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Maximizing the recovery of oil and gas resources has become an important national energy goal. In this article, the author addresses the possibility of federal administrative orders requiring secondary and tertiary operations (STR) on leases within federal unit agreements. Issues surrounding such orders are addressed, including the impact of STR orders on offshore leases and problems created by conflicting state conservation laws.

LEGAL ISSUES IN IMPLEMENTING SECONDARY AND TERTIARY RECOVERY OPERATIONS ON FEDERAL OIL AND GAS LEASES

*Douglas V. Fant**

The federal government's desire to increase revenues from use of federal lands and its policy to make the United States less dependent on foreign energy sources has prompted the federal government in its role as lessor of public and Outer Continental Shelf (OCS) lands to seek increased oil and gas production from those lands.[1] Additionally, with world oil prices remaining stable around thirty dollars a barrel more lessees are attempting to maximize production and extend the lives of older oil fields and leases by employing secondary and tertiary recovery techniques.[2]

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1. *See, e.g.*, the report prepared for the U.S. Department of Energy, Bartlesville Energy Technology Center, entitled *Enhanced Oil Recovery in the Gulf of Mexico* (Lewin and Associates, May 1982).
2. Secondary recovery of hydrocarbon resources includes all methods of resource extraction in which the lessees utilize energy sources which are extrinsic to the natural pressures in the reservoir.

   A subcommittee of the American Petroleum Institute defined "secondary recovery" more formally as "the oil, gas, or oil and gas recovered by any method (artificial flowing or pumping) that may be employed to produce them through the joint use of two or more well bores. Secondary recovery is generally recognized as being that recovery which may be obtained by the injection of liquids or gases into the reservoir for the purpose of augmenting reservoir energy." AMERICAN PETROLEUM INSTITUTE, SECONDARY RECOVERY OF OIL IN THE UNITED STATES 255 (1942).

   Tertiary recovery generally involves enhancing the characteristics of the reservoir through the use of chemicals or heat so as to produce hydrocarbons. "Enhanced recovery

The confluence of stable oil prices, increasing experimentation with secondary and tertiary recovery techniques, and growing federal revenue needs, raises the question of whether the agencies responsible for leasing federal lands and for managing oil and gas operations on federal lands, the Minerals Management Service (MMS) or Bureau of Land Management (BLM), could order a federal oil and gas lessee or a state oil and gas lessee within a federal unit agreement[3] to participate in a secondary or tertiary recovery project (STR operations).[4]

Secondary and tertiary recovery operations refer to a lessee's effort to stimulate oil production after a reservoir's original or primary pressure, which forces oil to the wells, has been dissipated. STR operations involve a number of processes. The most common methods include injection of gas or water into an underlying oil or gas pool to maintain or increase reservoir pressure,[5] or injection of steam or chemicals with water into the reservoir so as to improve the migration of resources to the producing wells. Continued high world oil prices have in part promoted increased experimentation with more exotic (and costly) techniques to increase oil production from currently producing fields.[6]

Although the issue of the power of the BLM, MMS, or the predecessor agency for administering federal oil and gas leases, the United States Geological Survey (USGS), to compel STR operations could arise in a variety of factual situations involving federal lands, the three most likely STR orders would apply to:

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of crude oil requires a means for displacing oil from the reservoir rock, modifying the properties of the fluids in the reservoir and/or reservoir rock to cause movement of crude oil in an efficient manner, and providing the energy and drive mechanism to force its flow to a production well." *Hearings before the Subcommittee on Energy of the Senate Committee on Finance*, 93rd Cong., 1st Sess. 570 (1973).

3. *See infra* note 10 and accompanying text.
4. Pursuant to a recent order of former Secretary of the Interior James Watt, the MMS administers operations on Outer Continental Shelf lands, while the BLM administers operations on public or onshore lands. *See* Secretarial Order No. 3087, issued December 3, 1982; implemented 48 Fed. Reg. 8982 (1983).
5. Generally lessees do not reinject oil back into the reservoir since the primary purpose for drilling any lease is the production of any underlying oil. Moreover, there are cheaper and more abundant fluids such as water to employ for fluid-drive purposes.
6. There are a panoply of enhanced recovery techniques such as alkaline flooding (a water flooding technique utilizing alkali metals); conventional steam drive injection (injection of steam into one set of wells so as to displace oil toward a second set of wells); cyclic steam injection (the alternating of steam injection and oil production from the same set of wells); enhanced heavy oil recovery; immiscible gas displacement (injection of non-hydrocarbon gas into an oil reservoir); in situ combustion (combustion of oil in the reservoir, sustained by continuous air injection, to displace unburned oil toward producing wells); microemulsion flooding (a water flooding technique in which a surfactant system is injected in order to enhance oil displacement toward producing wells); miscible fluid displacement (same as immiscible fluid injection, except that injected fluid and reservoir oil are expected to mix and be produced together); and polymer augmented waterflooding (a waterflooding technique similar to microemulsion flooding).

   This list is not complete as new and more sophisticated enhanced recovery techniques are constantly being evaluated.

   Costs for engaging in secondary recovery operations rose an average of 16.7% in 1982. *See Costs and Indexes for Domestic Oil and Gas Field Equipment and Production Operations*, NATIONAL ENERGY INFORMATION ADMINISTRATION, Forrestal Building, Washington, D.C.

(1) a federal oil and gas lease within the purview of a federal unit agreement;

(2) an oil and gas lease on state lands which is within the purview of a federal unit agreement; and

(3) a non-unitized federal oil and gas lease.[7]

I. FEDERAL OIL AND GAS LEASE WITHIN A UNIT AGREEMENT

It would be difficult for the federal government to require a multitude of federal oil and gas lessees whose leases are independently located over a common oil and gas reservoir to produce each lease so as to conserve oil and gas resources in the entire reservoir. Instead, Congress has provided the MMS with the power to require lessees to combine their efforts as a remedy for conserving oil and gas resources where production from two or more adjacent leases located on a common oil and gas reservoir is involved.[8]

A. *Unit Agreements.*

The federal government has traditionally resorted to unit agreements to resolve production problems where two or more federal leases are located on the same oil and gas reservoir. Use of a unit agreement allows production and operations to be conducted on a reservoir-wide basis rather than on a lease-by-lease basis. Reservoir-wide management of the reservoir prevents unnecessary wells from being drilled and prevents a wasteful dissipation of the reservoir's energy. This, in turn, usually increases the ultimate recovery of oil and gas resources from the reservoir.[9]

7. Another variable to consider within the context of these categories is whether the MMS order relates to oil and gas leases on lands located on or offshore.

8. "The Secretary may at any time prescribe and amend such rules and regulations as he determines to be necessary and proper in order to provide for the prevention of waste and conservation of the natural resources of the outer Continental Shelf, and the protection of correlative rights therein . . . (4) for unitization, pooling and drilling agreements . . . ." 43 U.S.C. § 1334(a) and (a)(4) (Supp. V 1981).

Onshore the power of the Secretary to require unitization is somewhat unclear: "For the purpose of more properly conserving the natural resources of any oil or gas pool, field, or like area, or any part thereof . . . lessees thereof . . . may unite with each other . . . in collectively adopting and operating under a cooperative or unit plan of development . . . whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest." 30 U.S.C. § 226(j) (1976).

The preceding paragraph does not specifically empower the Secretary to require unitization; however, subsection (j) later generally authorizes the Secretary to prescribe conditions and "approve operating, drilling, or development contracts . . . whenever in his discretion, the conservation of natural products or the public convenience or necessity may require it or the interests of the United States may be best subserved thereby." *Id.*

The power to enter into contracts to "conserve natural products" likely includes the power to require onshore lessees to unitize adjacent federal leases in order to maximize production of oil and gas resources beneath the leases.

In any case, the issue of compulsory unitization rarely arises onshore since most lessees will voluntarily enter into a unit agreement if the lessees believe that greater oil and gas production will result from unitizing adjacent leases.

