geological investigation of a substantial area, conducted from lands rightfully entered, constitutes a trespass upon adjoining land or a wrong against the owner thereof, or of the oil and gas rights therein, where there is no actual entry upon such adjoining land, although it may disclose geophysical information with respect thereto. To hold otherwise would greatly impede geological investigations which are essential to the discovery and development of oil and gas.

*Id.* at 310 (Phillips, J., concurring).

152. See *Kelly v. Ohio Oil Co.*, 49 N.E. 399 (Ohio 1897). For a thorough discussion of the continuing vitality of the rule of capture see, Phillip Wm. Lear et al., *Modern Oil and Gas Conservation Practice: And You Thought the Rule of Capture Was Dead?*, 41 ROCKY MTN. MIN. L. INST. 17-1 (1995).

The rule of capture governs even though there is evidence of the amount of oil and gas drained from an adjacent parcel. See, e.g., *Edwards v. Lachman*, 534 P.2d 670, 673 (Okla. 1974). And the rule of capture implicitly governs situations where substances injected into formations for enhanced recovery displace oil and gas from beneath neighboring lands—at least where the neighbor was given a reasonable opportunity to participate in the enhanced recovery operations, but refused. See, e.g., *Syverson v. North Dakota State Indus. Comm.*, 111 N.W.2d 128, 133 (N.D. 1961). While the law could require a geophysical operator to first make a reasonable effort to obtain permission to conduct seismic operations from mineral owners of all targeted parcels, I see no basis for this burdensome and inefficient requirement in the geophysical-operations context given that a producer can freely capture oil and gas by drainage.

is entitled to protection against a direct surface<sup>153</sup> or subsurface<sup>154</sup> entry trespass and any resulting conversion of production, a mineral owner has no cause of action against a neighbor who drains oil and gas from a common reservoir through a well bore located wholly within such neighbor's property boundaries. And if a mineral owner drills several dry holes, thereby reducing the speculative value of surrounding lands, that owner is not liable to neighbors for any resulting loss of speculative value. Accordingly, I submit that the gathering of seismic data by a mineral owner (or such owner's permittee) through geophysical operations conducted on such owner's parcel and concerning the possible presence of oil or gas beneath a neighbor's parcel should be privileged under the rule of capture. In other words, such operations should be treated no more restrictively than the drilling of a producing well that drains oil or gas from a neighbor's parcel or the drilling of a dry hole that causes a neighbor's parcel to suffer a decline in speculative value. Returning to my hypothetical seismic problem, because Wilson may drill a producing well on Whiteacre and capture oil and gas from beneath Blackacre without liability to Baxter, and because Wilson may drill a dry hole on Whiteacre without liability to Baxter for loss of speculative value, Wilson should be privileged to "capture" information about the possible presence of oil and gas beneath Blackacre through geophysical operations on Whiteacre.<sup>155</sup>

A rule-of-capture approach to the gathering of seismic data would be efficient and would provide some encouragement for the further development of domestic oil and gas resources<sup>156</sup> at a time when ma-

---

153. See *Swiss Oil Corp. v. Hupp*, 69 S.W.2d 1037 (Ky. 1934).

154. See *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate*, 76 P.2d 167 (1938).

155. This rule-of-capture argument is also endorsed in *Jones & Faber*, *supra* note 2, at J-10, -11, and implicitly endorsed in *SUMMER*, *supra* note 2, at 148.

Note that Wilson, as mineral owner, may make any reasonable and necessary use of the surface of Whiteacre for exploration of that portion of the reservoir that is beneath Whiteacre. The fact that information is simultaneously gathered about nearby parcels should not, by itself, be viewed as exceeding the permitted scope of surface use. Surely, a severed mineral owner who drains oil from beneath nearby tracts under the rule of capture does not exceed the lawful scope of surface-use rights. If, however, Wilson (or Wilson's geophysical permittee) used Whiteacre solely for the purpose of gathering information about Blackacre, or if Wilson used more of the surface of Whiteacre than was reasonably necessary to explore Whiteacre (*e.g.*, to gather information about Blackacre), then such use (in the absence of an express provision in the severance instrument) would exceed the scope of Wilson's surface-use rights. This matter is further discussed below.

156. The principle that any one may use land to gain information about a neighbor's land has been recognized in other contexts. See, *e.g.*, *Victoria Park Racing & Recreation Grounds Co. v. Taylor*, 58 C.L.R. 479 (1937) (holding that no action arises where neighbor erected platform on his property to facilitate the broadcast of horse races conducted on plaintiff's tract). Cf. *Pittsburgh Athletic Co. v. KQV Broad. Co.*, 24 F. Supp. 490, 492 (W.D. Pa. 1938) (holding that the defendant, who made unauthorized broadcasts of baseball games with the aid of observers stationed outside of the ballpark, engaged in unfair competition and interfered with advertisers who had contracted with the owner of the baseball franchise for exclusive broadcasting rights). Note that this last case is distinguishable from the first and, by analogy, is comparable

lor, and many independent, oil and gas companies are spending the lion's share of their exploration and development budgets overseas.<sup>157</sup> Acquiring permits from multiple mineral owners, lessees, and surface owners regarding all lands affected by a seismic survey is costly in both time and money. A rule-of-capture approach would greatly reduce transaction costs by reducing the number of seismic permits needed to conduct a survey and by discouraging "hold-out" bargaining by mineral owners bent on collecting large fees from geophysical operators. Moreover, by not having to purge the acquired data of information concerning non-permitted parcels, seismic data would be more useful, more reliable, more complete, and hence, more valuable. In short, a rule-of-capture approach would encourage more 3D seismic surveying, which, in turn, should optimize orderly and efficient development of remaining oil and gas resources. In the oil and gas conservation sense, a rule-of-capture approach to geophysical exploration would serve to prevent economic waste.

