Selected Legal and Regulatory Concerns Affecting Domestic Energy Transportation Systems

July 1979

**Prepared for the U.S. Department of Energy
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SELECTED LEGAL AND REGULATORY
CONCERNS AFFECTING DOMESTIC
ENERGY TRANSPORTATION SYSTEMS

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FOREWORD

This report is an account of effort performed as a task in the Energy Material Transport, Now Through 2000, System Characteristics and Potential Problems Project. This project is conducted for the Department of Energy, Environmental Control Technology Division, by Pacific Northwest Laboratory. The DOE Project Officer is R. F. Garrison; Project Manager at PNL is J. G. DeSteele. The studies and analysis contained in this report were contributed by staff members of the Battelle Human Affairs Research Centers.

The overall objectives of this project are: 1) to provide advanced warning of potential problems that may inhibit the safe and environmentally-acceptable development of fossil and nuclear energy material transportation systems between now and the year 2000; and 2) to recommend research, development and other action to mitigate the potentially adverse impacts of these problems. The results of other studies in this project have been published as indicated below:

1. An Overview of Transportation in the Nuclear Fuel Cycle (BNWL-2066)
2. Project Task 2 Final Report - Coal Transportation (PNL-2420)
3. Project Task 3 Final Report - Petroleum Transportation (PNL-2421)
4. Project Task 4 Final Report - Natural Gas Transportation (PNL-2422)
5. Assessment of Synfuel Transportation to Year 2000 (PNL-2768).

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SUMMARY

This report provides assessments of eight legal and regulatory concerns that may affect energy material transportation in the United States during the balance of the century. These concerns are discussed individually in the chapters of this report. The primary conclusions of this study are as follows:

- Chapter 1--"State Authority to Regulate the Transportation of Nuclear Materials under The Clean Air Act, the Hazardous Materials Transportation Act, and the Atomic Energy Act"

Under the Clean Air Act the states have little or no authority to regulate the transportation of nuclear materials. However, under both the Hazardous Materials Transportation Act and the Atomic Energy Act, the states have retained some jurisdiction to regulate the transportation of nuclear materials; nevertheless, the exact division between federal and state jurisdiction is not at all clear.

- Chapter 2--"Divestiture of Petroleum Pipelines from Major Integrated Oil Companies"

The ultimate resolution of the divestiture issue may well depend on social and political, not economic, factors. Moreover, now that the Federal Energy Regulatory Commission has been created, additional analysis is needed in order to justify the difference between the ICC's regulation of oil pipelines and FERC's regulation of gas pipelines.

- Chapter 3--"Problems Affecting the Natural Gas Transportation System"

Given the multi-year debate that preceded both the approval of Northwest Alaskan's proposal to build the Alaskan

natural gas pipeline system and also the recently passed Natural Gas Policy Act of 1978, it seems premature to undertake any new major administrative or legislative initiatives until the results of these two actions become more certain.

- Chapter 4--"Capabilities of Energy Transportation Systems During Emergencies"

The Emergency Petroleum Allocation Act, the Energy Policy and Conservation Act, the Energy Conservation and Production Act, and the National Energy Conservation Policy Act of 1978 seemingly give the United States the ability to respond quickly to emergency shortages in the supply of energy.

- Chapter 5--"Federal Coal Pipeline Legislation"

Several steps must be taken before the issue of whether or not western coal should be transported by unit trains or by pipelines can be resolved. First, one must determine what agency will regulate the pipelines and what regulatory powers the agency will have. Second, the question of who has the right to use water in the arid western states must be resolved. Third, the environmental problems posed by the Clean Air Act must be settled. And fourth, because of the importance of the coal pipeline issue, there should be more--and more visible-- public debate.

- Chapter 6--"Ability of Federal Agencies to Anticipate Railroad Difficulties"

Long-term solutions to the economic problems of the railroads will probably come from less--not more--federal regulation. Since the administration is currently preparing deregulation legislation that hopefully would give railroads greater freedom to raise or lower rates, to abandon uneconomic lines, and to merge if necessary, no legislative or administrative action is currently appropriate.

- Chapter 7--"Abandonment of Uneconomic Railroad Lines"

The Interstate Commerce Act, the Regional Rail Reorganization Act, the Railroad Revitalization and Regulatory Reform Act, and the new administrative procedures of the ICC all provide alternatives to abandonment that should mitigate the negative consequences of a railroad's abandoning an unprofitable line.

- Chapter 8--"The Impact of the Panama Canal Treaty Upon U.S. Energy Transportation"

Ratification of the Panama Canal treaties will not have a significant adverse impact on the energy transportation system in the United States. In fact, to the extent that the treaties reduce tensions and eliminate a significant cause of hostilities, they may assure the continued operation and openness of the Canal for all shippers.

INTRODUCTION

Effective, safe and publicly-acceptable systems for transporting energy materials are essential components of the national economy and security. The volume and number of energy materials transported is steadily increasing. This trend can be expected to continue during the rest of the century. A variety of problems may develop in the future as a result of this anticipated growth.

The "Energy Material Transportation, Now Through 2000" (TP-2000) Project, performed for the Department of Energy (DOE) by PNL has produced a series of reports that assess transportation problem scenarios in the balance of the century. A primary purpose of each task in this project is to provide information and perspective that assists the evaluation of future research and development needs and priorities. Project effort to date has identified and assessed potential problem scenarios affecting the transportation of the principal fossil fuels (coal, petroleum, and natural gas), synthetic fuels and commercial nuclear fuel cycle materials.

Several significant future concerns in energy material transportation appear to be associated with legal and regulatory issues. These concerns tend to be more critical than concerns of a purely technical nature. Resources can generally be organized to address a technical problem in a relatively short time after it is recognized. In contrast, the resolution of legal, regulatory, institutional and social issues typically requires many years and sometimes decades.

Previous reports in this series provide assessments of a broad range of potential problems, including legal and regulatory concerns, that may affect the safety, environmental compatibility and future adequacy of energy material transportation systems. Since the completion of these studies, some of the legal and regulatory concerns considered previously

have developed new implications. Other concerns of this type have evolved from recent events.

This task in the TP-2000 Project was undertaken to review some of these potentially significant concerns in more detail. The task, therefore, complements and, in some cases, extends several assessments performed in other tasks of the project.

This report provides assessments of eight specific legal and regulatory concerns that may affect domestic energy material transportation between now and the year 2000. These concerns are discussed individually in the following eight chapters of this report. Comments are included, where appropriate, to compare the results of this study with the conclusions and recommendations contained in other reports of the series.

CHAPTER ONE

STATE AUTHORITY TO REGULATE THE TRANSPORTATION
OF NUCLEAR MATERIALS UNDER THE CLEAN AIR ACT,
THE HAZARDOUS MATERIALS TRANSPORTATION ACT,
AND THE ATOMIC ENERGY ACTCONCERN

Seventy nuclear power plants provide over 10 percent of the electrical generating capacity in the United States. By 1985, it is anticipated that an additional 75 nuclear plants will be in operation. Every year each of these plants discharges about 30 metric tons of spent fuel. This fuel is temporarily placed in onsite storage pools but must eventually be transported either to a federal waste repository for disposal, an away-from-reactor storage area, or, if such a facility is licensed, to a reprocessing plant. If transportation services are not available to move this spent fuel from filled reactor storage pools, the reactors must be shut down.

In general, the jurisdiction to regulate the transportation of spent fuel belongs to the federal government. However, limited state authority to regulate this area is provided by the Hazardous Materials Transportation Act and the Atomic Energy Act. Moreover, the Clean Air Act Amendments of 1977 also give the states some authority to regulate air pollution caused by nuclear materials. This chapter explores the extent to which state regulation of the transportation of nuclear materials is provided by these three acts.

CLEAN AIR ACT

The Clean Air Act Amendments of 1977 (42 U.S.C. §§7401 et seq.) probably do not provide for state regulation of the transportation of nuclear materials. Subchapter II of the Amendments ("Emission Standards for Moving Sources") pertains

to air pollution caused by moving sources. However, this subchapter clearly is designed to regulate emissions from the propulsion plant of mobile sources of pollution, such as automobiles and other vehicles, not to the transportation of spent nuclear materials.

Subchapter I ("Programs and Activities") does explicitly mention nuclear and radioactive materials, but it also does not appear to be applicable. However, the issue of whether Subchapter I permits the states to regulate the transportation of nuclear materials is complex and should be examined in detail.

Section 7422 of Subchapter I states that, no later than August 7, 1979, the administrator of the Environmental Protection Agency shall determine whether or not emissions of radioactive pollutants "will cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health." As of fall 1978, no such determination has been made, and it is likely that no final determination will be made until late 1979. The strongest arguments for state regulation may well fall under Section 7422.

If an affirmative determination is made, then the radioactive pollutant can be regulated pursuant to sections 7408 ("Ambient Air Quality Standards"), 7410 ("Standards of Performance for New Stationary Sources"), and 7412 ("Standards for Hazardous Air Pollutants"). Of these three sections, the one that most clearly provides for state regulation of nuclear or radioactive materials is section 7412.

Section 7408 and the two related sections, 7409 and 7410, may be apposite. First, these sections apply only to emissions "which may reasonably be anticipated to endanger public health or welfare" (§7408(a)(1)(A)) and which result from "numerous or diverse mobile or stationary sources" (§7408(a)(1)(B)). Approximately 3 million shipments of radioactive materials of all varieties are made each year.

If the radiation emitted by these materials were to be termed a "radioactive pollutant" the shipments could conceivably be termed "numerous or diverse mobile or stationary sources". There is, therefore, a slim chance that radioactive materials in transit could be considered to come within the meaning of Section 7408(a)(1)(B).

Sections 7408-7410 do not seem to provide for more than minimal state regulation. Section 7408 states that the administrator of the EPA shall issue air quality criteria and control techniques for the purpose of establishing national primary and secondary ambient air quality standards. Section 7409 provides for the actual promulgation of the national primary and secondary ambient air quality standards by the EPA, and section 7410 provides that state implementation plans be submitted to the EPA in order to ensure compliance with the national primary and secondary ambient air standards. The state implementation plans are designed only to enforce the federal regulations, not to enforce state regulations.

Finally, the section of the Clean Air Act (§7416) that explicitly provides for the retention of state regulation does not refer to section 7408. Section 7416 says that a state or a subdivision may establish standards more stringent than federal standards. However, this section refers only to section 7411 ("Standards of Performance for New Stationary Sources") and section 7412 ("National Emission Standards for Hazardous Air Pollutants"). It does not mention, and therefore does not apply to, section 7408.

In summary, therefore, it seems clear that states cannot regulate the transportation of nuclear materials under section 7408 (and the related sections 7409 and 7410).

It is also doubtful that section 7411 provides for state regulation of the transportation of nuclear materials. This section provides for establishment and enforcement of standards of performance for new stationary sources. "Stationary"

is defined to mean "any building, structure, facility, or installation which emits any air pollutant" ((42 U.S.C. §7411(a)(3))). The EPA's Office of General Counsel in Washington, D.C. has a narrow interpretation of the word "stationary". According to the General Counsel's Office, since the transportation of nuclear materials is clearly covered by the Hazardous Materials Transportation Act, there is no gap or interstice in the scheme of federal regulation over nuclear materials. Therefore, there should be no motivation for EPA to argue that the word "stationary" includes transported fuel casks.

Finally, EPA's Office of General Counsel in Washington has also stated that the regulation of nuclear materials in its Clean Air Act is probably covered by section 7412, not by section 7411. Section 7411 applies to sources of pollution "which may reasonably be anticipated to endanger public health or welfare" (42 U.S.C. §7411(b)(1)(A)). Section 7412, on the other hand, applies to air pollutants which may result in "an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness." The General Counsel's Office believes that the more catastrophic language of section 7412 is more appropriate for the regulation of nuclear materials than is the language of section 7411.

Thus, as was the case with section 7408, there is little likelihood that states can regulate the transportation of nuclear materials pursuant to section 7411.

