

V. Legal Aspects of Enhanced Oil Recovery

Method of Approach

This chapter of OTA's assessment of enhanced oil recovery (EOR) examines legal impacts on EOR processes arising from Federal and State statutes, regulations, and other laws. It seeks to identify existing and potential constraints on the employment of EOR techniques to obtain additional oil beyond primary and secondary production.

Federal and State laws and regulations were collected and studied in detail; the legal literature relating to enhanced recovery in treatises and law reviews were reviewed; and the recent studies for, or by, the Energy Research and Development Administration (ERDA), the Federal Energy Administration (FEA), the National Petroleum Council (NPC), the Environmental Protection Agency (EPA), the Gulf Universities Research Consortium (GURC), and the Interstate

Oil Compact Commission—together with other technical literature—were examined. With the cooperation of the Interstate Oil Compact Commission, questionnaires regarding EOR regulation and associated problems were sent to 18 large producing companies, about 240 smaller producers, 34 State regulatory commissions, and to appropriate officials in the Department of the Interior. Responses were received from 15 of the large producers, 67 of the smaller producers, and 32 of the State commissions. In addition, calls were made to or personal discussions were held with selected individuals with knowledge in the field of enhanced recovery. Information from all of these sources was used in completing this segment of the EOR assessment. A more detailed discussion of legal aspects of EOR activity is presented in appendix C of this report.

Legal Issues in EOR Development

The law affects enhanced recovery of oil operations in many ways. Based upon the responses to questionnaires, price controls on crude oil constitute the most significant legal constraint to enhanced recovery operations. Approximately 65 percent of all producers responding to the questionnaire indicated that removal of price controls would make more projects economically feasible or more attractive.

A second important problem area for enhanced recovery appears to be the establishment of operating units. In order to be able to treat a reservoir without regard to property lines, it is necessary that a single party have control over the entire reservoir or that the various parties who own interests in the reservoir integrate their interests either voluntarily or through a re-

quirement by the State. Integration of these interests is referred to as unitization, and problems with unitization were cited by producers with the second greatest frequency after price controls as an EOR constraint. The difficulties surrounding unitization can be better explained by providing a brief background on the basic principles of oil and gas law. It should be noted that most problems associated with enhanced recovery methods apply to waterflooding as well. Therefore, problems with unitization agreements and possible contamination of ground water are not unique to enhanced oil recovery.

The right to develop subsurface minerals in the **United States originally coincides with** the ownership of the surface. The owner of land may, however, sever the ownership of the surface from

ownership of the minerals. A variety of interests may be created, including mineral and royalty interests on all or part of a tract, undivided fractions of such interests, and leasehold interests. The owner of the minerals normally does this because he is unable to undertake the development of the minerals himself because of the great expense and risk of development operations. To obtain development without entirely giving up his interest he will lease to another party the right to explore for and produce the minerals. The lessee will pay a sum of money for the lease and will promise to drill or make other payments, and if there is petroleum to pay the value of a portion of the production to the lessor. Should certain of the terms of the lease not be met, the lease will terminate and the interest will revert to the lessor.

In the lease transaction the lessee has both express and implied rights and duties. These often have a significant impact on enhanced recovery activities. Among these rights of the lessee is the right to use such methods and so much of the surface as may be reasonably necessary to effectuate the purposes of the lease, having due regard for the rights of the owner of the surface estate. This would generally include the right to undertake enhanced recovery operations. Some authorities have asserted that there is a duty for a lessee to undertake enhanced recovery. In general, the lessee has a duty to develop the lease as a prudent operator and to do nothing to harm the interest of the lessor. Without the express consent of the lessor, the lessee does not have the right or the power to unitize the interest of the lessor.

In order to undertake fieldwide recovery operations (waterflood or EOR), it is generally necessary to secure the consent of all or most of the various interest owners in the field through a unitization agreement. It may take many months or even years for the parties to reach such agreement. The principal difficulty lies in determining the shares of risk and/or production from the operations. The producing State governments allow voluntary unitization and provide the parties an exemption from possible application of the antitrust laws. Most producing States also provide for compulsory joinder of interest

owners in the unit once a certain percentage of interest owners have agreed to unitization. This percentage ranges from a low of 50 percent to a high of 85 percent as shown in table 34. In the absence of such legislation, or where the necessary percentage of voluntary participation cannot be achieved, the undertaking of enhanced recovery operations can result in substantial liability for the operator due to possible damage to conjoiners.

