

**RIDING THE WAVE:
IS SEISMIC TRESPASS ACTIONABLE OR ILLUSORY?**

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RIDING THE WAVE: IS SEISMIC TRESPASS ACTIONABLE OR ILLUSORY?

I. INTRODUCTION

The uncertainty of oil prices over the past decade has left many land owners and oil and gas operators with little room for error when drilling exploratory wells. One of the ways companies combat the ever shrinking margins created by the decline in oil prices is to conduct seismic, or geophysical, surveys of the subsurface structures. These surveys are performed by introducing various types of seismic waves into the strata and then recording the reflections to obtain a clearer understanding of any potential valuable contents beneath the surface of the surveyed land.

Extensive geophysical research and improved computer technology have aided the progression of seismic technology from its original—and frequently unreliable—two-dimensional (“2D seismic”) mode to three-dimensional (“3D seismic”) status.¹ While geophysical trespass issues first originated with conventional 2D seismic operations, the implications of 3D seismic operations have created new challenging legal issues that require the courts to keep pace with new technological advancements.

Survey companies cannot begin operations on property without obtaining permits from certain governmental entities, as well as the permission of the parties who have rights to the land being surveyed. In recent years, it has become more difficult, costly, and time-consuming to obtain access rights because drilling activities have expanded into more populated and protected areas. Additionally, while land owners generally are cooperative in granting access rights, some have become more resistant to seismic and drilling activities occurring on their property and stall or refuse to grant these rights for various reasons. Consequently, if such access rights from a specific land owner are not obtained, the data related to that landowner’s property must be removed or redacted from the final survey results. The failure to redact or remove the seismic information relating to mineral interests held by non-consenting third parties creates the potential for claims for seismic trespass.

This paper will focus on legal issues related to obtaining seismic data, including from whom to seek

consent when planning to conduct a seismic survey, the legal implications of not obtaining such consent, and the damages available for land and mineral owners as a result of improper seismic operations.² Additionally, while property owners may also have potential nuisance claims when the intrusion is caused by foul odors, dust, noise and bright lights, or claims sounding in negligence where an intrusion causes harm to property, this article is limited to issues related claims arising in the form of trespass.

Finally, the focus of this paper is to provide an overview of the legal issues, rather than a hyper-technical discussion of how seismic operations are performed or the varying contractual prerequisites necessary to conduct such operations.³

II. OVERVIEW OF GEOPHYSICAL SURVEYING

Geophysical exploration is described as “[t]he search for geologic structures favorable to the accumulation of petroleum by means of geophysical devices.”⁴ Typically, the landowner or operator will contract with a geophysical contractor to perform the survey. It is important to understand that geophysical exploration does not locate oil and gas; it is used to determine whether the presence of subterranean structures and stratigraphy that may “trap” oil and gas. Geologists and geophysicists use geophysical surveys to search for these “traps”—synclines, anticlines, domes, faulting, and fracturing.⁵

A frequently used geophysical method, the seismic survey, measures shock waves reflected and refracted by subterranean structures. *Id.* The process of three dimensional seismic exploration consists of placing “shot” and “receiver” points on the earth’s surface and then using energy sources (vibroseis or explosives) to send vibrations into the earth. In a two dimensional survey, shot and receiver points are arranged in a linear formation, whereas in a three dimensional survey, shot and receiver points are typically arranged in a grid pattern. The velocity and character of the subterranean formations’ reflection and refraction of a particular shock wave are recorded. Following the processing of this data, a contour map is plotted outlining the subsurface structures. Compressional wave vibrators operate on similar principles. The sound waves reflect

¹ Owen L. Anderson & John D. Pigott, 3D Seismic Technology: Its Uses, Limits, & Legal Ramifications, 42 Rocky Mtn. Min. L. Inst. § 16.01, at 16-1 (1996).

² While there may be citation to other jurisdictions for comparative purposes, the paper primarily focuses on Texas law.

³ This article relies heavily on previous legal commentators and publications. The authorities from which much of the information contained herein is gathered can be found in the attached bibliography.

⁴ See B. Berger & K. Anderson, *Modern Petroleum* at 46-56 (1978).

⁵ *Id.* at 48.

back to the surface, where they are picked up and changed into electrical impulses.

Oil and gas explorers typically acquire seismic data in several ways: (i) they conduct their own geophysical survey or seismic shoot (a “proprietary seismic survey”); (ii) they join with a group of explorers to conduct the seismic shoot (a “participation survey” or “group shoot”); or (iii) they acquire the data from the owner of the data through an outright purchase, a trade, a license, or some other kind of use arrangement.⁶ While each of these methods has advantages and disadvantages, the overriding objective is ensuring the information remains confidential.

