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SECONDARY RECOVERY OF OIL & GAS --- THE RULE OF POSITIVE DOMINION

The following article is based on three premises: first, that efficient secondary recovery of petroleum reserves is a matter of considerable economic and legal importance; second, that the present laws of oil and gas serve inadequately to perform their requisite functions in regard to secondary recovery; third, that analysis of sparse and confusing case law, supplemented by analogy to related fields of property law, reveals a practicable doctrine of property rights which could serve as the basis for a legal construct satisfactory to the secondary recovery operator, the owner of adjacent mineral rights, and the public interest.

The shortcomings of secondary-recovery-related law are a lack of certainty due to inconsistent results in resolving problems and an obsolescence of principle as measured by the customary practices and technological realities of the petroleum industry. These shortcomings seem to be a result of the way oil and gas law has evolved in delayed reaction to the distinct technological advances in the industry. Unlike the engineers, who have no doctrine of *stare decisis*, the practitioners of the law have been unable to abruptly abandon their history, and as a result the law of oil and gas has often embodied vestiges of obsolete technology. The object of this article is to attempt a reconciliation of traditional property rights with the practical advances represented by secondary recovery operations.

THE IMPORTANCE OF SECONDARY RECOVERY OPERATIONS

The unfavorable ratio of increasing energy demands to decreasing energy supplies in the United States has dramatically emphasized the importance of maximum exploitation of petroleum resources.¹ The disproportionate share of world energy consumption by this country² further emphasizes the

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1. Crude oil and natural gas have contributed two-thirds of annual United States energy consumption since 1957; most of the other one-third is attributable to coal. W. LOVEJOY & P. HOMAN, *ECONOMIC ASPECTS OF OIL CONSERVATION REGULATIONS* 106 (1967).
2. The United States contains six percent of the world's population but consumes more than one-third of the world's total energy supply, and the rate

particular need for maximum production in the domestic oil and gas industry. Although the U.S. Geological Survey in 1965 estimated that 1 trillion barrels of crude oil might be discovered in this country³ (annual production in 1972 was less than 3.5 billion barrels),⁴ the critical factor in determining the amount of ultimate production is the efficiency of recovery.⁵ Exploration and future discovery can lead to greater production also, but as a finite resource diminishes, the cost of exploration increases in the face of fewer and fewer significant finds. Increasing the efficiency of recovery, on the other hand, generally represents a more constant cost/investment factor even as the market price increases, hence a more attractive option to oil producers.⁶

The most efficient means of increasing ultimate production is the employment of secondary recovery operations.⁷

is expected to increase in the future. T. BAUER, *NATURAL AND ENERGY RESOURCES* 91 (Industrial College of the Armed Forces, 1968).

3. *Id.* at 101; cf. Torrey, *Evaluation of United States Oil Resources as of January 1, 1966*, INTERSTATE OIL COMPACT COMMISSION 3 (1966) [hereinafter cited as Torrey], estimated the original content of reservoirs at 404 billion barrels.
4. Sweeney, *The Formation of the Interstate Oil Compact Commission Secondary Recovery Committee*, 14 INTERSTATE OIL COMPACT COMM'N COMM. BULL. 24 (1972).
5. As used here, the efficiency of recovery means the percentage of the original oil in place which is actually removed from the ground.
6. The future availability of crude petroleum products will be progressively more dependent upon the petroleum industry's ability to improve the efficiency of recovery for existing oil accumulations by the application of secondary recovery techniques. This situation is the result of the inability to discover adequate amounts of economic new reserves to replace the vast amounts of oil used annually.
VanWingen, *Foreword*, to G. LANGNES, J. ROBERTSON, & G. CHILINGER, *SECONDARY RECOVERY AND CARBONATE RESERVOIRS* at xi (1972) [hereinafter cited as Langnes].
7. The term "secondary recovery" means any fluid injection into an oil reservoir for the purpose of augmenting naturally occurring pressure to increase the flow of oil to the well bore, thereby more completely recovering the oil in place. In common usage the term "pressure maintenance" is applied to fluid injection begun while primary recovery is still productive whereas "secondary recovery" is applied to those operations begun after primary methods have ceased producing. The two are technically indistinguishable and will herein be treated as one. H. WILLIAMS, R. MAXWELL & C. MEYERS, *CASES AND MATERIALS ON THE LAW OF OIL AND GAS* 11 (2d ed. 1964) [hereinafter cited as WILLIAMS, MAXWELL & MEYERS]. As used herein, the term also encompasses those methods known as "unconventional", "improved fluid injection", or "tertiary" methods and including miscible displacement, chemical additives in waterflooding, and thermal recovery (*in situ* combustion, steam stimulation, steam drive). All of these methods involve subsurface injection and can encounter similar legal problems. Keeling, *The Application of Advanced Recovery Techniques in the Mid-continent Area*, 8 INTERSTATE OIL COMPACT COMM'N BULL. 11 (1966).

Early in the century, extraction by primary methods⁸ achieved 10-20 percent recovery of the oil originally in place. Current rates are less than 30 percent.⁹ In contrast, conventional secondary recovery methods normally improve recovery rates to 30-60% of the original oil in place, and advanced methods customarily achieve rates as high as 70-80%.¹⁰ One author offers the rule of thumb that the incremental recovery by secondary methods represents a 100% improvement for crude oil with specific gravity greater than 30° and a 50-100% improvement for gravities less than 30°¹¹ By 1965, 8,421 fluid injection projects accounted for 36.4% of the nation's total oil production.¹² At least 25 of the 31 oil producing states have recovered fluid injection projects¹³ and many states report that a majority of their oil production results from secondary recovery.¹⁴

In light of such figures, the clear public interest in conservation¹⁵ and maximum recovery of oil and gas¹⁶ must

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8. Primary production is that which results from "the natural flow of oil caused by the inherent pressure that originally existed in the pool." Reed v. Texas Co., 22 Ill.App.2d 131, 159 N.E.2d 641, 642 (1959).
 9. Based on 1966 figures of 404 billion barrels originally in place, 78 billion barrels cumulative production and 32 billion barrels primary reserve. Torrey, *supra* note 3, at 3.
 10. Elkins, *The Role of Improved Secondary and Tertiary Methods in Enhancing USA Domestic Oil Reserves*, 15 INTERSTATE OIL COMPACT COMM'N COMM. BULL. 12, 19 (1973) [hereinafter cited as Elkins]. Note however, that secondary recovery is not feasible in all fields. Waterfloods, for instance, are generally practical only at depths less than 11,000 feet and for crude oil of specific gravity in the range of 17°-46°. LANGNES, *supra* note 6, at 2-3.
 11. LANGNES, *supra* note 6, at 51. The authors cite the experiences in two Texas fields as examples. In one, the estimated primary recovery and secondary recovery figures were 20 percent and 62 percent respectively; in the other, the figures were 17 percent and 50 percent. *Id.* at 161.
 12. Torrey, *supra* note 3, at 14.
 13. U.S. BUREAU OF MINES, DEP'T OF THE INTERIOR, INFO. CIR. No. 8455, POTENTIAL OIL RECOVERY BY WATERFLOODING RESERVOIRS BEING PRODUCED BY PRIMARY METHODS (1970) [hereinafter cited as BUREAU OF MINES].
 14. Arkansas, 47 percent; Indiana, 65 percent; Kansas, 60 percent (in 59 counties); Kentucky, 50-60 percent; Pennsylvania, 95 percent; Utah, 72 percent. INTERSTATE OIL COMPACT COMMISSION SUMMARY OF SECONDARY RECOVERY AND PRESSURE MAINTENANCE RULES AND REGULATIONS IN THE UNITED STATES (1969). Oklahoma, 50 percent; Texas, 30 percent; Illinois, 75 percent. *Reports by States on Enhanced Recovery Activities*, 14 INTERSTATE OIL COMPACT COMM'N COMM. BULL. 26 (1972).
 15. "It is now undeniable that a state may adopt reasonable regulations to prevent economic and physical waste of natural gas." Cities Service Co. v. Peerless Oil & Gas Co., 340 U.S. 179, 185 (1950); *accord*, Champlin Refining Co. v. Corporation Commission of Oklahoma, 286 U.S. 210 (1932), Ohio Oil Co. v. Indiana, 177 U.S. 190 (1900).
 16. Support for conservation as a basic premise is not unanimous. Opponents of conservation point to continuing discovery of oil reserves, extraction of oil from oil shale and coal, and the prospects for nuclear energy development as the basis for contending that conservation of oil and gas is un-