A relevant legal limit on the rule of capture is that the operator must have a lawful right to conduct operations on the land where the well is located. An operator must not allow the well bore to physically invade neighboring land.<sup>158</sup> That is, the well bore itself must remain

---

to the situation where a landowner gives exclusive geophysical exploration rights to one geophysical operator who then suffers an invasion by a competing geophysical operator. In the geophysical context, I would not permit a direct invasion of one's exclusive exploration right by a competing geophysical operator, but I would allow the rule of capture to govern where the competing geophysical operator obtained the information through activity conducted from nearby parcels.

In *Rock and Roll Hall of Fame and Museum, Inc. v. Gentile Prod.*, 134 F.3d 749 (6th Cir. 1998), the Court of Appeals for the Sixth Circuit vacated a preliminary injunction barring defendant from selling a poster depicting and identifying the Rock and Roll Hall of Fame building. The defendant had taken pictures of the building from public property. In dissolving the injunction and remanding the case, the court concluded that the plaintiff failed to establish the likelihood of an intellectual property right in the building as a trademark. Cf. *R.M.S. Titanic, Inc. v. The Wrecked and Abandoned Vessel*, 9 F.Supp. 2d 624 (E.D.Va. 1998) (enjoining parties from photographing the Titanic wreck on the ground that a photographic expedition would unlawfully interfere with the salvor's exclusive salvage rights).

157. Another reform that would encourage more geophysical exploration would be for the Congress to amend the tax code so that geological and geophysical costs could be uniformly treated as an ordinary business expense, rather than as a capital expenditure, regardless of whether prospects are developed.

158. See *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate*, 76 P.2d 167 (Cal. App. 1938).

Yet another recent technology that raises trespass concerns is hydraulic fracturing. Hydraulic fracturing is a technique used to increase the permeability of reservoir rock—that is to increase the ability of a fluid such as oil to flow through reservoir rock. This technique forces propellants into reservoir rock, creating and maintaining fractures that increase permeability. Because the extent or length of a fracture cannot be precisely controlled, both the propellants and the resulting fractures can extend beyond property boundaries, raising the issue of trespass. The Texas Supreme Court, in an opinion that was subsequently withdrawn, held that such a physical invasion constituted unlawful subsurface trespass. See *Geo Viking, Inc., v. Tex-Lee Operating Co.*, 1992 WL 80263 (Tex. 1992); *Geo Viking, Inc., v. Tex-Lee Operating Co.*, 839

within the physical boundaries of the operator's land. Applying this same legal limit to geophysical operations, shot holes and receivers could be located on any "permitted" parcels so as to optimize the gathering of information from the entire targeted area but could not be placed within the boundaries—surface or subsurface—of "non-permitted" parcels.<sup>159</sup>

---

S.W.2d 797, 798 (Tex. 1995) (letting stand the Court of Appeals decision that fracturing was protected by the rule of capture, 817 S.W.2d 357, 364 (Tex. App. – Texarkana 1991, writ denied)). Even if one were to concede (and I do not) that the Supreme Court's initial opinion was correct, hydraulic fracturing beyond one's property boundary is distinguishable from seismic sound waves penetrating beyond one's property boundary because seismic sound waves do not physically alter subsurface formations. For discussion of the trespass concerns that arise from hydraulic fracturing, see Laura H. Burney and Norman J. Hyne, *Hydraulic Fracturing: Stimulating Your Well or Trespassing Theirs*, 44 ROCKY MT. MIN. L. INST. 19-1 (1998).

Professors Burney and Hyne offer an excellent discussion of hydraulic fracturing technology, related trespass concerns, and a lessee's potential obligation to engage in hydraulic fracturing under the reasonable and prudent operator standard. Concerning hydraulic fracturing from a trespass standpoint, I would argue that both the rule of capture and an operator's obligation to prevent underground waste should protect an operator who conducts prudent fracturing operations against a suit for trespass, nuisance, conversion, or other related action. Using waste as the lynchpin, a prudent operator should act to prevent waste and refrain from taking action that causes waste, especially underground and economic waste, *i.e.*, the failure to recover oil and gas reserves effectively and efficiently. Thus, this obligation to both prevent waste and not cause waste, together with the rule of capture, should shield an operator from liability for conducting a prudent fracturing operation. If a fracturing operation damages a reservoir, a neighboring well, or causes damage other than drainage, liability could arise on grounds of waste or negligence. *Cf.* Snyder Ranches, Inc. v. Oil Conservation Comm'n, 798 P.2d 587 (N.M. 1990) (stating, in dicta, that an injector of salt water, a waste product, would be liable for damages to neighboring landowners); *El-liff v. Texon Drilling Co.*, 210 S.W.2d 558 (Tex. 1948) (holding liable operator whose drilling operations resulted in a blowout for damage to reservoir on grounds of negligence and waste). This approach would promote reasonable and prudent fracturing operations as desirable public policy while discouraging waste and negligence.

