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THE UNIVERSITY OF OKLAHOMA
GRADUATE COLLEGE

JOINT VENTURES IN THE INTERNATIONAL PETROLEUM
INDUSTRY: PRODUCTION AND PIPELINES

A DISSERTATION
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JOHN R. MUNKIRS
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JOINT VENTURES IN THE INTERNATIONAL PETROLEUM
INDUSTRY: PRODUCTION AND PIPELINES

APPROVED BY

Wm Beach
Thomas D. Curt
Sam Morgan
A. J. London
Jim E. Reese

DISSERTATION COMMITTEE

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vii
LIST OF ILLUSTRATIONS.	xiii
 Chapter	
I. INTRODUCTION	1
Purpose and Scope	
Framework and Method of Approach	
The Data	
II. RECENT LITERATURE ON JOINT VENTURES.	16
Introduction	
Corporation Organizational Structure	
The Technologist	
Traditional Industrial Organization	
Literature	
The Industry's View of Itself	
The Anational Corporation Literature	
The Anti-Trust Literature	
Literature Specifically on Joint Ventures	
Investment Decision Approach	
Case Study Approach	
III. THE STRUCTURAL AND FINANCIAL ASPECTS OF JOINT VENTURES	47
International Majors	
Structural and Financial Types of	
Joint Ventures	
Reasons for Joint Ventures	

International Minors	
Structural and Financial Types of	
Joint Ventures	
Reasons for Joint Ventures	
Government-owned Companies	
Structural and Financial Types of	
Joint Ventures	
Profit Sharing Joint Ventures	
Production Sharing Joint Ventures	
Cost Sharing Partners	
Reasons for Joint Ventures	
Summary	
IV. THE MAGNITUDE OF JOINT VENTURES IN PETROLEUM	
PRODUCING OPERATIONS.	97
Introduction	
Basic Characteristics and Peculiarities	
of the Statistics	
Participating Groups	
International Majors	
Joint Venture Operations	
One-Owner Operations	
Joint Venture Partners	
Joint Venture Ownership and Inter-	
locking Ownership Ties--OPEC	
Countries	
International Minors and Government-owned	
Companies	
Joint Venture Operations	
One-Owner Operations	
Joint Venture Partners and Interlocking	
Ownership Ties	
Summary	
APPENDIX TO CHAPTER IV.	150
Petroleum Producing Operations in the	
OPEC Countries	
V. THE MAGNITUDE OF JOINT VENTURES IN CRUDE	
PETROLEUM PIPELINE SYSTEMS.	171
Introduction	
Ownership Characteristics and	
Participating Groups	
Statistical Peculiarities	

Chapter	Page
- A General Overview - International Majors - International Minors and Government-owned Companies - Joint Venture and One-Owner Pipeline Systems by Area - Middle East - Europe - Africa - Central America and Asia Pacific - South America - Canada - Alaska and Australasia - Summary	
VI. SUMMARY AND CONCLUSIONS.	210
APPENDIX I	228
Legal Titles, Acronyms and Home Countries of Selected Companies Examined in the Study.	
APPENDIX II.	231
Tables Containing Ownership Information on the Major Petroleum Producing and Pipeline Operations for All Ten Areas and a Note Concerning the Statistical Framework of the Study	
BIBLIOGRAPHY	344

LIST OF TABLES

Table	Page
1. Joint Ventures: Jointly Owned Subsidiaries, Contractual Joint Ventures, and Farm-Out Arrangements, Selected Areas, as of June, 1972.	51-52
2. Joint Ventures: Petroleum Operations Owned by the Same Parent Companies With Each Operation Having a Distinct Legal Identity, Selected Areas, as of June, 1972.	55-56
3. Joint Venture: Joint Venture With Minority Participation by the International Minors, and Non-Equity Contractual Participation by a State-owned Company in the Middle East, as of June, 1972.	64-65
4. Joint Ventures: Contractual Joint Ventures and Jointly Owned Subsidiaries in the Alaska Cook Inlet, Various Years 1957-1972.	68-70
5. Joint Ventures: Contractual Joint Ventures, Jointly Owned Subsidiaries and Farm-Out Arrangements in Australia, as of June, 1972.	72-73
6. Joint Venture: Profit Sharing Joint Ventures of Government-owned Companies, Selected Areas, as of June, 1972.	82
7. Joint Venture: Production Sharing Joint Ventures, of Government-owned Companies in Indonesia, as of June, 1972.	84

Table	Page
8. Joint Venture: Cost Sharing Joint Ventures, of Government-owned Companies in Africa, as of June, 1972.	87
9. World Petroleum Production and the Percent Produced by Joint Ventures, Outside the United States and Communist Bloc Countries, as of 1970.	99
10. Petroleum Producing Operations, Joint Venture Operations and Participation by Company Classification, Outside the United States and Communist Bloc Countries, as of 1970.	105
11. Sales, Assets and Net Income of the Inter- national Majors, as of 1971	106
12. World Petroleum Production, Outside the United States and Communist Bloc Countries, and Joint Venture Producing Operations Where the Majors Control 50 Percent or More Interest, as of 1970	114
13. The Number of Petroleum Producing Operations and Percent of Production Accounted for by the Majors in One-Owner Operations, Outside the United States and Communist Bloc Countries, as of 1970	118
14. Major Petroleum Companies and Their Joint Venture Partners in Producing Operations, by Company Classification, Outside the United States and Communist Bloc Countries, as of 1970	119
15. Petroleum Production and Reserves in the OPEC Countries, as of 1970.	123
16. Percent of Petroleum Production Owned by International Majors in Joint Ventures, Where Two or More Majors Participate-- OPEC Countries, as of 1970.	128-129

Table	Page
17. Percent of Petroleum Production Owned by the International Majors in One-Owner Operations and in Joint Ventures With Minors and/or Government-owned Companies--OPEC Countries, as of 1970.	130-131
18. Sales, Assets and Net Income of International Minors and Government-owned Companies, as of 1971.	135-136
19. World Petroleum Production and Joint Venture Producing Operations Where the Minors and/or Government-owned Companies Control 51 Percent or More Interest, Outside the United States and Communist Bloc Countries, as of 1970 . .	143
20. The Number of Petroleum Producing Operations and Percent of Production Accounted for by the Minors and/or Government-owned Companies in One-Owner Operations, Outside the United States and Communist Bloc Countries, as of 1970	144
21. The Minors and/or Government-owned Petroleum Companies and Their Joint Venture Partners in Producing Operations, by Company Classification, as of 1970	145
22. Ownership of the Major Petroleum Producing Operations in the OPEC Countries, as of 1970.	151-170
23. World Crude Petroleum Pipeline Mileage and the Percent Produced by Joint Ventures, Outside the United States and Communist Bloc Countries, as of 1970 . .	175
24. World Crude Pipeline Mileage and Joint Venture Pipeline Operations Where the Majors Control 50 Percent or More Interest, Outside the United States and Communist Bloc Countries, as of 1970 . .	180

25.	The Number of Crude Petroleum Pipeline Operations and Percent of Mileage Accounted for by the Majors in One-Owner Operations, Outside the United States and Communist Bloc Countries, as of 1970.	181
26.	World Crude Petroleum Pipeline Operations, Joint Venture Operations, and Participation by Company Classification, Outside the United States and Communist Bloc Countries, as of 1970.	185-186
27.	World Crude Petroleum Pipeline Mileage and Joint Venture Pipeline Operations Where the Minors and/or Government-owned Companies Control 51 Percent or More Interest, Outside the United States and Communist Bloc Countries, as of 1970 . . .	188
28.	The Number of Crude Petroleum Pipeline Operations and Percent of Mileage Accounted for by the Minors and/or Government-owned Companies in One-Owner Operations, Outside the United States and Communist Bloc Countries, as of 1970.	189
29.	Number of Joint Ventures and Interlocking Ownership Ties in Petroleum Producing Operations, Selected Companies, as of June, 1972	221
30.	Number of Joint Ventures and Interlocking Ownership Ties in Petroleum Pipeline Operations, Selected Companies, as of June, 1972.	223
31.	Number of Joint Ventures and Interlocking Ownership Ties in Petroleum Refining Operations, Selected Companies, as of June, 1972.	225
32.	Legal Titles, Acronyms and Home Countries of Selected Companies Used in the Study . .	229-230
33.	Ownership of Major Petroleum Producing Operations in Africa, as of June, 1972. . .	233-244

Table	Page
34. Ownership of Major Petroleum Pipeline Systems in Africa, as of June, 1972.	245-250
35. Ownership of Major Petroleum Producing Operations in Alaska and North Slope, as of June, 1972	251-253
36. Ownership of Major Petroleum Pipeline Systems in Alaska and North Slope, as of June, 1972.	254-255
37. Ownership of Major Petroleum Producing Operations in Asia Pacific, as of June, 1972	256-261
38. Ownership of Major Petroleum Pipeline Systems in Asia Pacific, as of June, 1972	262-263
39. Ownership of Major Petroleum Producing Operations in Australasia, as of June, 1972	264-266
40. Ownership of Major Petroleum Pipeline Systems in Australasia, as of June, 1972	267-268
41. Ownership of Major Petroleum Producing Operations in Canada, as of June, 1972	269-280
42. Ownership of Major Petroleum Pipeline Systems in Canada, as of June, 1972.	281-287
43. Ownership of Major Petroleum Producing Operations in Central America and West Indies, as of June, 1972.	288-290
44. Ownership of Major Petroleum Pipeline Systems in Central America and West Indies, as of June, 1972	291
45. Ownership of Major Petroleum Producing Operations in Europe, as of June, 1972	292-301
46. Ownership of Major Petroleum Pipeline Systems in Europe, as of June, 1972.	302-306

Table	Page
47. Ownership of Major Petroleum Producing Operations in the Middle East, as of June, 1972.	307-317
48. Ownership of Major Petroleum Pipeline Systems in the Middle East, as of June, 1972.	318-324
49. Ownership of Major Petroleum Producing Operation in North Sea, as of June, 1972.	325
50. Ownership of Major Petroleum Producing Operations in South America, as of June, 1972.	326-337
51. Ownership of Major Petroleum Pipeline Systems in South America, as of June, 1972.	338-343

LIST OF ILLUSTRATIONS

Figure	Page
1. Petroleum Concessions in Indonesia, as of 1970.	75
2. Oil Haves and Have-Nots in the World, as of 1972	92
3. Interlocking Ownership Ties in Petroleum Producing Operations Among the Inter- national Majors--OPEC Countries, as of 1970.	125
4. Interlocking Ownership Ties in Pipeline Operations Among the International Majors--All Areas, as of 1970	178

JOINT VENTURES IN THE INTERNATIONAL PETROLEUM
INDUSTRY: PRODUCTION AND PIPELINES

CHAPTER I

INTRODUCTION

This is an empirical study of joint ventures in the international petroleum industry. For this study a joint venture is defined as the sharing of costs, profits, or both, by two or more legal entities in one or more production activities. Although there is a growing literature on various aspects of joint ventures, this writer was unable to find any that dealt specifically with petroleum industry joint ventures on a worldwide basis.¹

Two primary methods are used in effecting joint ventures in the petroleum industry. The most often used is the "jointly owned subsidiary." A jointly owned subsidiary is a company that is owned by two or more parties. For example, Caltex Oil (S.A.) Ltd. operates a 50,000 barrel per day refinery in South Africa. This company is owned 50-50 by

¹See Chapter II, pp. 42-46 for a survey of the literature dealing specifically with joint ventures.

Standard Oil Company of California and Texaco Inc.

Another method used in effecting joint ventures is the "contractual joint venture," of which there are many types. The most prominent is the risk sharing venture in which all partners hold "equity" shares proportionate to their investments. A second type is a contractual venture where one partner assumes all risks and costs but shares a percentage of the profits with his "non equity" partner. The latter type of contractual joint venture is common between private oil firms and government or state-owned companies. There are many variations in contractual joint ventures which will be examined later. But for this study all contractual joint ventures have one common characteristic--in no instance is a separate enterprise formed.

In essence, a study of joint ventures in the petroleum industry is a study on the "joint ownership of the means of production." In this study the concept joint ownership of the means of production implies a concept fundamentally different from that associated with the textbook oligopoly market structure. An oligopoly market generally refers to a few firms dominating production in an industry. But each firm owns its own production facilities. In the literature surveyed for this study the petroleum industry is generally treated as typifying an oligopolistic market. The recurring theme in many of these studies revolves around several firms fixing prices, limiting supply, arranging cartel agreements

and otherwise engaging in collusive tactics.

This study examines the hypothesis that a multinational corporate framework exists with a worldwide network of production and transportation facilities linked together through joint ventures, i.e., the study examines the joint ownership of the means of production in the petroleum industry effected through the mechanism of joint ventures. If any one group "jointly owns" the means of production, then a mechanism for centralized control and monopoly exists.

The joint venture is becoming an increasingly prominent device used by multinational corporations in spreading their activities around the world. George W. Ball, Undersecretary of State in two administrations, commenting on the internationalization of business, said ". . . before many years we may see supranational companies incorporated under treaty arrangements, without a domicile in any particular nation-state."²

Carl A. Gerstacker, the Dow Chemical Company's Board Chairman, expressed a similar opinion. Gerstacker, while attending a White House Conference on the Industrial World Ahead, declared ". . . we appear to be moving strongly in the direction of what will not be really multinational or international companies as we know them today, but what we might call 'anational companies'--companies without any

²Editorial, "Ball Predicts World Public Role for America's Private Capital," The New York Times, September 11, 1967, p. 67.

nationality belonging to all nationalities."³ In an interview with the New York Times, following the White House Conference, Mr. Gerstacker commented ". . . that for about 10 years Dow had been studying the possibility of locating in a neutral country like Switzerland or even on an island in the Caribbean."⁴

Jean Jacques, a noted French economist, writing on Western European industry, predicted that ". . . the third industrial power in the world, following the United States and the Soviet Union could well be in fifteen years not Europe but American industry in Europe. Already today, in the ninth year of the Common Market, the organization is essentially American."⁵

Just how important are the multinationals? Burton Teague, in a study published in September, 1971, by the National Industrial Conference Board and quoted in the New York Times put it this way:

Of a gross world product of \$3 trillion, approximately one-third is produced in the United States, one-third in the industrial nations of Europe, Canada, Japan, and Australia, and the remaining one-third in Russia, Eastern Europe, China and the developing nations elsewhere in the world.

About 15 percent, or \$450 billion, is accounted for by

³Editorial, "Anationals--Worldwide Companies Outgrow Nations," The New York Times, February 13, 1972, sec. 3, p. 1.

⁴Ibid.

⁵J. J. Servan-Schreiber, The American Challenge. (New York: Atheneum House Inc., 1968), p. 3.

multinational enterprises; \$200 billion of this by U.S. based companies; \$100 billion by foreign-based companies which also operate in the U.S., and \$150 billion by interproduction in other countries.

The proportion contributed by multinational corporations is growing at a rate of 10 percent per year. At this rate the multinational companies will generate one-half or more of the gross world product in less than 30 years.⁶

As a group, some of the oldest and most experienced of the multinational enterprises are the international oil firms. By any measure of economic size, the petroleum companies represent one of the greatest concentrations of economic power within their respective countries. Total sales for the top five U.S. oil companies in 1971 was \$45.5 billion. Ranking U.S. corporations by sales, Standard Oil Company (New Jersey) (Exxon) ranks second, Mobil Oil Corporation is sixth, Texaco Inc. is eighth, Gulf Oil Corporation is eleventh, and Standard Oil Company of California is twelfth.⁷ Standard Oil Company of California, Standard Oil Company (New Jersey) (Exxon) and Mobil Oil Corporation are successor companies to the famous Standard Oil Company of New Jersey trust that was dissolved by the U.S. Supreme Court in 1911.⁸

In terms of profits the firms rank even higher. Standard Oil Company (New Jersey) (Exxon) ranks second,

⁶Editorial, "Multinationals: How Important," The New York Times, March 12, 1972, sec. 3, p. 5.

⁷Editorial, "The 500 Largest U.S. Industrial Corporations," Fortune, May, 1972, p. 190.

⁸Simon N. Whitney, Anti Trust Policies (New York: Twentieth Century Fund, 1958), p. 190.

Texaco Inc. is fourth, Gulf is sixth, Mobil is seventh and Standard Oil Company of California is eighth. The top five major oil companies have total assets of \$56.7 billion. This represents 56 percent of the total assets owned by the top ten American corporations.⁹

The data actually underestimate the importance and size of the United States oil industry as a group. The next ten largest oil companies have assets totalling \$35.7 billion. These companies are often referred to as "the Newcomers" or "the Independents." The majors and ten largest independents combined control nearly 50 percent of all assets owned by the 50 largest corporations in America.¹⁰ For example, among the Newcomers, Standard Oil Company (Indiana) ranks 12th in both assets and profits. Atlantic Richfield Company and Continental Oil Company rank 14th and 26th respectively in assets, and 20th and 41st in profits. Standard of Indiana, Atlantic Richfield and Continental are likewise successor companies to the old Standard Oil Company of New Jersey.

In Great Britain the comparative size of the petroleum industry is even more perceptible. In 1972, Fortune reported that The Royal Dutch/Shell Group (RDS) and The British Petroleum Company Ltd. (BP) accounted for 50 percent of all assets and nearly 55 percent of all profits in

⁹Fortune, May 1972, p. 190.

¹⁰Ibid.

Britain's top ten corporations. The British government owns 48 percent of BP and 40 percent of RDS. RDS is the largest corporate giant outside the United States, with assets totalling \$19 billion.¹¹

If the majors play an important economic role in their home countries, their presence in the underdeveloped oil exporting countries has still greater consequence. In Saudi Arabia, ". . . in 1968-1969, income originating from the oil sector accounted for about 50 percent of the GNP, 90 percent of foreign exchange earnings, and 85 percent of budget revenues."¹² Arabian American Oil Co. (ARAMCO) is the sole producer of oil in Saudi Arabia. Standard of California, Standard of New Jersey (Exxon) and Texaco Inc. each own 30 percent of ARAMCO. Mobil Oil Corporation owns the other 10 percent.

Saudi Arabia has approximately 145 billion barrels of petroleum reserves. This represents one of the largest known petroleum reserves of any country in the world. It is the fourth largest petroleum producer in the world, following the United States, Russia, and Iran. But the oil industry in Saudi Arabia does not represent an oligopolistic market structure where four firms dominate the industry. The

¹¹"Editorial, "The 300 Largest Industries Outside the U.S.," Fortune, August 1972, p. 151.

¹²United States Department of the Interior, Minerals Yearbook, Area Reports: International, A report prepared by the Bureau of Mines (Washington, D.C.: U.S. Government Printing Office, 1969), Vol. IV, p. 470.

petroleum industry in Saudi Arabia is owned solely by ARAMCO.

In Iran, ". . . in 1969, the petroleum sector accounted for about 85 percent of the country's foreign exchange earnings, contributed 17 percent of the gross national production (GNP) and provided \$1.1 billion in government revenues."¹³ The Iranian Oil Participants Ltd. (Consortium) accounts for approximately 98 percent of all production and refining in the country. Ninety percent of the consortium is owned by BP, RDS, Standard Oil Company of California, Gulf, Mobil, Texaco and Standard Oil Company (New Jersey) (Exxon). These seven are known worldwide simply as "the majors" or "the seven sisters."

In Venezuela, the world's fifth largest oil producer, 65 percent of its income and 90 percent of its foreign exchange come from petroleum activities.¹⁴ The majors occupy a similar strategic economic position in almost every petroleum exporting nation in the world. At present, oil is the economic life of these countries vis-a-vis its dollar contribution and relative size in terms of national income, foreign exchange earnings and needed capital for economic development.

But petroleum is also a vital factor of production in the industrialized nations. Michael Tanzer, in his study

¹³Ibid., p. 371.

¹⁴The Petroleum Publishing Company, International Petroleum Encyclopedia (Tulsa: The Petroleum Publishing Company, 1970), p. 186.

on the petroleum industry, put it this way:

In fact any economists who like this author has studied the relationship between energy and the total economy in a variety of countries would be tempted to add Energy as the fourth factor of production to the classic ones of Land, Labor, and Capital. For just as capital without labor is useless, so too is sophisticated capital without energy. (Historically, the whole course of industrialization, starting with the waterwheel and steam power, can be seen as a joint capital-energy substitution process; . . .¹⁵

In June 6, 1972, Representative Ed Edmondson, a Democrat from Oklahoma, in a speech before the Texas Independent Producers and Royalty Owners Association said a ". . . greater reliance on this foreign oil supply simply means that our national security and our economic stability inevitably becomes more dependent upon the actions of other countries."¹⁶ On June 4, 1972, when Iraq nationalized Iraq Petroleum Company's (IPC) holdings, the British government responded by saying that it had ". . . contacted the U.S., French, and Dutch governments to explore a mutually acceptable solution."¹⁷ IPC is owned by Britain's BP, France's Campagnie Francaise des Petroles (CFP), Dutch's RDS, America's Standard Oil Company (New Jersey) (Exxon) and Mobil Oil Corporation.

¹⁵Michael Tanzer, The Political Economy of International Oil and the Underdeveloped Countries (Boston: Beacon Press, 1969), p. 3.

¹⁶Editorial, "Edmondson Cites Threats to U.S. Energy Needs," The Oklahoma Journal, June 4, 1972, p. 12.

¹⁷Editorial, "Iraq Offers Nationalized Oil at Cut Rate; Consortium Warns Buyers of Legal Battle," The New York Times, June 6, 1972, p. 5.

Petroleum has been called "black gold" and the "life-blood" of industrialized economies. Currently, petroleum occupies a strategic position financially and as an indispensable factor of production in both the industrialized and non-industrialized nations. Petroleum production activities draw together both the political and private economic interests of nation states. Max Weber viewed this type of political capitalism as the basis for forming ". . . a league between the state and the capitalist interest."¹⁸

Lastly, the petroleum industry has operated on an international scale since the early 1900's. The Royal Dutch/Shell Group and Standard Oil Company (New Jersey) (Exxon) were well entrenched in Indonesia by 1915.¹⁹ In the Middle East, IPC's first concession agreement was to run for 75 years beginning in 1925. ARAMCO's concession agreement with Saudi Arabia dates from 1933 and expires in 1999.²⁰

Due to the petroleum industry's experience and longevity in the international field and its strategic economic importance, the industry is ideal for studying the joint ownership of the means of production effected through the mechanism of joint ventures.

¹⁸Max Weber, General Economic History (New York: Collier Books, 1961), p. 257.

¹⁹Arabian American Oil Company, ARAMCO Handbook (Dhaharn, Arabian American Oil Company, 1968), p. 89.

²⁰Ibid., p. 90.

Purpose and Scope

The purpose of the present study is to: 1) examine the different financial types of joint ventures, 2) determine the physical structure of joint ventures, 3) ascertain if any worldwide patterns are discernible, 4) examine the extent to which joint ventures exist and 5) determine if any ownership ties exist between joint ventures in producing operations and pipeline systems.

In producing petroleum products there are four basic fields of activity: production, transportation, refining and marketing. Production includes exploration, drilling, field producing operations, and storage terminals at or near the fields. Transportation includes pipeline systems, ocean-going tankers, inland barges, railroad cars and trucks. This study deals with field producing operations and pipeline systems.²¹ It is part of a larger research effort which also includes exploration, drilling, and refining. The exploration and drilling part of the study is contained in a dissertation being written by Jim Sturgeon "Joint Ventures in the International Petroleum Industry: Exploration and Drilling."²² Petroleum activities within the geographic area

²¹Hereafter, whenever the term production is used, unless otherwise stated, it refers only to field producing operations. Also, unless otherwise stated, the term transportation will refer only to pipeline systems.

²²Jim I. Sturgeon, "Joint Ventures in the International Petroleum Industry: Exploration and Drilling" (Ph.D. dissertation, presently being written, University of Oklahoma).

covered by the Communist bloc countries and the continental United States are excluded in both studies.

Framework and Method of Approach

Three primary groups operating in the petroleum industry are the international majors, the international minors, and government-owned companies.

The seven international majors are Standard Oil Company (New Jersey) (Exxon), The Royal Dutch/Shell Group, Mobil Oil Corporation, Texaco Inc., Gulf Oil Corporation, Standard Oil Company of California and The British Petroleum Company Ltd. The most significant aspect about the majors is their vertical integration on a worldwide scale. In every oil producing area the majors control producing operations, pipeline systems, storage areas, refining operations, tankers, and marketing facilities.

The international minors consist of 15 to 20 smaller oil companies which ventured into the international arena in the mid 1950's. Examples are Standard Oil Company (Indiana), Getty Oil Company and Atlantic Richfield Company.

The state-owned oil companies numbered nearly 100 in 1968.²³ Examples of the more prominent state-owned companies are France's ELF/Entreprise de Recherches et d'Activities Pétrolières (ELF/ERAP) and Italy's Ente Nazionale Idrocarburi

²³Lester F. Van Dyke, "Where governments are taking a piece of the oil action," Oil and Gas Journal, August 19, 1968, p. 38.

(ENI). State-owned oil companies and the minors have played a significant role in changing the structure of joint ventures in the petroleum industry. They have had some impact not only in terms of who participates, but also on the financial agreements between the participants.

In each of the activities studied--field producing operations and pipeline systems--participation in joint ventures by the majors, minors and state-owned companies is examined.

The Data

The data came from two primary sources--Oil and Gas Journal and World Oil. Both publications contained detailed information on joint ventures in the petroleum industry. Company names, participation percentages, location tracts, dates, production and refining figures, cost and concession sizes were taken from these journals. The publishing companies obtain information from three primary sources: 1) foreign government agencies, 2) the oil companies themselves and 3) private trade sources which they did not care to divulge.²⁴ Information from World Oil was generally cross referenced with data in the Oil and Gas Journal. When discrepancies occurred, the International Petroleum Register, Minerals Yearbook and the International Petroleum

²⁴This information was obtained in personal interviews with John C. McCaslin, exploration director, for Oil and Gas Journal and George B. Gibbs, editorial director for World Oil.

Encyclopedia were consulted.

A financial grant from the University of Oklahoma, Department of Economics, made possible a trip to Washington D.C. Several government agencies were visited. Personal interviews were conducted with Frank Lipson, attorney in the Federal Trade Commission's Bureau of Competition; William John Lamot, attorney in the Justice Department's Anti-Trust Division; and Dr. David Martin, Patricia Y. Bario and Dr. Walter S. Measday, staff economists for the Senate Subcommittee on Antitrust and Monopoly of the Committee on the Judiciary, United States Senate.

Personal interviews were also conducted with Arthur S. Miller, Professor of Law at George Washington University, James E. Hickey Jr., Counsellor at Law in the law offices of Northcutt Ely, and Jerry S. Cohen, attorney at law and former staff director and chief counselor for the hearings before the Senate Subcommittee on Anti Trust and Monopoly of the Committee on the Judiciary entitled, Government Intervention in the Market Mechanism: The Petroleum Industry.²⁵

The world was divided into ten geographical areas-- Alaska, the North Sea, Europe, Asia Pacific, Africa, Australasia, Central America, Canada, The Middle East and

²⁵The Northcutt Ely law firm in cooperation with the United States Department of the Interior, Bureau of Mines, published a five volume set entitled, Summary of Mining and Petroleum Laws of the World. Jerry S. Cohen, in addition to his work with the Senate Subcommittee, coauthored, America Inc.

South America. Statistical information computed and analyzed indicates: 1) the amount of production and pipeline mileage in the major producing operations and pipeline systems, 2) the percent of each activity carried on through joint ventures and 3) the extent to which the majors, minors and government-owned companies joint venture among themselves and with each other. The study's time span covers the years 1957 through June, 1972.

There follows an outline of the study. In Chapter II there is a survey of the literature. In Chapter III there is a detailed analysis of the financial and structural nature of joint ventures and the reasons given by the participants for entering joint ventures. Chapters IV and V contain information concerning the extent and intensity to which joint ventures exist in producing operations and pipeline systems. A summary is presented in Chapter VI.

CHAPTER II

RECENT LITERATURE ON JOINT VENTURES¹

Introduction

In surveying the literature, two facts became apparent. First, volumes have been written on the history, politics and economics of the petroleum industry. Second, there was little that dealt specifically with the international majors jointly owning the means of production through the mechanism of joint ventures. In addition to examining the literature on joint ventures, various areas in both business and economics were surveyed. Attention was directed to the literature on business organizational structure. Corporations are intensifying their use of the joint venture form of business organization, and the literature on business organizational structure frequently contains discussions on joint ventures.

The information presented is divided into two broad

¹The detailed and principal analysis of the survey of the literature may be found in a Ph.D. dissertation being written by Jim Sturgeon, "Joint Ventures in the International Petroleum Industry: Exploration and Drilling," (University of Oklahoma).

categories: 1) that which concerns corporate organizational structure and 2) that which concerns joint ventures per se. The literature on corporate structure is subdivided into five categories--the technologist literature, the traditional industrial organization literature, the industry's view of itself, the anational or multinational corporation literature and the anti-trust literature. Each topic is discussed in the order listed.

Corporation Organizational Structure

The technologist

One general theme of the technologist's literature is that all industrialized economies are planned economies. The technologists stress that in planned systems man's economic activities are not subject to the authority of the market. The use of modern technology dictates the use of "central planning," either private or public, or both. Galbraith sums up the technologists' view as:

. . . in this larger context of change, the forces inducing human effort have changed. This assaults the most majestic of all economic assumptions, namely that man in his economic activities is subject to the authority of the market. Instead we have an economic system which, whatever its formal ideological billing, is in substantial part a planned economy. . . . The imperatives of technology and organization, not the images of ideology, are what determine the shape of economic society.²

As mentioned in Chapter I, if the means of production

²John Kenneth Galbraith, The New Industrial State (Boston: Houghton Mifflin Company, 1967), pp. 6-7.

in the petroleum industry are jointly owned through the mechanism of joint ventures by one group of companies, a mechanism for centralized planning and control exists. The information obtained by this study might further add in our understanding of the technologists' position.

The thesis that technology plays a central role in shaping institutions has a long and scholarly list of exponents including such brilliant minds as Marx, Veblen, Dewey, and Ayres. Karl Marx was one of the first economists to use the technology theme as a unifying element in his economic analysis. Marx, writing in 1859, summarized his central hypothesis saying:

The general conclusion at which I arrived and which, once reached, became the guiding principle of my studies can be summarized as follows. In the social production of their existence, men inevitably enter into definite relations, which are independent of their will, namely relations of production appropriate to a given stage in the development of their material forces of production. The totality of these relations of production constitutes the economic structure of society, the real foundation, on which arises a legal and political superstructure and to which correspond definite forms of social consciousness. The mode of production of material life conditions the general process of social, political, and intellectual life.³

In 1921 Thorstein Veblen argued that one of the key variables determining economic organizational patterns was technology or the "state of the industrial arts," as opposed to the traditional classical factors of production-land,

³Karl Marx, A Contribution to the Critique of Political Economy, Trans. by S. W. Ryazanskaya, Ed. by Maurice Dobb (New York: International Publishers, Inc., 1970), p. 20.

labor and money capital. Veblen viewed technology as a common stock of knowledge derived from past experience. Viewing technology as a social asset, Veblen could see no validity in one man or one firm claiming this knowledge as individual private property to be used for pecuniary gain. Professor Veblen made a distinction between 1) the mechanical or technological imperatives inherent in the machine process and 2) business activities carried on for profit and pecuniary gain:

In effect, the progressive advance of this industrial system towards an all-inclusive mechanical balance of interlocking processes appears to be approaching a critical pass, beyond which it will no longer be practicable to leave its control in the hands of business men working at cross purposes for private gain, or to entrust its continued administration to others than suitably trained technological experts, production engineers without a commercial interest. What these men may then do with it all is not so plain; the best they can do may not be good enough; but the negative proposition is becoming sufficiently plain, that this mechanical state of the industrial arts will not long tolerate the continued control of production by the vested interests under the current businesslike rule of incapacity by advisement.⁴

Veblen, like Marx, viewed technology as a dynamic and unifying element in industrial economies.

Professor Clarence E. Ayres in his book, The Theory of Economic Progress, expressed a similar position:

The significant truth is that each society has its own distinctive way of getting a living. . . . Indeed, whole cultures have been transformed by the introduction of new instruments. . . .

⁴Thorstein Veblen, The Engineers and the Price System (4th ed.; New York: Harcourt, Brace, & World, Inc., 1963), pp. 75-76.

In the same sense industrial technology is the real substance of the modern economy.⁵

Professor Ayres, like Veblen and Marx, drew a contrast between traditional economic thinking and the technologist's position:

Granted that no exponent of the market theory has ever denied the existence of what Veblen called "the machine process;" nevertheless that theory in all its manifestations does imply that the creative principle--the economic magic of the Western economy--somehow emanates from the market, from mercantile activities, from buying and selling. . . . As Adam Smith put it, "as it is the power of exchanging that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of that power, or, in other words, by the extent of the market."

But surely the true state of affairs is almost the exact reverse of this. Indeed, it can be stated most succinctly in these very words. As it is the state of the industrial arts that gives occasion to exchange, so the extent of the markets must always be limited by the state of the industrial arts.⁶

Gunnar Myrdal, currently Professor of International Economics at the University of Stockholm and Minister of Trade and Commerce in the Swedish government, likewise views technological development as an active force in changing and shaping our basic institutions and social relations:

Technological and organizational developments have in many fields been increasing the size of the units in relation to the markets. At the same time, in all other fields the individual units have found the means by which to combine.

The markets and the prices have more and more lost their character of being given and objective conditions, outside the influence of the individual units. . . . The markets have become consciously "regulated"

⁵C. E. Ayres, The Theory of Economic Progress (4th ed.; New York: Schocken Books, 1962), pp. xv-xvi.

⁶Ibid., p. xvi.

by the participants.

When this happens on a large enough scale, a fundamental institutional change has occurred in the position of the human beings in relation to each other and to the community.⁷

Professor Myrdal concurs with the Galbrathian thesis concerning how these technological developments have effected the production process noting that:

. . . our national economies have become increasingly regulated, organized, and coordinated, i.e., "planned,"
⁸

Emmanuel G. Mesthene, previous director of the Harvard University Program on Technology and Society, expressed one of the major conclusions of the Harvard University Program as follows:

. . . changes discussed and illustrated in the preceding section represent the relatively direct effects of technology on values.

To be sure the tradition that ties freedom and liberty to a laissez-faire system of decision making remains very strong and the changes in social structures and cultural attitudes that can touch it at its foundations are still only on the horizon. But the trend seems clearly implicit in the imperatives of technological change.⁹

W. H. Ferry summarized the conclusions contained in a study done in 1960 by the Center for the Study of

⁷Gunnar Myrdal, Beyond the Welfare State (2nd ed.; New York: Bantam Books, Inc., 1967), pp. 28-29.

⁸Ibid., p. 9.

⁹Emmanuel G. Mesthene, Technological Change: Its Impact on Man and Society (New York: The New American Library, Inc., 1970), pp. 56-57.

Democratic Institutions as follows:

Technology and bureaucracy within a generation will transform present economic practice, theory, dogma, and institutions . . .¹⁰

Spokesmen for the petroleum industry often use the technologist theme. Henry D. Ralph, in an article appearing in the Oil and Gas Journal, explained how the industry functioned during the Second World War:

The chief wartime activity of the petroleum industry has been, and still is, to keep one jump ahead of the stupendous and constantly increasing military requirements. . . .

This was possible only through the closest kind of cooperation within the industry in planning, pooling technical knowledge and exchanging products and equipment, and probably could not have been accomplished without the coordination of the Petroleum Administration for War.¹¹

In 1950, Walter S. Hallanan, President of Plymouth Oil Company and Chairman of the National Petroleum Council, explained that the integrated oil companies were an organizational attempt to match the logic of separate technological processes with a comparable order within the business framework:

Just as it became necessary for individuals and small business operations to integrate their resources and facilities in order to keep pace with the demands of a surging and seething economy, it was of vital importance in the public interest for oil companies to integrate their facilities into a smooth, economical and efficient overall organization. Integration is

¹⁰W. H. Ferry, The Economy Under Law (Santa Barbara: The Fund for the Republic, Inc., 1960), p. 6.

¹¹Henry D. Ralph, "Close Cooperation Within Industry Has Made Possible Its Wartime Achievements," Oil and Gas Journal, March 31, 1945, p. 288.

the one essential factor that has made it possible for the oil industry to meet every demand of the American people both in peace and war.¹²

In 1969, Frank J. Gardner, international editor for the Oil and Gas Journal, defended the dominant position held by the international majors in the petroleum industry saying:

Semantics aside, however, the fact remains that the major internationals still must run the show as far as international supply and demand patterns are concerned. Only they have the flexibility, the capital and the technology to do the job.¹³

Michael Tanzer in his book, The Political Economy of International Oil and the Underdeveloped Countries, said that technical incompetency was one of the basic arguments used to discourage government sponsored oil exploration and promote private enterprise joint ventures.¹⁴ Dr. Tanzer stated the position as follows:

The case for private and against government oil exploration in oil-importing underdeveloped countries rests on three major premises: (1) Oil exploration is a very "risky" business. (2) Because of this "riskiness," considerable diversification of efforts is needed to have a chance of a successful oil exploration program. This necessarily entails great expenses, both in men and money. (3) The international oil companies have the money and technical skills which are required and are sufficiently diversified so that they can

¹²Leonard M. Fanning, ed., Our Oil Resources (New York: McGraw-Hill, 1950), p. 3.

¹³Frank J. Gardner, "Forecast for the Seventies--Around the World," Oil and Gas Journal, November 10, 1969, p. 22.

¹⁴Michael Tanzer, The Political Economy of International Oil and The Underdeveloped Countries (Boston: Beacon Press, 1969), p. 117. Dr. Tanzer does not agree with this position and argues in Chapter 10 of his book that oil exploration should be carried on by the underdeveloped countries themselves.

afford risk; conversely, the governments of the under-developed countries have neither large amounts of capital nor trained manpower and hence cannot afford the "risk" of oil exploration. It logically follows from the above that governments of underdeveloped countries should not embark alone on an oil exploration program, but rather should leave it to the resources of the international oil companies; at most a government might participate with the companies on some joint-venture basis, where the companies would provide the scarce manpower and foreign exchange.¹⁵

As the above quotes indicate, spokesmen for the petroleum industry use the "imperatives of technology" argument to explain the existence of: 1) fully integrated oil companies, 2) joint ventures and 3) the dominance of the industry by the international majors.

Recurring themes in the technologists' literature are that: 1) technology is a dynamic and organizing force in any society and 2) the efficient use of modern technology demands industrial integration, planning and cooperation.

Traditional industrial organization literature

The traditional industrial organization approach views economic structures in terms of efficiency and cost. Market conduct and performance are determined by the degree to which a particular market structure minimizes cost and maximizes efficiency. Supposedly, the theoretical norm which accomplishes both tasks perfectly is atomistic competition. Usually four market structures are hypothesized--atomistic competition, monopolistic competition, oligopoly, and pure

¹⁵Ibid., p. 117.

monopoly. The market performance of the latter three is always judged against the theoretically perfect norm, atomistic competition.

The petroleum industry is usually viewed as having an oligopolistic market structure. Oligopoly is characterized by: 1) fewness of sellers and 2) a high degree of interdependence between the sellers, in terms of production capacity, price, and product quality.

Fewness of sellers is not a precise mathematical term. There is no borderline between many and few, i.e., there is no precise borderline between a competitive market consisting of many buyers and sellers and an oligopoly market consisting of only a few buyers and sellers. But all that is required to indicate an oligopoly market, is that a certain number of firms have large enough shares of the total market to recognize their mutual interdependence. Fritz Machlup, a leading contributor in analyzing oligopoly markets, said:

Not objectively in numbers then can we find the criterion for the distinction between polypoly and oligopoly, but rather in subjective attitudes, in the state of mind of the seller. The criterion is whether the seller, when he contemplates a decision or action that he might take concerning his selling prices, sales volumes, product qualities, selling efforts, or production capacity, is or is not conscious of what his competitors might think or do in reaction.

This rival-consciousness, or self-consciousness vis-a-vis competitors, contrasts oligopoly sharply with polypoly, and also with monopoly, as a type of seller's attitude. "Polypoly is the position where the seller believes that other sellers in the market would

not care about what he does because there are too many for anyone to feel or mind the effects of what he does."¹⁶

Machlup uses the term polypoly to describe what is generally referred to as perfect competition in standard economic textbooks. One essential difference between sellers in competitive markets and sellers in oligopoly markets is the attitude of each seller toward his rivals.

Machlup commented on this in an article in Kyklos as follows:

In no type of seller's attitude is the feeling of rivalry and competitiveness as prevalent as in some forms of oligopoly. Under perfect polypoly the feeling of rivalry is completely absent from the attitudes of the "pure competitors." Under imperfect polypoly a seller may be aware of the fact that he has competitors but, although he may watch them, he is not selfconscious about his own actions, because he has not the feeling of being watched by them. Since he is sure his actions cannot hurt any one of them and no one of them would ever "come back" at him for anything he might do, he will not have any particular "rival" or "rivals."

This is different under certain forms of oligopoly. The oligopolist usually thinks of certain firms as his rivals; he knows they are watching him or, at least, will notice his "competitive" actions; he believes he can hurt them or make them angry or cause them to take an action they would not take but for what he has done. And all this means that he will be very conscious of being in competition, actively or potentially.¹⁷

Edward Hasting Chamberlin also viewed the essential characteristic of oligopoly as the "mutual dependence" or interdependence between sellers. He said:

¹⁶Fritz Machlup, The Economics of Sellers' Competition (Baltimore: The Johns Hopkins Press, 1952), p. 351.

¹⁷Fritz Machlup, "The Characteristics and Classifications of Oligopoly," Kyklos, V (1951/1952), 149.

When a move by one seller evidently forces the other to make a counter move, he is very stupidly refusing to look further than his nose if he proceeds on the assumption that it will not. As already argued, the assumption of independence cannot be construed as requiring the sellers to compete as though their fortunes were independent, for this is to belie the very problem of oligopoly itself.¹⁸

Both Chamberlin and Machlup see the basic problem a firm faces in oligopoly markets as: how will my competitor react to my decisions concerning production capacity and the quality and price of the products I sell. Thus, typical topics examined in industry case studies of oligopoly markets include relevant markets, pricing behavior, production capacities, concentration ratios, and product quality.¹⁹ One important question is whether oligopoly theory explains the behavior of firms in the petroleum industry. None of the oligopoly theories examined take into account the problem of joint ownership of the means of production. For example, if the means of production are owned jointly by the various firms, independent action by one firm concerning increasing capacity would be legally prohibited. In essence, the majority equity shareholders would legally be bound to a common course of action. As noted above, the petroleum industry is

¹⁸Edward Hastings Chamberlin, The Theory of Monopolistic Competition, 8th ed. (Cambridge, Mass.: Harvard University Press, 1965).

¹⁹Several standard classroom texts use this approach, including Joe S. Bain's Industrial Organization (New York: John Wiley and Sons, Inc., 1967), Leonard W. Weiss' Case Studies in American Industry (New York: John Wiley and Sons, Inc., 1967), and William G. Shepherd's Market Power and Economic Welfare (New York: Random House, Inc., 1970).

usually viewed as having an oligopoly market structure. One of the goals of this study is to gain further insight into the actual market structure of the petroleum industry.

Another recurring theme in industrial organization literature is the corporate structure's growing complexity concomitant with industrial concentration. George W. Stocking and Myron W. Watkins said that ". . . an outstanding feature of American industrial history has been the increase in size and, in many fields, the decline in number of business enterprises relative to national output."²⁰ They further stated that ". . . in most branches of American industry the representative form of business enterprise is the giant corporation."²¹

Owen D. Young, a former chairman of the board of the General Electric Company, testified before Congress concerning the Insull group of companies and is quoted by Stocking and Watkins as saying:

Well, I confess to a feeling of helplessness as I began to examine . . . the complicated structure of that organization. . . . I would say it was so set up that it was impossible really for anyone to comprehend its entire aspect; and it was so set up that you could not possibly get an accounting system which would not mislead even the officers themselves of that complicated structure.²²

²⁰George W. Stocking and Myron W. Watkins, Monopoly and Free Enterprise (New York: The Twentieth Century Fund, 1951), p. 53.

²¹Ibid.

²²Ibid., p. 79.

More recently, Sueyuki Wakasugi, president of Mitsui and Company, a leading Japanese international trading firm (dealing in petroleum and other manufacturing areas), expressed the same idea. Discussing Mitsui's industrial structure in an interview for the Wall Street Journal, December, 1971, Wakasugi said, "Mitsui really is too complex to manage."²³ Mitsui & Co. had sales of \$9.3 billion in the fiscal year ending September 30, 1970, and handled approximately 10,000 products with 20,000 or more companies. The company has 116 offices abroad and ". . . about 15,000 messages clatter in and out daily on 60 telex machines; in addition, there are direct leased lines to such major centers as New York, London, and Bangkok. All these reports are compiled into a daily intelligence file for top executives."²⁴

Mobil Oil Corporations's board chairman took a position similar to that expressed by Mitsui's president in testimony before Congress during the Senate's Emergency Oil Lift Hearings. When asked about affiliates in Australia and Japan, Mobil's chairman replied, "There are a lot of our companies in which we own interest directly that I don't have knowledge of. . . ."²⁵

²³Editorial, "Role of Mitsui, Other Japanese Trading Firm Changes as They Become Consultants, Financiers," The Wall Street Journal, December 3, 1971, p. 24.

²⁴Ibid.

²⁵U.S., Congress, Senate, Emergency Oil Lift Program and Related Oil Problems. Joint Hearings before subcommittee of the Committee on the Judiciary and Committee on Interior

The proliferation of holding companies, subsidiaries, affiliates, and joint ventures make the management and study of modern industrial structures complicated. As the above quotes indicate, executives operating within the corporation are often bewildered by the complexity of their own organization.

The industry's view of itself

Members of the industry generally stress that petroleum business enterprise is highly competitive. A typical Oil and Gas Journal editorial comment follows:

There's no such thing as the oil industry, it's just a bunch of individual outfits competing with each other, and each one has its own policies.²⁶

This definition follows closely the usual economic definition of competitive capitalism. Another Oil and Gas Journal editorial, in December, 1962, contained the following comment:

For several years most of the world's oil men have been waiting hopefully for an end to the worldwide surplus of crude. It should now be apparent that this is a vain hope. . . .

.

For producers everywhere, survival under this continuing condition of fierce and global competition will depend on cutting cost to an extent and by means unknown in the past.²⁷

and Insular Affairs, U.S. Senate, 85th Congress, 1st Session (Washington, 1957), Part 2, p. 1535.

²⁶Editorial, "The Oil Industry," Oil and Gas Journal, January 15, 1962, p. 51.

²⁷Editorial, "Policies in A World of Low-Cost Energy," Oil and Gas Journal, December 31, 1962, p. 63.