favor the encouragement of secondary recovery methods. In addition to the offer of economical incentive,¹⁷ a prerequisite to effective encouragement of these methods is the development of an acceptable legal framework. While there is not justification to favor the secondary recovery operator legally, there is an absolute need to avoid unreasonable risk to him of liability for his conduct and to afford him a degree of certainty in appraising his legal position. Whereas considerations of contract law, real property conveyancing, or tax law might be foremost in the primary recovery legal context, in regard to secondary operations the salient factor is the potential for tort liability to a neighboring mineral owner.¹⁸ An examination of the tort aspects of the secondary recovery operation serves to identify the legal duties imputed to the operator while defining the protectable property rights of his neighbor. A workable legal framework must adequately recognize these property rights and balance them against the public policies favoring conservation through employment of secondary recovery.

TECHNOLOGICAL PARAMETERS¹⁹

Since the origin of oil and gas law, the petroleum industry has advanced technologically in several areas which bear on the question of secondary-recovery-related property rights. The following brief description of four such areas facilitates understanding of past court decisions and supports the proposition that novel legal solutions regarding secondary recovery relationships are needed.

necessary and uneconomical. WILLIAMS, MAXWELL & MEYERS, *supra* note 7, at 629.

17. Several states offer increased oil allowables for secondary projects. INTER-STATE OIL COMPACT COMM'N, STUDY OF CONSERVATION OF OIL AND GAS IN THE UNITED STATES 95 (1964). Tax incentives for secondary recovery are available under the provisions of INT. REV. CODE OF 1954, §§ 611 to 613.
18. See generally Bowen, *Secondary Recovery Operations—Their Values and Their Legal Problems*, 13 OIL & GAS INST. (SW. LEGAL FDN.) 331 (1962) [hereinafter cited as Bowen]; Keeton & Jones, *Tort Liability and the Oil and Gas Industry II*, 39 TEXAS L. REV. 253 (1961) [hereinafter cited as Keeton & Jones]; ones, *Tort Liabilities in Secondary Recovery Operations*, 6 ROCKY MT. MIN. L. INST. 639 (1961); Kennedy, *Tort Liability in Waterflood Operations*, 5 ALBERTA L. REV. 52 (1965) [hereinafter cited as Kennedy]; McElroy, *Waterflooding of Oil Reservoirs*, 7 BAYLOR L. REV. 18 (1955); 1 H. WILLIAMS & C. MEYERS, OIL AND GAS LAW §§ 227 to 230 (1972).
19. For a comprehensive discussion of secondary recovery technology see LANGNES, *supra* note 6.

(1) *Awareness of geological conditions within oil reservoirs.* Through extensive research, petroleum engineers have developed an understanding of important soil characteristics such as the size of sand grains, porosity and permeability within the reservoir, and interfacial forces between displacing and displaced fluids, plus structural conditions such as thief zones (causing bypass of oil) and barriers to flow such as faults.²⁰ The increased predictability resulting from these developments has encouraged the expansion of secondary recovery operations.

(2) *Refinement in measurement of recoverability.* Improved accuracy in estimating total amounts of oil in place, amounts recoverable from an entire reservoir, and amounts attributable to tracts within a reservoir has had an important impact on the feasibility of measuring damages and of working out proration formulas for unitization. Whereas several decades ago the courts took notice of measuring the exact quantity of oil under each tract,²¹ recent decisions indicate a willingness to rely heavily on expert analysis of reservoir potential.²²

(3) *Understanding of the dynamics of oil and gas migration.* Early decisions reflected an incomprehension of the underground movement of the fugacious minerals.²³ Today, the industry and the courts rely heavily on the predictability of the migration.²⁴ All major secondary recovery projects and many voluntary agreements—such as lease line injection projects where adjacent owners inject simultaneously near the lease line and realize reciprocal benefits from the induced flow²⁵—are based upon the accuracy of migration predictions.

20. *Id.*

21. *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362, 65 A. 801 (1907); *Wettengel v. Gormley*, 160 Pa. 559, 28 A. 934 (1894).

22. *Greyhound Leasing & Financial Corp. v. Joiner City Unit*, 444 F.2d 439 (10th Cir. 1971); *Elliff v. Texon Drilling Co.*, 146 Tex. 575, 210 S.W.2d 558 (1948).

23. *Brown v. Spilman*, 155 U.S. 665 (1895); *Brown v. Vandergrift*, 80 Pa. 142 (1875).

24. *Greyhound Leasing & Financial Corp. v. Joiner City Unit*, *supra* note 22.

25. Two unreported Kansas cases regarding such an arrangement held that there could be no liability for damages caused to wells by fluid injection pursuant to the agreement. *Poe v. Sinclair Oil & Gas Co.*, Civ. No. 2727 (D. Kan. 1964); *Dawson v. Sinclair Oil & Gas Co.*, Civ. No. 2728 (D. Kan. 1964); as cited in Lawson, *Recent Developments in Pooling and Unitization* 23 OIL & GAS INST. (SW. LEGAL FDN.) 145, 208 (1972).

(4) *Advanced methods of recovery.* In addition to basic gas injection and waterflooding, many other injection techniques have been developed. Sometimes called "tertiary" when applied after secondary recovery has been exhausted, the advanced methods include the following, employed either singly or in combination: steam injections with a single bore (called huff-puff), steam drive, combustion of the reservoir contents, injection of solvents and additives, and injection of a miscible slug driven by a less valuable fluid. The objective of these methods is to thin the oil by heating it or to alter its permeability, thereby making it flow more easily and allowing it to be more thoroughly swept from the reservoir. The cost of such methods ranges as high as \$1.50 per barrel.²⁶ Aside from this high cost, it is also noteworthy that secondary recovery projects are not automatically successful; failures can result from engineering analysis errors related to geologic factors, unforeseen drainage, unexpected bypassing of oil, or mechanical problems, or from economic difficulties resulting from insufficient capital, changes in pro-rations and allowables, or changes in prices.²⁷

THE TORT LIABILITY PROBLEM IN SECONDARY RECOVERY OPERATIONS

Outside the scope of this article are many topics which may affect secondary recovery operations in an indirect way. Conventional tort liability problems accompany many oil recovery operations: the surface damage caused by destructive vibrations from blasting,²⁸ by vibrations from drilling,²⁹ by objects hurled onto neighboring property by explosives,³⁰ or by the escape of deleterious substances;³¹ or the subsurface

26. Elkins, *supra* note 10, at 12-17. Cf. A preliminary cost estimate for a typical 1968 water injection project was \$264,800. U.S. BUREAU OF MINES, *supra* note 13, at 27.

27. LANGNES, *supra* note 6, at 15.

28. States Exploration Co. v. Reynolds, 344 P.2d 275 (Okla. 1959), Pate v. Western Geophysical Co. of America, 91 So.2d 431 (La. 1956). See generally, Smith, *Rights and Liabilities on Subsurface Operations*, 8 OIL & GAS INST. (SW. LEGAL FDN.) 1 (1957); Annot., 20 A.L.R. 2d 1372 (1951).

29. Fairfax Oil Co. v. Bolinger, 186 Okla. 20, 97 P.2d 574 (1939).

30. Sparks v. Tennessee Mineral Products Corp., 212 N.C. 211, 193 S.E. 31 (1937); Longtin v. Persell, 30 Mont. 306, 76 P. 699 (1904); Masterson, *The Legal Position of the Drilling Contractor*, 1 OIL & GAS INST. (SW. LEGAL FDN.) 183 (1949).