9. *See, e.g.*, Kaveler, *The Engineering Basis for and the Results from the Unit Operation of Oil Pools*, 23 TUL. L. REV. 331 (1949).

It is technically impossible to recover 100% of the oil and gas resources from an oil and gas reservoir. During initial production from a field, natural reservoir energy forces petroleum into the well bore where it can then be pumped to the surface. There are three

A discussion of the significance of a unit agreement on the MMS' power to compel STR operations best begins with definition of the term "unit." The term is generally defined as

> an area of land, deposit, or deposits of minerals, stratum or strata, or pool or pools, or a part or parts thereof, as to which parties with interests therein are bound to share minerals produced on a specified basis and as to which those having the right to conduct drilling or mining operations therein are bound to share investment and operating costs on a specified basis. A unit may be formed by convention or by order of an agency of the state or federal government empowered to do so. A unit formed by order of a governmental agency is termed a 'compulsory' unit.[10]

Operations on a unit are conducted under a unit agreement. A "unit agreement" is defined by the MMS as "an agreement or plan of development and operation for the recovery of oil and gas made subject thereto as a single consolidated unit without regard to separate ownerships and for the allocation of costs and benefits on a basis as defined in the agreement or plan."[11]

In short, once the leases are unitized, the lessees are bound by contract or by governmental order to engage in a common development and production scheme. Lease boundaries are ignored for the purposes of the unit agreement. Not surprisingly, unit provisions concerning development then displace inconsistent express or implied provisions of the underlying lease.[12] Thus, the unit agreement itself may provide for secondary or tertiary recovery operations to be undertaken and the lessee would be contractually bound thereby.

Unit agreements usually spell out drilling obligations which are necessary to retain leases within the unit; however, those obligations relate to drilling of individual wells and therefore are spacial in character and limited in duration. Generally, questions of STR operations are not specifically addressed in federal unit agreements.

The current federal unit agreement forms are silent as to the power of the lessor to require secondary and tertiary recovery operations. The model unit agreement for onshore units, GFS-Form 45, and the proposed model unit agreement for OCS operations, GFS-Form 201, contain no express provisions by which the MMS or BLM could compel lessees within that unit to engage in STR operations.[13]

natural sources of reservoir energy in an underground reservoir: (1) gas expansion; (2) water encroachment; and (3) gravity. Once those forces have been dissipated, oil and gas production will either decline or cease. Usually natural reservoir energy will help produce 20% or 30% of the oil and gas resources in a reservoir. By artificially maintaining or increasing the reservoir's energy through, e.g., STR operations, additional resources may be recovered. For an extended discussion of petroleum geology and engineering, *see* INTERSTATE OIL COMPACT COMMISSION, OIL AND GAS PRODUCTION (University of Oklahoma Press, 1951).

10. LA. REV. STAT. ANN. § 31:213 (West 1975).
11. 8 H. WILLIAMS & C. MEYERS, OIL AND GAS LAW 798-99 (1982).
12. 6 H. WILLIAMS & C. MEYERS, *supra* note 11, at 734.
13. The Federal Land Policy and Management Act excludes Outer Continental Shelf Lands from the definition of "public lands." 43 U.S.C. § 1702(e) (1976). A separate form of unit agreement is necessary for onshore and offshore federal oil and gas leasing.

B. Purpose of the Unit Agreement.

Even if a unit agreement contains no express provisions mandating participation in secondary or tertiary recovery operations, one of the basic purposes behind unitization is to avoid wasteful production practices and thereby maximize recovery of the resources in place in the oil and gas reservoir.[14] Thus, this purpose should be read into the terms of the unit agreement and should influence the extent of production obligations thereunder.

Two factors, however, limit the MMS' power to compel any particular leasehold operation. First, if the lessee does not wish to comply with an MMS order, the lessee may always relinquish his leasehold rights and avoid imposition of any obligation which the lessee perceives to be onerous or unfair.[15] Given the significant investments necessary to develop oil and gas leases, however, especially offshore leases, it is unrealistic to assume that any lessee will lightly relinquish a producing lease. Second, any MMS order must fall within a zone of reasonableness and not be confiscatory of the lessee's leasehold rights.[16] For example, it would not be reasonable for the MMS to order STR operations where the entire underlying reservoir is not subject to common control under the order.[17] Despite these general constraints, however, the MMS and BLM have a statutory and regulatory basis for compelling secondary and tertiary recovery operations.[18]

C. The Authority of the MMS to Require STR Operations-Offshore Leases.

Federal offshore oil and gas production operations are governed primarily by a single statute, the OCS Lands Act, as amended.[19] Section 5(a) of the Act imposes a general duty upon the Secretary of the Interior to *conserve the natural resources of the OCS.*[20] This language is the basis for MMS orders requiring OCS lessees to restrict oil or gas production so as to maintain original reservoir pressure.[21] However, controlling rates of oil

14. *See, e.g.,* 6 H. WILLIAMS & C. MEYERS, *supra* note 11, at § 913.1. Unit agreements are not specifically created in order to engage in STR operations. STR operations, if successful, do increase production and increase the ultimate recovery of resources from the reservoir.
15. 43 C.F.R. § 3320.1 (1982) (offshore); 43 C.F.R. § 3108.1 (1982) (onshore).
16. Sun Oil Company v. United States, 572 F.2d 786 (Ct. Cl. 1978).
17. It should also be noted that the following discussion is not applicable to individual leases, but rather to entire units. It is entirely unrealistic to assume that the MMS would order STR operations on a lease which covered only a portion of an underlying reservoir, since adjacent lessees would then receive a windfall of increased production at the expense of the unitized lessees who paid for and engaged in the STR operations.
18. In dicta, in one case involving an oil and a gas lease on the same allotted tribal lands, one court stated that the lessor would have "just cause to complain, if an inefficient operation of the leases resulted from the failure of the lessees to use improved [production] methods which came in common use during the terms of the leases." Utilities Prod. Corp. v. Carter Oil Co., 72 F.2d 655, 659 (10th Cir. 1934). However, the case involved a dispute between the oil lessee and the gas lessee over rights to certain gas production and the issue of compulsory STR operations was not at issue in the case. Otherwise the issue of whether a lessor may compel a lessee to engage in STR operations has not been addressed by a court.
19. 43 U.S.C. §§ 1331-1356 (1976 & Supp. V 1981).
20. 43 U.S.C. § 1334(a) (Supp. V 1981). *See also* Section 10 of the OCS lease form which iterates the lessee's obligation: "After due notice in writing, the lessee shall drill such wells and produce at such rates as the lessor may require in order that the leased area or any part thereof may be properly and timely developed and produced in accordance with sound operating principles." (On file at *Land & Water Law Review* office).
21. *See, e.g.,* OCS Order No. 11, Gulf of Mexico Area.

and gas production to preserve and prolong the reservoir's original energy and thereby prolong primary production is a common oilfield practice and does not constitute an STR operation.[22]

STR operations require the lessee to alter reservoir conditions, for example by increasing reservoir pressure, rather than merely producing the reservoir under the same conditions in which the reservoir was originally found. The conjunction of principles behind the OCS Lands Act and certain developmental duties which are generally implied in oil and gas leases suggest that the MMS could require some form of gas/water/chemical stimulation of underlying reservoirs in order to enhance the ultimate recovery of oil and gas in place.