Once agreement for unit operations has been reached, it is necessary for the operator or other parties to go before a State commission for approval of the unit. The commission will require the submission of a detailed application describing the unit and its operations, the furnishing of notice of the application to other parties who might have an interest in the unit operation, the opportunity for hearing on the application, and the entry of an order establishing the unit when the other steps have been completed. The problems with unitization arise from the difficulties in securing the voluntary agreement of different interest owners, and generally not from the State regulatory procedures.

Prior to undertaking injection programs for enhancing production of oil, each State requires the operator to secure a permit for the operation. The procedure for this is similar to the procedure for approval of unitization and sometimes may be accomplished in the same proceedings. There is little indication that these regulatory activities significantly restrict or hinder enhanced recovery of oil with the possible exception of one or two jurisdictions. The procedures could well change under regulations promulgated by the Environmental Protection Agency pursuant to the Safe Drinking Water Act. Producers and others have indicated that such Federal regulations could have an important adverse impact on enhanced recovery.

Once enhanced recovery projects have commenced, a variety of legal problems can arise. Operators in some States will face the prospect of liability to parties who refuse to join a unit when enhanced project operations reduce the production of such non joiners. There is also the prospect of liability to governmental agencies

and the possibility of shutting down of operations for environmental offenses. Operators may have difficulty in acquiring adequate water supplies for EOR projects or be subject to a cutting off of supplies owing to the water rights

doctrines followed in some States. Problems such as these can interfere with the operation of enhanced recovery projects or even prevent their being started.

Table 34
Comparative Chart of Aspects of Unitization Statutes

State	Percent working or royalty int. req'd. (vol. = voluntary only)	Proof or findings required				Unit area - Part or All of Single or Multip, -pools	Water rights doctrine R-riparian PA-prior appropriate ion D-dual system
		Inc. ult. recovery	Prevent waste	Protect corr. rights	Add. cost not over add. recov.		
Alabama	75	Yes	Yes	Yes	Yes	PAM	R
Alaska	62.5	Yes	Yes	Yes	Yes	PAS	PA
Arizona	63	Yes	Yes	Yes	Yes	PAS	PA
Arkansas	75	Yes	Yes	Yes	Yes	PAS	R
California Subdence.	65	No	No	Yes	Yes	PAM	D
California Townsite*	75	Yes	—	Yes	Yes	AS	D
Colorado	80	Yes	—	Yes	Yes	PAM	PA
Florida	75	Yes	Yes	Yes	Yes	PAM	R
Georgia	None	—	—	—	—	PAS	R
Idaho	vol.	—	Yes or Yes	—	—	PAM	PA
Illinois	75	Yes	Yes	Yes	Yes	PAM	R
Indiana	None	—	Yes or Yes	—	Yes	PAS	R
Kansas	75	Yes	Yes	Yes	Yes	PAS	D
Kentucky	75	Yes	Yes	Yes	Yes	PAM	R
Louisiana Subsection B.	None	—	Yes	—	—	PAS	R
Louisiana Subsection C	75	Yes	Yes	Yes	Yes	AM	R
Maine	85-W - 65-R	Yes	—	—	Yes	PAM	R
Michigan	75	Yes	Yes	Yes	Yes	PAM	R
Mississippi	85	Yes	Yes	Yes	Yes	PAM	D
Missouri	75	Yes	Yes	Yes	Yes	PAS	R
Montana	80	Yes	—	Yes	Yes	PAM	PA
Nebraska	75	Yes	Yes	Yes	Yes	PAM	D
Nevada	62.5	Yes	Yes	Yes	Yes	PAS	PA
New Mexico	75	Yes	Yes	Yes	Yes	PAS	PA
New York	60	Yes	—	Yes	Yes	PAS	R
North Dakota	80	Yes	Yes	Yes	Yes	PAM	D
Ohio	65	Yes	—	Yes	Yes	PAS	R
Oklahoma	6.3	Yes	Yes	Yes	Yes	PAS	D
Oregon	75	Yes	Yes	Yes	Yes	PAM	D
South Dakota	75	Yes	Yes	Yes	Yes	PAM	D
Tennessee	50	—	—	—	—	—	R
Texas	vol.	—	Yes	Yes	Yes	PAM	D
Utah	80	—	Yes	Yes	Yes	PAS	PA
Washington	None	Yes	Yes	Yes	Yes	AM	D
West Virginia	75	Yes	Yes	Yes	Yes	AS	R
Wyoming	80	Yes	Yes	Yes	Yes	PAM	PA