31. Keeton & Jones, *Tort Liability in the Oil and Gas Industry*, 35 TEXAS L. REV. 1 (1956), and cases cited therein.

trespass which attaches to the bottoming of a well across a lease line;³² or the trespass and ouster by an operator wrongfully under claim of right to do so.³³ Other aspects of damage to mineral rights by geophysical trespass³⁴ are also excluded, though many of the property considerations involved are applicable to secondary problems. Lessor-lessee relationships in secondary recovery situations are not specifically discussed.³⁵

The problem which dominates the legal aspects of secondary recovery operations is the liability of the operator for the subsurface invasion of neighboring property by injection fluids.³⁶ Since any physical entry upon the property of another—upon, above, or below the surface—constitutes a trespass,³⁷ the tortious nature of the problem is patent. Due to the unusual circumstances inherent in the recovery of fugacious mineral, to the unique damages in issue where minerals of great value but questionable recoverability are replaced by substances of less value, and to the strong public policies involved regarding conservation, the courts have differed in defining the precise nature of the wrong. Decisions from various jurisdictions have fitted the subsurface trespasses into one of at least three categories of related theories of liability: common law trespass; intrusion-based theories; and interference-based theories.³⁸ Emerging from this seeming diversity of tort theory, however, is an identifiable body of commonly protected property rights. These common elements of the tort theories upheld by various courts must be

32. *Alphonzo E. Bell Corp. v. Bell View Oil Syndicate*, 24 Cal.App.2d 587, 76 P.2d 167 (1938); *Union Oil Co. of California v. Mutual Oil Co.*, 19 Cal. App.2d 409, 65 P.2d 896 (1937); CAL. CIVIL PROCEDURE CODE § 349 3/4 (West, 1954).

33. *Martel v. Hall Oil Co.*, 36 Wyo. 166, 253 P. 862 (1927); *Humble Oil & Refining Co. v. Kishi*, 276 S.W. 190 (Tex. 1925).

34. Annot., 67 A.L.R.2d 444 (1959).

35. See generally Merrill, *Implied Covenants and Secondary Recovery*, 4 OKLA. L. REV. 177 (1951).

36. See generally Hughes, *Legal Problems of Water Flooding, Recycling, and Other Secondary Operations*, 9 OIL & GAS INST. (SW. LEGAL FDN.) 105 (1958) [hereinafter cited as Hughes]; Walker, *Problems Incident to Acquisition, Use and Disposal of Repressuring Substances Used in Secondary Recovery Operations*, 6 ROCKY MT. MIN. L. INST. 273 (1961); Annot., 93 A.L.R.2d 457 (1964).

37. W. PROSSER, *THE LAW OF TORTS* § 13, at 63 (4th ed. 1971).

38. Different categorization and discussion of the varied theories are found in Bowen, *supra* note 18, Keeton & Jones, *supra* note 18; Kennedy, *supra* note 18; Lynch, *Liability for Secondary Recovery Operations*, 22 OIL & GAS INST. (SW. LEGAL FDN.) 37 (1971) [hereinafter cited as Lynch].

encompassed by any rule purporting to generalize secondary-recovery related property rights.

Underlying the tort theory within a given jurisdiction is the accepted theory of mineral ownership in oil and gas. Generally, the oil-producing states treat the mineral interest holder as either the owner of the oil as it exists in the ground within his property boundaries—the ownership-in-place theory³⁹—or as the possessor of the right to reduce that oil to his possession and ownership by removing it from the ground—the non-ownership theory.⁴⁰ For the purposes of this discussion, the significant fact is that the extent to which property is legally protected from invasion is not dependent on the ownership theory held.⁴¹ Rather, under either theory the courts have tried to incorporate the traditional common law property concept by which surface boundaries extend vertically down to the center of the earth and up to the heavens.⁴² Also, within a given jurisdiction, the migratory nature of oil and gas—hence the designation as fugacious minerals—has been accommodated by reliance to some extent on the competing doctrines of the Rule of Capture and Correlative Rights.

The Rule of Capture⁴³ states that the owner of a tract of land acquires title to the oil or gas he produces from wells on his land, though part of the oil or gas may have migrated from adjoining lands.⁴⁴ The rule resulted from the early misconception of the physical nature of gas and oil in the ground. Believing that oil flowed freely underground, the courts analogized the mineral to a wild animal, reasoning that the owner into whose property the oil flowed could claim title to the mineral just as he could claim title to an animal which

39. *Elliff v. Texon Drilling Co.*, *supra* note 22.

40. *Miller v. Ridgley*, 2 Ill.2d 223, 119 N.E.2d 759 (1954); *Callahan v. Martin*, 3 Cal.2d 110, 43 P.2d 788 (1935).

41. 1 H. WILLIAMS & C. MEYERS, OIL AND GAS LAW §§ 203 to 203.4 at 26-47 (1972), recognizes two additional theories, qualified ownership and ownership of strata, and considers some states undecided. However, "[t]he liability *vel non* of the injector to the adjoining landowner does not appear to turn upon the view held in the state as to the nature of the landowner's interest in oil and gas." *Id.* §§ 204.5 at 53.

42. *Shell Oil Co. Inc. v. Manley Oil Corp.*, 37 F.Supp. 289 (E.D.Ill. 1941); 2 W. BLACKSTONE, COMMENTARIES 18 (5th ed. 1773).

43. Shank, *Present Status of the Law of Capture*, 6 OIL & GAS INST. (SW. LEGAL FDN.) 257 (1955).

44. *Elliff v. Texon Drilling Co.*, *supra* note 22.

migrated there.⁴⁵ As a more advanced technology demonstrated that oil existed in reservoirs, that it was capable of migration but was not freely flowing, the Rule of Capture was modified by the developing doctrine of Correlative Rights.⁴⁶

Correlative Rights is a generic term for those protections afforded the property interests of an owner of oil and gas which is part of a common source of supply.⁴⁷ Though founded in common law, the specific protections afforded mineral owners vary statutorily by jurisdiction; the most significant correlative rights are (1) assurance of a right to appropriate a just and equitable share in the proceeds from a common source of supply,⁴⁸ (2) protection from unreasonable drainage,⁴⁹ and (3) protection from damage to the common source of supply.⁵⁰ These protections of individual rights are actually conservation measures, on the premise that protecting correlative rights provides a stabilizing influence on the petroleum industry and discourages wasteful practices resulting when private owners race to satisfy their own interests.⁵¹ Though these protections effectively restrict traditional prerogatives of property owners, the basis for limiting property rights to prevent waste⁵² is firmly established as falling within the lawfully exercised state police powers for the general welfare.⁵³ The constitutionality of conservation statutes thereby enacted was affirmed beyond

45. *Westmoreland & Cambria Natural Gas Co. v. DeWitt*, 130 Pa. 235, 18 A. 724 (1889); *Brown v. Vandergrift*, 80 Pa. 142 (1875).

46. *Ohio Oil Co. v. Indiana*, 177 U.S. 190 (1900).

47. In a literal sense, the right of the mineral owner to invoke the Rule of Capture is a correlative right, but the term is used to describe the other rights, generally acting in opposition to the Rule of Capture.

48. WYO. STAT. § 30-216(a) (3) (i) (1967); *Ohmart v. Dennis*, 188 Neb. 260, 196 N.W.2d 181 (1972).

49. OKLA. STAT. ANN. Title 52, § 87.1 (Cumm. Supp. 1971), and OKLA. STAT. ANN. Title 52 § 274 (1969).

50. NEB. REV. STAT. § 57-903 (1968), NEB. REV. STAT. § 57-905(3) (Cumm. Supp. 1972). See generally Jones, *Protection of Correlative Rights in Wyoming*, 3 LAND & WATER L. REV. 363 (1968), contending that legislative protection of correlative rights is superfluous as it adds nothing to extant common law rights.