Industry spokesmen are usually adamant in insisting on the intensity of competition within the industry. Robert Engler in his book, The Politics of Oil, commented on this saying:

It is an essential part of corporate ritual to insist that industry is competitive, presumably in the classic capitalist image, with the price mechanism of a free market place guiding and restraining the behavior of all participants.²⁸

In 1946, A. Jacobsen, then president of Amerada Petroleum Corporation, summed up the policy of the petroleum industry as follows:

We have never formalized our national petroleum policy, but we have had one, and it has made the American petroleum industry preeminent in the world. The industry has been based throughout on private, competitive enterprise.

The oil industry should remain a free, private, competitive enterprise, furnishing its own capital and managed by private initiative.²⁹

M. M. Brisco, elected president of Standard Oil Company (New Jersey) (Exxon) in 1969, espoused similar ideas in expressing the industry's relationship to the government:

One of the most critical areas of government relations is in Washington. Unless the industry can convince the government it must retain present levels of depletion allowance and import controls, we could be headed for real trouble. . . .

.
It's a tough, competitive world. In the oil business you have to be ready to stand up and compete with the

²⁸Robert Engler, The Politics of Oil Private Power and Democratic Directions (2nd ed.; Chicago: The University of Chicago Press, 1967), p. 37.

²⁹Editorial, "Jacobsen Defends U.S. Policy in Summarizing Testimony," Oil and Gas Journal, April 6, 1946, p. 51.

rest of the industry. This is one more reason we must have the proper economic conditions to operate under.³⁰

As already noted and as the above quotes indicate, the spokesmen for the petroleum industry portray their business as being highly competitive. However, one may question the degree to which competition can exist if the means of production are owned jointly by the competing firms. One of the goals of this study is to gain more information on how joint ventures might affect competition in the petroleum industry.

The multinational corporation literature

The multinational, or as it is now being called, the "anational" corporation, is a timely and prominent topic in the literature on business enterprise. Adolf A. Berle and Gardiner C. Means were among the first to begin research and publish in this area. In their book, The Modern Corporation and Private Property, written in 1932, they stated that:

The rise of the modern corporations has brought a concentration of economic power which can compete on equal terms with the modern state--economic power versus political power, each strong in its own field. The state seeks in some aspects to regulate the corporation, while the corporation, steadily becoming more powerful, makes every effort to avoid such regulation. Where its own interests are concerned it even attempts to dominate the state. The future may see the economic organism, now typified by the corporation, not only on an equal plane with the state, but possibly even superseding it as the dominant form of social organization. The law of corporations, accordingly, might well be considered as a potential constitutional law for the new economic

³⁰Editorial, "Global Problem: Oil's Relations with Governments," Oil and Gas Journal, October 13, 1969, p. 198.

state, while business practice is increasingly assuming the aspect of economic statesmanship.³¹

Following the same theme, in 1955, Adolf A. Berle in his book, The 20th Century Capitalist Revolution, said of the petroleum industry:

Large corporations, like nations, have encountered the danger of world anarchy, have sought safety in balance of power, and from time to time have attempted in their field experiments in world government. To this last point, attention may be directed. In point of surprising fact, the large American corporations in certain fields have more nearly achieved a stable and working world government than has yet been achieved by any other institution. The outstanding illustration is the case of the oil industry.³²

Professor Berle further stated that in particular the Achnacarry Agreement ". . . established what may be described, without too much exaggeration, as the most successful experiment in economic world government thus far achieved in the twentieth century."³³ The official title of this agreement was, "The Pool Association of 17 September 1928." In petroleum literature the agreement is usually referred to more simply as the "Achnacarry Agreement" or the "As Is" agreement. Geographically, the agreement covered the whole world outside the United States and the Soviet Union. The signatories to the "As Is" agreement were Royal Dutch Shell,

³¹Adolf A. Berle and Gardiner C. Means, The Modern Corporation and Private Property (New York: Harcourt, Brace, & World, Inc., 1932), p. 313.

³²Adolf A. Berle, Jr., The 20th Century Capitalist Revolution (New York: Harcourt, Brace, & Company, 1955), p. 144.

³³Ibid., p. 147.

Standard Oil Company of New Jersey (Exxon) and Anglo-Persian Oil Company. Anglo-Persian Oil Company has since changed its name to British Petroleum Company, Ltd.³⁴

Professor Berle summarized the main principles of the agreement as follows:

Summarized the "As Is" Agreement adopted seven governing principles.

- (1) Each company was to retain the percentage of the market, everywhere, enjoyed at the time by that company. (Diplomats would call this "peace on the basis of the status quo.")
- (2) The existing facilities of all companies were to be made available to competitors at not less than actual cost but at a cost less than any company would incur if it built new facilities.
- (3) New facilities were to be built only to supply increased consumption requirements.
- (4) Each producing area was to have the advantage arising from its geographical position--that is, should sell in the nearest market.
- (5) Supplies for each market should be drawn from the nearest producing area.
- (6) Surplus production in any producing area was not to be "dumped" in other areas to the disturbance of the price structure there prevailing.
- (7) No measures were to be taken which would materially increase the cost of producing oil.³⁵

Christopher Tugendhat in his book, Oil: The Biggest Business, said of the seven principles:

The principles speak for themselves. In an effort to stem the rising tide of competition, the big three agreed to try to freeze the market in its existing mould. They were to combine their interests and share each other's facilities--refineries, storage, tankers, and the rest--in order to present a united front against

³⁴Other companies who later accepted its main provisions were Atlantic Refinery, Cities Service, Continental, Gulf, Sinclair, Richfield, Standard of California, Standard of Indiana, Standard of New York, Texas Tidewater, Union, and Vacuum.

³⁵Ibid., pp. 147-148.

companies trying to break into new markets, price cutters, and other disturbing elements.³⁶

There were several successor arrangements to the "As Is" agreements. The two most notable are the "Memorandum for European Markets (1932) and the "Draft Memorandum of Principles" 1934.³⁷ The thesis set out by Adolph A. Berle and Gardiner C. Means in 1932 viz., that modern corporations can compete with and might supersede nation states as the dominant form of social organization, is prominent in the current literature on anational enterprises.

From an economic standpoint trade among nation states is based on the idea that finished products are traded internationally but that the factors of production are not. The law of comparative advantage, first popularized by Adam Smith and refined by David Ricardo, led to the rationalization that nations should specialize and export those commodities in which they have a comparative advantage. The theory tells us that through trade each nation can increase its consumption of goods and services. But now, almost two

³⁶Christopher Tugendhat, Oil: The Biggest Business (New York: G. P. Putnam's Sons, 1968), p. 100.

³⁷For a more detailed discussion of the "As Is" agreement and subsequent attempts by the oil industry at world organization via written agreement see Robert Engler's, The Politics of Oil (The University of Chicago Press, 1961), Raymond Vernon's Sovereignty at Bay (New York: Basic Books, Inc., 1971), Michael Tanzer's The Political Economy of International Oil and the Underdeveloped Countries (Boston: Beacon Press, 1969), Christopher Tugendhat's Oil: The Biggest Business (New York: G. P. Putnam's Sons, 1968), and A. A. Berle's The 20th Century Capitalist Revolution (New York: Harcourt, Brace, and Company, 1954).

centuries later, the factors of production themselves are being transported across national boundaries. In addition, technology and managerial skills are becoming increasingly important as factors of production.

The transportation of technology and managerial skills across national boundaries by the multinational enterprises (ME's) is creating wider markets and wider defense areas often without the sanction of individual nation states. Jack N. Behrman, Professor of International Business at the Graduate School of Business Administration of the University of North Carolina, described these developments as follows:

The ME's in these sectors have a propensity to treat the world as a single, integrated market. They are attempting to integrate the operations of various far-flung affiliates so as to achieve the least-cost production for distribution wherever the market arises. To accomplish this, they are developing centralized policies covering such aspects as finance, pricing, sourcing of materials, marketing, product-lines, processes, designs, and even personnel. They are determining the location of plants and distribution outlets over the world market, according to company advantage. Their criteria are neither comparative advantage--according to classical theory--nor national interest--as determined by any single government.³⁸

In 1969, Sidney E. Rolfe expressed similar ideas in a paper given at an international conference sponsored by The Atlantic Council of the United States, The Committee for Atlantic Economic Cooperation and the Atlantic Institute:

³⁸Jack N. Behrman, "Industrial Integration and the Multinational Enterprise," in The Multinational Corporation, ed. by David H. Blake (Lancaster: The American Academy of Political and Social Science, 1972), pp. 46-47.

International investment is a reflection of the development of technology, and if technology--internal in the corporations' discoveries and production adaptations and external in the case of travel, communication, and administrative control--is at the root of the movement; it is a movement certain to grow ever more important with time and to challenge every facet of the established and order-financial, cultural, and political--in the course of that growth. Few human institutions in the past have withstood the march of technology, and those currently extant are no less likely to succeed. . . . In retrospect, the history of our time is likely to be recorded as the conflict between ethnocentric nationalism and geocentric technology.³⁹

Louis Turner in his book, Invisible Empires, described the important areas of contention between multinational enterprises and nation-states. He discussed both structural and policy matters as they relate to international economics, politics, and the trends toward regional and global integration of markets. He reached conclusions similar to those of Professors Behrman and Rolfe and concluded by saying:

This book has presented the range of problems thrown up by the rise of the multinationals. We are slowly moving toward a world economy in which wage rates, prices, and interest rates become increasingly standardised. To some extent this is happening because governments are willing it to happen, but more importantly, the dynamics of the multinational company are bringing it about whether governments will it or no. There is in fact a kind of vacuum in which such companies can find themselves outside any form of national control.⁴⁰

³⁹Sidney E. Rolfe, "The International Corporation in Perspective" in The Multinational Corporation in the World Economy, ed. by Sidney E. Rolfe and Walter Damm (New York: Praeger Publishers, 1970), p. 32.

⁴⁰Louis Turner, Invisible Empires (New York: Harcourt, Brace, Javonvich, Inc., 1970), p. 213.

Information on anational corporations is also beginning to appear in leading magazines and newspapers. In the November 20, 1972, issue of Newsweek, William I. Spencer, president of the 90-Nation First National City Corporation, is quoted as saying, ". . . the political boundaries of nation-states are too narrow and constricted to define the scope and sweep of modern business."⁴¹ In the same article, Samuel Pizar, an international legal expert, commenting on Senator Frank Church's upcoming Senate investigation of global companies said, ". . . the emerging battle will pit two gigantic forces: the economic power of the multinationals and the political power of nation-states."⁴² In March, 1972, an article in the New York Times quoted a survey showing 176 multinational corporations with nearly 1.4 million host country nationals as employees.⁴³ Peter G. Peterson in a report prepared for President Nixon and the Council on International Economic Policy, The United States In a Changing World Economy, said that direct investment abroad increased from \$30 billion in 1960 to \$78 billion in 1970.⁴⁴

⁴¹Editorial, "Global Companies: Too Big to Handle?", Newsweek, November 20, 1972, p. 96.

⁴²Ibid., p. 97.

⁴³Editorial, "Multinationals: How Important," The New York Times, March, 1972, Sec. 3, p. 5.

⁴⁴Peter G. Peterson, The United States in the Changing World Economy, report to the President and to the Council

The recurring themes in the anational corporation literature are: 1) the tremendous growth in both economic size and geographical area covered by the modern corporation and 2) the emerging conflict between nation-states and the anational companies.⁴⁵

The anti-trust literature

A study made by the Twentieth Century Fund Foundation concluded that: 1) published material on monopoly and competition in the petroleum industry probably exceeded that on any other industry 2) The Federal Trade Commission, prior to 1936, had made 13 economic investigations of the industry and 3) since 1945 there had been fourteen congressional studies concerning the petroleum industry.⁴⁶ The study quoted the Assistant Attorney General and Anti-Trust Division Chief under the Truman administration, Graham Morrison. Morrison said in testimony before the House Interstate and Foreign Commerce Commission, ". . . its major battles historically

on International Economic Policy (Washington, D.C.: U.S. Government Printing Office, April, 1971), p. 45.

⁴⁵For additional literature following the anational corporation theme and stressing the conflict between modern corporations and nation-states see Jack N. Behrman's National Interest and The Multinational Enterprise (Englewood Cliffs: Prentice-Hall, Inc., 1970) Christopher Tugendhat's, The Multinationals (London: Eyre and Spottiswoode, Publishers, Ltd., 1971), Lester R. Brown's World Without Borders (Random House, 1972), and The Multinational Firm and the Nation State, ed. by Giller Paquet (Collier-MacMillan Canada, Ltd., 1972).

⁴⁶Simon N. Whitney, Antitrust Policies (New York: Twentieth Century Fund, 1958), p. 98.

and daily have been against the oil industry."⁴⁷ In 1964, the Oil and Gas Journal reported Attorney General Robert F. Kennedy as saying there were about 150 complaints against the oil industry in 1963, 43 investigations and two grand jury investigations.⁴⁸

A major Federal Trade Commission study dealing specifically with monopoly practices in the international oil industry, The International Petroleum Cartel, was published in August, 1952. The report traced the history of cooperation between the world's biggest seven international oil companies dating from the Achnacarry Agreements in 1928. It concluded by accusing the companies of conspiring to fix prices, divide markets, and in general conspiring to freeze out competition.⁴⁹

Also, much of the literature in this area deals specifically with whether anti-trust laws apply and/or should apply to foreign joint ventures. John C. Scott and Steven K. Yablonski in an article, "Transnational Mergers and Joint Ventures Affecting American Exports," conclude:

Mergers and joint ventures are treated together here because in many respects they are similar--a fact that

⁴⁷Ibid., p. 100.

⁴⁸Editorial, "Justice says Oil's Competition is Waning," Oil and Gas Journal, July 16, 1964, p. 60.

⁴⁹U.S., Congress, Senate, The International Petroleum Cartel, Staff Report to the Federal Trade Commission, released through Subcommittee on Monopoly of Select Committee on Small Business, U.S. Senate, 83rd Congress, 2nd Session (Washington, 1952), pp. 47-112.

has not gone unrecognized by the courts

There no longer seems to be much doubt, though, that the United States courts can apply the Anti-Trust laws to foreign mergers.⁵⁰

In summary, the information contained in anti-trust literature is usually ex post data on price fixing, anti-competitive practices, cartel agreements or debates and discussions concerning the anti-trust implications with reference to market structure.

Literature Specifically On Joint Ventures

In 1965, the International Chamber of Commerce (ICC) held its annual meeting at New Delhi, India. The ICC's agenda was concerned mainly with international joint business ventures in developing countries. One of its main conclusions read as follows:

All those present agreed that this form of cooperation was extremely promising, as it brought together the technical skill and financial means of companies from the developed countries and the contribution which could be made by local firms, thanks to their experience of local customs concerning distribution methods, relations with the authorities and the labor force, etc.⁵¹

⁵⁰John C. Scott and Steven K. Yablonski, "Transnational Mergers and Joint Ventures Affecting American Exports," in MSU International Business and Economic Studies, ed. Etienne Cracco (East Lansing: Graduate School of Business Administration, Michigan State University, 1970), p. 292.

⁵¹International Chamber of Commerce, "International Joint Business Ventures in Developing Countries," in MSU International Business and Economic Studies, ed. Etienne Cracco (East Lansing: Graduate School of Business Administration, Michigan State University, 1970), p. 57.

At a Tokyo session of the International Chamber of Commerce Commission on Asian and Far Eastern affairs held in May, 1966 the delegates adopted the following statement:

Joint business ventures to which businessmen from overseas can add their financial and technical resources and knowledge to those of a local partner, have an important part to play in the developing countries of Asia but many problems have to be solved.⁵²

As suggested by the above quotes and noted in Chapter I, international joint ventures are growing in number and importance. But, as also noted, the literature on joint ventures deals primarily with the problems and conflicts that develop between a local partner and a foreign company.

The literature specifically on joint ventures is of two general types: 1) the investment decision approach and 2) the case study approach. James W. C. Tomlinson's book, The Joint Venture Process In International Business, is typical of the investment decision approach.⁵³ Tomlinson constructed a model containing parameters such as local demand, taxes, government attitudes and the characteristics of local associates in the host country. The model is used for quantifying the investment decision process for international business firms. The literature in this area is often directed specifically at the question of profitability. In essence, Tomlinson's model is an attempt to illustrate how

⁵²Ibid., p. 72.

⁵³James W. C. Tomlinson, The Joint Venture Process in International Business (Cambridge, Mass., M.I.T. Press, 1970).

domestic talents and resources can be combined with foreign technology and skills to maximize profits.⁵⁴

Wolfgang G. Friedmann and Jean-Pierre Beguin's book, Joint International Business Ventures in Developing Countries, is characteristic of the case study approach.

Individual joint venture agreements in various non-industrialized areas are examined in detail. Attention is focused primarily on financial and legal arrangements and methods developed for resolving disputes between the domestic and foreign companies. Chapter II "Oil Production In Iran" contains a discussion on two petroleum industry joint ventures in Iran. The discussion centers around the legal and financial relationship between the domestic government-owned company and the international oil consortium. Both equity and contractual arrangements are examined with reference to the different investment, taxation, and profit sharing agreements that relate to the two types of joint ventures.⁵⁵

Another typical case study approach can be found in

⁵⁴Other examples typifying the investment decision approach can be found in Michael Z. Brooke and N. Lee Remmers', The Strategy of Multinational Enterprise (New York: American Elsevier Publishing Company, Inc., 1970), Mira Wilkins', The Emergence of Multinational Enterprise (Cambridge: Harvard University Press, 1970) and The International Corporations, edited by Charles P. Kindleberger (Cambridge, Mass., M.I.T. Press, 1970).

⁵⁵The various types of joint venture financial arrangements used in the petroleum industry are discussed in detail in Chapter III.

Joint International Business Ventures edited by Wolfgang G. Friedmann and George Kalmanoff. The editors point out the growing importance of joint ventures, saying:

It would be tempting to conclude this rather detailed survey and analysis of joint international business ventures in many countries and types of industry by saying that no general conclusions can be drawn at all, that the variety of countries, situations, and conditions is too great to permit any generalizations.

Such a conclusion would be as unwarranted as oversimplified generalizations. The general assumption underlying this study was that the joint international business venture might constitute an important expression of changing relationships between the industrially developed and less developed countries. That hypothesis has been abundantly confirmed by our country surveys and case studies.⁵⁶

This book contains a discussion concerning the quantitative importance of joint ventures using various countries and industries as examples. Attitudes and motivations, internal operations, governmental policies and legal elements are factors examined in each of the case studies.⁵⁷ The authors reach the conclusion that domestic companies in non-industrialized countries and foreign companies from industrialized countries can both profit from joint venture business arrangements.

⁵⁶Wolfgang G. Friedmann and George Kalmanoff, ed., Joint International Business Ventures (New York: Columbia University Press, 1961), p. 258.

⁵⁷Other typical examples of the case study approach can be found in Manech S. Wadia's Cases in International Business (Scranton: International Textbook Company, 1970), John H. Dunning's The Multinational Enterprise (London: George Allen & Unwin Ltd., 1971) and Foreign Investment in the Petroleum and Mineral Industries, edited by Raymon F. Mikesell (Baltimore: The Johns Hopkins Press, 1971).

As indicated above, the literature on joint ventures deals primarily with the interactions and conflicts between a local company or partner usually located in a non-industrialized country and a foreign company from an industrialized country. But the present study is concerned primarily with the direct and/or indirect relationship between the international majors and/or the international minors themselves, i.e., this study examines the supposition that the international majors and/or minors jointly own the means of production in the petroleum industry through a worldwide mechanism of joint ventures. Little information was found concerning this aspect of joint ventures. There was no literature found that attempted examining petroleum industry joint ventures on an integrated worldwide basis. Daniel R. Fusfeld, economic professor at Michigan State University, offers the following explanation for the lack of information on the joint ownership of the means of production effected through joint ventures:

Joint subsidiaries of large corporations have never been subjected to intensive study. There is little knowledge of their number, the areas of the economy in which they are to be found, and their economic significance. Even the many volumes of hearings and reports of the Temporary National Economic Committee offer little on the subject and reports of the Federal Trade Commission have largely ignored it, ...

One reason for the lack of any comprehensive study of joint subsidiaries is the great difficulty of getting accurate information. . . . The financial reports made to the Securities and Exchange Commission are required to contain information only on subsidiaries in which an interest of about 50 percent or

more is owned. When joint subsidiaries are owned by three or more firms, it is very likely that none of the parent firms will be required to report their ownership interest.⁵⁸

This study's goal is to add to our knowledge about joint ventures in the international petroleum industry.

⁵⁸American Economic Association, Daniel R. Fusfeld, Papers and Proceedings of the Seventieth Annual Meeting, "Joint Subsidiaries in the Iron and Steel Industry" (Philadelphia, Pennsylvania, 1957), p. 578.

CHAPTER III

THE STRUCTURAL AND FINANCIAL ASPECTS OF JOINT VENTURES

In this chapter there is a discussion concerning the structural and financial aspects of joint ventures and the reasons given by the participants for entering joint ventures. Primary attention is focused on the international majors, the international minors, and the government-owned companies.

The term structure refers to: 1) the number of companies or corporations involved in a particular joint venture and 2) the group into which the companies or corporations are categorized, i.e., international majors, international minors, government-owned companies or local private capital. In addition, structure also refers to the continuity or discontinuity concerning "identical" ownership of the means of production for: 1) a particular producing operation, 2) the pipeline that services the producing operation and 3) the refinery at the end of the pipeline system. For example, one company may own the producing operation, another company the pipeline gathering system that services the producing

operation and yet another company the refinery to which the pipeline transports the oil. All three operations may be owned by companies having names which are not readily identifiable with the parent company. Yet all three companies may be owned by the same individual parent company or the same group of companies.

The term "financial type" is restricted to two basic commercial organizations--the jointly owned subsidiary and the contractual joint venture.¹

The jointly owned subsidiary is a separate organization set up and owned by two or more parties. Contractual joint ventures are more complex. The specific details and legal arrangements vary from country to country and area to area. The more prominent types will be examined during the course of the discussion.

The examples used in this chapter were chosen because they: 1) are typical, 2) show the structural relationships between the various phases of petroleum activity and 3) encompass different geographical areas.

International Majors

Structural and financial types of joint ventures

Joint ventures among the international majors may take one of a number of forms. The venture may be a simple contractual relationship between two or more parent companies

¹See Chapter I, pp. 1-2 for additional discussion.

or two or more subsidiaries of parent companies. But more often, especially in pipelines and refining, the venture is effected through the creation of a jointly owned subsidiary.

For example, Kuwait Oil Company Ltd. (KOC) is a fully integrated company.² In the tiny sheikdom of Kuwait on the Persian Gulf, the company operates nine fields, several pipelines, and a 250,000 barrel per day refinery. KOC is owned jointly by two wholly owned subsidiaries of Gulf Oil Corporation and the British Petroleum Company Ltd. KOC is the sole producer of oil in Kuwait. The creation of fully integrated jointly owned subsidiaries that dominate the petroleum industry in one country is typical and numerous in the older established oil producing areas in the Middle East. In 1970 Kuwait ranked seventh in world petroleum production and third in known petroleum reserves.³

In contrast to this type of ownership pattern, Texaco Inc. and Gulf Oil Corporation operate in South America through several types of joint ventures. The companies are engaged in exploration and drilling throughout the continent on a 50-50 contractual joint venture basis. For example, in Colombia they have nine producing fields which flow 95,000 barrels per day (1970). In this joint venture both partners hold equity shares proportionate to their investments. Each

²See Example 1, Table 1, p. 51.

³Editorial, "World Wide Production," Oil and Gas Journal, December 27, 1971, p. 73.

partner shares 50-50 in all costs and profits. But, they created a jointly owned subsidiary, Trans Andean Pipeline, to transport oil from their Orito fields in Columbia to Tucamö. Further, they effected a five company jointly owned subsidiary, Venezuela Gulf Refining Co., to build and operate a 159,000 barrel per day refinery in Venezuela. In essence, these are three distinct joint venture arrangements, all owned ultimately by Gulf and Texaco.⁴ Companies frequently set up two or more jointly owned subsidiaries: one for production, one for transportation, and another for refining.

In addition, Gulf Oil Corporation holds approximately 680,000 acres of producing property in Venezuela. Gulf has a contractual production agreement with Standard Oil Company (New Jersey) (Exxon) and The Royal Dutch/Shell Group (RDS) on these properties. Standard of New Jersey (Exxon) and RDS each receive interest in Gulf's crude production. The original concession leases were paid for by Standard and RDS. Gulf Oil Corporation then contracted to explore and develop specific areas of the concession in return for sharing a percentage of any production. In the petroleum industry this type of joint venture is called "farm-outs." Farm-outs have become prevalent since the middle 1960's. This operation was effected through the creation of three wholly owned subsidiaries, Gulf's Mene Grande Oil Company, Standard of New

⁴See Examples 2, 3, and 4, Table 1, pp. 51-52.

TABLE 1

JOINT VENTURES: JOINTLY OWNED SUBSIDIARIES, CONTRACTUAL
JOINT VENTURES, AND FARM-OUT ARRANGEMENTS,
SELECTED AREAS, AS OF JUNE, 1972

Area, Company and Ownership	Percent Ownership	Type of Venture
<u>MIDDLE EAST</u>		
1. KUWAIT OIL CO. LTD.		
Gulf Kuwait Co.	50	Jointly owned subsidiary; 5 company venture engaged in exploration, drilling, pro- duction, pipelines and re- fining.
Gulf Oil Corp.		
BP Kuwait Co.	50	
British Petroleum Exploration		
<u>SOUTH AMERICA</u>		
2. TEXACO INC.	50	Contractual joint venture en- gaged in exploration, drilling and production throughout South America.
GULF OIL CORP.	50	
3. TRANS ANDEAN PIPELINE		
Gulf Oil Corp.	50	Jointly owned subsidiary; 3 company venture engaged in pipelines.
Texaco Inc.	50	

TABLE 1--Continued

Area, Company and Ownership	Percent Ownership	Type of Venture
4. VENEZUELA GULF REFINING CO.		
Mene Grande Oil Co.	66.7	Jointly owned subsidiary; 5 company venture engaged in re- fining.
Venezuela Gulf Oil Gulf Oil Corp.		
Texaco Inc.	33.3	
5. MENE GRANDE OIL CO.	50	Seven company farm-out en- gaged in exploration, drilling and production.
Venezuela Gulf Oil Co.		
Gulf Oil Corp.		
INTERNATIONAL PETROLEUM CO., LTD. . .	25	
Standard Oil Co. (New Jersey)		
SHELL DE VENEZUELA LTD.	25	
Royal Dutch/Shell Group		

Source: Compiled from data in Oil and Gas Journal, various issues, 1957-1972.

Jersey's (Exxon) International Petroleum Company Ltd. and Royal Dutch/Shell's Shell de Venezuela Ltd.⁵

In Colombia, second only to Venezuela in oil production in South America, Texaco Inc. has also joined forces with Mobil Oil Corporation. In production and exploration, Mobil and Texaco operate 50-50 through a jointly owned subsidiary, Colombia Petroleum Corporation, and in pipelines through a 50-50 jointly owned subsidiary, South American Gulf Oil Company.⁶ Colombia Petroleum Corporation operates six fields, producing 20,000 barrels per day (1970). South American Gulf Oil Company operates an 800 mile crude gathering system transporting oil from their inland fields to Convenas, a city on the coast. This, again, is an example of two major companies, creating through jointly owned subsidiaries, two other separate companies. The subsidiaries each operate in a different phase of the production process, but are physically and financially interconnected links in the overall production superstructure.

Our last two examples are from joint ventures in Africa.⁷ These are examples of the kinds of joint ventures that began to emerge in the middle and late sixties. In 1965 Central African Petroleum Refineries (PVT), Ltd. built a refinery at Feruka in Southern Rhodesia. Companhia Do

⁵See Example 5, Table 1, p. 52.

⁶See Examples 1 and 2, Table 2, p. 55.

⁷See Examples 3 and 4, Table 2, pp. 55-56.

Pipelines Mocambique built a 195 mile pipeline from Beria, a coastal city in Mozambique, to this refinery. Both companies are operating subsidiaries for a ten company consortium consisting of The Royal Dutch/Shell Group, The British Petroleum Company Ltd. (BP), Mobil Oil Corporation, Texaco Inc., Standard Oil Company of California, Aminoil Inc., Compagnie Francaise des Petroles (CFP), and the Kuwait National Petroleum Company (KNPC). Aminoil Inc. is a subsidiary of the American Independent Oil Company which is in turn owned by R. J. Reynolds Industries, Inc. These two ventures have as members the majors (RDS, BP, Mobil, Texaco, Standard of California), the minor (R. J. Reynolds Industries Inc.) and the state-owned companies (KNPC and CFP).⁸ In the late 1960's joint ventures began to have more members and representation from majors, minors and state-owned companies.

When the above examples are considered as a whole, not only is the list of ownership long, but it is made more complex by the interlocking ties among the various affiliates. These examples give added meaning to the statement by Mobil Oil Corporation's board chairman, discussed in Chapter II, to the effect that Mobil owned direct interest in many companies that he, the chairman of the board, was not fully aware of.⁹

⁸Ibid.

⁹See Chapter II, p. 30.

TABLE 2

JOINT VENTURES: PETROLEUM OPERATIONS OWNED BY THE SAME PARENT COMPANIES WITH
EACH OPERATION HAVING A DISTINCT LEGAL IDENTITY, SELECTED
AREAS, AS OF JUNE, 1972

Area, Company and Ownership	Percent Ownership	Type of Venture
<u>SOUTH AMERICA</u>		
1. COLOMBIA PETROLEUM CORP.		
Mobil Oil Corp.	50	Jointly owned subsidiary; 3 company venture engaged in ex- ploration, drilling, production and refining.
Texaco Inc.	50	
2. SOUTH AMERICAN GULF OIL CO.		
Mobil Oil Corp.	50	Jointly owned subsidiary; 3 company venture engaged in pipelines.
Texaco Inc.	50	
<u>AFRICA</u>		
3. CENTRAL AFRICAN PETROLEUM REFINERIES (PVT.) LTD.		
Royal Dutch/Shell Group	20.75	Jointly owned subsidiary; 11 company venture engaged in refining.
British Petroleum Explor. Co.	20.75	
Mobil Oil Corp.	17.75	
Caltex Petroleum Co..	15.75	
Texaco Inc.		
Standard Oil Co. of California		
Aminoil Inc..	15	
American Independent Oil Co.		
R. J. Reynolds Industries, Inc.		

TABLE 2--Continued

Area, Company and Ownership	Percent Ownership	Type of Venture
Compagnie Francaise des Petroles. . French government controlled	5	
Kuwait National Petroleum Co. . . . Kuwait government controlled (60%) Kuwait private interest (40%)	5	
4. COMPANHIA DO PIPELINE MOCAMBIQUE Ownership same as number 3 above		Jointly owned subsidiary; 11 company venture engaged in pipelines

Source: Compiled from data in Oil and Gas Journal, various issues, 1957-1972.

In summary, typical joint venture arrangements used by the majors and illustrated in the above examples are:

1) simple contractual joint ventures, 2) farm-outs, 3) jointly owned subsidiaries with from 2 to 11 companies and 4) a definite relationship between the ownership of the means of production in producing operations, pipeline systems and refineries. The international majors engage in the types of joint ventures illustrated in all oil producing areas of the world.

Reasons for joint ventures

Spokesmen for the international majors usually give three basic reasons for joint ventures: 1) to meet the imperatives of foreign customs and habits, 2) to bring order in the market and 3) to lessen financial and political risk.

In 1955 the Attorney General's office set up a National Committee to study anti-trust laws. A paper submitted to this committee by Standard Oil Company (New Jersey) (Exxon) is published in the Committee's final report, Current Anti Trust Problems. The concluding arguments in this paper are as follows:

Most Western business methods and concepts are without meaning in the Middle East. The corporation was unknown there until very recent years. Local business is conducted according to ancient Islamic law supplemented by the dictates of monarchs, like the late King Ibn Saud, who has been described as a "desert prophet, not a modern or even a medieval man but one of the last great figures of the Old Testament." In the end, it is monarchs such as he who determine the nature of the economic and political institutions of the

countries. Once the method by which oil is to be produced has been elected by the monarchs, it is impossible to believe that he will abandon that method because of a United States court's view that it is not compatible with the competitive economy.

Thus, regardless of action taken by our courts, the joint production venture will doubtless remain in the Middle East. The British, the Dutch and the French, the Iraqis, and the Saudi Arabs will see to that. We would accomplish nothing except great harm to ourselves by insisting that American companies comply with standards to which foreign competitors are in no way obligated to adhere. This would simply strait-jacket American companies in their oil operations in the Middle East and put them at a disadvantage with foreign concerns which are free to deal with Middle East countries according to the wishes of those countries. It may in the end lead to the forced withdrawal of American business interests from operations in those countries with all the damage to the interests of the United States which that would entail.¹⁰

The argument outlined in this paper suggests that joint ventures are forced upon the American companies by foreign domestic policies. Further, any attempt to apply the anti-trust laws to such ventures would damage America's competitive position with other international companies and be particularly offensive to other nation states.

Gulf Oil Corporation presented another industry view before the Federal Trade Commission's international petroleum cartel hearings in 1952. Gulf's position paper contained the following concluding remarks:

¹⁰U.S. Congress. House. Current Anti Trust Problems, Hearings before Anti Trust Subcommittee (Subcommittee No. 5) of the Committee on the Judiciary, U.S. House of Representatives, 84th Congress, 1st Session (Washington, 1955), part 2, p. 826.

Hitherto, to the best of our knowledge, it has never been considered reprehensible for businessmen within a particular business to meet for discussions of mutual interest for the purpose of bringing order in the market. Insofar as the oil companies have tried to realize a somewhat uniform price level, the elimination of extra rebates, a reduction of the number of distributing points, etc., all this must be considered permissible and reasonable If in one point or another there has been achieved a regulation, it has never been unfair or uneconomical for the consumer. Considered objectively, it can never be wrong to maintain uniform prices and conditions for gasoline which for the most part is a standard product. Had the prices been set too high, or if any other criticisms were to be made about the other conditions, then there would be an excuse for fault finding.¹¹

The idea that ". . . to the best of our knowledge, it has never been considered reprehensible for businessmen within a particular business to meet for discussions of mutual interest for the purpose of bringing order in the market . . ." is a controversial point of view. Adam Smith writing in 1776 in his book, An Inquiry into the Nature and Causes of the Wealth of Nations, said:

People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.¹²

Nonetheless, the argument outlined in Gulf's position paper suggests that cooperation and organization achieved through

¹¹U.S. Congress. Senate. The International Petroleum Cartel, Staff Report to the Federal Trade Commission, released through Subcommittee on Monopoly of Select Committee on Small Business, U.S. Senate 83rd Congress, 2nd Session (Washington, 1952), p. 307.

¹²Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, ed. by Edwin Cannan (Random House, Inc., 1937), p. 128.

the mechanism of joint ventures is essential for "bringing order in the market."

The majors also point out that joint ventures are necessary in order to lower risk and uncertainty, both financial and political. This is probably the most common view expressed by the majors. First, politically, through joint ventures, the majors are organized in a manner that enables them to present any country which threatens nationalization with a unified front. For example, Arabian American Oil Company (ARAMCO) is the sole producer of oil in Saudi Arabia and accounts for 50 percent of Saudi Arabia's gross national product. ARAMCO is owned by Standard of New Jersey (Exxon), Texaco Inc., Mobil Oil Corporation and Standard Oil Company of California. Due to its dominant position in the country's economic life, ARAMCO has frequent negotiations with the government over issues such as royalty payments, taxes and the amount of oil to be produced. But ARAMCO is a jointly owned subsidiary, legally binding the vicissitudes of its parent companies to each other. When ARAMCO negotiates with the Saudi Arabian government, the parent companies can be more secure and certain of presenting a unified front.

Second, financially, a company that joins 6 or 7 different joint venture operations is: 1) enhancing its own possibilities for striking oil by covering a broader area and 2) making sure its competitors don't make a strike in

which it does not participate.

These are not the only reasons for joint ventures in the petroleum industry. The international minors give basically a different set of reasons, as do the government-owned companies.

International Minors

Structural and financial
types of joint ventures

Joint ventures among the international minors take various forms. The venture may be: 1) a simple contractual relationship between two or more minors, 2) minority participation with consortiums dominated by the international majors, 3) the creation of jointly owned subsidiaries and 4) farm-outs.

The Iricon Agency Ltd. is an example of several minors forming a group and obtaining minority participation in a consortium previously dominated solely by international majors.¹³ The Anglo-Iranian Oil Company Ltd. was the sole producer of oil in Iran from 1933 until 1951. Premier Mohammed Mossadegh nationalized all the company's holdings in 1951. At that time, Anglo-Iranian (later named British Petroleum Company Ltd.), was controlled by the British government (55.9 percent), Burma Oil, a subsidiary of Royal Dutch/Shell (26.3 percent), and by private individuals (17.8

¹³See Table 3, pp. 64-65.

percent). The majors effectively boycotted Iranian petroleum and no significant quantities of oil were exported from 1951 until 1953. Mossadegh was ousted from power by a coup in 1953. Following Mossadegh's overthrow, the new government did not give the nationalized properties back to Anglo-Iranian. Instead, the government formed two new corporations to operate its facilities. Iranian Oil Exploration and Producing Co. handles exploration and production and Iranian Oil Refining Co. controls the refining operations. The two companies are known simply as the "consortium." In 1970 Iran ranked as the largest producer of oil in the Middle East and the world's third largest producing country.¹⁴ The consortium accounts for 90 percent of all production and 80 percent of all refining in Iran. The British Petroleum Company Ltd., Standard Oil Company of California, The Royal Dutch/Shell Group, Standard Oil Company (New Jersey) (Exxon), Mobil Oil Corporation, Gulf Oil Corporation and Texaco Inc. hold an 89 percent majority interest in the consortium. Compagnie Francaise des Petroles (CFP) and Iricon Agency Ltd. have minority participation in the consortium. The government-owned company, National Iranian Oil Company (NIOC), is not an equity partner. Yet, NIOC receives 50 percent of the profits.

The Iricon group is an eight company joint venture

¹⁴Editorial, "Worldwide Production," Oil and Gas Journal, December 27, 1971, p. 73.

composed of international minors, which include American Independent Oil Co., Atlantic Richfield Company, Signal Oil and Gas Company, Getty Oil Company, San Jacinto Petroleum Corporation, Standard Oil Company (Ohio) and Tidewater Oil Company. American Independent Oil Company became a wholly owned subsidiary of R. J. Reynolds Industries, Inc. in 1971. Prior to the Reynolds takeover, American Independent was owned by an eight company group consisting of Minerals Co. Inc., Ashland Oil and Refining Co., Globe Oil and Refining Co., Laird Oil and Gas Company, Pauley Petroleum Inc., Phillips Petroleum Co., Signal Oil and Gas Company, and Sunray DX Oil Company. Thus, in 1954 when the consortium was reformed, the Iridon Agency Limited group consisted of 16 independent minors. This example illustrates two patterns which became prevalent during the middle 1950's in the petroleum industry: 1) a contractual joint venture where the government company participates only in the profits and does not share in the cost of the venture and 2) increasing participation on a small minority basis by the international minors in already established producing fields.

Another typical joint venture arrangement is illustrated in Table 4. In 1958 Standard Oil Company of California, Ohio Oil Company (now Marathon Oil Company), Royal Dutch/Shell Group, Sunray Mid-Continent, Superior Oil Company, Texaco Inc., Union Oil Company of California, Western Gulf and Richfield Oil Company (now Atlantic Richfield Corp.)

TABLE 3

JOINT VENTURE: JOINT VENTURE WITH MINORITY PARTICIPATION BY THE INTERNATIONAL MINORS, AND NON-EQUITY CONTRACTUAL PARTICIPATION BY A STATE-OWNED COMPANY IN THE MIDDLE EAST, AS OF JUNE 1972

Area, Company and Ownership	Percent Ownership	Type of Venture
<u>MIDDLE EAST</u>		
1. IRANIAN OIL EXPLORATION AND PRODUCING CO.		Jointly owned subsidiary; 22 company venture engaged in exploration, drilling, production, pipelines and refineries--also a non equity contractual joint venture with a state-owned company.
Iran Oil Participants Ltd.		
National Iranian Oil Co.		
State owned (participates in profits, 50%)		
British Petroleum Co.	40	
Bataafse Petroleum Maatschappij N.V..	14	
Royal Dutch/Shell Group		
Standard Oil Co. of California. . . .	7	
Standard Oil Co. (New Jersey)	7	
Mobil Oil Corp.	7	
Gulf Oil Corp.	7	
Texaco Inc.	7	
Compagnie Francaise des Petroles. . .	6	
French government controlling interest		
Iricon Agency Ltd.	5	
American Independent Oil Co. (0.833%)		
R. J. Reynolds Industries, Inc.		
Atlantic Richfield Co. (1.677%)		
Signal Oil and Gas Co. (0.833%)		

TABLE 3--Continued

Area, Company and Ownership	Percent Ownership	Type of Venture
Getty Oil Co. (0.417%) San Jacinto Petroleum Corp. (0.417%) Continental Oil Co. Standard Oil Co. (Ohio) (0.417%) *Tidewater Oil Co. (0.417%) Mission Corp. Getty Oil Co. (47%) Getty Oil Co. (15%)		

Source: Compiled from data in World Oil, Various issues, 1957-1972.

*Mission Corporation, Getty Oil Company and Tidewater Oil Company have merged. The new company is called Getty Oil Company.

formed a twelve company contractual joint venture to engage in seismic surveys in the Alaskan Cook Inlet. Each company shared proportionately in the cost of the survey. Likewise, each company shared in the information gathered on the probability of oil deposits. In 1959 two members of this group, Superior and Sunray Mid-Continent, joined Conoco Inc. and Honolulu Oil Company in a four company contractual joint venture and began drilling operations. Also, in 1959 two other members, Union and Ohio, formed a 50-50 contractual joint venture and began drilling on a 222,000 acre concession in the Cook Inlet. In 1966 after discovering oil, Union and Marathon (formerly Ohio Oil Company), joined Cities Service Company, Mobil Oil Corporation and Atlantic Refining Company in building a pipeline on the west side of the Cook Inlet.

In the same year a three company joint venture, consisting of The Royal Dutch/Shell Group, Standard Oil Company of California and Atlantic Richfield Corporation, joined a four company joint venture consisting of Pan American, Skelly, Phillips and Sinclair Oil Corporation (now Atlantic Richfield Company) in a 50-50 contractual joint venture. The group built a pipeline system from their offshore platforms in the Cook Inlet to shoreline terminals. This is a typical sequence followed by the international minors. First, the pattern emerges where: 1) large groups of companies combine and run seismic tests, 2) the companies next form smaller groups and perform drilling operations and

3) if oil is discovered, several of the smaller groups recombine to build pipelines. Second, small groups of independents begin exploration and drilling on an international scale and at a later date merge into one company. As an illustration, Atlantic Refining Company, Sinclair Oil Corporation and Richfield Oil Company, all originally joint venture partners merged into what is now Atlantic Richfield Corporation. Skelly Oil Company, Mission Corporation and Getty Oil Company also originally joint venture partners, have merged into what is now Getty Oil Company. This happens frequently.¹⁵

Another typical joint venture arrangement is the farm-out. Farm-out agreements have become a way of life in new exploration areas. West Australian Petroleum Pty. Ltd. (WAPET), a jointly owned subsidiary consisting of Standard Oil Company of California, Texaco Inc., Royal Dutch/Shell Group and Ampol Exploration Ltd., has been doing exploration work in Western Australia since the early 1950's.¹⁶ In 1964 WAPET assigned Sun Oil Company and Continental Oil Company a 105,000 square mile concession located in the Perth and Canning basins. Sun and Continental have a 50-50 contractual joint venture between themselves and have done extensive

¹⁵Examples 1, 2, 3, 4, and 5 in Table 4 provide illustrations of the development of the petroleum industry in the Alaskan Cook Inlet, pp. 68-70.

¹⁶See Example 1, Table 5, p. 72.

TABLE 4

JOINT VENTURES: CONTRACTUAL JOINT VENTURES AND JOINTLY OWNED SUBSIDIARIES
IN THE ALASKA COOK INLET, VARIOUS YEARS, 1957-1972

Area, Company and Ownership	Percent Ownership	Type of Venture
<u>ALASKA COOK INLET</u>		
1. Standard Oil Co. of California Ohio Oil Co. Pan American Petroleum Corp. Standard Oil Co. (Indiana) Shell Oil Co. Royal Dutch/Shell Group Sunray Mid Continent Oil Co. (now, Sun Oil Co.) Superior Oil Co. Texaco Inc. Union Oil Co. of California Western Gulf Oil Co. Richfield Oil Co.* (now, Atlantic Richfield Corp.)		100
Twelve company contractual joint venture engaged in seismic survey (1958)		
2. Union Oil Co. of California Ohio Oil Co.	50 50	Contractual joint venture engaged in exploration and drilling (1959)

TABLE 4--Continued

Area, Company and Ownership	Percent Ownership	Type of Venture
3. Sunray Mid-Continent Oil Co. (now, Sun Oil Co.) Conoco, Inc. Continental Oil Co. Honolulu Oil Co. Superior Oil Co.	100	Five company contrac- tual joint venture engaged in exploration and drilling (1959)
4. COOK INLET PIPELINE CO. Mobil Oil Corp. Union Oil Co. of California Marathon Oil Co. (formerly, Ohio Oil Co.) Cities Service Co. Atlantic Refining Co.* (now, Atlantic Richfield Corp.)	100	Jointly owned sub- sidiary; 6 company venture engaged in pipeline operations
5. Shell Oil Co. Royal Dutch/Shell Group Standard Oil Co. of California Richfield Oil Co.* (now, Atlantic Richfield Corp.)	50	One four company con- tractual joint venture; and one eight company contractual joint ven- ture engaged in pipe- line operations; 50-50 profit split (1966)

TABLE 4--Continued

Area, Company and Ownership	Percent Ownership	Type of Venture
Pan American Petroleum Corp. Standard Oil Co. (Indiana) Skelly Oil Co.** Mission Corp. Getty Oil Co. (47%) Getty Oil Co. (15%) Phillips Petroleum Co. Sinclair Oil Corp.* (now, Atlantic Richfield Corp.)	 50	

Source: Compiled from data in Oil and Gas Journal, various issues, 1957-1972.

*Richfield Oil Company, Atlantic Refining Company and Sinclair Oil Corporation have merged and are known as Atlantic Richfield Corporation.

**The three company group which owned Skelly Oil Company and Skelly itself have merged into what is known as Getty Oil Company.

exploration in the Australia and Asia Pacific areas. In their farm-out arrangements with WAPET they assume all costs incurred in their operations. But WAPET is to share 50-50 in any production. WAPET paid the Australian government for the original concession area. Conoco and Sun pay no concession expenses, only actual drilling and operating cost if oil is discovered. The international minors use this type of arrangement with considerable success to gain entrance into the international petroleum industry outside their domestic domicile.