*See appendix C

Adapted in part from Eckman, 6 Nat Res. Lawyer 384 (1973).

Policy Options

The factor most often identified by producers as a constraint to EOR activities was Federal price controls. A large majority of both independent and large producers felt that price controls were inhibiting EOR projects. For example, one Oklahoma independent stated: "We see no point in 'enhancing' anything until it reaches the stripper qualification [exempt from price controls]. This makes no engineering sense, but this is what has been forced upon us by a myriad of political decisions." Although price options are taken up in another segment of the EOR assessment, the price constraint is mentioned in order to place the other factors identified in perspective. However, it should be noted that differing treatment of interest owners producing from the same reservoir does act to discourage unitization. Because of current price regulations (upper- and lower-tier prices), producers in the same unit may not receive the same price for their oil. To avoid this, it is suggested that whatever price, taxation, or subsidy determinations are made should not place an interest owner in a worse position than before unit operations were undertaken, and should operate in such a way that each interest owner will receive the same benefits that other similarly situated interest owners in the field receive.

The second most important area now causing problems for enhanced recovery operations is the difficulty in joinder of parties for fieldwide operations. Owners of relatively small interests in a reservoir in many States can effectively prevent the majority from undertaking enhanced recovery operations. The problem appears to be greatest in Texas, which has no compulsory unitization statute. In other major producing States which have compulsory unitization statutes, the percentage of voluntary participation required may be so high as to make unitization of some reservoirs difficult or impossible. To overcome these problems, the Federal Government could recommend that each State adopt a compulsory unitization statute requiring that 60 percent of the working interest and royalty owners consent to unitized operations before the remaining interest owners would be compelled to participate. This could be easily incorporated in existing unitization legislation in each State.

Alternatively, the Federal Government could require that States adopt such features in their unitization statutes before the States can qualify for administrative support or to avoid having a Federal agency take responsibility for unitization and enhanced recovery regulation,

While it is likely that this would be a constitutional exercise of Federal authority under the commerce clause, such a major step probably would encounter considerable opposition at the State level. In any case, the desirability of strong regulations to encourage unitization would depend on a more detailed reservoir-by-reservoir analysis of the extent to which unitization problems are in fact an obstacle to a significant amount of potential EOR activity.

The Federal Government could also recommend to the States that they, by statute, exempt producers from liability for any damages caused by State-approved enhanced recovery operations not involving negligence on the part of the producer. This would remove a constraint to the operations and would act as an incentive to unitize for parties who might otherwise remain out of the unit.

As to regulatory requirements and practices, there were only two important areas of concern for producers: environmental requirements in California and the potential impact of the regulations issued by EPA under the Safe Drinking Water Act. Congress might consider reviewing the effects of various environmental laws and regulations on the production of petroleum. Congress might also consider reviewing EPA's authority and actions under the Safe Drinking Water Act to see if the proposed regulations would unduly restrict enhanced recovery projects. Producers did not complain of State EOR practices and a number indicated that State commissions are most helpful. With respect to Federal lands, several producers indicated that the Bureau of Indian Affairs and the U.S. Geological Survey had delayed the initiation of projects for long periods of time. Congress might consider directing the Department of the Interior to survey Federal lands for their EOR potential and to review its policies on EOR.