94th Congress
1st Session

COMMITTEE PRINT

U.S. OIL COMPANIES AND THE ARAB OIL EMBARGO: THE INTERNATIONAL ALLOCATION OF CONSTRICTED SUPPLIES

PREPARED FOR THE USE OF

SUBCOMMITTEE ON MULTINATIONAL CORPORATIONS

OF THE

COMMITTEE ON FOREIGN RELATIONS

UNITED STATES SENATE

BY THE

FEDERAL ENERGY ADMINISTRATION'S OFFICE OF INTERNATIONAL ENERGY AFFAIRS

JANUARY 27, 1975

Printed for the use of the Committee on Foreign Relations

U.S. GOVERNMENT PRINTING OFFICE
42-474 WASHINGTON : 1975

COMMITTEE ON FOREIGN RELATIONS

JOHN SPARKMAN, Alabama, *Chairman*

MIKE MANSFIELD, Montana
FRANK CHURCH, Idaho
STUART SYMINGTON, Missouri
CLAIBORNE PELL, Rhode Island
GALE W. McGEE, Wyoming
GEORGE S. McGOVERN, South Dakota
HUBERT H. HUMPHREY, Minnesota
DICK CLARK, Iowa
JOSEPH R. BIDEN, Jr., Delaware

CLIFFORD P. CASE, New Jersey
JACOB K. JAVITS, New York
HUGH SCOTT, Pennsylvania
JAMES B. PEARSON, Kansas
CHARLES H. PERCY, Illinois
ROBERT P. GRIFFIN, Michigan

Pat M. Holt, *Chief of Staff*
Arthur M. Kuhl, *Chief Clerk*

Subcommittee on Multinational Corporations

FRANK CHURCH, Idaho, *Chairman*

STUART SYMINGTON, Missouri

CLIFFORD P. CASE, New Jersey
CHARLES H. PERCY, Illinois

Jerome Levinson, *Chief Counsel*
Jack Blum, *Associate Counsel*

LETTER OF TRANSMITTAL

FEDERAL ENERGY ADMINISTRATION,
Washington, D.C., November 22, 1974.

Hon. FRANK CHURCH,
Chairman, Subcommittee on Multinational Corporations, U.S. Senate, Washington, D.C.

DEAR SENATOR CHURCH: Attached is a study of the performance of the United States petroleum industry during the Arab oil embargo prepared at your request by the Federal Energy Administration's Office of International Energy Affairs. This analysis, based on questionnaires completed by the thirteen largest U.S. oil companies, provides insight into the complex international allocation process and the behavior of the U.S. petroleum industry during the embargo.

No attempt has been made in this study to draw policy conclusions. The paper is an objective description of the allocation of reduced supplies by U.S. major and independent oil companies during the embargo and a discussion of the various political, commercial, technical and legal considerations which influenced that allocation process. A brief chronology of the embargo is also included.

The basic data have been placed on a computer file and are available for further analysis and evaluation. We look forward to cooperating with you and your staff during the next few months to extend and refine the analysis.

Very truly yours,

CLEMENT B. MALIN,
Deputy Assistant Administrator for International Energy Affairs.

CONTENTS

U.S. OIL COMPANIES AND THE ARAB OIL EMBARGO: THE INTERNATIONAL ALLOCATION OF CONSTRICTED SUPPLIES

I. Introduction

The major Arab oil producing nations imposed an embargo on all petroleum shipments to the United States and the Netherlands during the two weeks following the meeting of OAPEC Ministers held in Kuwait on October 17, 1973. (For a detailed chronology, consult Appendix I.) The embargo of the U.S. and the Netherlands was accompanied by production cutbacks, designed to exert increasing pressure on other major consuming nations to expedite a "satisfactory" Arab-Israeli settlement.

There are many aspects to the embargo, including the subtle interplay of political motives and economic interests, the abrupt rise in oil prices, and the physical allocation of reduced supplies. This report concentrates on the last of these—how the embargo affected the global distribution of petroleum supplies. In addition to a description of the effects on the worldwide distribution of supplies, this study focuses on the international allocation of supplies by 13 U.S. companies which cooperated with the Federal Energy Administration by completing questionnaires and through a series of interviews with FEA staff members. Those cooperating U.S. companies were:

"Majors"—Exxon, Gulf, Mobil, Socal, Texaco.

"Independents"—Amerada Hess, Arco, Continental, Getty, Marathon, Occidental, Phillips, Standard (Indiana).

Each company provided, in confidence, data on its international movements of crude oil and refined products on a month by month basis from July 1972 through July 1974. These proprietary data were subjected to a comprehensive computer analysis by FEA to facilitate evaluation of the industry's performance. Supplemented by interviews and published source material, the analysis provides a base for evaluating the effects of the embargo and the response of U.S. companies to the constriction of supplies.

II. Administration of the Embargo

A. Arab Guidelines

The experience of Aramco during the embargo offers an excellent insight into the administration of the embargo. The Saudi Arab Oil Minister, Sheikh Yamani, met with Aramco representatives on October 21, 1973, to discuss implementation of the Saudi government's embargo and cutback orders. Yamani first made it very clear that Aramco had no choice but to enforce the rules as laid down by the SAG; nationalization was the alternative to noncompliance. Aramco, faced with such an alternative, believed it was better to cooperate and maintain the flow of Arab oil to non-embargoed nations than to risk relinquishing altogether access to Saudi oil.

The SAG first required that Aramco shut in production previously earmarked for export to the embargoed nations. The company was then directed to apply the (initial) 10 percent cutback to the remaining volume of crude production. These measures rendered the *de facto* cutback closer to 20 percent for Saudi liftings. They were thus more than double the 10 percent figure initially adopted by most other Arab oil producers. In early November, however, the OAPEC ministers redefined the percentage cutback to include shut-in liftings for "embargoed" nations, while raising the overall reduction to 25 percent. The Arabs also clarified that there were three categories of consuming nations:

(1) *Preferred*—receiving 100 percent of September 1973 levels.

(2) *Neutral*—receiving a reduced percentage of September 1973 levels.

(3) *Embargoed*—receiving no crude oil or refined products.

In December 1973 the Arabs added a fourth category—"most favored"—countries to receive *current* demand requirements, as opposed to the *historical* demand limitations on the "preferred" list.

In addition to these destination controls, the SAG insisted that the cutbacks be administered to cover the various grades of crude in equal proportions.

Aramco's computers and the supply managers of the Aramco partners' parent companies were thus presented with a logistical headache of major proportions. Each of the Aramco companies had its own "entitlement" of Saudi oil. Yet a given company would often have embargoed customers but insufficient entitlements or *vice versa*. Intra-Aramco "swaps" were frequently engineered during the embargo period.

The fate of third party sales proved a complicated issue. While historically, a given third party purchaser would be entitled to a certain share of crude, the destination of that crude introduced a new problem. The SAG insisted that it was the ultimate destination which counted, so Aramco was forced (1) to determine the intended destination of third party purchases; then (2) to determine the third party customer's appropriate share from the historical base period; and finally, (3) to reconcile conflicts between the first two criteria. Here again, a considerable volume of "swaps" among the Aramco partners somewhat facilitated this extremely complex process.

The Saudis required the strictest control over the transportation of their exports. Ship captains accepting Saudi petroleum were required to sign an affidavit stating their destination. To preclude mid-ocean diversions, arrival at that destination was reported by cable to Aramco as confirmation of delivery. In addition, Arab diplomats abroad monitored public records of oil imports by country of origin. When Exxon delivered a load of preembargo Saudi oil to its Linden, New Jersey refinery in February 1974, Aramco's president was called on the carpet by the Saudi government within hours to explain the apparent violation of the embargo. Exxon was able to prove to the SAG's satisfaction that the oil had been loaded prior to the embargo.

B. RESPONSE OF U.S. GOVERNMENT

After the outbreak of hostilities in the Middle East, the U.S. Government had begun to resupply the Israeli armed forces. It was this action which directly provoked the Arab states to cut back production and embargo the United States. Even before the embargo was announced, U.S. companies in Saudi Arabia had transmitted their concern to the Administration.

The U.S. Government was unprepared for the embargo but action was soon forthcoming. On November 7, President Nixon delivered a nationwide radio and television speech urging domestic energy conservation and proposing "Project Independence." In response to the President's prodding, Congress enacted the Alaskan pipeline legislation and extended mandatory allocation authority to all fuels. The President signed both measures into law in late November.