Moonie field, the first commercial producing field in Australia (1961), was discovered by international minors. The financial development of Moonie field in New South Wales is representative of operations by the minors in new discovery areas.¹⁷ Union Oil Development Corp. and Kern County Land Company have a 50-50 contractual joint venture in exploration and production. In 1959 Australian Oil and Gas Company (AOG), a company owned by private local capital, joined the group. AOG incurs no cost but shares in 20 percent of all profits. After discovering oil, the group formed a jointly owned subsidiary, Moonie Pipeline Company, Pty. Ltd. Moonie Pipeline built a 200 mile pipeline from Moonie field to Lyton, near Brisbane. In 1964 Esso Exploration (Australia) Inc., a subsidiary of Standard Oil Company (New Jersey) (Exxon), took a farm-out from the group covering

¹⁷See Examples 2, 3, and 4, Table 5, pp. 72-73.

TABLE 5

JOINT VENTURES: CONTRACTUAL JOINT VENTURES, JOINTLY OWNED SUBSIDIARIES AND
FARM-OUT ARRANGEMENTS IN AUSTRALIA, AS OF JUNE, 1972

Area, Company and Ownership	Percent Ownership	Type of Venture
<u>AUSTRALIA</u>		
1. WEST AUSTRALIAN PETROLEUM PTY. LTD.		
California Asiatic Oil Co.	28.57	Farm-out arrangement from 8 company jointly owned subsidiary en- gaged in exploration and drilling to a 2 company contractual joint venture; engaged in exploration and drilling
Standard Oil Co. of California		
Texaco Overseas Petroleum Ltd.	28.57	
Texaco Inc.		
Shell Development (Australia) Pty. Ltd..	28.57	
Royal Dutch/Shell Group		
Ampol Exploration Ltd.	14.29	
local private capital		
Sun Oil Co..	50	
Continental Oil Co..	50	50-50 profit split
2. Union Oil Development Corp.	50	Four company contrac- tual joint venture engaged in explora- tion, drilling and production
Union Oil Co. of California		
Kern County Land Co..	50	
(now, Tenneco Inc.)		
Australian Oil & Gas Co.		
(20%) of all profits)		

TABLE 5--Continued

Area, Company and Ownership	Percent Ownership	Type of Venture
3. Moonie Pipeline Co. Pty. Ltd. International Oil Exploration N. L. of Australia local private capital (joined group in 1971) Union Oil Co. of California Kern County Land Co. (now, Tenneco Inc.) Australian Oil & Gas Co. local private capital	 100	Five company jointly owned subsidiary en- gaged in pipeline operations.
4. Union Oil Co. of California. Kern County Land Co. (now, Tenneco Inc.) Australian Oil & Gas Co. (AOG) local private capital (20% of all profits)	50 50	Farm-out arrangement-- Standard has farm-out from Union-Kern-AOG, 60-40 profit split.
Esso Exploration (Australia) Inc. Standard Oil Co. (New Jersey)		

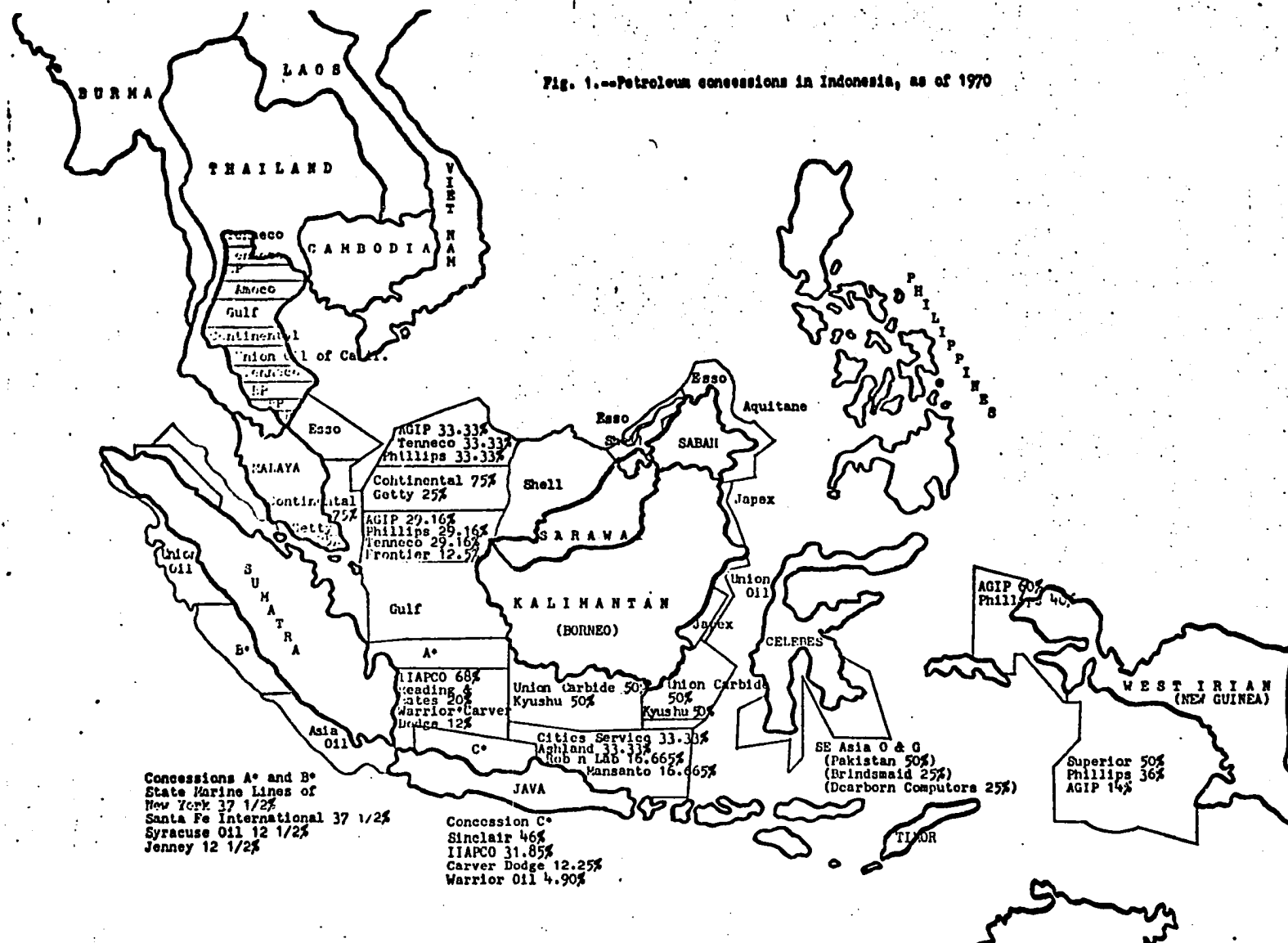
Source: Compiled from Oil and Gas Journal, various issues, 1957-1972.

15,000 square miles in New South Wales and Queensland. The arrangement included a 50-50 profit split on any production until Esso recovered all exploration and drilling costs. The agreement then calls for a 60-40 profit split with the Union-Kern-AOG group getting the greater percentage.

In summary, the above examples illustrate several aspects which are typical of operations involving international minors: 1) the international minors, following the example of the international majors, usually set up separate jointly owned subsidiaries to handle pipeline and refining operations, 2) once oil is discovered in an area by a group of international minors, a major or a group of majors usually enter the picture, sometimes through farm-out arrangements and often through an outright purchase of the entire concession, and 3) operations involving international minors generally contain private, public or government capital from the host country. The international minors repeat these types of joint ventures throughout the world.

Reasons for joint ventures

The international minors cite one basic reason for entering joint ventures--cutting cost. The patchwork nature in which petroleum concessions are granted is illustrated in Figure 1. This pattern, depicting concession leases granted in the South China Sea and Indonesian areas, is typical in much of the world. The international minors point out that when operators of the various concessions join together for



Source: "Indonesia Rewrites the Book," World Petroleum. (New York:
Mona Palmer, March 1971), pp. 48-49.

seismic and exploration evaluations, the cost to each individual group is lowered. As discussed above, after the seismic evaluations are complete, the companies then form smaller groups and bid on the concessions.

Another method of cutting cost is to enter farm-out agreements with the majors. The majors have the ready capital to buy large amounts of acreage. In return for a production sharing agreement or a profit split the international minors pay no leasing or concession cost.

The large independents point out that the real reason for forming combines is simply that a minor acting individually can not afford to enter the industry on an international scale. But, by joining forces, they provide competition for the majors and reap generous profits.

Government-owned Companies

Structural and financial
types of joint ventures

Government-owned company joint ventures take different forms. From a structural standpoint, the venture may be a simple contractual relationship between two or more government-owned companies or a government-private venture consisting of any number of companies. Government-owned companies joint venture with the international majors, but seem to share a preference for dealing with the international minors and other government-owned companies. Primarily, the structural nature of government company joint ventures is

similar to the types used by the majors and minors and will not be discussed in detail. However, the financial arrangements vary considerably.

Government-owned companies engage in both jointly owned subsidiaries and contractual joint ventures. The actual content of each agreement is as varied as there are agreements. But from an historical standpoint, three basic patterns emerge. The first and earliest form of government-owned company agreement is a simple "profit sharing joint venture." In most instances the state-owned company in the host country is not an equity partner and does not share in production costs or risks. However, the government-owned company receives a share of the profits, if oil is discovered. The profits paid to the state-owned company do not include royalties, taxes or bonuses paid to the government itself.

The second form of government-owned company agreement is the "production sharing joint venture." In these ventures the state-owned company in the host country receives a percentage of total crude production. As before, the production sharing contract does not include royalties, taxes or bonuses paid to the government.

The third and newest government-owned company agreement is that of a "cost sharing joint venture partner." In this arrangement the state-owned company is a full equity partner in the usual sense of the term. The state-owned

company shares in both costs and profits. The host government usually has less participation in terms of bonuses and royalties in these arrangements.

Profit sharing joint ventures

Prior to 1957 the most advantageous contract any oil producing country could arrange with the international majors called for a 50-50 profit split. The host country government-owned company did not share in any costs and did not participate on the board of directors of the company.

This traditional well established pattern was broken by Enrico Mattie and Iran's state-owned National Iranian Oil Company. Mattie was the head of Italy's state-owned oil company, Ente Nazionale Idrocarburi (ENI). ENI was established February 10, 1953, to promote the Italian petroleum industry. ENI today has nearly 150 subsidiaries, is a fully integrated company, and operates in all parts of the world.

The state-owned National Iranian Oil Company (NIOC) was chartered in 1951, following the nationalization of the petroleum industry in Iran. NIOC and ENI operate in: 1) direct operations by themselves, 2) jointly owned subsidiaries, 3) contractual joint ventures and 4) agency operations.

In 1957 NIOC became a full but "nonpaying" partner with ENI in a new company called Societe Irano-Italienne des

Petroles (SIRIP).¹⁸ The jointly owned subsidiary calls for a 50-50 profit split between ENI and NIOC. ENI then splits its share of the profits 50-50 with the Iranian government. In effect the Italian state-owned oil company, ENI, puts up all exploration and production money and receives only 25 percent of the profits. Besides setting a new profit split trend, SIRIP is notable because it is one of the first successful ventures between two state-owned oil companies where no international major is involved. Since the late 1950's joint ventures between government-owned companies have become increasingly prominent and successful.

In 1958 the Arabian Oil Company Ltd. (AOC), a Japanese state-owned firm, broke the traditional 50-50 profit split in an agreement with the governments of Kuwait and Saudi Arabia.¹⁹ AOC is a fully integrated company operating in production, pipelines and refining. Production in the Khafi field, located in the Neutral Zone, reached 340,000 barrels per day in 1970. The governments of Kuwait and Saudi Arabia pay no exploration or production cost on this field but receive 57 and 56 percent of all profits, respectively. The three government joint venture also owns a 30,000 barrel per day refinery at Ras Khafju, in the Neutral Zone, and a 60 mile pipeline running from their field to the

¹⁸See Example 1, Table 6, p. 82.

¹⁹See Example 2, Table 6, p. 82.

refinery. The pipeline and refinery is an 80-10-10 "cost and profit" sharing contractual joint venture, with AOC getting the greater percentage. Like the SIRIP venture discussed above, this venture also involves no international majors or privately owned companies.

An international minor was involved in breaking the traditional 50-50 profit split in Indonesia.²⁰ In 1962 Pan American Indonesian Oil Company signed a 60-40 profit sharing contract with Permsmaan Negara Pertambangan (PERTAMINA), the Indonesian state-owned oil company, with PERTAMINA receiving the greater percentage. The concession area covered 13,500 square miles in Central Sumatra. In addition to the 60-40 profit split, Pan American paid the government \$12 million in bonuses and agreed to give back 50 percent of the contract area in 10 years.

In summary, two noteworthy aspects emerge from the above examples: 1) the international minors and state-owned oil companies were the first to break the traditional 50-50 profit split and 2) the state-owned oil companies in industrialized countries that import oil and state-owned companies in non-industrialized countries that export oil began to participate more actively with each other through joint ventures.

The next important development in government-owned

²⁰See Example 3, Table 6, p. 82.

TABLE 6

JOINT VENTURES: PROFIT SHARING JOINT VENTURES OF GOVERNMENT-OWNED COMPANIES,
SELECTED AREAS, AS OF JUNE, 1972

Area, Company and Ownership	Percent Profits	Type of Venture
<u>MIDDLE EAST</u>		
1. Societe Irano-Italienne des Petroles AGIP SPA		GOV'T-GOV'T, 5 company contractual joint venture engaged in production and pipelines.
Ente Nazionale Idrocarburi	50	
Italian government controlled		
National Iranian Oil Co.	50	ENI also has 50-50 profit split with government of Iran.
Iranian government controlled		
2. Arabian Oil Co. Ltd.	80	GOV'T-GOV'T, 3 company contractual joint venture engaged in production, refining and pipelines.
Japanese Petroleum Trading Co.		
Japanese government		
Saudi Arabian government	10	
Kuwait government.	10	
<u>INDONESIA</u>		
3. Pan American Indonesian Oil Co.		GOV'T-PRIVATE, 6 company joint venture engaged in production; 60-40 profit split with bonuses.
Pan American International Oil		
American International Oil Co.	100	
Standard Oil Co. (Indiana)		
Permshaan Negara Pertambangan (Pertamina)		
Bureau of Petroleum and Natural Gas		

Source: Compiled from data in Oil and Gas Journal, various issues, 1957-1972.

company joint ventures is the participation production sharing contract.

Production sharing
joint ventures

PERTAMINA, the Indonesian state oil company, took the lead in developing production sharing contracts. The production sharing contractual joint venture gives the government-owned company a percentage of the crude oil produced, as opposed to profit participation. In 1968 PERTAMINA signed a 65-35 contractual joint venture production sharing agreement with a joint venture group including Continental Oil Company of Indonesia (CONOCO) and Union Oil Company of Indonesia (UNION),²¹ with PERTAMINA receiving the larger percentage. UNION and CONOCO have a 50-50 contractual joint venture agreement between themselves and are subsidiaries of Union Oil Company of California and the Continental Oil Company. The concession area covers 5,525 square miles of the Barite Basin in Southeastern Kalimantan. CONOCO and UNION paid the Indonesian government a \$10,000 "entrance fee" when bidding on the contract and an additional \$1 million when the contract was signed. In addition, if commercial production reaches 75,000 barrels per day, PERTAMINA's gross production share increases to 67.5 percent.

In 1969 PERTAMINA signed a similar 65-35 joint venture production sharing agreement with the Jenny Indonesian

²¹See Example 1, Table 7, p. 84.

TABLE 7

JOINT VENTURES: PRODUCTION SHARING JOINT VENTURES OF GOVERNMENT-OWNED
COMPANIES IN INDONESIA, AS OF 1972

Area, Company and Ownership	Percent Production	Type of Venture
<u>INDONESIA</u>		
1. Continental Oil Company of Indonesia (50%) Continental Oil Company Union Oil Company of Indonesia (50%) Union Oil Company of California	. . . 35	Contractual joint venture engaged in exploration and drilling between a government-owned company and another private ⁴ company contractual joint venture.
Permsahaan Negara Pertambangan (Pertamina). . . Government-owned	65	
2. JENNY INDONESIAN JOINT VENTURE. Jenny Oil Company (12.5%) State Marine Lines Inc. (37.5%) Santa Fe International Corp. (37.5%) Syracuse Oils Ltd. (12.5%) PERMSAHAAN NEGARA PERTANBANGAN (Pertamina). . . Government-owned	35 65	Contractual joint venture engaged in exploration and drilling between a government-owned company and a private ⁵ company jointly owned subsidiary

Source: Compiled from data in Oil and Gas Journal, various issues, 1957-1972.

Joint Venture Group (JENNY). This contract covers 17,000 square miles in the South China Sea, off south-eastern Sumatra. The Jenny group is a four company jointly owned subsidiary, consisting of Jenny Oil Company, Sante Fe International Corporation, State Marine Lines, Inc., and Syracuse Oils Ltd. The JENNY combine pledged to spend \$11.9 million on exploration in the first eight years. Production bonuses of \$1.2 million, \$3 million and \$5 million are payable to the Indonesian government when production reaches 25,000, 50,000 and 100,000 barrels per day, respectively. PERTAMINA's share in gross production increases to 67.5 per cent when production reaches 60,000 barrels per day.

As the examples discussed indicate, production sharing agreements are seldom identical. But there is a general pattern. The contract usually calls for: 1) a 65-35 division of the petroleum produced in favor of the state-owned company, rising to 67.5-32.5 at around 70,000 barrels per day, 2) signature bonuses to the government, 3) additional production bonuses that escalate with the level of production and 4) a total expenditure commitment by the private companies.

Cost sharing partners

The newest development in state-owned company joint ventures is the government-owned company cost sharing partner. Egyptian General Petroleum Corporation (EGPC) and Italy's Ente Nazionale Idrocarburi (ENI) are the pioneers in

this type joint venture. In these ventures the host government state-owned oil company usually assumes some portion of the production cost responsibilities and is a paying equity partner in all stages from exploration and drilling to refining.

For example, AGIP (Nigeria) Ltd., a subsidiary of Italy's state-owned ENI, and Phillips Petroleum Company entered such an agreement in 1963.²² If a commercial discovery is made, the Nigerian government has an option to buy 30 percent equity interest in the venture. The concession consists of 2,030 square miles in the Niger Delta. In 1965 Phillips and ENI discovered commercial production in the M'bede and Ebocha fields and in 1966 built a 40 mile pipeline connecting the fields. The pipeline operation is run under the same agreement. As yet (1973), the Nigerian government has not exercised its option to become an equity partner. The fields are small and together produce only 20,000 barrels of oil per day (1970).

Another example of a government-private equity partnership is the Western Desert Operating Company (WEPCO). WEPCO is a 50-50 cost sharing partnership between Egypt's state-owned EGPC and Phillips Petroleum Company.²³ All costs are shared 50-50 but the profits are split 75-25 in favor of EGPC. WEPCO's concession covers 17,775,000 acres

²²See Example 1, Table 8, p. 87.

²³See Example 2, Table 8, p. 87.

TABLE 8

JOINT VENTURES: COST SHARING JOINT VENTURES OF GOVERNMENT-OWNED
COMPANIES IN AFRICA, AS OF JUNE 1972

Area, Company and Ownership	Percent Ownership	Type of Venture
<u>AFRICA</u>		
1. AGIP (Nigeria) Ltd.	50	GOV'T-PRIVATE 4 company contractual joint venture engaged in production and pipelines.
AGIP SPA		
Ente Nazionale Idrocarburi		
Phillips Oil Co. (Nigeria) Ltd.	50	
2. Western Desert Operating Company		GOV'T-PRIVATE jointly owned subsidiary engaged in exploration and drilling but 75-25 profit split.
Phillips Petroleum Company.	50	
Egyptian General Petroleum Corporation. .	50	
state owned		
3. Gulf of Suez Petroleum Company		GOV'T-PRIVATE 5 company jointly owned subsidiary engaged in production and pipelines, 50-50 profit split.
Pan American UAR Oil Company	50	
American International Oil Co.		
Standard Oil Co. (Indiana)		
Egyptian General Petroleum Corporation. .	50	

Source: Compiled from data in Oil and Gas Journal, various issues, 1957-1972.

in Egypt's Western Desert. The partners discovered the El Alamein field in 1968, so far the largest producer in Egypt.

In a somewhat similar arrangement, EGPC and Pan American UAR Oil Company set up a 50-50 jointly owned subsidiary, known as Gulf of Suez Petroleum Company (GUPCO). Pan American is a subsidiary of Standard Oil Company (Indiana) (SOI). The concession covers 2,500 square miles in the Gulf of Suez. EGPC does not share in exploration costs. But the state-owned company shares 50-50 in development costs if oil is discovered, and 50-50 in all profits. In the previous example, where Phillips and EGPC share 50-50 in all costs, the profit split is 75-25 in favor of EGPC. The contract with SOI stipulates that Standard of Indiana must spend \$27.5 million in exploration costs the first 10 years.

The cost sharing partnerships pioneered by the state companies are becoming more prevalent. A recent article in the Wall Street Journal had the following comment:

The world's largest oil-producing consortium, Arabian American Oil Company said it agreed in principle to grant Saudi Arabia a direct 20% government ownership in its operation . . . Aramco's decision is expected to have far reaching impact on the changing relationship between international oil companies and host foreign governments in many parts of the world, particularly among the 11 member nations of the Organization of Petroleum Exporting Countries, which control 90% of the world's oil exports.

At an OPEC meeting in Beirut, Lebanon over the weekend, the member states reaffirmed their "determination to achieve promptly the effective implementation of participation in all member countries" and

indicated they would give the companies until June to grant a minimum 20% stake.

Talks will Set the Pattern

Iran, Iraq, Kuwait, Abu Dhabi, and Qatar, which like Saudi Arabia are members of OPEC and large Persian Gulf crude-oil producers, have already indicated the Armaco-Saudi Arabian talks will set the pattern for those countries as well. And the 20% ownership pattern will likely spread to other Persian Gulf states, such as Bahrain and Dubai, which aren't members of OPEC.²⁴

The international minors and the state-owned oil companies frequently join together in joint ventures. Since the middle 1950's, when ENI and the Arabian Oil Company, Ltd. (a Japanese firm) breached the traditional 50-50 profit sharing agreements, the trend has steadily increased toward closer cooperation between the state-owned companies and the minors. The results have been greater participation by both groups in the petroleum industry.

For example, ". . . in a paper given at an OPEC seminar in Vienna last year, the Royal Dutch/Shell groups G. Chandler said that in 1952, the seven majors controlled 90% of all oil production in the free world outside North America, 72% of all refining output, and more than 75% of product sales. By 1971, he predicted their shares to fall to

²⁴Editorial, "Aramco to Grant Direct 20% Stake to Saudi Arabia," Wall Street Journal, March 13, 1972, p. 5.

77% of production, 57% of refining and 56% of product sales."²⁵

The statistics generated in this study indicate that in 1970 the seven majors controlled 77 percent of petroleum production and 60 percent of both pipeline mileage and petroleum refining.

Reasons for joint ventures

Frank J. Gardner, international editor for the Oil and Gas Journal, made the following observation in an article he wrote in November, 1969, entitled, "Forecast for The Seventies--Around the World":

The cry of the seventies in the producing countries will be for "participation," and to a lesser degree "Nationalization." The Organization of Petroleum Exporting Countries (OPEC) will raise its banner higher in a call for direct participation in the affairs of their concessionaires by the host governments.

"Concession" is a dead word. "Agreement" and "Contract" are the semantics of the seventies. No country wants to concede anything now, they want to participate.

This is a trend that will persist and grow throughout the seventies.

The sixties have seen a new force pressuring the major international oil companies--the smaller independent company. These have moved into the international oil picture with amazing swiftness and with outstanding success.

Even individuals with persuasive tongues and fat wallets have moved onto the scene.

²⁵Frank J. Gardner, "Free-World Governments Grab Ever-Larger Oil Role," Oil and Gas Journal, August 31, 1970, p. 21.

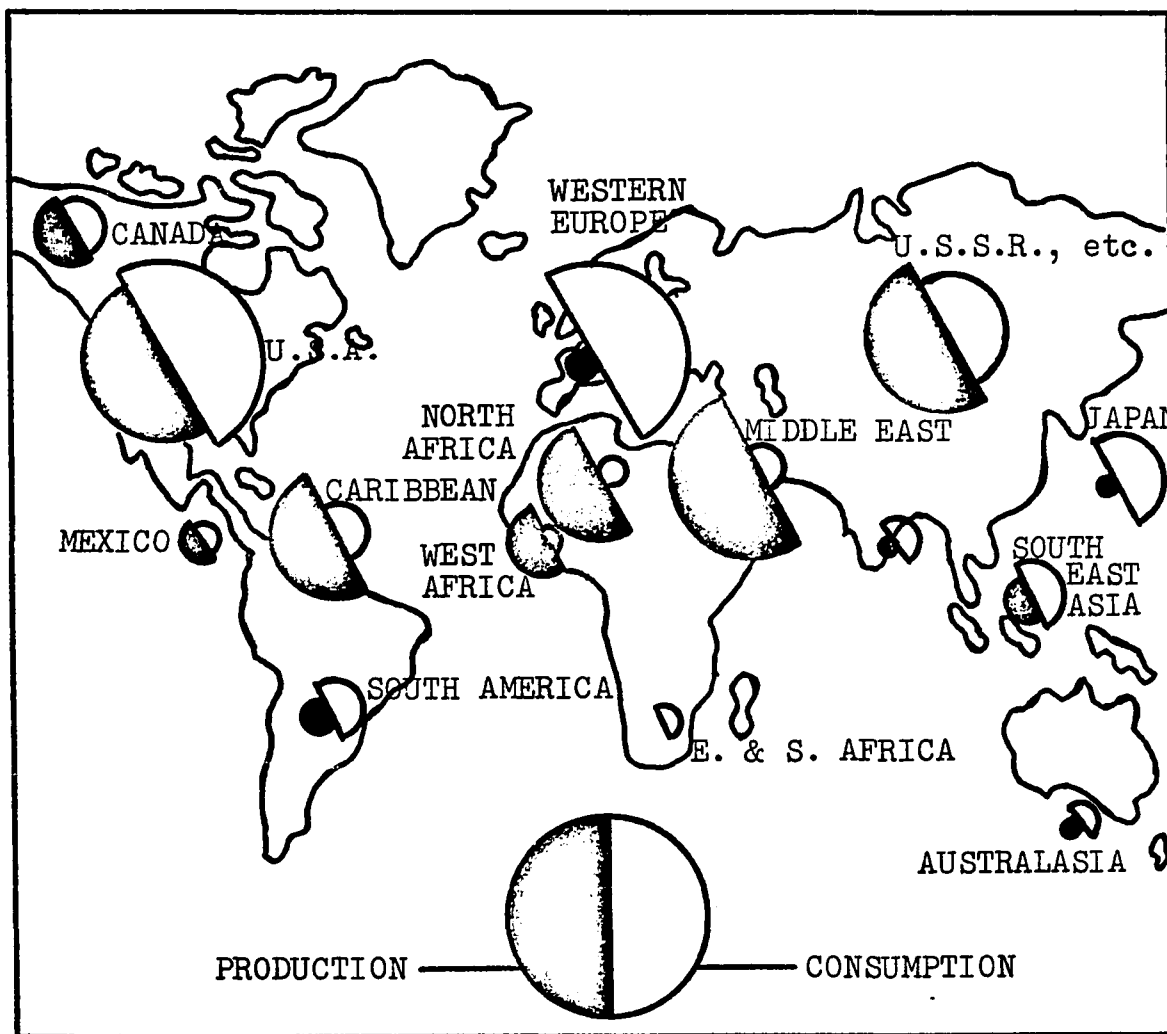
The greatest political challenge to the industry comes from another phenomenon of the sixties--the national oil company.

These come in two colors--the government oil company of a consuming country, bent on lining up its own production in foreign lands, and the government oil company of a producing country, bent on squeezing all it can out of foreign companies on its territory.²⁶

In order to understand the relationship between "the government oil company of a consuming country lining up its own production in foreign lands, and the government oil company of a producing country bent on squeezing all it can out of foreign companies on its territory," one must visualize where the oil is consumed versus where the oil is produced. A vivid illustration of the oil "haves and have nots" is shown in Figure 2. The pattern unfolds where the biggest consumers of oil, outside the Communist bloc countries and excluding America, are the smallest producers. The biggest producers are the smallest consumers. For example, the six common market countries in 1970 produced approximately 300,000 barrels of oil per day. But they consumed approximately 14 million barrels of oil per day. This produces a situation where the big producing countries are attempting to gain more control and participation in downstream operations--refining, and marketing. The consuming nations are attempting to gain more control and participation in .

²⁶Frank J. Gardner, "Forecast for the Seventies--Around the World," Oil and Gas Journal, November 10, 1969, p. 202.

Fig. 2.--Oil haves and have-nots in the World, as of 1972



Source: "Oil: Fuel for Discord?," The New York Times, Feb. 27, 1972, sec. 3, p. 1.

upstream operations--pipelines and production. The petroleum "have and have not" countries are using the state-owned company, acting through joint ventures to further their goals.

The ultimate goal of the non-industrialized Oil Petroleum Exporting Countries (OPEC) is to control their own resources. At the Second Arab Oil Congress in 1960, Shaikh Abdullah Tarike, Oil Directorate of Saudi Arabia, delivered a paper saying "prices mean nothing compared with the overall necessity of gaining control over our oil resources."²⁷ Further, in 1971 Tarike criticized joint ventures and participating deals as being worth less than an ordinary concession and urged state-owned oil companies to develop their resources on their own.²⁸

A more moderate view is expressed by the majority of the OPEC members. They say that participating deals and contractual joint ventures are still the best way for national oil companies to gain experience in operating skills and management techniques. They see their biggest problem as being a lack of technical skills.²⁹

The ultimate goal of the industrialized Oil Petroleum Importing Countries (OPIC) is to secure safe and

²⁷Editorial, "Foreign Prices Phony," Oil and Gas Journal, Oct. 31, 1960, p. 52.

²⁸Frank J. Gardner, "West Nurses Bad Case of Oil Jitters," Oil and Gas Journal, Feb. 1, 1971, p. 38.

²⁹Ibid., p. 39.

dependable supplies of oil. As discussed above, France's CFP and Italy's ENI have pioneered new joint venture concepts. Government-owned companies from the OPIC countries (such as Italy, France, Germany and Japan) approach the government-owned companies in the OPEC countries (such as Venezuela, Iran, Libya, Kuwait, and Indonesia) with unusual offers of lucrative partnerships and profit splits. These offers differ substantially from the traditional 50-50 agreement.

Frank J. Gardner, in his article, "Forecast for the Seventies--Around the World," articulates how the long established international majors view these recent developments:

Semantics aside, however, the fact remains that the major internationals still must run the show as far as international supply and demand patterns are concerned. Only they have the flexibility, the capital, and the technology to do the job. This was amply demonstrated immediately following the 1967 Arab-Israeli war when the western world was cut off from its major Middle East oil source. It is being demonstrated again today, in the face of major cut-backs at Mediterranean supply ports.³⁰

And as noted above, the seven majors still control 77 percent of all petroleum production outside of North America and the Communist bloc countries. The reasons stated by the participating parties for entering joint ventures vary. But in the petroleum industry joint ventures are a way of life.

³⁰Frank J. Gardner, "Forecast for the Seventies--Around the World," Oil and Gas Journal, November 10, 1969, p. 22.

Summary

There are two primary methods to effect joint ventures in the petroleum industry--the jointly owned subsidiary and the contractual joint venture. Both types are employed by the international minors, the international majors and the government-owned companies.

Producing operations, pipeline systems and refineries are not always built as distinct money making enterprises, but may be connecting links in an integrated petroleum industry. Often an interconnected producing operation, pipeline system and refinery will each have a separate legal identity and company name. But in many instances all three operations will be owned by the same joint venturing parent companies or the same jointly owned subsidiaries which in turn are owned by the same parent companies.

Both jointly owned subsidiaries and contractual joint ventures can have as few as two members and often as many as seven or eight. The largest jointly owned subsidiary cited in the study has twenty-two participating companies.

Reasons given for joint ventures vary among the participating groups. The international majors cite three basic reasons. The most often stated explanation is to lessen the financial and political risk. Other often stated reasons are: 1) to "bring order to the market" and 2) to conform to the "imperatives of foreign customs and habits."

The international minors cite one basic reason for joint ventures--cost. They explain that no independent or small integrated minor can afford the risk and huge capital outlays necessary to operate on a world-wide scale. But by joining with government-owned companies or international majors, they can afford to enter the international field.

Government-owned companies in the oil petroleum importing countries (OPIC) state that joint venturing with other government-owned companies gives them a more secure source of petroleum supplies. The government-owned companies in the oil petroleum exporting countries (OPEC) explain that joint ventures offer them the opportunity to gain technical knowledge and needed capital for economic development. They see the joint venture as a mechanism for eventually gaining control of their own natural resources.

The government-owned companies and international minors have had some success with their seemingly increasing desire to cooperate with each other through joint ventures. The international majors still control 77 percent of all petroleum production.

CHAPTER IV

THE MAGNITUDE OF JOINT VENTURES IN PETROLEUM PRODUCING OPERATIONS¹

Introduction

Joint ventures account for approximately 75 percent of the crude petroleum production outside the USSR and the USA. In three of the ten areas (Alaska, Australasia, and the North Sea), all production is carried on through joint ventures. Approximately 50 percent of the petroleum production accounted for occurs in the Middle East, which is one of the oldest and largest oil producing areas in the world. Ninety-seven percent of the Middle East's petroleum production is done through joint venture operations. In three other areas (Asia Pacific, Africa and Europe) approximately 70 percent of petroleum production is carried on through joint ventures. Canadian production figures per joint venture are not available to the author. But, Canada probably

¹The statistics and tables used in this chapter are compiled from data in the Appendix following Chapter IV, and Appendix II, Tables 33 through 51 following Chapter VI. Unless otherwise noted, the statistics for petroleum production are for 1970.

follows the above general pattern since 32 of its 36 producing operations are joint ventures.

The two exceptions to this general pattern are Central America and South America.² Mexico produces 78 percent of petroleum production in Central America through its state-owned company, Petroleos Mexicanos (PEMEX). In South America Standard Oil Company (New Jersey) (Exxon), Royal Dutch/Shell Group and several government-owned companies operating in one-owner ventures account for approximately 75 percent of petroleum production. Taking all ten areas as a whole, joint venture operations account for 75 percent of total petroleum production. There are usually 3 or 4 companies participating in each joint venture.³

Basic characteristics and peculiarities of the statistics

Noting some basic characteristics and peculiarities of the statistics will be helpful before proceeding with the discussion. The term producing operation does not refer to an oil field. In this study producing operation refers to a commercial organization, i.e., a company or group of companies. A producing operation may be effected through a jointly owned subsidiary, a contractual joint venture or a one-owner operation. The same producing operation may own

²The statistics on Central America includes petroleum operations in the West Indies.

³See Table 9, p. 99.

TABLE 9

WORLD PETROLEUM PRODUCTION AND THE PERCENT PRODUCED
BY JOINT VENTURES, OUTSIDE THE UNITED STATES
AND COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Petroleum Production		Average Number of Companies per Joint Venture
	(000 b/d)	Percent in Joint Ventures	
Asia Pacific	1,188.8	70	2.0
Australasia	149.9	100	3.3
Alaska and North Slope	96.7	100	3.1
Africa	5,992.7	72	3.2
Canada	1,260.0*	-	3.5
Central America and West Indies	591.6	14	3.0
Europe	310.8	71	3.0
Middle East	13,776.8	97	4.6
North Sea	10.0	100	4.0
South America	4,572.3	23	3.7
Total	27,949.6 (26,689.6)*	75	3.4
World total**	28,083.6		

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Canada's production is not used in figuring percent in joint venture operations. Production figures per joint venture not available to the author.

** Does not include Communist bloc countries or the continental United States. Calculated from data in Oil and Gas Journal. December 27, 1971, pp. 72-73.

many oil fields and operate in many different parts of the world.

The 200 producing operations cited in this study account for petroleum production totalling 27.9 million barrels of oil per day (1970). This is approximately 99 percent of the total production in the ten areas. Some of these producing operations are jointly owned by as many as twenty-two companies. Sixty-seven are one-owner operations and 133 are joint ventures. The sixty-seven one-owner operations account for 34 percent of the gross number of operations, but only 25 percent of petroleum production. Further, the gross number of producing operations in a particular area has no direct relationship to the amount of petroleum produced. For example, three areas (South America, Africa and Canada), have more producing operations than the Middle East. Yet, the Middle East's petroleum production is almost three times as great as any other single area. As an illustration, the Middle East has 27 producing operations and Europe has 26. Yet, the Middle East produces 13.7 million barrels of oil per day and Europe produces fewer than 500,000 barrels of oil per day (1970).

Also, there is no clear relationship between the gross number of joint ventures and the amount of petroleum produced in joint ventures. As noted above, there are twenty-seven producing operations in the Middle East. Eighteen of these operations are joint ventures. Nonetheless, 97 percent

of the Middle East's petroleum production is carried on through joint venture operations. Asia Pacific has seventeen producing operations. Seven of these are joint ventures. But, one joint venture, P.T. Caltex Pacific Indonesia, accounts for 60 percent of all petroleum production in the Asia Pacific area.

Gross numbers are indicative of the presence of various participating groups and of overall activity in specific areas. However, gross numbers can be misleading concerning the ultimate degree of control, ownership and the amount of petroleum produced in an area.

Participating groups

The participating groups in producing operations are shown in Table 10. There are six categories--the international majors, the international minors, local private capital, local government capital, non-host government-owned companies, and others. The international majors and minors are active in all parts of the world. A detailed list of the international majors and the more prominent international minors and government-owned companies is contained in Tables 11 and 18. These tables also contain data on total sales, assets and net income. The criteria for choosing the international minors and the government-owned companies are: 1) their ranking in terms of total sales and assets, 2) their participation in several of the ten areas, and 3) their

dominance in a particular area which gives them significant economic importance.

Participation by local private capital is limited almost exclusively to the industrialized countries. Ten of the fourteen operations where local private capital is present are in Europe and Australasia. There are two operations owned by local private capital in Central America, while Africa and South America have one each.

Government-owned companies are most active in Africa and the Middle East. They participate in forty-one producing operations throughout the ten areas. Twenty-two of these operations are in Africa and seven are in the Middle East. Government-owned company operations are separated into two categories--"non-host government-owned companies" and "local government-owned companies."

A non-host government-owned company refers to a state-owned company that is operating outside its domestic domicile. These are usually companies with domiciles in the industrialized oil petroleum importing countries (OPIC). The OPIC countries having state-owned companies are generally those countries in the European Economic Community (EEC) and Japan. Over 90 percent of the oil consumed in the EEC countries and Japan is imported from Europe, Africa, Indonesia and South America. As discussed in Chapter III, the OPIC countries frequently use their government-owned companies in joint ventures with other government-owned

companies in the oil producing non-industrialized countries.⁴ Two of the largest and most active OPIC government-owned companies are Italy's Ente Nazionale Idrocarburi (ENI) and France's Elf/Enterprise de Recherches et Activities Petrolieries (ELF/ERAP). Both ENI and ELF/ERAP have joint venture petroleum operations throughout the world. They are particularly active in those areas where they formerly held colonies.

A local government-owned company refers to a state-owned company that is operating in its home country. Local state-owned companies are almost exclusively limited to the oil petroleum exporting countries (OPEC). The OPEC countries include Iran, Saudi Arabia, Venezuela, Kuwait, Libya, Iraq, Nigeria, Algeria, Indonesia, Abu Dhabi and Qatar.⁵ These eleven countries accounted for about 90 percent of all the oil exported in the world in 1970.⁶ With the exception of Libya, all eleven countries have state-owned companies which are generally required by law to participate in some manner in petroleum industry activities in their respective countries. In 1968 the Oil and Gas Journal reported there were 100 state-owned companies in the (OPEC) producing and

⁴For a detailed discussion concerning this type of joint venture, see Chapter III, pp. 90-94.

⁵See Table 15, p. 123.

⁶Editorial, "West Nurses Bad Case of Oil Jitters," Oil and Gas Journal, February 1, 1971, p. 38.

(OPIC) consuming countries.⁷

The column designated as "other" represents private companies that were not included in the international minors category because of size or a limited number of operations of an international nature.

In summary, the study accounts for 200 producing operations, 133 of which are joint ventures. The international majors participate in 76, the international minors in 80, local private capital in 14, local government in 24, non-host government capital in 17, and others 42.⁸

The International Majors

Joint venture operations

By any measure of economic size and power the statistics place the international majors at the apex of the petroleum industry. In 1971 the seven majors had \$84 billion in assets, \$63 billion in total sales, and over \$5 billion in net income.⁹

The seven majors control 77 percent of all petroleum production and 80 percent of petroleum reserves in the ten areas. As already noted, the international majors consist of seven companies--5 American companies and 2 foreign companies.

⁷"Where Governments are Taking a Piece of the Oil Action," Oil and Gas Journal, August 19, 1968, p. 38.

⁸See Table 10, p. 105.

⁹See Table 11, p. 106.

TABLE 10

PETROLEUM PRODUCING OPERATIONS, JOINT VENTURE OPERATIONS, AND PARTICIPATION BY COMPANY CLASSIFICATION, OUTSIDE THE UNITED STATES AND COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Number of Producing Operations	Number of Joint Venture Producing Operations	Number of Joint Venture Participations, by Company Classification					
					Local Capital		Gov't. Non- Host Country	Other*
					Private	Gov't.		
Asia Pacific	17	7	3	3	0	3	0	1
Australasia	6	6	4	2	4	0	0	0
Alaska and North Slope	9	9	8	9	0	0	0	0
Africa	33	26	12	15	1	10	12	12
Canada	36	32	15	24	0	0	2	12
Central America and West Indies	8	3	2	0	2	2	0	0
Europe	26	16	13	3	6	3	0	2
Middle East	27	18	12	14	0	5	2	11
North Sea	1	1	0	1	0	0	1	0
South America	37	15	7	9	1	1	0	4
Total	200	133	76	80	14	24	17	42

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Companies in this column are private companies that are not included in the "minors" category because of size or a limited number of operations on an international scale.

TABLE 11

SALES, ASSETS AND NET INCOME OF THE INTERNATIONAL MAJORS, AS OF 1971

Company	Country	Sales (\$Billions)	Assets (\$Billions)	Net Income (Millions)
Standard Oil Company (New Jersey)	U.S.	18.7	20.3	1,462.0
Royal Dutch/Shell Group	Britain/ Netherlands	12.7	19.6	901.9
Mobil Oil Corporation	U.S.	8.2	8.5	541.0
Texaco Inc.	U.S.	7.5	10.9	904.0
Gulf Oil Corporation	U.S.	5.9	9.5	561.0
Standard Oil Company of California	U.S.	5.1	7.5	511.0
British Petroleum Company Ltd.	Britain	5.1	7.8	362.3
Total		63.2	84.1	5,243.2

Source: "The 500 Largest Industrial Corporations." Fortune, May 1972, p. 190
and "The 300 Largest Industrial Companies Outside the U.S." Fortune.
August 1972, p. 151.

The five American companies are privately owned corporations. The two foreign companies, Royal Dutch/Shell Group (RDS) and The British Petroleum Company, Ltd. (BP) are semi-government companies. The British government owns 40 percent of RDS and 48 percent of BP. The other 52 percent of BP is owned by private English capital and the other 60 percent of RDS is owned by the Netherlands government.

The seven majors operate almost exclusively through joint ventures. They participate in 76 of the 133 joint venture producing operations--controlling 50 percent or more interest in 66 of these joint ventures and acting as minority partners in the other 10. The 66 operations in which they have the controlling interest account for 61 percent of total petroleum production in the ten areas. Also, these 66 joint venture operations account for 80 percent of the total petroleum production controlled by the majors.

Control should not be confused with the amount of petroleum owned. But majority control is significant. The majority stockholder can determine the amount of oil (circumscribed by the physical limits of the particular field) that is produced. As discussed in Chapter I, total production is very important to many countries. In some instances, earnings from the petroleum industry account for a significant share of the non-industrialized country's gross

national product, and/or foreign exchange earnings.¹⁰

For example, the recent conflict in early 1972 between Iraq's government and the Iraq Petroleum Company, Ltd. (IPC) was precipitated by IPC curtailing production.¹¹ In 1972 IPC cut back production almost 50 percent in the northern Kirkuk and Rumaila fields from 1.2 million barrels of oil per day to less than 600,000 barrels of oil per day. The Iraqi government demanded that oil production be increased to its original 1.2 million barrels per day. The companies contended that the field's production costs were too high to be competitive and did not increase production.¹² In May, 1972 Iraq's government nationalized the fields in question. But IPC's fields in southern Iraq were not nationalized. An editorial in the Wall Street Journal cited unidentified IPC company spokesmen as saying some of the lost production could be made up by increasing production in IPC's southern Iraqi fields. Since the southern fields are much closer to the shore terminals on the Persian Gulf, pipeline transportation fees from the southern fields to terminal shipping points would cost less. The IPC spokesmen cited these cheaper transportation costs as the chief reason

¹⁰For a more detailed discussion of this point, see Chapter I, pp. 6-9.

¹¹Editorial, "Iraq Offers Nationalized Oil at Cut Rate; Consortium Warns Buyers of Legal Battle," Wall Street Journal, June 5, 1972, p. 5.

¹²Ibid.

for the southern fields being more economical than the northern fields.¹³

Owners of IPC are British Petroleum Company, The Royal Dutch/Shell Group and Cie Francaise des Petroles (CFP), each with 23.75 percent; Standard Oil Company (New Jersey) (Exxon) and Mobil Oil Corporation, each with 11.875 percent and Coloste Gulbenkian Foundation of Paris which owns 5 percent. The French government owns 36 percent of CFP and the British government owns 48 percent of BP. IPC accounted for over 95 percent of Iraq's total petroleum production in 1971-72. At this writing (early 1973) the eventual outcome of the nationalization process is still uncertain. The matter of concern here is the reduction in production by the majority stockholders and the ensuing conflict with the Iraqi government. As noted, once an oil well is drilled, production can be limited to suit the interest of its majority stockholders.

A similar dispute occurred in early 1972 between the international majors and the Venezuelan government. The majors cut back Venezuelan petroleum production and oil exports in the last quarter of 1971. The Venezuelan government countered by threatening to increase taxes on petroleum exports. The petroleum industry accounts for 65 percent of Venezuela's total income and 90 percent of her foreign exchange earnings. H. J. Maidenbergh, writing in the New York

¹³Ibid.

Times, explains part of the conflict as follows:

The failure to maintain exports, the Government said, would lead to a fine of up to 10 per cent of existing taxes on all of the offending company's exports for each quarter of the year in which a deficit was found.