The third possibly applicable section is 7412 ("National Emission Standards for Hazardous Materials"). As stated earlier, if the administrator of the EPA determines by August 7, 1979, that radioactive emissions "may reasonably be anticipated to endanger public health" (42 U.S.C. §7422), then these radioactive pollutants may be regulated pursuant to section 7412. Moreover, as also stated earlier, section 7416 explicitly says that states can adopt more stringent standards than the federal government under section 7412. Finally, the

EPA's General Counsel's Office has stated that section 7412 is the most appropriate of all sections in the Clean Air Act with respect to regulating nuclear materials.

However, section 7412 applies only to a "stationary source" of hazardous air pollutants. (42 U.S.C. §7412(a)(2)) And "stationary" is to be given the same meaning as it was in section 7411. As explained earlier, both the interpretation of the EPA's General Counsel's Office and common sense would seem to preclude the possibility that a transported fuel cask would fall within the definition of stationary source. Thus, in all likelihood, states will not be able to regulate the transportation of nuclear materials by relying on section 7412.

In conclusion, neither Subchapter II of the Clean Air Act nor the various sections of Subchapter I would appear to give states any meaningful authority over the regulation of transported nuclear material.

HAZARDOUS MATERIALS TRANSPORTATION ACT

An act that clearly does authorize some state regulation of the transportation of nuclear materials is the Hazardous Materials Transportation Act (46 U.S.C. §170; 49 U.S.C. §§1471, 1472, 1655, 1801 et seq.). Section 112 of the act (49 U.S.C. §1811) provides for state regulation as long as the state regulation is not inconsistent with any requirement set forth in the Hazardous Materials Transportation Act or in any regulations issued pursuant to the act.

Except as provided in subsection (b) of this section, any requirement, of a state or political subdivision thereof, which is inconsistent with any requirement set forth in this title, or in a regulation issued under this title, is preempted. (49 U.S.C. §1811(a))

Section 112(b) further provides that an inconsistent state or local requirement is preempted unless the Secretary

of Transportation determines that the state or local requirement:

- (1) affords an equal or greater level of protection to the public than that provided by federal requirements; and
- (2) does not unreasonably burden commerce.

The Department of Transportation has adopted regulations establishing administrative procedures for implementing section 112 (49 C.F.R. 107 Subpart C). These procedures are intended to provide states, localities, and affected persons with the opportunity to seek administrative rulings on the consistency or inconsistency of any state or local requirements.

Thus far, there has been only one decision concerning the scope of state regulation permitted by section 112 (Inconsistency Ruling IR-1, April 4, 1978, 43 F.R. 16954-58, April 20, 1978). This ruling involved a provision of the New York City Health Code.

Section 175.111 of New York City Health Code was amended on January 15, 1976, to, in effect, prohibit the transportation of commercial radioactive materials through the city. On March 1, 1977, the Associated Universities, Inc., of Upton, Long Island, operator of two research reactors at Brookhaven National Laboratory, applied for an inconsistency ruling as to whether the New York provision was inconsistent with and preempted by the Hazardous Materials Transportation Act. In its administrative ruling of April 4, 1978, the Materials Transportation Bureau of the Department of Transportation (MTB) concluded that:

[t]here is not any identifiable requirement in the text of the HMTA or in regulations issued thereunder that provides a basis for a finding of inconsistency with §175.111.⁽¹⁾

Thus, the MTB found that there was no federal preemption and that New York could in fact prohibit the transportation of radioactive materials within its boundaries. An appeal of the decision has been withdrawn, and the decision of the Bureau has become final.⁽²⁾

However, the MTB did limit the applicability of its ruling by adding four caveats.⁽³⁾ First, the decision applied only to highway transportation. Air, rail, and water transportation "are more thoroughly imbued with a federal interest," and thus the Bureau indicated that the city's regulation of the transportation of nuclear materials by these modes would be looked upon less favorably. Second, the Bureau noted that §175.111 might still be declared invalid because of preemption under the Commerce Clause or under the Atomic Energy Act. Third, contrary to the position taken by the city, New York could not require a highway carrier to ship radioactive material by a nonhighway mode, if transportation through the city by highway was the only practical route. Fourth, the validity of Section 175.111 might well be subject to further attack on the grounds of federal preemption under the Hazardous Materials Transportation Act, depending upon future rulemaking that will be undertaken by the Bureau. Presently, hearings are scheduled to be held in Washington at the end of November, 1978, and additional regulations concerning the transportation of nuclear materials may well be issued by late 1979.

Finally, although not mentioned in the inconsistency ruling, the jurisdiction of DOT under the Hazardous Materials Transportation Act is limited to transportation "affecting interstate commerce." Under this test, shipments do not have to cross state lines in order to be subject to DOT jurisdiction. Nevertheless, it is possible that, at some point, as shipments become shorter and more localized, a court could find that they no longer affect interstate commerce and hence are not subject to DOT control.

ATOMIC ENERGY ACT

A third act that provides for limited state regulation over the transportation of nuclear materials is the Atomic Energy Act (42 U.S.C. §§2011 et seq.). In particular, section 274 permits the Nuclear Regulatory Commission (NRC) to share some of its regulatory authority with the states upon the execution of an agreement between the Commission and the governor of a state.⁽⁴⁾ Currently, 25 states have entered into such agreements, which provide them with regulatory authority over by-product material, source material, and less-than-critical quantities of special nuclear material.⁽⁵⁾ The state role has generally been interpreted as being a rather minor one, covering the regulation of research, medical, or industrial activities that only use minimal quantities of radioisotopes, natural uranium, or special nuclear materials. It has generally been assumed that the regulation of more hazardous activities, such as the construction and operation of nuclear reactors, would be reserved for federal responsibility.⁽⁶⁾

Industry experts and federal regulators^(7,8) are of the view that the NRC cannot relinquish its regulatory authority with respect to the packaging, shipment, or carriage of spent fuel or high-level radioactive wastes. However, some state officials believe that agreement-state status permits a state to regulate spent fuel shipments. For example, the Attorney General of the state of Oregon has taken the position that Oregon's agreement-state status, together with the legislation that the state has enacted, gives the Energy Facility Siting Council jurisdiction to regulate, within Oregon, all transportation of spent fuel and high-level radioactive waste being transported from or to any nuclear reactors.⁽⁹⁾ Because section 274 of the Atomic Energy Act precludes the NRC from turning over jurisdiction concerning critical amounts of special nuclear materials, it would appear that the Oregon

interpretation of state authority is too broad. However, a lawsuit may be required to settle the issue. In the meantime, a shipper who ignores Oregon's regulations may be doing so at his peril.

Finally, there may also be a limited state regulatory role concerning the transportation of nuclear materials that does not affect interstate commerce. Although NRC has expressly exempted common and contract carriers from licensing requirements, it does require licensees to assure compliance.⁽¹⁰⁾ In the case of agreement-states, this poses no problem, since all agreement-states require that packing and transportation comply with DOT standards.⁽¹¹⁾ In addition, many states--both agreement-states and nonagreement-states--have adopted the DOT regulations by reference. However, in those states that have neither signed an agreement with the NRC nor have adopted DOT regulations, there may be a regulatory gap concerning the transportation of nuclear materials that does not affect commerce and does not involve NRC licensees. It is not clear, however, whether such a regulatory gap in fact exists, or whether, if it does exist, it would prove to be troublesome.

CONCLUSION

In general, it appears that under the Clean Air Act the states have little or no authority to regulate the transportation of nuclear materials. However, under both the Hazardous Materials Transportation Act and the Atomic Energy Act, the states have retained some jurisdiction to regulate the transportation of nuclear materials. Nevertheless, the exact division between federal and state jurisdiction is not clear and will be resolved only by further judicial and administrative decisions or by additional legislation.

NOTES: CHAPTER ONE

1. Inconsistency Ruling, IR-1, 43 F.R. 16957, April 4, 1978.
2. Telephone conversation, David Ortiz, Office of Research and Special Programs Administration, Department of Transportation, October 23, 1978.
3. Ibid. at 16958.
4. 42 U.S.C. §2021.
5. The "agreement" states are: Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Nebraska, Nevada, New Hampshire, New Mexico, New York, North Carolina, North Dakota, Oregon, South Carolina, Tennessee, Texas, and Washington.
6. A. Murphy and D. La Pierre, "Nuclear 'Moratorium' Legislation in the States and the Supremacy Clause: A Case of Express Preemption," 76 Columbia L. Rev. 392, 402 (1976).
7. W. England, "Recent Regulatory Developments Concerning the Transportation of Nuclear Fuel and Other Radioactive Materials," 7 Environmental Law 203, 210 (1977).
8. W. A. Brobst, ERDA, "Nuclear Transportation: Problems and Proposed State Regulations," AIF Nuclear Dialogue for State Regulators, Detroit (October 19, 1976), 10.
9. Opinion of the Attorney General of Oregon, Lee Johnson, Attorney General, No. 7308 (June 25, 1976), 2 CCH Nuclear Reg. Rep. 16,256.
10. 42 U.S.C. §2021(k).
11. 42 U.S.C. §2018.

CHAPTER TWO

DIVESTITURE OF PETROLEUM PIPELINES FROM
MAJOR INTEGRATED OIL COMPANIESCONCERN

The petroleum industry plays a dominate role in the U.S. economy. Twelve out of the top 25 largest industrial corporations in the United States are petroleum companies,⁽¹⁾ and virtually every activity undertaken by business and individuals requires reliable deliveries of oil and natural gas.

The major petroleum companies are involved in each of the four basic stages of the industry: production, transportation, refining, and marketing. These major companies have also diversified into fuels that are alternatives for oil and natural gas, such as coal and uranium.

The size and influence of the major oil companies, plus the quadrupling of petroleum prices in 1974, have contributed to proposals that the major oil companies be forced to divest themselves of significant portions of their operations. An important target of this divestiture effort is the separation of oil pipeline operations from the integrated companies. The issue of divestiture and the related issue of the regulation of natural gas pipelines are enormously complex and are briefly examined in this chapter.

BACKGROUND

Almost since the birth of the petroleum industry in the United States, there has been controversy concerning the industry's ownership of petroleum pipelines. The oil pipeline industry is dominated by oil company ownership. In the transportation of both crude oil and refined petroleum

products, oil companies are generally the producers and receivers of the commodities moved by pipeline. No other mode of transportation is so completely integrated with the industry that it serves.⁽²⁾ Generally, other common carrier transportation companies are owned and operated independently of producers and receivers. Railroads, for example, are prohibited from transporting their own commodities.⁽³⁾

Because of the concentrated nature of the industry and the vertical ownership of the major companies, many criticisms have been advanced concerning industry ownership of the oil pipelines. Some critics have charged that producers have used their control of pipelines to allocate market shares. Others have stated that vertical ownership of pipelines has removed the incentive to reduce pipeline tariffs. In addition, some critics claim that outside competition for pipeline transportation is foreclosed because of the long-term throughput commitments given by oil companies to their own pipelines.⁽⁴⁾ More generally, many critics argue that there is no free market for crude or refined product in the petroleum industry today because of the dominance of the vertically integrated companies and that the absence of competitive markets results in inefficiency at refining and marketing levels. The proponents of divestiture say that divestiture will permit the development of free markets in crude and refined products and will bring about increased efficiency.⁽⁵⁾

On the other hand, many justifiable arguments have also been proposed opposing divestiture. For example, there may be economies resulting from the vertical ownership of oil pipelines. Moreover, the oil industry obviously has the greatest expertise in the oil business, and therefore, the oil companies should have the greatest knowledge and ability to operate oil pipelines efficiently. In addition, since tariffs charged by oil pipelines are regulated by the Interstate Commerce Commission, the oil companies can only charge

"reasonable" rates.⁽⁶⁾ Finally, many economists and industry officials argue that petroleum is one of the least concentrated of the nation's major industries and that it is characterized by a high degree of healthy competition with vigorous and effective markets for both crude oil and refined petroleum products.⁽⁷⁾

In summary, there are arguments for both sides of the divestiture issue, and lengthy analysis is required before one can state whether or not divestiture would be economically beneficial.