51. INTERSTATE OIL COMPACT COMM'N, STUDY OF CONSERVATION OF OIL AND GAS IN THE UNITED STATES 202 (1964).

52. Waste includes not only physical waste but such specifically defined acts as unnecessary dissipation of reservoir energy, inefficient storage, and reduction in ultimate recovery of a pool. WYO. STAT. § 30-216(a) (Cumm. Supp. 1973).

53. *Lombardo v. City of Dallas*, 73 S.W.2d 475 (Tex. 1934); *Chicago, Burlington and Quincy Railway Company v. People of the State of Illinois ex rel Drainage Commissioners*, 200 U.S. 561 (1906).

dispute as early as 1900.⁵⁴ Correlative rights are explicitly or impliedly protected in the conservation statutes of 31 states.⁵⁵

The differing theories of tort liability for subsurface invasion by secondary recovery injection fluids have evolved within the limitations of these correlative rights and Rule of Capture concepts which are unique to oil and gas law. The following discussion is not intended as a complete examination of the theories, but rather as an analysis of their common elements. The differences between the theories are less significant than the similarities when one attempts to define property rights in a manner compatible to the prevailing laws of all the oil-producing jurisdictions.

COMMON LAW TRESPASS: Many subsurface incursions are common law trespass⁵⁶ actions since the intentional movement of a substance which results in the crossing of a boundary underground is an invasion of another's property⁵⁷ just as clearly as is the crossing on the surface and subsequent wrongful drilling of a well.⁵⁸ Bottoming of a slant well under a neighbor's land,⁵⁹ damage to structures by seismic vibrations,⁶⁰ and subsurface damage to fresh water wells by disposal of salt water⁶¹ have resulted in recoveries of injunctions based on a trespass theory. Contrarily, a similar situation of intrusion across lease lines by salt water disposal was held not actionable, in spite of unauthorized use of land, where there was no damage shown.⁶² One writer has suggested that all other theories are obfuscatory in secondary recovery

54. *C.C. Julian Oil & Royalties Co. v. Capshaw*, 145 Okla. 237, 292 P. 841 (1930); *Ohio Oil Co. v. Indiana*, 177 U.S. 190 (1900); Annot., 78 A.L.R. 834 (1932).

55. Alabama, Alaska, Arizona, Arkansas, Colorado, Florida, Georgia, Idaho, Illinois, Iowa, Kansas, Kentucky, Louisiana, Michigan, Mississippi, Nebraska, Nevada, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, West Virginia, Wyoming.

56. Any unauthorized entry onto the land of another. 3 W. BLACKSTONE, COMMENTARIES 209 (5th ed. 1773).

57. W. PROSSER, THE LAW OF TORTS, § 13, at 69-70 (4th ed. 1971); 2 W. BLACKSTONE, COMMENTARIES 18 (5th ed. 1773).

58. *Humble Oil & Refining Co. v. Kishi*, 276 S.W. 190 (Tex. 1925).

59. *Hastings Oil Co. v. Texas Co.*, 149 Tex. 347, 234 S.W.2d 389 (1950).

60. *States Exploration Co. v. Reynolds*, 344 P.2d 275 (Okla. 1959).

61. *West Edmund Hunton Lime Unit v. Lillard*, 265 P.2d 730 (Okla. 1954).

62. *West Edmund Salt Water Disposal Ass'n v. Rosecrans*, 204 Okla. 9, 226 P.2d 965 (1950). This result is contrary to common law trespass for which at least nominal damages were available even without show of damage. W. PROSSER, THE LAW OF TORTS § 13, at 66 (4th ed. 1971).

situations and that trespass is the only appropriate remedy for the invasion of another's land by injection fluids.⁶³ There is little support to be found for such a contention, however, and the one case which can be read to rely on trespass theory in a true secondary recovery situation contains elements of several theories.⁶⁴ Overall, the trespass theory is impractical as a vehicle for solving secondary recovery injection problems. Because trespass is based on the tenet that the property owner is entitled to absolutely exclusive use and possession, there is an inherent contradiction with the realities of oil and gas law embodied in the rules of capture and correlative rights. Additionally, as discussed *infra*, there is reason to doubt another trespass theory tenet, the inviolability of vertical boundaries.

Interference-Based Theories: Many cases have based liability on the nature of the interference. Whether couched in terms of nuisance, negligence per se, or strict liability,⁶⁵ these theories reflect the pivotal factor of the tort as the fact of interference with the possession, use and enjoyment of property.⁶⁶ Though the general nature of the intruder's activity might be considered indirectly, his care or the specific nature of his conduct is disregarded.⁶⁷ The intruders' intent or lack of intent is not significant nor is his adherence to recognized standards of care.⁶⁸ In such cases there is liability only for damages actually caused, not for the trespass itself. The California statute providing for damages liability from secondary recovery fluid invasions is directly in point, as the actionable trespass is not enjoined;⁶⁹ only the interference is in issue, not the act of the intruder.

63. Kelley, *Trespass in Secondary Recovery*, 17 Sw. L.J. 591 (1963).

64. *Tidewater Oil Co. v. Jackson*, 320 F.2d 157 (10th Cir. 1963).

65. For a well-reasoned criticism of the failure by courts to properly distinguish between strict liability and negligence, see Green, *Hazardous Oil and Gas Operations: Tort Liability*, 33 TEXAS L. REV. 574 (1955) [hereinafter cited as Green].

66. An action of nuisance is different from an action of trespass. An action of trespass is the action which was brought where the body or the land of a person had been invaded. An action of nuisance is the action which was brought where there was no invasion of the property of somebody else, but where the wrong of the defendant consisted in so using his own land as to injure his neighbour's.

Kine v. Jolly, [1905] 1 Ch. 480, 487-88.

67. *Fairfax Oil Co. v. Bolinger*, *supra* note 29 (vibration damage).

68. *Id.*

69. CAL. CIV. PRO. CODE § 731(c) (West. Supp. 1974).

The possible basis for many of these cases is the famous case of *Rylands v. Fletcher*⁷⁰ which introduced the hazardous activity concept and a form of strict liability for damages caused thereby. In that case, defendant accumulated water on his own property. The water eventually flooded plaintiff's mine. The defendant was held liable because the damages resulted from a non-natural use of the land, regardless of the way in which he conducted himself.⁷¹ The decision is based upon the protection of plaintiff's property rights and the nature of the interference therewith, rather than upon the conduct of the defendant.⁷²

The modern cases tend to attach strict liability to private nuisance resulting from activities regarded as abnormally hazardous or merely abnormal.⁷³ Kansas imputes absolute liability where pollution damage has been defined a nuisance, and has applied the surface pollution statute to subsurface invasion.⁷⁴ Even the Texas courts, which profess a negligence approach, have applied strict liability to subsurface pollution of fresh water wells where defendant violated a specific administrative rule.⁷⁵

In all cases of strict liability, the type of harm threatened and the class of persons protected are well marked out,⁷⁶ but in application to a specific case, only the nature of the interference is significant. One may infer from these cases a strong policy against certain types of harm and a strong judicial interest in granting to a property owner some form of absolute protection from interference, but the equally strong inference arises that such protection will be afforded only where the rights involved are defined with requisite certainty.

Intrusion-Based Theories: Although no cases of subsurface invasion by secondary recovery injection fluids are

70. L.R. 3 H.L. 330 (1868).

71. *Id.*

72. *Fletcher v. Rylands*, 159 Eng. Rep. 737 (H. & C. 1865). Lord Bramwell, in his trial court dissent, subsequently upheld, characterizes the crux of the plaintiff's case as follows: "[Y]ou have violated my right, you have done what you had no right to do, and you have done me damage."

73. *Gulf Oil Corp. v. Hughes*, 371 P.2d 81 (Okla. 1962).