Recently, directional drilling, the predominant method of efficient production, has experienced exponential technological growth. Many of the operators today employ technology that allows them to receive geophysical data in real-time via seismic information transmitted from the drill bit up to the driller through pulses in the mud column.⁷ Logging While Drilling (LWD) is the term given to the techniques utilized in acquiring and transmitting petrophysical data in real-time while drilling. Similarly, Measurement While Drilling (MWD) refers to the process of acquiring, collecting, and transmitting specific data while drilling. Schlumberger, for example, offers a “seismicVISION Seismic-While-Drilling Service” which “[d]eliver[s] borehole seismic measurements for real-time, time-depth-velocity information without disrupting drilling operations.”⁸ As technology continues to advance, legal concepts which seemingly have been unchanged for over a half-century will soon need to be revisited.

III. LEGAL CONCEPTS RELATED TO SEISMIC DISCOVERY

A. Property Rights

The right to permit entry on land to conduct geophysical surveys for the purpose of exploring for oil, gas, or other minerals has long been recognized as a valuable property right belonging exclusively to the owner of the mineral estate in fee. *Phillips Petroleum Co. v. Cowden*, 241 F.2d 586, 590 (5th Cir. 1957) (“there can be no doubt that in Texas the right to explore for oil and minerals is a valuable property right that can be legally protected”). This right is protected because of the impact of information concerning mineral deposits

to the value of the mineral estate. Once the seismic data loses its confidentiality, the competitive advantage one has by owning it or licensing it is lost. Accordingly, if the information obtained be favorable, it can be used and is used in dealing with the landowner for his valuable mineral rights. If the information is unfavorable, the fact quickly becomes publicly known and thus impairs the power of the landowner to deal advantageously with his valuable mineral rights.

1. Whose permission must a surveyor obtain before conducting seismic operations?

To prevent potential liability for trespass or related torts, the geophysical surveyor must obtain permission from the owner of the exploration right. The right to perform a geophysical survey to determine the prospective value of minerals is recognized in Texas as a valuable property right.⁹ Whether the surface estate or mineral estate has standing to sue depends on the specific granting language in the lease. If there has been no severance of the minerals from the surface estate, that person is the owner of the right to explore and must sign-off on any subsurface exploration affecting his land. However, where a severance has occurred, the question becomes whether the right to explore is owned by the mineral estate, the surface estate, or concurrently by both estates. If the minerals have been leased, the question of ownership is further complicated by the intervening rights of geophysical exploration by the mineral lessee.

a. *Mineral Owner or Surface Owner*

Where ownership of the minerals has been severed from ownership of the surface, only the mineral owner has the right to explore. The seminal case related to the rights of geophysical exploration as between the surface owner and mineral owner is *Phillips Petroleum Company v. Cowden*, 241 F.2d 586 (5th Cir. 1957). Phillips had obtained permission from the owner of the surface estate to perform a geophysical survey, but did not obtain permission from Cowden, the owner of the minerals. Cowden brought suit for trespass to the mineral estate and for wrongful appropriation of the exploratory right. The Fifth Circuit ruled that the mineral owner, Cowden, had the exclusive right to use the surface for the purpose of conducting seismographic exploration and had the exclusive power to permit or

⁶ Warren J. Ludlow, “Seismic Agreements and Issues,” 23rd Annual Advanced Oil, Gas and Energy Resources Law Course (September 15-16, 2005).

⁷ Lamont-Doherty Earth Observatory, An Introduction to Logging While Drilling: Seminar in Marine Geophysics, THE EARTH INSTITUTE AT COLUMBIA UNIVERSITY (Feb. 14, 2008).

⁸ Geophysics While Drilling: Seismic Imaging and Correlation, SCHLUMBERGER, https://www.slb.com/services/drilling/mwd_lwd/geophysics_lwd.aspx

⁹ *Wilson v. Texas Co.*, 237 S.W.2d 649 (Tex. Civ. App.—Fort Worth 1951, writ ref’d n.r.e.).