POSITION OF THE JUSTICE DEPARTMENT

The Justice Department is in favor of divestiture. It has indicated that "[w]e believe that there may be sound reasons for enacting legislation which would require that oil pipelines be independently owned, free from control by persons engaged in any other phase of the petroleum business."⁽⁸⁾ The Justice Department perceives that there is little economic advantage to petroleum company ownership of oil pipelines, and it is skeptical of assertions that independent entrepreneurs would not be able to raise the enormous amounts of capital necessary to build pipelines. Moreover, it believes that if independent pipeline entrepreneurs were given the same kind of throughput commitments from the prospective users that major oil companies are given when they propose a joint venture pipeline, the economic risks would be reduced to acceptable limits, and independent operators would thus be willing and able to finance even the largest pipeline projects.

The Department also has noted that independently-owned and operated pipelines such as the Williams Brothers and Buckeye pipelines, for example, have operated for many years entirely apart from any ownership of petroleum companies. They have operated their facilities and added new facilities

in response to the needs of existing and perspective shippers large and small, integrated and unintegrated.⁽⁹⁾

As a result of the above positions, the Justice Department (as well as the Federal Trade Commission and the Department of Energy) has recently stated that the establishment of pro-competitive rules or the preclusion of oil company ownership of petroleum pipelines appears to be desirable.⁽¹⁰⁾

REGULATORY HISTORY

Under the Interstate Commerce Act, oil pipelines are common carriers subject to ICC determination of rates. Rates charged by the pipelines must be "reasonable." Moreover, rates that are found to be "excessive" may operate as an unlawful rebate to producers who own the pipelines, since all producers could pay the same rate but the producers/pipeline owners could pay a dividend to themselves.

In an action brought by the Justice Department and settled by a consent decree in 1941,⁽¹¹⁾ dividend payments to owners of an interstate common carrier oil pipeline were limited to seven percent. However, because the Justice Department was not very precise in the language in the consent decree, the U.S. Supreme Court subsequently interpreted the consent decree as allowing common carriers to distribute earnings on pipeline operations based on valuations which include debt as well as equity capital.⁽¹²⁾ Therefore, a pipeline owner could receive a seven percent return on the total value of his investment, although in fact his paid-in or equity capital might amount to only a small percent of his total investment.

A House subcommittee report stated:

The decree . . . sought only to limit dividends to a fair return on the actual investment by shipper-owners. But it did so quite ineptly by the adoption of a formula limiting dividends paid out to seven percent of the "shipper-owners

share" of the pipeline's "valuation." This language made the seven percent limitation almost completely ineffective, since it was applied not to paid in investment only but to the entire valuation of the line, including debt capital. And, since joint venture pipelines were increasingly financed by a 90-10 debt equity ratio, the difference was quite staggering. Instead of a limit of seven percent of actual investment, the formula permitted dividends of 70 percent of actual investment.(13)

Thus, although oil pipelines have been subject to Interstate Commerce Act regulation since 1906, the regulatory scheme has not been completely effective.

Moreover, the ICC's regulatory authority over oil pipelines is different than the Federal Energy Regulatory Commission's (FERC's) regulatory authority over gas pipelines. As stated above, the ICC began regulating oil pipelines in 1906. Natural gas pipelines, on the other hand, were not regulated until 1938, when the Federal Power Commission (FPC) was created. In October, 1977, the Federal Energy Regulatory Commission (FERC), was established pursuant to the Department of Energy Organization Act, and it assumed much of the FPC's regulatory authority. FERC, unlike the ICC, does have authority to grant certificates of public convenience and necessity for oil pipelines and to order extensions of existing facilities.

CONCLUSION

Given the complexity of the economic issues concerning divestiture, it is not appropriate to recommend in this brief issue paper what should or should not be done. In fact, the ultimate resolution of the divestiture issue will in all likelihood depend on social and political factors, not economic ones.

However, with respect to the regulation of oil pipelines, some action is probably desirable. At the least, now that the

Federal Energy Regulatory Commission has been created, it may well be appropriate to examine in detail the different regulatory schemes for the natural gas pipeline industry and the oil pipeline industry. Since it is unclear why the ICC's regulation of oil pipelines should be different from FERC's regulation of natural gas pipelines, further justification for these different regulatory schemes is at least warranted.

Another aspect of this concern was identified in the Petroleum Task Study of this Project.⁽¹⁴⁾ This concern is that pending the resolution of the divestiture issue, consumers may be faced with a suboptimal petroleum transportation system and uncertainty within the industry which may deter investments needed to maintain and develop the system. A recommendation of the Petroleum Task Study was that the DOE should develop a policy position on divestiture during the period of public debate on this subject. The DOE should also develop recommendations that would improve competition within the petroleum industry and minimize any resulting impacts on the energy transportation system.

NOTES: CHAPTER TWO

1. "The 500 Largest Industrial Corporations," Fortune (May 8, 1978) at 240.
2. J. Jimison, National Energy Transportation, Vol. I--Current Systems and Movements, Report by the Congressional Research Service for the U.S. Senate Committee on Energy and Natural Resources, and the Committee on Commerce, Science, and Transportation, 95th Cong, 1st Sess., Publication No. 95-15 (May 1977) at 281.
3. 49 U.S.C. 1(8).
4. Current Systems and Movements, supra note 5 at 274.
5. U.S. Senate Committee on the Judiciary, Majority Report on the Petroleum Industry Competition Act of 1976, Report No. 94-1005, Part I, pp. 5-6.
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CHAPTER THREE

PROBLEMS AFFECTING THE NATURAL
GAS TRANSPORTATION SYSTEMCONCERN

The United States natural gas transportation system has changed rapidly during the past few years. Production in traditional areas along the Gulf Coast and in the Southwest has been declining for almost a decade, the new sources of gas that have been or may well be found (such as North Slope Alaskan gas) are far from the existing natural gas transportation system. Finally, the shortages, the declines in production, and the supply/demand imbalances that have existed between the inter- and intrastate systems in recent years will hopefully be eliminated or moderated by the recently enacted Natural Gas Policy Act of 1978. This chapter examines the recent changes in this country's natural gas transportation system and discusses whether additional measures are needed.

HISTORY

The interstate natural gas market grew up largely around the production capacity of Texas and Louisiana. In 1941, the Bureau of Mines reported that:

Texas and Louisiana have been the principal sources of new gas for markets in other states. Their importance is indicated by the fact that 71 percent of the total increase in interstate movement in the 13-year period (1928-1941) came from these two states.⁽¹⁾

Subsequently, the natural gas industry in Texas and Louisiana continued to grow rapidly. Pipelines were constructed that tied all but one of the lower 48 states (Vermont) to the producing or exporting states. The bulk of

the flow was from the Gulf Coast and Southwest to industrial regions of the North and Middle Atlantic states, although a separate but important market developed in California.

Texas and Louisiana still dominate the production of natural gas. They produce approximately 75 percent of the natural gas consumed in the continental U.S. Moreover, since three adjacent states (New Mexico, Kansas, and Oklahoma) account for another 17 percent of total production, over 90 percent of U.S. production is concentrated in this five-state region.⁽²⁾ The transportation system that developed to move this gas to distributors is comprised of over 300,000 miles of gathering and transmission pipeline. These permanently installed point-to-point pipelines almost all emanate from the five central producing states.⁽³⁾

However, most recent forecasts have estimated that the volume of domestically produced natural gas will diminish by the turn of the century.⁽⁴⁾ Production peaked in the traditional Gulf Coast producing areas in the late 1960s and apparently has begun an irreversible decline. By 1974, declining production forced curtailed deliveries to both firm and interruptible customers. In 1975-76, the nation's 50 major interstate pipelines curtailed deliveries by an average of 20 percent, and in 1976-77 interstate pipeline companies curtailed 23 percent of their firm requirements.⁽⁵⁾ The FPC projected that there would be less gas delivered in 1977-78 than in 1976-77.

Declining proven reserves and diminishing supply therefore have produced excess capacity in the pipeline system. Unless new supplies of natural gas are found, the pipeline system will be transporting less and less Southwest and Gulf Coast gas to distributors. In turn, the increasing inefficiency of the system will inevitably result in higher prices to the consumer.

NEW SOURCES OF GAS

A major source of new domestic gas will come from the North Slope of Alaska, specifically from Prudhoe Bay. The planned Northwest Alaskan pipeline project, which will deliver gas from Prudhoe Bay to the lower 48 states, will have a capacity of at least 2.5 million cubic feet of gas per day. Proven reserves at Prudhoe Bay are listed at 26 trillion cubic feet, which is equivalent to slightly more than the U.S. consumption for one year.⁽⁷⁾ In addition, further exploration for gas (and petroleum) is now being conducted near Prudhoe Bay in the Beaufort Sea and in the National Petroleum Reserve-Alaska.

Supplemental supplies will also be imported as liquefied natural gas (LNG). The first major operating LNG facilities are in the Northeast at Everett, Massachusetts, and Cove Point, Maryland. The Everett LNG plant has a capacity of 44 million cubic feet per day, and the Cove Point project is expected to "boost gas supplies by one million cubic feet a day over the next 25 years."⁽⁸⁾ Taken together, the capacity of the two plants represents 10 to 15 percent of the baseload supply of the two pipeline companies who will be transporting the gas. In addition to these two facilities, there are other projects that presently should deliver approximately 1.1 trillion cubic feet a year by 1985.⁽⁹⁾

Other possible sources of new gas include increased imports from Canada and Mexico. Canada's MacKenzie Valley has proven reserves of 7 trillion cubic feet, while Mexico's Reforma oil fields could possibly deliver a billion cubic feet a day to the southern tip of Texas.⁽¹⁰⁾ However, the potential for these imports is uncertain, since many problems have yet to be resolved, such as whether the gas should be priced by the incremental or "rolled-in" method and whether increasing the U.S.'s dependence on foreign sources of supply

can be reconciled with the goals of the President's National Energy Plan.

Additional sources of new gas which could materially alter the U.S. gas supply are Eastern Devonian shale deposits, geopressurized zones in the Gulf of Mexico, discovery of economically recoverable sources of gas in both the Pacific and Atlantic outer continental shelves (OCS). Presently, there have been significant discoveries in the Baltimore Canyon off the East Coast, while in contrast the results of OCS exploration in the Gulf of Alaska have been disappointing so far.

A final source of supplemental supplies could come from coal gasification. The economics of coal gasification is uncertain, but its future is most promising in the Northern Plains states, Montana, and Wyoming, where coal that can be strip-mined is located.

Regardless of where the new supplies of natural gas come from, it is likely that many of the discoveries will be located in areas far from the traditional producing regions in the Southwest and the Gulf Coast. The ability of the natural gas pipeline industry to integrate these new supplies into an economical and equitable system is therefore a matter of serious concern. President Carter's National Energy Plan recognized that concern:

During the era of cheap energy, the United States developed a national energy transportation system principally for moving oil and natural gas from the South and the Texas Panhandle to the North and the Northeast It is clear that the energy transportation routes built in the first half of this century will have to be supplemented by new routes capable of moving the projected mix of energy supplies in 1985 to market.⁽¹¹⁾

Therefore, substantial new discoveries of natural gas will inevitably mean that new pipelines, new regasification plants for LNG, and other new facilities will have to be built.

REGULATORY STRUCTURE OF INDUSTRY

The interstate natural gas pipeline industry has been a fully regulated industry since the passage of the Natural Gas Act of 1938. Until the Department of Energy (DOE) was formed in 1977, interstate natural gas pipelines were regulated by the Federal Power Commission. Since the creation of the DOE, they have been regulated by the Federal Energy Regulatory Commission (FERC), an independent entity within DOE which assumed the jurisdiction of the FPC.

The transmission of gas via pipelines has traditionally been separate from the production and distribution of gas. Unlike the oil industry, the natural gas industry has primarily not been vertically integrated. Until recently, natural gas pipelines have entered into long-term contracts with gas producers to buy the gas. Under the terms of these contracts, the pipelines own the gas while it is in the pipelines; they then resell it to a distribution company or a large industrial user.

This well-established pattern of doing business has undergone major changes since shortages of natural gas began a few years ago. Service has been curtailed to major industrial users under federal end-use priority schedules, and emergency sales between pipelines have been ordered to maintain service to high-priority users. Moreover, a more complex system of transporting gas is now developing. Previously, independent companies marketed their own product to their customers. However, since the shortages began, the FPC (now FERC) has allowed some large industrial users to buy gas directly from the producer at prices above the ceiling set for interstate pipeline purchases. This customer-owned gas is then transmitted through interstate pipelines.