74. *Polzin v. Nat'l Co-op. Refinery Ass'n*, 175 Kan. 531, 266 P.2d 293 (1954).

75. *Gulf Oil Corp. v. Alexander*, 291 S.W.2d 792 (Tex. 1956).

76. W. PROSSER, *THE LAW OF TORTS* § 79, at 517-519 (4th ed. 1971).

directly in point,⁷⁷ many analogous cases have relied on some variation of the theories of negligence or fault, finding liability on the basis of the manner in which the intruder has carried on the activity which proximately caused the damage.⁷⁸ Liability is contingent on the fault of the intruder in his non-conformance with a definable standard of due care,⁷⁹ measurable by customary industry practice and administrative regulations. Though the cause of action would be based on the nature of the intruder's act, difficulty could be encountered in providing damages, proximate cause, and foreseeability of the harm. Articles cited above (note 78) amplify the ramifications of applying a negligence/fault theory.

Negligence was proffered as the only acceptable theory in a Texas opinion, *Turner v. Big Lake Oil Co.*⁸⁰ (intrusion by salt water from flooded ponds), but the opinion is confusing.⁸¹ Another Texas case, involving surface damage by intruding oil, disallowed liability in the absence of a show of negligence.⁸² The Texas case most similar to a secondary recovery situation is *Commanche Duke Oil Co. v. Texas Pac. Coal & Oil Co.*, involving damage to neighboring wells resulting from plaintiff's use of explosives in shooting his own oil well. The court based liability on a finding of negligence in the use of too much nitroglycerine.⁸³ Also, in *Elliff v. Texon Drilling Co.*, liability was founded on negligence in drilling procedure, causing a well to blow out and crater, damaging neighboring wells.⁸⁴

Several older cases involving the flooding of a neighbor's mines offer a close analogy to fluid injection invasions. In these cases the courts relied on fault or negligence in holding that one is not accountable for permitting water to

77. One gas re-cycling case does include dicta to the effect that negligence would have to have been shown in order to find liability. *Tidewater Associated Oil Co. v. Stott*, 159 F.2d 174 (5th Cir. 1946).

78. For a comprehensive discussion of tort theories in secondary recovery and argument supporting a negligence/fault theory as the proper approach, see Lynch, *supra* note 38, and Bowen, *supra* note 18.

79. W. PROSSER, *THE LAW OF TORTS* § 30, at 143 (4th ed. 1971).

80. 128 Tex. 155, 96 S.W.2d 221 (1936).

81. See Green, *supra* note 65.

82. *Cosden Oil Co. v. Sides*, 35 S.W.2d 815 (Tex. 1931).

83. 298 S.W. 554 (Tex. 1927).

84. The analogy to the secondary recovery situation is admittedly strained, but the opinion of the court indicates a probable willingness to extend the holding to damage caused by fluid injection.

flow naturally from his own property into a neighbor's mine, but one is liable for non-conformance to standards of ordinary care if he contributes to the flow.⁸⁵

The theory of liability based on negligence in subsurface invasions is an attractive one. It takes into account the reasonableness or unreasonableness of the secondary recovery operation. Although the theory does not serve to clarify relevant property rights of the mineral owners, it does indicate this essential consideration. Only by so taking into account the nature of an intruder's act can a theory of liability provide the necessary freedom of operation essential to the encouragement of secondary recovery operations.

THE EFFECT OF ADMINISTRATIVE APPROVAL, UNITIZATION STATUTES, & PUBLIC POLICY

One aspect of the secondary recovery legal scheme which arises in many cases is the effect of approval by the appropriate state administrative agency.⁸⁶ In most states the commission having authority to approve an injection program must base its decision on findings that correlative rights will be protected, that waste will be prevented, and that ultimate recovery will be increased.⁸⁷ The doctrines of primary jurisdiction⁸⁸ and collateral estoppel⁸⁹ afford finality to an administrative determination of matters within the authority of the commission, but the issue of tort liability has not been determined by a commission even when it finds that correlative rights will be protected.⁹⁰

The decided cases have given varied weight to agency approval. Texas courts in one case held that where valid

85. *Spadra Creek Coal Co. v. Eureka Anthracite Coal Co.*, 104 Ark. 359, 148 S.W. 644 (1912); *Horner v. Watson*, 79 Pa. 242 (1875).

86. See generally Driscoll, *Secondary Recovery of Oil and Gas: Significance of Agency Approval*, 13 KANSAS L. REV. 481 (1965).

87. WYO. STAT. §§ 30-219 & 30-222 (Cumm. Supp. 1973).

88. 2 AM. JUR. 2d *Administrative Law* §§ 788-797 (1962). See Convisser, *Primary Jurisdiction: The Rule and Its Rationalizations*, 65 YALE L.J. 315 (1955).

89. Where an issue has actually been adjudicated by a valid and final judgment, the determination is conclusive between the parties and their privies. Unlike other *res judicata* effects, the doctrine does not apply to which only might have been adjudicated but were not. See 46 AM. JUR. 2d JUDGMENTS § 415 *et seq.* (1969).

90. *Gregg v. Delhi-Taylor Oil Corp.*, 162 Tex. 26, 344 S.W.2d 411 (1961).

agency approval of a reasonable injection program has been obtained, a trespass does not occur when injection fluids move across lease lines and therefore the operation is not enjoined.⁹¹ One trial court decision, subsequently reversed, found a similar invasion to constitute a trespass, but considered commission approval to render it non-enjoinable nonetheless.⁹² One writer has suggested that agency approval should immunize the operator from all liability for operations pursuant to the plan.⁹³ In one case a federal court awarded damages where a Kansas court had disallowed injunction for the same invasion.⁹⁴ Courts have denied injunction,⁹⁵ and in one case damages,⁹⁶ simply because the complaining party had previously refused participation in an approved program.

The precedential value of these cases is not clear. Because most of them deal with inconclusive evidence of damages, past or prospective, and because the question of actual compliance with agency directive has not been clearly decided, a narrow reading of any one of the cases would be indicated. The complexity of secondary recovery operations and relationships is such that these prior cases could then be distinguished from a disputed issue.

Although prior, lawful agency approval appears to provide grounds for denial of injunctive relief, the ultimate tort liability issue is not capable of resolution by an administrative body acting before the fact. In the absence of a re-assessment of property rights such as is proposed below, the best approach is that provided by statute in California. Injunction is specifically denied for subsurface invasion from reasonable secondary recovery operations, and damages liability is mitigated by the amount of the benefits conferred on the plaintiff by the operation.⁹⁷

91. *Railroad Commission of Texas v. Manziel*, 361 S.W.2d 560 (1962).

92. *Gregg v. Delhi-Taylor Oil Corp.*, *supra* note 90.

93. *Hughes*, *supra* note 36.

94. *Tidewater Oil Co. v. Jackson*, 320 L.2d 157 (10th Cir. 1963); *Jackson v. State Corporation Commission*, 186 Kan. 6, 348 P.2d 613 (1960).

95. *Reed v. Texas Co.*, 22 Ill.App.2d 131, 159 N.E. 2d 641 (1959).

96. *Tidewater Associated Oil Co. v. Stott*, *supra* note 77.

97. CAL. CIV. PRO. CODE § 731(c) (West. Supp. 1961). California also provides statutory exemption for damages caused from operations conducted without negligence pursuant to an approved project. CAL. PUB. RES. CODE § 3320.5 (West. 1972).