The conservation and protection mandate can be interpreted to allow the MMS to maximize the ultimate recovery of resources by ordering use of secondary and/or tertiary recovery techniques.[23] First, generally recognized implied development covenants can be read into a federal OCS oil and gas lease. Implied covenants generally have been read into federal oil and gas leases as well as into state oil and gas leases or oil and gas leases between private parties.[24] It is difficult for the lessor and lessee to agree when signing a lease and prior to any drilling how future production operations should be conducted. The fact that the lessor is the federal government alters neither the traditional interests of a lessor in maximizing recovery of resources nor the inability of either the lessor or lessee to surmise what production techniques will insure maximum recovery. Thus, the policy rationale behind application of the covenants to state or private oil and gas leases is equally applicable to oil and gas leases issued on federal lands.[25]

Unknown factors like geology, economic conditions, or reservoir mechanics will affect how the lessee conducts operations. Thus, unlike most other business contracts, an oil and gas lease leaves the heart of the contract—production-related matters—open so that future events rather than foresight shape development of the lease. Implied covenants, therefore, have been judicially created to facilitate management of post-development operations.[26]

The unique parameters of this business transaction have led to implied development-related covenants in oil and gas leases. The implied covenant of reasonable development requires a lessee, after initiation of oil or gas

22. See Interim Notice to Lessees for implementing Section 606(d)(1) of the OCS Lands Act Amendments of 1978: Maximum Attainable Rate of Production.
23. Maximization of production is not to be confused with the maximum efficient *rate* of production which is also governed by the MMS. *See supra* note 22. The BLM may also establish maximum efficient rates of production for onshore leases. *See* Section 4 of competitive and Section 4 of non-competitive public domain lands lease forms; and Section 5 of competitive and Section 5 of non-competitive acquired lands lease forms. Obviously, any rate of production which exceeds the maximum efficient rate of recovery would not constitute "conservation of natural resources" as, e.g., a premature "watering out" loss of reservoir pressure, or loss of viscosity could result. This would lead to an overall recovery of oil or gas which is less than that recovery which would have occurred without the lessee engaging in such primary production methods.
24. *See, e.g.,* Sun Oil Co. v. United States, 572 F.2d 786, 810 (Ct. Cl. 1978).
25. *See* 5 H. WILLIAMS & C. MEYERS, *supra* note 11, at § 832.
26. *Id.*

production from the lease, to drill such additional wells as a reasonably prudent operator would drill under similar circumstances.[27] Or, more simply stated, the lessee is under an obligation to use due diligence in producing resources from the lease. A second catchall covenant, the covenant to use reasonable care and due diligence in developing an oil and gas lease, requires a lessee to maximize the total amount of resources that are produced.[28] The duties of reasonable development and due diligence have been found to arise both in the primary as well as the secondary term of the lease.[29]

The rationale for the implied covenants is clear. The lessee covenanted with the lessor to produce the oil and gas resources on the lease and to pay a lessor a royalty on the resources produced.[30] Failure of the lessee diligently to produce those resources denies the lessor the consideration for the lease.[31] Moreover, it would be inequitable to allow the lessee to hold the lease for a length of time without requiring the lessee to make a diligent effort to produce oil and gas. This would deprive the lessor not only of his express right under the lease to obtain royalties, but would also deprive him of the opportunity to work the lease himself or, under the Rule of Capture, produce all the resources of the reservoir. As stated by one court in a mining law case interpreting the development obligations under a mineral lease: "It is of the essence of the lease, necessarily implied, that the lessee shall work the mine with reasonable diligence, or surrender the lease."[32]

That rationale is equally applicable, if not with greater force, to federal OCS leases beyond their primary terms. As noted in a report prepared for the Department of Energy on enhanced oil recovery in the Gulf of Mexico, once the OCS platforms serving the offshore fields are removed, the prospects for STR operations "are virtually eliminated."[33] Once the initial surge of oil and gas production has occurred and production begins to decline, erecting a platform on an OCS solely to engage in STR operations would be cost prohibitive.

Thus, the alternative which the lessor enjoys with many onshore leases, forcing the lessee to produce or surrender the lease, is effectively not available on OCS leases with declining production curves. This suggests that the only protection available to the lessor MMS is to extend the implied covenants of reasonable development and due diligence to include STR operations on OCS leases even if STR operations do not require the drilling

27. *See* Rush v. King Oil Co., 220 Kan. 616, 556 P.2d 431 (1976) for a detailed discussion of the reasonable development covenant in Kansas.
28. *See, e.g.*, Brown, *Oil and Gas Lease—Implied Covenant to Use Due Care*, 19 TEX. L. REV. 80 (1940).
29. Fox Petroleum Co. v. Booker, 123 Okla. 276, 253 P. 33 (1926) (primary term); Waggoner Estate v. Sigler Oil Co., 118 Tex. 509, 19 S.W.2d 27 (1929) (secondary term).
30. *See, e.g.*, Sections 2, 4, 5 and 6 of the standard OCS Lease Form 3300-1, 43 Fed. Reg. 44893 (1978), as corrected in 43 Fed. Reg. 46586 (1978).
31. "The fundamental purpose of the mineral lease—the use for which it was intended by the lease—is the production of minerals. Once production commences, the lessor is paid rent for the leased premises only by the royalty reserved in the lease. It is therefore the duty of the lessee . . . to develop the leased premises properly and to prevent drainage of oil and gas from beneath it. . . ." Williams v. Humble Oil & Refining Co., 290 F. Supp. 408, 414 (E.D. La. 1968); *aff'd*, 432 F.2d 165 (5th Cir. 1970).
32. George v. Jones, 168 Neb. 149, 95 N.W.2d 609 (1959).
33. *See supra* note 1, *Enhanced Oil Recovery in the Gulf of Mexico.*

of additional wells. Otherwise, significant quantities of oil could be permanently lost to the lessor in derogation of the lessor's statutory mission to "conserve the resources of the OCS."[34] There is no second line of "lessee-producers" to step into a leasehold vacated by the original lessee. This interpretation also furthers one of the primary policies behind passage of the OCS Lands Act Amendments of 1978—the expedition and increase of oil production from OCS leases.[35]

So long as significant economic burdens are not imposed—i.e. the profitability of the underlying leases is not totally vitiated,[36] the MMS' statutory mandate to "conserve and protect the resources of the OCS" should be construed to include the power to order STR operations on OCS leases, since such operations are intended to conserve the resources by increasing the ultimate production of oil from the underlying reservoir.[37]

D. Application of STR Orders to Offshore Leases.

With the repeal of section 302(b) of the Department of Energy Organization Act,[38] the Secretary of Interior may once again establish diligence requirements for federal leases and set maximum rates of production "which may be sustained without loss of ultimate recovery of oil or gas."[39] While no diligence standards have been yet established, the MMS could use its power to publish a regulation which defines diligence in light

34. *Id.*
35. "The purposes of this chapter are to-(1) establish policies and procedures for managing the oil and natural gas resources of the Outer Continental Shelf which are intended to result in expedited exploration and development of the Outer Continental Shelf in order to achieve national economic and energy policy goals, assure national security, reduce dependence on foreign sources, and maintain a favorable balance of payments in world trade. . . ." 43 U.S.C. § 1802(1) (Supp. V 1981).
36. Indeed, even "profitability" per se may not impose a limit upon the MMS' power to impose STR operational requirements. *See* FERC v. Pennzoil Producing Co., 439 U.S. 508, 519 (1979), wherein the Supreme Court in a case involving a natural gas pricing dispute noted that the FERC was "under no obligation automatically to relieve the bind on producers facing increased royalty costs based in unregulated prices."
37. There is one exception to that general conclusion. That is, the MMS probably cannot require a lessee to reinject natural gas already produced back into the reservoir so as to maintain or improve reservoir pressure.