The Federal Energy Office was established in the Executive Office of the President on December 4, 1973, under Mr. William Simon, focusing Executive Branch concern in one agency. The Administration's energy policy concentrated initially on the *domestic* rather than the *international* allocation process. The U.S. Government left the difficult international distribution questions to be resolved by the oil companies themselves. There was no formal policy guidance to U.S. oil companies responsible for the movement of crude oil and refined products overseas. FEO did, however, informally request the U.S. companies to maintain deliveries to the U.S. from overseas.

International efforts by the U.S. Government during the embargo period took two directions:

(1) Secretary of State Kissinger's efforts to facilitate a more permanent peace settlement in the Middle East.

(2) Efforts to stimulate consumer government cooperation and solidarity.

C. OTHER CONSUMER GOVERNMENT RESPONSES

The Arab oil embargo divided the consuming nations more than it united them. The designation of France and the UK as preferred customers, for example, tended to undercut the prospects for a common U.S.-Canadian-EEC-Japanese approach. On December 12, Secretary Kissinger proposed a joint U.S.-European-Japanese approach to the energy crisis by establishing an "Energy Action Group." The EEC proved unable to agree on a Common Market energy policy at its Copenhagen summit meeting, but the U.S. concept was more formally developed during the ensuing weeks, leading to an official invitation to Canada, UK, West Germany, France, Italy, Denmark, Belgium, Luxembourg, Ireland, Japan, the Netherlands and Norway to meet in Washington on February 11. The President also sent letters to major producing states suggesting the possibility of joint consumer-producer consultations at a later date.

In the face of outspoken French opposition, the Conference held together; in the meantime bilateral "special arrangements" between producing and consuming nations proliferated. Among others these special relationships embraced the following pairs of countries:

Japan-Iraq
France-Saudi Arabia
UK-Iran
West Germany-Iran

While subsequent negotiations within the framework of the ECG eventually led to the development of an emergency sharing concept—the International Energy Program—the governments did not in the interim interject themselves into the international allocation process. In virtually every consuming country, allocations of foreign supplies were left to private industry, with a minimum of supervision. The oil companies simply responded to periodic government inquiries, often relayed from abroad by their affiliates. The American experience, then, was not unique.

D. COMPANY RESPONSES: CORPORATE DECISIONMAKING

The U.S. oil companies individually decided that each would attempt to meet the requirements of the embargoed nations while complying to the letter with the Arab directives. Essentially, all the U.S. companies decided that "the pain should be evenly spread" to all major consuming regions. That is, that the reduction in supplies should be distributed throughout the world and not "targeted."

While in many cases, this key decision was taken at the highest level, in some of the larger corporations, the internal decisionmaking dynamic tended to reinforce that decision. At Exxon, for example, the various regional affiliates demanded the equitable distribution of supplies within the corporation's distribution system. An "internal market" thus functioned to ensure an even allocation of the production cutbacks.

1. *Allocation Criteria*

The next decision was the selection of an appropriate allocation base to serve as a guideline for the reallocation of supplies. Companies were faced with two options: an historical base (usually January–September, 1973) or a current/projected demand base. Mobil, for example, elected the historical base, while Exxon preferred the current demand approach.

An historical base provided the "safest" criterion since it offered an easily defensible position. On the other hand, common commercial instincts called for allocations based on current and projected demand. While a number, if not the majority, of U.S. companies attempted to use the current demand criterion, the room for debate over appropriate statistics was considerable. The Japanese, for example, stood to lose a much greater share of the reduced supplies under an historical allocation base than under a current/projected demand allocation since Japanese energy demand was growing at a much higher rate than U.S. and European demand.

In the final analysis, however, there was not much difference between those companies selecting an historical base and those choosing a current/projected demand base. Many other variables complicated the picture.

Once the allocation base had been established, the companies sought to distribute supplies as evenly as possible to consuming nations. Thus a supply cutback of 10 percent would ideally result in each consuming nation receiving 90 percent of its base demand. Unfortunately, this redistribution of supplies was hampered by a variety of political, economic, technical and legal considerations and/or constraints.

2. Political Constraints

First and foremost, the destination embargoes, accompanied by a constantly fluctuating list of "most-favored," "preferred" and "neutral" customers, posed the major problem to the oil companies. Simply meeting the allocations decreed by the various Arab nations was in itself a logistical headache of major proportions. Essentially, the companies were forced to redistribute both embargoed and "flexible" crudes (from non-Arab producers) to effectively meet their allocation targets.

Second, export restrictions imposed by consuming nation governments further hampered the distribution process. Almost immediately after the embargo was imposed, for example, Italy prohibited the exportation of refined products. Certain U.S. companies have traditionally run large volumes of crude oils to Italian refineries for re-export. Italian product export controls temporarily interrupted this pattern, until Rome backed down and relaxed the controls in response to pressure from the oil companies.

A third obstacle came in the form of pressure from various consuming nation governments, protesting diversions of cargoes to other nations. In particular, those nations on the Arabs' "preferred" and "most favored" list demanded undiminished imports. In the case of Canada, these demands were accompanied by the implicit threat of further reductions of Canadian exports to the U.S. midwest. In some cases, pressure was exerted on the parent company in the United States, but frequently it was the affiliated companies abroad which "took the greatest heat."

Within the industry, there was a widespread belief that failure to redistribute supplies equitably would simply invite greater governmental intervention. The companies were thus anxious to avoid "provoking" consuming governments and parliaments, making great efforts to convince consuming nations that the "pain was evenly spread."

On the other hand, the companies were fearful of provoking greater militancy among OPEC and OAPEC nations. This fear, principally of nationalizations or more onerous "participation" agreements, effectively discouraged companies from violating the embargo.

The absence of any detailed policy guidance from the U.S. government or from multilateral organizations and the frequently contradictory guidance from other consuming nations also made the companies' role more difficult.

Another problem was posed by stockpiling regulations, particularly in the Netherlands, which prevented reducing inventories below certain minimum levels. In at least one instance, however, companies were allowed to conclude temporary agreements whereby one would run its inventories below the minimum while another promised to maintain a compensating surplus above its minimum.

3. Technical Constraints

Refineries are engineered with limited tolerances for crude inputs. Sulfur thresholds in particular are a major factor in refinery designs, and, therefore, high sulfur crudes cannot be redistributed at will. Running the "wrong" crudes at a given refinery can cause considerable corrosion and can reduce refinery efficiency. Accordingly, redistribution of crude runs must take into account the grade and sulfur content of the oil. These considerations further complicated the reallocation process.

An additional consideration was the availability of appropriate transportation. Although the embargo hit at a time of surplus capacity in the tanker market, the lack of deep water ports in the U.S. tended to make redistribution of supplies more complicated. The recent development of transshipment facilities in the Caribbean has, however, somewhat mitigated this problem.

Another problem is pipeline tolerances—only certain crudes can be pumped through existing pipelines. In Germany, for example, the pipeline tolerances did limit the flexibility of several U.S. companies.

A final "technical" constraint is the location and local product demand of inland refineries. Even if an inland refinery could accept a given grade of crude in a technical sense, there had to be a local market for the refined products produced from that crude since redistribution of such products is limited by the local transportation system. (Coastal refineries, on the other hand, could simply re-export products by tanker.)

4. Economic and Commercial Constraints

Profit and price controls in consuming nations were a major problem, but do not appear to have significantly affected U.S. company allocations. For example, shipments to Germany, where perhaps the largest profit could be made, were not significantly greater than imports to countries like the United States, where price controls and mandatory allocation systems limited the commercial incentive to import.

The large jump in oil prices during October–December 1973 posed a number of problems for the oil companies. First, the rising prices raised suspicions that companies were withholding supplies. Second, as the consuming nations accepted the curtailment of supplies, they found that their export bills for oil continued to rise. An initial wave of concern about the volume of petroleum supplies was followed by an equally intense concern over the cost of those supplies.

As the Aramco experience demonstrates (see above), joint ventures often complicated the allocation process. Partner companies engineered "swaps" of entitlements for customers and vice versa. Thus a partner with an unembargoed customer but insufficient entitlements in a given Arab nation would "swap" with another partner with surplus oil but an "embargoed" customer.

Within companies, the degree of vertical integration also affected the allocation process. "Crude long" companies (i.e., less integrated) enjoyed somewhat greater flexibility in that they could curtail third party sales in order to meet the demands of their own affiliates, but faced legal constraints when breaking third party contracts. "Crude short" companies (i.e., highly integrated) were somewhat less flexible, but had fewer legal problems since reductions of deliveries to affiliates were less controversial.