Paralleling the effect of administrative approval in specific cases is the overall impact of unitization statutes⁹⁸ and express public policy favoring secondary recovery of oil and gas.⁹⁹ These measures provide evidence of at least legislative sentiment and at most legislative mandate that in a conflict between the wishes of a private mineral owner and the interests of society in efficient petroleum recovery, the mineral owner must yield.¹⁰⁰ Though an owner overruled by societal policy must always receive compensation for minerals removed, it is important to realize that the individual owner has interests other than immediate monetary gain. For example, an owner might wish to postpone development on the basis of personal reasons, tax considerations, or his own assessment—hardly unreasonable—that his resources will be worth more in the future. One author has identified four other major reasons for opposition to the principle of unitization:

- (1) Unitization is viewed as contrary to the free enterprise ethic and as being socialistic.
- (2) It is felt that the administrative responsibility is placed in the hands of major operators who are held in distrust by independents skeptical of the prospects for impartiality.
- (3) It is doubted that officials are capable of apportioning fairly even if acting in good faith.
- (4) A conservative attitude favors the status quo. There is the feeling that the industry is doing just fine without unitization.¹⁰¹

98. Twenty-five states have adopted some form of unitizations statute: Alabama, Alaska, Arkansas, California, Colorado, Florida, Georgia, Indiana, Kansas, Louisiana, Michigan, Mississippi, Missouri, Nebraska, Nevada, New York, North Dakota, Oklahoma, Oregon, South Dakota, Tennessee, Utah, Washington, Wyoming.

99. ILL. REV. STAT. Ch. 104 § 89 (Supp. 1973); NEB. REV. STAT. § 57-901 (1968); *Reed v. Texas Co.* *supra* note 95.

100. Various compulsory unitization statutes permit the inclusion of between 5 percent and 37 percent of the interest owners in spite of their protests. *E.g.*, WYO. STAT. § 30-222(b) (Cum. Supp. 1973), requiring the approval of at least 80 percent of the interest owners in order to compel the unitization.

101. L. LOVEJOY & P. HOMAN, *ECONOMIC ASPECTS OF OIL CONSERVATION REGULATION* 106 (1967).

Notwithstanding these opposing views, the compelling facts favor continued encouragement of secondary recovery operations and unitizations. Any re-evaluation of secondary-recovery-related property rights must take into account this unrelenting trend.

THE RULE OF POSITIVE DOMINION¹⁰²

The problems associated with secondary recovery operations have received considerable attention from writers in the field. Discussed *infra* are five proposals that have been offered as solutions to the legal complications involved; none, however, have been well received by the courts. The following suggested rule proposes a different approach by offering a re-definition of fundamental property rights in oil and gas. As will be demonstrated by application to recent cases, the rule provides not only the abstract certainty essential to the encouragement of secondary recovery operations, but also the guidelines for practical decision-making in the courts. It is suggested that the Rule of Positive Dominion (hereinafter referred to as the Rule) encompasses the important and constructive features of the various tort theories discussed previously, and at the same time it follows logically upon the modern concepts of property ownership.

STATEMENT OF THE RULE

PROPERTY RIGHTS IN OIL AND GAS VEST ONLY TO THE EXTENT THAT THE INTEREST HOLDER ESTABLISHES POSITIVE DOMINION OVER THE MINERALS IN THE GROUND.

POSITIVE DOMINION IS EFFECTED WHEN (1) PHYSICAL INFLUENCE HAS BEEN EXERTED OVER THE PARTICULAR STRATUM CONTAINING THE MINERALS, AND (2) THE PRESENT CAPACITY TO ACHIEVE PHYSICAL POSSESSION OF THE MINERALS HAS BEEN ESTABLISHED.

102. "Dominion, when full, is defined to be the right in a thing from which arises the power of disposition and the right of claiming it from others." *Baker v. Westcott*, 73 Tex. 129, 11 S.W. 157, 159 (1889). "Dominion implies the right to the property to the exclusion of others." 2 W. BLACKSTONE, COMMENTARIES 1 (5th ed. 1773).

The application of the Rule of Positive Dominion is uncomplicated. When an individual, *N*, acquires oil and gas interests in Blackacre, he owns the exclusive right to drill into fugacious substances located within the vertical boundaries of the land. When he drills a well, *N* establishes positive dominion over oil or gas formations reached by the well bore to the extent he is capable of recovering the oil or gas. That is, mere intrusion effects instantaneous positive dominion over oil and gas recoverable by primary methods— it is immediately recoverable. That portion of the oil and gas recoverable only by secondary recovery methods does not come within *N*'s positive domain until such methods are initiated, rendering the mineral presently recoverable. If instead *N*'s well contacts fluids forced under Blackacre by the injection from an adjacent secondary recovery operator, *O*, *N* has established positive dominion over only what he finds, be it gas, oil, salt water, or whatever. Should *N*'s well contact oil which is being pressured by *O*'s injection project, *N* establishes dominion over whatever oil will flow from his well, source of pressure notwithstanding, because this oil is now immediately recoverable by *N*. If on the other hand, where *N* has not drilled a well and *O*'s project sweeps the oil out from under Blackacre, *N* has suffered *damnum absque injuria* because he did not have a vested interest in the oil swept away. There has been no interference with or conversion of minerals over which *N* exercises positive dominion. It is important to note that the proposed rule does not in any way lessen *N*'s rights against a slant driller. Only the legal interest holder possesses the right to physically enter or drill within the vertical boundaries of Blackacre. The oil and gas beneath the surface are not fair game for the first taker.

As regards *N*'s subsurface boundaries and the extent of his potential subsurface rights, the rule is fair and unambiguous. In keeping with *N*'s property rights in the air above Blackacre, which exist only to the extent he can occupy or use the space,¹⁰³ so also do his subsurface rights exist only to the extent he exercises positive dominion over the property. Both

103. In *Re Honolulu Rapid Transit Co. Ltd.*, 507 P.2d 755 (Hawaii 1973).

above and below the surface, *N* has the right to use the property at any level and to the very edge of his boundaries. He may drill a well, thereby claiming subsurface strata, or he may build a skyscraper over every square inch of the land. But in either case, he cannot absolutely exclude invasion into a level which he is not capable of using reasonably. Violation of *N*'s rights by another are compensable to the extent of diminution in value of those minerals over which *N* exercised dominion.

THE AIRSPACE ANALOGY

The only aspect of the rule which clearly departs from traditional property rights concepts is the disregard of the sanctity of vertical boundaries. This departure is not unprecedented.

The non-adherence to strict vertical property boundaries first emerged in regard to ownership of the space above the surface. The analogy of above-surface boundaries to subsurface boundaries follows quite naturally from the fact that the extension of surface boundaries in both directions traditionally emanated from the same common law maxim: *cujus est solum ejus est usque ad coelum et ad inferos*.¹⁰⁴

The problem of legally protecting indefinite vertical boundaries was recognized early in the development of the common law, but at that time the issue was raised only rhetorically.¹⁰⁵ When applied to practical situations, the doctrine was modified by pragmatic construction. For example, in a case involving a wire crossing over the land of another, a New York court found that land ownership extended above the land only within limitations, which in that case meant "within the bounds of any structure yet erected by man."¹⁰⁶

104. "To whomsoever the soil belongs, he owns also to the sky and to the depths." BLACK'S LAW DICTIONARY 453 (Rev. 4th ed. 1968). "Land hath also, in its legal signification, an indefinite extent, upwards as well as downwards." 2 W. BLACKSTONE, COMMENTARIES 18 (5th ed. 1773).

105. "You must prove that the projection is a trespass; it may be a very nice question.—I recollect a case, where I held that firing a gun loaded with shot into a field was a breaking of the close. . . . Would a trespass lie for passing through the air in a balloon over the land of another?" *Pickering v. Rudd*, 1 Starkie 56, 171 Eng. Rep. 400, 401 (1815).

106. *Butler v. Frontier Telephone Co.*, 186 N.Y. 486, 79 N.E. 716, 718 (1906).