Another major change in the industrial structure involves pipelines moving into the production or exploration end of the natural gas business. Interstate pipelines are spending

hundreds of millions of dollars in exploration and development in an attempt to keep their systems flowing.⁽¹²⁾ The FPC encouraged this trend when it issued Order 770-A in November, 1976. Order 770-A penalizes producers who accept advance payments from pipelines, and thus it effectively eliminates a source of exploration capital for producers. In turn, it should provide incentives to pipelines to do their own exploration and thus create marked changes in the structure of the industry.

Finally, the recently passed Natural Gas Policy Act of 1978 will create even more changes in the industry structure. Among other things, this act will eliminate the distinction between inter- and intrastate natural gas, promote incremental or marginal pricing for large industrial users who use gas for boiler fuel to generate steam or electricity, and will phase out price controls by January 1, 1985, for new gas and for intrastate gas selling for more than \$1.00 per million BTU's.

DISPLACEMENT

The structure of the industry becomes very important when the changing geography of supplies is considered. According to a report prepared by the Congressional Research Service of the U.S. Senate,

[f]rom a practical standpoint, the United States has a natural gas pipeline 'grid' which could be used to modify the directions and quantities of natural gas flows substantially.⁽¹³⁾

However, as the report points out, institutional barriers to instigating such a grid arise from the industry structure and framework.

Technically, the capacity for establishing a grid exists. In 1966, there were approximately 2,300 metered interconnections between gas pipelines.⁽¹⁴⁾ These have grown to the point where there is currently almost an interconnection

wherever two pipelines cross. These have historically been used for emergency connections caused by equipment failure or unexpectedly cold weather. For example, movements of gas between pipelines to provide service to essential users during the heating seasons of 1976-77 and 1977-78 made extensive use of these interconnections. In January 1977, massive amounts of gas were displaced through Ohio and Pennsylvania when additional Canadian supplies were brought in to help meet demand.

In fact, the potential for displacing natural gas through the system exists on a large scale. For example, the proposed Northwest Alaskan pipeline project, if built, will result in substantial volumes of gas being displaced. The Northwest project will deliver gas to the lower 48 states at the Saskatchewan-Montana border and then break into two spurs. The first spur (the Northern Border System) will travel across Montana, North Dakota, South Dakota, Minnesota, and Iowa and terminate near Chicago. The second spur (the Western Leg) will travel through Washington and Oregon and be transferred to the intrastate facilities of Pacific Gas and Electric Company at the California border. The gas will then travel through expanded intrastate facilities to much of California. Both of these spurs will require construction of new pipelines and facilities to deliver gas to their markets. The Northern Border System will include 1,117 miles of new 42-inch pipeline in the United States, while the Western Leg will begin with 873 miles of additional pipeline in California.

In addition to the new pipeline and facilities, each spur will require displacement to reach the markets. For instance, the Northern Border System will deliver gas directly into the three systems which cross its path (Natural Gas Pipeline Company of America, Northern Natural Gas Company, and Michigan-Wisconsin Pipeline Company). Other purchasers of Alaskan gas will probably receive supplies by displacement from existing pipelines.

The Western Leg will also require considerable reorientation of the existing system. The pipeline system which currently supplies much of Southern California flows from Texas. When gas deliveries commence from Alaska, this pipeline system will reduce deliveries to California from Texas. Presumably, this Texas gas will be displaced and shipped to other users in the U.S.

NATIONAL GRID SYSTEM

Ideally, it should be possible to displace natural gas supplies anywhere in the pipeline system and to order gas "wheeled" from one pipeline system to another. However, until recently there have been legal and institutional barriers to this happening. Presumably, the passage of the Natural Gas Policy Act of 1978 will eliminate much of the opposition to wheeling and will encourage the establishment of a national grid of pipelines.

The Natural Gas Policy Act provides that, in a shortage, the President may authorize interstate pipelines and distributors served by interstate pipelines to make emergency purchases of gas under any contract terms and conditions the President believes are necessary. Eligible sellers of this emergency gas include producers not affiliated with an interstate pipeline, intrastate pipelines, local distribution companies, and any persons or companies other than interstate pipelines. Moreover, if the President finds that the above-described emergency purchases are not sufficient to meet high-priority needs, the Act gives him the necessary authority to allocate certain supplies of gas.

The past opposition to wheeling has occurred for three reasons. First of all, intrastate pipelines have traditionally opposed wheeling of natural gas. Intrastate pipelines have in general delivered gas to lower-priority customers than have interstate pipelines. Much of the wheeling that has

occurred has involved rerouting gas to high-priority customers who faced shortages. As a result, intrastate pipelines have opposed wheeling on the grounds that they would suffer disproportionate losses.⁽¹⁵⁾ However, the Natural Gas Policy Act will establish gas prices that are applicable to both the intra- and interstate systems, and therefore it should eliminate the disproportionate impact of wheeling on the intrastate systems.

Second, the widely divergent prices of natural gas have impeded the creation of a national grid system. With gas of all price ranges flowing through an integrated transportation system, the problems of accounting are quite severe. The National Gas Policy Act would create identical prices for intra- and interstate gas and would establish a limited system of incremental pricing of new gas for large industrial customers. The Act thus should help create more uniform and economically justifiable prices.

Third, interstate pipeline companies have also resisted efforts to establish a common carrier or unified national system. Although they are willing to transfer emergency gas voluntarily to other pipelines on a short-term basis, they have feared that acute shortages would become chronic and that pipelines that spent the money and acquired adequate supplies for their customers would be forced to share gas with other less well-managed pipelines on a long-term basis. However, the eventual deregulation of natural gas by January 1, 1985, should encourage more exploration and hopefully more production. Moreover, the elimination of the intrastate-interstate distinction should also reduce, if not eliminate, the recent shortages of interstate gas that have occurred during the past few winters.

CONCLUSION

The Northwest Alaskan Gas Pipeline project will cause the displacement of substantial volumes of natural gas. Before an FERC certificate of public convenience and necessity can be issued, the problems created by displacement must be resolved and the method of displacement must be approved by FERC. Moreover, the severe emergencies and shortages of natural gas during the past few winters will hopefully be reduced by the passage of the Natural Gas Policy Act of 1978.

Given the tremendous debate and interest that preceded both the approval of Northwest's application to build the Alaskan pipeline system and also the Natural Gas Policy Act, it seems reasonable that the project and the act will eliminate or at least mitigate the problems that have recently affected the natural gas system in this country. It would seem premature to undertake any new major administrative or legislative initiatives until the benefits (or costs) of these two actions become more certain.

NOTES: CHAPTER THREE

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4. Federal Power Commission, Bureau of Natural Gas, The Future of Natural Gas, Economic Myths, Regulatory Realities (November 1976), p. 17.
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12. "U.S. Interstate Lines Pour Cash into Search for Gas," The Oil and Gas Journal (December 27, 1976).
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CHAPTER FOUR

CAPABILITIES OF ENERGY TRANSPORTATION
SYSTEMS DURING EMERGENCIESCONCERN

Key energy transportation systems in the United States are vulnerable to disruption by natural disasters and sabotage, and obviously such disruptions can result in massive economic dislocations. To the extent that the nation moves towards larger-scale single-purpose energy transportation systems, vulnerability to these interruptions will increase. Provision of some level of interruption protection thus requires larger inventories, back-up systems, and demand-reduction mechanisms. This paper briefly examines some of the federal programs dealing with emergencies in the U.S.'s energy transportation system.

POSSIBILITIES OF SUPPLY SHORTAGES CAUSED BY NEW
TRANSPORTATION SYSTEMS

The possibility of future supply shortages or emergencies in the nation's energy transportation system exists in part because of the unique characteristics of new or proposed transportation systems. In particular, the Alyeska and Northwest Alaskan pipelines and the existing and proposed coal slurry pipelines could cause disruptions in the supply of oil, natural gas, and coal.

The Alyeska and Northwest pipelines are so large that consumers are, or will be, uniquely dependent upon their reliability. The Alyeska pipeline currently has a capacity of 1.2 million barrels per day, but it can be enlarged to 2.0 million barrels per day. Thus, if the Alyeska pipeline is at full capacity, more than 12 percent of the nation's production

of crude oil would flow through a single pipeline today; by 1985, this amount may increase to over 20 percent.⁽¹⁾

Similarly, the Alaska natural gas pipeline system, if it is built, will transport as much as 1.2 trillion cubic feet of natural gas per year from the North Slope of Alaska to consumers in the lower 48 states. When completed, this system is likely to carry more than seven percent of all domestic natural gas production.⁽²⁾ As in the case of the oil pipeline, any interruption of the Alaska natural gas line will have enormous impacts.

Moreover, both of these pipelines (as well as other major oil and gas pipeline systems in the United States) are largely unprotected from sabotage. These pipelines are (or, in the case of Northwest Alaskan, will be) highly automated, located in isolated locations, and unguarded. What is more, there seems to be little planning or effort directed toward pipeline security.⁽³⁾

Similarly, the construction of coal slurry pipelines might also increase the possibility that shortages or emergencies in energy supplies will occur. Coal slurry pipelines will be point-to-point systems designed primarily to serve a small group of distant high-volume consumers from a single mining area. If a coal slurry system fails, continued deliveries to its customers will obviously be required. However, it is unlikely that sufficient standby railroad or truck transportation capacity would be available. Conversely, the point-to-point rigidity of a slurry pipeline means that it would be of little use in substituting for other transporting systems in the event they are disabled. For example, in the case of a national railroad strike, coal slurry pipelines would be of little help in transporting coal to those previously served by rail.

In summary, the overall trend of energy transportation toward high-volume specialized modes tends to reduce

flexibility and system resiliency in the event of breakdowns. This reduces the alternatives available in the event of emergency interruptions.

RESPONSE CAPABILITY

In the event that there is a shortage in the supply of energy sources, the federal government can rely on several policy measures to mitigate any adverse consequences. These measures are described below.

EMERGENCY ALLOCATION OF NATURAL GAS

Cold weather in the East and Midwest during the winter of 1976-77 created extraordinary demands for natural gas at the same time that supplies of interstate natural gas were declining. In response to this supply shortage, Congress passed the Emergency Natural Gas Act of 1977, which authorized the President, upon a declaration of a natural gas emergency, to order deliveries of natural gas between interstate pipelines and to require the construction and operation of facilities necessary to effect such deliveries or transportation.⁽⁴⁾ The exercise of this emergency authority added an estimated 39.5 billion cubic feet of natural gas to the interstate market during the past winter and an estimated total of 147.2 billion cubic feet through July 31, 1977.⁽⁵⁾

The temporary emergency authority of the President under this act has lapsed, but additional emergency allocation authority is also contained in the recently passed Natural Gas Policy Act of 1978.⁽⁶⁾ Under the emergency provisions of this act, the President may declare a natural gas supply emergency if a gas shortage exists or is imminent that endangers supplies of gas for "high-priority" use. High-priority use is defined as any use of gas in a residence or a commercial establishment, using less than 50,000 cubic feet per day, and any use the curtailment of which would endanger

life, health, or the maintenance of physical property. The President's declaration of emergency will terminate after 120 days or earlier, unless extended because of continued emergency conditions.

During an emergency, the President may authorize interstate pipelines and distributors served by interstate pipelines to make emergency purchases of gas under any contract terms and conditions he believes necessary. Eligible sellers of this emergency gas include producers not affiliated with an interstate pipeline, intrastate pipelines, local distribution companies, and any persons or companies other than interstate pipelines.

If the President finds that the emergency purchases described above are not sufficient to meet high-priority needs, the act gives him authority to allocate certain additional supplies of gas. This allocation authority may be used only after an affected pipeline or distributor has stopped deliveries to all but its high-priority customers.

PRIORITIES OF NATURAL GAS USE

Under the Natural Gas Act, the FPC (now FERC) has issued Order No. 467-B, which established nine priorities of natural gas service for use during periods of curtailed deliveries by interstate pipeline companies. In the event of a shortage, individual pipeline curtailment plans will be implemented that terminate service first to the largest boiler fuel users of natural gas that have alternative fuel burning capability, and then to progressively smaller users. The highest priority users, and therefore the last to be shut off, are residential and small commercial users that do not have alternate fuel burning capability. These curtailment priorities have operated to allocate available natural gas to high-priority users.