A final commercial consideration with political overtones was the medium to long term prospects in various consuming markets. A company was obviously more interested in maintaining imports into a market with rapid growth potential than into a stagnating or contracting market.

5. Legal Constraints

First, the selection of an allocation base period itself was fraught with legal ramifications, as previously discussed. Second, contractual obligations for third party sales posed difficult legal problems. Companies invoked "force majeur" frequently to reduce allocations to third parties.

Another complication arose in the distribution of "nationalized" oil. For example, the ownership of Libyan crude oil recently seized by the government without compensation gave rise to a number of lawsuits in various jurisdictions. While bearing only an indirect relation to the embargo, this situation added to the complexity of the allocation process.

Although cooperation among the joint venture partners (particularly within Aramco) was close, it was strictly confined to operations within the scope of that joint venture. U.S. antitrust laws prevented any broader cooperation, limiting somewhat the industry's flexibility in the global reallocation of supplies.

III. Allocation of Constricted Supplies

A. GLOBAL IMPACT OF THE EMBARGO

Production

World crude oil production declined by an average of 5 percent during November 1973 through February 1974. This decline reflects a cutback of 19 percent in Arab production mitigated in part by a 2 percent increase in non-Arab production, when compared with the record September 1973 high. Arab production declined by 24 percent in October 1973, then rose gradually during the ensuing months. Non-Arab liftings showed a modest and sustained expansion through January 1973 followed by three months of relatively constant production. The following table summarizes world crude oil production from September 1973 through March 1974:

[In millions of barrels per day]

	1973				1974		
	September	October	November	December	January	February	March
Arab	20.8	19.8	15.8	16.1	17.6	17.9	18.5
Non-Arab	38.4	38.9	39.0	39.3	39.6	39.5	39.5
Total	59.2	58.7	54.8	55.4	57.2	57.4	58.0

Source: Oil and Gas Journal.

Consumption

Consumption of petroleum products in the major consuming nations declined by 6.3 percent during January-April 1974, compared with the same four months of the previous year. Canada and Japan fared the best, with consumption actually rising during the embargo. The United States placed next, with a 6.9 percent decline, while Western Europe (based on data for the United Kingdom, France, Germany, and Italy) lost 11 percent. The following table summarizes these figures (in millions of tons):

CONSUMPTION IN MAJOR CONSUMING AREAS [1]
[millions of tons]

Country/region	January–April 1973	January–April 1974	Percent of change
United States	220.9	205.8	–6.9
Japan	81.5	82.4	+1.0
Western Europe (United Kingdom, France, Germany, Italy)	152.2	135.4	–11.0
Canada	26.4	28.1	+6.5
Total	481.1	450.7	–6.3

[1] It should be noted:

1. That the base period for this consumption table differs from the base for the production statistics.
2. That higher petroleum prices in Western Europe tended to curtail demand more than in the United States where price levels remained significantly lower.
3. That Japanese demand had been growing much more rapidly than United States or European demand.
4. That Canada, as both a petroleum importing and exporting nation, occupies a unique position.

Source: OECD.

B. ALLOCATION BY U.S. "MAJORS"

The five major U.S. oil companies (Exxon, Mobil, Gulf, Socal, and Texaco) experienced a reduction of 6.3 percent in available crude supplies and a 9.6 percent reduction in products available overseas (see Table I). It is interesting to note that while Arab crude oil supplies were reduced by 9.5 percent, Arab products were in fact up 16.8 percent. Aggregating crude and product availability, the major oil companies suffered a 6.9 percent decline in supplies worldwide during the embargo (12/73–4/74) period as compared to the preembargo base period (12/72–4/73).

In the distribution of those constricted supplies, (see Table II) the Majors treated the U.S. and Western Europe quite evenly, with the U.S. marginally better off, receiving 12 percent less crude and product while Europe received 13.6 percent less. Japan, on the other hand, enjoyed a 1 percent rise in imports during the embargo. It should be noted, however, that during the course of 1973, Japanese energy demand was growing at approximately 17 percent while the U.S. and Western Europe were experiencing a far more modest growth rate of approximately 5 percent. If allowances are then made for these widely divergent growth rates, the allocation of supplies by the major oil companies appears far more equitable. In fact, since Japanese energy demand growth was growing approximately 12 percent above the U.S. and European levels, figures from Table II should be revised to reflect the following distribution of the shortfalls from projected current demand:

	Percent
United States	—17.0
Europe	—18.6
Japan	—16.0

In order to accomplish this reallocation, the Majors altered about 30 percent of their normal distribution flows, in rough terms. They dramatically increased flows of "flexible" (i.e. unembargoed) oils to the United States, especially from Iran, Nigeria and Indonesia. They redirected embargoed crudes to Europe, and appeared to rely on Shell to take care of the Netherlands. Japan received a continuing flow of Indonesian crude and a growing amount of Arab oil, while Iranian imports were diverted.

C. ALLOCATION BY U.S. INDEPENDENTS

The eight "independent" U.S. oil companies covered in the FEA survey experienced somewhat greater cutbacks in their supplies of crude oil than the U.S. Majors (14.1 percent versus 6.3 percent—see Table III). However, the general pattern of decreased Arab supplies compensated by increased non-Arab flows prevailed. When crude and product figures are aggregated, the Independents suffered a 10.4 percent loss of supplies compared to a 6.9 percent decline for the Majors.

The Independents allocated their reduced supplies somewhat less evenly than the Majors, providing Japan with a 35.8 percent increase in deliveries as opposed to a 12.6 percent decline of imports into Western Europe and a 13.6 percent cutback to the United States (see Table IV). Again, it should be noted that the higher rate of growth of Japanese energy demand brings these figures somewhat closer. Moreover, the absolute volumes imported into Japan by the Independents are small compared to the volumes imported into the U.S. or Western Europe.

IV. Allocation Flexibility: The Case of the United States

It is extremely difficult to derive a framework to analyze or describe the flexibility of the international petroleum supply and distribution system. Thousands of independent variables enter into the mechanics of the system, including not only the obvious political constraints imposed by producer governments during an embargo, but also the whole variety of commercial and technical considerations discussed elsewhere in this study.

To illustrate the degree of flexibility of the international oil distribution system, this study utilizes the case of the United States. As an embargoed country, the United States received virtually no Arab oil during the embargo period. Some Arab oil loaded prior to the embargo was landed in the U.S. during the embargo and there was some "leakage" from the smaller Arab producers, but by and large the embargo did choke off the flow of Arab oil to the United States. Had the U.S. oil companies not increased deliveries from non-embargoed sources, the United States Majors would have delivered 29 percent less crude to the U.S. In fact, the Majors limited the reduction of their crude imports into the U.S. to 16.4 percent. This was accomplished by importing greater quantities of Venezuelan, Iranian, Nigerian and Indonesian crudes to compensate for the loss of Arab and some Canadian oil,[1] as shown by the following table:

Changes in average daily imports from major exporters into the United States

Crude oil exporter:	*Change over Preembargo base period (percent)*
Venezuela	+3.3
Iran	+41.8
Nigeria	+66.9
Indonesia	+28.8
"Other Caribbean" (mostly transshipped Iranian)	+131.4

V. Conclusions

(1) U.S. companies helped to blunt the edge of the Arab oil weapon by redistributing global supplies so that the construction of supplies was fairly evenly allocated.

(2) Although varying allocation criteria were adopted by the various companies, the net impact was a fairly even distribution of the reduced supplies when measured against current demand.

(3) U.S. companies appear to have been more responsive to their assessment of the long term implications of their allocations rather than to their short term interests.

(4) It is difficult to imagine that any allocation plan would have achieved a more equitable allocation of reduced supplies.

(5) There is considerable flexibility in the distribution system of the U.S. oil companies, permitting them to redistribute supplies on short notice in spite of a wide variety of technological and transportation difficulties.

(6) There is no evidence that the Arab nations exerted pressure on U.S. oil companies regarding their allocation of non-Arab supplies.

(7) Some pressure was exerted on U.S. oil companies by consuming nation governments, but it was rarely "excessive." In most cases, governments were satisfied by industry assurances that supplies were being equitably distributed.

(8) Nevertheless, U.S. companies agree that they were called upon to make difficult and potentially volatile political decisions during the embargo—decisions beyond the realm of normal corporate concerns.