The less-than-subtle answer of the foreign producers was to reduce pumping by an average of 625,000 barrels a day from the 1971 level during the first five weeks of this year.¹⁴

Why was production first reduced in Venezuela? Maidenberg says ". . . the oil men pointedly remark that the cost of oil from the Middle East averages 50 cents a barrel less than the price of Venezuelan oil."¹⁵ Thus, in the short run, it was in the economic interest of the companies to decrease oil production in Venezuela and increase oil production in the Middle East.

In essence, majority control allows one to determine not only the amount of production but in what "particular" fields or "particular" areas of the world the production occurs. In the petroleum industry "where" the oil is produced seems to be as important to the contending participants as how much oil is produced. This is an important point sometimes overlooked in studies on the petroleum industry, i.e., production can be decreased in one field or area of the world and increased in another field or area to suit the interest of the majority stockholders.

¹⁴H. J. Maidenberg, "Oil Showdown," The New York Times, February 20, 1972, p. 9.

¹⁵Ibid.

Joint venture operations, in which the majors control majority stock interest, account for 90 percent of all production in the Middle East, 83 percent in Australasia, 67 percent in Europe and 64 percent in the Asia Pacific region.¹⁶ The two notable exceptions to this pattern are South America and Africa.

The seven majors control 76 percent of total crude production in South America. But 61 percent of this total is through one-owner operations. Only 15 percent of crude petroleum production is controlled by the majors through joint ventures in this area.

First, South America produces 4.5 million barrels of oil per day (1970) and is the third largest producer in the ten areas. Second, Venezuela produces 80 percent of South America's total, or 3.7 million barrels per day. Three one-owner operations account for 2.7 million barrels of Venezuela's petroleum production. For example, Creole Petroleum Corporation, a subsidiary of Standard Oil Company (New Jersey) (Exxon), produces 1.6 million barrels of oil per day. Compania Shell de Venezuela, a subsidiary of the Royal Dutch/Shell Group, produces 0.9 million barrels of oil per day. Texaco Maracaibo Inc., Texaco Petroleum Company and Coro Petroleum Company, all three wholly owned subsidiaries of Texaco Inc., produce 180,000 barrels of oil per day. South America is the only area in the study where the majors

¹⁶See Table 12, p. 114.

operate primarily as one-owner operations.

Africa produces 5.9 million barrels of oil per day (1970) and is the second largest oil producing area in the study. Seventy-two percent of Africa's petroleum production occurs in joint venture operations. The seven majors control only 50 percent of Africa's crude production--35 percent through joint ventures and 15 percent in one-owner operations.

The international minors and government-owned companies have been more active and successful in Africa than in any other area. Africa has 33 producing operations, 26 of which are joint ventures. The majors participate in 12 joint ventures and control 50 percent or more interest in 9. But, the minors participate in 15 joint ventures, local government capital in 10, and non-host government capital in 12. Combined, the minors and/or government-owned companies control a majority interest in 17 joint venture operations.

The structural pattern of joint venture operations in Africa is similar to that in all the other areas with the exception of South America. But, the pattern of ownership and control is dissimilar, i.e., Africa is the only area with a substantial amount of petroleum production where the seven majors do not dominate the industry.¹⁷

¹⁷See Table 12, p. 114.

One-owner operations

Another approach which aids in examining the magnitude of joint ventures in producing operations is to investigate the number of one-owner producing ventures operated by the majors, i.e., the extent to which the majors act independently of each other. In three areas, Australasia, Alaska and the North Sea, the majors have no one-owner production operations.

In the Middle East the majors have three one-owner operations which account for 221,000 barrels of oil per day (1970). This represents only 2 percent of the petroleum produced in the Middle East. As noted above, the seven majors control 90 percent of the Middle East's crude production through joint ventures. For example, Royal Dutch/Shell (RDS) owns 2 of the 3 one-owner operations in the Middle East. RDS operates in Turkey through its wholly owned subsidiary, N.V. Turkse Shell, in seven fields which produce 39,000 barrels of oil per day. RDS operates in Qatar through its wholly owned subsidiary, Shell Oil Co. of Qatar, in four fields which produce 172,600 barrels of oil per day. The other one-owner operation in the Middle East is located in Turkey and is operated by Mobil Oil Corporation through its wholly owned subsidiary, Mobil Exploration Mediterranean. Mobil operates three fields in Turkey which produce 9,660 barrels of oil per day.

In Asia Pacific, Royal Dutch/Shell Group through its

TABLE 12

WORLD PETROLEUM PRODUCTION, OUTSIDE THE UNITED STATES
AND COMMUNIST BLOC COUNTRIES, AND JOINT VENTURE
PRODUCING OPERATIONS WHERE THE MAJORS CONTROL
50 PERCENT OR MORE AS OF 1970

Area	Petroleum Production (000 b/d)	Operations Where Majors Control 50 Percent or More	
		Number of Operations	Percent Produced in Joint Venture Operations
Asia Pacific	1,188.8	3	64
Australasia	149.9	4	83
Alaska and North Slope	96.7	5	2
Africa	5,992.7	9	35
Canada	1,260.0*	13	-
Central America and West Indies	591.6	2	11
Europe	310.8	13	67
Middle East	13,776.8	11	90
North Sea	10.0	0	0
South America	4,572.3	6	15
Total	27,949.6 (26,689.6)*	66	61

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Canada's production is not used in figuring percent for joint venture operations. Production figures not available to the author.

subsidiary, Brunei Shell Petroleum Co., Ltd., produces 147,000 barrels of oil per day (1970). The production comes from seven fields in Brunei-Malaysia, accounts for 12 percent of total production and is the only one-owner operation owned by a major in the area. In contrast, the majors control 64 percent of Asia Pacific's crude production in joint venture operations.

In Africa the majors control four one-owner operations, which produce 923,000 barrels of oil per day (1970). This represents 15 percent of Africa's production. For instance, Esso Standard Libya, a wholly owned subsidiary of Standard Oil Company (New Jersey) (Exxon), produces 566,000 barrels per day from seven fields in Central Libya. Notably this represents 60 percent of the total produced in one-owner operations by the majors in Africa. Gulf Oil Corporation controls two separate producing operations through its wholly owned subsidiaries, Cabinda Gulf Oil Company and Gulf Oil Company (Nigeria), Ltd. These two Gulf subsidiaries produce 302,000 barrels of oil per day, which represents another 33 percent of the petroleum produced in one-owner operations. Mobil Oil Corporation through its subsidiary, Mobil Exploration Nigeria, Ltd., produces the remaining 7 percent.

Europe has 4 one-owner operations while Central America has one such operation. In both areas less than 10 percent of the petroleum production is carried on by the

international majors in one-owner ventures.

South America, as noted above, is the outstanding exception to this general pattern. South America has eight one-owner producing operations. These eight operations account for 61 percent of South America's crude production.

In all ten areas the seven majors have a total of twenty-four one-owner producing operations. Royal Dutch/Shell Group is very active in one-owner ventures, having a total of 8, followed by Standard Oil Company (New Jersey) (Exxon) with 4, Texaco Inc., with 4, Gulf Oil Corporation with 3, Mobil Oil Corporation with 3, Standard Oil Company of California with 1, and British Petroleum Company Ltd., with 1. Sixteen percent of the total petroleum production in the ten areas is accounted for by these 24 operations.¹⁸ In contrast, the majors control 61 percent of the total petroleum production in the ten areas through joint venture operations.

Joint venture partners

The seven majors usually choose other majors or international minors for joint venture partners. The majors are cited in seventy-six joint ventures. Twenty ventures consist solely of majors and 37 consist of majors and minors. Hence, in 75 percent of the ventures cited, the majors are with other majors or international minors.

¹⁸See Table 13, p. 118.

The international majors seldom joint venture with government-owned companies. Only 8 operations were found where government-owned companies are engaged in joint ventures with the majors. Five of these are in Africa.

The majors are cited with local private capital in 6 instances--3 times in Australasia, 2 times in Europe and once in Central America. Participation by local private capital is almost exclusively limited to the industrialized countries.

Thus, the data indicate that the majors operate primarily through joint ventures and that participation in the ventures is usually limited to other majors or international minors.¹⁹

Two important aspects of joint ventures have not yet been discussed: 1) the extent the majors engage in joint ventures with each other and 2) petroleum production the majors own jointly with each other, as opposed to control.

Joint venture ownership and
interlocking ownership
ties--OPEC countries

The discussion now turns to the amount of petroleum production the international majors own in: 1) joint venture operations where more than one major participates, 2) joint venture operations with government-owned companies or international minors and 3) one-owner operations.

¹⁹See Table 14, p. 119.

TABLE 13

THE NUMBER OF PETROLEUM PRODUCING OPERATIONS AND PERCENT
OF PRODUCTION ACCOUNTED FOR BY THE MAJORS IN ONE-OWNER
OPERATIONS, OUTSIDE THE UNITED STATES AND COMMUNIST
BLOC COUNTRIES, AS OF 1970

Area	Petroleum Production in One-Owner Operations (000 b/d)	Number of One-Owner Operations	Percent of Output in One-Owner Operations
Asia Pacific	147.0	1	12
Australasia	0	0	0
Alaska and North Slope	0	0	0
Africa	923.0	4	15
Canada	- *	3	-
Central America and West Indies	45.0	1	8
Europe	20.3	4	7
Middle East	221.3	3	2
North Sea	0	0	0
South America	2,804.0	8	61
Total	4,160.6	24	16

Source: Calculated from data in Appendix II, Tables
33 through 51.

*Production data for one-owner operations in Canada
not available to the author.

TABLE 14

MAJOR PETROLEUM COMPANIES AND THEIR JOINT VENTURE PARTNERS IN PRODUCING
OPERATIONS, BY COMPANY CLASSIFICATION, OUTSIDE THE UNITED STATES
AND COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Number of Producing Operations Participated in By Majors	Participating Partners in Petroleum Production Operations					
		Major(s)	Major & Local Capital		Major(s), Minor(s)	Major(s), Gov't	Major(s), Others
			Private	Gov't			
Asia Pacific	3	3	0	0	0	0	0
Australasia	4	0	3	0	1	0	0
Alaska and North Slope	8	0	0	0	8	0	0
Africa	12	3	0	2	2	3	2
Canada	15	1	0	0	10	0	4
Central America and West Indies	2	1	1	0	0	0	0
Europe	13	6	2	3	3	0	0
Middle East	12	3	0	0	9	0	0
North Sea	0	0	0	0	0	0	0
South America	7	3	0	0	4	0	0
Total	76	20	6	5	37	3	6

Source: Calculated from data in Appendix II, Tables 33 through 51.

For example, Iranian Oil Exploration and Producing Company (IOEPC) produces 3.4 million barrels of oil per day (1970). The seven majors have an 89 percent interest in IOEPC. Therefore, they own approximately 3 million barrels of IOEPC's production. Compagnie Francaise des Petroles (CFP), a French company, has another 6 percent interest and Iricon Agency Ltd., a consortium consisting of nine international minors, has the other 5 percent. Each of the three groups owns a percentage of the petroleum produced in proportion to its equity shares. Each individual participant is responsible for the disposition of the petroleum it owns. But, as emphasized above, the party which controls 51 percent interest can determine the amount of petroleum produced. Thus, both "ownership" and "majority control" are important variables.

"Interlocking ownership ties" refer to a company that partially owns a subsidiary or producing operation with other companies. For example, West Australian Petroleum Pty. Ltd. (WAPET) is owned by four companies--Standard Oil Company of California, Texaco Inc., Royal Dutch/Shell Group (RDS) and Ampol Exploration, Ltd. Therefore, in WAPET, Standard Oil Company of California has interlocking ownership ties with Texaco, RDS and Ampol.

Joint ownerships and interlocking ownership ties among the majors are most common in: 1) the older producing areas and 2) areas where large quantities of oil are

produced. Also, in these areas there are usually more majors involved per venture.

The eleven OPEC countries satisfy both the above criteria. For example, the OPEC countries account for approximately 50 percent of the world's petroleum production (1970).²⁰ Excluding the USSR and USA they account for 81 percent of petroleum production and 79 percent of petroleum reserves, i.e., the OPEC countries account for 81 percent of petroleum production in the ten areas examined in this study.²¹

The OPEC was founded in 1961 by five countries; Venezuela, Saudi Arabia, Kuwait, Iraq and Iran. Six countries have joined since 1961. Nigeria, the most recent member, joined in 1971. The OPEC's expressed aim is to gain control of their natural resources. This is discussed in Chapter III.²² Given the present state of technology, petroleum is their most abundant and most profitable natural resource.

Petroleum production in the OPEC countries totals 22.5 million barrels of oil per day (1970). Fifty-eight percent of this total is owned by the seven majors in sixteen joint ventures where more than one major is involved. In

²⁰Editorial, "West Nurses Bad Case of Oil Jitters," Oil and Gas Journal, February 1, 1971, p. 38.

²¹See Table 15, p. 123.

²²See Chapter III, pp. 89-94.

these sixteen ventures the seven majors have sixty-eight interlocking ownership ties with each other, either directly or through subsidiaries. They average more than three interlocking ownership ties per venture. For example, Standard Oil Company (New Jersey) (Exxon) has interlocking ownership ties with Royal Dutch/Shell 7 times, Mobil Oil Corporation 10 times, British Petroleum Company Ltd. 6 times and with Gulf Oil Corporation, Texaco Inc., and Standard Oil Company of California 2 times each. Texaco Inc. and Standard of California have 5 interlocking ownership ties. BP is interlocked 7 times with Royal Dutch/Shell, 6 times with Mobil, 2 times with Gulf and once each with Texaco and Standard of California.²³

Saudi Arabia and Kuwait are the 5th and 7th largest oil producing countries in the world (1970). Each country's total production is owned by one jointly owned subsidiary. Kuwait Oil Company (KOC) is the sole producer of oil in Kuwait. KOC is owned 50-50 by BP and Gulf. Arabian American Oil Company (AAOC) is the sole producer of oil in Saudi Arabia. AAOC is a wholly owned subsidiary of Standard of New Jersey (Exxon), Standard of California, Texaco and Mobil.

Iran is the largest oil producer among the OPEC countries (1970) and the 3rd largest oil producing country in the world. The seven majors own 76 percent of Iran's total petroleum production through one jointly owned subsidiary,

²³See Figure 3, p. 125.

TABLE 15

PETROLEUM PRODUCTION AND RESERVES IN THE OPEC*
COUNTRIES, AS OF 1970

Country	Production (000 b/d)	Reserves (000,000 b/d)
Iran	3,850.0	55,500.0
Venezuela	3,673.3	13,900.0
Saudi Arabia	3,550.0	145,300.0
Libya	3,302.0	25,000.0
Kuwait	2,700.0	66,023.0
Iraq	1,472.0	35,990.0
Nigeria	1,110.0	11,680.0
Algeria	995.0	12,250.0
Indonesia	860.7	10,400.0
Abu Dhabi	695.0	18,948.0
Qatar	363.0	6,000.0
Total	22,571.0	400,991.0
Total for 10 area study	27,949.6	506,105.8
OPEC countries as percent of area study	81	79

Source: Calculated from data in Appendix II, Tables 33 through 51 and Oil and Gas Journal, December 27, 1971, pp. 72-73.

*The organization known as the Oil Petroleum Exporting Countries (OPEC) was founded in 1960. See Chapter III, pp. 89-94, for a discussion concerning the OPEC.

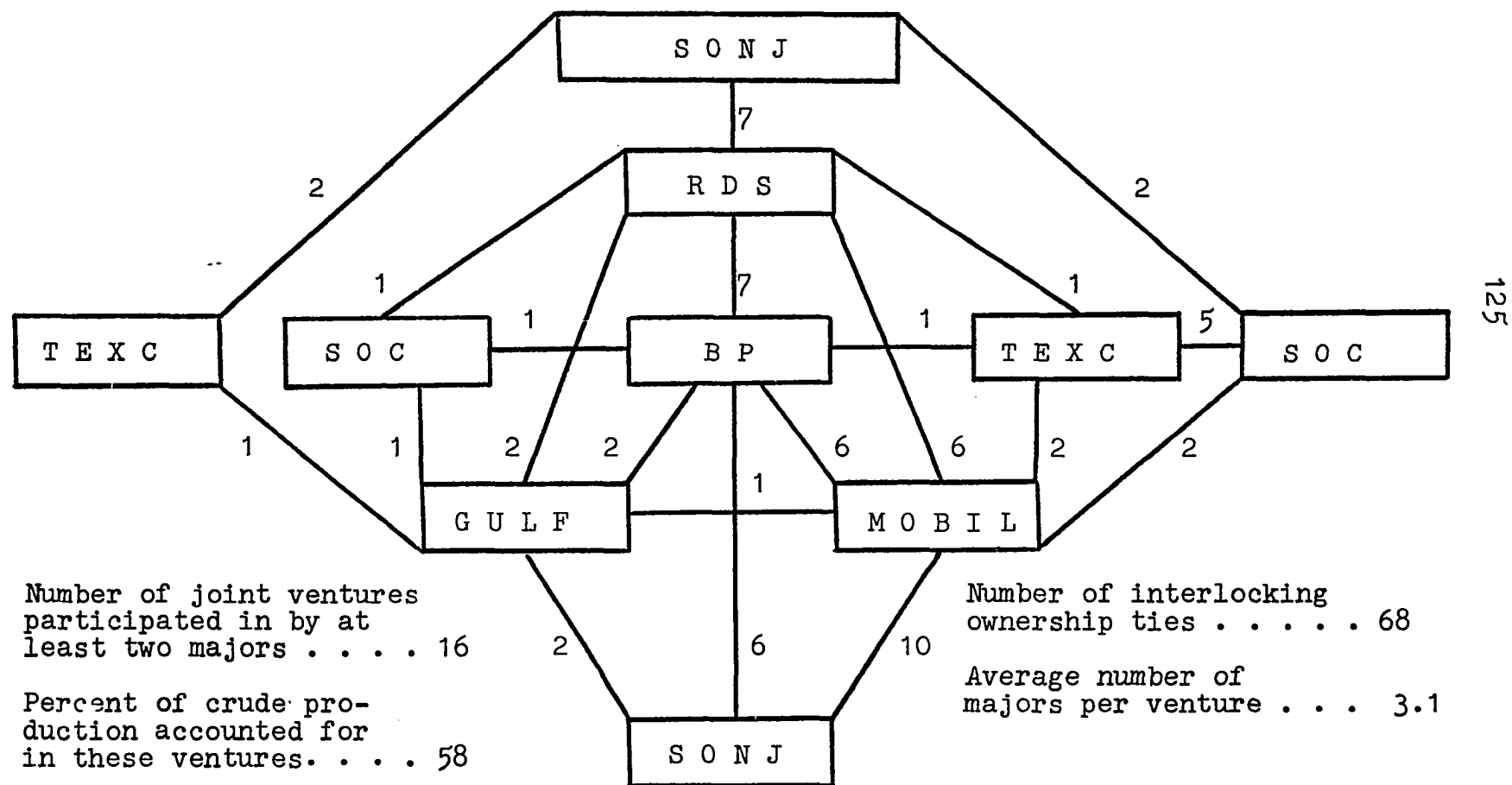
known as the Iranian Oil Exploration and Producing Company (IOEPC). As noted above, the seven majors own 89 percent interest in IOEPC.

The majors own 89 percent of Indonesia's oil production (1970) through three joint ventures. P. T. Caltex Pacific Indonesia (a wholly owned subsidiary of Texaco and Standard of California) owns 83 percent of Indonesia's petroleum production. The other 6 percent is owned by P. T. Stanvac Indonesia and P. N. Stanvac Indonesia. Both P. T. Stanvac and P. N. Stanvac are owned 50-50 by Mobil Oil Corporation and Standard of New Jersey (Exxon).

The several examples mentioned above are typical of joint ventures throughout the world. But they are particularly relevant in those countries that have enormous amounts of petroleum production and reserves. The mechanism of joint ventures provides the international majors with a means for jointly owning the means of production in these areas. Due to the extent of joint ventures in these areas, independent decisions affecting production and prices are unlikely. No individual major is likely to increase or decrease production without consulting his partner. The tendency toward unity of action seems almost a certainty where the means of production are owned jointly.

The two notable exceptions to this pattern are Venezuela and Libya. In both Venezuela and Libya the majors

Fig. 3.--Interlocking ownership ties in petroleum producing operations among the international majors--OPEC countries, as of 1970.



Source: Calculated from data in Appendix II, Tables 33 through 51.

in joint ventures with each other own only 12 percent of crude production.

The sixteen ventures illustrated in Table 16 account for 58 percent of petroleum production in the OPEC countries (1970).²⁴ But this does not represent all the oil owned by the majors in these countries. Another 20 percent of OPEC's total production is owned by the majors--16 percent in 7 one-owner operations and 4 percent in 11 joint ventures with minors and government-owned companies.²⁵ In 7 of the 11 OPEC countries (Iran, Saudi Arabia, Kuwait, Iraq, Algeria, Indonesia, and Abu Dhabi), the seven majors have no one-owner oil producing operations.

Algeria is the only OPEC country where the majors do not dominate petroleum ownership. The petroleum industry in Algeria is dominated by French government-owned companies and Sonatarch, the Algerian state-owned company. The majors own only 6 percent of Algeria's crude production. But, as the data in Tables 16 and 17 indicate, the majors own 76 percent of all petroleum production in Iran, 85 percent in Qatar, 84 percent in Venezuela, 71 percent in Iraq, 89 percent in Indonesia, 92 percent in Nigeria, 79 percent in Abu Dhabi, 48 percent in Libya and 100 percent in both Saudi Arabia and Kuwait (1970).

In summary, the data indicate that the seven majors

²⁴See Table 16, pp. 128-129.

²⁵See Table 17, pp. 130-131.

TABLE 16

PERCENT OF PETROLEUM PRODUCTION OWNED BY INTERNATIONAL MAJORS IN JOINT VENTURES,
WHERE TWO OR MORE MAJORS PARTICIPATE--OPEC COUNTRIES, AS OF 1970

Country	Production (000 b/d)		International Majors			
	Total	Joint Venture	Percentage Controlled	Production Owned	Percent of Country's Total Production Owned	Number of Majors in Venture
Iran	3,850.0	3,400.0	89.0	3,026.0	76	7
Saudi Arabia	3,550.0	3,550.0	100.0	3,550.0	100	4
Venezuela	3,673.0	420.0 120.0	100.0 100.0	420.0 120.0	12	3 2
Kuwait	2,700.0	2,700.0	100.0	2,700.0	100	2
Libya	3,302.0	384.0	100.0	384.0	12	2
Iraq	1,472.0	1,056.0 350.0 63.0	71.1 71.1 71.1	750.8 248.8 44.8	71	4 4 4
Nigeria	1,110.0	750.0 10.0	100.0 100.0	750.0 10.0	68	2 2
Algeria	995.0	0	0	0	0	0
Indonesia	860.7	718.2 25.2 19.4	100.0 100.0 100.0	718.2 25.3 19.4	89	2 2 2

TABLE 16--Continued

Country	Production (000 b/d)		International Majors			
	Total	Joint Venture	Percentage Controlled	Production Owned	Percent of Country's Total Production Owned	Number of Majors in Venture
Abu Dhabi	695.0	425.0	71.1	302.2	43	4
Qatar	363.0	190.4	71.1	135.3	37	4
Total	22,571.0	-	-	13,204.8	58	50

Source: Calculated from data in Appendix to Chapter IV.

TABLE 17

PERCENT OF PETROLEUM PRODUCTION OWNED BY THE INTERNATIONAL MAJORS IN ONE-OWNER OPERATIONS AND IN JOINT VENTURES WITH MINORS AND/OR GOVERNMENT-OWNED COMPANIES--OPEC COUNTRIES, AS OF 1970

Country	Production	Production in One-Owner Operations		Production in Joint Venture Operations		Participants
		One-Owner Operations	Percent Owned by Majors	Joint Venture	Percent Owned by Majors	
Venezuela	3,673	1,600.0	72	0*	0	SONJ
	0	900.0	0	0	0	RDS
	0	180.0	0	0	0	TEXC
Libya	3,302	566.0	17	0	0	SONJ
	0	0	0	800.0	16.7	RDS and 3 minors
	0	0	0	200.0	50.0	SONJ and Atlantic Richfield
	0	0	0	245.0	65.0	Mobil and BASF
	0	0	0	400.0	50.0	BP and Hunt
Algeria	995	0	0	120.0	35.0	RDS and 3 French gov't. companies
	0	0	0	69.0	25.0	Mobil and 3 French gov't. companies
Nigeria	1,110	215.0	24	0	0	Gulf
	0	55.0	0	0	0	Mobil
Qatar	363	172.6	48	0	0	RDS

TABLE 17--Continued

Country	Production	Production in One-Owner Operations		Production in Joint Venture Operations		Participants
		One-Owner Operations	Percent Owned by Majors	Joint Venture	Percent Owned by Majors	
Abu Dhabi	695	0	0	270.0	66.6	BP and CFP
Total	-	3,688.6	16	-	4.0	-

Source: Calculated from data in Appendix to Chapter IV.

*Texaco Inc. is in four joint venture operations in Venezuela with international minors. Production figures for these operations not available to the author.

in 34 producing operations own 78 percent of OPEC's petroleum production. Fifty-eight percent is owned in 16 joint ventures, averaging more than 3 majors per venture. In these sixteen ventures the majors are interlocked with each other 68 times. Another sixteen percent is owned in 7 one-owner operations and four percent is owned in 11 joint ventures where individual majors participate with international minors and government-owned companies.

For all ten areas the seven majors control 61 percent of total production in joint venture operations and own 16 percent in one-owner operations. Thus, in 1970 the seven international majors owned and/or controlled 77 percent of total petroleum production in the 10 areas.

The International Minors and Government-owned Companies

Joint venture operations

The twenty-two companies listed as international minors and government-owned companies represent substantial financial power. The fifteen United States companies (Standard Oil Company (Indiana), Atlantic Richfield Company, Continental Oil Company, Tenneco Inc., Occidental Petroleum Corp., Phillips Petroleum Company, Union Oil Company of California, Sun Oil Company, Cities Service Company, Ashland Oil Inc., The Standard Oil Company (Ohio), Amerada Hess Corporation, Getty Oil Company, The Signal Companies Inc., and Marathon Oil Company) all rank in the first 100 of

Fortune's top 500 U.S. corporations. The seven foreign companies include 4 international minors and 3 government-owned companies. The foreign international minors include Germany's Badische Anilin-und Sodafabrik (BASF), France's Cie Francaise des Petroles (CFP), Australia's The Broken Hill Proprietary Company Limited (BHP) and Belgium's Petrofina, S.A. The 3 government-owned companies include France's ELF-ERAP, Italy's Ente Nazionale Idrocarburi (ENI) and Mexico's Petroleos Mexicanos (PEMEX). The seven foreign companies rank in the first 75 of Fortune's top 300 corporations outside the United States. In 1971 the twenty-two companies had combined assets of \$62.0 billion, sales of \$45.7 billion and net income of \$2.2 billion.²⁶

The international minors and government-owned companies combined control the majority interest in sixty-seven joint venture operations. These sixty-seven operations account for 14 percent of the petroleum production in the ten areas (1970). This 14 percent represents more than half of the petroleum production by the minors and government-owned companies. This indicates that 60 percent of their production is carried on in joint ventures and 40 percent in one-owner operations. However, there is an important qualification which substantially changes the overall implications concerning the degree of joint venture activity. Just two of the 43 one-owner operations account for 50 percent of all

²⁶See Table 18, pp. 135-136.

petroleum production in one-owner ventures. If these two operations are not included in calculating the degree of control, the data indicates a 77-23 breakdown between joint venture versus one-owner operations. This represents a substantial difference from the prior 60-40 split. Also, it gives a more accurate reflection of the degree of activity and control in joint venture and one-owner operations.

The data indicate that international minors and government-owned companies achieve their greatest successes in the newer oil producing regions. Eighty-five percent of their joint venture production comes from the North Sea, Alaska, Africa and the more recently developed offshore fields in the Middle East.

This too, however, is subject to several important qualifications. For example, in Alaska the international minors control 98 percent of crude production in four joint venture operations (1970). All four operations are in Southern Alaska in or near the Cook Inlet and the McArthur and Swanson river areas. Estimated reserves in Southern Alaska total only 360 million barrels (1972). The other 2 percent of Alaska's production comes from the North Slope. But in early 1973 the estimated reserves in this area were between 30 and 50 billion barrels. Further, the majors have controlling interest in Prudhoe Bay's 3 producing fields. Also, as of early 1973 the majors control 500 concessions which account for 74 percent of all acreage under lease.

TABLE 18

SALES, ASSETS AND NET INCOME OF INTERNATIONAL MINORS
AND GOVERNMENT-OWNED COMPANIES, AS OF 1971

Company	Country	Sales (\$Billions)	Assets (\$Billions)	Net Income (\$Millions)
Standard Oil Company (Ind.)	U.S.	4.1	5.6	341.7
Atlantic Richfield	U.S.	3.1	4.7	198.7
Continental Oil	U.S.	3.0	3.0	109.4
BASF	Germany	3.2	3.5	82.7
Tenneco	U.S.	2.8	4.6	184.0
Occidental Petroleum	U.S.	2.4	2.6	67.0
Phillips Petroleum	U.S.	2.4	3.2	132.3
Union Oil of California	U.S.	2.0	2.6	114.7
Cie. Francaise des Petroles	France	2.4	3.5	101.0
Sun Oil	U.S.	1.9	2.8	151.6
Broken Hill Proprietary	Australia	2.1	1.8	77.5

TABLE 18--Continued

Company	Country	Sales (\$Billions)	Assets (\$Billions)	Net Income (\$Millions)
Cities Service	U.S.	1.8	2.3	104.5
ENI	Italy*	2.1	6.2	14.2
Ashland Oil	U.S.	1.6	1.0	23.8
ELF (ERAP)	France*	1.8	3.2	138.3
Standard Oil (Ohio)	U.S.	1.4	1.8	54.6
Amerada Hess	U.S.	1.3	1.3	133.2
Getty Oil	U.S.	1.3	2.0	103.9
Signal Companies, Inc.	U.S.	1.3	1.3	28.6
Petrofina	Belgium	1.3	1.9	60.3
Marathon Oil	U.S.	1.2	1.4	68.2
Pemex (Petroleos Mexicanos)	Mexico*	1.2	2.2	1.4
Total		45.7	62.0	2,200.0

Source: "The 500 Largest Industrial Corporations." Fortune. May 1972, pp. 190-192, and "The 300 Largest Industrial Companies Outside the U.S." Fortune. August 1972, pp. 151-158.

*Government-owned companies.

The minors control 180 concessions which account for the remaining 26 percent of the lease acreage. Thus, the evidence seems to indicate that the international majors will dominate the petroleum industry in Alaska, once production begins on the North Slope.

In the North Sea a contractual joint venture, consisting of eleven companies, owns the only producing operation. The consortium consists of Phillips Petroleum Company (36.96 percent), Petrofina S.A. (30 percent, private Belgian capital), Assianda Generale Italiana Petroli (13.04 percent, Italian state agency) and Petronard A/S (20 percent, owned by a group of 7 French and Norwegian companies). This group has 3,026,000 acres under lease in the North Sea. In early 1973, their only producing field (Ekofish) was pumping 10,000 barrels of oil per day. But estimated reserves are 7 billion barrels. These reserves rank it as a major discovery. Concession acreage under lease indicates that the North Sea might develop similar to Africa's petroleum industry. In the North Sea area, as of early 1973, the minors and government-owned companies control 340 concessions representing 64 percent of all lease acreage. The remaining 36 percent is controlled by the seven majors in 193 concessions. Thus, the international minors and government-owned companies might have as much success in the North Sea as they are having so far in Africa.

Africa accounts for 58 percent of all joint venture

production by the international minors and government-owned companies. Further, it is the only area with substantial oil production where the majors do not effectively dominate petroleum production. Several factors influence this situation. First, the European government-owned companies are active in their former colonies. Second, 7 of the 10 petroleum producing countries in Africa have participation by local government-owned companies as "equity partners." Third, the government-owned companies and the international minors in recent years have cooperated in joint ventures with some success.

For example, Italy's state-owned company, Ente Nazionale Idrocarburi (ENI), operates the El Borma field in Tunisia through a 50-50 joint venture with the Tunisian government. ENI and the Tunisian government's jointly owned subsidiary, Societe Italio--Tunisienne des Petroles, operates the El Borma field which accounts for 95 percent of Tunisia's production. Further, ENI and Phillips Petroleum Company operate the Ebocha, M'bede, Ndoni and Idu fields in Nigeria through a 50-50 contractual joint venture. Also, AGIP Recherches Congo S.A. is an 80-20 joint venture partnership between ENI and the Republic of Congo, with ENI receiving the greater percentage. ELF/ERAP, the French state agency, operates in Gabon, Algeria, Tunisia and Morocco.

African countries, with state-owned companies which participate as full equity partners in petroleum operations,

include Tunisia, Egypt, Angola Cabinda, Morocco, Congo Brazzaville, Congo Kinshasa, and Algeria. Algeria has partially nationalized their oil industry, with the state controlling marketing, refining and transportation. Exploration and production remain largely in the hands of French government-owned companies and international minors. Algeria is the 2nd largest oil producer in Africa, with 995,000 barrels per day (1970). The majors own only 6 percent of this total and do not control majority interest in any producing operation. All five producing operations in Algeria are joint ventures between French government-owned companies and the international minors.

There is considerable cooperation between the international minors and local government-owned companies in Egypt. Gulf of Suez Petroleum Co. (GSPC), operates the El Morgan field which produces 261,600 barrels of oil per day (1970). This represents 78 percent of Egypt's total production. GSPC is a 50-50 jointly owned subsidiary, owned by Standard Oil Company (Indiana) and Egypt's state-owned company, Egyptian General Petroleum Corp. (EGPC). EGPC, in another 50-50 joint venture with Phillips Petroleum Company, operates the El Alamein fields through their subsidiary, Western Desert Operating Co. EGPC operates five small fields by itself, which together produce 9,000 barrels of oil per day. These are the only three producing operations in Egypt (1970).

The only other area where the international minors and government-owned companies have significant joint venture production operations is in the Middle East. Iran's state-owned company, National Iranian Oil Company (NIOC), has a 50 percent interest in four operations which together produce 440,000 barrels of oil per day (1970). Its partners in these ventures are international minors and/or other government-owned companies. In the Neutral Zone the Arabian Oil Company Ltd. (AOC) produces 340,000 barrels of oil per day (1970) from the Khafji and Hout fields. AOC is a three government joint venture between Japan Petroleum Trading Company, a Japanese government-owned company, and the Saudi Arabian and Kuwait national governments. Aminoil Inc. also produces in the Neutral Zone. Aminoil is a 50-50 joint venture between Getty Oil Company and R. J. Reynolds Industries Inc. Aminoil produces 160,000 barrels of oil per day (1970) from six fields. In Dubai, the Dubai Petroleum Co., (DPC) produces 80,000 barrels of oil per day (1970) from its Fateh field. DPC is owned jointly by Sun Oil Co., Texaco Inc., British Petroleum Co., Ltd., Continental Oil Company and France's Compagnie Francaise des Petroles.

These seven joint ventures produce approximately one million barrels of oil per day. They account for all the oil produced in the Middle East through joint ventures controlled by the international minors and government-owned companies.

In summary, the minors and government-owned companies in joint venture operations account for less than 10 percent of total production in Asia Pacific, Europe, Central America, South America and the Middle East. Production in the North Sea and Alaska is dominated by the international minors and government-owned companies. But, combined production in both areas amounts to only 100,000 barrels of oil per day. Fourteen percent of all crude production accounted for in the study is through joint ventures controlled by international minors and government-owned companies.²⁷

One-owner operations

The international minors and government-owned companies, combined, own forty-three one-owner producing operations. These forty-three ventures account for 9 percent of all production in the ten areas. Fifty percent of this total is produced in two operations. Occidental Petroleum Company (OXY) owns one of these and the other is owned by Mexico's state-owned company, Petroleos Mexicanos (PEMEX).

OXY owns three fields in Libya which produce 700,000 barrels of oil per day (1970). This is the most spectacular discovery by an international minor. The discovery was made in 1967 and by 1970 had cumulative production of 455 million barrels. With the exception of OXY's major discovery, production in one-owner operations by the international minors

²⁷See Table 19, p. 143.

is almost non-existent. The minors control an additional twenty-two one-owner ventures. But total production in all twenty-two operations is only 235,000 barrels of oil per day (1970).

PEMEX is the major one-owner operator among government-owned companies. In 1938 Mexico expropriated the properties of seventeen American and British petroleum firms. PEMEX has conducted Mexico's petroleum industry since that time.²⁸ Seventy-eight percent of the petroleum production in Central America is done by PEMEX. This totals 459,000 barrels of oil per day (1970). Including PEMEX, 20 of the 43 one-owner operations are owned by government-owned companies. These 20 operations produce 1.4 million barrels of oil per day and account for 60 percent of total petroleum production in one-owner operations in the 10 areas (1970).

There are no one-owner producing operations in Australasia, Alaska and the North Sea. Canada has 1 and Africa 3. In relationship to total petroleum production, one-owner operations controlled by the international minors and government-owned companies are not significant.²⁹

²⁸U.S. Department of Interior, Bureau of Mines. Summary of Mining and Petroleum Laws of the World, Western Hemisphere (Washington, D.C.: Government Printing Office, 1970), p. 23.

²⁹See Table 20, p. 144.

TABLE 19

WORLD PETROLEUM PRODUCTION AND JOINT VENTURE PRODUCING
OPERATIONS WHERE THE MINORS AND/OR GOVERNMENT-OWNED
COMPANIES CONTROL 51 PERCENT OR MORE INTEREST,
OUTSIDE THE UNITED STATES AND COMMUNIST BLOC
COUNTRIES, AS OF 1970

Area	Crude Production (000 b/d)	Operations Where Minors and/or Government-Owned Companies Control 51 Percent or More Interest	
		Number of Operations	Percent of Total Production
Asia Pacific	1,188.2	4	6
Australasia	149.9	2	17
Alaska and North Slope	96.7	4	98
Africa	5,992.7	17	37
Canada	1,260.0*	19	-
Central America and West Indies	591.6	1	3
Europe	308.7	3	4
Middle East	13,776.8	7	7
North Sea	10.0	1	100
South America	4,572.3	9	8
Total	27,949.6 (26,689.6)*	67	14

Source: Calculated from data in Appendix II, Tables
33 through 51.

*Canada's production is not used in figuring percent
for joint venture operations. Production figures not avail-
able to the author.

TABLE 20

THE NUMBER OF PETROLEUM PRODUCING OPERATIONS AND PERCENT
OF PRODUCTION ACCOUNTED FOR BY THE MINORS AND/OR
GOVERNMENT-OWNED COMPANIES IN ONE-OWNER
OPERATIONS, OUTSIDE THE UNITED STATES
AND COMMUNIST BLOC COUNTRIES,
AS OF 1970

Area	Petroleum Production in One-Owner Operations (000 b/d)	Number of One-Owner Operations	Percent of Output in One-Owner Operations
Asia Pacific	210.5	9	18
Australasia	0	0	0
Alaska and North Slope	0	0	0
Africa	749.0	3	13
Canada	-*	1	-
Central America and West Indies	460.6	4	78
Europe	69.7	6	22
Middle East	118.1	6	1
North Sea	0	0	0
South America	726.3	14	16
Total	2,334.2	43	9

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Production data for one-owner operations in Canada not available to the author.

TABLE 21

THE MINORS AND/OR GOVERNMENT-OWNED PETROLEUM COMPANIES AND THEIR JOINT VENTURE
PARTNERS IN PRODUCING OPERATIONS, BY COMPANY CLASSIFICATIONS, AS OF 1970

Area	Number of Pro- ducing Opera- tions Minors	Participating Partners in Petroleum Production Operations						
		Minor Minor(s)	Minor(s) and Local Capital		Minor(s) and Gov't.	Gov't. Gov't.	Major(s) Minor(s)	Minor(s) Others
			Private	Gov't.				
Asia Pacific	3	0	0	3	0	0	0	0
Australasia	2	0	1	0	0	0	1	0
Alaska and North Slope	9	1	0	0	0	0	8	0
Africa	15	2	0	3	5	3	2	0
Canada	24	3	0	0	0	0	10	11
Central America and West Indies	0	0	0	0	0	0	0	0
Europe	3	0	0	0	0	0	3	0
Middle East	14	1	0	3	1	0	9	0
North Sea	1	0	0	0	1	0	0	0
South America	9	4	0	1	0	0	4	0
Total	80	11	1	10	7	3	37	11

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Minors in Africa include two non-host government ventures.

Joint venture partners and interlocking ownership ties

The international minors participate in eighty joint venture operations. They participate with the majors in 37, other international minors 11, local government companies 10 and with non-host government-owned companies 7 times.³⁰ The typical joint venture producing operation has 3 or 4 firms as members. In the eleven joint ventures where only the minors participate, the companies have eighty-three interlocking ownership ties. For example, Phillips Petroleum Company has interlocking ownership ties with Standard Oil Company (Indiana) 4 times and Sun Oil Company 5 times. In the 37 major/minor joint ventures the firms are interlocked 125 times.³¹

The international minors and government-owned companies have 30 interlocking ownership ties. This is 15 more than exists between the seven majors and government-owned companies. Phillips Petroleum Company has 8 interlocking ties with government-owned companies, Compagnie Francaise des Petroles 10, while Standard Oil Company (Indiana) and Atlantic Richfield Company have 3 each. The international minors and government-owned companies are cited together in 17 joint venture producing operations. Eight of these are in

³⁰See Table 21, p. 145.

³¹See Table 29 on page 221 for a complete list of the number of joint ventures per company and the total number of interlocking ownership ties between all companies and groups.

Africa, 4 are in the Middle East, 3 are in South America and 2 are in Europe. The minors and government-owned companies have achieved some success operating with each other through joint ventures. Following the pattern set by the international majors, they have numerous interlocking ownership ties.

Summary

The 200 producing operations cited account for petroleum production totalling 27.9 million barrels of oil per day (1970). This is approximately 99 percent of total production in the ten areas. Sixty-seven percent of the 200 producing operations are joint ventures. Further, joint ventures account for 75 percent of total petroleum production. Of this 75 percent, the majors control 61 percent and the international minors and government-owned companies control 14 percent. The typical joint venture consists of 3 or 4 companies and in the 133 joint venture operations there is a total of 701 interlocking ownership ties.

The 11 OPEC countries produce 80 percent of the petroleum production accounted for in the ten areas and approximately 50 percent of the world's total. The majors own 78 percent of all production in the OPEC countries. They accomplish this: 1) in 16 joint ventures where they have controlling interest and produce 58 percent of their total production, 2) in 4 joint ventures where they have minority interest and produce 4 percent of their total production and

3) in 8 one-owner operations where they produce 16 percent of their total production. In the 16 joint ventures where the seven majors have controlling interest they have interlocking ownership ties with each other 68 times. For example, in these 16 operations Standard Oil Company (New Jersey) (Exxon) is in interlocking ownership ties with Royal Dutch/Shell Group 7 times, British Petroleum Co. Ltd. (BP) 6 times, Mobil Oil Corporation 10 times, and Gulf Oil Corporation, Standard Oil Company of California and Texaco Inc. 2 times each. Further BP has six interlocking ownership ties with both RDS and Mobil Oil Corporation while Texaco Inc. and Standard Oil Company of California have five interlocking ownership ties.

The basic pattern of joint venture ownership is similar in all ten areas, with the notable exception of South America and Central America. In these two areas one-owner operations predominate. For example, South America has only 23 percent of its petroleum production in joint venture operations while Central America has only 14 percent. But joint venture operations account for 100 percent of all petroleum production in Australasia, Alaska and the North Sea; 97 percent in the Middle East, and approximately 70 percent in Africa, Europe and the Asia Pacific.

Africa, however, differs in terms of control from all the other areas in the study. Seventy-two percent of Africa's production is accomplished through joint ventures

but control is evenly divided between the seven majors and the international minors and government-owned companies.