With the advent of frequent air travel, the courts had little difficulty in further limiting the effect of the maxim. They simply refused to interpret it literally.¹⁰⁷ Various cases limited the maxim in specific terms: to an owner's dominant right of occupancy of the airspace above his land for purposes incident to the use and enjoyment of the surface;¹⁰⁸ to a right in the space within which the surface owner has a reasonable possibility of possession;¹⁰⁹ or, most recently, to ownership of as much space above his ground as he can occupy or use in connection with the land.¹¹⁰ In all of these cases, invasion of space outside the reasonable limit was not actionable. The U.S. Supreme Court held as early as 1946 that the doctrine that ownership of land extends to the periphery of the universe has no place in the modern world, and that recognition of any such claim is contrary to the public interest.¹¹¹

The application of the airspace analogy to subsurface property boundaries took place soon after the air travel cases first reached the courts. In holding that a sewer procured by condemnation at a depth greater than 150 feet was not an encumbrance (in breach of a deed covenant), a New York court stated the analogy in the following terms:

It therefore appears that the old theory that the title of an owner of real property extends indefinitely upward and downward is no longer an accepted principal of law in its entirety. Title above the surface of the ground is now limited to the extent to which the owner of the soil may reasonably make use thereof.

By analogy, the title of an owner of the soil not be extended to a depth beyond which the owner may not reasonably make use thereof.¹¹²

A concept similar to the proposed Rule of Positive Dominion was mentioned in a well-reasoned dissent in the

107. See generally Annot., 69 A.L.R. 316 (1930); Annot., 83 A.L.R. 333 (1933); Annot., 99 A.L.R. 173 (1935) and cases cited therein.

108. *Swetland v. Curtiss Airports Corp.*, 55 F.2d 201 (6th Cir. 1932).

109. *Thrasher v. City of Atlanta*, 178 Ga. 514, 173 S.E. 817 (1934).

110. *In Re Honolulu Rapid Transit Co. Ltd.*, *supra* note 103.

111. *United States v. Causby*, 328 U.S. 256 (1946).

112. *Boehringer v. Montalto*, 142 Misc. 560; 254 N.Y.S. 276, 278 (1931).

1929 Kentucky case of *Edward v. Sims*.¹¹³ In that case, the court allowed plaintiff to force the closing of defendant's tourist attraction, a scenic cavern, pending determination of whether the cavern extended under plaintiff's property. Objecting to this recognition of property rights in one who has no entrance to the cave many feet below the surface, Justice Logan stated the following in his lengthy dissent:

. . . The true principle should be announced to the effect that a man who owns the surface, without reservation, owns not only the land itself, but everything upon, above, or under it which he may use for his profit or pleasure, and which he may subject to his dominion and control. But further than this his ownership cannot extend. It should not be held that he owns that which he cannot use and which is of no benefit to him, and which may be of benefit to others.

. . . .

. . . Therefore, let it be written that a man who owns land does, in truth and in fact, own everything from zenith to nadir, but only for the use that he can make of it for his profit or pleasure. He owns nothing which he cannot subject to his dominion.¹¹⁴

THE RULE APPLIED

The practical legal problems accompanying the crossing of lease lines by injection fluid attach to a limited number of situations; two relatively recent cases illustrate the most likely occurrences leading to legal conflict. It is in light of these and other actual cases that one must assess the Rule of Positive Dominion and such other proposals a have been offered a comprehensive approaches to the secondary recovery legal dilemma.

The secondary recovery legal conflict usually involves a variation on one of three hypothetical situations involving *O*, the secondary recovery operator, and *N*, the owner of neighboring mineral estates bounding *O*'s project:

113. 232 Ky. 791, 24 S.W.2d 619 (1929).

114. *Id.* at 622.

Case #1: *N* is actively producing oil from his own wells. *O*'s injection fluid destroys the productivity of *N*'s wells. A significant variable in this situation is the question of whether *N* is in primary or secondary recovery.

Case #2: *N* has no active recovery operations. *O*'s injection fluid sweeps the oil out from under *N*'s property.

Case #3: *N* objects to the intrusion by *O*'s injection fluid, but recovers from his own wells oil unrecoverable except for the pressure provided by *O*'s project.

The 1971 Oklahoma case of *Greyhound Leasing & Financial Corp. v. Joiner City Unit*¹¹⁵ is illustrative of situation #1. In *Greyhound*, plaintiff *N* was an interest owner in two oil and gas leases and two wells alleged to have been damaged permanently by injection fluid from the unitized waterflood project of defendant, *O*. *O*'s project was a voluntary unitization approved by the Corporation Commission; *N* had refused to be included in the unit. The invading fluid was injected a mile from the lease boundary and the flood had been in progress for nearly a year prior to the damage to *N*. Prior to the interference, *N*'s wells had been producing by primary methods.

The court awarded *N* approximately \$530,000 on the basis of four main findings affirmed on appeal: (1) Involvement by *N* in the commission hearings, and his subsequent acts in keeping himself apprised of the flood's progress did not constitute assumption of the risk or consent to the intrusion; (2) The fluid invasion constitutes a common law private nuisance as modified by the Oklahoma constitution's prohibition of depriving an individual of property without compensation; (3) The measure of damages is the diminution of recoverable reserves; (4) The Corporation Commission does not have jurisdiction over an action for damages, notwithstanding that the unit operation had been approved.¹¹⁶

Hypothetically applying the Rule of Positive Dominion to the *Greyhound* case, the results are the same. *N*'s two

115. 444 F.2d 439 (10th Cir. 1971).

116. *Id.*

wells established positive dominion over his portion of the reservoir. Interference with *N*'s vested interest was actionable, the damages measurable by the amount of established potential recovery denied to *N*. The only debatable question of fact would be the exact amount of presently recoverable oil. Whether presently recoverable oil would include potential secondary recovery would be a fact question to be contingent to *N*'s showing of feasibility and intent to conduct such operations.

The significance of the Rule is demonstrated by this application not because of the result, but because of the reasoning upon which the result is based. By clarifying the relationship of the parties the rule illustrates the necessary limit beyond which public policy considerations regarding secondary recovery cannot be extended without express statutory foundation. The result in *Greyhound* serves merely as a case in point. More importantly, the Rule in this application defines clearly the various interests involved, highlighting the considerations upon which legislation could and should be based. In the absence of compulsory unitization, the Rule does permit a single operator to impede the progress of a large waterflood project, but only because that operator has clearly established his right to do so. This clarification of interests serves the cause of unitization better than does any polemical arguments favoring the steamroller approach to public policy considerations. Unlike the atmosphere of uncertainty now prevalent, the situation under the Rule would be one in which the rights and obligations of the parties would be clearly delineated. It is only within such parameters that intelligent legislation and consistent court actions are forthcoming.

The 1969 Nebraska case of *Baumgartner v. Gulf Oil Corp.*¹¹⁷ is illustrative of problem #2. *N* owned the oil and gas lease in land adjoining *O*'s waterflood project. *O*'s operation was a voluntary unitization with commission approval which *N* had refused to join. (The case arose prior to the passage of Nebraska's compulsory unitization statute.) *O*'s injection fluid swept the oil from under *N*'s land. *N* had not

117. 184 Neb. 384, 168 N.W.2d 510 (1969).

drilled a well. The oil under his land was not economically recoverable by primary methods, but if *N* had drilled a well prior to the intrusion he could have recovered oil being pressured by *O*'s waterflood. The trial court awarded recovery for the full amount of the oil displaced, basing the judgment on a common law trespass theory. The Nebraska Supreme Court reversed, holding that *N* could not be permitted to profit from his refusal to join in a unitization project. Rather than deny any recovery, however, the court inexplicably awarded recovery up to the amount of profit *N* would have realized had he drilled his own well, even though that profit would have been attributable to *O*'s waterflood.¹¹⁸ *N* recovered what he could have realized from primary and secondary recovery, though he conducted no drilling or injection. The enigmatic holding of the court seemed to reflect an attempt to honor simultaneously (1) the express Nebraska policy favoring secondary recovery, (2) the commission approval of the voluntary project, (3) the correlative rights of *N*, and (4) *N*'s fundamental property rights. The inconclusive decision is directly attributable to the contradictions inherent in the four factors. This was a case crying out for a doctrine of realistically defined property rights.