---

[1] The Canadians were forced to reduce exports to the U.S. to compensate for reductions to Canadian imports from overseas because of the embargo and production cutbacks.

TABLE I.—5 MAJOR U.S. OIL COMPANIES—SOURCES OF CRUDE OIL AND PRODUCTS

[In thousands of barrels per day]

	Base period (December 1972–March 1973)	Embargo (December 1973–March 1974)	Change (percent)
Crude oil:			
Arab OPEC	5,630.0	5,096.8	—9.5
Non-Arab OPEC	3,477.5	3,624.8	+4.2
Other	747.0	516.7	—30.8
Total	9,854.5	9,238.3	—6.3
Products:			
Arab OPEC	270.0	315.3	+16.8
Non-Arab OPEC	711.0	701.5	—1.3
Other	1,615.8	1,331.5	—17.6
Total	2,596.8	2,348.3	—9.6
Crude and products:			
Arab OPEC	5,900.0	5,412.1	—8.3
Non-Arab OPEC	4,188.5	4,326.3	+3.3
Other	2,362.8	1,848.4	—21.8
Total	12,451.3	11,586.8	—6.9

TABLE II.—5 MAJOR U.S. OIL COMPANIES—DELIVERIES OF CRUDE OIL AND PRODUCTS

[In thousands of barrels per day]

	Base period (December 1972–March 1973)	Embargo (December 1973–March 1974)	Change (percent)
Crude oil:			
United States	1,359.0	1,136.8	—16.4
Canada	493.3	466.3	—5.5
Western Europe	4,074.8	3,718.3	—8.7
Japan	1,557.8	1,505.5	—3.4
Other	2,369.6	2,411.6	+1.8
Total	9,854.5	9,238.5	—6.3
Products:			
United States	1,248.3	1,158.0	—7.2
Canada	12.8	8.3	—35.3
Western Europe	784.5	480.0	—38.8
Japan	125.5	195.5	+55.8
Other	425.7	506.5	+19.0
Total	2,596.8	2,348.3	—9.6
Crude and products:			
United States	2,607.3	2,294.8	—12.0
Canada	506.1	474.6	—6.3
Western Europe	4,859.3	4,198.3	—13.6
Japan	1,683.3	1,701.0	+1.0
Other	2,795.3	2,918.1	+4.4
Total	12,451.3	11,586.8	—6.9

TABLE III.—8 INDEPENDENT U.S. OIL COMPANIES—SOURCES OF CRUDE OIL AND PRODUCTS

[In thousands of barrels per day]

	Base period (December 1972–March 1973)	Embargo (December 1973–March 1974)	Change (percent)
Crude oil:			
Arab OPEC	1,298.8	907.3	—30.1
Non-Arab OPEC	647.3	734.5	+13.5
Other	329.2	311.7	—5.3
Total	2,275.3	1,953.5	—14.1
Products:			
Arab OPEC	59.3	51.0	—13.9
Non-Arab OPEC	144.0	137.0	—4.9
Other	585.5	604.8	+3.3
Total	788.8	792.8	+.5
Crude and products:			
Arab OPEC	1,358.1	958.3	—29.4
Non-Arab OPEC	791.3	871.5	+10.1
Other	914.7	916.5	+.2
Total	3,064.1	2,746.3	—10.4

TABLE IV.—8 INDEPENDENT U.S. OIL COMPANIES—DELIVERIES OF CRUDE OIL AND PRODUCTS

[In thousands of barrels per day]

	Base period (December 1972–March 1973)	Embargo (December 1973–March 1974)	Change (percent)
Crude oil:			
United States	657.3	466.5	—29.0
Canada			
Western Europe	930.8	822.0	—11.7
Japan	100.0	136.5	+36.5
Other	587.2	528.5	—10.0
Total	2,275.3	1,953.5	—14.1
Products:			
United States	627.5	643.5	+2.5
Canada			
Western Europe	83.8	64.3	—23.3
Japan	18.8	26.0	+38.7
Other	58.7	59.0	+.5
Total	788.8	792.8	+.5
Crude and products:			
United States	1,284.8	1,110.0	—13.6
Canada			
Western Europe	1,014.6	886.3	—12.6
Japan	118.8	162.5	+36.8
Other	645.9	587.5	—9.0
Total	3,064.1	2,746.3	—10.4

APPENDICES

Appendix I

Chronology of the Arab Oil Embargo

Throughout the late spring and summer of 1973, the Arab nations brandished the "oil weapon" with increasing frequency. The "weapon" was alternately described as an embargo directed at consuming states "unfriendly" to the Arab cause or as a production cutback of a more general nature. Whatever the means, there was little doubt that the ends were from the outset intensely political—designed to produce a "satisfactory" outcome to the long-standing Arab-Israeli conflict. At no time prior to the embargo was the curtailment of production as a means of raising prices publicly discussed. When the embargo came, it was in response to political and military concerns; nevertheless, its impact on the price of oil was immediate and dramatic.

The first rattles were from Saudi Arabia (where in April Sheikh Yamani warned the United States that the SAG would not acquiesce to Aramco's ambitious expansion program unless the United States would alter its "pro-Israeli" stance). On May 3, 1973, King Faisal delivered a similar lecture to Aramco President Jungers threatening a curtailment of the rate of production expansion. At the end of May, the same message was sounded by Dr. Pachachi, former Secretary General of OPEC, who proposed a crude production "freeze" to force withdrawal of Israeli forces from the 1967 cease-fire lines.

In Libya, production cutbacks accompanied demands for participation in oil company operations. Qadafi embargoed Bunker Hunt liftings of Sarir crude at the end of May, prior to "nationalization" of the company on June 11. The Libyan leader justified the action by asserting the U.S. deserved a "good hard slap on its insolent face." On July 19, Iraq threatened the use of embargoes and nationalizations as a "political" weapon. In anticipation of the Arab foreign ministers meeting in Kuwait, scheduled for September 4, the "oil weapon" became a popular subject for speculation throughout the Arab world, while the thrust of developments within OPEC continued to concentrate on pricing. At its 35th meeting on September 15, OPEC demanded renegotiation of the Teheran Agreement, scheduling the first round for October 8 in Vienna.

Although the Vienna talks began on October 8, they were rapidly overtaken by events in the Middle East following the fighting which erupted on October 7, 1973. Initially, the impact on the petroleum market was curiously muted. There were, however, some significant developments. Iraq nationalized U.S. (Exxon and Mobil) interests in

Basrah Petroleum Company on October 7. Military action curtailed up to two-thirds of the 2 million barrels per day exports from major Eastern Mediterranean pipeline terminals. In Europe, Italy and Spain imposed product export controls while France tightened existing product export controls.

On October 9, Kuwaiti Minister Atiqi responded to pressure from his National Assembly and called for an emergency meeting of Arab oil ministers. While pressure for the use of the oil weapon mounted, Aramco was directed to supply crude oil and products to fuel the Arab war effort. Even though the oil and the products had been contracted for and were destined for other customers, the Saudi Office of Aramco informed the shareholders that the request was a "matter of state priority" and that Aramco had "no alternative but to comply." In his first cable on this problem, Jungers told the shareholders that "we can probably expect more of this as time goes on." The first request was for crude oil for Egypt, the second was for crude oil and products for Iraq.

On October 15, Jungers cabled from Saudi Arabia that the Saudis were upset over what they believed to be a major American role in the war on the side of the Israelis. He said that Yamani was unhappy about the remarks of a number of United States Government officials, including then Vice President Ford, and that unless there was a major change in the tone of remarks coming from the highest level of the United States Government the companies could expect the imposition of a boycott. Yamani said that the pressure for curtailment came mainly from the Libyans and the Iraqis but that the effort was also being pushed hard by the Kuwaitis and would, therefore, be very difficult to turn around.

Yamani was designated by his government as the principal Saudi official discussing the Saudi role in imposing an oil embargo and as the Saudi Government representative at the oil ministers meeting in Kuwait.

On October 16, the "Gulf" committee of OPEC met in Kuwait. They decided to raise prices by 70 percent unilaterally. The following day, the OPEC Ministers convened in the same city and agreed on an immediate 5 percent production cutback from September production. The communique further warned:

> The same percentage will be applied in each month compared with the previous one, until the Israeli withdrawal is completed from the whole Arab territories occupied in June 1967 and the legal rights of the Palestinian people restored. The conferees are aware that this reduction should not harm any friendly state which assisted or will assist the Arabs actively and materially. Such countries would receive their shares as before the reduction.