deny others such a right. As such, *Cowden* stands for the proposition that a surveyor is only required to obtain consent from the mineral holder, as it holds the inherent right to use as much of the surface as is reasonably necessary to explore for oil and gas. *Ball v. Dillard*, 602 S.W.2d 521 (Tex. 1980); *Harris v. Currie*, 176 S.W.2d 302 (Tex. 1943). The court's ruling seems logical in view of the Texas theory of ownership in place of mineral rights. Practically speaking, though, most explorers find it prudent to seek permission from the surface owner to avoid potential surface access issues, to pay for damages to the surface (although often not legally required), or to at least put the surface owner on notice of the intended operations.

b. Mineral Lessor or Lessee

A mineral owner has the ability to assign to its lessee the right to explore. However, a mineral lessee's ability to provide consent to explore the mineral property depends on the specific grant in the lease. In *Shell Petroleum v. Puckett*, 29 S.W.2d 809 (Tex. Civ. App.—Texarkana 1930, no writ), the lease instrument was “for the sole and only purpose. . . of mining and operating for oil and gas and of laying pipelines and of building tanks, power stations and structures thereon to produce, save and take care of said products.” The court found the lessee did not have the exclusive right to conduct seismographic surveys and that the lessor retained the right to conduct such surveys himself. However, the opposite conclusion was reached in *Wilson v. Texas Company* where a lease contained language “grant[ing] . . . the exclusive right to prospect, explore, by use of core drills or otherwise . . .” 237 S.W.2d at 650. It was expressly held that the lessor had conveyed the exclusive right to conduct seismographic operations and therefore had relinquished the right to convey the privileges to another. These days, modern leases almost always contain a granting clause making the right to explore and produce an exclusive right in the lease.

Whether a royalty interest owner has standing to bring a trespass claim was further discussed in *Coastal Oil and Gas Corp. v. Garza Energy Trust*. 268 S.W.3d 1 (Tex. 2008). In *Garza*, the Texas Supreme Court found that a mineral lessor who has a royalty interest and the possibility of reverter, but no right to possess, explore for or produce the minerals, has a possessory interest sufficient to support a claim for trespass or an “injury to the right of possession.” *Id.* at 10. The *Garza* court analogized the lessor's reversion interest in the minerals to a surface owner's reversion interest in the surface estate. *Id.* at 10. Said otherwise, just like a landlord has interest in preventing the depreciation of his estate as a result of damages caused by the tenant, a mineral owner with a possibility of reverter has an

interest, and incentive, to prevent damages to the mineral estate by the leasee.

B. Claim for Trespass

“Trespass to real property is an unauthorized entry upon the land of another, and may occur when one enters – or causes something to enter – another's property.” *Envntl. Processing Sys., L.C. v. FPL Farming Ltd.*, 457 S.W.3d 414, 422 (Tex. 2015) (citing *Barnes v. Mathis*, 353 S.W.3d 760, 764 (Tex. 2011)). It encompasses three elements: (1) entry (2) onto the property of another (3) without the property owner's consent or authorization. *Id.* The burden of proving these elements, including unauthorized entry, lies with the plaintiff. *Id.* at 423. Trespass need not be in person, but may be made by causing or permitting a thing to cross the boundary of the property below the surface of the earth. Likewise, as long it is an unauthorized entry upon the property of another, the intent or motive prompting the trespass is immaterial. *Watson v. Brazos Elec. Power Coop., Inc.*, 918 S.W.2d 639, 645-46 (Tex. App.—Waco 1996, writ denied).

A typical trespass scenario plays out as follows. Tracts A, B, and C are three contiguous tracts of land. The owner of B, the middle tract, owns the full fee estate, and refuses to provide permission to a geophysical surveyor to enter the land. The surveyor sets the seismic “vibroiseis” truck or the shot hole with dynamite on Tract A and sets geophones to receive the sound signals on the surface of Tracts A and C. As a result of the seismic exploration, three types of trespass of Tract B can potentially exist. First, the survey will release waves of sonic energy into the ground, and the waves will travel through the subsurface of all three tracts. Second, the geophones will receive reflections of the sound waves. The data from the geophones, when processed with mathematical algorithms on computers, create visual images of the subsurface beneath all three tracts, and despite that there are no geophones on the surface of Tract B, images of lesser quality of the subsurface of Tract B will still be available for commercial use. Third, the wave energy might lead to claims of damage to the foundation of a building or to a water well on Tract B.