As was the case in *Greyhound*, the application of the Rule to the *Baumgartner* case presents no difficulty. *N* would recover nothing. At no time did *N* establish positive dominion over any oil. He suffered *damnum absque injuria* if he suffered at all.

The true value of the Rule in this situation derives not from the ease of application, but from the contribution it would have made to the pre-injection understanding of the legal situation by all parties involved. *N* would have understood his risk in refusing to join the unit without taking action to drill on his lease. *O*, for his part, could have proceeded with some assurance regarding his rights. Whereas the court decision provides little guidance for mineral owners in slightly different situations, the result under the Rule would have provided as much certainty as can be found anywhere in the law.

118. *Id.*

The application of the Rule to situation #3 is amply illustrated by varying slightly the facts in *Baumgartner*. Had *N* in fact drilled a well prior to the invasion by the injection fluid, #3 would have resulted: *N* would have recovered oil pressured by *O*'s flood. The result under the Rule would then agree with what the court held in *Baumgartner*. *N* having established positive dominion over the oil recoverable by secondary methods—a present capacity to recover though a result of *O*'s injection—he would have been entitled to the value of that amount of oil. Whatever he physically recovered would then be offset against this total value in determining *O*'s liability, so that in most such situations there would probably be no net damages. Regardless of the specific results, the recognition of the Rule would have enabled both *N* and *O* to understand their relative rights and obligations as soon as *N* drilled his well.

In applying the Rule to these situations, one important aspect of secondary recovery legal problems that is not fully resolved is the question presented by suits for injunction against injection projects. Under prevailing law, many courts have denied injunctive relief because a project was reasonable and had been approved by the appropriate administrative authority.¹¹⁹ Although these decisions are inextricably bound up with procedural doctrines relating to administrative law and construction of statutory provisions relating to the extent of commission authority,¹²⁰ the ultimate decision must be largely dependent on the court's definition of plaintiff's subsurface property rights. As a result, adherence to the Rule of Positive Dominion could clarify such decisions, con-

119. *E.g.*, *Jackson v. Corporation Commission*, *supra* note 94; *Railroad Commission of Texas v. Manziel*, *supra* note 91.

120. *Tidewater Oil Co. v. Jackson*, *supra* note 94.

A fluid injection damage situation not mentioned in the three hypothetical cases involves the significance of agency approval: *O* conducts a fluid injection operation either without approval or in a negligent manner, and the total potential recovery of the reservoir is diminished. Under the Rule, mineral owners in other portions of the reservoir have not been damaged unless they have previously established positive dominion. As discussed in the text, *supra* at 15 & 16, exclusive authority over injection operations has been granted to administrative agencies which must find that waste will be prevented and correlative rights protected before an operation is approved. Therefore, the negligent or non-approved operator is properly answerable to the state rather than to other mineral owners whose claim of damage has not been clearly established. Statutory provisions for criminal or state civil penalties would seem to be the appropriate remedy in such situations.

tributing significantly to consistency and the elimination of uncertainty in this type of action. The most satisfactory result, irrespective of property theory upheld, would be the statutory denial of injunction against approved projects as now prevails in California.¹²¹

ALTERNATIVE PROPOSALS

The proposed rule is not the first attempt to simplify the fluid injection dilemma. At least five writers have responded to the compelling need for clarity in this confused area. The following discussion undoubtedly oversimplifies each proposal, but the general approach of each one should be understandable when considered in the context of the situations discussed heretofore.

(1) Williams and Meyers have suggested that a "negative rule of capture" has developed, providing that the migration of secondary recovery injection fluids into another's lease should be treated as a corollary to the Rule of Capture, hence not actionable.¹²² The idea has been mentioned in several decisions,¹²³ but it has not been adopted in any jurisdiction. This proposal would seem to be unsatisfactory in application to the hypothetical situation #1 discussed *supra*, where pre-existing neighboring wells are damaged since one would not expect the allowing of such damage with impunity. The proposal is best applied in situations such as #2 or in gas storage and recycling situations.

(2) Several writers¹²⁴ have proposed that the operator of an approved injection project be without liability if he conducts the operation in accordance with the accepted plan. This proposal has been discussed primarily in regard to lessee-lessor relationships, where it has considerable merit, and further extension of the concept is appealing. The one overriding objection is the procedural inability of an administrative agency to fairly determine the issue of tort liability in

121. CAL. CIV. PRO. CODE § 731(c) (West Supp. 1961).

122. 1 H. WILLIAMS & C. MEYERS, OIL AND GAS LAW §§ 204.5, 222 (1972).

123. *E.g.*, Baumgartner v. Gulf Oil Corp., *supra* note 116; Railroad Commission of Texas v. Manziel, *supra* note 91.

124. *E.g.*, Hughes, *supra* note 36.

evaluating the proposed project prior to the fact. The courts are unlikely to extend the doctrine of primary jurisdiction to such extremes. To do so would be to acquiesce in a usurpation of their authority, and the prevailing statutes from which the commissions derive their authority do not support such a result.

(3) A comprehensive proposal has been put forth by Dean Kuntz in his revision of Thornton¹²⁵ and in a 1964 article *Recent Developments in Oil and Gas Law*.¹²⁶ Appraising the problem from the standpoint of correlative rights, he suggests that two such rights have emerged in regard to secondary recovery: (a) The right to fair opportunity to conduct secondary recovery operations, and (b) the right to participate in secondary operations conducted by another. Taken together, these two correlative rights would lead to a fully satisfactory resolution of injection fluid problems. The only objection to this approach is that the judicial interpretations required in its application are unlikely to be more clear or consistent than those which have been decided up to now. In essence, the proposed theory accomplishes indirectly what the Rule of Positive Dominion does directly. Such a fundamental alteration of property rights should not be approached tangentially, but should instead be accomplished in an unequivocal way in order to avoid divergent interpretation and results.

(4) A provocative comment in an article by Dean Keeton and Mr. Lee Jones alludes to another comprehensive solution.¹²⁷ Reserving discussion of the suggestion for a subsequent article, the authors rely on the airspace analogy, *supra*, and propose that the reasonableness of the operator's conduct, the public and private interests involved, and the neighbor's prospective use of a subsurface reservoir should all be considered in determining a proper theory. The precise approach is not discussed, so the manner in which the solution would be articulated and the property or tort relationships thereby affected is a matter of speculation.

125. 1 E. KUNTZ, OIL AND GAS §§ 4.8(c) and (d) (Supp. 1971).

126. 10 PRACTICAL LAWYER 65 (1964).

127. Keeton & Jones, *supra* note 18, at 270.

(5) In an article covering all facets of the problem,¹²⁸ Mr. Thomas W. Lynch argues forcefully that the universal acceptance of the theory of fault as the single approach would accomplish the desired purpose. He has included a proposed standard of care (based upon the evidentiary condition upon which the commission based its approval) and a proper measure of damages (the difference between plaintiffs net gains, with and without secondary recovery), so the theory is complete in all respects. As was mentioned earlier, the major drawback to the fault-only approach to these problems is its failure to clarify the rights of the neighboring landowner. In addition, the fact that the application depends on an authoritative determination of whether the operator has adhered to an approved plan and whether his acts fall within the prescribed standard of care would result in too many cases in which litigation is unavoidable.

In summary, the proposals offered to de-mystify the problem of secondary recovery fluid invasions have not proved satisfactory. Each proposal either fails to deal with some facet of the problem or provides a solution lacking the desirable clarity and certainty of result in its application.

CONCLUSION

Secondary recovery of oil and gas is of increasing legal and economic importance. Previously accepted tort theories provide an inadequate legal construct to encourage such operations and to balance fairly the competing interests of operator, neighboring mineral leaseholder, and public policy. Solutions which have been proposed have provided reasonable approaches to various aspects of the situation, but the proposals have offered fragmentary solutions or theories unacceptable to the courts. It is suggested that the only practical solution is a re-evaluation of fundamental property rights in oil and gas such as is here offered by the Rule of Positive Dominion.

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128. Lynch, *supra* note 38.