APPENDIX TO CHAPTER IV

PETROLEUM PRODUCING OPERATIONS IN THE OPEC COUNTRIES

TABLE 22
OWNERSHIP OF THE MAJOR PETROLEUM PRODUCING OPERATIONS
IN THE OPEC COUNTRIES, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>IRAN</u>		
1. IRANIAN OIL EXPLORATION AND PRODUCING CO.		3,400,000
Iran Oil Participants Ltd.		
National Iranian Oil Co.		
state owned (agency participation)**		
British Petroleum Co.	40	
Bataafse Petroleum Maatschappij N.V..	14	
Royal Dutch/Shell Group		
Standard Oil Company of California.	7	
Gulf Oil Corporation.	7	
Standard Oil Company (New Jersey)	7	
Mobil Oil Corporation	7	
Texaco Inc.	7	
Compagnie Francaise des Petroles.	6	
French government (35)		
Other French private interest (65)		
Iricon Agency Ltd.		
American Independent Oil Co. (0.833)	5	
R. J. Reynolds Industries Inc.		
Atlantic Richfield Co. (1.677)		
Getty Oil Co. (0.417)		
Tidewater Oil Co. (0.417)		
(now Getty Oil Co.)		
San Jacinto Petroleum Co. (0.417)		
Continental Oil Co.		
Signal Oil and Gas Co. (0.833)		
Standard Oil Company (Ohio) (0.417)		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELDS: Agha Jari, Ahwaz, Bibi Hakimeh, Paris, Gach Saran, Haft Kel, Karanj, Marun, Masjid-i- Sulaiman, Pazanan, Rag-e-Safid, Nowruz, Naft Safid, Lali, Ramshir, Binak		
2. SOCIETE IRANO-ITALIENE DES PETROLES		90,000
AGIP SPA	50	
Ente Nazionali Idrocarburi		
Italian government company		
National Iranian Oil Co.	50	
Iranian government		
FIELD: Bahrgansar		
3. IRAN PAN AMERICAN OIL COMPANY		150,000
Pan American International Oil Co.	50	
American International Oil Co.		
Standard Oil Co. (Indiana)		
National Iranian Oil Co.	50	
state owned		
FIELDS: Darius, Fereidoon, Esfandiar, Cyrus		
4. LAVAN PETROLEUM COMPANY		100,000
National Iranian Oil Co.	50	
state owned		
Atlantic Exploration Co.	12.5	
Atlantic Richfield Co.		
Murphy Middle East Oil Co.	12.5	
Murphy Oil Corporation		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
Iranian Sun Oil Co.	12.5	
Sun Oil Co.		
Union Oil Company of Iran	12.5	
Union Oil Company of California		
FIELD: Sassan		
5. NATIONAL IRANIAN OIL COMPANY.	100	10,000
state owned		
FIELDS: Naft-i-Shah, Alborz, Sarajeh		
6. IRANIAN MARINE INTERNATIONAL OIL COMPANY:		100,000
National Iranian Oil Co	50	
state owned		
AGIP SPA.	16 2/3	
Ente Nazionali I drocarburi		
Italian government company		
Phillips Petroleum Co..	16 2/3	
Oil and Natural Gas Commission, India	16 2/3	
Indian government company		
FIELD: Rostam		
TOTAL IRAN		3,850,000

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>SAUDI ARABIA</u>		
7. ARABIAN AMERICAN OIL COMPANY		3,550,000
Standard Oil Company of California	30	
Standard Oil Company (New Jersey).	30	
Texaco Inc..	30	
Mobil Oil Corporation.	10	
FIELDS: Khurais, Manifa, Ghawar, Abqaiq, Berri, Abu Sa'Fah, Abu Hadriya, Safaniya, Qatif, Khursaniyah, Fadhili, Dammam, Shaybah		
TOTAL SAUDI ARABIA.		3,550,000
<u>VENEZUELA</u>		
8. CREOLE PETROLEUM CORPORATION	100	1,600,000
Standard Oil Company (New Jersey)		
FIELDS: Cabimas, Tia Juana, Lagonillas, Bachaquero, Silvestre, Bolivar Coastal, Jobo, Aguasay, Tusepin, Mulat, Santa Ana, San Joaquin, El Roble, El Toco, Sinco, La Paz, Centro, Urdaneta, Lama, Santa Rosa, Maria, Caripito, Aficina, Temblador, Quiriquire, Tucupido, Boscan		
9. COMPANIA SHELL DE VENEZUELA LTD.	100	900,000
Shell Western Holdings Ltd. Royal Dutch/Shell Group		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELDS: Cabimas, Tia Juana, Lagonillas, Bachaquero, San Lorenzo, Lama, Bolivar Coostal, Centro, La Paz, Marlago		
10. MENE GRANDE OIL COMPANY Venezuela Gulf Oil Co. Gulf Oil Corporation	50	420,000
Shell and SONJ each share 25% of Mene Grande's crude production		
FIELDS: Cabimas, Tia Juana, Lagonillas, Bachaquero, Aficina, Lamar, Mene Grande, Lago, Zanzas, Zacarias, Elias, Ceuta, Marlago, Mapiri Nipa, East Soto, Leona, Caracoles, Guara, Santa Rosa Este		
11. MOBIL OIL COMPANY DE VENEZUELA Mobil Oil Corporation	75	120,000
Creole Petroleum Corporation shares 25% of Mobil's crude production		
FIELD: San Silvester		
12. TEXACO MARACAIBO INC., TEXACO PETROLEUM CO., AND. . . . CORO PETROLEUM CO. (all three are owned 100 percent by Texaco Inc.)	100	180,000
FIELDS: Falcon, Lama, Mota-Ricon, El Salto		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
13. PARIA OPERATIONS INC.		***
The Texas Company	25	
Texaco Inc.		
Continental Oil Co.	25	
Cities Service Co.	16 2/3	
Richfield Oil Co.	8 1/3	
Standard Oil Company of California		
Ohio Oil Co.	25	
FIELD: Posa		
14. VENEZUELA SUN OIL	23 1/3	***
Sun Oil Co.		
VENEZUELA ATLANTIC REFINING	33 1/3	
Atlantic Richfield Co.		
SEABOARD OIL COMPANY.	1/10	
Texaco Inc.		
PAN AMERICAN VENEZUELA OIL CO.	33 1/3	
Standard Oil Company (Indiana)		
FIELDS: Lama, Aguasay, Bachaquero		
15. VENEZUELA ATLANTIC REFINING	45	***
Atlantic Richfield Co.		
VENEZUELA SUN OIL COMPANY	45	
Sun Oil Co.		
SEABOARD OIL COMPANY.	10	
Texaco Inc.		
FIELD: Aguasay		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
16. SINCLAIR VENEZUELA OIL COMPANY Atlantic Richfield Company FIELD: East Aguasay		***
17. S.A. PETROLERA LA MERCEDES The Texas Company Texaco Inc. Caracas Petroleum Co. S.A.. Ultramar Company Ltd. English capital FIELDS: Guarario, Las Mercedes	50 50	***
18. PHILLIPS PETROLEUM COMPANY. SUNRAY DX OIL COMPANY Sun Oil Co. ASHLAND OIL AND REFINING. KERR-MC GEE OIL INDUSTRIES. EL PASO NATURAL GAS WESTERN NATURAL GAS PACIFIC PETROLEUM SUBSIDIARIES. Phillips Petroleum Co. FIELDS: Block 17, Santa Maria, Morichal, Bachaquero	55.75 17.37 10.78 5.40 3.20 3.20 4.30	***
19. PHILLIPS PETROLEUM COMPANY. SAN JACINTO VENEZUELA C.A. Continental Oil Co. EL PASO NATURAL GAS	45 25	***

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
SUNRAY DX OIL COMPANY Sun Oil Co. PACIFIC PETROLEUMS LTD. Phillips Petroleum Co. WESTERN NATURAL GAS COMPANY		
FIELDS: Block 10, Santa Maria		
20. SIGNAL OIL AND GAS COMPANY HANCOCK VENEZUELAN OIL COMPANY Signal Oil and Gas Company STANDARD OIL COMPANY (OHIO) PURE OIL COMPANY		100
FIELD: Centro, Lago		
21. SAN JACINTO VENEZUELA S.A. Continental Oil Co. TENNESSEE GAS TRANSMISSION Tenneco Inc. UNION OIL COMPANY OF CALIFORNIA. MURPHY CORPORATION MANSONTO CHEMICAL COMPANY. AMERICAN PETROFINA CO. OF VENEZUELA. American Petrofina Inc. American Petrofina Holding Co. Petrofina S.A. Private Belgian Capital SHARPLES INC.	30 15 15 15 15 5 5	***
FIELD: Marlago		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
22. SUPERIOR OIL COMPANY	100	***
FIELDS: Lama, Bachaquero		
23. CORPORACION VENEZOLANO DEL PETROLEO.	100	30,300
state owned		
FIELDS: Lake Maracaibo		
24. CHEVRON OIL COMPANY OF VENEZUELA	100	50,000
Standard Oil Company of California		
FIELD: Baja Grande		
PRODUCTION FIGURES FOR INDIVIDUAL COMPANIES IN VENEZUELA**		
Sun Oil Company		250,000
Signal Oil and Gas Company		10,000
Phillips Petroleum Company		50,000
Continental Oil Company		11,000
Atlantic Richfield Company		52,000
TOTAL VENEZUELA.		3,673,300
<u>KUWAIT</u>		
25. KUWAIT OIL COMPANY		2,700,000
Gulf Kuwait Co.	50	
Gulf Oil Corporation		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
BP Kuwait Co.	50	
British Petroleum Exploration Co., Ltd.		
FIELDS: Burgan, Minagish, Raudkatain, Sabiriyah, Bahrah, Magwa Ahmadi, Umm Gudair, Khashman		
TOTAL KUWAIT. . .		2,700,000
<u>LIBYA</u>		
26. OASIS OIL CO. OF LIBYA		800,000
Marathon Oil Co. of Libya	33.3	
Marathon Oil Co.		
Continental Oil Co. of Libya.	33.3	
Continental Oil Co.		
Amerada Petroleum Co. of Libya.	16.7	
Amerada-Hess Corporation		
Libya Shell N.V..	16.7	
Royal Dutch/Shell Group		
FIELDS: Dahra, Zaggut, Waha, Gialo, Bahi, Defa, Samah		
27. ESSO SIRTE INC.	50	200,000
Esso Standard Libya		
Standard Oil Company (New Jersey)		
LIBYAN AMERICAN	25.5	
Texas Gulf Producing		
Sinclair International Oil Co.		
Atlantic Richfield		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
W. R. GRACE & CO.	24.5	
FIELDS: Raguba, Mabruk		
28. AMERICAN OVERSEAS PETROLEUM LTD.		384,000
California Texas Oil Company Ltd.	50	
Standard Oil Company of California		
Texaco Inc.	50	
FIELDS: Dor, Beda, Kotla, Nafoora		
29. MOBIL OIL LIBYA LTD..	65	245,000
Mobil Oil Corporation		
GELSENKIRCHENER BERGWERKE	35	
Gelsenberg Benzin		
Private German capital		
FIELDS: Farigh AA, Ed Dib, Farud, Hofra, Ora, Amal, Ora, Dor Marada, Bu M'Ras		
30. AMOCO LIBYA OIL CO.	50	7,000
Standard Oil Co.		
Standard Oil Co. (Indiana)		
PHILLIPS PETROLEUM CO..	50	
FIELDS: Umm Farud, Khuff		
31. BRITISH PETROLEUM CO. LTD..	50	400,000
NELSON BUNKER HUNT.	50	
Hunt Oil Co.		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELD: Sarir		
32. ESSO STANDARD LIBYA Standard Oil Company (New Jersey)	100	566,000
FIELDS: Zelten, Ain Jarbi, Arshad, Jebel, Ralah		
33. OCCIDENTAL PETROLEUM CORPORATION.	100	700,000
FIELDS: Intisar A, Intisar D, Augila, Intisar C.		
TOTAL LIBYA		3,302,200
<u>IRAQ</u>		
34. IRAQ PETROLEUM COMPANY LTD.		1,056,000
British Petroleum Exploration Co.	23.7	
Shell Petroleum Company Ltd..	23.7	
Royal Dutch/Shell Group		
Campagne Francaise des Petrole s	23.7	
French government company (35)		
other private French interest (65)		
Near East Development Corporation	23.7	
Standard Oil Company (New Jersey) (50)		
Mobil Oil Corporation (50)		
Participations and Exploration Corp..	5.0	
C. S. Gulbenkian Estate		
FIELDS: Kirkuk, Bai Hassan, Jambur		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
35. MOSUL PETROLEUM COMPANY LTD. ownership same as IRAQ PETROLEUM COMPANY LTD. (Number 34 above)		63,000
FIELDS: Ain Zalah, Butmah		
36. BASRAH PETROLEUM COMPANY LTD. Ownership same as IRAQ PETROLEUM COMPANY LTD. (Number 34 above)		350,000
FIELDS: Zubair, Rumaila		
37. IRAQ NATIONAL OIL COMPANY state owned	100	3,000
FIELD: Naft Kaneh		
TOTAL IRAQ.		1,472,000

NIGERIA

38. THE SHELL-BP PETROLEUM DEVELOPMENT CO. OF NIGERIA LTD.		750,000
Royal Dutch/Shell Group	50	
British Petroleum Company Ltd.	50	
FIELDS: Afiesere, Egwa, Eriemu, Ewureni, Forcados Estuary, Jones Creek, Kokori, Odidi, Olomoro, Oroni, Oweh, Ughelli, Utorogu, Uzere, Agbada, Afam, Afam-Umuosi, Ahia, Alakiri,		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
Apara, Bodo West, Bomu, Bonny, Cawthorn Creek, Ebubu, Ekuloma Elelenwa, Egbema, Ibibio, Imo River, Isimiri, Korokoro, Krakama, Nkali, Obigbo North, Oloibiri, Oza, Rumuekpe, Lake Umuechem		
39. PHILLIPS PETROLEUM COMPANY NIGERIA AGIP OIL COMPANY. Ente Nazionale Idrocarburi Italian government company	50 50	20,000
FIELDS: Ebocha, Mbede, Ndoni, Ide		
40. SAFRAP (NIGERIA) LTD.. ELF/ERAP French government agency	100	40,000
FIELD: Obagi		
41. GULF OIL COMPANY (NIGERIA) LTD.. Gulf Oil Corporation	100	215,000
FIELDS: Delta, Delta South, Malu, Meji, Meren, Okan, Parabe		
42. MOBIL EXPLORATION NIGERIA LTD.. Mobil Oil Corporation	100	55,000
FIELDS: Asabo, Idoho, Ubit		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
43. AMERICAN OVERSEAS PETROLEUM LTD.		10,000
California Texas Oil Company Ltd.		
Texaco Inc.	50	
Standard Oil Company of California.	50	
FIELD: Pennington		
44. TENNECO NIGERIA, INC.	50	20,000
Tenneco Inc.		
SUNRAY NIGERIA INC.	25	
Sun Oil Company		
SINCLAIR NIGERIAN OIL	25	
Sinclair Oil Co.		
Atlantic Richfield Corporation		
FIELD: Kanuskiri		
TOTAL NIGERIA.		1,110,000
<u>ALGERIA</u> ****		
45. COMPAGNIE DE RECHERCHES DE PETROLE AI SAHARA (CREPS)		120,000
Royal Dutch/Shell Group	35.0	
ELF/ERAP.	55.5	
French government agency		
Others.	9.5	
FIELDS: Zarzaitine, Edjeleh, Gassi Touil East, Dome a Collenias, Edeyen, Ouan Taredert, Taguientourine		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
46. PHILLIPS PETROLEUM COMPANY OMNIREX. Phillips Petroleum Co. (50) Ommium Francaise de Petroleus (50) COMPAGNIE DES PETROLES FRANCE AFRIQUE (COPEFA) ELF/ERAP (80.91) French government agency	25.0 37.5 37.5	216,000
FIELD: Gassi Touil		
47. CIE FRANCAISE DES PETROLEOS (ALGERIE) (CFP (A)) . . . Compagnie Francaise des Petroles (CFP (85)) French government (35) other French private interest (65) SOCIETE NATIONALE DE RECHERCHES ET D'EXPLOITATION DES PETROLES EN ALGERIE (SN REPAL) Algerian government (40) ELF/ERAP (40.15) French government agency Compagnie Financiere de Recherches Petrolieres (COFIREO) (5.33) French holding company Others (French banking and investment companies) (14.52)	50 50	390,000
FIELDS: Hassi Messaoud, Oued Gueterini		
48. SINCLAIR MEDITERRANEAN PETROLEUM Atlantic Richfield Co. NEWMONT MINING CORPORATION	28 7.5	200,000

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
VEEDOL OIL	11.5	
Tidewater Oil Corporation (now Getty Oil Co.)		
SOCIETE ANONYME FRANCAISE DE RECHERCHES ET D'EXPLOITATION DE PETROLE (SAFREP)	35	
ELF/ERAP (67.5)		
Compagnie Franciere de Recherches Petrolieres (7.42)		
Others (25.8)		
SOCIETE DE RECHERCHES ET D'EXPLOITATION DE PETROLE . .	18	
FIELDS: Rhourde El Baguel, Mesdar		
49. SONATRACH	35	69,000
Algerian government		
MOBIL OIL NORD-AFRICAINE	25	
Mobil Oil Corporation		
SOCIETE PETROLIERE FRANCAISE EN ALGERIE.	35	
PRIVATE INTEREST.	5	
FIELDS: Tin Fouye, Ohanet		
TOTAL ALGERIA.		995,000
<u>INDONESIA</u>		
50. P.T. CALTEX PACIFIC INDONESIA		718,170
Standard Oil Company of California	50	
Texaco Inc.	50	

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)	
FIELDS: Tandun, So. Bekasap, Rangau, Pungut, Petani, Pematang, Minas, Duri, Bekasap			
51. P.N. STANVAC INDONESIA		25,278	
Standard Oil Company (New Jersey).	50		
Mobil Oil Corporation.	50		
FIELDS: Andan, Lirik, Molek, Pulau North, Sago, Ukui			
52. P.T. STANVAC INDONESIA		19,423	168
Standard Oil Company (New Jersey).	50		
Mobil Oil Corporation.	50		
FIELDS: Abab, Benakat, Betun, Djirak, Pendopo, Radja, Talang Akar			
53. P.N. PERTAMBANGAN MINJAK NASIONAL (P.N. PERTAMINA) . . state agency	100	97,811	
FIELDS: Badjubang, Kenali Asam, Tempino, Gunung Kemala, Limau, Belimbing, Talang Djimar, Tandjung Tiga, Klamono, Rantau, Bongas, Kruka, Bunju, Sambodja, Tandjung, Tarakan			
TOTAL INDONESIA.		860,682	

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>QATAR</u>		
54. QATAR PETROLEUM COMPANY LTD. Ownership same as Abu Dhabi Petroleum Company Ltd. (see number 56 below)		190,400
FIELD: Duklan		
55. SHELL OIL COMPANY OF QATAR. Royal Dutch/Shell Group	100	172,600
FIELDS: Idd El Shargi, Maydan-Mahzan, Bul Hanine		
TOTAL QATAR.		363,000
<u>ABU DHABI</u>		
56. ABU DHABI PETROLEUM COMPANY LTD. British Petroleum Exploration Co. Shell Petroleum Co. Ltd.. Royal Dutch/Shell Group Compagnie Francaise des Petrole s French government Near East Development Co. Standard Oil Company (New Jersey) (50) Mobil Oil Corporation (50) Participation and Exploration Corporation C.S. Gulbenkian estate	23.7 23.7 23.7 23.7 5.2	425,000
FIELDS: Murban, Bu Hasa, Abu Jidu		

TABLE 22--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
57. ABU DHABI MARINE AREAS LTD.		270,000
British Petroleum Exploration Co.	66 2/3	
British Petroleum Company Ltd.		
Compagnie Francaise Des Petroles.	33 1/3	
FIELDS; Umm Shaif, Zakum		
	TOTAL ABU DHABI.	695,000
	TOTAL OPEC COUNTRIES	22,571,182

Source: Data compiled from World Oil, 1957-1972. Oil and Gas Journal, 1957-1972. International Petroleum Register, 1966-67. Latin America Petroleum Directory, 1971. Eastern Hemisphere Petroleum Directory, 1971-72.

* Petroleum Production figures are for 1970.

** National Iranian Oil Co. (NIOC) is not an equity partner in this venture. NIOC does share 50 percent in all profits. This is sometimes known in the literature as Agency Participation.

*** Production figures for some operations are not available to the author. In Venezuela for companies with significant amounts of production, production is often shown per individual company and does not always indicate from which field or operation the production originates.

**** Algeria as of 1970 had partially nationalized their oil industry. The state controlled all marketing, refining and transportation, but exploration and production remained largely in the private sector.

CHAPTER V

THE MAGNITUDE OF JOINT VENTURES IN CRUDE PETROLEUM PIPELINE SYSTEMS¹

Introduction

Ownership characteristics
and participating groups

Petroleum pipeline systems have several distinct characteristics. First, they are not necessarily independent money making enterprises, but may be one unit or process in an integrated industrial structure. Simon Whitney, in a study for the Twentieth Century Fund, put it this way:

. . . most big recent lines have been built as joint ventures rather than by a single company. Although continued expansion of the pipeline system can be interpreted to mean that current regulation permits a high enough return to induce new investment, it may also mean a line is usually built not as a means of earning money directly, but as a unit in an integrated petroleum structure.²

Second, the companies which own the pipeline operations are identical with no major exceptions to the companies

¹The statistics and tables used in this chapter are compiled from data in Appendix II, Tables 33 through 51.

²Simon N. Whitney, Antitrust Policies (New York: The Twentieth Century Fund, 1958), p. 123.

which own the producing operations. As an illustration, Texaco Inc. and Gulf Oil Corporation operate throughout South America. In exploration, drilling and production they usually operate in a 50-50 "contractual joint venture." For instance, in Colombia they jointly own nine producing oil fields through a contractual agreement. The Trans Andean Pipeline Company transports Texaco's and Gulf's petroleum production from these fields to a refinery at Tucamo on the Colombian coast. Thus, it might be concluded that the ownership of the pipeline system and the producing operations are different companies. This is not, however, the case. The Trans Andean Pipeline Company is a 50-50 "jointly owned subsidiary" of Texaco Inc. and Gulf Oil Corporation. As discussed in detail in Chapter III, this is a typical pattern followed by petroleum companies.³ One of the operations might be a contractual joint venture and the other a jointly owned subsidiary. Often it may be a "jointly owned subsidiary" owned by other subsidiaries. But the parent company or companies which own a producing operation, almost without exception, also own the pipeline system that services the producing operation. For this reason the participating groups and companies within each group are identical to those already discussed and listed in detail in Chapter IV.

Finally, the term pipeline operation and/or system does not refer to a single pipeline. In this study pipeline

³See Chapter III, pp. 50-58.

system refers to a commercial organization, i.e., a company or group of companies. The same pipeline system may own many individual pipelines and operate in many different parts of the world.

Statistical peculiarities

Several statistical peculiarities need to be pointed out. For example, using the total amount of pipeline mileage as an indicator of control over petroleum transportation is subject to several qualifications. The statistics generated in this study indicate that Canada and Central America have 10,693 miles of crude petroleum pipelines. This represents 31 percent of all the pipeline mileage accounted for in the study. Yet, Canada and Central America's pipeline systems carry only 6 percent of the total amount of crude petroleum transported through pipelines in the ten areas. Thus, viewed only in terms of aggregate mileage, the statistics distort the degree of control over the total amount of crude transported in a particular system.

Second, total mileage does not give a clear indication of the "amount" of crude transported in ownership classifications, i.e., joint venture versus one-owner systems. This problem would be greatly mitigated if the capacity per pipeline system were known. But, with few exceptions, the capacity per system is not available to the author. Fortunately, the problem is overcome, to a great extent, by knowing the amount of crude produced in the particular fields

served by the various pipelines. In addition, almost all the pipeline mileage in some areas is owned in joint venture operations, while the pipeline mileage in other areas is almost solely owned by one-owner operations. For instance, all the pipeline mileage in Alaska is owned in joint ventures. Likewise, joint ventures account for 94 percent of the pipeline mileage in Australasia, 84 percent in Europe and 81 percent in Canada. In contrast, 96 percent of the pipeline mileage in Central America is owned in one-owned operations.⁴

Notwithstanding the above qualifications, there is a reasonably consistent relationship between the total percent of crude petroleum production controlled through joint venture operations in an area and the total percent of crude petroleum pipeline mileage controlled through joint venture operations in the same area. Also, there is a consistent and close relationship between the percent of crude petroleum controlled in an area by the majors and the percent of pipeline mileage they control. For example, in South America the international majors control 76 percent of all crude petroleum production and 76 percent of all crude petroleum pipeline mileage. In Africa the majors control 50 percent of all petroleum production and 48 percent of all pipeline mileage. In Europe the majors control 74 percent of all petroleum production and 75 percent of all pipeline mileage.

⁴See Table 23, p. 175.

TABLE 23

WORLD CRUDE PETROLEUM PIPELINE MILEAGE AND THE PERCENT
PRODUCED BY JOINT VENTURES, OUTSIDE THE UNITED STATES
AND COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Crude Petroleum Pipeline Mileage		Average Number of Companies Per Joint Venture
	Total	Percent in Joint Venture Operations	
Asia Pacific	1,594	45	2.0
Australasia	735	94	3.0
Alaska and North Slope	172	100	4.2
Africa	5,212	52	3.5
Canada	8,139*	81	3.4
Central America and West Indies	2,554	4	2.0
Europe	3,594	84	5.3
Middle East	5,936	76	4.0
North Sea	0	0	0
South America	6,378	29	2.9
Total	34,314 (33,299)*	59	3.7

Source: Calculated from data in Appendix II, Tables
33 through 51.

*Ownership not available to author for three pipeline
systems in Canada totalling 1,015 miles. Mileage for these
lines is not used in computing percentages.

The control of total pipeline mileage and the amount of petroleum processed through a particular line are both important variables. Where the data permit, each will be used in conjunction with the other in this discussion.

A General Overview

The data compiled for this study indicate 119 operating pipeline systems in the ten areas. Ownership is identified for 116 of the systems--73 are joint ventures and 38 are one-owner operations. Total mileage for all pipeline operations is 34,314 miles.

Sixty-three percent of the operations are joint ventures. This is similar to the production statistics, where 66 percent of the producing operations are joint ventures. The typical joint venture pipeline system is participated in by 3.7 companies. This is slightly higher than the 3.4 average for producing operations. Further, the 73 joint venture operations represent 59 percent of total pipeline mileage.⁵ In these 73 operations there are 619 interlocking ownership ties between the majors, the international minors and the government-owned companies.⁶

International majors

The international majors are represented in 9 of the 10 areas. They participate in 55 of the 73 joint venture

⁵See Table 23, p. 175.

⁶See Table 30, p. 223.

pipeline operations.⁷ Also, the seven international majors in these 55 joint ventures are involved in 443 interlocking ownership ties. They have interlocking ownership ties with each other 148 times, with international minors 142 times, with government-owned companies 37 times, and with local private capital 17 times.⁸

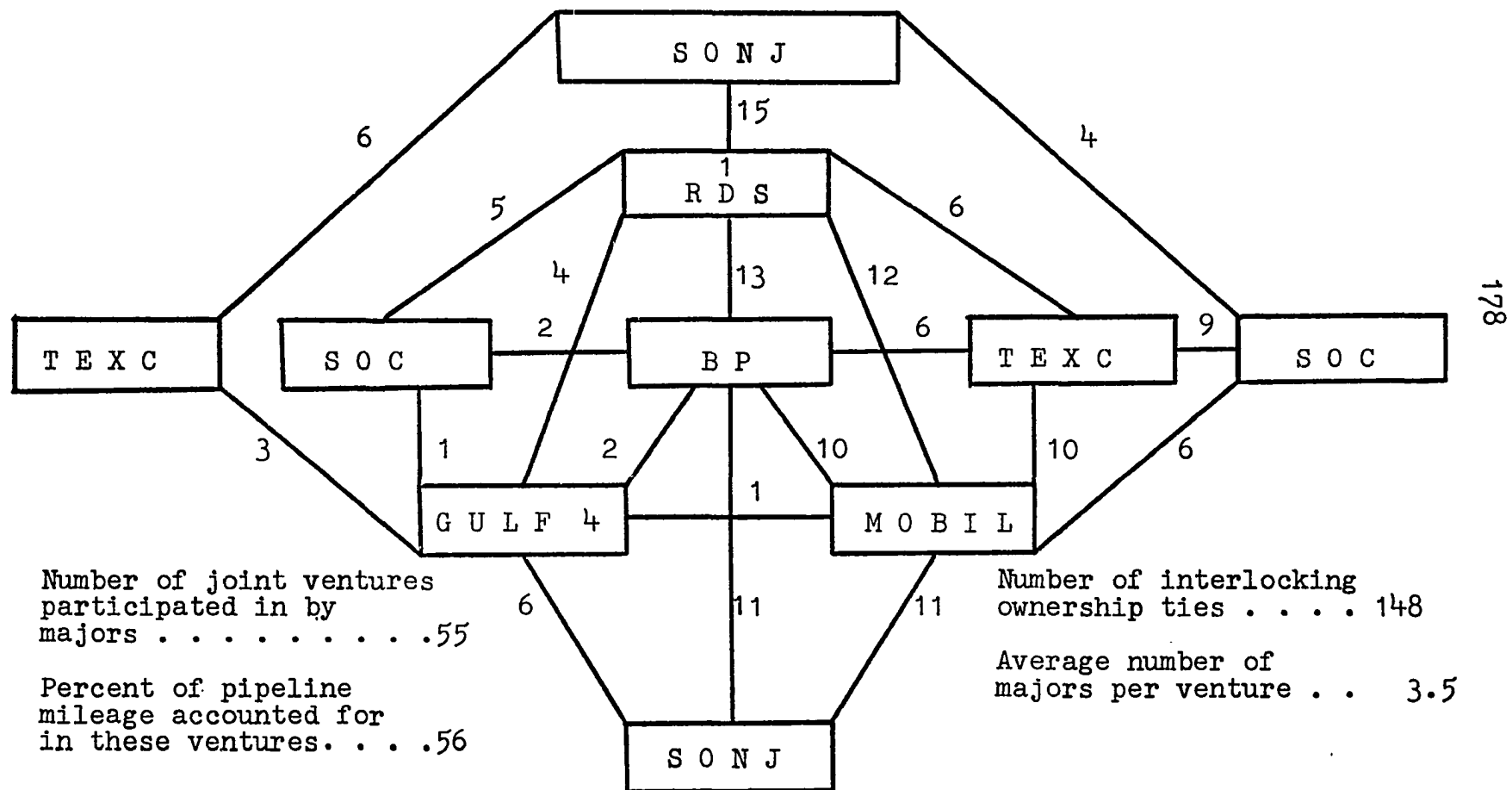
For example, Standard Oil Company (New Jersey) (Exxon) participates in 24 joint ventures. In these 24 ventures Standard of New Jersey (Exxon) has 53 interlocking ownership ties with other majors. Similarly, Royal Dutch/Shell Group, in 24 joint ventures, has 56 ownership interlocks with other majors; British Petroleum Company Ltd., in 17 joint ventures, has 44 ownership interlocks; Mobil Oil Corporation, in 20 joint ventures, has 50 ownership interlocks; Texaco Inc., in 17 joint ventures, has 40 ownership interlocks; Gulf Oil Corporation, in 16 joint ventures, has 21 ownership interlocks and Standard Oil Company of California in 10 joint ventures, has 27 ownership interlocks with the other majors.

Royal Dutch/Shell Group has more interlocking ownership ties with all six participating groups than any other major. Royal Dutch/Shell Group has 123 interlocking ownership ties, Standard of New Jersey (Exxon) has 113, Mobil Oil Corporation has 94, Texaco Inc. has 71, Gulf Oil Corporation

⁷See Table 26, p. 185.

⁸See Figure 4, p. 178 and Table 30, p. 223.

Fig. 4.--Interlocking ownership ties in pipeline operations among the international majors--all areas, as of 1970.



Source: Calculated from data in Appendix II, Tables 33 through 51.

TABLE 24

WORLD CRUDE PETROLEUM PIPELINE MILEAGE AND JOINT VENTURE
PIPELINE OPERATIONS WHERE THE MAJORS CONTROL 50 PERCENT
OR MORE INTEREST, OUTSIDE THE UNITED STATES AND
COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Mileage	Operations Where the Majors Control 50 Percent or More Interest	
		Number of Op- erations	Percent of Pipeline Mileage in Joint Venture Operations
Asia Pacific	1,594	0	0
Australasia	735	1	62
Alaska and North Slope	172	1	13
Africa	5,212	8	43
Canada	8,139*	13	60
Central America and West Indies	2,554	0	0
Europe	3,594	10	68
Middle East	5,936	11	75
North Sea	0	0	0
South America	6,378	5	28
Total	34,314 (33,299)*	49	47

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Ownership not available to author for three pipeline systems in Canada totalling 1,015 miles. Mileage for these lines is not used in computing percentages.

TABLE 25

THE NUMBER OF CRUDE PETROLEUM PIPELINE OPERATIONS AND
 PERCENT OF MILEAGE ACCOUNTED FOR BY THE MAJORS IN
 ONE-OWNER OPERATIONS, OUTSIDE THE UNITED STATES
 AND COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Pipeline Mileage in One-Owner Operations	Number of One-Owner Operations	Percent of Pipeline Mileage in One-Owner Operations
Asia Pacific	0	0	0
Australasia	46	1	6
Alaska and North Slope	0	0	0
Africa	310	2	6
Canada	447	2	6
Central America and West Indies	120	1	5
Europe	245	4	7
Middle East	0	0	0
North Sea	0	0	0
South America	3,049	6	48
Total	4,217	16	13

Source: Calculated from data in Appendix II, Tables
 33 through 51.

has 56, Standard of California has 45, and British Petroleum Company Ltd., has 44.⁹

The majors participate in 55 joint venture operations and in 49 of these control 50 percent or more interest. The 49 operations, where the majors are the majority stockholders, account for 15,757 miles and represent 47 percent of the total pipeline mileage. The majors also own 16 one-owner operations which account for 4,217 miles and represents 13 percent of the total mileage. Thus, the international majors control 56 percent of the number of pipeline operations and 60 percent of the total pipeline mileage.¹⁰ With the exception of South America, the international majors seldom operate in one-owner pipeline systems. They have no one-owner operations in Asia Pacific, The North Sea, the Middle East or Alaska. In each of three areas (Australasia, Africa and Canada) the majors own 6 percent of the total pipeline mileage in one-owner operations. In Central America they own 5 percent of the pipeline mileage in one-owner operations and 7 percent in Europe.¹¹

⁹See Figure 4, p. 178 and Table 30, p.

¹⁰See Table 24, p. 180, Table 25, p. 181 and Table 26, p. 185.

¹¹See Table 25, p. 181.

International minors and
government-owned companies

The international minors and government-owned companies also operate pipeline systems in all the areas except the North Sea. The international minors participate in 38 joint venture pipeline systems, local government capital in 10, non-host government capital in 10 and local private capital in 8.¹²

As in producing operations, participation by local private capital is almost exclusively limited to the more industrialized areas. Of the eight pipeline operations where local private capital participates--five are in Europe and one each in Canada, Australasia and Central America.

The areas where government-owned companies participate in pipeline systems are also consistent with the joint venture ownership patterns in producing operations. Of the 20 pipeline operations where government-owned companies participate, 9 are in Africa and 4 in the Middle East.¹³

As noted above, the international minors have 142 interlocking ownership ties with the international majors. They also have 58 interlocking ownership ties with each other; 25 with government-owned companies and 18 with local private capital. The government-owned companies have only 15 interlocking ties with each other.

¹²See Table 26, p. 185.

¹³Ibid.

Cie Francaise des Petroles (CFP) is the most active of the international minors. CFP participates in 11 joint ventures and has 38 interlocking ownership ties with the seven majors. Atlantic Richfield Company (ARCO) and Phillips Petroleum Company are the next most active of the international minors. ARCO participates in 8 joint ventures and Phillips participates in 6. Two international minors (Tenneco Inc. and Occidental Petroleum Company) and one government-owned company (Petroleos Mexicanos, Mexico's state-owned company) do not participate in any pipeline joint venture operations.

The international minors and government-owned companies control a majority interest in twenty-four joint venture pipeline systems. These twenty-four systems represent only 12 percent of the total pipeline mileage in the 10 areas.¹⁴

The minors and government-owned companies control an additional 28 percent of the total pipeline mileage in twenty-seven one-owner operations. Eleven of these are owned by international minors, and fourteen are owned by local government-owned companies with the remaining two owned by local private capital. The twenty-seven one-owner operations total 9,436 miles of pipeline.¹⁵ The eleven systems operated by the international minors total only 1,490 miles.

¹⁴See Table 27, p. 188.

¹⁵See Table 28, p. 189.

TABLE 26

WORLD CRUDE PETROLEUM PIPELINE OPERATIONS, JOINT VENTURE OPERATIONS, AND
PARTICIPATION BY COMPANY CLASSIFICATION, OUTSIDE THE UNITED STATES
AND COMMUNIST BLOC COUNTRIES, AS OF 1970

Area	Number of Pipe- line Opera- tions	Number of Joint Venture Pipeline Opera- tions	Number of Joint Venture Participations by Company Classification					
			Majors	Minors	Local Capital		Gov't. Non- Host Country	Other*
					Private	Gov't.		
Asia Pacific	4	1	0	1	0	1	0	0
Australasia	3	2	1	2	1	0	0	0
Alaska and North Slope	5	5	4	5	0	0	0	0
Africa	17	13	8	4	0	2	7	2
Canada	25	18	14	9	1	0	1	12
Central America and West Indies	3	1	0	0	1	1	0	0
Europe	19	12	11	5	5	3	1	2
Middle East	21	13	12	9	0	3	1	9
North Sea	0	0	0	0	0	0	0	0
South America	22	8	5	3	0	0	0	2
Total	119 (116)**	73	55	38	8	10	10	27

Source: Calculated from data in Appendix II, Tables 33 through 51.

TABLE 26--Continued

*Companies in this column are private companies that are not included in the minors category because of size or a limited number of operations on an international scale.

**Ownership not available to author for three pipeline systems in Canada totalling 1,015 miles. Mileage for these lines is not used in computing percentages.

Many of the pipelines controlled by the international minors are small crude lines which connect with major trunk lines controlled by the international majors. This pattern prevails in Canada, South America, Africa, Europe and the Middle East. For example, Amoco Italia SPA, a wholly owned subsidiary of Standard Oil Company (Indiana), operates a 50 mile line in Italy; R. J. Reynolds Industries Inc., operates one 50 mile line in Kuwait and another 3¹/₄ mile line in the Neutral Zone; Getty Oil Company operates a 32 mile line in Kuwait; in South America, Tenneco Inc. operates a 50 mile line and Atlantic Richfield Company operates a crude line 4⁷/₈ miles long. No international minor controls a principal one-owner pipeline system.

On the other hand, the government-owned companies own 1¹/₄ one-owner operations, totalling 7,659 miles. In the Middle East, Iraq, Syria, Turkey, Israel and Iran, all have state-owned companies which operate pipeline systems. SONATARCH, Algeria's state agency, operates 2,035 miles of crude petroleum pipelines. PEMEX, Mexico's state company, operates a 2,33¹/₄ mile crude gathering system. In South America, Argentina, Brazil, Chili, Peru and Bolivia all have state companies which operate crude pipeline systems, as do Burma and Indonesia in the Asia Pacific areas.

Two one-owner pipeline systems are owned by local private capital--Spain's Empresa Nacional Calvo Sotels S.A. operates a 162 mile system and Italy's Industrie Chimiche

TABLE 27

WORLD CRUDE PETROLEUM PIPELINE MILEAGE AND JOINT VENTURE
PIPELINE OPERATIONS WHERE THE MINORS AND/OR
GOVERNMENT-OWNED COMPANIES CONTROL 51
PERCENT OR MORE INTEREST, OUTSIDE
THE UNITED STATES AND COMMUNIST
BLOC COUNTRIES, AS OF 1970

Area	Pipe- line Mileage	Operations Where Minors and/or Government-owned Companies Control 51 Percent or More Interest	
		Number of Operations	Percent of Pipeline Mileage in Joint Venture Operations
Asia Pacific	1,594	1	45
Australasia	735	1	32
Alaska and North Slope	172	4	87
Africa	5,212	5	9
Canada	8,139*	5	21
Central America and West Indies	2,554	1	4
Europe	3,594	2	16
Middle East	5,936	2	1
North Sea	0	0	0
South America	6,378	3	1
Total	34,314	24	12
	(33,299)*		

Source: Calculated from data in Appendix II, Tables 33 through 51.

*Ownership not available to author for three pipeline systems in Canada totalling 1,015 miles. Mileage for these lines is not used in computing percentages.

TABLE 28

THE NUMBER OF CRUDE PETROLEUM PIPELINE OPERATIONS AND
 PERCENT OF MILEAGE ACCOUNTED FOR BY THE MINORS
 AND/OR GOVERNMENT-OWNED COMPANIES IN
 ONE-OWNER OPERATIONS, OUTSIDE THE
 UNITED STATES AND COMMUNIST
 BLOC COUNTRIES, AS OF 1970

Area	Pipeline Mileage in One-Owner Operations	Number of One-Owner Operations	Percent of Pipeline Mileage in One-Owner Operations
Asia Pacific	874	3	55
Australasia	0	0	0
Alaska and North Slope	0	0	0
Africa	2,185	2	42
Canada	873	2	13
Central America and West Indies	2,334	1	91
Europe	337	3	9
Middle East	1,396	8	23
North Sea	0	0	0
South America	1,437	8	23
Total	9,436	27	28

Source: Calculated from data in Appendix II, Tables
 33 through 51.

Italiana Del Petrole operates a 125 mile system.

In summary, there is a close relationship between the statistics in producing operations and pipeline systems concerning: 1) ownership and control, and 2) the overall dominance of the international majors. Further, in no principal petroleum operation is the parent ownership of a producing operation and the parent ownership of the pipeline system that serves it different companies.

Joint Venture and One-owner
Pipeline Systems by Area

Middle East

The international majors are highly concentrated through joint venture operations in those areas where the greatest use of pipeline transportation occurs. The Middle East accounts for approximately 50 percent of the petroleum production in the ten areas (1970). This petroleum is transported in twenty-one pipeline systems. Thirteen are joint venture operations. The majors have controlling interest in eleven of these and have minority participation in one other. In these twelve pipeline operations 12.5 million barrels of oil per day (1970) are transported from inland and offshore fields to tanker terminals and refineries. Thus 90 percent of the total petroleum production in the Middle East is transported through 12 joint venture pipeline systems.¹⁶

¹⁶See Table 9, p. 99.

For example, Kuwait Oil Company (KOC) transports 2.7 million barrels of petroleum per day (1970) from its inland fields to tanker terminals at Mina-al-Ahmadi. KOC is a 50-50 jointly owned subsidiary of Gulf Oil Corporation and British Petroleum Company Ltd. and operates a 231 mile gathering system servicing eight different fields. Another important pipeline system in the Middle East is owned by the Arabian American Oil Company (ARAMCO). ARAMCO operates a 900 mile crude gathering system which transports 3.5 million barrels of oil per day (1970) from thirteen inland fields to its tanker terminals at Ras Tanura. Standard Oil Company (New Jersey (Exxon), Standard Oil Company of California and Texaco Inc. each own 30 percent interest in ARAMCO. Mobil Oil Corporation owns the other 10 percent. ARAMCO's fields in the Middle East account for approximately 25 percent of the known crude oil reserves in the ten areas.¹⁷ Further, KOC and ARAMCO account for approximately 50 percent of all the petroleum transported through pipelines in the Middle East.

In the 12 joint venture pipeline systems participated in by the majors there are typically 3 or 4 majors per venture.¹⁸ Also, in these 12 operations the 7 majors have a total of 63 interlocking ownership ties with each other.

Seventy-six percent of the pipeline mileage in the

¹⁷See Table 15, p. 123.

¹⁸See Table 23, p. 175.

Middle East is owned in joint venture operations. The international majors control 4,464 miles, out of a total 5,936 miles, through joint venture operations.¹⁹ Only one percent of the joint venture mileage in the Middle East is not controlled by international majors. Further, 90 percent of all the oil produced in the Middle East is transported through the majors' pipeline systems.

In contrast, there are eight one-owner pipeline systems in the Middle East. None of these is owned by the international majors. These eight operations account for 1,396 miles of pipeline and represent 23 percent of the Middle East's total pipeline mileage. Three are owned by 2 international minors and 5 by state-owned companies. Getty Oil Company operates a 32 mile crude line from its Wafra field in the Neutral Zone to Mina Saud. American Independent Oil Company, a wholly owned subsidiary of R. J. Reynolds Industries Inc., operates two crude lines from the Wafra field to Mena Abdulla. Turkey, Israel, Iran, Syria and Iraq each have government-owned companies that operate pipeline systems.²⁰ These eight one-owner systems account for approximately ten percent of the crude production transported through pipelines in the Middle East.

¹⁹See Table 24, p. 180.

²⁰See Appendix II, Table 48, p. 318.

Europe

Europe produces 308,713 barrels of oil per day (1970). However Europe refines 14.4 million barrels of oil per day (1970). Virtually all of that continent's oil consumption is dependent on imported crude from Africa, South America and the Middle East.

Europe has an elaborate system of crude petroleum trunk lines to transport imported crude from shore terminals to 128 refineries located throughout the continent. This consists of nineteen pipeline operations totalling 3,594 miles. Twelve of these, totalling 3,012 miles, are joint ventures. This represents 84 percent of the pipeline mileage.²¹

The international majors have ownership in fifteen pipeline systems in Europe. They have controlling interest in 10 joint venture operations, totalling 2,454 miles, and operate 4 one-owner systems, totalling 245 miles. Thus, the international majors have controlling interest or own 14 of Europe's 19 pipeline operations, accounting for 75 percent of the total pipeline mileage in Europe.²²

In addition, Mobil Oil Corporation, Standard Oil Company (New Jersey) (Exxon). The British Petroleum Company, Ltd., and Royal Dutch/Shell Group jointly own 41 percent interest in the Adriatic-Vienna Pipeline (AVP). AVP is a 258

²¹See Table 23, p. 175, and Table 26, p. 185.

²²See Table 24, p. 180, and Table 25, p. 181.

mile crude line which connects the major Trans Alpine trunk line to several refineries near Vienna. In all, the international majors participate in eleven joint venture pipeline systems in Europe. In these 11 systems the majors have 46 interlocking ownership ties. There are typically 3 or 4 majors participating in each joint venture.

There are only four pipeline systems in Europe that are not controlled by the seven majors--the AWP system mentioned above, 2 state-owned operations and 1 operation owned by private Spanish capital. For example, Italy's Ente Nazionale Idrocarburi (ENI) owns and operates a 300 mile trunk line from Genoa, Italy to Algie, Switzerland. Industrie Chi'miche Italiane Del Petrolio, also an Italian state company, operates a 125 mile crude line from Manghera, Italy to Mantua. Empresa Nacional Colvo Sotelo, S.A. (owned by private Spanish capital) operates a 162 mile crude line from the Malaga fields in the Ebro river delta to a refinery at Puerto Llano.

In summary, approximately 70 percent of all crude petroleum transportation via pipelines (accounted for in the ten areas) occurs in Europe and the Middle East. The seven majors dominate the pipeline systems in both areas through joint ventures. In both areas, they have: 1) controlling interest in 21 out of the 23 joint venture operations and 2) 109 interlocking ownership ties with each other.

Africa

Unlike the Middle East and Europe, where the international majors dominate pipeline systems, the international minors and government-owned companies have had considerable success in Africa. Africa's pipeline statistics are similar to the data on producing operations, i.e., as in the case for producing operations, control of the pipeline systems is divided almost evenly between the majors on the one hand and the international minors and government-owned companies on the other. The seven majors have controlling interest in 8 joint venture pipeline operations and own 2 one-owner operations. These ten operations account for 49 percent of the total pipeline mileage in Africa.²³ The minors and government-owned companies have controlling interest in 5 joint venture operations and own 2 one-owner operations. These seven systems account for 51 percent of the total pipeline mileage.²⁴ As indicated in Chapter IV, the control of crude production is also divided approximately 50-50 between the international majors on the one hand and the international minors and government-owned companies on the other.

In Africa the statistics indicating overall ownership between the various groups of companies (majors versus minors and/or government-owned) are different from those in any other area. Nonetheless, the statistics concerning the

²³See Table 24, p. 180 and Table 25, p. 181.

²⁴See Table 27, p. 188 and Table 28, p. 189.

number of joint venture versus one-owner operations are similar to those in most of the other areas. But pipeline mileage in joint venture versus one-owner operations is dissimilar. For example, there are seventeen pipeline operations in Africa, totalling 5,212 miles. Thirteen of these are joint ventures. Thus, 76 percent of Africa's pipeline operations are joint ventures. Yet, these joint venture operations account for only 52 percent of the total pipeline mileage. This relatively low percentage of joint venture pipeline mileage in relationship to the high percentage of joint venture operations is due to Algeria's nationalization of its pipeline system. In 1969 Algeria nationalized 2,035 miles of pipelines representing 40 percent of Africa's total pipeline mileage. Further, prior to nationalization all of Algeria's pipeline systems were joint venture operations.

Three countries in Africa (Algeria, Nigeria and Libya) typify the continent's petroleum industry. They also provide examples of ownership pattern extremes among the three major participants in the petroleum industry. Africa produces 5.9 million barrels of oil per day (1970). Algeria, Nigeria and Libya together produce 5.4 million barrels of oil per day (1970), or 90 percent of Africa's total production. Also, the three countries have 4,218 miles of pipeline, which accounts for 81 percent of Africa's total pipeline mileage.