    Once the lessee has brought either oil or gas to the surface of the lease, the oil or gas is considered captured and "produced." Title to and control of that production (other than perhaps the government's royalty share) then passes by terms of the lease to the lessee. Sections 6 and 15 of the OCS Lease Form 3300-1, 43 Fed. Reg. 44893 (1978), as corrected in 43 Fed. Reg. 46586 (1978). Neither the term of any lease nor any statutory authority specifically authorizes the MMS to require a lessee's production which has been captured to be reinjected into the leasehold for pressure maintenance purposes. Formation waters produced incidentally to the oil and gas may be freely used for operations under Section 2(b) of offshore leases. OCS Lease Form 3300-1 (Sept. 1978). In the case of natural gas most OCS production is also subject to dedication to a particular purchaser under a certificate of public convenience and necessity issued under the Natural Gas Act. 15 U.S.C. § 717-717w (1982). In any case, such dedication could prevent or hamper the MMS' required diversion of the gas for pressure maintenance purposes.
38. The Department of Energy Organization Act in 1977 transferred Interior's authority to establish maximum rates of production and diligence standards to the newly-created Department of Energy. Department of Energy Organization Act, Pub. L. No. 95-91, 91 Stat. 565 (1977). However, dividing management responsibilities for federal oil and gas leases between two agencies proved unworkable. So Congress returned the above authorities to Interior.
39. Department of the Interior Appropriations Act—Fiscal Year 1982, Pub. L. No. 97-100, 95 Stat. 1391, 1407; *see* 43 U.S.C. § 1334(a) (7) (Supp. V 1981) for authority to impose diligence requirements on OCS leases.

of its statutory conservation mission and requires a lessee to engage in STR operations and sustain production unless such STR operations were not technically or economically feasible.[40] Basically, this would codify into regulation for STR purposes the implied covenant of due diligence and also shift the burden of justifying *not* undertaking STR operations onto the lessee on a case-by-case basis. Such an expansive interpretation of the MMS' power if applied on a case-by-case basis to existing leases, under not too rigorous standards, would not have radical ramifications upon current oil and gas lessees. First, in order to continue an OCS lease beyond its primary term, there must be "production in paying quantities."[41] Otherwise, the lease terminates by operation of law. Thus a lessee must continue to produce oil or gas from a lease beyond its primary term in paying quantities or lose the lease.[42] The question of whether or not to engage in STR operations arises at the end of the productive life of a lease, an event which invariably occurs in the secondary term of the lease. Second, recognizing that the productive life of a lease is affected by many variables such as the rate of decline of production, quality of oil and gas being produced, available markets for the production, and lease bonus and royalty terms, amongst others, one may assume that a lessee will act in its own economic self-interest and produce as much of its leasehold reserves as will bring a reasonable rate of return. Third, the MMS itself has some flexibility economically to encourage OCS lessees to engage in STR operations. If STR operations would not be profitable under then-existing lease terms, the Secretary may reduce royalty rates[43] and may also approve related revisions of any current OCS lease development and production plan, if the revision "is the only means available to avoid substantial economic hardship to the lessee."[44]

40. Actually the MMS since 1975 has required OCS lessees located in the Gulf of Mexico or off Southern California to submit plans to engage in STR operations:

> *Enhanced Oil and Gas Recovery Operations.* Operators shall timely initiate enhanced oil and gas recovery operations for all competitive and non-competitive reservoirs where such operations would result in an increased ultimate recovery of oil or gas under sound engineering and economic principles. A plan for such operations shall be submitted with the results of the annual MER review as required in paragraph 3A(3) of this Order.

OSC Order 11, *supra* note 20.

However, the requirement is not well-known, either by the OCS lessees or the federal lessor, is not generally applicable to OCS lessees located elsewhere on the federal OCS, and has had little effect to date upon operations in those two offshore areas.

41. "An oil and gas lease issued pursuant to this section shall - (2) be for an initial period of - (A) five years . . . and as long after such initial period as oil or gas is produced from the area in paying quantities. . . ." 43 U.S.C. § 1337(b) (Supp. V 1981).

42. Suspensions of operations, and drilling and well reworking operations will also extend the term of a lease absent "production in paying quantities." Could a lessee request a suspension in order to assess the viability of STR Operations or maintain a lease pending such an assessment? Section 5(a) (1) of the OCS Lands Act, as amended, allows a lessee to request a suspension of a lease if the request is in the national interest or would facilitate proper development of the lease. 43 U.S.C. § 1334(a) (Supp. V 1981).

43. Section 8(a) (3) of the OCS Lands Act allows the Secretary to waive or reduce royalty or net-profit sharing terms contained in OCS leases "in order to promote increased production on the lease area, through direct, secondary, or tertiary recovery means. . . ." 43 U.S.C. § 1337(a) (3) (Supp. V 1981). Moreover, any oil produced from an "approved tertiary project" is taxed at a lesser rate of tax than other categories of oil production under the Windfall Profits Tax Act of 1980. 26 U.S.C. §§ 4987 and 4993 (Supp. V 1981). Finally FERC authorizes a lessee to charge a higher than normally applicable price for gas which is produced by certain "production enhancement procedures." 15 U.S.C. § 3317(c) (5) (1982); 18 C.F.R. § 271.704 (1982).

44. 43 U.S.C. § 1351(i) (Supp. V 1981).

Finally, as noted earlier, STR operations usually occur near the end of the productive life of a given oil and gas reservoir, when the rate of production has begun to drop. Thus, the decision usually facing a lessee is whether to engage in STR operations or whether to assign his leasehold rights to the declining production. Theoretically these factors mesh and will usually cause a lessee to make such a choice voluntarily regardless of any statutory or regulatory requirement compelling STR operations.

Nevertheless, the dynamic tension between the MMS' and the lessees' economic interest, the timing of imposition of any STR operations requirement, and the financial status of the lessees in the unit when the requirements are imposed will often cause deviations from the above assumptions about the lessees' behavior.

The MMS as lessor desires to maximize production from any OCS lease for two reasons. First, the OCS Lands Act requires the MMS to conserve and protect the resources of the OCS.[45] Second, the lessor receives a royalty on any oil or gas produced on an OCS lease.[46] The more oil or gas that is produced, the greater the financial return to the lessor.

The OCS lessees, on the other hand, are businesses run for profit. Each lessee has a rate of return which it seeks to earn from each oil and gas lease that it acquires and develops. When revenues generated from operations on a lease fall below that rate of return, the lessee will allocate its limited resources elsewhere—regardless of the oil and gas resources still producible on that lease.

STR operations, especially tertiary recovery operations, often require enormous capital outlays which may or may not prolong or increase production from the leases in question. That money often may be invested in an exploratory lease play elsewhere which promises a greater likelihood of production generating higher rates of return than would result from attempting to extend the production life of an older field.

With the current decline in price for petroleum products, energy companies generally do not generate internally the capital necessary for ambitious exploration programs. Continued high interest rates simultaneously cause companies to hesitate to borrow money for pursuit of ambitious exploration programs. One must also consider the financial status of smaller companies which participate in OCS lease development. Usually those companies bid jointly with the major energy companies and acquire percentage interests in OCS leases. With less capital available, the smaller companies may balk at entering into any offshore STR operations even if profitable, since one STR operation may consume all of the company's available operating capital and the company still has to attend to operations on other leases. The amount of funds available for oil and gas activities as a whole is finite. Thus, if the MMS applied STR operation orders indiscriminately, a diversion of funds from exploration activity into marginal STR operations

45. 43 U.S.C. § 1334(a) (Supp. V 1981).
46. Sections 5 and 6 of the OCS Lease Form 3300-1 establish a minimum royalty which must be paid after oil and gas is discovered in paying quantities, and a percentage royalty when production generates royalty payments greater than the minimum royalty payments.

and a withdrawal of smaller energy companies from participation in offshore development could occur. Both would impact future domestic oil and gas production contrary to the stated policy of the OCS Lands Act to increase such production.

Imposition of a general STR operations requirement could even impact current OCS production. Unlike onshore operations, it is unlikely that an OCS lessee would be able to sell or assign his leasehold rights, thereby committing its available resources to further exploration and future production while allowing an assignee to engage in STR operations.[47] Offshore operations require a special expertise and are very costly. Moreover, potential liabilities for offshore failure or mishap are enormous. Even if the original lessee left its development platform in place offshore on the lease it is still unlikely that the smaller "mom and pop" oil companies which rework old oil and gas leases onshore possess the expertise or capital to venture offshore to engage in STR operations. Once the original OCS lessee decides not to engage in STR operations and to relinquish an OCS lease it is unlikely that another developer will seek to obtain assignment of that lease.