In general, Order No. 467-B has only permitted allocations among the end-users of a single pipeline company. However, as explained above, the recently passed Natural Gas Policy Act gives the President far broader power than before to order emergency sales of natural gas between different pipeline systems and also between interstate and intrastate pipelines.

ELECTRIC UTILITY MEASURES

After the 1965 Northeast electrical blackout, the federal government encouraged the formation of electric reliability councils composed of utility industry members throughout the nation. These organizations provide mechanisms for utility cooperation, joint planning, and a forum for decision-making on system interties and other safety devices. The Federal Energy Regulatory Commission (FERC), an independent agency within the Department of Energy, oversees these activities pursuant to the Federal Power Act.⁽⁷⁾

Moreover, the National Energy Act recently passed by Congress contained five separate bills, one of which is the Public Utilities Regulatory Policy Act of 1978.⁽⁸⁾ Among other things, this act provides FERC with new authority to order interconnections, wheeling, and pooling among electric utilities.

FERC is given new powers to order the physical connection of electric power transmission facilities so that energy can be sold or exchanged across the interconnection. The Federal Power Act is amended to empower FERC to order such electric utility interconnections on its own motion or upon application. Prior to issuing such an order, however, FERC must find that the interconnection is in the public interest and that it will improve either energy and economic conservation, efficiency, or overall utility systems reliability. Furthermore, FERC must determine that the interconnection order will not adversely affect reliability or the ability to render adequate

service and that the interconnection will not result in a burdensome economic loss for a utility affected by the order. Finally, any order for interconnection applied for by a utility may not be issued unless the applicant utility adequately demonstrates that it is ready, willing, and able to reimburse the utility subject to the order.

The act also gives FERC new authority to order wheeling, that is to order an electric utility to provide transmission services so that two noncontiguous utilities can transmit electric power over the utility's system. However, before FERC can issue a wheeling order, it must find that the order will:

- (1) conserve a significant amount of energy;
- (2) significantly further the efficient use of electric generation and transmission facilities;
- or
- (3) improve the reliability of utility systems without a reduction in the reliability of other systems.

FERC must also determine that a wheeling order will preserve existing competitive relationships and will not either place an undue burden on a utility affected by the order, impair the reliability of the system or any other utility, or compel the enlargement of generation facilities. No wheeling order may be issued if any other utility is likely to incur an uncompensated loss as a result of the order.

Finally, the act also gives the Secretary of Energy new powers with regard to pooling. The Secretary, in consultation with FERC, shall conduct a one-year review of the opportunities for energy conservation and increased efficiency in use of facilities or resources through pooling arrangements among utilities. In appropriate cases FERC may exempt utilities from any state law or rule which prohibits voluntary

coordination between utilities to obtain more economic use of facilities and resources.

PRICE AND ALLOCATION AUTHORITY

The Emergency Petroleum Allocation Act (EPAA) of 1973 gave the President power to promulgate regulations providing for mandatory price and allocation controls for crude oil, residual fuel oil, and refined petroleum products.⁽⁹⁾ The act also mandated that these standby controls should satisfy certain specific goals, such as the maintenance of national defense, the protection of agriculture, and the preservation of an independent refining industry.

Pursuant to the Emergency Petroleum Allocation Act, the FEA (now DOE) promulgated regulations which specified the allocation and price control measures in detail. These regulations, the Mandatory Petroleum Price and Allocation Regulations, became effective in late 1973 and early 1974.⁽¹⁰⁾

Subsequently, the EPAA was amended by the Energy Policy and Conservation Act (EPCA).⁽¹¹⁾ EPCA permitted the price and allocation regulations to be suspended and placed in a standby status until and unless the President determined that controls were once again necessary. EPCA also provided a mechanism whereby every category of petroleum that had been decontrolled could have controls reimposed.

Moreover, pursuant to EPAA and EPCA, the Economic Regulatory Administration (ERA) is now preparing a contingency rationing plan for motor gasoline. The emergency allocation (as opposed to rationing) plans provide for the distribution of motor gasoline and other crude and refined petroleum products to various economic sectors or activities but not to the ultimate end-users--the individual drivers of various motor vehicles. ERA is preparing a rationing plan that would involve the creation of a white market in motor gasoline coupons. Each registered owner of a vehicle would receive a

certain number of gasoline coupons which could be used to purchase motor gasoline at retail gas stations and wholesale outlets. These coupons, however, could be legally traded so that registered drivers could buy and sell as many coupons as they desired.

STRATEGIC PETROLEUM RESERVE

Another authority related to energy emergency response is the creation of a strategic petroleum reserve (SPR). Part B of Title I of the Energy Policy and Conservation Act requires the storage of petroleum for rapid access in the event of an energy emergency.⁽¹²⁾ Although the principal intent of such a reserve is to safeguard against an interruption in the flow of imported petroleum, it is possible that strategic petroleum supplies can be made available in case of a transportation-related energy emergency.

The plan is to establish a strategic petroleum reserve in two stages: the first stage, to be completed by December, 1978, calls for 150 million barrels, and the second stage, estimated to be reached by December, 1982, calls for a minimum total of about 500 million barrels.⁽¹³⁾ The reserve could obviously play an important role in limiting the impact of a system disruption in the petroleum transportation network.

CONCLUSION

The measures described above, plus other non-emergency conservation measures specified in several acts (e.g., the Energy Policy and Conservation Act, the Energy Conservation and Production Act, and the National Energy Conservation Policy Act of 1978) presumably do give the United States the ability to respond quickly to emergency shortages in the supply of energy. Certainly, when the second stage of the Strategic Petroleum Reserve program is achieved, this country

should be in far better position than before to respond to an oil embargo or shortage.

The results of other studies in this Project support the above general conclusions. However, concerns about the longer-term adequacy of energy material transportation during emergencies were identified in the Petroleum and Natural Gas Study Tasks,^(14,15) that may not be solved by the allocation measures described in this chapter. Recommendations contained in the Petroleum and Natural Gas Task Reports include:

- (1) A whole-system network analysis of the national energy distribution system is needed to provide a data base for multiscenario contingency planning of energy material transportation under emergency conditions.
- (2) A vulnerability study should be performed to determine the weaknesses of each transportation mode for specific emergency scenarios.
- (3) Contingency plans should be formulated for each scenario that consider the cross impact between energy material systems and transportation modes.
- (4) The DOE should review current emergency plans to determine if they are adequate and complementary to a comprehensive national transportation contingency plan for energy material transportation.

NOTES: CHAPTER FOUR

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9. 15 U.S.C. §§751 et. seq.
10. 10 C.F.R. Part 211, 212.
11. 42 U.S.C. §§6201 et. seq.
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CHAPTER FIVE

FEDERAL COAL PIPELINE LEGISLATION

CONCERN

Significant expansion in coal production, especially in the West, is expected between now and the year 2000, and much of this western coal will be shipped over 1,000 miles to utilities in the Midwest and south central states. There are two possible modes of transporting these large amounts of coal over long distances--the railroads and coal-slurry pipelines.

Currently coal is the most important single commodity that the railroads handle. Coal represented \$2.4 billion or 14 percent of the total gross freight revenues for 1976,⁽¹⁾ and there were twice as many carloads of coal as any other freight commodity hauled by the railroads in 1976.⁽²⁾ In order to handle the projected increase in coal production railroads anticipate a 95 percent increase over 1974 coal loadings by 1980, with the western railroads preparing for an anticipated increase of over 300 percent.⁽³⁾ According to a GAO report, the railroads plan to invest over \$5 billion in hopper cars, locomotives, physical plant, and maintenance facilities to meet this anticipated increase in coal traffic.⁽⁴⁾

The primary means of transporting coal by railroad is the unit train, which has increased the efficiency and lowered the costs of delivering large volumes of coal by rail. A unit train for coal consists of a train made up exclusively of coal-carrying hoppers which moves continuously from the mine to the user. By avoiding switching yards and other delays, a unit-train can travel up to 800 miles a day.⁽⁵⁾ Moreover, the railroad industry is currently expanding the use of unit-trains through equipment buildup. The railroads received

39,908 open-top hoppers in 1975-76, 75 percent of which are being used in coal unit-trains.⁽⁶⁾

The other alternative to the transportation of large amounts of coal is the coal-slurry pipeline. Such pipelines would be able to transport vast amounts of coal at (their supporters claim) costs lower than the costs of unit trains. Currently, there is only one operational coal pipeline in the United States, which runs from Black Mesa in north central Arizona to the Mojave power plant in southern Nevada--a distance of 273 miles. The pipeline is owned by the Southern Pacific Railroad and has been operating efficiently since 1970.

The first coal pipeline was constructed from the coal fields near Cadiz, Ohio, in 1957 and ran 108 intrastate miles to suburban Cleveland. This pipeline shut down after six years, because it was unable to compete with the railroads after unit-train service was introduced.

In addition, in 1973, Energy Transportation Systems, Inc. (ETSI), an affiliate of Bechtel, Inc. proposed to build a coal pipeline that would run the 1,030 miles from Gillette, Wyoming to Pine Bluff, Arkansas. This proposed pipeline could deliver about 25 million tons of coal per year through a buried 38-inch diameter pipe to the Arkansas Power and Light Utilities, which is a subsidiary of Middle South Utilities.⁽⁷⁾

During 1978 Congress considered (but did not pass) several pieces of legislation that would have placed significant federal regulatory controls over coal pipelines. The Coal Pipeline Act of 1978, H.R. 1609, would have made coal pipelines subject to federal certification and regulation.⁽⁸⁾ Specifically, this bill would have given primary certification authority to the Department of Transportation, authority over rate regulation to the Interstate Commerce Committee, and power over the allocation of water rights to

the states. In addition, Congress also considered two other bills that would have given certification authority to the Interstate Commerce Committee.⁽⁹⁾

Before any legislation is enacted there must be sufficient information available to Congress regarding the relative benefits and costs of coal pipelines and unit trains. In this regard, a recent report by the Office of Technology Assessment has in fact added considerably to available knowledge.⁽¹⁰⁾ No optimal decision, however, can be made without necessary information in four areas: (1) cost of transporting coal by alternative modes; (2) regulatory problems; (3) water rights; and (4) environmental problems. This chapter briefly discusses each of these areas.

COST OF TRANSPORTING COAL

There seems to be little consensus regarding whether coal pipelines or railroads can deliver coal at a lower price. There are examples of conclusions in each direction. The conclusion of the recent OTA report perhaps summarizes the existing uncertainty:

Based on the analysis performed in this assessment, coal slurry pipelines do represent under some specific circumstances the least costly available means for transporting coal measured in economic terms.⁽¹¹⁾

The phrase "under some specific circumstances" obviously underlines the uncertainty. The construction costs of pipelines are often subject to significant cost overruns due to inflation and lengthy regulatory delays. The 25 million ton per year ETSI pipeline was originally estimated to cost approximately \$500 million; however, a more recent estimate for this pipeline by its promoters approached one billion dollars.⁽¹²⁾

An additional complication in estimating costs is the unknown regulatory climate in which the competing modes will operate. The OTA report states:

[t]he current regulatory framework does not guarantee that choices between slurry pipelines and rail will necessarily minimize the cost to society of transporting coal. With the power of eminent domain, coal pipelines would enjoy significant regulatory advantages over railroads. These advantages would stem from the differences between regulated tariffs and costs of service, the ability of pipelines to serve selected customers, and the prohibition of long-term contracts between railroads and their shippers.⁽¹³⁾

Until and unless Congress creates a regulatory scheme for coal slurry pipelines, the legal and regulatory uncertainty will persist. And this uncertainty will continue to create problems for reliably estimating the costs of coal-slurry pipelines.