Algeria's petroleum industry is controlled almost completely by international minors and government-owned

companies. All marketing, refining and transportation facilities have been nationalized. Thus, no joint venture pipeline systems exist. Sonatarch, Algeria's state-owned company, controls all pipeline operations. Petroleum production totals 995,000 barrels per day (1970) which is 16 percent of Africa's total petroleum production. Algeria is the 3rd largest petroleum producer in Africa. Exploration and production activities have not been totally nationalized. But most of this activity is carried on by government-owned companies and international minors. Only two international majors (Mobil Oil Corporation and the Royal Dutch/Shell Group) are active in Algeria. In addition, Mobil and RDS always participate as minority partners.

Nigeria's petroleum industry is controlled almost entirely by the international majors. Nigeria accounts for 20 percent of Africa's petroleum production. It is the 2nd largest producing country on the continent, and accounts for 6 percent of Africa's pipeline mileage. The Royal Dutch/Shell Group (RDS) and British Petroleum Company Ltd. (BP) dominate the industry in this country. Shell BP Development Co. of Nigeria Ltd., is a 50-50 jointly owned subsidiary of RDS and BP. Shell-BP produces 750,000 barrels of oil per day (1970). This represents 66 percent of Nigeria's production. The oil is transported from several inland fields to Port Harcourt by the Trans Niger Pipeline Company's 184 mile crude gathering system. Trans Niger is also a 50-50 jointly owned

subsidiary of RDS and BP. Gulf Oil Corporation, acting independently, owns seven fields which produce 215,000 barrels of oil per day (1970) and owns one 50 mile pipeline gathering system.

The above two operations account for 85 percent of Nigeria's petroleum production and 79 percent of total pipeline mileage. Another 5 percent of Nigeria's crude production is accounted for in operations run by the majors. Mobil Oil Corporation has three fields which produce 55,000 barrels per day (1970). Texaco Inc. and Standard Oil Company of California, in a 50-50 joint venture, have one offshore field which produces 10,000 barrels of oil per day (1970). Thus, ninety percent of Nigeria's crude production and 79 percent of its pipeline mileage is owned by international majors.

Libya, which accounts for 55 percent of Africa's petroleum production, divides its production and pipeline operations almost evenly between the international majors on the one hand, and the international minors and government-owned companies, on the other. Libya produces 3.3 million barrels of oil per day (1970) in 8 operations. Six are joint ventures and 2 are one-owner systems. The joint venture operations account for 62 percent of Libya's crude production.

The international majors have controlling interest in 4 joint ventures and 1 one-owner operation, which accounts for 54 percent of Libya's production. The

international minors and government-owned companies control the other 46 percent of Libya's production in 2 joint ventures and 1 one-owner operation. There are seven pipeline operations in the country, totalling 1,885 miles. Five are joint ventures and two are one-owner systems. The international minors and government-owned companies have controlling interest in two pipeline operations, totalling 775 miles. One is a joint venture and the other is a one-owner operation. Together they account for 42 percent of Libya's pipeline mileage. The international majors have controlling interest in the other five pipeline systems. Four of these are joint ventures. The five lines account for 58 percent of Libya's pipeline mileage.

Thus, Africa is similar to the other areas in terms of joint venture versus one-owner control. But it is dissimilar in that no one group exhibits overwhelming ownership dominance.

In summary, three countries account for 90 percent of Africa's producing operations and 80 percent of the pipeline systems. In Libya, control is divided almost evenly between the international majors on the one hand and the international minors and government-owned companies on the other. In Algeria the minors and government-owned companies dominate the industry. In Nigeria the international majors have almost complete control.

Central America and Asia Pacific

Central America and Asia Pacific are the only two areas where the seven majors do not have a substantial interest in pipeline systems.²⁵ In Central America there are only two countries with substantive petroleum activity--Mexico and Trinidad and Tobago. Only three pipeline operations were found in these two countries. The only major pipeline system is operated by Mexico's state-owned company, Petroleos Mexicanos (PEMEX). PEMEX operates a 2,334 mile crude gathering system, which accounts for 91 percent of the total pipeline mileage in this area. As noted in Chapter IV, PEMEX also accounts for 78 percent of all crude production in the area.

The other two pipeline systems are on the island of Trinidad. Texaco Trinidad Inc., is a wholly owned subsidiary of Texaco Inc. Texaco Trinidad operates a 120 mile crude gathering system which transports oil from its 45,000 barrel per day (1970) Guayaguayare field to a 361,000 barrel per day refinery at Pointe Pierre. The oil field operation, pipeline system and refinery are all owned by "one" company, Texaco Trinidad Inc. It is a rare occurrence for three petroleum activities which are interconnected to be owned by a company with the same name and legal identity.

The only other pipeline system is owned by Trinidad-Tesoro Petroleum Co., Ltd., which is a 50-50 joint venture

²⁵See Table 24, p. 180 and Table 25, p. 181.

between the Trinidad and Tobago government and the Tesoro Petroleum Corporation. The ownership of the Tesoro Petroleum Corporation is not known to the author. The operation consists of a 100 mile crude gathering system in and around Pointe Fortin and Pointe Pierre.

Summarizing, in Central America 96 percent of the pipeline mileage is in one-owner operations.²⁶ The international majors control only 5 percent of the pipeline mileage. This is in a one-owner operation conducted by a wholly owned subsidiary of Texaco Inc.

In Asia Pacific there are four major pipeline systems. Three are one-owner operations and one is a joint venture. The joint venture system is operated by Oil India Private (OIP), a 50-50 jointly owned subsidiary between Burmah Oil Co., Ltd. and the Indian government. Burmah Oil is a private English company and carries on extensive petroleum activities in the Asia Pacific area. OIP operates one 270 mile pipeline that transports 58,000 barrels of oil per day (1970) from the Moran and Naharkatiya fields to the refinery at Gauhati. OIP also operates a 450 mile pipeline that connects the refineries at Barauni and Gauhati, and is the only crude petroleum pipeline operation in India.

Indonesia also has only one pipeline operation, P.N. Pettambangan Minjak Nasional (P.N. PERTAMINA). It operates seven crude gathering systems that transport crude from 40 or

²⁶See Table 25, p. 181 and Table 28, p. 189.

50 inland fields to shoreline terminals and refineries.

Indonesia has seven refineries, with a combined total capacity of 420,000 barrels of oil per day (1970). Both the refining and pipeline operations were nationalized in 1962. But, the producing operations totalling 860,682 barrels of oil per day (1970), were left in the private sector.

Burma has one 320 mile pipeline system connecting its two refineries located at Onouk and Lyriam. The system is operated by Peoples Oil Industry (POI), a Burmese government state agency. The only other crude pipeline in the area is operated by Attock Oil Co., Ltd. Attock Oil operates a 104 mile crude line running from the Dhuban and Balkassar Oil fields in Pakistan to a refinery at Rawalpindi.

In summary, there are four pipeline operations accounting for 1,594 miles in the Asia Pacific area. Fifty-five percent of the total is in one-owner operations. All the pipeline systems are controlled by international minors and/or government-owned companies. Thus, in Central America and the Asia Pacific, the international majors control only one 120 mile pipeline operation. Pipeline systems in these areas are controlled by local capital from the private and/or government sectors.

South America

South America is the third largest petroleum producer

among the ten areas.²⁷ It has the second largest pipeline system, with twenty-two operations totalling 6,378 miles.²⁸ Also, like most areas where substantial petroleum activity occurs, it is dominated by the international majors. But, unlike most prolific petroleum regions, ownership in South America is effected primarily through one-owner operations. For example, fourteen of the 22 operations are one-owner systems. These 14 operations account for 71 percent of the pipeline mileage. The international majors operate 6 of the 14 one-owner operations. These 6 systems account for 48 percent of the pipeline mileage in South America. The other 8 one-owner systems are operated by international minors or government-owned companies. These 8 systems account for an additional 23 percent of the total pipeline mileage in one-owner operations.²⁹ The remaining 29 percent of South America's pipeline mileage is owned in joint venture operations. Five of these operations account for 1,802 miles and are controlled by the majors. Three are controlled by the international minors and/or government-owned companies, and account for only 90 miles.³⁰

In summary, the international majors control 1,802 pipeline miles through 5 joint ventures and 3,049 pipeline

²⁷See Table 9, p. 99.

²⁸See Table 23, p. 175.

²⁹See Table 25, p. 181 and Table 28, p. 189.

³⁰See Table 24, p. 180 and Table 27, p. 188.

miles through 6 one-owner systems, representing 76 percent of the pipeline mileage. The international minors and government-owned companies control 90 pipeline miles through 3 joint ventures and 1,457 pipeline miles through 8 one-owner operations, representing 24 percent of the pipeline mileage.

The statistics for pipeline systems are almost identical to those for producing operations. As an illustration, forty percent of the producing operations in South America are joint ventures and 36 percent of the pipeline systems are joint ventures. Similarly, the international majors control 76 percent of all crude production and 76 percent of all pipeline mileage.

Canada

Canada has more pipeline operations (twenty-five) and pipeline mileage (8,139) than any of the other nine areas. It is similar to the other areas in that most of the operations are joint ventures and the majors control most of the operations. The ownership of three systems totalling 1,015 miles could not be identified. The statistical compilations do not include these operations. Thus, the statistics are based on 22 systems, with pipeline mileage totalling 7,124 miles. Eighteen of the 22 operations are joint ventures. The international majors have controlling interest in 13 of these. Further, these 13 represent 60 percent of the pipeline mileage. The international minors have controlling interest in the other 5 joint ventures, which account for 21

percent of Canada's pipeline mileage. Hence, 81 percent of Canada's pipeline mileage is operated through joint ventures.³¹

Canada's most prominent oil producing region centers around Edmonton, Alberta. Alberta produces 727,135 barrels of oil per day (1970). This is approximately 60 percent of Canada's total production. Primarily the oil reaches the United States' markets in two crude petroleum truckline systems--The Interprovincial Pipe Line and the Trans Mountain Oil Pipe Line Company. The crude petroleum segment of the Interprovincial Pipe Line (IPL), is 1,100 miles long. IPL runs from Edmonton, Alberta, to Lake Superior. Over the 1,100 mile span IPL feeds sixteen refineries and is connected with thirty-two smaller crude gathering systems. The smaller gathering systems transport crude from scattered fields to IPL, the main trunk line. IPL is owned by subsidiaries of Gulf Oil Corporation, Standard Oil Company (New Jersey) (Exxon), Standard Oil Company (Indiana) and the Royal Dutch/Shell Group.

The Trans Mountain Oil Pipe Line Co. (TOPL) operates a 723 mile trunkline and serves the same function as IPL. except that it runs from Edmonton, Alberta to tanker terminals at Vancouver, British Columbia. TOPL is owned by subsidiaries of Standard Oil Company of California, Royal Dutch/Shell Group, Standard Oil Company (New Jersey) (Exxon)

³¹See Table 23, p. 175.

and Standard Oil Company (Indiana).

There are four one-owner pipeline operations in Canada. Two are owned by international majors and two by international minors. The 4 operations combined account for 19 percent of Canada's petroleum pipeline mileage.

Alaska and Australasia

Alaska and Australasia combined have eight pipeline operations, all except one are joint ventures. In Australia, Shell Refinery (Australia) Pty. Ltd., operates the single one-owner system. Shell has a 12 mile crude line from Gore Bay in Victoria to its 75,000 barrel per day refinery at Clyde. Shell also operates a 3¹/₄ mile crude line from its Newport Installation at Gore Bay to a 112,000 barrel per day refinery at Geelong. There are two other pipeline systems in Australia. Moonie Pipeline Co. Pty. Ltd. (MPC) operates a 23¹/₄ mile crude gathering system from its fields in Southern Queensland to the coastal city of Brisbane. MPC is owned by Union Oil Development Corporation, Tenneco Inc., Australian Oil and Gas Corporation and International Oil Exploration N.L. of Australia. The latter two firms are owned by Australian local private capital. The other pipeline system is owned by Esso Exploration Australia Inc., and Hematite Pty. Ltd. Esso and Hematite are subsidiaries of Standard Oil Company (New Jersey) (Exxon) and Broken Hill Proprietary Co., Limited (BHP). Esso and BHP operate a 455 mile crude gathering system in the Bass Strait. Bass Strait production

averages 75,000 barrels per day (1970). The industry predicts production of 500,000 barrels per day in these fields in 1974.

Alaska's five pipeline systems, located in southern Alaska in and around the Cook Inlet, are all joint ventures. The international minors control four. The other system, Kenai Pipe Line Co., is a 50-50 jointly owned subsidiary owned by Standard Oil Company of California and Atlantic Richfield Company. At present (early 1973) the international minors control the pipeline systems in Alaska. This may change when the Prudhoe Bay and North Slope areas begin commercial production. As discussed in Chapter IV, reserves in the Bay area are estimated between 30 or 50 billion barrels. Several different groups are studying alternative routes for transporting the North Slope petroleum. Among the more active groups are Alyeska Pipeline Service Company, Mackenzie Valley Pipe Line Research Ltd. and the North West Project Study Group. Majority interest in these groups is controlled by the international majors. For instance, the Alyeska Pipeline Service Company is owned by Atlantic Richfield Company (27.5 percent), British Petroleum Company Ltd. (27.5 percent), Humble Oil and Refining Co. (25 percent), Mobil Oil Corporation (8.5 percent), Phillips Petroleum Company (3.25 percent), Union of California (3.25 percent), Amerada Hess Corporation (3 percent), and Home Oil Company (2 percent). Humble Oil and Refining Company is a wholly owned subsidiary

of Standard Oil Company (New Jersey) (Exxon). Standard of New Jersey (Exxon), BP and Mobil together control 61 percent interest in Alyeska Pipeline Service Company. Hence, in the near future the international majors may dominate the producing operations and the pipeline systems in these two areas.

Summary

The study accounts for 119 pipeline systems. Seventy-three are joint ventures and 43 are one-owner operations. Ownership for three systems could not be identified. Fifty-nine percent of the total pipeline mileage is in joint venture operations and 41 percent is in one-owner systems.

Pipeline systems in the major oil producing and oil importing areas are controlled almost exclusively by the international majors through joint venture operations. Europe and the Middle East have a 9,530 mile pipeline transportation system. This represents only 29 percent of the total pipeline mileage accounted for in the study. Nonetheless, approximately 70 percent of all crude petroleum transportation through pipelines occurs in Europe and the Middle East. The seven majors dominate the pipeline systems in both areas through joint ventures. The typical pipeline joint venture in Europe and the Middle East will have 3 or 4 majors as members. In both areas, the majors have: 1) controlling interest in 21 out of 23 joint venture operations and 2) in the 21 operations they have 109 interlocking ownership ties.

The statistics on joint venture versus one-owner operations in Africa are similar to those in Europe and the Middle East. However, in Africa control of the petroleum pipeline systems is evenly divided between the international minors and government-owned companies and the international majors.

In South America the international majors dominate pipeline operations, but they operate primarily in one-owner ventures.

In two areas, Central America and Asia Pacific, only 2 of 7 pipeline operations are joint ventures with government-owned companies owning nearly all the pipeline operations in these areas.

As in producing operations, the primary form of ownership in pipeline systems is "joint ownership of the means of production" through the mechanism of joint ventures.

CHAPTER VI

SUMMARY

During the last several decades there has been a phenomenal increase in the growth of multinational corporations. The idea that before many years we may see supranational companies incorporated under treaty arrangements without a domicile in any particular nation aptly depicts the views of academic scholars such as Adolf A. Berle and Gardiner C. Means and noted business leaders such as Carl A. Gerstacker and George W. Ball. Some are saying that the term multinational corporation is a misnomer and that a better description for this new form of worldwide organization is "anational corporations."

Some of the oldest and most experienced of the multinational or anational enterprises are the international petroleum firms. Moreover, petroleum is a vital factor of production in the industrialized nations. Some economists consider energy important enough to be designated as a fifth factor of production. Also, petroleum accounts for an extraordinarily large share of many non-industrialized countries' gross national product, government revenues and

foreign exchange earnings. Thus, the petroleum industry is of strategic economic and political importance in both the industrialized and non-industrialized countries of the world.

There are four basic activities in producing petroleum products: production, transportation, refining and marketing. Production includes exploration, drilling, field producing operations and storage terminals at or near the fields. Transportation includes pipelines, oceangoing tankers, inland barges, railroad cars and trucks. This study deals specifically with field producing operations and pipelines. It is part of a larger effort which also includes exploration, drilling and refining. The exploration and drilling part of the study is contained in a Ph.D. dissertation being written by Jim Sturgeon at the University of Oklahoma--"Joint Ventures in the International Petroleum Industry: Exploration and Drilling."

The study's time span covers the years 1957 through June, 1972. Geographically, the Communist bloc countries and the Continental United States are excluded. The world is separated into ten geographic areas--Alaska, the North Sea, Europe, Asia Pacific, Africa, Australasia, Central America, Canada, the Middle East and South America.

The data comes from two primary sources--Oil and Gas Journal and World Oil. The International Petroleum Register, Minerals Yearbook, and the International Petroleum Encyclopedia are also valuable sources of information and are used

frequently for referencing purposes. Company names, participation percentages, location tracts, production and refining figures, cost and concession sizes are all taken from these journals.

In the literature surveyed for this study, the petroleum industry is generally treated as typifying an oligopolistic market structure. The recurring theme is one of the international majors dividing markets, fixing prices, limiting supply and, in general, engaging in cartel agreements, with each firm usually considered to be the proprietor of its own means of production.

This study examines the hypothesis that the international petroleum industry does not typify an oligopolistic market, but is anational in nature, linking together "through direct ownership ties" a worldwide network of production and transportation facilities. The predominant mechanism used for accomplishing this task is the joint venture. Traditional oligopoly theories do not provide an explanation for the behavior of firms where the dominant firms jointly own the means of production.

The primary groups operating in the petroleum industry are the international majors, the international minors and government-owned companies. These groups use two primary methods in effecting joint ventures--the "jointly owned subsidiary" and the "contractual joint ventures."

The jointly owned subsidiary is simply a separate

organization set up and owned by one or more other parties. Contractual joint ventures are more complex with the details and specific legal arrangements differing from country to country and area to area. The three most prominent are the profit sharing joint venture, the production sharing joint venture, and the cost sharing joint venture partner.

Both types of joint ventures are used by the international minors, the international majors, and the government-owned companies. Structurally, jointly owned subsidiaries and contractual joint ventures can have as few as two members and often as many as seven or eight. The largest jointly owned subsidiary cited in the study has twenty-two participating members. In addition, producing operations, pipeline systems and refining operations are not always built as distinct money making enterprises but may each be a connecting link in an integrated petroleum production process. A producing operation and the pipeline system that services it will each have a separate legal identity and company name. Yet in almost all instances both operations are owned by the same parent company or group of companies. Thus, producing fields, and transportation pipeline systems are all ultimately owned jointly by the same group of companies.

The reasons given for entering joint ventures vary among the participating groups. The international majors give as basic reasons the need: 1) to lessen the financial and political risk, 2) to bring order to the market and 3) to

"conform to the imperatives of foreign customs and habits."

The international minors give one basic reason for entering joint ventures-cost. They explain that no independent, or small integrated minor, can afford the risk and huge capital outlays necessary to operate on a worldwide scale and only by joining with government-owned companies or international majors can they afford to enter the international field.

The oil petroleum importing country (OPIC) government-owned companies state that joint venturing with other government-owned companies from the oil petroleum exporting countries (OPEC) gives them a more assured source of petroleum supplies. The OPEC governments explain that joint ventures offer them the opportunity to gain technical knowledge and needed capital for economic development, with their ultimate objective to gain control of their natural resources.

The international minors and government-owned companies have been pioneers in developing lucrative contracts that are more favorable to the non-industrialized oil producing countries, especially where the government-owned company becomes a full cost sharing equity partner. The European government-owned companies have extensive joint venture holdings in their former African colonies. In addition, international minors, such as Standard Oil Company (Indiana) and Phillips Petroleum Company, have extensive holdings with the Egyptian, South American and Indonesian state-owned companies.

There are 200 producing operations cited in this study. Production in these operations totals 27.9 million barrels of oil per day (1970) which accounts for 99 percent of the total petroleum production in the ten areas studied.

Joint ventures account for 75 percent of all petroleum production, with the seven international majors controlling 61 percent of this total. The international minors and government-owned companies control the remaining 14 percent. In the 133 joint venture operations there are 701 interlocking ownership ties among the 29 firms.

One-owner operations account for the remaining 25 percent of petroleum production. Of this 25 percent, the international majors own 16 percent and the international minors and/or government-owned companies own the remaining 9 percent.

Adding the one-owner and joint venture production figures together show the seven international majors controlling 77 percent of petroleum production. In addition, they also control 80 percent of the petroleum reserves. By any measure of economic size and power the statistics place these companies at the apex of the petroleum industry, with assets totalling \$80 billion (1971). However, this is not an oligopoly market structure consisting of five or six dominant firms with the potential to practice price fixing, limit supply or engage in other cartel activities. The seven majors own the means of production jointly, through binding

legal contracts. For example, in 76 joint venture operations, the international majors produce 61 percent of petroleum production accounted for in the study. Royal Dutch Shell Group, participating in 24 of these 76 operations, has interlocking ownership ties with the other 6 majors 47 times. Likewise, Mobil Oil Corporation, participating in 25 of the 76 operations, has interlocking ownership ties with the other 6 majors 42 times.

The international majors concentrate joint venture control and ownership in the eleven OPEC countries. These countries produce 80 percent of petroleum production accounted for in this study and approximately 50 percent of the world's total (1970). The majors, in joint ventures with each other, own 58 percent of all production in the OPEC countries, 16 percent in one-owner operations and another 4 percent in joint ventures with international minors and/or government-owned companies. Therefore, they own 78 percent of the OPEC countries' petroleum production.

The majors control their joint venture production in the OPEC countries in 16 operations. In these Standard Oil Company (New Jersey) is in interlocking ownership ties with Royal Dutch/Shell (RDS) 7 times, British Petroleum Company Ltd. (BP) 6 times, Mobil Oil Corporation 10 times and with Gulf Oil Corporation, Standard Oil Company of California and Texaco Inc. twice each. Further, BP is in 7 interlocking ownership ties with RDS, 6 with Mobil, 2 with Gulf and one

each with Texaco and Standard of California.

The twenty-two companies listed as international minors represent substantial financial power, with assets totalling approximately \$60 billion in 1971. They consist of 15 U.S. companies and 7 foreign companies. The international minors and government-owned companies control 23 percent of the crude petroleum produced, 14 percent through majority interest in 67 joint venture operations and 9 percent in 43 one-owner operations. The international minors and government-owned companies have had their greatest success in the newer petroleum producing areas, such as Africa where approximately 50 percent of the industry's production is controlled by minors and/or government-owned companies.

Joint venture ownership is dominant in all ten areas, with the notable exceptions of South America and Central America, where one-owner operations predominate. For example, in South America and Central America only 23 and 14 percent of petroleum production is in joint venture operations. But joint venture operations account for 100 percent of the petroleum production in Australasia, Alaska, and the North Sea; 97 percent in the Middle East; and approximately 70 percent in Africa, Europe and the Asia Pacific area.

The statistics for pipeline operations are similar to those for producing operations in term of: 1) ownership, 2) joint venture versus one-owner operations and 3) the degree of interlocking ownership ties.

This study accounts for 119 pipeline systems, 73 of which are joint ventures, 43 one-owner operations and 3 not identified. Fifty-nine percent of the total pipeline mileage is in joint ventures and 41 percent is in one-owner systems.

In South America the international majors control 76 percent of all crude petroleum production and 76 percent of all crude petroleum pipeline mileage. In Africa they control 49 percent each of petroleum production and pipeline mileage. In Europe the majors control 74 percent of all petroleum production and 75 percent of all pipeline mileage. Sixty-three percent of all pipeline systems are joint ventures and 66 percent of all producing operations are joint ventures. There are 619 interlocking ownership ties in the 73 joint venture pipeline systems and 701 interlocking ownership ties in the 133 joint venture producing operations.

Pipeline systems in the major oil producing and oil importing areas are almost exclusively controlled by the international majors in joint ownership operations. Approximately 70 percent of the crude petroleum transportation via pipeline occurs in Europe and the Middle East. The seven majors dominate the systems in both areas through joint ventures. The data for both areas show the majors with: 1) controlling interest in 21 out of 23 joint venture operations, and 2) 109 interlocking ownership ties with each other.

The statistics on joint ventures in Africa are similar to those in Europe and the Middle East. However,

control of the crude petroleum pipeline systems is evenly divided between the international minors and/or government-owned companies, on the one hand, and the international majors on the other.

In South America the international majors dominate primarily through one-owner ventures. In two areas, Central America and Asia Pacific government-owned companies own nearly all the pipeline operations.

In the 10 areas the seven international majors in fifty-five joint ventures have interlocking ownership ties with each other 148 times. For example, in 24 joint ventures Standard Oil Company (New Jersey) (Exxon) is interlocked with the other six majors 53 times. In these 24 joint ventures, Standard of New Jersey has interlocking ownership ties with Royal Dutch/Shell Group 15 times, Mobil Oil Corporation and British Petroleum Company 11 times each, Texaco and Gulf 6 times each and with Standard of California 4 times. Joint ventures are a way of life in the petroleum industry in both producing operations and pipeline systems.

The petroleum industry production process includes many other interconnected activities--refining, ocean tankers, storage terminals and marketing processes, to mention only a few. A study examining the ownership patterns in all phases of the petroleum production process is necessary for a comprehensive understanding of worldwide organizational patterns. But, to this writer, there is persuasive

evidence indicating the existence of a worldwide legally unified structure which operates as the "controlling factor" in producing and pipeline operations. The interlocking ownership ties are so numerous among the seven majors in producing and pipeline systems that independent action of a significant nature by any one member appears highly unlikely.

Among the 7 majors there were 117 interlocking ownership ties in producing operations, 148 in pipeline operations and 190 in refining operations. Moreover, the 7 majors control approximately 77 percent of the petroleum production and approximately 60 percent of the pipeline mileage and refining capacity. Combining the three activities (production, pipelines and refining) the seven majors have 455 interlocking ownership ties.¹

Consultation and coordinated action among the seven majors does not occur because they are members of an oligopolistic market or because of previous cartel agreements. Consultation and coordinated action occurs because the petroleum concessions, producing operations and pipeline systems are owned jointly. Out of the 200 producing operations cited in this study, the majors own only 24 one-owner operations which account for only 16 percent of the total production in the 10 areas. In essence, in the ten areas studied, the seven international majors do not operate as independent

¹See Tables 29, 30 and 31 for a summary presentation of the interlocking ownership ties.

TABLE 29

NUMBER OF JOINT VENTURES AND INTERLOCKING OWNERSHIP TIES IN PETROLEUM PRODUCING OPERATIONS, SELECTED COMPANIES, AS OF JUNE, 1972

NUMBER OF JOINT VENTURES BY COMPANY		24	21	25	31	12	14	17	11	18	12	2	4	0	19	9	13	11	1	2	5	1	10	4	1	4	3	4	4	0	14	4	17	22	59		
NUMBER OF INTERLOCKING OWNERSHIP TIES BY COMPANY		S O N J	T E X C	M O B I L	R O D S	G U L F	S O C	B P	S O I	A R C O	C O N C O	B A S F	T E N C O	O X Y	P H I L I P	U K C A L	C F P	S U N	B H P	C I T Y S	E N I	A S H	E L F / E	S O H I O	A M R D A	G E T T Y	S I G N L	P E T R O	K A R O N	P E M E X	L P C	L G C	K H C O Y	O T H E R	T O T A L		
INTERNATIONAL MAJORS	Standard of New Jersey																																			3	
	Texaco, Inc.	3																																		3	
	Mobil Oil Corporation	12	5																																	17	
	Royal Dutch/Shell	26	6	12																																44	
	Gulf Oil Corporation	2	3	4	1																															13	
	Standard of California	2	9	3	2	1																														23	
	British Petroleum Co.	7	3	2	10	9	1																													33	
	Sub Total	40	26	25	16	8	2																												117		
INTERNATIONAL MINORS AND/OR GOVERNMENT-OWNED COMPANIES	Standard of Indiana	0	2	0	0	1	0	0																												3	
	Atlantic Richfield	5	3	2	1	1	4	2	3																											21	
	Continental Oil	2	3	1	2	2	2	1	1																											16	
	BASF	2	0	0	2	0	0	0	0	0	0																									4	
	Tenneco Inc.	0	0	0	0	0	0	0	0	0	0	0																							1		
	Occidental Petroleum	0	0	0	0	0	0	0	0	0	0	0	0																						3		
	Phillips Petroleum	1	1	1	0	1	2	0	4	1	2	0	0	0	3																				16		
	Union of California	0	1	1	0	0	1	0	1	2	2	0	1	0	0																				9		
	Cie Francaise des Petroles	0	2	0	2	1	1	0	0	1	2	0	0	0	0	0																			14		
	Sin Oil	0	1	1	0		0	2	1	3	2	0	0	0	5	1	1																		11		
	Broken Hill Proprietary	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0																1		
	Cities Services	0	1	0	0	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0																5	
	Ente Nazionale Idrocarburi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0														1		
	Ashland Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0													1		
	Elf/Erap	1	0	0	3	1	0	0	0	1	0	0	0	0	0	0	0	6	0	0	0	0	0	1												15	
	Standard of Ohio	1	2	1	1	2	2	1	0	1	2	0	0	0	1	0	1	0	0	1	0	0	0	0												16	
	Amerada Hess	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0												1	
	Getty Oil Company	1	2			2	2	1	5		0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0										21	
	Signal Companies Inc.	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0										14	
	Petrofina	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0									4
	Marathon Oil	0	1	0	1	0	1	0	1	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0									8
	Petroleos Mexicanos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									0
	Local Private Capital	4	3	2	11	0	1	2	0	0	0	2	1	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0		30
	Local Gov't Capital	0	1	1	2	1	1	1	3	2	0	0	0	0	4	1	4	1	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0		29
	Non Host Gov't Capital	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0		2
	Other	14	6	12	16	13	3	11	5	10	16	0	2	0	21	5	14	12	0	0	1	0	20	5	0	7	2	2	1	0							127
	Sub Total	40	34	33	50	28	22																													524	
	Total	80	60	58	66	36	24	22	22	30	33	2	5	0	41	10	29	21	0	2	4	0	27	10	1	11	2	3	1	0	4	15	2	70	701		

Source: Compiled from data in Appendix II, Tables 33 through 51.

TABLE 30

NUMBER OF JOINT VENTURES AND INTERLOCKING OWNERSHIP TIES IN PETROLEUM PIPELINE OPERATIONS, SELECTED COMPANIES, AS OF JUNE, 1972

NUMBER OF JOINT VENTURES BY COMPANY		24	17	20	24	16	10	17	5	8	3	3	1	0	6	3	11	3	1	2	5	1	6	0	1	1	0	2	4	0	7	9	4	59	273		
NUMBER OF INTERLOCKING OWNERSHIP TIES BY COMPANY		S O N J	E X C	O B I L	R D S	G U L F	S O C	B P	S O I	A R C O	C O N C O	B A S F	T E N C O	O X Y	P H I L I P	U N C A L	C F P	S U N	B H P	C I T Y S	E N I	A S H	E L F / E	S O H I O	A M R D A	G E T T Y	S I G N L	P E T R O	N A R O N	P E M E X	L P C	L G C	N H G O V	O T H E R	T O T A L		
INTERNATIONAL MAJORS	Standard of New Jersey																																			6	
	Exxon, Inc.	11	10																																	21	
	Mobil Oil Corporation	12	6	12	1																															34	
	Royal Dutch/Shell	6	3	1	4	4																														13	
	Gulf Oil Corporation	4	2	6	5	1																														25	
	Standard of California	11	6	10	13	2	2																													44	
	British Petroleum Co.																																				
	Sub Total	53	34	29	23	7	2																													148	
INTERNATIONAL MINORS AND/OR GOVERNMENT-OWNED COMPANIES	Standard of Indiana	3	0	0	4	3	2	0																												12	
	Atlantic Richfield	2	1	3	4	1	4	1	4	1																										21	
	Continental Oil	3	1	1	3	3	1	1	1	2																										16	
	BASF	2	3	1	3	0	0	3	0	0	0																									12	
	Tenneco Inc.	0	0	0	0	0	0	0	0	0	0	0																							0		
	Occidental Petroleum	0	0	0	0	0	0	0	0	0	0	0	0																						0		
	Phillips Petroleum	0	0	0	1	0	1	0	2	3	0	0	0	0	0	2																			9		
	Union of California	0	1	1	0	0	0	0	0	1	0	0	0	1	0	0																			4		
	Cie Francaise des Petroles	8	2	8	9	1	1	9	0	1	1	1	1	0	0	0	0																		41		
	Sun Oil	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0																2		
	Broken Hill Proprietary	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0															1		
	Cities Services	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0															3	
	Ente Nazionale Idrocarburi	2	1	2	2	0	0	2	0	0	0	0	0	0	0	1	0	1	0	0	0	0														11	
	Ashland Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0														2	
	Elf/Erap	2	1	1	3	1	0	1	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0													12	
	Standard of Ohio	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0											10	
	Amerada Hess	1	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
	Getty Oil Company	2	2	2	2	2	1	2	1	3	2	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		14
	Signal Companies Inc.	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		13
	Petrofina	2	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		12
	Marathon Oil	2	2	2	2	0	0	1	0	0	1	0	0	0	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0		17
	Petroleos Mexicanos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
	Local Private Capital	5	3	0	3	0	1	5	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		35
	Local Gov't Capital	2	1	2	2	0	0	1	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0		22
	Non Host Gov't Capital	2	1	4	3	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		14
	Other	19	9	13	21	22	4	11	5	2	5	3	0	0	5	1	10	8	0	0	0	1	3	4	1	1	2	1	2	3	0	0	4	2	12		144
	Sub Total	60	31	44	67	35	18																													471	
Total		113	65	73	90	42	20	40	13	19	12	6	3	0	11	6	20	9	0	1	4	3	8	4	2	5	1	4	3	0	17	9	4	12		619	

Source: Compiled from data in Appendix II, Tables 33 through 51.

TABLE 31

NUMBER OF JOINT VENTURES AND INTERLOCKING OWNERSHIP TIES IN PETROLEUM REFINING OPERATIONS, SELECTED COMPANIES, AS OF JUNE, 1972

NUMBER OF JOINT VENTURES BY COMPANY		30	38	21	31	11	32	20	2	3	3	3	0	2	6	2	22	2	0	0	12	0	14	2	0	3	4	4	2	0	21	25	17	11	46		
NUMBER OF INTERLOCKING OWNERSHIP TIES BY COMPANY		S O N J	T E X C	M O B I L	R O Y A L	G U L F	S O C	D P	S O I	A R C O	C O N C O	B A S F	T E N C O	O X Y	P H I L I P	U N C A L	C F P	S U N	D H P	C I T Y S	E N I	A S H	E L F / E	S O H I O	A M R D A	G E T T Y	S I G N L	P E T R O	M A R O N	P E N E X	L P C	L G C	R H G O V	O T H E R	T O T A L		
INTERNATIONAL MAJORS	Standard of New Jersey	13																																		13	
	Texaco, Inc.	13	8																																	21	
	Mobil Oil Corporation	15	12	10	1																															38	
	Royal Dutch/Shell	4	4	2	3																															13	
	Gulf Oil Corporation	8	28	4	6	2																														59	
	Standard of California	11	9	10	16	3	6																													55	
	British Petroleum Co.																																				
Sub Total		64	61	26	28	5	6																													190	
INTERNATIONAL MINORS AND/OR GOVERNMENT-OWNED COMPANIES	Standard of Indiana	0	0	0	0	0	0																												0		
	Atlantic Richfield	3	2	2	2	2	2	2	0																										15		
	Continental Oil	4	3	2	3	2	2	2	0	0	0																								20		
	BASF	0	0	0	0	0	0	0	0	0	0																								0		
	Terneco Inc.	0	0	0	0	0	0	0	0	0	0	0	0																					0			
	Occidental Petroleum	0	0	0	0	0	0	0	0	0	1	0		0	0																			1			
	Phillips Petroleum	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			0			
	Union of California	0	0	0	0	0	0	0	0	0	0	0	0	0	0																			0			
	Cie Francaise des Petroles	12	7	9	10	2	4	10	0	3	3	1	0	0	0	0	0	3																	64		
	Oni Oil	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0																1			
	Ercken Hill Proprietary	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0															0			
	Cities Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0														0			
	Ente Nazionale Idrocarburi	2	1	0	0	0	1	2	0	0	0	0	0	0	0	0	1	1	0	0	0	1													9		
	Ashland Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0												0		
	Elf/Erap	3	4	2	3	0	3	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0											21		
	Standard of Ohio	3	2	2	2	2	2	2	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0										17		
	Amerada Hess	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									0		
	Getty Oil Company	3	2	2	2	2	2	2	0	2	4	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0	0							29	
	Signal Companies Inc.	3	2	2	2	2	2	2	0	2	2	0	3	2	1	0	0	2	0	0	0	0	0	0	0	0	0	0								29	
	Petrofina	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0								3	
	Marathon Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								0	
	Petroleos Mexicanos	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Local Private Capital	2	13	10	10	2	13	3	0	0	0	0	0	0	2	1	7	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	122
	Local Gov't Capital	3	5	2	3	1				0	0	0	0	0	0	0	0	0	7	0	0	0	4	0	4	0	0	0	0	0	1	0	0	0	5	0	49
	Non Host Gov't Capital	1	4	1	2	0	4	1	0	0	0	0	0	0	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	0	39	
	Other	12	10	8	12	4	5	2	3	2	2	2	0	0	4	1	14	1	0	0	0	0	0	2	6	2	0	3	3	0	0	0	0	0	0	0	14
Sub Total		57	55	42	52	19	45																												565		
Total		121	116	68	80	24	51	40	3	15	13	3	0	1	7	2	50	2	0	0	5	2	19	8	0	10	3	1	2	0	65	20	9	5	755		

Source: Compiled from data in Oil and Gas Journal. 1957-1972, World Oil.
1957-1972 and International Petroleum Register. 1966-1967.

companies. Rather, they operate through joint ventures, which legally bind them and their future to each other. Thus, whatever its formal ideological billing, the petroleum industry has created a worldwide mechanism for centralized planning and control.

APPENDIX I

LEGAL TITLES, ACRONYMS AND HOME COUNTRIES OF
SELECTED COMPANIES EXAMINED IN THE STUDY

TABLE 32--Continued

Legal Title	Acronym	Country
Cie Francaise des Petroles	CFP	France
Sun Oil Company	SUN	U.S.
The Broken Hill Proprietary Company Limited	BHP	Australia
Cities Services Company	CITYS	U.S.
Ente Nazionale Idrocarburi	ENI	Italy
Ashland Oil Inc.	ASH	U.S.
ELF/ERAP	ELF/E	France
The Standard Oil Company (Ohio)	SOHIO	U.S.
Amerada Hess Corporation	AMRDA	U.S.
Getty Oil Company	GETTY	U.S.
The Signal Companies Inc.	SIGNL	U.S.
Petrofina, S.A.	PETRO	Belgium
Marathon Oil Company	MARON	U.S.
Petroleos Mexicanos	PEMEX	Mexico

Source: Compiled from data in USA Oil Directory 1972; Eastern Hemisphere Petroleum Directory 1971-72; and Latin American Petroleum Directory 1971.

APPENDIX II

TABLES CONTAINING OWNERSHIP INFORMATION ON THE MAJOR
PETROLEUM PRODUCING AND PIPELINE OPERATIONS
FOR ALL TEN AREAS, AND A NOTE CONCERNING
THE STATISTICAL FRAMEWORK OF THE STUDY

A NOTE CONCERNING THE STATISTICAL
FRAMEWORK OF THIS STUDY

Petroleum production, pipeline mileage and ownership statistics were taken from several sources. The two primary sources were Oil and Gas Journal and World Oil. Statistics from these journals, whenever possible, were cross referenced with statistics taken from the International Petroleum Register, Minerals Yearbook, and the International Petroleum Encyclopedia. The joint venture ownership statistics for each producing field are for June 30, 1972. At the time of writing, however, the latest statistics on petroleum production on an individual field basis were for the calendar year 1970.

TABLE 33

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN AFRICA, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>GABON</u>		
1. SHELL GABON	50	48,000
Royal Dutch/Shell Group		
SOCIETE ELF DES PETROLES D'AFRIQUE EQUATORIAL(SPAFE)	50	
ELF/ERAP (40.15)		
French government agency		
Caisse Centrale de Cooperation Econamique (14.54)		
Others (45.31)		
FIELDS: Ivinga, Gamba		
2. SOCIETE ELF DES PETROLES D'AFRIQUE EQUATORIAL(SPAFE)		40,000
ELF/ERAP	40.15	
French government agency		
Caisse Centrale de Cooperation Econamique	14.54	
Others	45.31	
FIELDS: Nord Lopez, Cap Lopez, M'Bega, Ozuri, Anguille, Batanga, Tchenque, Pointe Clairette, Tchenque Ocean		
TOTAL GABON.		88,000

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>TUNISIA</u>		
3. SOCIETE ITALIO-TUNISIENNE DES PETROLES		83,000
Tunisian government.	50	
AGIP SPA	50	
Ente Nazionali Idrocarburi (80)		
Italian government Company		
Others (20)		
FIELDS; El Borma		
4. SOCIETE NATIONALE DES PETROLES D'AQUITAINE (SNPA). . .	30	5,000
ELF/ERAP (51)		
French government agency		
Compagnie Francaise des Petroles (7.2)		
Others (41.8)		
SOCIETE DE RECHERCHES ET D'EXPLOITATION DES		
PETROLES EN TUNISIA (SEREPT)	70	
ELF/ERAP		
French government agency		
Compagnie Francaise des Petroles (10.9)		
Compagnie Francaise Pour le Financement de		
la Recherche et de L'Exploitation de Petrole (5.5)		
Tunisian government (23.9)		
French Finance Company		
Other (2.8)		
FIELDS: Douleb, Semmania, Tamesnida		
TOTAL TUNISIA. . .		88,000

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>ANGOLA, CABINDA</u>		
5. COMPANHIA DE PETROLES DE ANGOLA		13,000
Petrofina S.A.	45	
Angolan government	55	
FIELDS: Tobias, Benfica, Quenguela Norte		
6. CABINDA GULF OIL CO.		87,000
Gulf Oil Corp.	100	
FIELDS: Offshore concessions		
TOTAL ANGOLA		100,000
<u>NIGERIA</u>		
7. THE SHELL-BP PETROLEUM DEVELOPMENT CO OF NIGERIA LTD		750,000
Royal Dutch/Shell Group	50	
British Petroleum Co. Ltd.	50	
FIELDS: Afiesere, Egwa, Eriemu, Ewreni, Forcados Estuary, Jones Creek, Kokori, Odidi, Olomoro Oroni, Oweh, Ughelli, Utorogu, Uzere, Agboda, Afam, Afam-Umuosi, Ahia, Alakiri, Aporo, Bodo West, Bome Bonny Cawthorn, Ebubu, Ekuloma Elelenwa, Egbema, Ibibio, Imo River, Isimisi Korokoro, Krakama, Nkoli, Obigbo North, Oloibiri, Oza Rumuekpe, Lake Umuechem		

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
8. PHILLIPS PETROLEUM CO.	50	20,000
NIGERIA AGIP OIL CO.	50	
Ente Nazionali Indrocarburi (ENI)		
Italian government company		
FIELDS: Ebocha, M'bede, Ndoni, Idi		
9. SAFRAP (NIGERIA) LTD.		40,000
ELF/ERAP		
French government agency	100	
FIELDS: Ogabi		
10. GULF OIL CO. (NIGERIA) LTD.		215,000
Gulf Oil Corp.	100	
FIELDS: Delta, Delta South, Mail, Meje, Meren, Okan, Parobe		
11. MOBIL EXPLORATION NIGERIA LTD.		55,000
Mobil Oil Corp.	100	
FIELDS: Asobo, Idobo, Ubit		
12. AMERICAN OVERSEAS PETROLEUM LTD.		10,000
Texaco Inc.	50	
Standard Oil Co. of California	50	
FIELDS: Pennington		

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
13. TENNECO NIGERIA INC.	50	20,000
Tenneco Inc.		
SUNRAY NIGERIA INC.	25	
Sun Oil Co.		
SINCLAIR NIGERIAN OIL.	25	
Sinclair Oil Co.		
Atlantic Richfield Corp.		
FIELDS: Konuskiri		
TOTAL NIGERIA		1,110,000
<u>EGYPT</u>		
14. GULF OF SUEX PETROLEUM CO.		261,600
Pan American UAR Oil Co.	50	
American International Oil Co.		
Standard Oil Co. (Indiana)		
Egyptian General Petroleum Corp.	50	
Egyptian state company		
FIELDS: El Morgan (78% of total Egyptian production)		
15. WESTERN DESERT OPERATING CO.		37,000
Phillips Petroleum Co.	50	
Egyptian General Petroleum Corp.	50	
Egyptian state company		
FIELDS: El Alamein		

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
16. EGYPTIAN GENERAL PETROLEUM CORP.		9,000
Egyptian state company	100	
FIELDS: Ras Gharib, Bakr, Garim, Amin, Shukheir		
TOTAL EGYPT		307,600
<u>LIBYA</u>		
17. OASIS OIL CO. OF LIBYA		800,000
Marathon Oil Co. of Libya.	33.3	
Marathon Oil Co.		
Continental Oil Co. of Libya	33.3	
Continental Oil Co.		
Amerada Petroleum Co. of Libya	16.7	
Amerada-Hess Corp.		
Libya Shell N.V.	16.7	
Royal Dutch/Shell Group		
FIELDS: Dahra, Zaggut, Waha, Gialo, Bahi, DeFa, Samah		
18. ESSO SIRTE INC.	50	200,000
Esso Standard Libya		
Standard Oil Co. (New Jersey)		
LIBYAN AMERICAN	25.5	
Sinclair International Oil Co.		
Atlantic Richfield		
W.R. GRACE AND CO.	24.5	

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELDS: Raguba, Mabruk		
19. AMERICAN OVERSEAS PETROLEUM LTD.		384,000
California Texas Oil Co. Ltd.		
Standard Oil Company of California	50	
Texaco Inc.	50	
FIELDS: Dor, Beda, Kohtla, Nafoora		
20. MOBIL OIL LIBYA LTD.	65	245,000
Mobil Oil Corp.		
GELSENKIRCHENER BERGWERKE.	35	
Gelsenberg Benzin		
FIELDS: Farigh AA, Eldib, Farud, Hofra, Ora, Amal Ora, Dor Marada, Bi m'Ras		
21. AMOCO LIBYA OIL CO.		7,200
Standard Oil Co.	100	
Standard Oil Company (Indiana)		
PHILLIPS PETROLEUM CO.		
FIELDS: Umm Farud, Khuff		
22. BRITISH PETROLEUM CO. LTD.	50	400,000
NELSON BUNKER HUND	50	
Hunt Oil Co.		
FIELDS: Serir		

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
23. ESSO STANDARD LIBYA		566,000
Standard Oil Company (New Jersey)	100	
FIELDS: Zelten, Ain Juri, Arshod, Jebel, Ralah		
24. OCCIDENTAL PETROLEUM CO.		700,000
FIELDS: Indris A, Indris D, Augila, Indris C		
TOTAL LIBYA.		3,302,200
<u>MOROCCO</u>		
25. SOCIETE CHERIFIENNE DES PETROLES (SCP)		900
Bureau de Recherches et de Participation Minieres .	50	
Moroccan government agency		
ELF/ERAP.	36	
French government agency		
Compagnie Francaise des Petroles.	6.71	
Others	17.29	
FIELDS: Haricha, Sida, Fili, Sidi Rhalem		
TOTAL MOROCCO.		900

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>ALGERIA</u> **		
26. COMPAGNIE DE RECHERCHES DE PETROLE AT SAHARA (CREPS)		120,000
Royal Dutch/Shell Group	35	
ELF/ERAP.	55.5	
French government agency		
Others.	9.5	
FIELDS: Zarzaitine, Edjelah, Gassi Touil East, Dome a Collenias, Edeyen, Ouan Taredert Tiguentourine.		
27. CIE FRANCAISE DES PETROLEOS (ALGERIE) (CFP(A)). . . .	50	390,000
Compagnie Francaise des Petroles (85)		
SOCIETE NATIONALE DE RECHERCHES ET D'EXPLOITATION DES PETROLES EN ALGERIA (SN REPAL)	50	
Algerian government (40)		
ELF/ERAP (40.15)		
French government agency		
Compagnie Financiere de Recherches Petrolieries (COFIREP) (5.33)		
Holding company (French)		
Others (French banking and invest. co.) (14.52)		
FIELDS: Hassi Messaud, Oued Gueterini		
28. PHILLIPS PETROLEUM CO..	25	216,000
OMNIREX	37.5	
Phillips Petroleum Co (50)		
Omium Francaise de Petroleus (50)		

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
COMPAGNIE DES PETROLES FRANCE AFRIQUE (COPEFA). . . .	37.5	
ELF/ERAP		
French government agency		
FIELDS: Gassi Touil		
29. SINCLAIR MEDITERRANEAN PETROLEUM.	28	200,000
Atlantic Richfield Co.		
NEWMONT MINING CORP.	7.5	
VEEDOL OIL.	11.5	
Tidewater Oil Corp. (now Getty Oil Co.)		
SOCIETE ANONYME FRANCAISE DE RECHERCHE ET D'EXPLOITATION		
DE PETROLE (SAFREX)	35	
ELF/ERAP (67.5)		
Compagnie Franciere De Recherches Petrolieres (7.42)		
Others (25.08)		
SOCIETE DE RECHERCHES ET D'EXPLOITATION DE PETROLE. .	18	
FIELDS: Rhourde El Baguel, Mesde		
30. SONATARCH	35	69,000
Algerian Government		
MOBIL OIL NORD-AFRICAINE.	25	
Mobil Oil Corp.		
SOCIETE PETROLIERE FRANCAISE EN ALGERIE	35	
PRIVATE INTEREST.	5	
FIELDS: Tin Fourge, Ohanet		
TOTAL ALGERIA.		995,000

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>CONGO (BRAZZAVILLE)</u>		
31. AGIP RECHERCHES CONGO S.A.		
Republic of Congo	20	
AGIP	80	
Ente Nazionali Idrocarburi		
State controlled (Italy)		
FIELDS: Emeraude Marine, New field--no production 1970		
32. SOCIETE DES PETROLES D'AFRIQUE EQUATORIALE		1,000
ELF/ERAP	40.15	
French government agency		
Caisse Centrale de Cooperation Economique	14.54	
Societe Financiers des Petroles Investment Co.	10.00	
Others	35.31	
FIELDS: Pinte Indienne		
TOTAL CONGO (BRAZZAVILLE)		1,000
<u>CONGO (KINSHASA)</u>		
33. GULF OIL CONGO	50	
Gulf Oil Corp.		
SOCIETE DE LITTORAL CONGOLOIS	50	
Congolese government		
FIELDS: GC-1X, New field--no production 1970		

TABLE 33--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
TOTAL FOR AFRICA.		5,992,700

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-1967.