Thus, imposition of a general STR requirement on existing OCS leases by the MMS could force OCS lessees to abandon marginally productive OCS leases earlier than usual so as to avoid future significant STR-related expenditures and actually reduce the amount of oil produced by offshore operations on existing leases. Thus, with the myriad of STR methods available, and with the individual characteristics of each oil reservoir involved, the MMS should only approach the requirement of STR operations offshore carefully and on a unit-by-unit basis.

E. Application of STR Orders to Onshore Leases.

Although federal onshore oil and gas leasing occurs under a variety of statutes and classifications of public land, the BLM's power as administrator of onshore federal oil and gas leases to impose STR operational requirements is the same as the MMS'.

The Mineral Leasing Act (MLA) governs leasing of public domain lands and acquired lands not otherwise subject to reservation or withdrawal.[48] Similar to the OCS Lands Act, the MLA authorizes unitization of leases "[f]or the purpose of more properly conserving the natural resources of any oil or gas pool."[49] Moreover, the Secretary must insure under this standard that natural resources are not wasted and that production of the resources "accords with prudent principles of conservation."[50] The repeal of section 302(b) of the Department of Energy Organization Act also transferred back to the Secretary from the Department of Energy the power to set maximum rates of production of oil and gas and establish diligence re-

47. The OCS Lands Act, as amended, authorizes assignments and relinquishments of OCS leases. 43 U.S.C. § 1334(a)(3) (Supp. V 1981).
48. *See* 30 U.S.C. §§ 181-193 (1976 & Supp. V. 1981). *See also* 30 U.S.C. § 352 (1976) for authority to lease acquired lands.
49. 30 U.S.C. § 226(j) (1976).
50. California Co. v. Udall, 296 F.2d 384 (D.C. Cir. 1961).

quirements for leases issued under the Mineral Leasing Act and Acquired Lands Leasing Act.[51]

Like a federal OCS lessee, an onshore federal oil and gas lessee must produce oil or gas in paying quantities in order to maintain a lease beyond its primary term.[52] Also, the rationale behind the implied covenants of reasonable development and due diligence are equally applicable to federal oil and gas leases which happen to be located onshore rather than offshore. So, for onshore as well as offshore oil and gas leases, the BLM may validly construe its duty to conserve the oil and gas resources in place as authority to require maximization of production of oil and gas resources in place.

As previously noted, STR operations are intended to increase the ultimate recovery of resources in place in the oil and gas reservoir. The BLM would be within its statutory authority to require federal oil and gas lessees within an onshore unit agreement to engage in STR operations.

II. STATE OR PRIVATE OIL AND GAS LEASE WITHIN THE PURVIEW OF A FEDERAL UNIT AGREEMENT[53]

The pattern of land ownership which developed as a result of American history makes it unlikely that every onshore lease situated over a common oil and gas reservoir will be entirely a federal oil and gas lease. Often, onshore leases are situated over a common oil-producing reservoir subject to both federal and state jurisdiction. The Mineral Leasing Act recognizes this fact and authorizes the Secretary of the Interior to enter unto unit agreements onshore which include leases issued on state or privately owned lands.[54]

51. *See* 30 U.S.C. § 226(e) (Supp. V 1981); 30 U.S.C. § 226(j) (1976); 30 U.S.C. § 352 (1976); sections 2(j) and 4 of Public Domain Lands Competitive Lease Form 3120-7 (Feb. 1977); section 2(j) and 4 of Public Domain Lands Lease Form 3130-4 (Feb. 1977); and sections 2(k) and 5 of the Public Domain Lands Competitive Acquired Lands Lease Form 3130-4 (& Feb. 1977). Not only may the Secretary require diligent production of oil and gas resources from an onshore oil and gas lease, he may also restrict production from that lease. 30 C.F.R. § 221.35 (1982).

52. "Competitive leases issued under this section shall be for a primary term of five years. . . . Each such lease shall continue so long after its primary term as oil or gas is produced in paying quantities." 30 U.S.C. § 226(e) (Supp. V 1981).

53. It is extremely unlikely that a Unit Agreement involving offshore leases would include leases issued upon both federal and state lands for two reasons. First, as determined by the Supreme Court in 1947 in United States v. California, 332 U.S. 19 (1947), and codified by the OCS Lands Act in 1953, all lands beyond the limits of state territorial waters are under the control of the federal government. Second, Congress amended Section 8 of the OCS Lands Act in 1978 to include a provision which requires the federal government to share with adjacent states certain revenues generated from federal OCS tracts situated within 3 miles of the seaward boundary of coastal states. 43 U.S.C. § 1337(g) (Supp. V 1981).

Assuming the federal government previously had the authority to create a federal/state OCS Unit Agreement, Subsection (g) acts at least as a disincentive for states to enter into such an agreement, if not a requirement for the federal government to settle all federal/state boundary drainage disputes by direct revenue grants rather than any mutual oil and gas operations.

Thus, this section of the article is confined to consideration of onshore-related problems where STR operations may be required on a reservoir which lies under federal, state, and private lands.

54. 30 U.S.C. § 226(j) (1976); 30 C.F.R. § 226 (1982). The onshore unit agreement, interestingly enough, includes within its purview only leases issued under either the Mineral Leasing Act or Acquired Lands Leasing Act, but fails to mention protective leases and rights-of-way leases which are also included under the BLM's general leasing regulations. 30 C.F.R. § 226(d) (1982); 43 C.F.R. § 3100.0-3(c) and (d) (1982).

In regulating oil and gas leases on state lands, the states have developed their own regimes of conservation laws and regulations. Of course some of those laws and regulations which govern state oil and gas leases may be contrary to the terms of a BLM order which required unit-wide STR operations. For example, the BLM STR order may require a fluid injection program so as to increase declining oil field pressures. In order to inject fluids to increase reservoir pressure, the lessees may need to drill additional wells in the oilfield, but drilling of those additional wells would be contrary to state well-spacing requirements applicable to the field. Another example is rates of production. STR operations, if ultimately successful, will increase production rates from wells in the field. The increased production may exceed production rates established by state regulation—forcing the state to accept greater oil and gas production as the royalty interest owner from the state leases whether the state approves or not. Thus, the question arises as to whether the BLM in regulating operations on a unit agreement which contains both public and state lands may preempt state conservation laws or regulations in order to fulfill its statutory duty under the MLA to conserve federal oil and gas resources by requiring STR operations.

A. Federal Statutory Background.

State oil and gas leases, if authorized by the laws of the state in which the unit is located, are generally subject to state law even though the lands are included within a federal unit agreement.[55] Moreover, if the federal government owns less than fifty percent of the acreage contained in a unit agreement, the oil or gas field involved is fully developed, and the federal lands account for less than fifty percent of the recoverable reserves in that unit, the Secretary of Interior may waive the applicability of its own onshore operating regulations to the federal lands within the unit agreement.[56] Nevertheless, both of these exceptions are subject to the general MLA mandate to the Secretary under the unit agreement to conduct operations "for the purpose of more properly conserving the natural resources thereof. . . ."[57] Any state or private lessee who enters into the unit agreement also contractually acknowledges the power of the Secretary to conduct operations with that purpose in mind.[58]

The unit agreement also provides a mechanism whereby the unit area may be expanded to include leases on adjacent lands whenever "expansion . . . is necessary or advisable to conform with the purposes of this agreement."[59] This, of course, allows the BLM as unit operator to prevent drainage of a unitized area by operations on an adjacent lease by requiring that lessee to join the unit.