In the week following this decision, the Arab states individually imposed a rapidly escalating series of restrictions on the supply of crude oil, briefly summarized in the following chronology:

Date	Country	Production cutback (percent)	Embargoes: United States	Embargoes: Netherlands	Embargoes: Other
Oct 18	Saudi Arabia	10			
	Qatar	10			
	Libya	5			
	Abu Dhabi		X		
	Algeria		X[1]		
Oct 19	Libya		X		
Oct 20	Bahrain	5	X		Cancellation 1971 U.S. Navy base agreement.
	Saudi Arabia		X		
	Algeria	10			
Oct 21	Kuwait	10	X		
	Dubai		X		
	Qatar		X		
	Bahrain		X		
	Algeria			X	
Oct 22	Iraq				Nationalized Royal Dutch Shell interest in BPC.
Oct 23	Kuwait			X	
	Abu Dhabi			X	
Oct 24	Qatar			X	
Oct 25	Oman		X	X	
Oct 30	Libya			X	
	Bahrain			X	
Nov 2	Saudi Arabia			X	

[1] Originallly imposed Oct. 6.

By early November, the embargoes and cutbacks were firmly in place. The net impact on crude production was approaching a 20 percent reduction due to the fact that both Saudi Arabia and Kuwait first shut in liftings for the embargoed nations and then applied the cutback percentage. Moreover, the rules of the game laid down by the Arabs (with most following the Saudi level) had been refined. The complete embargo applied to all exports to the United States, but also to Canada, the Bahamas, Trinidad, Netherlands Antilles, Puerto Rico, Guam, and the Netherlands. In a separate action, shipments to South Africa and South Yemen were cut off by the SAG.

As the embargo continued, transshipments to other European destinations via Holland and limited deliveries to Canada for domestic consumption were permitted.

In addition to the "embargoed" nations, the Arabs maintained an "exempt" or "most favored" list of "friendly" nations, including: France, Spain, United Kingdom, Jordan, Lebanon, Malaysia, Pakistan, Tunisia, and Egypt. These countries were to receive 100 percent of their September 1973 supplies, notwithstanding the production cutbacks. Accordingly the remaining "neutral" states were effectively cut back well over the announced percentages.

On November 4, OAPEC Ministers reassembled in Kuwait to coordinate the embargo/cutback. They immediately raised the cutback to 25 percent, but agreed to include the shut-in volumes for embargoed states in this percentage. This move was designed to raise the smaller producers to the Saudi Arab level and to establish a uniform calculating procedure.

In addition, the embargo of the U.S. was expanded by all Arab States to include all indirect shipments as well as direct deliveries to the American market, including deliveries to refiners supplying U.S. forces in Bahrain, Italy and Greece. The "most favored" list was expanded to include India, and all African states which had broken diplomatic relations with Israel. The cutback of 25 percent from the September 1973 levels equated to a 32 percent slash of Aramco's projected November production. Conformity was not complete, however. Iraq participated in the U.S. and Dutch embargo, but refused to subscribe to the production cutbacks. Both Libya and Algeria publicly announced cutback formulas different from that announced in Kuwait. Saudi Arabia subsequently added Brazil to the "most favored" list while announcing an embargo against Portugal.

In mid-November, Saudi Arabia and Kuwait announced goals of well beyond the 51 percent participation level. In Vienna, OPEC made no progress on pricing issues, delaying the decision until December 22. Ecuador was admitted to OPEC and Gabon was offered associate status. The Arab Ministers also agreed to exempt on a one-time basis all the EEC nations (except Holland) from the scheduled 5 percent December cutback. The spotlight then shifted to the Arab summit meeting held on November 26–28 in Algiers.

At their summit, the ministers made a number of changes in the use of the oil weapon. Specifically, they decided:

(1) That notwithstanding the embargoes and cutbacks, no producing state would be expected to tolerate reductions of more than 25 percent in petroleum export earnings;

(2) To establish a special Ministerial Committee to "classify" consuming nations as friendly, neutral or hostile;

(3) To exempt Japan and the Philippines from the December cutbacks only;

(4) To impose an all-Arab embargo on South Africa, Portugal and Rhodesia;

(5) To establish an Arab Development Bank for Africa;

(6) To draw up a schedule for production increases to correspond to the various stages of an Israeli withdrawal; and

(7) To compensate non-embargoed European nations for the loss of supplies normally transshipped via Holland.

Following the summit, the Saudi Arab and Algerian oil ministers made a trip to major European capitals to emphasize Arab demands for Israeli withdrawals, but offering to restore production progressively in response to a staged Israeli pullback. On December 8, the Arab oil ministers again assembled in Kuwait to reaffirm the embargo, but Saudi Arabia postponed its scheduled 5 percent December cutback until January. The SAG also announced it would not consider restoring production above the September 1973 level, even if the Israelis withdrew immediately.

As December drew to a close, a series of momentous decisions were undertaken by the oil producing nations. On December 21, Libya banned sales to Caribbean refineries (where production is virtually all for U.S. consumption), thus plugging the major "leak" in the Arab embargo of the U.S. The 37th OPEC Meeting in Teheran opened the following day. Concern for the quantity of supply was rapidly transformed into concern for the cost of supply as OPEC raised posted prices by 130%. Leading the drive for a major price hike were the Iranians, flushed with the unprecedented $17/bbl prices received at an NIOC auction the week before. During the week of this announcement, OPEC established a simplified pricing system utilizing Arabian Light (34°) as the "marker crude" with standard adjustments for specific gravity, sulfur content and transportation differentials. Also, the Arabs agreed to relax their production cutbacks from 25 percent to 15 percent effective January 1, 1974.

The embargo on exports to the U.S. and Holland was maintained while Japan, the Philippines and Belgium were granted preferential status. In the case of Belgium, this gesture was retroactive until December 1, 1973. In addition, certain "friendly" countries were granted additional preferences, permitting them to receive more than their September 1973 imports. This special list included the U.K. (then being crippled by a coal strike) and several Islamic and African nations.

With this action, the Arabs effectively established four categories of consuming nations:

(1) "*Most favored*"—exports to meet current demand;

(2) "*Preferential*"—receiving September 1973 levels or average of January–September 1973 levels;

(3) "*Neutral*"—receiving remaining production, prorationed on January–September 1973 averages;

(4) "*Embargoed*"—receiving no crude oil or refined products.

The internal politics of the December OPEC meeting were instructive. The Saudi representative, Sheikh Yamani, attempted to hold the line on the price rise, under strict instructions from the King, who was anxious to maintain the "political" tone of the embargo. The Shah, on the other hand, was committed to a spectacular price hike—to $17/barrel or more. A compromise emerged.

In January and February 1974, rumors of an impending end to the Arab boycott of the United States proliferated. Speculation was extremely high prior to an Arab oil ministers meeting scheduled for Tripoli (13–14 February 1974) which was cancelled at the last moment. The intensive shuttle diplomacy of U.S. Secretary of State Kissinger finally bore fruit in mid-March. The embargo against the United States was lifted by most Arab states on March 18, 1974 but continued against Holland. In addition, Iraq and Libya continued an embargo against the U.S. The curtailment of U.S. petroleum supplies had lasted exactly five months.

Appendix II

Statistical Analysis—Major Oil Companies and Independent Oil Companies

The data appearing in this analysis are derived from information furnished to FEA by 13 U.S. oil companies. In the analysis, a "pre-embargo seasonal" base period of December 1972 through March 1973 was selected for comparison to the embargo period. Since the figures are on a "landed" basis, the embargo period was defined as December 1973 through March 1974. The third column expresses embargo period movements as a percentage of pre-embargo seasonal base movements.

Most companies excluded third party sales from their reports to FEA. Accordingly, there are certain volumes of international petroleum movements which are not covered by this study even though those volumes were originally lifted abroad by one of the thirteen cooperating companies.

It should also be noted that changes in stocks and inventories during the embargo period, not covered by this survey, may have served to offset partially the shortfalls of imports to major consuming areas.