REGULATORY PROBLEMS

There are numerous regulatory problems that must be resolved before the coal slurry--unit train question can be satisfactorily resolved. First, currently railroads are prohibited from entering into long-term contracts, with one principal exception. The Railroad Revitalization and Regulatory Reform Act of 1976 allows a rate to be set for five years if more than a million dollars is invested in facilities improvements directly affecting the services.⁽¹⁴⁾ This rate cannot be suspended or set aside during the five year period, unless the Interstate Commerce Commission finds that the rate "reduce[s] the going concern value of the carrier." If such a finding is made, the rate charged by the railroad can be increased to equal the variable cost of providing the service.

Part of the congressional debate over coal slurry pipelines involves allowing railroads and pipelines to enter into

long-term contracts. Such contracts are often necessary, since they would assure an adequate return on investment. Moreover, long-term contracts often contain cost-escalation clauses, which obviously further protect the carriers. The issue of allowing either railroads or pipelines or both to enter into such long-term contracts is clearly one regulatory problem that must be settled by Congress.

Another regulatory problem concerns the common carrier obligations of railroads which require them to furnish transportation service to all shippers on a nondiscriminatory basis. This may obligate the railroads to subsidize service to small shippers and to maintain service on unprofitable, low-volume branch lines.

Even if these common carrier requirements were imposed on coal-slurry pipelines, the impact would probably not be significant because of the physical characteristics of a pipeline. The point-to-point service provided by a pipeline, plus the necessity of maintaining a designed throughput for the system, means that common carrier status would have very little meaning. Moreover, lack of shipping connections and facilities at both the receiving and delivery end of the system largely precludes any genuine ability to serve customers other than those originally contracted with. Coal-slurry pipelines would therefore be common carriers in name only. Because common-carrier status has little significance for pipelines, the railroads argue that coal pipelines will transport high-volume, long-distance freight, which is the most desirable traffic, while the railroads will be left with lower-volume, shorter-distance, and less profitable shipments.

Another significant regulatory issue is whether coal-slurry pipelines should be granted the power of eminent domain by the federal government and the states. In fact, the grant of the power of federal eminent domain was a principal issue in all of the bills considered by Congress.

With respect to the state eminent domain power, only some of the states through which prospective coal-slurry pipelines would pass have enacted eminent domain laws (Montana, Utah, North Dakota, Louisiana, Texas, and Oklahoma).⁽¹⁵⁾ Five other important states have no legislation which would empower the pipelines to acquire rights-of-way through condemnation. A final eight significant states have ambiguous statutes which are subject to court interpretation.⁽¹⁶⁾

Certain limited construction of pipelines could begin under current state law. However, because most of the states which have granted authority are the receiving states, passage of the federal legislation may be needed to promote major development of this transportation mode and to prevent having to gerrymander pipelines into the appropriate states.

A final regulatory issue concerns the allowable rate of return for coal-slurry pipelines. The Interstate Commerce Commission regulates rail transportation and currently sets allowable rates of return for the railroads as well as for the trucking industry. However, until the coal-slurry pipeline bill is passed by Congress, there will continue to be uncertainty over who will regulate and set the rates for coal pipelines. There needs to be a coherent national policy concerning rate regulation for both the railroads and the coal-slurry pipelines.

WATER RIGHTS

The most sensitive and the most important issue is water rights. Most of the proposed pipelines would carry large amounts of water from the generally arid coal-producing areas to the water-rich recipient states. This water would then be merely disposed of in the recipient states at an unknown ecological risk. A certain percentage of this water could possibly be used for cooling the generating plants, but most of it will be put in holding ponds and evaporated. It is

generally agreed that it is not economical to recycle the water to the producing states by constructing a return pipeline.

The proposed ETSI pipeline is a good example of the controversy that surrounds the water rights issue. This pipeline would transfer 20,000 acre-feet of water per year from arid Wyoming to water-rich Arkansas.⁽¹⁶⁾ It would pump the water 70 miles from a deep well into the Madison aquifer to the mouth of the pipeline and then to Arkansas. The Wyoming permit allowing this appropriation right was granted with the understanding that the water in question was unsuitable for domestic or agricultural use. However, subsequent investigation indicates that the water is potable and that the city of Gillette, Wyoming, intends to tap the aquifer for a municipal water supply.

Although the federal government theoretically has the constitutional authority to make water available, as a practical matter, this control rests with the states, and it may be politically impossible to change this tradition.⁽¹⁷⁾ Under most state law, water usage for coal slurries would have to be found in the public interest, or beneficial to each individual state. According to the OTA report:

[g]uidelines under case law and under most state statutes are insufficient to resolve this question, although the legislatures of those states which have focused on the issue have generally taken a negative attitude toward water for coal slurry pipelines.⁽¹⁸⁾

Western state law concerning water generally operates on a prior appropriation method which means that previous claims to water are dominant. Under conditions of heavy general use in western states, the pipelines might not be able to secure adequate water supplies. Many western states also have prohibitions against sending water out of state, prohibitions which could be applied in times of general water shortage.

Moreover, the western governors have in fact formally opposed the development of coal-slurry pipelines precisely because of the water rights issue. This position of the western states concerning water rights was reflected in the proposed Coal Pipeline Act of 1978. This act would have permitted the states with jurisdiction over the coal pipeline's water supply to veto any water use, so long as such a reservation was made at the time that the state granted the water right.⁽¹⁹⁾

A final water rights problem concerns the rights of Indian tribes. Indians may be able to assert water rights ahead of non-Indian users not only for traditional uses, but also for irrigation, fish and game preservation, and industrial development.⁽²⁰⁾

ENVIRONMENTAL PROBLEMS

The future of western coal development is uncertain for more reasons than the availability of water. Implementation of the Clean Air Act might diminish the incentive of utilities and other potential users in the East to use low-sulfur, low-BTU western coal. The Clean Air Act mandates minimum air pollution standards for a number of pollutants, including sulfur dioxide.

Sulfur dioxide emissions can, in general, be reduced in two ways. Users could purchase low-sulfur western coal, and thus increase the demand for coal-slurry pipelines. Alternatively, if utilities and other users are forced to adopt "the best available technology," they will install scrubbers. These scrubbers will reduce the emission of sulfur dioxide. If scrubbers are in fact installed, there will be little incentive for industrial users in the East to pay the added costs of transporting low-sulfur coal from the West. In turn, there will be a significantly reduced demand to construct coal-slurry pipelines.

CONCLUSION

The issues involved in whether to transport western coal by unit trains or by pipeline are numerous and far-reaching in importance. Before these issues can be resolved, several steps must be taken.

The regulatory problems described must first of all be resolved. What agency will regulate the pipelines? What type of regulatory authority over pipelines will there be? What will happen to the ICC's regulatory powers over the railroads? These problems must be resolved.

Second, the water rights debate must also be resolved. If the western states have their way, it is doubtful that there will be enough water to build the pipelines.

Third, the environmental problems posed by the Clean Air Act must be settled. Depending on their resolution, there may be insufficient demand for western coal to justify building coal-slurry pipelines.

Finally, because of the importance of the issues, there must be more public debate. The legal process over the Alaska natural gas pipeline project took nearly four years to resolve. It is unrealistic to assume that a far more significant issue--the decision as to whether or not to promote the construction of coal pipelines--should take any less time to resolve.

In support of the above conclusions, the Coal Task Study of this Project⁽²¹⁾ recommended that the DOE generate a comprehensive position paper on the slurry versus unit train controversy, with emphasis on whole-system, lifetime energy comparisons for route specific cases. A DOE position on coal slurry systems should be available for consideration in future regulatory hearings on slurry pipeline issues.

NOTES: CHAPTER FIVE

1. Library of Congress, National Energy Transportation, Vol. I--Current Systems and Movements. Publication No. 95-15 (September 1977), p. 44.
2. Association of American Railroads, Coal and the Railroads--1977 (Washington, D.C.), p. 11.
3. U.S. Coal Development--Promises, Uncertainties. Report to Congress by the Comptroller General of the United States (September 22, 1977), p. 5.8.
4. Ibid. at 5.10.
5. U.S. Department of Interior, Bureau of Mines, and the Federal Energy Administration, Comparative Final Transportation Costs: An Economic and Engineering Analysis of Truck, Belt, Rail, Barge, and Coal Slurry and Pneumatic Pipelines, Vol. II, Unit Trains (August 1977), p. 2-2.
6. Coal and the Railroads, supra note 2 at 5.
7. Coal and the Railroads, supra note 2 at 11.
8. The Coal Pipeline Act of 1978, H.R. 1609, Congressional Record, July 19, 1978, H. 6948-6972.
9. Wall Street Journal, "System for Coal-Slurry Pipeline Certification is Offered by Carter; Complications Seen," February 8, 1978.
10. Office of Technology Assessment, Congress of the United States, A Technology Assessment of Coal Slurry Pipelines, Washington, D.C. (January 1978).
11. Ibid., p. 3.
12. George G. Goley, "Pipelines versus Unit Trains," 12 Coal Mining Processing 65 (January 1975).
13. OTA Report, supra note 10 at 4.
14. 49 U.S.C. §15, Par. 19.
15. OTA Report, supra note 10 at 166.

16. Congressional Research Service, Library of Congress, "Coal Slurry Pipelines, Issue Brief Number IB7505a."
17. Congressional Record, July 19, 1978, H. 6951.
18. OTA Report, supra note 10 at 16.
19. Congressional Record, July 19, 1978, H. 6951.
20. See Winters v. U.S., 207 U.S. 564 (1908).
21. J. G. DeSteese, J. A. Bamberger, et al., Energy Material Transport, Now Through Year 2000, Systems Characteristics and Potential Problems - Task 2 - Final Report - Coal Transportation, PNL-2420, June, 1978.

CHAPTER SIX

ABILITY OF FEDERAL AGENCIES TO ANTICIPATE
RAILROAD DIFFICULTIESCONCERN

Virtually all forecasts predict that the Administration's plan for increased reliance on coal as a primary energy source means that the railroads will have to transport far greater amounts of coal. The Administration's goal is to double coal production by 1985 to approximately 1.2 billion tons annually.⁽¹⁾ If increases even approximating this magnitude are to be realized, an efficient and dependable railroad system for transporting the coal from mine to market is a necessity.

Yet, segments of the railroad industry have been, and still are, in a poor financial condition. Many eastern railroads have long practiced deferred maintenance on their lines and could possibly have trouble in meeting the forecasted increase in coal traffic. The railroads' increasing reliance on unit trains with 100-ton hopper cars to transport coal will require extensive upgrading of existing track and facilities wherever such traffic occurs. Financing for this type of work will depend on the general economic health of the railroads. While other transportation modes such as motor carriers have prospered under government regulation, many eastern and midwestern railroads have suffered post-war economic declines which have led to several bankruptcies, including the bankruptcy of the nation's single largest transporter of coal, the Penn Central, and the December 1977 bankruptcy of the Milwaukee Road.

The Interstate Commerce Commission (ICC) is the principal federal regulatory agency with jurisdiction over railroads, and thus it will play a critical role in determining whether

or not the railroads will be able to meet the increased demand for coal transportation. More particularly, the ICC must ensure that the rail system is a financially viable and dependable mode of transportation for coal. A major concern, therefore, is whether the regulatory structure of the ICC is adequate to accomplish these tasks. This chapter briefly examines the question of whether or not federal regulatory (and most particularly ICC) control over the railroads should be changed.

FRAGMENTATION OF REGULATORY AUTHORITY

Considerable fragmentation has developed in federal policy and in responsibility over railroad transportation. For example, in an attempt to restore financial viability of the bankrupt northeastern rail network, the Regional Rail Reorganization Act of 1973 (3-R Act)⁽²⁾ created two quasi-governmental entities, the United States Railway Association (USRA) and the Consolidated Rail Corporation (Conrail). USRA was directed to develop the final system plan for the northeastern-midwestern rail system, while Conrail was created to take control and operate these rail systems. Moreover, the Railroad Revitalization and Regulatory Reform Act of 1976 (4-R Act) gave responsibility for both major planning and for financial assistance for the railroads to the Department of Transportation.⁽³⁾

In addition, advanced planning for the railroads is conducted by many other agencies or organizations in addition to the ICC. For instance, the National Transportation Policy Study Commission, established under the Federal Aid to Highways Act of 1976, is now undertaking a two-year study of transportation (including railroad) issues for the U.S. Congress. The U.S. Senate also has a major study of transportation issues underway; the Committee on Energy and Natural Resources and the Committee on Commerce, Science, and

Technology have requested the Congressional Research Service to examine probable problems in the transportation of energy in the immediate future. Moreover, within the Department of Transportation, the Federal Railroad Administration (FRA) is doing research and conducting planning for the rail system.