*Production figures are for the calendar year 1970.

**Many of these properties have been nationalized.

TABLE 34

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS
IN AFRICA, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>NIGERIA</u>	
1. TRANS-NIGER PIPELINE	
Shell-BP Development Co. of Nigeria	
Royal Dutch/Shell Group	50
British Petroleum Co.	50
LOCATION: 184 mile gathering system around Port Harcourt	
2. PHILLIPS PETROLEUM CO..	50
NIGERIA AGIP OIL CO..	50
Ente Nazionali Idrocarburi	
Italian government company	
LOCATION: 64 mile gathering system from Ebocha field to Rumuekpe	
3. GULF OIL CO. OF NIGERIA LTD.	
Gulf Oil Corp.	
LOCATION: 50 mile gathering system in and around Meta, Meren, Delta and Okan fields	
<u>GABON</u>	
4. SOCIETE ELF DES PETROLES D'AFRIQUE EQUATORIALE (SPAFE)	
ELF/ERAP.	52.831
Caisse Centrole de Cooperation Economique	14.543
Societe Financiers des Petroles	10.000
Others.	22.629
LOCATION: 119 mile gathering system from Ozuri, Animba and Point Clairette fields to Cape Lopez.	

TABLE 34--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>ANGOLA</u>	
5. COMPANHIA DE PETROLEOS DE ANGOLA (PETRANGOL)	
Petrofina S.A.	45
Government of Portugal	55
LOCATION: 65 mile system from Tobias field to refinery at Luanda	
<u>RHODESIA AND MOZAMBIQUE</u>	
6. COMPANHIA DE PIPELINE MOCAMBIQUE-RODESIA	
Royal Dutch/Shell Group.	20.75
British Petroleum Co..	20.75
Mobil.	17.75
Caltex	15.75
Standard Oil Company of California Texaco Inc.	
Aminoil	15.00
R. J. Reynolds Industries Inc.	
Kuwait National Petroleum Co..	5.00
Kuwait government (60) Private capital (40)	
LOCATION: 195 mile crude pipeline from Beria to refinery at Umtali	
<u>TUNISIA</u>	
7. SOCIETE DE RECHERCHES AND D'EXPLOITATION DES PETROLES EM TUNESIE (SEPEPT)	
ELF/ERAP	56.9
French government agency	
Campagne Francaise des Petroles (C.F.P.). (other French companies, COFIREP, REP, FRANCE)	10.9
Tunisian government.	8.3
	23.9
LOCATION: 120 mile trunk line from Douleb field to La Skhirra	

TABLE 34--Continued

Country, Company, Ownership, and Location	Percent Ownership
8. SOCIETE ITALO-TUNISIENNE D'EXPLOITATION PETROLIERE (SITEP)	
Ente Nazionali Idrocarburi	50
Italian government	
Tunisian government.	50
LOCATION: 120 mile trunk line from El Borma field to TRAPSA trunk line	
9. COMPAGNIE DES TRANSPORTS PAR PIPELINE AI SAHARA (TRAPSA).	65
Compagnie de Recherches de Petrole	
Ai Sahara (CREPS)	
Royal Dutch/Shell Group (35)	
ELF/ERAP (55.5)	
French government	
Others (9.5)	
ROYAL DUTCH/SHELL GROUP.	35
LOCATION: 375 mile trunkline from In-Amenas field to La Skhiria	
<u>ALGERIA</u>	
10. SOCIETE NATIONALE DE TRANSPORT ET DE COMMERCIALIZATION DES HYDRACARBONE (SONATARCH)	
Algerian government	100
LOCATION: 700 mile trunkline and gathering system from In-Amenas field to Hassi Messaoud field	
200 mile trunkline from Hassi Messaoud field to Hassi R-Mel	
300 mile trunkline from Hassi- R-Mel to Arzeu	
435 mile trunkline from Hassi Messaoud field to Skikda	

TABLE 34--Continued

Country, Company, Ownership, and Location	Percent Ownership
400 mile trunkline from Hassi Messaoud to Bougie	
<u>LIBYA</u>	
11. BRITISH PETROLEUM CO. LTD. NELSEN BUNKER HUNT	
Hunt Oil Company	100
LOCATION: 325 mile crude trunk line from Saris field to Marsa el Hariga	
12. AMERICAN OVERSEAS PETROLEUM CO. (AMOSEAS).	30
Standard Oil of California	
Texaco Inc.	
MOBIL OIL LIBYA LTD.	
Mobil Oil Corp.	70
GELSENBERG BENZIN A.G.	
LOCATION: 175 mile crude trunk line from Amol field to Ras Lanuf	
13. MOBIL OIL LIBYA.	65
Mobil Oil Corp.	
GELSENBERG BENZIN A.G.	35
LOCATION: 100 mile crude trunk line from Ora field to the Umm Ferud field	
175 mile crude trunk line from Hofra field to Ras Lanuf	

TABLE 34--Continued

Country, Company, Ownership, and Location	Percent Ownership
14. OASIS OIL CO. OF LIBYA Marathon Oil Co. (33.3) Continental Oil Co. of Libya (33.3) Amerada Petroleum Corp. (16.7) Libya Shell N.V. (16.7) Royal Dutch/Shell Group ESSO STANDARD LIBYA Standard Oil Co. of New Jersey LIBYAN AMERICAN OIL CO. Sinclair International Atlantic Richfield Company W. R. GRACE & CO.	100
LOCATION: 325 mile crude trunk line from Gialo, Zaggut, Waha and Samah fields to Sidra 50 mile crude trunk line from Mobruk field to Sidra 250 mile crude trunk line from the Samah and Dahra fields to Sider	
15. OCCIDENTAL OF LIBYA INC. Occidental Petroleum Corporation LOCATION: 150 mile crude trunk line from Intesar field to Agedabia	100
16. AMERICAN OVERSEAS PETROLEUM CO. Standard Oil Co. of California Texaco Inc. LOCATION: 75 mile crude trunk line from Magid field to the Nafuore field	50 50

TABLE 34--Continued

Country, Company, Ownership, and Location	Percent Ownership
17. ESSO-STANDARD LIBYA INC. Standard Oil Co. (New Jersey)	100
LOCATION: 210 mile crude trunk line from Zelten field to Marsa-el Brega 50 mile crude trunk line from Raguba field to Zelten trunk line	
TOTAL PIPELINE MILEAGE IN AFRICA. . 5,212	

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-1967.

TABLE 35

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN
ALASKA AND NORTH SLOPE, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>ALASKA AND NORTH SLOPE</u>		
1. STANDARD OIL CO. OF CALIFORNIA.	44.75	9,000
ATLANTIC RICHFIELD.	44.75	
UNION OIL CO. OF CALIFORNIA	5.25	
MARATHON OIL CO..	5.25	
FIELD: Swanson River Unit 2, Unit 1		
2. STANDARD OIL CO. OF CALIFORNIA.	46	**
ATLANTIC RICHFIELD CO..	46	
ALASKA OIL CO..	8	
FIELD: Soldotna		
3. PAN AMERICAN PETROLEUM CORP.. . . .	25	**
Standard Oil Co. (Indiana)		
PHILLIPS PETROLEUM CO..	25	
SINCLAIR OIL AND GAS CO..	25	
Atlantic Richfield Co.		
SKELLY OIL CO..	25	
(now Getty Oil Co.)		
FIELDS: Middle Ground Shoal (1), Granite Point B		

TABLE 35--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
4. SHELL OIL CO. Royal Dutch/Shell Group ATLANTIC RICHFIELD GROUP STANDARD OIL CO. OF CALIFORNIA	100	**
FIELD: Middle Ground Shoals (ISRS)		
5. UNION OIL CO. OF CALIFORNIA	33 1/3	86,000
MARATHON OIL CO..	33 1/3	
TEXACO INC.	16 2/3	
SUPERIOR OIL CO..	16 2/3	
FIELDS: 1-A Grayling, MacArthur River		
6. MOBIL OIL CORP.	75	**
UNION OIL CO. OF CALIFORNIA	25	
FIELDS: Granite Point-A, Trading Bay		
7. ATLANTIC RICHFIELD CO. HUMBLE OIL & REFINING CO. Standard Oil Co. (New Jersey)	100	***
LOCATION: North Slope--Sag River (Prudhoe Bay)		
8. MOBIL OIL CORP. PHILLIPS PETROLEUM CO. STANDARD OIL OF CALIFORNIA	100	***
FIELD: North Slope (Prudhoe Bay)		

TABLE 35--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
9. STANDARD OIL CO. OF OHIO		***
BP ALASKA INC.	100	
British Petroleum Co. Ltd.		
GULF OIL CORPORATION		
FIELD: (1 Put River) North Slope (Prudhoe Bay)		
TOTAL ALASKA AND THE NORTH SLOPE . . .		96,700***

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

*Production figures are for the calendar year 1970.

**Production figures not available to author.

***Total production in the North Slope (Prudhoe Bay Area) in 1970 was approximately 1,700 b/d.

TABLE 36

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS IN ALASKA
AND NORTH SLOPE AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership	
<u>ALASKA AND NORTH SLOPE</u>		
1. KENAI PIPE LINE CO.		
Standard Oil Co. of California	50	
Atlantic Richfield Company	50	
LOCATION: 22 mile crude line from Swanson and Soldatna fields to Nekiski		
2. COOK INLET PIPELINE CO.		
Cities Service Oil Co.	100	
Atlantic Richfield Co.		
Mobil Oil Corp.		
Union Oil Co. of California		
Marathon Oil Co.		
LOCATION: 42 mile crude line from Granite Point to terminal on Drift River		
3. SHELL GROUP.		50
Shell Oil Co.		50
Royal Dutch/Shell Group		
Standard Oil Co. of California		
Atlantic Richfield Co.		
PAN AM GROUP		50
Pan American Petroleum Corp.		50
Standard Oil Co. (Indiana)		
Phillips Petroleum Co.		
Atlantic Richfield Co.		
LOCATION: 40 mile crude from SRS platform and PASPS platform to shore facilities		

TABLE 36--Continued

Country, Company, Ownership, and Location	Percent Ownership
4. CHAKACHATNA GROUP PIPELINES	
Pan American Petroleum Corp.	
Standard Oil Co. (Indiana)	
Phillips Petroleum Co.	100
Skelly Oil Co.	
Mission Corp.	
Getty Oil Co.	
Atlantic Richfield Co.	
LOCATION: 52.4 mile crude system from Granite Point ("A" and "B") to shore facilities	
5. UNION OIL CO. OF CALIFORNIA	33 1/3
MARATHON OIL CO..	33 1/3
TEXACO INC.	16 2/3
SUPERIOR OIL CO..	16 2/3
LOCATION: 10 mile crude line from Trading Bay field to shore facilities, 6 mile crude line from McArthur River to shore facilities	
TOTAL PIPELINE MILEAGE ALASKA AND THE NORTH SLOPE. . .	172.4

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register 1966-67.

TABLE 37

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN
ASIA PACIFIC, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>PAKISTAN</u>		
1. ATTOCK OIL CO. LTD.		**
English private capital.	100	
FIELDS: Dhulian, Khour, Joya Mair, Balkassar		
2. PAKISTAN PETROLEUM LTD.		
Burmah Oil Co. Ltd..	70	**
English private capital		
Pakistan government & public	30	
FIELDS: Balkassar, Joya Mair, Dhulian, Khour, Karsol		
3. PAKISTAN OILFIELDS LTD.		
Attock Oil Co. Ltd..	70	**
English private capital		
Pakistan government & public	30	
FIELDS: Balkassar, Meyal		
TOTAL PAKISTAN		10,480

TABLE 37--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>TAIWAN</u>		
4. CHINESE PETROLEUM CORP.		1,677
Nationalist Chinese Government Co.	100	
FIELDS: Paoshon, Pakuashon		
TOTAL TAIWAN		1,677
<u>JAPAN</u>		
5. TEIKOKU OIL CO.		**
Japanese private capital	100	
LOCATION: Yabase, Niitsu, Kubiki, Innai, Shonai		
6. JAPAN PETROLEUM DEVELOPMENT CORP. (KODAN)		**
State agency	100	
LOCATION: Sarukawa, Tsuchizaki, Mitsuke, Barato, Amarume		
TOTAL JAPAN.		16,065
<u>INDONESIA</u>		
7. P.T. CALTEX PACIFIC INDONESIA		718,170
Standard Oil Co. of California	50	
Mobil Oil Corp.	50	

TABLE 37--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELDS: Tandun, So. Bekasap, Rangau, Pungut, Petani, Pematang, Minas, Duri, Bekasap		
8. P.N. STANVAC INDONESIA		25,278
Standard Oil Co. (New Jersey)	50	
Mobil Oil Corp.	50	
FIELDS: Andan, Lirik, Molek, Pulau North, Sago, Ukui		
9. P.T. STANVAC INDONESIA		19,423
Standard Oil Co. (New Jersey)	50	
Mobil Oil Corp.	50	
FIELDS: Abab, Benakat, Betun, Djirak, Pendopo, Radja, Talang Akar		
10. P.N. PERTAMBANGAN MINJAK NASIONAL (P.N. PERTAMINA)		97,811
State agency.	100	
FIELDS: Badjubang, Kenali Asam, Tempino, Gunung Kemala, Limau, Belimbing, Talang Djimar, Tandjung Tiga, Klamono, Rantou, Bongas, Kurka, Bunju, Sambodja, Tandjung, Tarakan		
TOTAL INDONESIA		860,682

TABLE 37--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>THAILAND</u>		
11. DEFENSE ENERGY DEPARTMENT		278
State agency	100	
FIELDS: Mae Soon Luang, Boh Ton Kham		
TOTAL THAILAND.		278
<u>AFGHANISTAN</u>		
12. AFGHAN OIL COMMISSION		35
State agency	100	
FIELDS: Angot, Khoja-Gogirdak, Khuiaja- Borhan, Saripul, Yatim Tagh		
TOTAL AFGHANISTAN		35
<u>BURMA</u>		
13. BURMAH OIL CO.		17,000
English private capital.	100	
FIELDS: Yenangyuang, Chauk-Lanywa		
TOTAL BURMA		17,000

TABLE 37--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>INDIA</u>		
14. ASSAM OIL CO.		3,000
Burmah Oil Co. Ltd.	100	
English private capital		
FIELD: Digboi		
15. OIL INDIA PRIVATE LIMITED		58,000
Burmah Oil Co. Ltd.	50	
English private capital		
Indian government	50	
FIELDS: Moran, Nahorkatiya		
16. OIL & NATURAL GAS COMMISSION		74,000
State agency.	100	
FIELDS: Gujarat, Ankleshwar, Kalol, Naulagam		
TOTAL INDIA.		135,000

TABLE 37--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>BRUNEI-MALAYSIA</u>		
17. BRUNEI SHELL PETROLEUM CO. LTD. Royal Dutch/Shell Group		147,000
FIELDS: Ampa, Baram, Fairley, Jerudong, Miri, Seria, West Lutong		
TOTAL BRUNEI-MALAYSIA.		147,000
TOTAL ASIA PACIFIC.		1,188,217

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-1967.

*Production figures are for the calendar year 1970.

**Petroleum production per individual field not available to author.

TABLE 38

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS IN
ASIA PACIFIC, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>PAKISTAN</u>	
1. ATTOCK OIL CO. LTD.	
English private capital.	100
LOCATION: 104 mile crude line from Dhulian and Balkassar field to refinery at Rawalpindi	
<u>BURMA</u>	
2. PEOPLES OIL INDUSTRY (POI)	
Burmese government	100
LOCATION: 320 crude line from refinery at Chauk to Refinery Lyriam	
<u>INDONESIA</u>	
3. P.N. PERTAMBANGAN MINJAH NASIONAL (P.N. PERTAMINA)	
State agency.	100
LOCATION: 7 crude lines totaling 450 miles from inland fields to shore terminals and refineries	

TABLE 38--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>INDIA</u>	
4. OIL INDIA PRIVATE	
Burmah Oil Co. (Pipe Lines) Ltd.	50
Burmah Oil Co. Ltd.	
Indian government.	50
LOCATION: 270 mile pipeline from Naharkatiya and Moran fields to refinery at Gauhati	
450 mile pipeline from Gauhati refinery to the refinery at Barauni	
TOTAL PIPELINE MILEAGE IN ASIA PACIFIC. . 1,594	

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-1967.

TABLE 39

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN
AUSTRALASIA, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>AUSTRALIA</u>		
1. UNION OIL DEVELOPMENT CORP.	50	10,000
Union Oil Company of California		
KERN COUNTY LAND CO.	50	
Tenneco Inc.		
AUSTRALIAN OIL & GAS CORP. LTD.		
(20% of profits) Private local capital		
FIELD: Moonie		
2. WEST AUSTRALIAN PETROLEUM PTY. LTD.		45,000
California Asiatic Oil Co.	28.57	
Standard Oil Co. of California		
Texaco Overseas Petroleum Ltd.	28.57	
Texaco Inc.		
Shell Development Australia	28.57	
Royal Dutch/Shell Group		
Ampol Exploration Ltd.	14.29	
Private local capital		
FIELD: Barrow Island		

TABLE 39--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
3. THE ASSOCIATED GROUP		15,000
Associated Australian Oilfields N.L.		
Associated Frency Oil Fields N.L.	 100	
Papuan Apinaipi Petroleum Co. Ltd.		
Interstate Oil Ltd.		
H. C. Sleigh Ltd.		
FIELD: Alton		
4. ESSO EXPLORATION AUSTRALIA INC.	50	75,000
Standard Oil Co. (New Jersey)		
HEMATITE PETROLEUM PTY. LTD.	50	
Broken Hill Proprietary Co. Ltd.		
FIELDS: Barracouta, Kingfish, Marlin, Halibut		
TOTAL AUSTRALIA.		145,000

NEW ZEALAND

5. EGMONT OIL WELLS LTD.		60
Shell BP & Todd Oil Services Ltd.		
Royal Dutch/Shell Group		
BP (New Zealand) Limited	 100	
British Petroleum Co.		
Todd Oil Services Ltd.		
Private local capital		
FIELD: Moturoa		

TABLE 39--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
6. SHELL BP & TODD OIL SERVICES LTD.		4,900
Shell Oil New Zealand Ltd.		
Royal Dutch/Shell Group	 100	
BP (New Zealand) Limited		
British Petroleum Co.		
Todd Oil Services Ltd.		
Private local capital		
FIELD: Kapuni		
	TOTAL NEW ZEALAND.	4,960
	TOTAL AUSTRALASIA	149,960

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

*Production figures are for calendar year 1970.

TABLE 40

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS IN
AUSTRALASIA, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>AUSTRALIA</u>	
1. MOONIE PIPELINE CO. PTY. LTD.	
Union Oil Development Corp.	
Union Oil Co. of California	
Kern County Land Co.	100
Tenneco Inc.	
Australian Oil & Gas Corp.	
Private local capital	
International Oil Exploration N.L. of	
Australia	
Private local capital	
LOCATION: 200 mile crude line from Moonie field to Brisbane	
34 mile crude gathering system Moonie field	
2. SHELL REFINERY (AUSTRALIA) PTY LTD..	100
Royal Dutch/Shell Group	
LOCATION: 12 mile crude line from Gore Bay to Clyde refinery	
34 mile crude line from Geelong refinery to Newport installation	

TABLE 40--Continued

Country, Company, Ownership, and Location	Percent Ownership
3. ESSO EXPLORATION AUSTRALIA INC. Standard Oil Co. (New Jersey) HAEMATITE PTY. LTD. Broken Hill Proprietary Co. Limited	50 50
LOCATION: 115 mile crude gathering system from Kingfish, Halibut, Marlin and fields to mainland 340 mile crude system from Westernport Crib point to Long Island point	
TOTAL PIPELINE MILEAGE IN AUSTRALASIA . . .	735

Source: Compiled from data in Oil and Gas Journal,
 1957-1972; World Oil, 1957-1972; and
International Petroleum Register, 1966-67.

TABLE 41

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN
CANADA, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production** (b/d)
<u>CANADA</u>		
1. WHITE-LLOYD AND ASSOCIATES FARGO OILS LTD. General American Oil Co. of Texas GULF STATES OIL CO. Western Natural Gas Co.		100
FIELD: Blueberry		
2. HUDSON'S BAY OIL & GAS CO. Continental Oil Co. (67.8) Hudson Bay Co. (22.6) UNION OIL CO. OF CANADA LTD. Union Oil Co. of California (83) Others (17)		100
FIELD: Miligan Creek, Kaybod, Eaglesham, Sturgeon Lake South		
3. HOME OIL CO. LTD. United Oils Ltd. HUDSON BAY OIL & GAS LTD. Continental Oil Co. (67.8) Hudson Bay Co. (22.6) UNION OIL CO. OF CALIFORNIA		100

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELD: Virginia Hills, Swan Hills, Whitecourt		
4. PHILLIPS PETROLEUM CO.	100	
STANDARD OIL CO. OF CALIFORNIA		
GULF OIL CANADA LTD.		
Gulf Oil Corp. (69)		
Others (31)		
FIELD: Kaybob South		
5. CANADIAN OIL COMPANIES LTD.	100	
Shell Canada Ltd.		
Royal Dutch/Shell Group		
CALGARY EDMONTON CORP.		
Superior Oil Co.		
SECURITY FREEHOLD PETROLEUM		
FIELD: Innisfail		
6. IMPERIAL OIL LTD.	70	
Standard Oil Co. (New Jersey)		
Others.	30	
FIELD: Beaver Lake near Judy Creek; Leduc, Mackinzie Delta, Atkinson H-25, Redwater		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
7. AMOCO CANADA PETROLEUM CO. Standard Oil Co. (Indiana) GULF OIL CANADA LTD. Gulf Oil Corp. (69) Others (31)	 100	
FIELD: Sacak Lake, Beaverhill Lake (A-1 Swan Hills)		
8. CREE OIL OF CANADA Shell Canada Ltd. Royal Dutch/Shell Group CANADIAN EXPORTS GAS AND OILS LTD.	 100	
FIELD: Carstairs region, Ponaka		
9. IMPERIAL OIL LTD. Standard Oil Co. (New Jersey) (70) Others (30) PACIFIC PETROLEUM CO. LTD. Phillips Petroleum Co. (48) Others (52)	 100	
FIELD: Alces East, S.W. Boundary Lake, Alces		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
10. PACIFIC PETROLEUM LTD.		
Phillips Petroleum Co. (48)		
Others (52)		
CANADIAN ATLANTIC OIL CO.	100	
PEACE RIVER NATURAL GAS CO.		
SUNRAY OIL CO.		
Sun Oil Co.		
CANADA SOUTHERN PETROLEUM LTD.		
FIELD: Pacific 13A on Buick Creek		
11. MOBIL OIL OF CANADA LTD.		
Mobil Oil Corp.	100	
FIELD: Pembina		
12. TEXACO CANADA LTD.	50	
Texaco Inc.		
CONSOLIDATED MIC-MAC OIL		
MAYFAIR OIL AND GAS CO.	50	
CODE OIL AND GAS LTD.		
FIELD: 2-7 Swan Hills		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
13. SUN OIL CO. FARGO OILS LTD. General American Oil Co. of Texas GENERAL AMERICAN OILS LTD. General American Oil Co. of Texas WESTERN NATURAL GAS CO.		100
FIELD: Blueberry		
14. CANADA SOUTHERN PETROLEUM LTD. PACIFIC PETROLEUM CO. Phillips Petroleum Co. (48) Others (52) WEST CANADIAN OIL AND GAS. Delhi Oil Ltd. now Standard Oil Company (Ohio) SCURRY RAINBOW OILS	27.75 27.75 22.5 20	
FIELD: Peejay		
15. AMOCO CANADA PETROLEUM CO. Standard Oil Co. (Indiana) UNION OIL CO. OF CALIFORNIA.	80 20	
FIELD: Melvin River		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
16. NORTHWESTERN PETROLEUM RESERVES LTD. ULSTER PETROLEUM LTD. SUN OIL CO.	 100	
FIELD: Coronation District		
17. ATLANTIC RICHFIELD CO. IMPERIAL OIL ENTERPRISES LTD. Standard Oil Co. (New Jersey) (70) Other (30)	 100	
FIELD: Utikuma Lake field		
18. UNITED CANSO OIL AND GAS CO. Catawaba Corp. TENNECO OIL AND MINERALS LTD. Tenneco Inc. MICHIGAN WISCONSIN PIPE LINE CO.	 100	
FIELD:		
19. HUDSON BAY OIL AND GAS CO. Continental Oil Co. (67.8) Hudson Bay Co. (22.6) Others (9.6) MIAMI OIL PRODUCERS INC.	 100	
FIELD: Rainbow area		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
20. BANFF OIL LTD.	5	
Aquitaine Co. of Canada Ltd.		
Soc. Nationale des Petroles d'Aquitaine		
MOBIL OIL CANADA LTD..	50	
Mobil Oil Corp.		
AQUITAIN CO. OF CANADA LTD.	45	
Soc. Nationale des Petroles d'Aquitaine		
FIELD: Rainbow Area, Zama Lake		
21. GULF OIL CANADA LTD.		
Gulf Oil Corp. (69)		
Others (31)		
HUDSON BAY OIL AND GAS CO.	100	
Continental Oil Co. (67.8)		
Hudson Bay Co. (22.6)		
Others (9.6)		
FIELD: Key River Oil		
22. AMOCO CANADA PETROLEUM CO.		
Standard Oil Co. (Indiana)		
PACIFIC PETROLEUM LTD.	100	
Phillips Petroleum Co. (48)		
Others (52)		
FIELD: North Ricinees		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
23. BLUEWATER OIL AND GAS LTD.	22	
McCLURE OIL CO.. . . .	36	
PRENOLTA PETROLEUM LTD.. . . .	13	
OTHERS	29	
FIELD: McClure-Moore		
24. BRETT OILS LTD..	25	
DALHOUSIE OIL CO. LTD.	12.5	
OTHER (PRIVATE INTEREST)	62.5	
FIELD: Essex County, Ontario		
25. NORTHERN FOOTHILLS AGREEMENT GROUP		
Texaco Exploration Canada Ltd.	25	
Texaco Inc.		
Shell Canadian Exploration	25	
Royal Dutch/Shell Group		
Gulf Oil Canada Ltd.	25	
Gulf Oil Corporation (69)		
Others (31)		
Mobil Oil Canada Ltd.	25	
Mobil Oil Corporation		
FIELD: Boundary Lake		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
26. MOBIL OIL CANADA LTD. Mobil Oil Corporation ATLANTIC RICHFIELD CANADA LTD. Atlantic Richfield Co.		100
FIELD: Swan Hills		
27. CENTRAL FOOTHILL AGREEMENT GROUP Triad Petroleum Development Ltd.. Triad Petroleum Co. British Petroleum Co. Ltd. (62.6) Others (37.4) Gulf Oil Canada Ltd.. Gulf Oil Corporation (69) Others (31) Sunray DX Canada Oil Co.. Sun Oil Co. Mobil Oil Canada Ltd. Mobil Oil Corporation Royalite Oil Co. Inc. Gulf Oil Canada Ltd. Gulf Oil Corporation (69) Others (31)	20	30
	25	
	15	
	10	
FIELD: Stolberg, Mountain Park, Lovett River		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
28. HUDSON BAY OIL AND GAS CO. LTD. Continental Oil Co. (65.7) Hudson Bay Co. (21.9) Others (12.4) AMOCO CANADA PETROLEUM CO. LTD. Standard Oil Co. (Indiana) CANADIAN FINA OIL LTD. Canadian Petrofina Ltd. Petrofina S.A. Belgian private capital	 100	
FIELD: Pine Creek, Beaver Creek, Whitecourt, Windfall, Woodbend (Sturgeon Lake)		
29. AMOCO CANADA PETROLEUM CO. LTD. Standard Oil Co. (Indiana) PACIFIC PETROLEUM CO. LTD. Phillips Petroleum Co. (48) Others (52) CANADIAN SEABORD OIL CO. Texaco Inc.	50 25 25	
FIELD: Lobstick		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
30. IMPERIAL OIL LTD		
Standard Oil Company (New Jersey) (70)		
Others (30)		
HUDSON BAY OIL AND GAS CO.	 100	
Continental Oil Co. (65.7)		
Hudson Bay Co. (21.9)		
Others (12.4)		
FIELD: Turney Valley		
31. ATLANTIC RICHFIELD CANADA LTD.		
Atlantic Richfield Co.	 100	
MARATHON INTERNATIONAL OIL CO.		
Marathon Oil Co.		
FIELD: Jackfish		
32. SHELL OIL CO. LTD.		
Royal Dutch/Shell Group.	100	
FIELD: Simonette River		
33. UNION OIL CO. OF CALIFORNIA.	100	
FIELD: Red Earth Creek		

TABLE 41--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
34. TRANS EMPIRE OILS LTD. BAILEY SELBURN OIL AND GAS LTD. CANADIAN SUPERIOR OIL OF CALIFORNIA LTD. Superior Oil Co. FIELD: Weyburn	 100	
35. AMOCO CANADA PETROLEUM CO. Standard Oil Co. (Indiana) FARGO OILS LTD. General American Oil Co. of Texas FIELD: Crossfield	 100	
36. SINCLAIR CANADA OIL CO. Atlantic Richfield Co. PACIFIC PETROLEUM CO. Phillips Petroleum Co. (48) Others (52) FIELD: Beaton River	 100	
TOTAL CANADA		1,260,000

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-1967.

*Petroleum production for individual fields not available to author.

**Production figures are for calendar year 1970.

TABLE 42

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS
IN CANADA, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>CANADA</u>	
1. FEDERATED PIPELINES LTD.	
Texaco Inc.	50
Home Oil Co. Ltd.	50
United Oils Ltd.	
LOCATION: 500 mile crude gathering system from Swan Hills and Judy Creek to Edmonton	
2. RANGELAND PIPELINE DIVISION	
Hudson's Bay Oil and Gas Co.	
Continental Oil Co.	67.8
Hudson Bay Co.	22.6
Others.	9.6
LOCATION: 550 mile crude gathering system from fields in Altoona to Rimbey	
3. RAINBOW PIPELINE CO. LTD.	
Mobil Oil Corp.	33.3
Imperial Oils Ltd.	33.3
Standard Oil Co. (New Jersey)	
Aquitains Co. of Canada Ltd.	30.0
Soc Nationale des Petroles d'Aquitaine	
Banff Oil	3.4
Soc Nationale des Petroles d'Aquitaine	
LOCATION: 300 mile crude line from Rainbow station to Edmonton	

TABLE 42--Continued

Country, Company, Ownership, and Location	Percent Ownership
4. SASKATOON PIPELINE LTD. Royalite Oil Co. Ltd. Gulf Oil Canada Ltd. (97) Gulf Oil Corp. (68.4) Others (31.6) Gulf Oil Canada Ltd. Gulf Oil Corp. (68.4) Others (31.6)	*
LOCATION: 57 mile crude line from Interprovincial trunk line to refinery at Saskatoon	
5. MID-SASKATCHEWAN PIPELINE Same as #4 above	*
LOCATION: 90 mile gathering system around Coleville terminal and Eureka station	
6. KAMLOOPS PIPELINE Same as #4 above	*
LOCATION: 5 mile crude line at Kamploop refinery	
7. BRITISH COLOMBIA OIL TRANSMISSION CO. Sun Oil Co. 33.3 General American Oils Ltd.. 33.3 General American Oil Co. of Texas Western Natural Gas Co. Inc.. 33.3	
LOCATION: 66 mile crude line from Blueberry field in British Colombia to Taylor	

TABLE 42--Continued

Country, Company, Ownership, and Location	Percent Ownership
8. PEACE RIVER OIL PIPELINE CO. LTD.	
Shell Canada Ltd.	
Royal Dutch/Shell Group	*
Imperial Oil Limited	
Standard Oil Co. (New Jersey)	
Hudson's Bay Oil & Gas Co. Ltd.	14
Continental Oil Co. (67.8)	
Hudson Bay Co. (22.6)	
Amoco Canada Petroleum Co.	
Standard Oil Co. (Indiana)	
Royalite Oil Co. Ltd.	
Gulf Oil Corp. (97.8)	
Others (2.2)	
Gulf Oil Canada Ltd.	
Gulf Oil Corp. (68.4)	
Others (31.6)	
LOCATION: 800 mile crude gathering system from Red Earth field area to Edmonton	
9. INTERPROVINCIAL PIPE LINE	
Gulf Oil Canada Ltd.	
Gulf Oil Corp. (68.4)	
Others (31.6)	
Imperial Oil Ltd.	23
Standard Oil Co. (New Jersey) (70)	
Others (30)	
Amoco Canada Petroleum Co.	
Standard Oil Co. (Indiana)	
Shell Canada Ltd.	
Royal Dutch/Shell Group	
LOCATION: 1100 mile truck line from Edmonton, Canada to Lake Superior connecting with 16 refineries and 32 pipelines	

TABLE 42--Continued

Country, Company, Ownership, and Location	Percent Ownership
10. TRANS MOUNTAIN OIL PIPE LINE CO.	*
Amoco Canada Petroleum Co.	
Standard Oil Co. (Indiana)	
Imperial Oil Ltd.	
Standard Oil Co. (New Jersey) (70)	
Others (30)	
Shell Canada Ltd.	
Royal Dutch/Shell Group	
Standard Oil Company of California.	8.64
LOCATION: 723 mile crude line from Edmonton, Alberta to Burnaby, British Columbia	
11. WESTERN PACIFIC PRODUCTS & CRUDE OIL PIPELINES LTD.	
West Coast Transmission Co. Ltd.	86.0
Pacific Petroleum Ltd. (27)	
Phillips Petroleum Co. (48)	
Others (52)	
Pacific Petroleum Ltd.	14.0
Phillips Petroleum Co. (48)	
Others (52)	
LOCATION: 505 mile crude line from Taylor, British Columbia to Kamloops	
12. WINNIPEG PIPELINE CO. LTD.	
Imperial Oil Ltd.	
Standard Oil Co. (New Jersey)	70
Others.	30
LOCATION: 75 mile crude line from refineries at Winnipeg to Interprovincial trunk line	

TABLE 42--Continued

Country, Company, Ownership, and Location	Percent Ownership
13. HUSKY OILS LTD. SUN OIL CO. LOUISIANA LAND AND EXPLORATION CO.. . . .	33.3 33.3 33.3
LOCATION: 86 mile crude line from Lloydsminster, Saskatchewan to Interprovincial, trunk line	
14. IMPERIAL PIPELINE CO. LTD. Standard Oil Co. (New Jersey)	100
LOCATION: 314 mile crude gathering system from Leduc and Redwater fields to Edmonton	
15. GREAT CANADIAN OIL SANDS Sun Oil Co. Canadian Oil Company Royal Dutch/Shell Group Canadian Pacific Oil and Gas Co. Canadian Pacific Railway Co.	75 *
LOCATION: 266 mile crude line from Fort McMurray to Edmonton	
16. REMBEY PIPELINE CO. LTD. Shell Canada Ltd. Royal Dutch/Shell Group Standard Oil Company of California. . . .	65 35
LOCATION: 70 mile crude line from Rembey to Edmonton	
17. PEMBINA PIPE LINE LTD.	**
LOCATION: 275 mile crude gathering system from Pembina fields to Edmonton	

TABLE 42--Continued

Country, Company, Ownership, and Location	Percent Ownership
18. WEST PUR PIPELINE CO.	
Dome Petroleum Ltd.	100
LOCATION: 109 mile crude line from Midale to Cromes	
19. PRODUCERS PIPELINE LTD.	
Dome Petroleum Ltd.	100
LOCATION: 764.5 mile crude gather- ing system in South Saskatchewan to Inter- provincial trunk line	
20. TRANS-PRAIRIE PIPELINES LTD.	**
LOCATION: 500 mile crude gathering system in Manitoba, Saskatchewan and British Columbia, Interprovincial trunk line	
21. SOUTH SASKATCHEWAN PIPELINE CO.	
Mobil Oil Canada Ltd.	50
Mobil Oil Corp.	
Others.	50
LOCATION: 161 mile crude line from Contour to Regina	
22. GULF SASKATCHEWAN PIPE LINE LTD.	
Gulf Oil Canada Ltd.	
Gulf Oil Corp.	68.4
Others.	31.6
LOCATION: 50 mile crude line from Moose Jaw to Inter- provincial trunk line	

TABLE 42--Continued

Country, Company, Ownership, and Location	Percent Ownership
23. GULF ALBERTA PIPELINE LTD.	
Gulf Oil Canada Ltd.	
Gulf Oil Corp.	68.4
Others	31.6
LOCATION: 400 mile crude gathering system from Drumbelles to Interprovincial trunk line	
24. TEXACO EXPLORATION	
Texaco Inc.	100
LOCATION: 133 mile crude line from Wizard Lake to Bonnie Glen and Rembey fields	
25. BOW RIVER PIPE LINES LTD.	**
LOCATION: 240 mile crude line from Taber to Hardisty, joins with Interprovincial trunk line	
TOTAL PIPELINE MILEAGE CANADA. . .	8,139

Source: Compiled from data in Oil and Gas Jour. al, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-1967.

*Total ownership and participation percentage not available to the author. If the majority of the known owners were international majors, the pipeline was included in calculating the international major statistics.

**Ownership and percentage unknown to author. Pipeline mileage not included in calculating statistics. The total mileage unknown is 1,015.

TABLE 43

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN CENTRAL
AMERICA AND WEST INDIES, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>TRINIDAD AND TOBAGO</u>		
1. TRINIDAD NORTHERN AREAS LTD. British Petroleum Co. Ltd. Trinidad Shell Ltd. Royal Dutch/Shell Group Texaco Inc.	 100	66,000
FIELDS: Soldado, Fortin		
2. TRINIDAD TESORO PETROLEUM CO. LTD. Tesoro Petroleum Corp. Trinidad & Tobago government	50 50	20,000
FIELDS: Galeota, Saint Hilaire, Gros Morne, Palo Seco		
3. TEXACO TRINIDAD INC. Texaco Inc.	100	45,000
FIELDS: Guayaguayare		
4. PREMIER CONSOLIDATED OILFIELDS LTD.**		544
5. TRINIDAD CANADIAN OILS LTD.*		1,045

TABLE 43--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
6. AMOCO TRINIDAD OIL CO. American International Oil Co. Standard Oil Co. (Indiana)	 100	***
FIELDS: Point Radix		
7. TRINMAR LTD. Shell Oil Co. Royal Dutch/Shell Group Texaco Inc. Trinidad Tesoro Petroleum Co. Ltd. Tesoro Petroleum Co. Trinidad & Tobago government	 100	***
FIELDS: Gulf of Paria		
TOTAL TRINIDAD AND TOBAGO. . . . 132,589		

TABLE 43--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>MEXICO</u>		
8. PETROLEOS MEXICANOS (PEMES)		459,000
state owned	100	
FIELDS: Arenque Offshore, Ebano Panuco, Naranjov-Cerro, Azue, Poza Rica		
TOTAL MEXICO.		459,000
TOTAL CENTRAL AMERICA AND WEST INDIES. . .		591,589

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

*Production figures are for calendar year 1970.