Major Oil Companies

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
BY EXPORTER FOR ALL IMPORTERS FOR ALL COMPANIES			
Exporter:			
Canada	301.5	199.3	66.1
Venezuela	952.3	885.0	92.9
Iran	1,491.0	1,501.5	100.7
Iraq	116.3	147.5	126.9
Kuwait	498.0	286.8	57.6
Saudi Arabia	3,787.8	3,902.8	103.0
Abu Dhabi	232.5	192.3	82.7
Other Mid-East and neutral	223.8	152.5	68.2
Algeria	249.8	183.0	73.3
Libya	522.0	232.0	44.4
Nigeria	436.5	580.3	132.9
Indonesia	597.8	658.0	110.1
Other Caribbean	29.0	42.0	144.8
Netherlands	167.0	33.8	20.2
Ireland	0	3.0	(1)
Denmark	0	.3	(1)
Other	249.5	238.5	95.6
Overall	9,854.5	9,238.3	93.7

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
BY IMPORTER FOR ALL EXPORTERS FOR ALL COMPANIES			
Importer:			
United States	1,359.0	1,136.8	83.6
Canada	493.3	466.3	94.5
Other Caribbean	826.0	751.5	91.0
United Kingdom	663.0	856.5	129.2
France	454.8	472.0	103.8
West Germany	837.0	826.5	98.7
Netherlands	830.5	446.5	53.8
Belgium/Luxembourg	303.3	318.0	104.9
Italy	719.3	621.0	86.3
Japan	1,557.8	1,505.5	96.6
Ireland	131.5	38.8	29.5
Denmark	135.5	139.0	102.6
Other	1,543.8	1,660.0	107.5
Overall	9,854.5	9,238.3	93.7
IMPORTER—UNITED STATES			
Exporter:			
Canada	301.5	199.3	66.1
Venezuela	182.0	188.0	103.3
Iran	41.3	58.5	141.8
Kuwait	43.0	0	0
Saudi Arabia	167.0	33.0	19.8
Abu Dhabi	53.5	0	0
Other Mid-East and netural	3.0	0	0
Algeria	73.5	0	0
Libya	53.8	1.5	2.8
Nigeria	214.3	357.5	166.9
Indonesia	152.0	195.8	128.8
Other Caribbean	17.5	40.5	231.4
Netherlands	0	0.5	(1)
Other	56.8	62.3	109.7
Overall	1,359.0	1,136.8	83.6
IMPORTER—CANDA			
Exporter:			
Venezuela	230.8	247.8	107.4
Iran	131.3	87.5	66.7
Kuwait	3.3	0	0
Saudi Arabia	16.8	52.5	313.4
Other Mid-East and neutral	4.3	0	0
Algeria	0	5.0	(1)
Nigeria	30.8	16.5	53.7
Other	76.3	57.0	74.8
Overall	493.3	466.3	94.5
IMPORTER—OTHER CARIBBEAN			
Exporter:			
Venezuela	474.0	407.8	86.0
Iran	30.8	132.8	431.7
Saudi Arabia	75.0	44.0	58.7
Other Mid-East and neutral	0	2.8	(1)
Algeria	3.3	0	0
Libya	29.8	0	0
Nigeria	52.8	.3	.5
Indonesia	36.5	53.8	147.3
Other Caribbean	11.5	1.5	13.0
Other	112.5	108.8	96.7
Overall	826.0	751.5	91.0
IMPORTER—UNITED KINGDOM			
Exporter:			
Venezuela	15.8	12.5	79.4
Iran	113.8	26.3	23.1
Kuwait	32.3	32.3	100.0
Saudi Arabia	389.0	738.0	189.7
Abu Dhabi	5.5	7.3	131.8
Other Mid-East and neutral	3.8	2.3	60.0
Algeria	.8	0	0
Libya	85.3	15.0	17.6
Nigeria	16.5	17.5	106.1
Indonesia	.5	.3	50.0
Other	0	5.3	(1)
Overall	663.0	856.5	129.2

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Persent (2)/(1)
IMPORTER—FRANCE			
Exporter:			
Venezuela	12.8	13.5	105.9
Iran	9.0	0	0
Iraq	3.3	3.5	107.7
Kuwait	9.8	0	0
Saudi Arabia	256.8	342.0	133.2
Abu Dhabi	71.8	37.0	51.6
Other Mid-East and neutral	15.5	0	0
Algeria	26.0	44.3	170.2
Libya	26.0	15.3	58.7
Nigeria	24.0	16.5	68.8
Overall	454.8	472.0	103.8
IMPORTER—WEST GERMANY			
Exporter:			
Venezuela	17.3	4.3	24.6
Iran	21.3	29.8	140.0
Iraq	0	22.5	(1)
Kuwait	1.0	2.5	250.0
Saudi Arabia	403.5	402.8	99.8
Abu Dhabi	20.3	76.5	377.8
Other Mid-East and neutral	35.5	20.8	58.5
Algeria	104.3	79.8	76.5
Libya	155.0	113.5	73.2
Nigeria	30.5	52.8	173.0
Netherlands	47.3	18.5	39.2
Ireland	0	3.0	(1)
Other	1.3	0	0
Overall	837.0	826.5	98.7
IMPORTER—NETHERLANDS			
Exporter:			
Venezuela	0	5.8	(1)
Iran	97.8	325.5	333.0
Kuwait	80.0	11.5	14.4
Saudi Arabia	511.5	6.3	1.2
Abu Dhabi	23.5	0	0
Other Mid-East and neutral	27.3	0	0
Algeria	8.0	0	0
Libya	49.8	0	0
Nigeria	32.8	97.5	297.7
Overall	830.5	446.5	53.8
IMPORTER—BELGIUM/LUXEMBOURG			
Exporter:			
Venezuela	0	2.3	(1)
Iran	24.8	25.0	101.0
Kuwait	14.0	2.0	14.3
Saudi Arabia	143.8	256.3	178.3
Abu Dhabi	0	1.0	(1)
Other Mid-East and neutral	0	1.0	(1)
Libya	4.0	10.0	250.0
Nigeria	.5	0	0
Indonesia	.5	3.3	650.0
Netherlands	115.8	14.8	12.7
Other	0	2.5	(1)
Overall	303.3	318.0	104.9
IMPORTER—ITALY			
Exporter:			
Venezuela	9.0	0	0
Iran	69.0	30.8	44.6
Iraq	60.0	81.8	136.3
Kuwait	21.8	6.0	27.6
Saudi Arabia	406.8	455.3	111.9
Abu Dhabi	15.3	0	0
Other Mid-East and neutral	21.0	2.3	10.7
Algeria	21.3	5.5	25.9
Libya	72.0	33.5	46.5
Nigeria	2.0	6.0	300.0
Indonesia	17.3	0	0
Netherlands	4.0	0	0
Overall	719.3	621.0	86.3

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—JAPAN			
Exporter:			
Iran	510.0	285.0	55.9
Kuwait	53.8	79.5	147.9
Saudi Arabia	538.0	645.0	119.9
Abu Dhabi	13.8	32.0	232.7
Other Mid-East and neutral	54.5	51.3	94.0
Libya	0.	9.0	(1)
Indonesia	387.8	403.8	104.1
Overall	1,557.8	1,505.5	96.6
IMPORTER—IRELAND			
Exporter:			
Iran	30.8	.8	2.4
Kuwait	37.5	0	0
Saudi Arabia	59.3	38.0	64.1
Other Mid-East and neutral	4.0	0	0
Overall	131.5	38.8	29.5
IMPORTER—DENMARK			
Exporter:			
Iran	25.3	64.8	256.4
Kuwait	19.0	12.3	64.5
Saudi Arabia	64.5	23.5	36.4
Abu Dhabi	1.8	0	0
Other Mid-East and neutral	0	1.5	(1)
Algeria	0	22.5	(1)
Libya	5.0	8.8	175.0
Nigeria	20.0	5.5	27.5
Denmark	0	.3	(1)
Overall	135.5	139.0	102.6
IMPORTER—OTHER			
Exporter:			
Venezuela	10.8	3.3	30.2
Iran	386.3	435.0	112.6
Iraq	53.0	39.8	75.0
Kuwait	182.8	140.8	77.0
Saudi Arabia	756.0	866.3	114.6
Abu Dhabi	27.3	38.5	141.3
Other Mid-East and neutral	55.0	70.8	128.6
Algeria	12.8	26.0	203.9
Libya	41.5	25.5	61.4
Nigeria	12.5	10.3	82.0
Indonesia	3.3	1.3	38.5
Other	2.8	2.8	100.0
Overall	1,543.8	1,660.0	107.5

[1] Infinite.