In summary, while the ICC still has responsibilities for setting rates, determining abandonments, approving mergers, and doing short- and long-range planning, many of the policy and economic decisions which directly affect the industry are widely dispersed throughout the government. This necessitates a far greater degree of coordination among agencies to assure an efficient and effective transportation system.

ICC's REGULATORY FUNCTION

Originally created to regulate the railroad monopolies of the late nineteenth century, the Interstate Commerce Commission's mandate has gradually been broadened to include regulating the competition between the railroads and the trucking industry, the railroad's primary transportation rival. The ICC Act itself has been amended more than 150 times.⁽⁴⁾ As early as 1920, the Commission's mandate began to shift from an anti-monopoly stance to a protective or promotional stance. Pursuant to the Transportation Act of 1920, the ICC became involved largely in promoting "a viable and efficient railroad system,"⁽⁵⁾ and it developed a rail system plan in an effort to enhance this promotional role.

The Transportation Acts of 1940 and 1958 further expanded the Commission's jurisdiction. For example, the Transportation Act of 1940 gave the Commission the responsibility to "... promote safe, adequate, economical, and efficient service and foster sound economic conditions in transportation ..."⁽⁶⁾ As a result of the changing mandate of the ICC, one of the Commission's primary functions today is to ensure

the economic health of two competing industries, the railroads and the trucking industry.

However, in its attempt to preserve the economic viability of the two systems, the Commission has occasionally given less attention to another goal of the 1940 Transportation Act, that of promoting "economical and efficient service." Railroads have been afforded little if any flexibility in setting rates. The rate-setting process has historically been complex and time-consuming. Moreover, as discussed in Chapter 7, the ICC has greatly hampered the railroads' efforts to abandon unprofitable lines or to merge with other railroad systems. As one transportation expert has stated, the ICC has often been more concerned with preserving the relative market shares of the railroads and the trucking industry than in promoting economical and efficient service.

In addition, critics have charged that the ICC was not prepared to deal with the bankruptcy of the Penn Central in 1972 nor with the larger problem of the economic malaise affecting most of the eastern and midwestern railroads. Indeed, much of the regulatory activity of the ICC has been characterized as a reactive, crisis-by-crisis approach. The subcommittee of the House of Representatives, charged with investigating regulatory reform in 1976, characterized the ICC in the following manner:

In the absence of planning, the Commission has tended to react to events rather than shape these events. Decisions are ad hoc rather than in conformance to a plan. The Commission's process of regulation is crisis oriented rather than preventive.⁽⁷⁾

In response to this absence of planning, the ICC has recently taken several steps to reorganize its planning and forecasting capabilities. Following the collapse of the Penn Central in 1972, the Commission developed an "Early Warning System" which is designed to identify dangers in advance of financial collapse. Presumably, this system will enable the

Commission to anticipate and hopefully avoid any major collapse of rail service. Moreover, in 1975 the ICC created an internal "Blue Ribbon Panel" on regulatory reform which recommended increasing the input of economic analysis into the decision-making process by upgrading the Bureau of Economics or by placing economists directly on the decision-makers' staff. As a result, the Commission announced a major reorganization of the Bureau and increased its staff from approximately 51 in 1976 to 68 for 1978.⁽⁸⁾ The impact of these changes in the Bureau of Economics is not yet known.

In addition to the economic forecasting conducted by the Bureau of Economics, additional responsibilities have been assigned to the Rail Service Planning Office. The Rail Service Planning Office was originally established under Regional Rail Reorganization Act of 1973 to assist the Commission in evaluating the final system plan for reorganizing the Northeastern and Midwestern railroads. The Rail Services Planning Office was made permanent by the 4-R Act of 1976 and charged with responsibility to:⁽⁹⁾

[a]ssist the Commission in developing, with respect to economic regulation of transportation, policies which were likely to result in a more competitive, energy-efficient, and coordinated transportation system ... [and] to conduct an ongoing analysis of the national rail transportation needs, [and] evaluate the policies, plans, and programs of the Commission

To facilitate the implementation of these responsibilities, the Commission also transferred all of its staff level planning functions to this statutorily semi-independent wing of the agency.

CONCLUSION

The ICC's recent steps to improve its planning functions will hopefully permit it to avoid, or at least to be better prepared to deal with, the problems presented by the

bankruptcies of railroads such as the Penn Central and the Milwaukee Road. Moreover, the ability of federal agencies to anticipate railroad difficulties would be improved if there were greater inter-agency coordination among the ICC's Rail Services Planning Office, the Federal Railroad Administration, and the Secretary of Transportation.

More importantly, long-term solutions to the economic problems of the railroads will probably come from less--not more--federal regulation. More freedom for the railroads to raise or lower rates, to abandon uneconomic lines, and to merge would probably promote better service, more efficient operations, and reduce the prospects of railroad bankruptcies. Since the Administration is currently preparing legislation that would accomplish these goals, no action is needed.

NOTES: CHAPTER SIX

1. See, e.g., General Accounting Office, U.S. Coal Development: Premises and Uncertainties (September 1977).
2. 45 U.S.C. §§701 et. seq.
3. 45 U.S.C. §§801 et. seq.
4. Subcommittee on Oversight and Investigations, House Committee on Interstate and Foreign Commerce, Federal Regulation and Regulatory Reform, 94th Cong., 2d Sess. H. Doc. No. 95-134, p. 342 (1976). [Hereinafter referred to as Regulations and Regulatory Reform.]
5. Ibid., p. 337.
6. 49 U.S.C. §1.
7. Regulation and Regulatory Reform, supra note 3, p. 366.
8. Department of Transportation and Related Agencies Appropriations Hearings before the Subcommittee on the Department of Transportation and Related Agencies, House Committee on Appropriations, 95th Cong., 1st Sess., p. 308 (1977).
9. 45 U.S.C. 715(d)(2) and (d)(4) (as amended February 5, 1976).

CHAPTER SEVEN

ABANDONMENT OF UNECONOMIC RAILROAD LINES

CONCERN

In certain regions the domestic railway system is currently more extensive than economically justified. The abandonment of unprofitable railroad lines will obviously help the railroads' financial position, but it may also have a negative impact on the transportation of this nation's energy resources, especially coal. Coal shippers may have to pay far higher transportation charges, and some users of coal might in fact be deprived of coal altogether. This chapter examines several aspects of the issue of whether the abandonment of uneconomic rail lines will, in fact, impair the transportation of this country's energy resources.

BACKGROUND

The early development of American railroads led to an expansive network of track, particularly in the East and Midwest. However, as the railroads lost their surface transportation monopoly to motor carriers and independent water carriers, much of this local track became surplus capacity. Yet, as common carriers, they were often required to continue to offer service over these lines even at an economic loss. To abandon service or rights-of-way has required ICC permission, and, because of frequent shipper opposition, the ICC has often been reluctant to grant railroad abandonment requests.

Despite the regulatory problems involved in abandoning uneconomic lines, railroads have abandoned 15,000 miles of track in the continental United States, and between 1970 and 1976, filed petitions with the Interstate Commerce Commission to abandon another 6,000 route miles of track. Additionally,

the Association of American Railroads estimates that 20 percent of the 200,000 miles of existing line will be abandoned by 1985.⁽¹⁾

However, railroad abandonment can have three negative impacts on the transportation of energy resources and on coal utilization in particular. It can greatly increase the cost of transporting coal supplies. It can increase the cost of transporting coal-producing equipment and machinery to the coal fields. And it can physically limit the amount of coal that industries and utilities have access to.

INTERSTATE COMMERCE ACT

The Interstate Commerce Act has provided an alternative to railroad abandonment.⁽²⁾ Section 1a(6) and (7) of the act allows persons, including government entities, to purchase an unprofitable line for continued operation or to provide financial assistance to the railroad by a "rail service continuation payment." Any financially responsible party may make such an offer after the ICC makes a finding of public convenience and necessity permitting the abandonment.

However, the ICC is prohibited from considering the offer of subsidy in determining whether the public convenience and necessity will permit the abandonment. A subsidy of this kind "must cover the difference between the revenues which are attributable to the line and the avoidable cost of providing service on the line together with a reasonable return on the value of such a line."⁽³⁾ Needless to say, under most circumstances this will represent a considerable increase in transportation costs for the persons making the offer.

3-R AND 4-R ACTS

In addition to the ICC Act, recently important legislative reforms have been implemented that are designed both to improve the financial condition of the railroads and

to improve the alternatives to abandonment. The Regional Rail Reorganization Act (3-R Act) was passed in 1973 in response to the bankruptcy of the Penn-Central, then the nation's largest transportation company.⁽⁴⁾ The 3-R Act established the United States Railway Association and gave it the authority to plan the reorganization of rail services. The two-year planning process initiated by the act also established the government-funded Consolidated Rail Corporation (Conrail) to operate the bankrupt lines. In addition, the act set up new procedures under sections 304-402 for abandoning light density freight lines and for subsidizing essential routes under certain circumstances. In general, the legislation streamlined the regulatory environment in which Northeast and some Midwest railroads operated, and it represented the first attempt by Congress to legislate a solution to the problem of redundant and debilitated physical facilities and weak financial structure of the railroads.

The Railroad Revitalization and Regulatory Reform Act (4-R Act) enacted February 5, 1976, made many reforms of the 3-R Act national.⁽⁵⁾ This legislation set out new procedures for abandonment and discontinuance of service; created a federal rail bank; streamlined the merger process; provided for the reform of regulations governing the industry; and established a financial assistance and loan program to assist the railroads.

Under the rail bank provisions, the Secretary of Transportation may include any trackage or rail properties which are listed for consideration in a final system for inclusion in a rail bank. The rail bank is "for purposes of preserving existing service in certain areas of the United States in which fossil fuel, natural resources, or agricultural production is located."⁽⁶⁾ Rail banks, therefore, can be used to maintain access to certain coal producing regions.

The 4-R Act is also designed to help railroads in other ways. It authorizes subsidies to uneconomic rail lines

pursuant to sections 803 and 805. It also permits more flexibility in railroad mergers, consolidations, coordination, and joint use of track. Specifically, the act amended section 5 of the Interstate Commerce Act and required major change in the ICC's handling of these cases. The new section 5(2)(g) imposes tight time limits on the Commission's processing of all rail consolidation proceedings which have historically been extremely time-consuming. A new section 5(3) provides for an activist role by the Department of Transportation in influencing mergers. DOT performs an initial study and makes recommendations to the ICC. Under this section, the ICC is under even tighter time restrictions to reach a decision.

INTER-MODAL SYSTEMS

The climate of regulatory reform now surrounding the restructuring of the rail system also provides the opportunity for an inter-modal option when rail lines are abandoned. Under this alternative, railroads could be required to provide common carrier transport service to all shippers, but they could meet this requirement through the most appropriate and efficient mode. Currently, railroads are largely precluded from owning other modes of transportation through a patch-work of statutes and ICC decisions.

The potential disruption of coal transportation that could be caused by abandonment calls for a serious analysis of the option of creating inter-modal transportation companies under the same common carrier obligations, but with more flexibility in the choice of mode. This would involve more of a change in policy than in legislation. According to the Congressional Research Service (CRS):

[a]fter a review of applicable federal statutory provisions governing the regulation of air carriers, water carriers, railroads, and motor carriers, we find no express statutory prohibitions against ownership, per se, by a single

company of facilities or operations involving more than a single mode of transportation.⁷

The CRS points out that the regulatory prohibitions that do exist are designed to prevent the acquisition of regulated carriers by their competition. They also point out that a major impediment to establishing multi-modal operations is that there is no single certification process for the separate modes. Under the current regulatory structure, each mode must be separately certified. New, streamlined legislation is needed.

COAL CONVERSION

A final problem posed by abandonment concerns coal conversion by major industrial users and by utilities. A railroad could successfully petition the ICC to abandon an unprofitable rail line that supplies coal to an industrial user or utility. Later, this same user might be requested to convert from natural gas or oil as an energy source to coal. Since the rail line would have already been abandoned, the abandonment might well prevent the desired coal conversion.