1. Requirement of Physical Entry

In Texas, in order to recover for geophysical trespass, courts require a physical entry onto or injury to the subject land. In *Railroad Commission of Texas v. Manziel*, the Texas Supreme Court held that “to constitute trespass, there must be some physical entry upon the land by some ‘thing.’” 361 S.W.2d 560, 567 (Tex. 1962). It has been noted that although these cases are commonly referred to as cases of “subsurface trespass,” they actually deal with a surface trespass done

with the intent to obtain knowledge of the subsurface conditions. *See*, Seismic Agreements and Subsurface Trespass, paper delivered by J.T. Walker and John K. England, Oil, Gas & Mineral Law Section Meeting of the Dallas Bar Association (January 21, 1987). The author could not locate any reported cases in Texas which allow recovery where there is no physical entry, or unauthorized access, to the surface estate.

The rule of capture backdrops modern oil and gas development, allowing a producer not otherwise restrained by conservation laws to produce without regard to the ownership rights of neighboring mineral owners from which the developed oil or gas may have migrated before being produced at the wellhead. Several commentators propose that the rule of capture should be applied equally in the geophysical exploration context:

“In short, we reject the argument that the intentional gathering of seismic data from a target parcel solely by geophysical operations conducted on nearby parcels is wrongful, immoral, unethical, and unreasonable (and thereby constituting “geophysical trespass”) if permission is not secured from a mineral owner of the target parcel. We reach these conclusions even though we 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. Nevertheless, we submit that this manner of gathering seismic data should fall within the venerable rule of capture.

* * *

Accordingly, we submit that the gathering of seismic data by a mineral owner (or such owner’s seismic permittee) by geophysical operations conducted on such owner’s parcel and concerning the possible presence of oil or gas beneath a neighbor’s parcel should be treated no more restrictively than the drilling of a producing well on such owner’s parcel that drains oil or gas from a neighbor’s parcel or than the drilling of a dry hole on such owner’s parcel which results in the loss of speculative value to a neighbor’s parcel.”¹⁰

In *Kennedy v. General Geophysical Company*, 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. 213 S.W.2d 707 (Tex. Civ. App.—Galveston 1948, writ ref’d n.r.e.). In *Kennedy*, General Geophysical had requested permission from Kennedy, the owner of a 339-acre tract of land, for permission to conduct geophysical operations across the property. When Kennedy denied General Geophysical permission to conduct a seismic survey across his lands, General Geophysical conducted its operations down a public highway adjacent to Kennedy’s property. The geophysical operator did not enter upon the Kennedy’s adjacent acreage at issue, but, instead placed shot points and receivers along a public road that was adjacent to this acreage. In discussing the effect of vibrations trespassing over boundaries the court noted, “[t]respass may also be committed by shooting onto or over the land, by explosions, by throwing inflammable substances, by blasting operations, by discharging soot and carbon, but not by mere vibrations.” *Id.* at 711. The court denied recovery because it found that no trespass was committed by the mere sending of vibrations into the adjacent property bordering the road. The *Kennedy* case is frequently cited by courts as the seminal case establishing that geophysical trespass requires a physical surface entry by the geophysical operator within the boundaries of the land at issue before recovery can be obtained for wrongfully taking exploration rights.

This concept has held true in Texas because the court found 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. *Id.* at 709. However, it is important to note the careful language of the court in describing the fact that a straight line running from shot points to receiving sets did not cross any part of Plaintiff’s land. The court found that the information received only gave information as to depth points directly under the receiving sets and that General Geophysical obtained no reliable information as to the subsurface structure under Kennedy’s land. However, because the court in *Kennedy* found that the vibrations were not a physical invasion of the surface, a prerequisite for trespass, the cause of action for a recovery would likely require some other theory. In dictum, the court also notably emphasized the facts that the operator had not disclosed any information about the Kennedy’s acreage to its principal, Skelly Oil Company, and that Kennedy failed to prove that the surveyor obtained any valuable or useful information about the acreage at issue. *Id.* at 709-713. Thus, the court’s dictum suggests that if valuable and useful information had been intentionally gathered from beneath the plaintiff’s acreage, the plaintiff might have prevailed. *See also*

¹⁰ *See Owen L. Anderson & John D. Pigott*, 3D Seismic Technology: Its Uses, Limits, & Legal Ramifications, 42 ROCKY MTN. MIN. L. INST. § 16.04, at 16-113 (1996).

Ohio Oil Co. v. Sharp, 135 F.2d 303, 306-309 (10th Cir. 1943) (involving an allegation of geophysical trespass, but mineral owners were not parties to the suit).