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
BY EXPORTER FOR ALL IMPORTERS FOR ALL COMPANIES			
Exporter:			
Canada	43.5	41.5	95.4
Venezuela	671.5	662.3	98.6
Iran	23.8	25.0	105.3
Iraq	.3	0	0
Kuwait	9.5	13.0	136.8
Saudi Arabia	140.5	127.3	90.6
Other Mid-East and neutral	105.5	165.5	156.9
Algeria	1.0	0	0
Libya	13.3	9.5	71.7
Nigeria	3.0	5.3	175.0
Indonesia	12.8	9.0	70.6

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
Exporter—Continued			
United States	4.5	5.3	116.7
Other Caribbean	589.3	578.3	98.1
United Kingdom	73.8	88.3	119.7
France	38.5	12.8	33.1
West Germany	36.0	45.8	127.1
Netherlands	368.3	214.8	58.3
Belgium/Luxembourg	93.0	77.0	82.8
Italy	203.8	108.0	53.0
Japan	1.0	.5	50.0
Ireland	.5	0	0
Denmark	8.3	9.0	109.1
Other	155.5	150.5	96.8
BY IMPORTER FOR ALL EXPORTERS FOR ALL COMPANIES			
Importer:			
United States	1,248.3	1,158.0	92.8
Canada	12.8	8.3	64.7
Other Caribbean	68.8	139.0	202.2
United Kingdom	283.8	159.0	56.0
France	14.0	7.5	53.6
West Germany	219.5	127.3	58.0
Netherlands	72.0	34.8	48.3
Belgium/Luxembourg	35.0	29.3	83.6
Italy	40.0	32.3	80.6
Japan	125.5	195.5	155.8
Ireland	19.0	16.5	86.8
Denmark	101.3	73.5	72.6
Other	357.0	367.5	102.9
Overall	2,596.8	2,348.3	90.4
IMPORTER—UNITED STATES			
Exporter:			
Canada	43.3	40.5	93.6
Venezuela	587.3	493.5	84.0
Iran	3.5	2.8	78.6
Kuwait	1.8	0	0
Saudi Arabia	12.8	0	0
Other Mid-East and neutral	12.0	1.8	14.6
Algeria	1.0	0	0
Nigeria	3.0	4.0	133.3
United States	1.3	2.5	200.0
Other Caribbean	515.3	562.5	109.2
United Kingdom	5.8	9.0	156.5
France	1.3	1.3	100.0
West Germany	.3	7.0	2,800.0
Netherlands	8.5	12.0	141.2
Belgium/Luxembourg	5.8	2.5	43.5
Italy	29.8	5.8	19.3
Ireland	.5	0	0
Other	15.5	13.0	83.9
Overall	1,248.3	1,158.0	92.8
IMPORTER—CANADA			
Exporter:			
Venezuela	4.3	3.8	88.2
Other Caribbean	4.3	4.5	105.9
Netherlands	3.8	0	0
Denmark	.5	0	0
Overall	12.8	8.3	64.7
IMPORTER—OTHER CARIBBEAN			
Exporter:			
Venezuela	50.5	133.5	264.4
Saudi Arabia	1.0	0	0
Other Mid-East and neutral	.3	0	0
United States	1.5	0	0
Other Caribbean	13.5	5.5	40.7
Other	2.0	0	0
Overall	68.8	139.0	202.2

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—UNITED KINGDOM			
Exporter:			
Venezuela	7.8	.3	3.2
Iran	1.3	5.0	400.0
Kuwait	3.0	9.5	316.7
Saudi Arabia	8.3	26.8	324.2
Other Mid-East and neutral	17.8	18.8	105.6
Libya	6.8	7.3	107.4
Nigeria	0	1.0	(1)
United States	.5	.5	100.0
Other Caribbean	27.8	1.3	4.5
United Kingdom	3.5	1.3	35.7
France	16.3	0	0
West Germany	4.0	7.3	181.3
Netherlands	111.3	44.3	39.8
Belgium/Luxembourg	10.5	6.3	59.5
Italy	33.3	13.0	39.1
Japan	.8	.3	33.3
Denmark	1.3	4.5	360.0
Other	30.0	12.0	40.0
Overall	283.8	159.0	56.0
IMPORTER—FRANCE			
Exporter:			
Saudi Arabia	0	2.5	(1)
United Kingdom	1.0	1.3	125.0
West Germany	2.3	1.0	44.4
Netherlands	0	2.8	(1)
Italy	10.8	0	0
Overall	14.0	7.5	53.6
IMPORTER—WEST GERMANY			
Exporter:			
Canada	.3	1.0	400.0
Iran	0	.3	(1)
Saudi Arabia	3.8	2.3	60.0
Other Mid-East and neutral	2.0	12.8	637.5
Libya	1.8	1.0	57.1
United States	0	.3	(1)
Other Caribbean	4.3	.3	5.9
United Kingdom	1.3	2.5	200.0
France	7.3	0	0
West Germany	.3	0	0
Netherlands	153.0	72.3	47.2
Belgium/Luxembourg	17.3	19.3	111.6
Italy	13.8	10.5	76.4
Denmark	.5	.3	50.0
Other	14.3	4.8	33.3
Overall	219.5	127.3	58.0
IMPORTER—NETHERLANDS			
Exporter:			
Venezuela	2.3	0	0
Iran	1.5	1.3	83.3
Kuwait	2.0	1.8	87.5
Saudi Arabia	6.8	0	0
Other Mid-East and neutral	5.8	0	0
Other Caribbean	8.0	0	0
United Kingdom	3.0	3.0	100.0
France	1.0	0	0
West Germany	1.3	1.5	120.0
Netherlands	3.0	5.3	175.0
Belgium/Luxembourg	9.5	5.3	55.3
Italy	23.3	13.5	58.1
Other	4.8	3.3	68.4
Overall	72.0	34.8	48.3

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—BELGIUM/LUXEMBOURG			
Exporter:			
Venezuela	0	2.5	(1)
Saudi Arabia	0	5.3	(1)
Other Mid-East and neutral	1.3	1.0	80.0
Libya	.8	1.3	166.7
United States	0	.5	(1)
United Kingdom	0	.8	(1)
France	1.0	2.3	225.0
West Germany	1.5	1.5	100.0
Netherlands	20.5	14.3	69.5
Italy	4.0	0	0
Other	6.0	0	0
Overall	35.0	29.3	83.6
IMPORTER—ITALY			
Exporter:			
Saudi Arabia	1.0	.5	50.0
Libya	1.3	0	0
France	2.8	3.8	136.4
Belgium/Luxembourg	0	.3	(1)
Italy	30.5	19.8	64.8
Other	4.5	8.0	177.8
Overall	40.0	32.3	80.6
IMPORTER—JAPAN			
Exporter:			
Iran	0	3.0	(1)
Saudi Arabia	70.3	72.8	103.6
Other Mid-East and neutral	13.3	90.5	683.0
Indonesia	12.8	9.0	70.6
Japan	.3	0	0
Other	29.0	20.3	69.8
Overall	125.5	195.5	155.8
IMPORTER—IRELAND			
Exporter:			
United Kingdom	19.0	12.8	67.1
Belgium/Luxembourg	0	3.8	(1)
Overall	19.0	16.5	86.8
IMPORTER—DENMARK			
Exporter:			
Other Mid-East and neutral	1.0	6.0	600.0
Other Caribbean	3.3	0	0
United Kingdom	24.3	36.3	149.5
West Germany	5.5	9.5	172.7
Netherlands	29.8	7.3	24.4
Belgium/Luxembourg	24.5	4.5	18.4
Italy	7.0	4.8	67.9
Denmark	.8	.3	33.3
Other	5.3	5.0	95.2
Overall	101.3	73.5	72.6

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—OTHER			
Exporter:			
Venezuela	19.5	28.8	147.4
Iran	17.5	12.8	72.9
Iraq	.3	0	0
Kuwait	2.8	1.8	63.6
Saudi Arabia	36.8	17.3	46.9
Other Mid-East and neutral	52.3	34.8	66.5
Libya	2.8	0	0
Nigeria	0	.3	(1)
United States	1.3	1.5	120.0
Other Caribbean	13.0	4.3	32.7
United Kingdom	16.0	21.5	134.4
France	9.0	5.5	61.1
West Germany	21.0	18.0	85.7
Netherlands	38.5	56.8	147.4
Belgium/Luxembourg	25.5	35.3	138.2
Italy	51.5	40.8	79.1
Japan	0	.3	(1)
Denmark	5.3	4.0	76.2
Other	44.3	84.3	190.4
Overall	357.0	367.5	102.9

[1] Infinite.