Although this scenario is presumably possible, it does not present any significant problems. First, as explained earlier, the ICC, the 3-R, and the 4-R Acts all provide for alternatives other than abandonment. These alternatives, in the hypothetical situation given above, make it unlikely that abandonment would be permitted. Second, despite the coal conversion goals of President Carter's National Energy Plan, it is extremely doubtful that any such industrial user or utility would be forced to convert in the above situation.

Third, if the major fuel burning installation were a utility and were forced to convert, then it would obviously have to provide rail service itself, or pay some one to provide rail service, in order for it to receive necessary coal

supplies. Since utilities are guaranteed a certain minimum return by state utility commissions, in all likelihood the cost of this rail service could be added to the utility's rate base. This particular situation is not a very likely one, and the actual procedure of allowing or disallowing the added cost might well vary from state to state. However, as a general rule, it seems probable that a utility could add the cost of running the railroad to its rate base. At a very minimum, the utility could certainly pass this cost on to the final consumer.

CONCLUSION

The ICC, 3-R, and 4-R Acts all provide alternatives to abandonment that should mitigate the negative consequences of a railroad's abandoning an unprofitable line. Moreover, in abandonment proceedings the ICC has traditionally investigated the social and economic impacts of a proposed abandonment before allowing the railroad to proceed. Therefore, the abandonment of unprofitable rail lines should have little effect on the nation's system for transporting coal.

NOTES: CHAPTER SEVEN

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2. 49 U.S.C. §§1 et. seq., 301 et. seq., 901 et. seq., 1001 et. seq., 1231 et. seq.
3. Rail Services Planning Office, Interstate Commerce Commission, Abandonment and Subsidy Procedures, Washington, D.C., p. 2 (undated).
4. 45 U.S.C. §§701 et. seq.
5. 45 U.S.C. §§801 et. seq.
6. 49 U.S.C. §1653(a).
7. Congressional Research Service, American Law Division. Memorandum on prohibitions on the transportation companies owning facilities or equipment capable of transporting freight by several modes. Washington, D.C. (May 4, 1977), p. 1.

CHAPTER EIGHT

THE IMPACT OF THE PANAMA CANAL TREATY
UPON U.S. ENERGY TRANSPORTATIONCONCERN

On September 7, 1977, President Carter and General Torrijos signed two Panama Canal treaties in the presence of the chiefs of state or other representatives of 26 Western Hemisphere nations. These treaties, which were later ratified by the Senate, provide for an increasing Panamanian role in the operation and management of the Canal and for transfer of the Canal to Panama in the year 2000. Moreover, the second treaty provides for the permanent neutrality of the Canal and obligates the Republic of Panama to keep the Canal secure and open to peaceful transit by vessels of all nations on terms of equality. These two treaties supersede a 1903 treaty under which the United States owned the Canal property and exercised virtually complete jurisdiction over the entire Canal Zone.

There was considerable debate in the Senate over the impact of the two treaties on the national security of the United States and, more specifically, on the transportation of oil and other critical energy sources used by this country. This chapter briefly analyzes this concern from the standpoint of the importance of the Canal in meeting the energy needs of the United States.

DECREASED COMMERCIAL IMPORTANCE OF CANAL

First of all, the commercial importance of the Canal has decreased significantly over the past three decades. In 1949, 13 percent of all the foreign trade going in and out of U.S. seaports passed through the Panama Canal. This compares with 7 percent in 1976.⁽¹⁾ Ambassador Sol M. Linowitz recently summarized the commercial importance of the Panama Canal:

While the use of the Canal commercially is still significant, obviously its importance has diminished considerably as world commerce patterns and technologies of shipping have changed. Today larger vessels cannot use the Canal. In percentage terms, the Canal is much more important to various countries in Latin America than it is to us. Today approximately 8 percent of total U.S. exports and imports by value pass through the Canal each year. About 7 percent of the U.S. seaborne trade traverses the Canal. To a substantial extent, therefore, the Canal, though still important, is obsolescent.⁽²⁾

Second, although petroleum shipments amounted to 18.7 percent of total cargo shipments through the Canal in 1976, the larger oil tankers used today cannot travel through the Canal.⁽³⁾ The current maximum ship size that can transit through the Canal is 975 feet long, 106 feet wide, with a 40-foot draft and approximately 65,000 dead weight tons.⁽⁴⁾ Vessels transporting Alaskan crude oil from Valdez are generally 125,000 dead weight tons; the Suez Canal is currently being enlarged to accommodate vessels of up to 350,000 dead weight tons. Over time, the Panama Canal will be able to accommodate an increasingly small percentage of the world's petroleum tankers.

Moreover, the importance of the Canal for coal shipments has also decreased considerably.⁽⁵⁾ The principal coal shipments through the Canal involve movements of coking coal used in steel making from East Coast ports to Japan. Increasingly, however, these movements are taking place in large bulk carriers that go around the Cape of Good Hope rather than through the Panama Canal. In addition, Japanese steel makers are seeking alternate and lower-cost supplies of coking coal to supplement imports from the United States. Thus, there is a possibility that U.S. coal exports through the Panama Canal may decline over time.

NORTHERN AND SOUTHERN TIER OIL PIPELINE

Prior to the production of Alaskan North Slope oil, petroleum traffic in the Panama Canal was so diffuse that no dominant trade route could be identified either from the point of origin or destination. However, with Alaskan North Slope crude being produced at a rate of 1.2 million barrels per day, approximately 600,000 barrels per day of crude oil are routinely shipped through the Panama Canal. Thus, despite the fact that large oil tankers cannot transit through the Canal, the Canal's role in transporting petroleum for the United States is quite significant at present.

However, this increased role will probably only be for the short term. There is considerable discussion concerning the construction of either a Northern Tier oil pipeline from Puget Sound to the Midwest or a southern oil (Pac-Tex) pipeline from Long Beach to Midland, Texas. Construction of either route would eliminate the need to ship Alaskan crude through the Canal. Although cost estimates for both projects are probably not very reliable, a recent study does indicate that the cost of transporting Alaskan crude via the Canal is \$3.29 per barrel, while the transportation costs using the proposed southern tier pipeline would be only \$2.54 per barrel.⁽⁶⁾ It may well be that the Panama Canal is the most expensive of all alternatives for delivering Alaskan oil to the U.S. markets.

EXPORT OF PRUDHOE BAY OIL

The Trans-Alaska Pipeline Act,⁽⁷⁾ by which Congress authorized construction of the Alyeska pipeline from Prudhoe Bay to Valdez, forbids the export of Alaskan oil to Japan or any other country unless the President makes an explicit finding that it is in the nation's best interests to export the oil and unless Congress approves this finding. In all

likelihood, however, it would not be politically feasible today to export Alaskan oil to any country.

However, given the economics of transporting oil, it probably would be economically rational to export Alaskan oil to Japan and, in turn, "swap" or exchange this oil for Middle Eastern or Mexican oil that otherwise would have been shipped to Japan. The Middle Eastern or Mexican oil would then be shipped directly to Gulf Coast refineries in this country. Although this alternative is currently not a very likely one because of political and perhaps national security reasons, it does remain a possibility. Certainly, for a short period of time while a northern or southern pipeline is being constructed, this exchange of oil would be economically justifiable.

TOLL RATES

Toll rates on the Panama Canal were essentially constant from 1903 to 1974. The Canal did not show a profit until about 1950 and, because of increases in operating costs, toll increases amounting to approximately 50 percent have been implemented since 1974. Present toll rates are approximately \$1.29 per net Panama Canal ton for each laden transit and \$1.04 per Panama Canal net ton for each ballasted transit.⁽⁸⁾ The current effective toll rate for crude oil is approximately 15 cents per barrel.

Under the 1903 treaty, Panama received approximately \$2.3 million per year as its share of toll revenues. Under the new Panama Canal treaties, Panama is to receive 30 cents (to be adjusted periodically for inflation) per Panama Canal ton transiting the Canal and a fixed sum of \$10 million per annum and an additional \$20 million per year if Canal traffic and revenues permit.⁽⁹⁾ In addition, Panama is to receive payment of \$10 million for the provision of general municipal services that were formerly performed by the Panama Canal Company.⁽¹⁰⁾ In 1978, approximately 146 million Panama

Canal net tons of traffic is projected. Thus, Panama would be entitled to a payment of approximately \$54 million plus an additional \$10 million if revenues permit for operation of the Canal. Depending upon traffic, meeting these payment obligations to Panama is likely to require toll increases from 25 to 35 percent.⁽¹¹⁾

The maximum attainable toll revenue, which is equivalent to the cost of alternatives, is only 40 percent greater than the revenue projected under current toll rates. And since, furthermore, another toll increase is currently being considered, the eventual elimination of this user's surplus must be viewed as a distinct possibility. The practical consequence of such an event would be the termination of the economic life of the Panama Canal on a toll revenue supporting basis.⁽¹²⁾

Thus, with the increases in toll rates that might be necessary to meet payments to the Panamanian government, the cost of using the Panama Canal may well exceed the costs of alternatives such as rerouting through the Suez Canal, the use of larger ships, the use of alternative modes such as rail over land, or product exchanges. As stated previously, one study estimates that the shipment of oil through the Canal will be significantly more expensive than shipment by the proposed Long Beach-Texas pipeline.⁽¹³⁾

CONCLUSION

It appears that ratification of the Panama Canal treaties will not have a significant adverse effect on the energy transportation system in the United States. In fact, to the extent that the treaties reduce tensions and eliminate a significant cause of hostilities, they may serve to assure the continued operation and openness of the Canal for all shippers. But even if the Canal, for whatever reason, is not available for domestic energy transportation, a number of other alternatives appear available for moving Alaskan North

Slope crude oil to markets in the United States. Thus, it appears that the Canal can provide needed flexibility and back-up capacities for domestic oil transportation, but the Canal is not absolutely critical to moving U.S. energy supplies to U.S. markets.

NOTES: CHAPTER EIGHT

1. Data on the Panama Canal, 77 Department of State Bulletin (October 17, 1977), note 22, p. 524.
2. S. Linowitz, "Why a New Panama Canal Treaty," 77 Department of State Bulletin, p. 520.
3. Hearings on the Panama Canal Treaties, U.S. Senate Committee on Foreign Relations, 95th Congress, 1st Session, Part I, p. 357 (Statement of Brock Adams, Secretary of Transportation).
4. Ibid., p. 359.
5. See, H. Lippek, "Selected Regulatory Issues Affecting Coal Transportation Requirements," Symposium on Critical Issues in Coal Transportation Systems, National Academy of Sciences, Washington, D.C., June 14-15, 1978.
6. Conversation with David M. Lindahl, Energy Transportation Project, Office of Oil and Gas Policy, Department of Energy, July 17, 1978.
7. Final Environmental Impact Report, Sohio West Coast to Mid-Continent Pipeline Project, Vol. 4, Part 5, "Economic Analysis of Alternative Transport Systems for the Disposal of Surplus Alaskan Crude Oil," Arthur D. Little, Inc., April, 1977, pp. V-49, 53.
8. 43 U.S.C. §§1651 et. seq.
9. International Research Associates, Panama Canal Traffic and Revenue Study 1978-2000. Prepared for the Panama Canal Company and the U.S. Department of State, III-1 (January 1978). A Panama Canal net ton is equivalent to 100 cubic feet of vessel cargo carrying space as determined by the measurement rules of the Panama Canal Company.
10. The adjusted effective toll rate on crude oil is \$1.12 per long ton. Ibid., p. III-5. One long ton equals 1.120 short tons and one short ton contains 6.65 barrels of average gravity crude oil. Federal Energy Administration, "Units of Measure," Monthly Energy Review (June 1977) at 90. Thus, an approximate conversion is that 7.448 barrels of crude oil are contained in a long ton, making the toll rate about \$0.15 per barrel.

12. Panama Canal Traffic and Revenue Study 1978-2000,
supra note 9, V-1.
13. Sohio West Coast to Mid-Continent Pipeline Project,
supra note 7, pp. V-49, 53.

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