A different result occurred where a surveying contractor actually entered land upon which the survey was performed. In *Phillips Petroleum Co. v. Cowden (Cowden I)*, Phillips conducted a seismic survey in the area and actually entered upon a portion of surface above Cowden's 2,682 acres in Ector County, Texas. *Cowden I*, 241 F.2d 586 (5th Cir. 1957), aff'd on rehearing, 256 F.2d 408 (5th Cir. 1958). Phillips had obtained permission from Moss, the owner of the surface estate, to conduct a geophysical survey, but did not obtain permission from Cowden, the owner of the minerals. Phillips intended to evaluate deep horizons underlying its Harper Field, which was adjacent to Cowden's acreage, but not to evaluate the Cowden's minerals. The surveying operations did not occur above Cowden's lands on 29 of the 34 days it took to conduct the survey, and Phillips located only 6 of 47 total shot holes on the surface of Cowden's minerals. Despite that, Cowden argued Phillips, through correlating the seismic data with existing geological information, could make interpretations of the entire area containing his minerals. The Fifth Circuit, after determining that Cowden as mineral owner, not the surface owner, owned the right to explore, held that plaintiffs could waive their trespass claim and sue in assumpsit for the reasonable value of the use and occupation of the property by Phillips. The court then rejected the trial court's determination that the entire extent of plaintiffs' property should be used in calculating the value of the use of the property. Relying on *Kennedy v. General Geophysical Co.*, 213 S.W.2d 707 (Tex. Civ. App.—Galveston 1948), the court held that plaintiffs could properly be compensated only for the use of that part of their property that was actually occupied, even though Phillips obtained information by extrapolation and correlation over a wider area. *Id.* at 594. On remand, the trial court came up with the same amount of damages as in the original trial. The Fifth Circuit upheld that damage award in *Phillips Petroleum Co. v. Cowden (Cowden II)*, 256 F.2d 408 (5th Cir. 1958). 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.

Courts have balanced the relatively small loss of minerals suffered by landowners against the State's longstanding policy to encourage maximum recovery of minerals and minimize waste since dawn of the first oil boom. The Texas Supreme Court addressed this concept in *Railroad Commission v. Manziel*, 361 S.W.2d 560 (Tex. 1962), where it explicitly held that it gives precedence to secondary recovery projects approved by the Railroad Commission over the technical rules of trespass. The Court reasoned that "[secondary recovery] operations should be encouraged, for as the pressure

behind the primary production dissipates, the greater is the public necessity for applying secondary recovery forces. It is obvious the secondary recovery programs could not and would not be conducted if any adjoining operator could stop the project on the ground of subsurface trespass. . . ." The technical rules of trespass have no place in the consideration of the validity of the orders of the Commission. *Id.* at 568-69.

Almost sixty years after *Kennedy*, the San Antonio Court of Appeals had the opportunity to reevaluate the requirement of an actual physical invasion of the property in a trespass claim in the context of modern geophysical survey techniques. Despite the significant advancements in seismic technology since *Kennedy*, the *Villarreal* court refused to stray from the requirement of a showing of physical harm to land. *Villarreal v. Grant Geophysical, Inc.*, 136 S.W.3d 265 (Tex. App.—San Antonio 2004, pet. denied). In *Villarreal*, two geophysical contractors, Grant and Millennium, conducted a survey of approximately 300 square miles, obtaining permission from over 2,100 surface and mineral owners. The contractors, however, were unable to obtain permission from the owners of approximately 125 tracts, including the Villarreal tracts. The seismic company was forced to obtain information about the Villarreal tract during the 3-D shoot because despite only placing the shot points and receivers on the tracts where they had obtained permission, the grid layout of the 3D shoot required the surveyor to collect seismic traces from within the boundaries of the "no permit" tracts in order to get full fold data on the permitted tracts. Although the surveying company attempted to delete the unauthorized information, it was inadvertently transmitted to two clients. When the error was discovered, the surveyor reclaimed the data from its clients to redact the unauthorized tracts.

The Texas appeals court refused to change the rule of law established by *Kennedy* and *Cowden*, holding that because there is no dispute about the fact that neither Grant nor Millennium physically invaded or injured the surface estate lying above the Villarreal's mineral estate, there can be no trespass. The court admitted that Texas law is running behind technology, but it was bound by precedent and could not extend the definition of geophysical trespass. *Id.* at 270. This language leaves the impression that the *Villarreal* court supported a change in the law and wanted to find the geophysical contractors liable for trespass despite an absence of evidence of a physical invasion of the property, but was constrained by Texas Supreme Court precedent. Courts in the future will likely be required to re-examine existing precedent and adopt a pragmatic approach of balancing the realities of modern technology, encouraging efficient exploration and protecting property rights. With the advancements in geophysical surveying technology, landowners are less concerned about physical damages from unauthorized geophysical

exploration, e.g., the destruction of trees and fences, and are more concerned about the often greater economic damages resulting from information obtained during a geophysical trespass of their property.