For decades, courts have protected a party's ownership of gas stored underground and protected such a party from claims of trespass in the event some of the stored gas migrates beneath a neighbor's tract. *See, e.g.*, Lone Star Gas Co. v. Murchison, 353 S.W.2d 870 (Tex. Civ. App.—Dallas 1962, writ ref'd n.r.e.) (recognizing that stored gas is "personal" property and not subject to the rule of capture). Courts have done so to further the public policy of efficient gas storage. In part, the storage of gas prevents the economic waste of having to build larger pipelines and prohibitively expensive man-made storage facilities. Similarly, because prudent hydraulic fracturing will increase the effective and efficient recovery of reserves, fracturing operations should be encouraged and protected. *See also* Railroad Comm'n v. Manziel, 361 S.W.2d 560 (Tex. 1962) (declining to enjoin a water-flooding operation, designed to increase ultimate recoveries, on grounds of trespass).

If necessary, conservation agencies could regulate fracturing operations to guard against overreaching, waste, and negligence. And, perhaps in the future, fracturing technology will improve so that the extent or length of fractures can be controlled. In the meantime, however, such operations should be encouraged, not fettered.

159. In this context, "permitted" parcels refers to land for which the geophysical operator has the appropriate permission to enter and use, in contrast to "non-permitted" parcels for which the geophysical operator has no right to enter or use.

This legal limitation on the scope of the rule of capture is also a physical limit in that the rule governs the correlative rights of parties having an interest in a common oil or gas reservoir. In other words, returning to my hypothetical seismic problem, for Wilson to be able to lawfully drain the geologic dome under the rule of capture, Wilson must be able to penetrate the dome from a well bore that is entirely within the boundaries of Whiteacre. Of course, this penetration can only be accomplished if the reservoir is physically located beneath Whiteacre, because Wilson may not drain the reservoir by drilling a directional well that penetrates the reservoir at a point beneath Blackacre.<sup>160</sup> Should this same limitation apply to geophysical operations where no part of the targeted structure underlies Whiteacre?

Initially, I submit that this question is largely academic (*i.e.*, the kind of question a particularly cantankerous professor might ask on a final oil and gas law examination). Most likely, the geophysical operator would be able to obtain permission from someone having an interest in the targeted structure. Once a permit is obtained from a fee or mineral owner having an interest in the targeted structure, the operator would be free to survey the acreage burdened by the permit, either directly or from nearby lands.<sup>161</sup> Then permission could be obtained from a surface owner<sup>162</sup> and mineral owner<sup>163</sup> of the lands where the actual surveying operations would occur. Accordingly, this problem would rarely arise.

But suppose this situation really did arise. While I concede the above physical limitation on the rule of capture where production is at issue, I submit that the gathering of geophysical data in this situation should still be privileged. Returning to my hypothetical problem, the

---

160. See *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate*, 76 P.2d 167. Note that this is true even if the reservoir also underlies Wilson's land.

161. The cautious geophysical operator could include in the terms of the permit the owner's express consent to image the structure from other tracts, including acreage beyond the edge of the targeted structure.

162. My rule-of-capture approach also addresses the surface-use problem that arises from the need to image structure (that is gather seismic data) from an angle rather than from above the targeted structures. Conventional wisdom suggests that, if the mineral rights beneath the occupied tracts are not a target of the survey, a geophysical operator must secure permission from the surface owner of the occupied lands. Cf. *Mountain Fuel Supply Co. v. Smith*, 471 F.2d 594 (10th Cir. 1973) (construing Utah law and holding that an oil and gas lessee could not use the surface of leased acreage to transport production from other leaseholds). This conventional wisdom is subject to one exception: if the severance instrument to the occupied lands expressly authorizes the use of the surface to explore and develop nearby lands, then no further permission would be needed from the surface owner in the absence of an applicable surface-owner-protection statute. A rule-of-capture approach should alter this conventional wisdom. If a mineral interest owner has the right to capture seismic data from neighboring parcels, then the scope of a mineral owner's right of surface use should implicitly include the use of the surface for such purpose.

163. The geophysical operator would need to secure the permission of a mineral owner of the occupied lands even if the occupied acreage was not a target of the survey. See, e.g., *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 590 (5th Cir. 1957).



rule of capture should protect the right of Wilson to use Whiteacre to gather information about other targeted parcels regardless of the physical presence of a common geologic structure beneath Whiteacre and the targeted parcels. My view might be identified as a corollary “*exploration* rule of capture” which governs the correlative rights of all mineral owners within a common area of interest (not necessarily a common oil and gas reservoir).<sup>164</sup>

Jurists who do not agree with the application of the rule of capture to this latter fact situation might nevertheless apply the rule where all imaging is done from tracts that contain a portion of the targeted structure. And jurists who do not agree with my rule-of-capture argument at all might reach the same end result by applying the balancing test suggested as a means of resolving the question of aerial surveying. Finally, jurists who do not agree with any of these arguments may find themselves in the good company of those learned commentators who believe that Baxter should have a cause of action after all.

#### IV. MEASURE OF DAMAGES FOR ACTIONABLE GEOPHYSICAL “TRESPASS”

In my view, the only actionable geophysical trespass should be one which involves a direct, physical surface entry on, or a subsurface entry into,<sup>165</sup> the property at issue. When such a wrongful entry occurs, the plaintiff should be allowed, through discovery, to learn whether the information obtained and processed reveals favorable or unfavorable prospects for oil and gas development and whether the information has been disclosed to another party or used by the trespasser in making development decisions. Then, in order to deter this direct trespass, the plaintiff should be allowed an election of remedies for the wrongful acquisition of geophysical information. The specific relief should depend on whether the trespass was in good faith or in bad faith. And the surface owner should be allowed to recover for any actual surface damages and for wrongful use of the surface.