55. "When authorized by the laws of the State . . . appropriate provision may be made in the [unit] agreement accepting such laws to the extent that they are applicable to non-federal unitized land." 30 C.F.R. § 226.7 (1982).
56. 30 C.F.R. § 226.8(b) (1982).
57. Paragraph Two of Preamble to Model Onshore Unit Agreement for Unproven Areas; 48 Fed. Reg. 26763 (1983).
58. *Id.*
59. *Id.*

Next, section 1 of the Onshore Unit Agreement appears to limit the Secretary's powers over production operations on state lands included within the unit agreement:

> Enabling Act and Regulations. The Mineral Leasing Act of February 25, 1920, as amended, supra, and all valid pertinent regulations including operating and unit plan regulations, heretofore issued thereunder or valid pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this agreement.[60]

The unit form thus only provides for the application of federal regulations regarding drilling and producing obligations in effect as of the date of the unit agreement and only if those regulations are not "inconsistent with . . . terms of the [agreement] or the laws of the State in which the non-Federal land is located."

While section 1 of the unit agreement limits the applicability of federal drilling and producing regulations to state lands, section 1 also incorporates the terms of the Mineral Leasing Act itself. Thus, the MLA's statutory mandate to "conserve the resources of any oil or gas pool" is incorporated into the unit agreement and would displace any limitation on the applicability of federal regulations contained in the agreement which are inconsistent with that statutory mandate.[61]

However, unlike an offshore unit containing solely federal oil and gas leases, sections 30 and 32 of the MLA are applicable here.[62] Relevant portions of section 30 read as follows:

> Each federal lease shall contain provisions for the purpose of insuring the exercise of reasonable diligence, skill, and care in the operation of said property; a provision that such rules for the safety and welfare of the miners and for the prevention of undue waste as may be prescribed by said Secretary shall be observed, including . . . provisions . . . for the prevention of monopoly and for the safeguarding of the public welfare. None of such provisions shall be in conflict with the laws of the states in which the leased property is situated.[63]

Thus, the MLA requires the Secretary of Interior to observe state rules and regulations in drafting federal lease terms relating to undue waste, diligence, safety, and monopoly.

60. *Id.* at Section 1.
61. 30 U.S.C. § 226(e) (Supp. V 1981).
62. 30 U.S.C. §§ 187 and 189 (Supp. V 1981).
63. 30 U.S.C. § 187 (Supp. V 1981).

Observance of state law requirements relative to prevention of undue waste and prosecution of diligent operations does not necessarily conflict with the Secretary's duty to "conserve the resources of the oil or gas pool." STR operations are concerned with the substantive question of maximizing recovery of resources in place, while lease terms relating to diligence or undue waste involve the procedure for accomplishing the same objective. That is, the STR order is aimed solely at producing more oil and gas. However, methods to ensure prompt development of leases under the STR order (diligence) and the methods to ensure that the development is carefully accomplished (undue waste) can be accomplished in a manner consistent with state law requirements. Thus neither section 30 of the MLA nor the limitations in the unit form regarding federal regulation of drilling and producing obligations would appear to limit the Secretary's power to order STR operations on units involving both federal and state lands.

Similarly, section 32 (the savings clause) of the MLA also imposes no limits on the Secretary's power:

> Nothing in this chapter shall be construed or held to affect the rights of the States or other local authority to exercise any rights which they may have, including the right to buy and collect taxes upon improvements, output of mines, or other rights, property, or assets of any lessee of the United States.[64]

This proviso preserves to states only "any rights which they may have." It does not confer any substantive authority upon a state which it does not already possess.[65]

Sections 30 and 32 of the MLA do not limit the power of the Secretary to order STR operations. Nevertheless, these sections leave unclear the correct line of demarcation between the federal and state governments for regulating production operations on state lands within a federal oil and gas unit agreement.

B. Federal Authority to Preempt State Law.

There may be situations in which a state law or regulation as applied to a state oil and gas lease within a unit agrement inhibits the MMS' power to implement the purpose behind creating the unit agreement in the first place, the conservation and production of the oil and gas under the leased lands, and thus may conflict with an STR order.

In *Kleppe v. State of New Mexico,*[66] the New Mexico Livestock Board entered upon public lands of the United States, removed some wild burros, and sold those burros at public auction. Thereafter, the Bureau of Land Management asserted jurisdiction over the burros under the Wild Free-Roaming Horses and Burros Act[67] and demanded that the state recover the burros and return them to the public lands. A unanimous Supreme Court held, inter alia, that the complete power which Congress has over public

64. 30 U.S.C. § 189 (Supp. V 1981).
65. Ventura County v. Gulf Oil Corp., 601 F.2d 1080 (9th Cir. 1979).
66. 426 U.S. 529 (1976), *reh'g denied,* 429 U.S. 873 (1976).
67. 16 U.S.C. §§ 1331-1340 (1982).

lands under the property clause in article IV, section 3, of the United States Constitution necessarily includes the power to preempt conflicting state law and to regulate and protect the wildlife living on public lands.[68] More importantly, the Supreme Court specifically left open the question of which "regulations under the Property Clause may have some effect on private lands not otherwise under federal control,"[69] citing *Camfield v. United States* with approval.[70]

In *Camfield,* the Supreme Court upheld federal regulation of fences built on private land adjoining United States property. These fences had the effect of enclosing the federal land and giving the private landowner sole use of public land. The Court found that Congress may exercise its police power and validly enact a statute which regulates nuisances occurring off federal lands so long as the statute is directed at protecting the federal lands.[71]

Thirty years later in a brief opinion, the Supreme Court reaffirmed the *Camfield* rationale in *United States v. Alford* holding that Congress could constitutionally prohibit acts upon privately-owned lands which imperiled publicly-owned forests.[72] Thus, except for the limited extension of power under the *Camfield* rationale, the Supreme Court has not squarely addressed the power of Congress under the property clause to regulate activities which occur on state or private lands but which substantially impact adjacent federal lands.

The United States Court of Appeals for the Eighth Circuit in *State of Minnesota by Alexander v. Block,* however, effectively expanded the applicability of *Camfield* and held that Congress' extra-territorial power includes regulation of conduct on or off public lands which would threaten either the use or the designated purpose of federal lands.[73] In *Minnesota,* a number of individuals, organizations, and businesses challenged the constitutionality of the Boundary Waters Canoe Area Wilderness Act of 1978[74] as applied to state lands and waters that came within the congressionally designated federal wilderness area boundaries. The challenged portion of the statute, section 4, prohibited use of motorboats in all but a small number of lakes in the wilderness area and limited use of snowmobiles to two routes through the area. The United States owned ninety percent of the land in the wilderness area, while the State of Minnesota owned the remaining ten percent which included the beds of all lakes and rivers within the wilderness area.

The court upheld the constitutionality of the restrictions which Congress applied to motorboat and snowmobile activities on non-federal lands,

68. 426 U.S. at 545.
69. *Id.* at 546. The property clause of the United States Constitution states: "Congress shall have power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States." U.S. CONST. art. IV, § 3, cl. 2.
70. 167 U.S. 518 (1897).
71. "While we do not undertake to say that Congress has the unlimited power to legislate against nuisances within a state . . . we do not think the admission of a territory as a state deprives it of the power of legislating for the protection of the public lands, though it may thereby involve the exercise of what is ordinarily known as the police power, so long as such power is directed solely to its own protection." 167 U.S. at 526.
72. United States v. Alford, 274 U.S. 264 (1927).
73. State of Minnesota by Alexander v. Block, 660 F.2d 1240, 1248 (8th Cir. 1981).
74. Pub. L. No. 95-495, 92 Stat. 1649 (1978).

interpreting the *Camfield* and *Alford* cases only to require that: "Congress . . . demonstrate a nexus between the regulated conduct [on non-federal land] and the federal land, establishing that the regulations are necessary to protect federal property."[75]

The circuit court in *Minnesota* interpreted the *Camfield* and *Alford* cases too broadly, however, in holding only that Congress demonstrate a nexus between the regulated conduct on the non-federal land and the federal land. The circuit court ignored the deference Congress traditionally affords to state and local control over real property within a state.[76] While Congress' power to administer federal lands under the property clause is "without limitation," this does not mean Congress should run slipshod over state sovereignty and private rights in accomplishing that goal.