2. Future Outlook

In the recent case of *Lightning Oil Company v. Anadarko E&P Onshore, LLC*, 520 S.W.3d 39 (Tex. 2017), the Texas Supreme Court addressed the issue of when leases may impose a restriction on surface use and what a lessee is supposed to do if it cannot procure a lease on adjacent properties. While *Lightning* dealt with issues related to subsurface trespass via horizontal drilling, the case suggests how the Texas Supreme Court may rule if faced with similar issues in the geophysical operations context.

Anadarko was the lessee of minerals under property owned by the state of Texas but was restricted from surface use because the property was a wildlife conservation area. Anadarko purchased surface rights to a ranch adjacent to the wildlife conservation area and sought to drill vertically below the surface of the ranch and then at an angle into the minerals under the conservation area. Another company, Lightning Oil Co., owned a mineral interest in the ranch on which Anadarko sought to begin its operations and objected to Anadarko's passing-through of the mineral reservoirs within Lightning's mineral estate. The Court determined that Anadarko was within its right to pass-through the minerals under the ranch to reach the minerals under the conservation area. Because Anadarko was not using, appropriating, or possessing any of the minerals under the ranch by passing-through their reservoirs, Anadarko was not infringing any of Lightning's property rights. In addressing Lightning's trespass claim, the Court analogized it to an airplane in that, while a plane passing across the surface of a property would be a trespass, a plane passing two miles above is not. To the Court, a drill or wellbore passing through a mineral estate is the same as a plane passing two miles above one's house.

In its appeal of the trial court's decision, Lightning expressed concern that it was being required to "trust" that Anadarko would not conduct any geophysical explorations or seismic surveys as it drilled through Lightning's mineral-bearing formations. The Court of Appeals dismissed this concern, stating that there was not sufficient evidence to demonstrate that Anadarko had or would conduct such explorations. Significantly, because Lightning abandoned this cause of action and did not raise its geophysical concerns before the

Supreme Court, the Supreme Court's opinion is devoid of any discussion concerning geophysical trespass.

Because Lightning discontinued its pursuit of its geophysical trespass claim, the question whether the seismic data obtained during horizontal drilling operations is subject to geophysical trespass claims remains somewhat unanswered. Moreover, the Court's record is silent as to whether Anadarko employed LWD techniques while drilling through Lightning's estate. However, pursuant to the Court's policy-heavy decision to deny a claim for trespass related to Anadarko's use of the mineral estate to facilitate drilling on its own lease, it appears unlikely that the Court would ever find support for the "property damage" necessary to bring a claim for seismic trespass.

Recently, in *Briggs v. Southwestern Energy Production Company*, 2018 Pa. Super. 79 (2018), the Pennsylvania Superior Court disagreed with the long-standing principle in Texas that a landowner needs to show physical damage to sue for subsurface trespass. The court in *Briggs* found the plaintiffs could recover for subsurface trespass from hydraulic fracturing even in the absence of physical damages to reservoirs or offset wells. In reaching its decision, the Pennsylvania court found subsurface trespass as a matter of law because "subsurface fractures, fracturing fluid, and proppant (sand added to fracking fluid) cross boundary lines and extend into the subsurface estate of an adjoining property for which the operator does not have a mineral lease, resulting in the extraction of natural gas from beneath the adjoining [] property" to which the landowner does not own a mineral interest. While *Briggs* involves subsurface trespass via hydraulic fracturing, the elimination of the physical damage requirement could have profound implications in the seismic context. If other states follow *Briggs*'s lead, operators and geophysical surveyors would have to ensure their survey methods do not extend into adjoining, unpermitted tracts.

Alternatively, there have been a host of commentators advocating for the elimination of the physical entry requirement altogether.¹¹ The potential of exploitation of the physical damage loophole—the gathering of valuable and reliable seismic data without physical entry onto the surface estate overlying the mineral estate—has increased with the advancements in 3-D seismic accuracy and affordability. This is particularly true for smaller mineral owners, where their acreage can easily be surveyed without physical entry. Despite this concern, to require permission from each potentially affected mineral owner would likely result in inefficient and delayed exploration, while

¹¹ See Sonya D. Jones, Time to Make Waves? A Discussion of the Outdated Application of Texas Law to Seismic Exploration, 38 Tex. Tech L. Rev. 429, 435 (2006) and Davis Mosmeyer, Comment, Ubi Jus Ibi Remedium: The Gap in

Texas Courts' Protection of Mineral Owners Against Unpermitted Seismic Exploration Without Physical Entry, 68 Baylor L. Rev. 797, 808 (2016).

simultaneously increasing transaction costs and risk assessments that will unduly burden the domestic oil and gas industry at a time where the margins are already dangerously thin. This issue will undoubtedly require reevaluation by the Texas Supreme Court sooner, rather than later, as the growing discontent for the seemingly archaic principles which underlie the aforementioned seminal cases continue to be attacked.