In case of *bad-faith* trespass, the plaintiff should be allowed to obtain the data, in processed form, in a reasonably usable state,<sup>166</sup> but

---

164. One justification for the rule of capture is that a court is often unable to determine the limits of a common reservoir with certainty so that production from a well can be fairly allocated among all parties suffering drainage. A more restrictive rule for geophysical operations would require courts to engage in an extensive fact finding inquiry about the existence of a common structure or reservoir—something that would be highly speculative, especially where wildcat acreage is involved. And in a developed area, the limits of common reservoir might not be known until after 3D seismic data have been gathered and interpreted.

165. By subsurface entry, I mean a physical intrusion such as the drilling of a directional shot hole beneath the property at issue, not mere concussion or sound waves generated by seismic operations conducted on nearby lands.

166. By reasonably usable state, I mean that the plaintiff should be allowed to obtain the processed data and interpretations of that data that directly relate to plain-

not the interpretations.<sup>167</sup> In general, the plaintiff should also be allowed to recover as damages the greater of the following: the value of the plaintiff's exploration right;<sup>168</sup> the loss of the subject acreage's speculative value for leasing and further development;<sup>169</sup> any resulting loss of a specific bargain; the plaintiff's lost profits, if any (such as where the plaintiff had issued a lease to a party who had already obtained the data and negotiated the lease at a time when the plaintiff was unaware of the trespass);<sup>170</sup> or the reasonable gross market value<sup>171</sup> to the defendant<sup>172</sup> of the information reasonably attributable to the plaintiff's acreage.<sup>173</sup> Further exemplary damages or damages for mental anguish generally should be denied.

In case of a *good-faith* trespass, the plaintiff should be allowed to obtain the data, in processed form, in a reasonably usable state, but not any interpretations, by compensating the defendant for the costs of the survey and processing that are reasonably attributable to the data that the plaintiff acquires. In general, the plaintiff should be allowed to recover as damages the greater of the reasonable value of the plaintiff's exploration right,<sup>174</sup> or the reasonable net market

---

tiff's acreage together with sufficient information concerning neighboring lands so as to be useful to the plaintiff in evaluating the acreage for development.

167. I draw this line regarding the raw data, the processed data, and the interpretations by balancing. Although processing occurs after the trespass has occurred and beyond the boundaries of the affected acreage, raw, unprocessed data are of little use to the average mineral owner. Thus, I would allow the mineral owner to acquire the processed data. On the other hand, a mineral owner should be able to retain a geophysicist to interpret processed data. For the limited purpose of proving damages (such as assessing any resulting loss in speculative value), however, I would allow a mineral owner to discover relevant interpretations.

168. If most landowners in the area issue oil and gas leases rather than prospecting permits or lease options, damages might include the lease bonus that plaintiff could have reasonably expected to receive for the acreage that a lessee would ordinarily expect to acquire.

169. A plaintiff might elect this remedy if the data are unfavorable to oil and gas development and have been disclosed to third parties, or used by the trespasser in making decisions about lease acquisitions.

170. The plaintiff might elect this remedy if the data were favorable to oil and gas development and if a more lessor-oriented lease would have been negotiated by a plaintiff who also possessed the data.

171. By "gross," I mean that the defendant should not be permitted to deduct the costs of gathering and processing the data.

172. The value to the defendant of the information wrongfully obtained from the plaintiff's acreage could be based upon the proportion that the plaintiff's acreage bears to the total acreage explored by the defendant during the course of the particular survey. This measure of damages is criticized by Hawkins, *supra* note 2, at 316-17, arguing that such a measure would bring "[d]oodle-bug superstition" into the courtroom. I do not find Hawkins' reasoning persuasive.

173. Perhaps the court would first determine the market value of the entire survey and then reduce that value by the proportion that the plaintiff's acreage bears to the total acreage explored by the defendant in the course of that particular survey.

174. This recovery could include recovery for an oil and gas lease bonus if the custom and practice of mineral owners in the locality were to issue leases, not prospecting permits.

value<sup>175</sup> to the defendant<sup>176</sup> of the information reasonably attributable to the plaintiff's acreage.<sup>177</sup>

A bad-faith trespass would encompass the situation where the defendant intentionally or recklessly trespasses onto the plaintiff's property. A good-faith trespass would encompass the situation where the geophysical trespasser reasonably believes that it has the right to enter plaintiff's property for purposes of exploration, such as where the trespasser enters with permission of a party the trespasser reasonably believes is a rightful mineral owner.

A directional subsurface trespass (such as drilling a directional shot hole) generally should be presumed to have been done in bad faith,<sup>178</sup> just as in the case of directional well drilling. In the context of oil and gas exploration,<sup>179</sup> the permission of a surface owner who owns no record interest in the oil and gas rights should not serve as evidence of a good-faith trespass—even in states where the issue of who owns the exploration right has not been addressed. Moreover, geophysical operations conducted along highway rights-of-way without the permission of the underlying mineral owner should be regarded as a bad-faith trespass.<sup>180</sup> I reach these latter two views because it is no longer reasonable, if indeed it ever was reasonable, to believe that either a surface owner or the owner of a highway right-of-way has the right to engage in geophysical operations related to oil and gas exploration and production.