The Eighth Circuit did recognize this fact in *United States v. Brown.*[77] In *Brown* the Eighth Circuit held that the property clause empowered Congress to prohibit hunting on state waters which were within the boundaries of Voyageur National Park in order to protect wildlife and visitors on the land. The court affirmed the district court which had held that the National Park Service could prohibit through regulation "activities [which] significantly interfere with the use of the park and the purposes for which it was established. . . ."[78] Although the Eighth Circuit failed to make an explicit link between the *Minnesota* and *Brown* cases, combining the *Brown* requirement of "significant interference," with the *Minnesota* requirement of a nexus between activity and effect, creates a standard which allows Congress to regulate extraterritorially to protect federal lands while preserving reasonable deference to traditional state and local control over property within the state.

In summary, current case law suggests that in order to regulate conduct on private lands which affects adjacent federal lands, Congress must show that the regulation is necessary to protect the federal land (*Camfield*), or that the conduct significantly interferes with either the use of the federal lands or designated purpose of those lands (*Minnesota/Brown*).

C. Federal Property Interest in Oil and Gas.

The Rule of Capture in oil and gas operations probably operates to prevent application of the *Camfield* rationale to unit agreements which involve federal and state lands. Unlike wild horses or burros on federal lands, the Rule of Capture prevents the federal government from asserting a property interest in the oil and gas in place under the federal lands.[79] The traditional elements necessary to assert a property interest in an object: "title to, possession of, or control over" that object, are lacking.[80] Title to oil and gas only passes to the lessee when the oil and gas are produced. Moreover,

75. 660 F.2d at 1249 n.18.
76. *Id.* at 1251-53.
77. 552 F.2d 817 (8th Cir. 1977), *cert. denied*, 431 U.S. 949 (1977).
78. 431 F. Supp. 56, 63 (D. Minn. 1976).
79. *See* United States v. Hughes, 626 F.2d 619 (9th Cir. 1980) wherein the Ninth Circuit found that although the United States probably did not own the wild horses and burros on federal lands, the United States clearly had asserted a property interest in those horses.
80. *Id.* at 622.

oil and gas in place under the lease are neither controlled nor possessed by the lessee under that same rule.

The doctrine of correlative rights might support assertion of such a property interest.[81] One element of the doctrine of correlative rights is the right of a landowner to a fair and equitable share of the source of supply;[82] that is, a specific interest in the oil and gas in place under the lease. Offshore, the OCS Lands Act gives the Secretary of Interior the power to administer the provisions of the Act "for the prevention of waste and conservation of the natural resources of the Outer Continental Shelf, and the protection of correlative rights therein."[83] Unfortunately, with respect to onshore oil and gas leases, the enabling provision of the MLA contains no such reference to the Secretary's power to protect correlative rights.[84] The lack of any reference to "correlative rights" either in the MLA or the onshore model unit agreement was, as with inclusion of sections 30 and 32 in the MLA, most likely an intentional act of federal deference to state allocation rules for oil and gas production.

Most oil and gas producing states regulate subsurface rights to production from state leases under various rules of allocation, both to prevent waste and to assure an equitable distribution of supply.[85] For example, some states create subsurface rights to oil and gas production pursuant to a rule known as the non-apportionment rule (rather than following the Rule of Capture).[86] In either case, a federal assertion of correlative or equitable rights to a portion of the oil and gas in place beneath the unit agreement would clash with the method by which these state conservation laws allocate subsurface rights to the resources. The MLA as well as the onshore model unit agreement were likely drafted so as not to impinge on these areas of traditional state regulation. The BLM instead avoids creating any federal subsurface rights to oil and gas which might clash with state allocation schemes and only gives the lessee a portion of the oil and gas after the resources are produced or "captured."[87]

81. *See* 8 H. WILLIAMS & C. MEYERS, *supra* note 11, at 151: This [sic] term is defined by Nev. Rev. Stat. section 522.020(1) as follows:

"[T]he opportunity afforded, so far as it is practicable to do so, to the owner of each property in a pool to produce without waste his just and equitable share of the oil or gas, or both, in the pool; being an amount, so far as can be practicably determined, and so far as can practicably be obtained without waste, substantially in the proportion that the quantity of recoverable oil or gas, or both, under such property bears to the total recoverable oil or gas, or both, in the pool and for such purposes to use his just and equitable share of the reservoir energy."

"There appears to be two aspects of the doctrine of correlative rights: (1) as a corollary of the rule of capture, each person has a right to produce oil from his land and capture such oil or gas as may be produced from his well, and (2) a right of the landowner to be protected against damage to a common source of supply and a right to a fair and equitable share of the source of supply."

82. *Id.*
83. 43 U.S.C. § 1334(a) (Supp. V 1981).
84. 30 U.S.C. § 226(e) (Supp. V 1981).
85. *See generally* 5 H. WILLIAMS & C. MEYERS, *supra* note 11, at 433-70.
86. *See* 8 H. WILLIAMS & C. MEYERS, *supra* note 11, at 465.
"Non-Apportionment" is the "[a]llocation of royalties to a royalty owner having an interest in the specific parcel on which a producing well is located rather than dividing royalties among the owners of interests in the land subject to the lease." *Id.*
87. *See* Model Onshore Unit Agreement for Unproven Areas, *supra* note 57, at § 11.

However, ordering unit-wide STR operations will not impinge on state rules which create subsurface rights to the oil and gas in place. STR operations are intended to increase production for all the lessees—both federal and state lessees—within the purview of the unit. How that increased production is allocated between the various lessees can still be accomplished pursuant to applicable state allocation rules.

One district court case, *Palila v. Hawaii Dep't. of Land & Natural Resources,*[88] however, suggested in dictum that Congress' power under the property clause was sufficient for Congress to assert a property interest in an endangered species superior to that of a state.[89] Although the decision in the case rested on Congress' treaty-making and commerce clause powers, it did by analogy suggest that the *importance* of preserving the oil and gas resources may be sufficient to raise oil and gas resources to the level of a federal property interest.

Congress has recognized that increased production of oil and gas from federal lands helps promote many significant national goals such as the nation's security and economic well-being.[90] Production of industrial goods and defense of the country are seriously jeopardized by the lack of domestic oil and gas production—national goals as important as preservation of an endangered species. In order to maintain or increase oil and gas production from the older onshore units which include federal lands, the BLM needs to be able to order unit-wide STR operations. Unlike *Palila,* where the endangered species resided on state-owned land, the resource to be preserved here resides in a common pool under both federal and state lands and can also only be preserved by unitary management.

The absence of reference to correlative rights in the MLA and use of participating areas in onshore unit agreements, therefore, does not necessarily preclude regulation of STR operations through federal assertion onshore of a *property interest* in oil and gas in place.

Of course, this result can also be reached by recharacterizing the interest which is being protected and promoted. The federal government is not attempting to protect the oil and gas per se, but is attempting to protect the orderly production of those resources. An improperly developed oil and gas reservoir will result in less than maximum recovery of the resources in that reservoir. Protection of production of oil and gas from federal lands is an inherently important federal interest as Congress through the MLA has commanded the BLM to "conserve" federal oil and gas resources.