C. Measure of Damages

1. Actual Damages

Typically, the exploring party pays upfront for expected surface damage, along with the consideration paid for access to the surface, because they are easy to prove and measure. Additionally, any permitting agreements generally discuss compensation for routine land damages, including damage to crops, trees, water wells, irrigation systems, houses and other improvements. However, since modern geophysical exploration methods inflict little or no damage to the surface, the compensation often offers little, if any, recovery to the claimant. Finally, in the event that the land is damaged over and above its expected use as a result of the negligence of the surveying contractor, the exploring party is typically indemnified by the surveyor for any damages arising from its own negligence.

The calculation of damages for seismic trespass was discussed extensively by the Fifth Circuit in *Phillips Petroleum v. Cowden*, 241 F.2d 586 (5th Cir. 1957), aff'd on rehearing, 256 F.2d 408 (5th Cir. 1958). The court discussed three different possible measures: (1) the decrease in value of the mineral rights; (2) the market value of the right to conduct the geophysical survey; and (3) the value of the information received by the trespasser. The court found that Cowden could recover under either of the first two methods, but not the third.

2. Damages for Subsurface Trespass

a. *Loss of Speculative Value*

In a typical “loss of speculative value” case, the claimant alleges that the geophysical trespasser caused a diminution of lease value from publicizing negative information obtained through the wrongful geophysical survey. Basically, that the claimant’s leases are worth less after the geophysical survey than before the survey. In this circumstance, a mineral owner is entitled to recover under an action for trespass the amount that would reflect the difference between the value of the

minerals before and after the trespass. For example, if Phillips had obtained information about Cowden’s mineral rights which were detrimental and which had been revealed to third parties, Cowden may have been able to recover under the theory of damage to the speculative value of its mineral rights, as discussed in *Humble Oil & Refining Company v. Kishi*, 276 S.W. 190 (Tex. Comm’n App. 1925) (finding where the defendant wrongfully entered the property and drilled a dry hole indicating the absence of hydrocarbons, the proper measure of damages was the diminution in the value of the leasehold interest caused by the trespass).

Accordingly, pursuant to *Cowden* and *Kishi* it is arguably wrong to intentionally gather geophysical information about a mineral estate without the permission from the mineral owner via operations conducted on an adjacent surface estate. An award for loss of speculative value would logically follow. Moreover, if the mineral owner had denied the geophysical operator permission to make a direct entry, some courts might even entertain an award of exemplary damages *if* this conduct is viewed as willful or wanton. This issue was addressed by the San Antonio Court of Appeals in *Villarreal*, which reaffirmed the premise that a geophysical trespass alone is not actionable. A mineral-interest owner whose minerals were surveyed must demonstrate that the surveyors trespassed upon the surface estate above the minerals to establish a trespass claim. *Villarreal*, 136 S.W.3d at 269-70. Pursuant to *Villarreal*’s interpretation of *Cowden*, the law in Texas is that a mineral estate owner may sue a geophysical trespasser for surveying his minerals even if his property does not sustain physical injury, but only if the surveyor physically trespasses upon the surface estate above the minerals—even if the mineral-estate owner does not own the surface estate. The damages recoverable would be the “ascertainable market value” of the geophysical trespass, “independent of the benefit that [the surveyors] actually received” *Cowden*, 241 F.2d at 593. Accordingly, *Villarreal* essentially provides that seismic 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.¹² The *Villarreal* ruling protects the important right of geophysical companies to continue using invaluable 3-D seismic technology without the impediment of a few mineral owners who withhold consent.