In the typical geophysical trespass context, the trespasser may have entered and explored the subject property in connection with the gathering of information from a larger area, and that much of the total information may have been lawfully gathered. Accordingly, the plaintiff should ordinarily be denied the right to enjoin the further use and disclosure of seismic data that have already been wrongfully gathered, but a plaintiff should be permitted to enjoin the wrongful entry it-

---

175. By "net," I mean that the defendant should be permitted to deduct the costs of gathering and processing the data.

176. Again, the value to the defendant of the information wrongfully obtained from the plaintiff's acreage could be based upon the proportion that the plaintiff's acreage bears to the total acreage explored by the defendant during the course of the particular survey.

177. Again, perhaps the court would first determine the market value of the entire survey and then reduce that value by the proportion that the plaintiff's acreage bears to the total acreage explored by the defendant in the course of that particular survey. Costs could be determined and allocated in the same manner.

178. Again, the imaging of a tract from a location on other land would be protected under the rule of capture and would not constitute a trespass against the imaged tract.

179. I make this qualification because I recognize that, under certain circumstances, a surface owner may have the right to engage in the gathering of subsurface data. *See supra* § III.B.

180. I realize that this may seem inconsistent with my view that aerial surveys in navigational airspace should be permitted. *See supra* § III.H.5. To me, geophysical operations, such as seismic surveys, conducted along a highway right-of-way are simply more invasive of the mineral owner's rights than is an aerial survey.

self.<sup>181</sup> Enforcing the injunction regarding the information wrongfully gathered, while preserving the defendant's right to the information rightfully gathered, would be difficult to accomplish fairly. Moreover, requiring the defendant to purge its records of the wrongfully gathered data seems wasteful. On the other hand, the trespasser should not be permitted to defend against liability or reduce damages by contending that the same data could have been lawfully gathered by exploration activities on nearby lands.<sup>182</sup>

At first glance, these suggested measures of damages may seem harsh when compared to existing case law; however, I am only proposing to treat direct physical entry onto or beneath the subject property as a trespass. The gathering of seismic data relating to the subject property by seismic operations conducted on nearby lands would be protected under the rule of capture.<sup>183</sup> Moreover, these suggested remedies are generally consistent with, and analogous to, the remedies generally available to a plaintiff who suffers a trespass that results in a producing well and the conversion of the production<sup>184</sup> or a trespass that results in a dry hole.<sup>185</sup> And bad-faith trespass, as I define it, would rarely occur;<sup>186</sup> however, there is little reason why a bad-faith trespass should not be treated harshly if it does occur. Finally, ethical geophysical operators should not be concerned with these penalties. Indeed, deterring trespass with harsh remedies should serve to enhance the reputation of the geophysical industry in the long run be-

---

181. See *Hastings Oil Co. v. Texas Co.*, 234 S.W.2d 389, 398 (Tex. 1950) (enjoining the anticipated drilling of a well).

182. Ample analogous law defends this view. For example, a trespasser who is producing oil and gas cannot reduce its liability for damages by showing that a quantifiable portion of the production is being drained from the adjacent property that the trespasser owns. See *Edwards v. Lachman*, 534 P.2d 670, 676 (Okla. 1974). Also, Professors Howard Williams and Charles Meyers contend that a lessee should not be permitted to defend against the violation of the implied covenant to prevent drainage by asserting that the lessee's existing well is draining the same amount of oil from beneath adjacent tracts that is being lost to drainage by neighboring wells. See *WILLIAMS & MEYERS*, *supra* note 2, at § 822.3.

183. I would also protect the right to gather information from all strata beneath acreage lawfully occupied even though the mineral rights have been horizontally severed, and, in general, I would protect the right of the owner of a specific mineral (*e.g.*, oil and gas), to gather information regarding other substances (*e.g.*, coal). See *supra* §§ III.E. and F., respectively.

184. Cf. *Alaska Placer Co. v. Lee*, 553 P.2d 54 (Alaska 1976) (discussing, in a mining case, the differences in the governing measures of damages between a good-faith trespass and conversion and a bad faith trespass and conversion). I am aware that Texas courts have denied recovery for conversion in cases involving geophysical trespass. See, *e.g.*, *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 593 (5th Cir. 1957); *Shell Petroleum Corp. v. Moore*, 46 F.2d 959, 961-62 (5th Cir. 1931).

185. Cf. *Humble Oil & Refining Co. v. Kishi*, 276 S.W. 190 (Tex. Comm'n App. 1925, judgment adopted).

186. This is especially true of the 3D seismic method which is predominantly used as a development tool. At the development stage, mineral ownership is generally well known and documented.

cause any "bad apples" would either reform their practices or find little work.

#### V. SURFACE-USE LIMITATIONS ON THE RIGHT TO EXPLORE

Because 3D seismic surveys generally cover a large area and because the survey grid involves more intensive use of the surface than do 2D seismic surveys, the likelihood of friction between surface owners and geophysical operators increases when 3D seismic operations occur. However, in the long run, 3D seismic operations should be a net gain for many surface owners concerned about extensive oil and gas development. For example, areas interpreted as being unfavorable for development based upon 3D seismic are less likely to be subjected to further oil and gas operations. Moreover, the use of 3D seismic reduces the number of dry holes that are drilled. Nevertheless, because of the more intense surface use required for 3D operations, I offer the following brief summary of the law of surface use as it relates to seismic operations.