**Ownership and fields unknown, in statistical compilations included with the international minors.

***Production figures not available to author.

TABLE 44

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS IN CENTRAL
AMERICA AND WEST INDIES, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>MEXICO</u>	
1. PETROLEOS MEXICANOS (PEMEX)	
State owned.	100
LOCATION: 2,334 mile crude gathering system	
2. TEXACO TRINIDAD INC.	
Texaco Inc.	100
LOCATION: 120 mile crude gathering system from Guayaguayare field to refinery at Pointe Pierre	
3. TRINIDAD-TESORO PETROLEUM CO. LTD.	
Tesoro Petroleum Corp.	50
Trinidad & Tobago government	50
LOCATION: 100 mile crude gathering system in and around Pointe Fortin and Pointe Pierre	
TOTAL PIPELINE MILEAGE CENTRAL AMERICA AND WEST INDIES.	2,554

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

TABLE 45

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS
IN EUROPE, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production * (b/d)
<u>AUSTRIA</u>		
1. OESTERREICHISCHE MINERALOELVERWAETUNG A.G. (OMV). . . State Company (Austria)	100	46,000
FIELD: Matzen-Oversthal (51% of all production), Schonkerchen-strasshof Tief (22% of all production)		
2. ROHOEL-GEWINNUNGS A.G. (RAG)		5,100
Royal Dutch/Shell Group	50	
Mobil Oil Corp.	50	
FIELD: Voitsdorf, Zistersdorf/Gaiselberg		
3. R. K. VAN SICKLE.	100	500
Canadian Capital		
FIELD: Neusidl A. Zaya field		
TOTAL AUSTRIA.		51,600
<u>ENGLAND</u>		
4. STANDARD OIL CO. (NEW JERSEY)	100	300
FIELD: Bothamsall		

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
5. THE BRITISH PETROLEUM CO. LTD.	100	1,700
FIELD: Plungas, Kimmeridge, Gainsborough, Egmonton, Beckingham, Apleyhead		
TOTAL ENGLAND		2,000
<u>FRANCE</u>		
6. SOCIETE ESSO DE RECHERCHES D'EXPLOITATION PETROLIERES (ESSO-REP)		38,000
Esso Standard S.A.F.	89	
United Petroleum Securities Corp.		
Standard Oil Co. (New Jersey) (77.5)		
Gulf Oil Corp. (22.5)		
ELF/Erap	5	
State company (France)		
Others	6	
FIELD: Aquitaine Basin, Parentis, Cazoux, La Vergne-1a-Teste, Mimizan nord, Cobiel-Ychoux, Mothes, Lugor, Lucats		
7. ELF/ERAP		3,750
State Company (France)		
COMPAGNIE D'EXPLORATION D'AQUITAINE (CEP).	100	
French capital		

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
FIELD: Aquitaine Basin, Parentis, Cazoux, La Vergne-la-Teste, Mimizan nord, Cobiel-Ychoux, Mothes, Lugor, Lucats		
7. ELF/ERAP		3,750
State Company (France)		
COMPAGNIE D'EXPLORATION D'AQUITAINE (CEP)	100	
French capital		
FIELD: Paris Basin, Chailly-en-Biere, Saint- Firmin-des-Bois, Chuelles, Chateaurenard, Marolles-en-Hurepoix, Courtenay, Chailly Triossic		
8. SOCIETE PETROLIERE DE RECHERCHES DANI LA REGION PARISIENNE (PETROREP)		1,400
Petrofrance	51	
Rothchilds & other French investment trusts	49	
FIELD: Coulommies		
9. ELF/ERAP.	100	1,200
State company (France)		
REGIE AUTONOME DES PETROLES (RAP)		
now Elf/Erap		
FIELD: Vellemer, Brie Charbonnettes, Grandville, Valence-en-Brie		

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
10. COMPAGNIE DES PETROLES DU SUD-EST PARISIEN (COPESEP)		550
Shell Francaise	50	
Royal Dutch/Shell Group		
Compagnie des Produits Chimiques et Raffineries de Berre	35	
Soc. Anen Francaise de Recherches et d'Exploitation de Perole.	15	
FIELD: Saint-Martin-de-Bossenay		
11. SOCIETE DE PROSPECTION ET EXPLOITATIONS	100	
PETROLIERES EN ALSACE (PREPA)		2,100
Elf/Erap		
State company (France)		
FIELD: Eschau, Souffleheim, Scheibenhard		
TOTAL FRANCE.		47,000

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>GERMANY</u>		
12. DEILMANN		**
German capital		
GEWERKSCHAFT ELWERATH		
Standard Oil Co. (New Jersey) (50)		
Royal Dutch/Shell Group (50)		
PREUBOY A.C.		100
German capital		
BADISCHE ANILIN-UND SODAFABRIK		
German capital		
FIELD: Georgsdorf		
13. GEWERKSCHAFT ELWERATH		**
Royal Dutch/Shell Group (50)		
Standard Oil Co. (New Jersey) (50)		
ITAG		
PREUSSAY A.G.		100
German capital		
MOBIL OIL CORP.		
FIELD: Lueben, Muehldorf-Sued		
14. DEUTSCHE ERDOL AKTIENGESELLSCHAFT (DEA)		**
Texaco Inc.	100	
FIELD: Darching, Bavaria		

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
15. DEUTSCHE ERDOEL A.G. Texaco Inc. GEWERKSCHAFT ELWERATH Royal Dutch/Shell Group (50) Standard Oil Co. (New Jersey) (50)	 100	**
FIELD: Boostedt, Ploen		
16. MOBIL OIL CORP. PREUSSAY A.G. German capital	 100	**
FIELD: Curslack		
17. BADISCHE ANILIN-UND SODAFABRIK German capital GEWERKSCHAFT ELWERATH Standard Oil Co. (New Jersey) (50) Royal Dutch/Shell Group (50)	 100	**
FIELD: Meckelfeld-Sued 1, Monchsrot		
18. DEUTSCHE ERDOEL A.G. Texaco Inc. (97.6) Others (2.4) MOBIL OIL CORP.	 100	**
FIELD: Hardesse		

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
19. MOBIL OIL CORP. GEWERKSCHOFT BRIGITTA CO. Royal Dutch/Shell Group (50) Standard Oil Co. (New Jersey) (50) FIELD: Varel, Sud Oldenburg	 100	**
20. MOBIL OIL CORP. GEWERKSCHAFT ELWERATH Standard Oil Co. (New Jersey) (50) Royal Dutch/Shell Group (50) FIELD: Wehsbleck	 100	**
21. BADISCHE ANILIN-UND SODAFABRIK. German capital FIELD: Emlichheim	100	**
CRUDE PETROLEUM PERCENT BREAKDOWN AMONG GERMAN COMPANIES, 1965***		
1. Gewerkschoft Elwerath Standard Oil Co. (New Jersey) (50) Royal Dutch/Shell Group (50)	23.9	
2. Deutsche Erdol A.G. Texaco Inc.	20.1	
3. BADISCHE ANILIN-UND SODAFABRIK German Capital	13.4	

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
4. MOBIL OIL A.G. IN DEUTSCHLAND Mobil Oil Corp.	10.8	
5. PREUSSAY A.G. German Capital	10.3	
6. DEUTSCHE SEHACHTBAU AND TIEFBOHRGESELLSCHAFT. . . German Capital	7.5	
7. Gewerkschaft Brigetta Royal Dutch/Shell Group (50) Standard Oil Co. (New Jersey) (50)	5.0	
TOTAL CRUDE PRODUCTION FOR GERMANY. . .		147,130
<u>ITALY</u>		
22. AGIP MINERARIA		15,500
Ente Nazionali Idrocarburi State company (Italy)	79.0	
Others	21.0	
FIELD: Pisticci, Cartemaggiore, Gela (Sicily)		
23. GULF OIL CORP.	100	8,000
FIELD: Ragusa, Sicily		
TOTAL ITALY.		23,500

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>NETHERLANDS (HOLLAND)</u>		
24. NEDERLANDSE AARDOLIE MAATCHAPPIJ (N.A.M.)		36,000
Royal Dutch/Shell Group	50	
Standard Oil Co. (New Jersey)	50	
FIELD: Wassenaar, Pijnacker, De Lier, Schoonebeck		
TOTAL NETHERLANDS		36,000
<u>SPAIN</u>		
25. SHELL ESPONA N.V.	51.7	**
Royal Dutch/Shell Group		
CIA ARRENDATARIA DEL MONOPOLIO DE PETROLEOS S.A. (CAMPSA)	8.3	
CIA DES PARTICIPATIONI DE RECHERCHES ESPONOLA (COPAREX)	16.0	
Owned by French banking & investment companies		
NATIONAL INSTITUTE OF INDUSTRY (INI)	24.0	
Government holding company (Spain)		
FIELD: Amposta field, Ebro River Delta		

TABLE 45--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
26. AMERICAN OVERSEAS PETROLEUM (SPAIN) LTD.		**
Cia Arrendataria del Monololio de Petroleos S.A.		
(CAMPSA)	50	
State Agency		
Caltex Group	50	
Standard Oil Co. of California (50)		
Texaco Inc. (50)		
FIELD: Ayoluengo		
TOTAL SPAIN.		3,583
TOTAL FOR EUROPE		310,813

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

*Production figures are for calendar year 1970.

**Production per individual field unknown to author.

***The percentage for each individual company or operation of Germany's total production is given in the 1965 Minerals Yearbook International Report. Production figures and the companies operating in Germany have not changed substantially since 1965.

TABLE 46

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS
IN EUROPE, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>AUSTRIA</u>	
1. ADRIATIC-VIENNA PIPELINE (AWP)	
Asterreichische Mineralolverwaltung A.G. (OMV)	51
State company (Austria)	
Royal Dutch/Shell Group	14.5
Mobil Oil Corp.	12.5
The British Petroleum Co. Ltd.	7.5
Standard Oil Co. (New Jersey)	6.5
Ente Nazionali Idrocarburi (ENI)	4
State company (Italy)	
Compagnie Francaise des Petroleos (CFP)	4
State company (French)	
LOCATION: 258 mile crude line from Trans Alpine trunk line to refineries at Vienna	
2. ESSO-REP	
Esso Standard S.A.F.	89
United Petroleum Securities Corp. Standard Oil Company (New Jersey) (77.5) Gulf Oil Corp. (22.5)	
ELF/ERAP.	5
Others.	6
LOCATION: 59 mile crude line from Parentis to Amber refinery	
3. Esso-Standard S.A.F.	
United Petroleum Securities Corp. Standard Oil Co. (New Jersey) (77.5) Gulf Oil Corp. (22.5)	
LOCATION: 23 mile dual crude line from Le Harve to Port Jerome refinery	

TABLE 46--Continued

Country, Company, Ownership, and Location	Percent Ownership
4. SOCIETE DE PIPE LINE SUD-EUROPEAN (SEPL)	
Esso A.G.	24.91
Standard Oil Co. (New Jersey)	
Royal Dutch/Shell Group	20.32
The British Petroleum Co. Ltd..	7.12
Texaco Inc.	4.
Mobil Oil Corp.	4.98
ELF/ERAP.	10
Compagnie Francaise des Petroles.	13.24
Veba-Chemie	3.87
Badische Anilin-und Sodafabrik.	3.87
Private German capital	
Gelsenberg-Benzin A.G..	3.17
Petrofina S.A..	0.89
Private Belgium capital	
Societe-Anton	3.63
State company (French)	
LOCATION: 489 mile crude line from Lavera near Marseille with a 40 mile extension to Karlsruhe, West Germany	
5. NORTH WEST OIL PIPELINE (NWP)	
Esso A.G.	25.1
Standard Oil Co. (New Jersey)	
The British Petroleum Co. Ltd..	25.1
Veba-Chemie	25.1
Union Rheinisthe.	10.5
Erdoelroffineria Dueesburg.	10.5
LOCATION: 390 mile crude line from Wilhelmshaven to Cologne	
6. ROTTERDAM-RHINE PIPELINE (RRP)	
Royal Dutch/Shell Group	40
Caltex Group.	20
Standard Oil Co. of California (50)	
Texaco Inc. (50)	
Geisenberg and Mobil Oil.	40
Gelsenberg Benzin A.G.	
Mobil Oil Corp.	
LOCATION: 283 mile crude line from Rotterdam to Wessel and Cologne	

TABLE 46--Continued

Country, Company, Ownership, and Location	Percent Ownership
7. THE BRITISH PETROLEUM CO. LTD. STANDARD OIL CO. (NEW JERSEY) TEXACO INC. ROYAL DUTCH/SHELL GROUP GELSENBERG-BENZIN A.G. VEBA-CHEMIE BADISCHE ANILIN-UND SODAFABRIK	100
LOCATION: 155 mile crude line to Ingolstadt from Karlsruhe	
8. TRANS ALPINE PIPELINE (TAL) Esso A.G. 20.4 Standard Oil Co. (New Jersey) Shell Oil Co. 15.4 Royal Dutch/Shell Group The British Petroleum Co. Ltd. 14.4 Mobil Oil Corp. 11.4 Marathon Oil International 7 Marathon Oil Co. Gelsenkirchen. 6 Texaco Inc. 3 Ente Nazionali Idrocarburi (ENI) 10.4 State company (Italy)	
LOCATION: 300 mile crude line from Trieste, Italy to Ingolstadt, West Germany	
9. AMOCO ITALIA SpA 100 American International Oil Co. Standard Oil Co. (Indiana)	
LOCATION: 50 mile crude line from Genoa to Cremona	
10. Gulf Italia Co. 100 Gulf Oil Corp.	
LOCATION: 43 mile crude line from Ragusa to refinery at Augusta	

TABLE 46--Continued

Country, Company, Ownership, and Location	Percent Ownership
11. CENTRAL EUROPEAN LINE (CEL) The British Petroleum Co. Ltd. Royal Dutch/Shell Group Deutsche Erdoc A.G. Texaco Inc. Gelsenberg Badische Anilin-und Sodafabrik	100
LOCATION: 566 mile crude line from Genoa to Ingolstadt	
12. ENI PIPELINE Snam SpA Ente Nazionali Idrocarburi (ENI) Oleoduc de Rhon Oleodott del Reno S.A. Rheinische Oelleitungsgesell German local capital	100
LOCATION: 300 mile crude line from Genoa, Italy to Aigle, Switzerland	
13. CONDOR SpA PER L'INDUSTRIA PETROLIFERA E CHIMIEA. Shell Italiana SpA Royal Dutch/Shell Group	100
LOCATION: 82 mile crude line from Genoa to Rho	
14. INDUSTRIE CHIMICHE ITALIANE DEL PETROLE (I.C.I.P.) Italian capital	100
LOCATION: 125 mile crude line from Manghera to Mantua	
15. CALTEX ITALIANA SpA California Texas Oil Corp. Standard Oil Co. of California Texaco Inc.	50 50
LOCATION: 100 mile crude line from to Novara	

TABLE 46--Continued

Country, Company, Ownership, and Location	Percent Ownership
16. NEDERLANDSE PIJPLEIDING MIJ NV (NPM)	
Royal Dutch/Shell Group	50
Standard Oil Co. (New Jersey)	50
LOCATION: 49 mile crude line from Europart to Amsterdam	
17. EMPRESA NACIONAL CALVO SOVELS S.A.	100
Spanish capital	
LOCATION: 162 mile crude line from Malaga to Puerto Llano	
18. BP REFINERY (LLANDARCY) LTD.	100
The British Petroleum Company Ltd.	
LOCATION: 60 mile crude line from Llandary refinery to Milford Haven terminal	
19. BP TRADING LTD.	100
The British Petroleum Co. Ltd.	
LOCATION: 60 mile crude line from	
TOTAL PIPELINE MILEAGE EUROPE . . . 3,594	

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

TABLE 47

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN
THE MIDDLE EAST, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>ABU DHABI</u>		
1. ABU DHABI PETROLEUM CO. LTD.		425,000
British Petroleum Exploration Co..	23.7	
Shell Petroleum Co. Ltd.	23.7	
Royal Dutch/Shell Group		
Compagnie Francaise des Petroleos.	23.7	
French government controlled		
Near East Development Co..	23.7	
Standard Oil Co. of New Jersey (50)		
Mobil Oil Corp. (50)		
Participation and Exploration Corp..	5.0	
C.S. Gulbekian estate		
FIELDS: Murban, Bu Hasa, Abu Jidu		
2. ABU DHABI MARINE AREAS LTD..		270,000
British Petroleum Exploration Co. (Associated		
Holdings) Ltd.	66 2/3	
Compagnie Francaise des Petroleos.	33 1/3	
FIELDS: Umm Shaif, Zakum		
TOTAL ABU DHABI.		695,000

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>BAHRIAN</u>		
3. BAHRIAN PETROLEUM CO. LTD.		76,000
Standard Oil Co. of California	50	
Texaco Inc.	50	
FIELDS: Awali		
TOTAL BAHRIAN		76,000
<u>DUBAI</u>		
4. DUBAI PETROLEUM CO.		80,000
Dubai Petroleum Co.	35	
Continental Oil Co.		
Dubai Marine Areas Ltd.	50	
British Petroleum Co. Ltd. (33 1/3)		
Compagnie Francaise des Petroles (66 2/3)		
Deutsche Erdoel Aktiengesellschaft.	10	
Texaco Inc.		
Dubai Sun Oil Co.	5	
Sun Oil Co.		
FIELDS: Fateh		
TOTAL DUBAI		80,000

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>NEUTRAL ZONE</u>		
5. AMINOIL INC.		160,000
Aminoil Inc.	50	
American Independent Oil Co. Inc.		
R. J. Reynolds Industry Inc.		
Getty Oil Co.	50	
FIELDS: Ratawa, Wafra, Burgan, Eocene, South Fuwaris, Ummgudair		
6. ARABIAN OIL CO. LTD.		340,000
Japan Petroleum Trading Co.	80	
Japanese Government Company		
Saudi Arabian Government	10	
Kuwait Government.	10	
FIELDS: Khafji, Hout		
TOTAL NEUTRAL ZONE		500,000
<u>QATAR</u>		
7. QATAR PETROLEUM CO. LTD.		190,400
Ownership same as Abu Dhabi Petroleum Co. Ltd. (See number 1 above)		
FIELDS: Dukhan		

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
8. SHELL OIL CO. OF QATAR		172,600
Royal Dutch/Shell	100	
FIELDS: Idd-el-Shargi, Maydam Mazam, Fulhanine		
TOTAL QATAR.		363,000
<u>TURKEY</u>		
9. N.V. TURKSE SHELL		39,000
Royal Dutch/Shell Group	100	
FIELDS: Kurkan, Kayakoy, Terzili, Beykan, Sahaban, Piyanko		
10. TURKIYE PETROLLERI A.O.		19,400
State owned	100	
FIELDS: Raman West, Bati-Raman, Kurtalan Garzan-Germik, Magrip, Bulgardag		
11. ERSAN PETROL SANAYII A.S.		950
Private local capital	100	
FIELDS: Kahta		

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
12. MOBIL EXPLORATION MEDITERRANEAN		9,660
Mobil Oil Corporation	100	
FIELDS: Selmo, Zengilan, Silvanka		
TOTAL TURKEY.		69,010
<u>ISRAEL</u>		
13. LAPIDOTH ISRAEL OIL PROSPECTORS		1,600
State owned	100	
FIELDS: Heletz-Brur, Kochav		
TOTAL ISRAEL.		1,600
<u>KUWAIT</u>		
14. KUWAIT OIL COMPANY		2,700,000
Gulf Kuwait Company	50	
Gulf Oil Corporation		
BP Kuwait Company	50	
British Petroleum		
Exploration Co., Ltd.		
FIELDS: Burgan, Minagish, Raudkatain, Sabiribah		
Bahrah, Magwa-Ahmadi, Ummgudair, Kashman		
TOTAL KUWAIT.		2,700,000

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>MUSCAT AND OMAN</u>		
15. PETROLEUM DEVELOPMENT (OMAN) LTD.		337,000
Royal Dutch/Shell Group	85	
Participation and Exploration Corporation	5	
C.S. Gulbenkian Estate		
Compagnie Francaise Des Petroles.	10	
FIELDS: Fahud, Natih, Yibal, Al-Huwaish		
TOTAL MUSCAT AND OMAN.		337,000
<u>SAUDI ARABIA</u>		
16. ARABIAN AMERICAN OIL COMPANY		3,550,000
Standard Oil Company of California.	30	
Standard Oil Company of New Jersey.	30	
Texaco Inc.	30	
Mobil Oil Corporation	10	
FIELDS: Khurais, Manifa, Ghawar, Abqaiq, Berri, Abu Safah, Abu Hadriya, Safaniya, Qatif, Khursaniya, Fadhili, Dammam, Shaybah		
TOTAL SAUDI ARABIA		3,550,000

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>IRAQ</u>		
17. IRAQ PETROLEUM COMPANY LTD.		1,056,000
British Petroleum Exploration Company.	23.7	
Shell Petroleum Company Ltd.	23.7	
Royal Dutch/Shell Group		
Compagnie Francaise Des Petroleos.	23.7	
French Government holds controlling interest		
Near East Development Corporation.	23.7	
Standard Oil Company of New Jersey (50)		
Mobil Oil Corporation (50)		
Participation and Exploration Corp.	5.0	
C.S. Gulbenkian Estate		
FIELDS: Kirkuk, Bai Hassan, Jambur		
18. MOSUL PETROLEUM COMPANY LTD.		63,000
Ownership same as IRAQ PETROLEUM CO. LTD. (number 17 above)		
FIELDS: Ain Zalah, Butmah		
19. BASRAH PETROLEUM COMPANY LTD.		350,000
Same as Iraq Petroleum Co. Ltd. (number 17 above)		
FIELDS: Zubair, Rumaila		

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
20. IRAQ NATIONAL OIL CO.		3,000
State owned	100	
FIELDS: Naft Khaneh		
	TOTAL IRAQ.	1,472,000
<u>IRAN</u>		
21. IRANIAN OIL EXPLORATION AND PRODUCING CO.		3,400,000
Iran Oil Participants Ltd.		
National Iranian Oil Company**		
State owned agency participation		
British Petroleum Company	40	
Bataafse Petroleum Maatschappi N.V.	14	
Royal Dutch/Shell Group		
Standard Oil Company of California.	7	
Gulf Oil Corporation.	7	
Standard Oil Company of New Jersey.	7	
Mobil Oil Corporation	7	
Texaco Inc.	7	
Compagnie Francaise des Petroles.	6	
French government controlled		
Iricon Agency Ltd.	5	
American Independent Oil Co. (.833)		
R.J. Reynolds Industries Inc.		
Atlantic Richfield Company (1.677)		
Getty Oil Company (.417)		
Tidewater Oil Company (.417)		
(now Getty Oil Company)		

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
San Jacinto Petroleum Company (.417)		
Continental Oil Company		
Signal Oil and Gas Company (.833)		
The Signal Companies Inc.		
Standard Oil Company of Ohio (.417)		
FIELDS: Agha, Jari, Ahwaz, Bibi Hakimeh, Paris, Gach Saran, Haft Kel, Karanj, Marun, Masjid-i-Sulaiman, Pazanan, Rag-E-safid, Noruz, Naft Safid, Lali, Ramshir, Binak		
22. SOCIETE IRANO-ITALIENNE DES PETROLES		90,000
AGIP SpA.	50	
Ente Nazionali Idrocarburi		
Italian govt. controlled		
National Iranian Oil Co..	50	
Iranian government controlled		
FIELDS: Bahregan Sar		
23. IRAN PAN AMERICAN OIL COMPANY		150,000
Pan American International Oil Co..	50	
American International Oil Co.		
Standard Oil Company of Indiana		
National Iranian Oil Company.	50	
FIELDS: Darius, Fereidoon, Esfandiar, Cyrus		

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
24. LAVAN PETROLEUM COMPANY		100,000
National Iranian Oil Company.	50	
State owned		
Atlantic Exploration Company.	12.5	
Atlantic Richfield Company		
Murphy Middle East Oil Company.	12.5	
Murphy Oil Corporation		
Iranian Sun Oil Company	12.5	
Sun Oil Company		
Union Oil Company of Iran	12.5	
Union Oil Company of California		
FIELDS: Sasan		
25. NATIONAL IRANIAN OIL COMPANY		10,000
State owned	100	
FIELDS: Naft-i-Shah, Alborz, Sarajeh		
26. IRANIAN MARINE INTERNATIONAL OIL COMPANY		100,000
National Iranian Oil Company.	50	
State owned		
AGIP SpA	16 2/3	
Ente Nazionali Idrocarburi		
State owned (Italy)		
Phillips Petroleum Company.	16 2/3	
Oil and Natural Gas Commission, India	16 2/3	
State owned (India)		
FIELDS: Rostam		
TOTAL IRAN.		3,850,000

TABLE 47--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>SYRIA</u>		
27. GENERAL PETROLEUM AUTHORITY Ownership by state agency		83,200
FIELDS: Homsch, Jubissa, Karatchok, Rumaban, Souedie		
TOTAL SYRIA		83,200
TOTAL MIDDLE EAST		13,776,810

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; International Petroleum Register, 1966-1967.

*Production figures are for calendar year 1970.

**National Iranian Oil Company (NIOC) is not an equity partner in this venture. However, NIOC does have a 50 percent share of the profits. In the literature this is often known as agency participation.

TABLE 48

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS IN
MIDDLE EAST, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>ABU DHABI</u>	
1. ABU DHABI PETROLEUM CO. LTD.	
BP Exploration Co.	23.7
Shell Petroleum Co. Ltd.	23.7
Royal Dutch/Shell Group	
Compagnie Francaise des Petroleos. . . .	23.7
French government controlled	
Near East Development Co.	23.7
Standard Oil Co. of New Jersey (50)	
Mobil Oil Corp. (50)	
Participation and Exploration Corp . . .	5.2
C. S. Gulbekian estate	
LOCATION: 80 mile crude line from on shore fields to export terminal at Jebel Dhanna	
2. ABU DHABI MARINE AREAS LTD.	
BP Exploration Co. (Associated Holdings) Ltd.	66 2/3
Compagnie Francaise des Petroleos. . . .	33 1/3
French government company	
LOCATION: 20 mile crude line from Umm Shaif to Das Island	
56 mile crude line from Zakum Field to Das Island	
<u>QATAR</u>	
3. QATAR PETROLEUM CO. LTD.	
Same ownership as Abu Dhabi Petroleum Co. Ltd. (see number 1 above)	
LOCATION: 60 mile crude line from Dukhan Field to Umm Said	
60 mile crude line gathering system from Dukhan Field to Umm Said	

TABLE 48--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>NEUTRAL ZONE</u>	
4. AMINOIL INCORPORATED	
American Independent Oil Co. Inc.	
R. J. Reynolds Industries, Inc.	
LOCATION: 34 mile crude line from	
Wafra oil field to Mena	
Abdulla	
5. ARABIAN OIL CO. LTD.	
Japan Petroleum Trading Company	80
Japanese government company	
Saudi Arabian Government.	10
Kuwait Government	10
LOCATION: 60 mile crude line from	
Khafji field to Ras Khafji	
6. GETTY OIL COMPANY	
Getty Oil Company	100
LOCATION: 32 mile crude line from	
Wafra field to Mina Saud	
<u>IRAN</u>	
7. IRANIAN OIL EXPLORATION AND PRODUCING COMPANY	
Iran Oil Participants Ltd.	
National Iranian Oil Company	*
state owned (Agency Participation)	
British Petroleum Company	40
Bataafse Petroleum Maatschappij N.V.. .	14
Royal Dutch/Shell Group	
Standard Oil Company of California. . .	7
Gulf Oil Corporation.	7
Standard Oil Company of New Jersey. . .	7
Mobil Oil Corporation	7
Texaco Inc.	7
Compagnie Francaise des Petroles. . . .	6
French government controlled	
Iricon Agency Ltd..	5
American Independent Oil Co. (.833)	
R. J. Reynolds Industries Inc.	

TABLE 48--Continued

Country, Company, Ownership, and Location	Percent Ownership
Atlantic Richfield Company (1.677)	
Getty Oil Company (.417)	
Tidewater Oil Company (.417) (now Getty Oil Co.)	
San Jacinto Petroleum Company (.417) Continental Oil Co.	
Signal Oil and Gas Company (.833)	
The Signal Companies, Inc.	
Standard Oil Company of Ohio (.417)	
LOCATION: 70 mile crude line from Gach Saran field to Kharg Island	
100 mile crude line from Agha Jari to Ganaweh	
26 mile crude line from Ganaweh to Kharg Island	
350 mile crude line gathering system from various fields to Abadan refinery	
8. SOCIETE IRANO-ITALIENNE DES PETROLES	
National Iranian Oil Company State owned	50
AGIP SpA Ente Nazionali Idracarburi (ENI) Italian government company	50
LOCATION: 16 mile crude line from Bahregan Sar to Bandar Deylam	
9. NATIONAL IRANIAN OIL COMPANY	
State owned.	100
LOCATION: 200 mile crude line from Naft-i-Shah to Kermanshah	

TABLE 48--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>ISRAEL</u>	
10. EILAT PIPELINE COMPANY LTD.	
State agency	100
LOCATION: 250 mile crude line from Elat to Haifa	
<u>TURKEY</u>	
11. TURKIYE PETROLLERI ANONIM ORTAKLIGI	
State controlled	100
LOCATION: 350 mile crude line from Batman to Iskendruni	
<u>JORDAN</u>	
12. TRANS ARABIAN PIPELINE COMPANY	
Standard Oil Company of California . . .	30
Standard Oil Company (New Jersey). . . .	30
Texaco Inc.	30
Mobil Oil Corporation.	10
LOCATION: 754 mile crude line quisumah in Saudi Arabia to Sidon, Lebanon	
<u>SYRIA</u>	
13. SYRIA, GOVERNMENT PETROLEUM COMPANY	
State owned.	100
LOCATION: 400 mile crude line from Karachuk field to Tartus	

TABLE 48--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>LOWER ARABIAN PENNINSULA</u>	
14. PETROLEUM DEVELOPMENT OMAN LTD.	
Shell Petroleum Company Ltd.	85
Royal Dutch/Shell Group	
Compagnie Francaise des Petroles. . . .	10
State owned	
Participation and Exploration Corp. . . .	5
C. S. Gulbenkian estate	
LOCATION: 200 mile crude line from Yibal field to Sail-el- Malih	
<u>KUWAIT</u>	
15. KUWAIT OIL COMPANY LTD.	
Gulf Kuwait Company.	50
Gulf Oil Corporation	
BP Kuwait Company.	50
British Petroleum Exploration Co.	
LOCATION: 120 mile crude line gather- ing system from Minagish field to Mina-al-Ahmadi	
61 mile crude line from Baudhatein to Mina-al- Ahmadi	
50 mile crude line from Ahmadi Magwa to Mina-al- Ahmadi	
16. AMERICAN INDEPENDENT OIL CO.	
R. J. Reynolds Industries Inc.	100
LOCATION: 50 mile crude line from Wafra field to Mina Abdullah	

TABLE 48--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>SAUDI ARABIA</u>	
17. ARABIAN AMERICAN OIL COMPANY	
Standard Oil Company of California. . . .	30
Standard Oil Company (New Jersey)	30
Texaco Inc.	30
Mobil Oil Corporation	10
LOCATION: 500 mile crude line gathering system from Safaniya field to Ras Tanura	
150 mile crude line from Khursaniyah to Ras Tanura	
250 mile crude line gathering system from Ghawar field to Ras Tanura	
<u>IRAQ</u>	
18. IRAQ PETROLEUM COMPANY	
Same ownership as Abu Dhabi Petroleum Co. Ltd. (see number 1 above)	
LOCATION: 532 mile crude line from Kirkuk field to Tripoli	
555 mile crude line from Kirkuk field to Banias	
116 mile crude line mainline from Kirkuk field to Banias	
19. BASRAH PETROLEUM COMPANY LTD.	
Same ownership as Abu Dhabi Petroleum Co. Ltd. (see number 1 above)	
LOCATION: 220 mile crude gathering system from Zubair and Rumaila fields to Fao Terminal	

TABLE 48--Continued

Country, Company, Ownership, and Location	Percent Ownership
20. MOSUL PETROLEUM COMPANY LTD. Same ownership as Abu Dhabi Petroleum Co. Ltd. (see number 1 above)	
LOCATION: 134 mile crude line from Ain Zalah and Butmah fields to Iraq Petroleum Company's main pipeline	
21. IRAQ NATIONAL OIL COMPANY State owned 100	
LOCATION: 80 mile crude line from Alwand Khanaqin to Naft Khaneh	
TOTAL PIPELINE MILEAGE MIDDLE EAST . . 5,936	

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; International Petroleum Register, 1966-1967.

*National Iranian Oil Company (NIOC) is not an equity partner in this venture. However, NIOC does have a 50 percent share of the profits. In the literature this is often known as agency participation.

TABLE 49

OWNERSHIP OF THE MAJOR PETROLEUM PRODUCING OPERATION
IN NORTH SEA, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
1. PHILLIPS PETROLEUM	36.96	10,000
PETROFINA S.A.	30.00	
Belgian private capital		
AGIP	13.04	
Ente Nazionali Idrocarburi (ENI)		
Italian state company		
PETRONARD A/S.	20.00	
Norsk Hydro		
Elf		
Norge Aquitaine		
Norge Total Marine		
Norsk Eurofrep		
Norge Cofranord		
Coparex Norge		
FIELD: Ekofish		
TOTAL NORTH SEA		10,000

Source: Compiled from data in Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; and International Petroleum Register, 1966-67.

*Production figures are for calendar year 1970.

TABLE 50

OWNERSHIP OF MAJOR PETROLEUM PRODUCING OPERATIONS IN
SOUTH AMERICA, AS OF JUNE, 1972

Country, Company, Ownership, and Fields	Percent Ownership	Production* (b/d)
<u>ARGENTINA</u>		
1. YACIMENTOS PETROLIFEROS FISCALES state owned	100	290,000
FIELDS: Salta, Mendoza, Neuquen, Rio Negro, La Pampa, Chubut, Jujuy, Cerro Redondo		
2. CITIES SERVICE OIL CO. OF ARGENTINA. Cities Service Co.	100	40,000
FIELD: Mendoza .		
3. PAN AMERICAN INTERNATIONAL OIL CORP. American International Oil Co. Standard Oil Co. of Indiana	100	35,000
FIELDS: Cerro Dragan, Canadon Grande, Anticlinal Grande		
4. TENNESSEE ARGENTINA S.A. Tenneco Oil Co. Tennessee Gas Transmission Co. Tenneco Inc.	100	15,000
FIELDS: Tierra del Fuego, La Sara		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
5. SHELL COMPANIA ARGENTINA DE PETROLEO. Royal Dutch/Shell Group	100	4,000
FIELDS: Santa Cruz, Chubut		
TOTAL ARGENTINA		384,000
<u>BRAZIL</u>		
6. PETROLEO BRASILEIRO, S.A. state owned	100	156,000
FIELDS: Dom Joao, Bazinda Boa Esperanca, Siririznho, Buracica, Carmopolis, Aracas, Candeias, Miranga, Agua Grande, Taquipe, Cassarongongo, Bazenda Imbe, Banzeda panelas, Riachuelo		
TOTAL BRAZIL		156,000
<u>CHILE</u>		
7. EMPRESA NACIONAL DEL PETROLEO state owned	100	36,000
FIELDS: Calafate, Cullen, Tres Lagos, Gaviata, Lynch, Canadon, Daniel, Posesion, Catalina, Sombrero, Punta Delgada, Bandurria		
TOTAL CHILE.		36,000

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>COLOMBIA</u>		
8. TEXACO PETROLEUM CO.		85,000
Texaco Inc.	50	
Gulf Oil Corp..	50	
FIELDS: Orito, Velasquez, Palagua, Tetvan- Ortega, Ermitano, Sagasmoso, Baul		
9. EMPRESA COLOMBIANA DE PETROLEOS	100	21,000
state owned		
FIELDS: Infantes, De Mares, La Cira		
10. COLOMBIA-CITIES SERVICE PETROLEUM CORP.	25	10,456
Cities Service Company		
ATLANTIC-RICHFIELD CO	25	
PAN AMERICAN COLOMBIA OIL CO.	25	
American International Oil Co.		
Standard Oil Co. of Indiana		
EMPRESA COLOMBIANA DE PETROLEOS	25	
state owned		
FIELD: Payoa		
11. COLOMBIAN PETROLEUM CORPORATION		20,000
Mobil Oil Corporation	50	
Texaco Inc.	50	
FIELDS: Barco, Cicuco, Tibu, Viola, Petrolea, Boquete		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
12. SHELL CONDOR S.A. Royal Dutch/Shell Group FIELDS: Casabe (Yondo), Cantagallo, San Pablo, Dificil	100	20,000
13. CHEVRON (RICHMOND) PETROLEUM CO. OF COLOMBIA. . . . Standard Oil Company of California FIELD: Zulia	100	30,000
14. INTERNATIONAL PETROLEUM (COLOMBIA) LTD. Esso Standard (Inter-America Inc.) Standard Oil Company (New Jersey) FIELDS: Buturama, Totumal, Gualanday, Provincia	100	20,000
15. SINCLAIR BRITISH PETROLEUM COLOMBIAN, INC. Sinclair Colombian Oil Co. Inc. Atlantic Richfield Co. British Petroleum Exploration Co. (Colombia) Ltd. British Petroleum Co. Ltd. International Petroleum Co. (Colombia) Ltd. . . . Esso Standard (Inter-America) Inc. Standard Oil Co. (New Jersey) FIELDS: Rio Zulia, Provincia	25 25 50	20,000
TOTAL COLOMBIA		226,456

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
<u>ECUADOR</u>		
16. ANGLO ECUADORIAN OILFIELDS LTD.		4,000
Lobitos Oil Fields Ltd.	100	
Burmah Oil Co. Ltd.		
South American Gold and Platinum		
FIELDS: Santa Paula/Cautivo, Lago Agrio, Ancon, El Tigre, Petropolis		
TOTAL ECUADOR		4,000
<u>PERU</u>		
17. BELCO PETROLEUM CORPORATION OF PERU	100	20,500
Belco Petroleum Corporation		
FIELDS: Tolara, Mirodor, Maquia		
18. PETROLEOS DEL PERU (PETROPERU).	100	45,000
state owned		
FIELDS: La Brea-Parinas, Lobitos		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
19. EMPRESA PETROLERA FISCAL state owned	100	5,000
FIELDS: Tunal, Organos, Hualtacal		
TOTAL PERU		70,500
<u>BOLIVIA</u>		
20. YACIMIENTOS PETROLIFEROS FISCOLES BOLIVIANOS state owned	100	22,000
FIELDS: Sanandita, Camiri, Quairuy, Bermejo Taro, Caranda, Tatarenda, Monteagudo, Rio Grande		
TOTAL BOLIVIA.		22,000
<u>VENEZUELA</u>		
21. CREOLE PETROLEUM CORPORATION Standard Oil Company (New Jersey)	100	1,600,000
FIELDS: Cabimas, Tia Juana, Lagonillas, Bachaquero, Silvestre, Bolivar Coastal, Jobo Aguagay, Tusepin, Mulat, Santa Ana, San Joaquin, El Robo, El Toco, Sinco, La Paz, Centro, Urdaneta, Lama, Santa Rosa, Maria, Caripito, Aficina, Temblados, Quiriquire, Tucupita, Boscan		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
22. COMPANIA SHALL DE VENEZUELA LTD. Shell Western Holdings Ltd. Royal Dutch/Shell Group	100	900,000
FIELDS: Cabimas, Tia Juana, Lagonillas, Bachaquero, San Lorenzo, Lama, Bolívar Coastal, Centro, La Paz, Marlago		
23. MENE GRANDE OIL COMPANY. Venezuela Gulf Oil Co. Gulf Oil Corporation	50	420,000
Shell and SONJ each share 25% of Mene Grande's crude production		
FIELDS: Cabimas, Tia Juana, Lagonillas, Bachaquero, Aficina, Lamar, Mene Grande Lago, Zanzas, Zacarias, Elias, Ceuta, Marlago, Mapiri, Nipa, East Soto, Leona, Caracoles, Guara, Santa Rosa		
24. MOBIL OIL COMPANY DE VENEZUELA Mobil Oil Corporation	75	120,000
Creole Petroleum Corporation shares 25% of Mobil's crude production		
FIELD: San Silvester		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
25. TEXACO MARACAIBO INC., TEXACO PETROLEUM CO. AND CORO PETROLEUM CO. All three companies owned by Texaco Inc.	100	180,000
FIELDS: Falcon, Lama, Mota-Ricon, El Salto		
26. PARIA OPERATIONS INC. The Texas Company. Texaco Inc. Continental Oil Co. Cities Service Co. Richfield Oil Co. Standard Oil Company of California Ohio Oil Co.	25 25 16 2/3 8 1/3 25	**
FIELD: Posa		
27. VENEZUELA SUN OIL. Sun Oil Co. VENEZUELA ATLANTIC REFINING. Atlantic Richfield Co. SEABOARD OIL COMPANY Texaco Inc. PAN AMERICAN VENEZUELA OIL CO. Standard Oil Company (Indiana)	23 1/3 33 1/3 10 33 1/3	**
FIELDS: Lama, Aguasay, Bacnaquero		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
28. VENEZUELA ATLANTIC REFINING	45	**
Atlantic Richfield Co.		
VENEZUELA SUN OIL COMPANY	45	
Sun Oil Co.		
SEABOARD OIL COMPANY.	10	
Texaco Inc.		
FIELD: Aguasay		
29. SINCLAIR VENEZUELA OIL COMPANY.	100	**
Atlantic Richfield Company		
FIELD: East Aguasay		
30. S.A. PETROLERA LA MERCEDES		**
The Texas Company	50	
Texaco Inc.		
Carocas Petroleum Co. S.A..	50	
Ultramar Company Ltd.		
English capital		
FIELDS: Guarario, Las Mecerdes		
31. PHILLIPS PETROLEUM COMPANY	55.75	**
SUNRAY DX OIL COMPANY	17.37	
Sun Oil Co.		
ASHLAND OIL AND REFINING.	10.78	
KERR-McGEE OIL INDUSTRIES	5.40	
EL PASO NATURAL GAS	3.20	
WESTERN NATURAL GAS	3.20	

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
PACIFIC PETROLEUM SUBSIDIARIES. Phillips Petroleum Co.	4.30	
FIELDS: Block 17, Santa Maria, Morichal, Bachaquero		
32. PHILLIPS PETROLEUM COMPANY SAN JACINTO VENEZUELA C.A. Continental Oil Co. EL PASO NATURAL GAS SUNRAY DX OIL COMPANY Sun Oil Co. PACIFIC PETROLEUM LTD. Phillips Petroleum Co. WESTERN NATURAL GAS COMPANY	 100	**
FIELDS: Block 10, Santa Maria		
33. SIGNAL OIL AND GAS COMPANY HANCOCK VENEZUELAN OIL COMPANY Signal Oil and Gas Company STANDARD OIL COMPANY (OHIO) PURE OIL COMPANY	 100	**
FIELDS: Centro, Lago		
34. SAN JACINTO VENEZUELA S.A.. Continental Oil Co. TENNESSEE GAS TRANSMISSION. Tenneco Inc.	30 15	**

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
UNION OIL COMPANY OF CALIFORNIA	15	
MURPHY CORPORATION.	15	
MANSONTO CHEMICAL COMPANY	15	
AMERICAN PETROFINA CO. OF VENEZUELA	5	
American Petrofina Inc.		
American Petrofina Holding Co.		
Petrofina S.A.		
Private Belgian capital		
SHARPLES INC.	5	
FIELD: Marlago		
35. SUPERIOR OIL COMPANY.	100	**
FIELDS: Lama, Bachaquero		
36. CORPORACION VENZALANO DEL PETROLEO.	100	30,300
state owned		
FIELDS: Lake Maracaibo		
37. CHEVRON OIL COMPANY OF VENEZUELA	100	50,000
Standard Oil Company of California		
FIELD: Baja Grande		

TABLE 50--Continued

Country, Company, Ownership, and Fields	Percent Ownership	Production (b/d)
PRODUCTION FIGURES FOR INDIVIDUAL COMPANIES IN VENEZUELA**		
Sun Oil Company		250,000
Signal Oil and Gas Company.		10,000
Phillips Petroleum Company.		50,000
Continental Oil Company		11,000
Atlantic Richfield Company.		52,000
TOTAL VENEZUELA.		3,673,300
TOTAL SOUTH AMERICA.		4,572,256

Source: Data compiled from Oil and Gas Journal, 1957-1972; World Oil, 1957-1972; International Petroleum Register, 1966-67.

*Production figures are for calendar year 1970.

**Production figures for some operations are not available to the author. In Venezuela for companies with significant amounts of production, production is often shown per individual company and does not always indicate from which field or operation the production originates.

TABLE 51

OWNERSHIP OF MAJOR PETROLEUM PIPELINE SYSTEMS IN
SOUTH AMERICA, AS OF JUNE, 1972

Country, Company, Ownership, and Location	Percent Ownership
<u>VENEZUELA</u>	
1. COMPANIA SHALL DE VENEZUELA LTD.	
Shell Western Holdings Ltd.	
Royal Dutch/Shell Group.	100
LOCATION: 1,176 mile crude gather- ing system in and around Lake Maricaibo	
2. CREOLE PETROLEUM CORP.	
Standard Oil Co. (New Jersey).	100
LOCATION: 145 mile crude line from Lake Maricaibo to Amuay Bay	
60 mile crude gathering system in and around Lake Maricaibo	
100 mile crude line from Temblador to Caripito	
90 mile crude gathering system from Caripito refineries to Santa Barbara	
3. MENE GRANDE OIL CO.	
Venezuela Gulf Oil Co.	
Gulf Oil Corp.	100
LOCATION: 387 mile crude line from Las Mercedes to Puerto La Cruz	
150 mile crude line from Southern Anzoategui Station to Puerto La Cruz	

TABLE 51--Continued

Country, Company, Ownership, and Location	Percent Ownership
4. MOBIL OIL CO. DE VENEZUELA	
Mobil International Oil Co.	
Mobil Oil Corp.	100
LOCATION: 250 mile crude gathering system in and around El Tigre and Anaco stations	
One 70 mile crude line from Anaco to Puerto La Cruz	
5. MOBIL OIL CO. DE VENEZUELA.	50
Mobil Oil Corporation	
SINCLAIR VENEZUELAN OIL COMPANY	50
Atlantic Richfield Company	
LOCATION: 212 mile crude line from San Silvestre to El Palito	
6. VENEZUELAN SUN OIL CO.	
Sun Oil Co.	100
LOCATION: 100 mile crude line from Santa Barbara to Puerto La Cruz	
7. PHILLIPS PETROLEUM CO. GROUP	
Phillips Petroleum Co..	55.15
Sunray Mid Continent.	17.37
Ashland Oil and Refining.	10.79
Kerr-McGee Oil Industries	5.40
El Paso Natural Gas	3.20
Western Natural Gas	3.20
Pacific Petroleum Subsidiaries.	4.29
LOCATION: 42 mile crude line in Morchal Field	

TABLE 51--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>COLOMBIA</u>	
8. ANDIA NATIONAL CORP. LTD. International Petroleum Co. Ltd. Esso Standard (Inter-America Inc.) Standard Oil Company (New Jersey).	100
LOCATION: 317 mile crude line from El Centro field to Cartagena Mamonal	
9. COLOMBIA-CITIES SERVICE PETROLEUM COMPANY Cities Service Company Atlantic Richfield Co. Standard Oil Company of New Jersey Empresa Colombiana de Petroleos. state company	25 25 25 25
LOCATION: 34 mile crude line from Payoa to Andia's line at Barran	
10. CHEVRON (RICHMOND) PETROLEUM CO. OF COLOMBIA Standard Oil Company of California	100
LOCATION: 304 mile crude line from Zulia field to Sta Marta	
11. SOUTH AMERICAN GULF OIL COMPANY Mobil Oil Corporation. Texaco Inc.	50 50
LOCATION: 480 mile crude line from Tibu field to Covenas	
249 mile crude line from Tibu field to Covenas	
77 mile crude line from Cicuco to Covenas	

TABLE 51--Continued

Country, Company, Ownership, and Location	Percent Ownership
12. COLOMBIAN PETROLEUM CORPORATION	
Mobil Oil Corporation.	50
Texaco Inc..	50
LOCATION: 66 mile crude line from Tibu field to Rio de Oro	
13. TRANS ANDEAN PIPELINE	
Gulf Oil Co.	50
Texaco Inc.	50
LOCATION: 400 mile crude line from Orito field to Tucamo	
<u>ECUADOR</u>	
14. ANGLO-ECUADORIAN OILFIELDS	
Lobitos Oil Fields Ltd.	
Burmah Oil Co. Ltd.	
South American Gold and Platinum Co.	100
LOCATION: 14 mile crude line from El Tibre field to La Libertad	
15. TRANS-ECUADORIAN PIPELINE SYSTEM	
Texas Petroleum Company	
Texaco Inc.	
Ecuadorian Gulf Oil Company	100
Gulf Oil Company	
LOCATION: 318 mile crude line Oriente field to Esmeraldas	

TABLE 51--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>ARGENTINA</u>	
16. TENNESSEE ARGENTINA S.A.	
Tenneco Oil Company	
Tennessee Gas Transmission Company	
Tenneco Inc.	100
LOCATION: 50 mile crude gathering system at Cerro Redondo field	
17. YACIMENTOS PETROLIFEROS FISCALES	
state owned	100
LOCATION: 10 mile crude line from La Sara field to San Sebastian	
<u>BOLIVIA</u>	
18. YACIMIENTOS PETROLIFEROS FISCALES	
BOLIVIANAS	
state owned	100
LOCATION: 876 mile crude line connecting refineries at Camire, Cochabamba and Sucre with Aruro Santa Cruz and La Paz	
<u>BRAZIL</u>	
19. PETROLEO BRASILEIRO, S.A.	
state owned	100
LOCATION: 50 mile crude line gathering system around San Mateus do Sul	

TABLE 51--Continued

Country, Company, Ownership, and Location	Percent Ownership
<u>CHILE</u>	
20. EMPRESA NACIONAL DEL PETROLEO	
state owned.	100
LOCATION: 176 mile crude line gathering system from Arica to Sicascia	
120 mile crude line gathering system on Tierra del Fuego Penninsula	
<u>PERU</u>	
21. COMPANIA DE PETROLEO GANSO AZUL LTD.	
Atlantic Richfield Company	100
LOCATION: 47 mile crude line from Agua Calinete to Pucallpa	
22. EMPRESA PETROLERA FISCAL	
state owned.	100
LOCATION: 8 mile crude line near Lima	
TOTAL PIPELINE MILEAGE SOUTH AMERICA . .	6,378

Source: Compiled from data in Oil and Gas Journal,
1957-1972; World Oil, 1957-1972;
International Petroleum Register, 1966-1967.

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