¹² Owen L. Anderson & John D. Pigott, *Seismic Technology and Law: Partners or Adversaries?* 24 *Energy & Min. L. Inst. Ch. 11*, at 397 (2004).

b. *Market Value of Conducting Seismic Surveys (Assumpsit)*

For the second theory of recovery, the court recognized that “the right to enter upon lands of another for the purpose of making geophysical surveys ...is a valuable property right.” *Cowden*, at 590. After noting that no Texas court had previously answered the question, the court held that the mineral-interest owner could “waive the trespass and sue in assumpsit for the reasonable value of the use and occupation,” *Id.* at 590-92. The Fifth Circuit utilized this measure of damages (based on recovery in assumpsit) in holding the trespasser liable for compensation based upon the market value of an agreement which would have been reached by reasonable parties for the geophysical exploration actually conducted by the trespasser. Accordingly, the court held that even though the mineral interest owner was not actually injured, it could recover against the geophysical trespasser for “the reasonable market value of the use.” *Id.* at 593. The case was remanded for a determination of the value of the right to conduct the survey, and on remand the appellate court rejected the theory that allowed recovery based on the value of the information received by Phillips, limiting *Cowden*’s recover only to compensation for the use of that part of their property that was compiled by the survey regardless of the fact that they owned other contiguous property for which information was also revealed.

3. Non-economic Damages

In Texas, punitive damages are recoverable in trespass cases where the trespass is willful, meaning “an act that is wanton or malicious or actuated by evil intent.” *Teledyne Exploration Co. v. Klotz*, 694 S.W.2d 109, 111 (Tex. App.—Corpus Christi 1985, writ ref’d n.r.e.). In that case, Teledyne contacted Dr. Klotz and requested permission to conduct a seismic survey. Dr. Klotz agreed, but then asked whether Teledyne would use thumpers or explosives to create the shock waves necessary for the survey. When told Teledyne would blast, Dr. Klotz withdrew his permission and told Teledyne to “hold off.” Teledyne’s representative said he would “get back” with Dr. Klotz, but never did so before its crew commenced the clearing operation. The discussion of punitive damages in *Teledyne* related to surface damages to the land from improper blasting and clearing of the estate.

When discussing the availability of punitive damages, the *Teledyne* court also affirmed an award of \$50,000 for past and future mental distress damages

Klotz suffered as a result of the bulldozing of his property to facilitate a seismic survey without permission. Accordingly, although the author is unaware of any cases awarding punitive or mental anguish damages in the context of wanton and malicious seismic trespass, such a recovery could arise if there is public disclosure of seismic data (coupled with actual injury to the land) that is found to be malicious and/or intentional.¹³

IV. CONCLUSION

The resurgence in drilling as a result of hydraulic fracturing continues to push the envelope of what E&P companies will do to find the next profitable field; the use and interpretation of seismic data are paramount to success. Modern technology allows exploration companies to access valuable information about oil, gas and mineral deposits without the mineral owner’s permission and for now it appears they will incur no liability for trespass, so long as there was no physical entry upon the subject land.

Fortunately for plaintiffs bringing seismic trespass actions, advancements in geophysical surveying technology have not only made it easier to “lawfully” trespass, but they have also eased the burden on plaintiffs as they can now submit evidence in a form that can be easily understood by the common juror. Specifically, this is made possible because a fact finder, supplied with recorded and processed seismic data that is correctly placed in the context of property boundaries, can now simply determine whether interpretable seismic data has been acquired from an unauthorized tract and/or whether specific portions were properly redacted. The relative ease of determining whether such seismic data supports an action for trespass is starkly contrasted against the more difficult questions faced by a fact finder who is asked to determine from what tract hydrocarbons originate when produced by way of horizontal drilling and fracking methods—an expensive and difficult exercise for which the rule of capture was specifically crafted to prevent.

This leads to the inevitable question of what protection should the law give the owners of such property interests to prevent others from obtaining valuable geophysical information without paying for the right to obtain it? Courts should apply a balancing test which accomplishes both Texas’s overarching policy of encouraging efficient exploration and increased energy production, protected by the rule of capture, with the rights of mineral owners who are damaged by the unauthorized collection of seismic data. While some may argue that eliminating the requirement of physical

¹³ Note – plaintiffs cannot recover for mental anguish damages in Texas when the damages arise from the defendant’s negligence, as opposed to an intentional act.

invasion would be disastrous for exploration companies, in light of the technological advances in geophysical exploration techniques that rarely, if ever, actually damage the surface estate, Texas courts would have to expand the scope of geophysical trespass to encompass seismic and other waves passing through the property of another. Whether through the adoption of a cause of action providing relief notwithstanding the absence of a surface entry, or legislative solution effectuating similar results, careful consideration is a must to ensure geophysical trespass cases will continue to promote, rather than hinder, efficient geophysical operations.

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