As previously discussed, a surface owner generally does not "own" the right to conduct geophysical operations. Moreover, absent a statute,<sup>187</sup> a surface owner is not entitled to compensation for, or even notice of, a mineral owner's reasonable and necessary surface use in connection with mineral exploration or development.<sup>188</sup> Likewise, a fee owner is not entitled to compensation for an oil and gas lessee's

---

187. Several states have surface owner damage compensation acts. At least two of these acts govern geophysical operations: The North Dakota Act, N. D. CENT. CODE §§ 38-11.1-03 & 38-11.1-06 (1987 & Supp. 1997) (governing both the drilling of oil and gas wells and geophysical and seismograph exploration activities); and the Montana Act, MONT. CODE ANNOT. §§ 82-10-501, 82-1-502 (1995) (governing "exploration" as well as drilling).

The Oklahoma Surface Damage Act, OKLA. STAT. tit. 52, §§ 318.2 - 318.9 (1991), does not apply to geophysical operations; however, a separate act, the Seismic Exploration Regulation Act provides for the registration, bonding, and regulation of seismic operators by the Corporation Commission. See OKLA. STAT. tit. 52, §§ 318.21 - 318.23 (Supp. 1998). The Act requires that the rules to be promulgated by the Commission "shall include" a requirement that a seismic operator give all surface owners at least 15 days advance notice through the United States mail of its planned operations. The notice must include a copy of the lease or seismic permit authorizing the planned operations. See *id.* at § 318.22. The Act also prohibits seismic blasting within 200 feet of any habitable dwelling, building, or water well without written permission from the owner. See *id.* at § 318.23.

Under the rules of the Colorado oil and gas conservation agency, seismic operators must have permission from surface owners to lawfully conduct seismic operations. See COLO. OIL & GAS CONS. COMM'N Rule 333, 2 COLO. CODE REGS § 404, 404-1 (1996). Cf. *Western Energy Co. v. Genie Land Co.*, 737 P.2d 478 (Mont. 1987) (holding unconstitutional a statute that required surface-owner consent prior to obtaining a coal strip-mining permit); *Devon Corp. v. Miller*, 280 S.E.2d 108, 114 (W. Va. 1981) (upholding a statute requiring surface-owner consent to the drilling of deep oil and gas well).

188. For more detailed treatment of surface-owner/mineral-owner conflicts, see John S. Lowe, *The Easement of the Mineral Estate for Surface Use: An Analysis of Its Rationale, Status & Prospects*, 39 ROCKY MTN MIN. L. INST. 4-1 (1993).

reasonable and necessary surface use relating to mineral exploration and development. Specifically, geophysical operations are ordinarily within the scope of a mineral owner's (or lessee's) right to explore.<sup>189</sup> Nevertheless, in many states, surface owners (whether or not they own an interest in minerals) are customarily paid for the use of the surface even though the right to conduct geophysical operations is held by a mineral owner or by an oil and gas lessee. These payments are commonly made for two reasons: (1) to compensate surface owners who may suffer damages or may be inconvenienced by geophysical operations; and (2) to obtain a signed waiver that the surface owner will not bring suit alleging an unreasonable, negligent, or excessive use of the surface respecting the activities described in the waiver. In addition, in some states, geophysical operations are regulated for the protection of both mineral and surface owners.<sup>190</sup>

A right of a mineral owner or lessee to use the surface is implicitly limited to non-negligent, non-excessive use of the surface relating to exploration and development operations conducted in accordance with the accepted custom and practice of the oil and gas industry. Properly conducted geophysical operations, including seismic operations, do not violate these limits.<sup>191</sup> However, if the mineral owner exercises the right to explore in an unreasonable, excessive, or negligent manner, the surface owner may sue for any resulting damages, generally measured by the decline in value of the land.<sup>192</sup> In each of these instances, damages may include a variety of special damage claims,<sup>193</sup> especially for damages to water resources.<sup>194</sup> Special dam-

---

189. See *Hunt Oil Co. v. Kerbaugh*, 283 N.W.2d 131, 139 (N.D. 1979). Two limits previously mentioned are: (1) that the lessee's use of the surface (including geophysical surveys) must be consistent with the underlying lease objectives, see *supra* § III.G; and (2) that the lessee's use of the surface must be related to exploration and development of minerals beneath that surface, see *supra* § III.H.1.

190. See MONT. CODE ANN. §§ 82-01-101 to 82-01-111 (1997) and N.D. CENT. CODE § 38-08.1 (1987 & Supp. 1997). In Colorado, the oil and gas conservation agency has the statutory authority to regulate seismic operations. See COLO. REV. STAT. §§ 34-60-102, -103 (Supp. 1997). The current regulation is codified at COLO. OIL & GAS CONS. COMM'N Rule 333, 2 COLO. CODE REGS § 404; 404-1 (1996). Recent Oklahoma legislation is codified at OKLA. STAT. tit. 52, §§ 318.21 to 318.23 (Supp. 1998).

191. See *Kerbaugh*, 283 N.W.2d at 139.

192. See *Bynum v. Mandrel Indus. Inc.*, 241 So.2d 629, 632 (Miss. 1970); *Magnolia Petroleum Co. v. McCollum*, 51 So.2d 217, 219 (Miss. 1951); *General Geophysical Co. v. Brown*, 38 So.2d 703, 705 (Miss. 1949).