D. The Minnesota/Brown Tests.

Turning to the *Minnesota* and *Brown* rationales, Congress' power under the property clause as codified in the MLA should support an STR

88. 471 F. Supp. 985 (D. Hawaii, 1979), *aff'd,* 639 F.2d 495 (9th Cir. 1981).
89. "But where endangered species are concerned, national interests come into play. . . . The importance of preserving such a national resource may be of such magnitude as to rise to the level of a federal property interest." *Id.* at 995, n.40.
90. *See, e.g.,* the preamble to the OCS Lands Act Amendments of 1978 (43 U.S.C. § 1802(1) (Supp. V 1981)).

order extending federal jurisdiction onto state lands in possible contravention of state conservation laws. The first issue to consider is whether any tenth amendment concern blocks a federal administrative agency's exercise of federal resource management powers granted by Congress over production activities on adjacent state lands under the property clause.[91]

The Supreme Court has not addressed the issue in the context of the property clause, but application of the principles utilized in resolving a similar conflict between Congress' power to regulate interstate commerce and the tenth amendment suggests that no tenth amendment conflict exists.[92] This analogy is appropriate since Congress' power both under the commerce clause to regulate interstate commerce and under the property clause to regulate and dispose of public property has been characterized by the Court as being "without limitation."[93]

In *Hodel v. Virginia Surface Mining and Reclamation Association, Inc.*,[94] the Supreme Court enunciated a three-part test to be applied to states' tenth amendment challenges to Congress' exercise of power under the commerce clause. In upholding federal environmental regulation of surface mining against a state challenge that the regulation preempted local land use regulation, the Court stated that there must first be

> a showing that the challenged statute regulates "States as States." Second, the federal regulation must address matters that are indisputably "attributes of state sovereignty." And, third, it must be apparent that the States' compliance with the federal law would directly impair their ability "to structure integral operations in areas of traditional functions."[95]

The regulation of oil and gas operations on state lands within a unit agreement in this instance fails the first test, as such regulation is directed at conduct of the lessees rather than the state itself. Simply stated, the lessees within the unit bear the burden of implementing any STR operations requirement. Those lessees are businesses attempting to develop their oil and gas leases. While an STR order would be aimed at the commercial activities of the lessees on the state land within the unit area, the state would still be free to govern the procedures by which each new individual well was drilled or each already drilled well was reworked. Finally, that the STR operations requirement is not directed at the state as a state is reflected in the fact that the order simultaneously affects federal lessees on federal lands along with state lessees on state lands. This clearly suggests that the STR operations requirement only incidentally impinges upon state regulatory prerogatives. The Supreme Court in *Hodel*, discussing the first test, stated that congressional regulation of private persons and businesses is "necessarily subject to the dual sovereignty of the government of the Nation and of the State in which they reside."[96]

91. U.S. CONST. amend. X provides: "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the People."
92. National League of Cities v. Usery, 426 U.S. 833, 852 n.17.
93. Kleppe v. New Mexico, 426 U.S. 529, 539 (1976).
94. 452 U.S. 264 (1981).
95. *Id.* at 288-89.
96. *Id.*

Thus, no conflict exists between Congress' power to protect federal resources under the property clause and a state's police power under the tenth amendment.

1. Interference with the purpose of federal lands.

Minnesota's first rationale, interference with the designated purpose of the federal lands, probably will not support an assertion of federal jurisdiction over oil and gas operations on state lands within the unit agreement. The *Minnesota* case involved a wilderness area which had been designated as such by Congress, and the Eighth Circuit placed great emphasis upon the special federal land use designation.[97] That is, the federal regulation would extend onto state lands and regulate state activities only to the extent that those activities impeded the purpose behind the specific congressional dedication of the federal land.

Of course, the bulk of federal oil and gas leasing occurs on federal lands subject to the provisions of the MLA. A number of federal statutes authorize a panoply of land uses similar to oil and gas leasing, such as mining and grazing, to occur generally on federal lands.[98] There is nothing in the MLA, however, to suggest that onshore oil and gas leasing generally is considered a special federal land use in and of itself. This conclusion is suggested by the fact that when Congress makes a specific dedication or withdrawal of federal lands for a particular use, such as a wilderness area or wildlife refuge, the terms of such dedication or withdrawal also usually restrict or prohibit oil and gas operations thereon.[99] This vitiates application of the first rationale.

2. The "Significant Interference" Test.

The rationale of *Brown,* that the conduct on adjacent state lands significantly interferes with the use of the federal lands,[100] should support issuance of a federal order requiring state oil and gas lessees within the unit agreement to join in STR operations. By commissioning a unit agreement, the federal government has clearly asserted that the primary use of the federal lands within the agreement is the development and production of oil and gas resources underlying those lands—a fact which the lessees on the state lands have acknowledged by signing the unit agreement. STR operations are reservoir-wide operations aimed at maximizing production of oil and gas resources, and should be considered one of the methods for implementing the MLA's requirement to "conserve oil and gas resources."[101] Without cooperation of all the lessees whose leases are within the unit agreement and located over that reservoir, pressure maintenance or fluid injection programs may fail to maximize production from the common oil and gas reservoir and may also bring a production windfall to the recalcitrant state lessee whose lease is adjacent to the STR operations.

97. 660 F.2d at 1249.
98. *See, e.g.,* the Taylor Grazing Act (43 U.S.C. § 315-315n); and the Mining Law of 1872, 30 U.S.C. §§ 21-54.
99. The Wilderness Act of 1964, for example, withdraws as of January 1, 1984, all lands within designated wilderness areas "from disposition under all laws pertaining to mineral leasing and all amendments thereto." 16 U.S.C. § 1133(d)(3) (1976).
100. *See* text accompanying note 72.
101. 30 U.S.C. § 226(j) (1976).

Since the success of the STR operations will depend upon cooperation of all unit lessees, failure of any state lessee to cooperate based upon a contrary state conservation law or regulation will *significantly interfere* with the primary use of the federal lands. Lack of cooperation may lead directly to less than maximum production of resources in place under the federal lands as well as the state lands in direct derogation of the MLA's statutory conservation mission. In fact, the recalcitrant lessee may even be compared in kind if not in degree to the plaintiff in *Camfield* whose fences and adjoining state lands prevented anyone but the plaintiff himself from enjoying the federal lands surrounded by fences on state lands. The state lessee who refuses based on state law to join the STR operation likely receives an increased amount of production in any case from the unit. So the lessee "enjoys" a federal asset while simultaneously preventing the BLM from achieving its statutory mission.

While the Supreme Court has acknowledged a state's interest in regulating the exploitation of resources within its borders,[102] that rule has been considerably weakened to permit assertion of what the Court considers paramount federal concerns.[103] "A State may no longer keep the property, if the sovereign so chooses, always within its jurisdiction for every purpose."[104] Thus, the *Minnesota* and *Brown* rationales under the property clause should be extended to allow the BLM to compel STR operations in units containing mixed federal and state oil and gas leases whenever failure to engage in such production operations would result in a less than maximum recovery of federal oil and gas resources in place.

III. STR OPERATIONS ON INDIVIDUAL FEDERAL OIL AND GAS LEASES

Often an entire oil reservoir lies under a single federal oil and gas lease. As previously noted, the MMS/BLM power to compel STR operations in federal unit agreements is derived from their statutory conservation mission as well as the implied covenants of reasonable development and due diligence, all three of which should be read into every federal oil and gas lease. Thus, MMS and BLM may compel STR operations on this basis and for the same practical reasons which justify compelling STR operations on federal unit agreements.[105]

CONCLUSION

The MMS or BLM may order federal oil and gas lessees to engage in STR operations if those operations appear reasonably likely to maximize the ultimate recovery of resources from the federal lease or leases involved.

102. Toomer v. Witsell, 334 U.S. 385, 402 (1948).
103. *See, e.g.*, Hughes v. Oklahoma, 441 U.S. 322 (1979).
104. *Id.* at 337.
105. May a lessee who owns substantial acreage in a field argue that the particular lease upon which the MMS has ordered STR operations is already receiving its proportionate share of development drilling? The one federal case in point says no, treating the obligation of the lessee as one measured solely by the requirements of and activities on the lease itself. Amerada Petroleum Co. v. Doering, 93 F.2d 540 (5th Cir. 1937).

For offshore operations, the MMS should avoid imposition of any blanket STR operations requirement. Instead, the MMS should consider implementation of STR operations with each lessee or group of lessees on a case-by-case basis.

The BLM's power to order STR operations onshore for maximization of recovery of resources should be construed to extend to lessees of state leases who are joined with federal lessees to engage in a common development scheme pursuant to a federal unit agreement. However, the specific procedures for implementation of the STR operations may be governed, wherever reasonably possible, by applicable state conservation laws and regulations.