193. See *Harrison v. Petroleum Surveys*, 80 So.2d 153, 158 (La. App. 1955) (awarding special damages for the temporary economic loss of destroying the land's utility for trapping muskrats).

194. See *Francis v. Sun Oil Co.*, 340 P.2d 824, 826, (Mont. 1959) (awarding special damages for harm to flowing spring and holding defendant liable as a trespasser ab initio even though defendant had entered the property with landowner's permission); *General Geophysical Co. v. Brown*, 38 So.2d at 705 (awarding special damages for injury to water well). In North Dakota, surface owners are aided by a special statute addressing damage to water supplies resulting from geophysical operations. See N.D. CENT. CODE § 38-11.1-06 (Supp. 1997).

ages may include costs of restoration<sup>195</sup> and possibly damages for mental anguish<sup>196</sup> or even exemplary damages;<sup>197</sup> however, in some states, total recovery might be limited to the market value of the injured land.<sup>198</sup>

In perhaps most jurisdictions, the mineral owner's surface-use rights may be further limited by the *accommodation doctrine*.<sup>199</sup> Under this doctrine, if an oil and gas operator has reasonable alternatives available for the manner or method of contemplated operations,<sup>200</sup> the court will consider the impact of each alternative on the surface owner's use and enjoyment of the surface.<sup>201</sup> After balancing the interests of the operator and surface owner, the court may order the operator to use the alternative that will cause the least disruption of the surface owner's use and enjoyment. If there are no reasonable alternatives to the manner or method of the operator's contemplated operations, then accommodation balancing is not triggered.

The North Dakota Supreme Court, in a case that accepts and applies the accommodation doctrine, has ruled that there is no reasonable alternative to seismic geophysical operations.<sup>202</sup> Nevertheless, in appropriate circumstances, a court might require an oil and gas operator to accommodate the surface owner regarding the manner in which seismic geophysical operations are conducted. For example, a court might concur with a landowner's request that shot points be placed a reasonable distance from a building, water hole, well, or flowing

---

195. See *Shell Petroleum Corp. v. Scully*, 71 F.2d 772, 774 (5th Cir. 1934) (construing Louisiana law).

196. See *Teledyne Exploration Co. v. Klotz*, 694 S.W.2d 109, 110 (Tex. App.—Corpus Christi 1985, writ ref'd n.r.e.) (involving damages to topsoil and trees).

197. See *Shell Oil Co. v. Murrah*, 493 So. 2d 1274, 1276 (Miss. 1986) (involving damages to trees); *Dahl v. Petroleum Geophysical Co.*, 632 P.2d 1136 (Mont. 1981) (involving tort damages for flooding).

198. See *Houck v. Hold Oil Corp.*, 867 P.2d 451, 461 (Okla. 1993) (applying common law and limiting surface damages to the market value of the injured land in an action brought pursuant to the Oklahoma surface damages statutes, OKLA. STAT. tit 52, §§ 318.2 to 318.9); *Johansen v. Combustion Eng'g., Inc.*, 834 F. Supp. 404, 412 (S.D. Ga. 1993) (limiting trespass and nuisance damages for pollution of a stream to the total value of the affected land). See generally RESTATEMENT (SECOND) OF TORTS § 929 (1977).

199. See, e.g. *Getty Oil Co. v. Jones*, 470 S.W.2d 618, 622 (Tex. 1971).

200. Under the Texas accommodation doctrine, for an alternative to be a reasonable, it must be available on the land in question. In *Sun Oil Co. v. Whitaker*, 483 S.W.2d 808, 812 (Tex. 1972), the surface owner argued that an oil and gas operator could truck salt water from other lands for use in drilling operations rather than use potable groundwater to the detriment of the surface owner's irrigation operations. The court, however, held that requiring the operator to truck water from other lands was not a reasonable alternative to the use of fresh groundwater, which was readily available on the premises, even though the use of fresh water might harm the surface owner's irrigation operations.

201. In Texas, in assessing the impact of an operator's activities on the surface owner, only the surface owner's existing, not future, land use is considered. See *Getty Oil Co. v. Jones*, 470 S.W.2d at 622.

202. See *Hunt Oil Co. v. Kerbaugh*, 283 N.W.2d 131, 137 (N.D. 1979).

spring.<sup>203</sup> Or perhaps a court might require an operator to postpone operations until after the surface owner has harvested growing crops. In a detailed 3D seismic survey, the extent of surface use can be fairly intense. Thus, the likelihood of a surface owner seeking an accommodation doctrine is increased—especially as oil and gas operations move into areas of intense surface development.<sup>204</sup>

Because explosives may be used in seismic operations, the geophysical operator might be held liable for any resulting actual damages.<sup>205</sup> Most jurisdictions hold a party engaged in blasting strictly liable for any actual damage caused by the detonation of explosives.<sup>206</sup> The theory of liability may be grounded in nuisance<sup>207</sup> or trespass,<sup>208</sup> or the blasting may simply be viewed as an ultrahazardous activity.<sup>209</sup> Other jurisdictions, however, require a showing of negligence.<sup>210</sup> Because the use of explosives in geophysical operations rarely causes substantial actual damage, further discussion of this topic is beyond the scope of this article.<sup>211</sup>

203. Recent Oklahoma legislation prohibits seismic blasting within 200 feet of any habitable dwelling, building, or water well without written permission from the owner. See OKLA. STAT. tit. 52, § 318.23 (Supp. 1998). In signing negotiating seismic permits, the Southwest Kansas Royalty Owners Association recommends that vibroseis trucks operate no closer than 1320 feet from a farmstead improvement, 1000 feet from a water well, 400 feet from concrete irrigation pipe, and 200 feet from underground PVC pipe. See *Seismic Distances*, SWKROA NEWSLETTER, (Southwest Kansas Royalty Owners Association), Oct. 1998, at 5. However, due to the adverse effects that these distances have on the optimum acquisition of seismic data, operators in Southwest Kansas have requested the Association to reduce these distances to 300 feet for structures, 4000 to 600 feet for water wells, and 100 feet for pipelines. See *id.* at 6. This same publication reports that permit compensation paid by seismic operators to surface owners in Southwest Kansas ranges from \$5.00 to \$15.00 per acre. See *id.* at 5.

204. See generally Jeanine Feriancek & Cynthia L. McNeill, *Oil Company Surface Use: Do Farmers Need Protection?*, 9 NAT. RESOURCES & ENV'T 28 (1995) (dealing with surface-owner/mineral-owner clashes in Wells County, Colorado—an area of small irrigated farms and intense oil and gas development).

In Louisiana, the rights of the landowner and mineral lessee are "correlative." See *Pennington v. Colonial Pipeline Co.*, 260 F. Supp. 643 (E.D. La. 1966), *aff'd*, 387 F.2d 903 (5th Cir. 1968). In *Pennington*, the court held that a seismic operator could not require a successor surface and right-of-way owner to cease its surface operations to accommodate seismic operations where the seismic operator was deemed more able to adjust its operations to accommodate the surface and right-of-way owner.

205. See *General Geophysical v. Brown*, 38 So. 2d 703 (Miss. 1949).

206. See *Longtin v. Persell*, 76 P. 699, 701 (Mont. 1904); *Feinberg v. Wisconsin Granite Co.*, 224 N.W. 184 (S.D. 1929).

207. See *Rotert v. Peabody Coal Co.*, 513 S.W.2d 667, 678 (Mo. Ct. App. 1974); *Colton v. Onderdonk*, 10 P. 395, 397 (Cal. 1886).

208. See *Watson v. Mississippi River Power Co.*, 156 N.W. 188, 192 (Iowa 1916).

209. See *Louden v. City of Cincinnati*, 106 N.E. 970, 973 (Ohio 1914).

210. See *Longtin v. Persell*, 76 P. 699, 701 (Mont. 1904); *Feinberg v. Wisconsin Granite Co.*, 224 N.W. 184 (S.D. 1929).

211. For further discussion, see SUMMERS, *supra* note 2, at § 661.



## CONCLUSION

*In terms of finding and managing petroleum reservoirs, the first significant impact on productivity probably came in the late 1950s and 1960s with the widespread use of well logs and 2D seismic data.*

.....  
*Together, these technologies greatly improved structural interpretation of the subsurface—one through direct measurement, the other through indirect imaging. They were as important to E&P professionals as exploratory surgery and X-rays were to physicians.*

.....  
*With the introduction of 3D seismic technology in the early 1980s, the industry took an even greater leap in productivity.<sup>212</sup>*

Modern 3D seismic technology is a major technological innovation for the oil and gas industry. It has become a critically important tool for successful and efficient primary development of oil and gas reservoirs. Through time-lapse imagery (4D seismic), 3D seismic is proving to be a valuable enhanced recovery tool. Moreover, its use in exploration is destined to increase.

My views regarding geophysical "trespass" advocate a public policy that promotes the efficient gathering of information through the use of modern geophysical operations. Promoting efficient geophysical exploration, by taking full advantage of modern technology, is desirable to promote further domestic exploration and production and should serve to lessen the competitive disadvantage domestic operations suffer when compared to international and offshore operations. To require permission from all potentially affected mineral owners is inefficient and creates transaction costs that will unduly burden the oil and gas industry.<sup>213</sup>

---

212. See R. P. Peebler, *Extended Integration—The Key to Future Productivity Leaps*, OIL & GAS J., May 20, 1996, at 57.

213. Admittedly, regarding geophysical trespass, a middle ground could be staked out via a legislative solution. A legislative solution could be limited to addressing specific issues regarding only geophysical operations. See, e.g., LA. REV. STAT. ANN. §§ 30:217, 31:164, 31:166, 31:175 (West 1989 & Supp. 1998) (providing an example of a regrettable legislative solution). However, the proper legislative solution would be a comprehensive statute that would allow oil and gas conservation commissions to establish exploratory units patterned after those created on federal lands. See 30 U.S.C. § 226(j) (1995), amended by 30 U.S.C. § 226(j) (Supp. 1998); 43 C.F.R. § 3186.1 (1997). While such a proposal would probably face opposition from small independent operators and mineral owners, many of their concerns could be addressed by properly tailored legislation that would include reasonable compensation for the exploration right. Moreover, the establishment of exploratory units would serve to encourage greater investment in domestic oil and gas exploration and production operations, which, in turn, may serve to lessen American dependence on foreign oil supplies. In any event, exploratory units are beyond the scope of this article. In the meantime, however, I urge courts to render opinions in geophysical "trespass" cases that will serve to promote, rather than hinder, efficient geophysical operations.