Independent Oil Companies

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
BY EXPORTER FOR ALL IMPORTERS FOR ALL COMPANIES			
Exporter:			
Canada	208.5	152.5	73.1
Venezuela	112.8	124.0	110.0
Iran	343.0	340.0	99.1
Iraq	17.8	0	0
Kuwait	78.0	18.5	23.7
Saudi Arabia	153.8	75.0	48.8
Abu Dhabi	6.8	2.0	29.6
Other Mid-East and neutral	72.3	36.5	50.5
Algeria	66.3	43.3	65.3
Libya	904.0	732.0	81.0
Nigeria	165.5	220.0	132.9
Indonesia	26.0	50.5	194.2
United States	4.5	5.0	111.1
Other Caribbean	39.5	65.5	165.8
Netherlands	0	5.3	(1)
Belgium/Luxembourg	3.8	4.5	120.0
Other	73.0	79.0	108.2
Overall	2,275.3	1,953.5	85.9
BY IMPORTER FOR ALL EXPORTERS FOR ALL COMPANIES			
Importer:			
United States	657.3	466.5	71.0
Other Caribbean	445.3	446.8	100.3
United Kingdom	231.0	309.5	134.0
France	47.3	5.5	11.6
West Ger any	215.8	179.3	83.1
Netherlands	37.5	8.5	22.7
Belgium/Luxembourg	46.0	49.5	107.6
Italy	353.3	260.0	73.6
Japan	100.0	136.5	136.5
Denmark	0.	9.8	(1)
Other	142.0	81.8	57.6
Overall	2,275.3	1,953.5	85.9

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—UNITED STATES			
Exporter:			
Canada	208.5	152 5	73.1
Venezuela	72.8	66.0	90.7
Iran	38.5	46.5	120.8
Kuwait	9.3	0	0
Saudi Arabia	52.5	5.3	10.0
Abu Dhabi	6.8	2.0	29.6
Other Mid-East and neutral	27.5	6.8	24.5
Algeria	22.5	0	0
Libya	92.8	4.5	4.9
Nigeria	45.8	95.5	208.7
Indonesia	13.5	22.8	168.5
United States	4.5	0	0
Other Caribbean	38.5	34.8	90.3
Other	24.0	30.0	125.0
Overall	657.3	466.5	71.0

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—OTHER CARIBBEAN			
Exporter:			
Venezuela	32.3	51.0	158.1
Iran	164.0	187.5	114.3
Saudi Arabia	12.0	0	0
Libya	79.8	0	0
Nigeria	113.8	124.5	109.5
United States	0	5.0	[1]
Other Caribbean	1.0	30.8	3,075.0
Other	42.5	48.0	112.9
Overall	445.3	446.8	100.3

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—UNITED KINGDOM			
Exporter:			
Venezuela	7.8	6.0	77.4
Iran	29.3	25.5	87.2
Kuwait	20.3	13.3	65.4
Saudi Arabia	16.3	25.5	156.9
Other Mid-East and neutral	9.5	9.0	94.7
Algeria	37.3	19.8	53.0
Libya	98.3	210.5	214.2
Nigeria	6.0	0	0
Other	6.5	0	0
Overall	231.0	309.5	134.0

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—FRANCE			
Exporter:			
Iran	4.0	2.0	50.0
Libya	43.3	3.5	8.1
Overall	47.3	5.5	11.6

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—WEST GERMANY			
Exporter:			
Iraq	3.5	0	0
Saudi Arabia	1.8	.5	28.6
Other Mid-East and neutral	8.8	0	0
Algeria	5.8	12.3	213.0
Libya	192.3	156.8	81.5
Netherlands	0	5.3	[1]
Belgium/Luxembourg	3.8	4.5	120.0
Overall	215.8	179.3	83.1

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—NETHERLANDS			
Exporter:			
Kuwait	2.0	0	0
Saudi Arabia	2.8	0	0
Libya	32.8	8.5	26.0
Overall	37.5	8.5	22.7

TYPE: CRUDE—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—BELGIUM/LUXEMBOURG			
Exporter:			
Libya	46.0	48.5	105.4
Other	0	1.0	(1)
Overall	46.0	49.5	107.6
IMPORTER—ITALY			
Exporter:			
Iran	14.3	1.0	7.0
Iraq	14.3	0	0
Kuwait	21.5	1.3	5.8
Saudi Arabia	52.5	40.5	77.1
Other Mid-East and neutral	4.0	4.0	100.0
Algeria	0	11.3	(1)
Libya	246.8	202.0	81.9
Overall	353.3	260.0	73.6
IMPORTER—JAPAN			
Exporter:			
Iran	51.3	46.0	89.8
Saudi Arabia	0	3.3	(1)
Other Mid-East and neutral	22.5	16.8	74.4
Libya	13.8	42.8	310.9
Indonesia	12.5	27.8	222.0
Overall	100.0	136.5	136.5
IMPORTER—DENMARK			
Exporter:			
Libya	0	9.8	(1)
Overall	0	9.8	(1)
IMPORTER—OTHER			
Exporter:			
Venezuela	0	1.0	(
Iran	41.8	31.5	75.4
Kuwait	25.0	4.0	16.0
Saudi Arabia	16.0	0	0
Algeria	.8	0	0
Libya	58.5	45.3	77.4
Overall	142.1	81.8	57.6

[1] Infinite.

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
BY EXPORTER FOR ALL IMPORTERS FOR ALL COMPANIES			
Exporter:			
Canada	42.8	46.8	109.4
Venezuela	126.8	123.3	97.2
Other Mid-East and neutral	19.3	31.5	163.6
Algeria	.3	1.3	500.0
Libya	39.8	18.3	45.9
Nigeria	4.8	0	0
Indonesia	12.5	13.8	110.0
United States	11.8	7.8	66.0
Other Caribbean	360.3	387.8	107.6
United Kingdom	12.8	7.0	54.9
France	3.5	.5	14.3
West Germany	.5	4.0	800.0
Netherlands	8.3	23.3	281.8
Belgium/Luxembourg	74.3	46.3	62.3
Italy	41.8	41.3	98.8
Denmark	0	1.8	(1)
Other	29.8	38.5	129.4
Overall	788.8	792.8	100.5

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Pre-embargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
BY IMPORTER FOR ALL EXPORTERS FOR ALL COMPANIES			
Importer:			
United States	627.5	643.5	102.5
Other Caribbean	3.5	0	0
United Kingdom	39.0	19.5	50.0
France	3.0	1.0	33.3
West Germany	16.3	20.3	124.6
Netherlands	19.0	16.0	84.2
Belgium/Luxembourg	.8	4.3	566.7
Japan	18.8	26.0	138.7
Ireland	5.8	3.3	56.5
Other	55.3	59.0	106.8
Overall	788.8	792.8	100.5
IMPORTER—UNITED STATES			
Exporter:			
Canada	42.8	46.8	109.4
Venezuela	119.0	118.3	99.4
Other Mid-East and neutral	7.3	1.3	17.2
Algeria	0	1.3	(1)
Libya	22.3	0	0
Nigeria	4.8	0	0
Indonesia	0	3.5	(1)
United States	.5	0	0
Other Caribbean	360.3	387.8	107.6
United Kingdom	2.3	0	0
France	2.3	0	0
West Germany	0	2.3	(1)
Netherlands	5.5	15.5	281.8
Belgium/Luxembourg	19.8	9.5	48.1
Italy	24.5	30.0	122.4
Other	16.5	27.5	166.7
Overall	627.5	643.5	102.5
IMPORTER—OTHER CARIBBEAN			
Exporter:			
Venezuela	3.5	0	0
Overall	3.5	0	0
IMPORTER—UNITED KINGDOM			
Exporter:			
Other Mid-East and neutral	0	2.3	(1)
Libya	.3	.3	100.0
United States	.8	0	0
Netherlands	1.8	2.5	142.9
Belgium/Luxembourg	25.0	9.8	39.0
Italy	10.3	4.8	46.3
Other	1.0	0	0
Overall	39.0	19.5	50.0
IMPORTER—FRANCE			
Exporter:			
Libya	0	.3	(1)
United States	0	.8	(1)
Belgium/Luxembourg	2.0	0	0
Italy	1.0	0	0
Overall	3.0	1.0	33.3
IMPORTER—WEST GERMANY			
Exporter:			
Algeria	.3	0	0
United States	1.3	0	0
France	1.3	.3	20.0
Netherlands	.5	4.3	850.0
Belgium/Luxembourg	5.5	8.0	145.5
Italy	3.5	6.0	171.4
Other	4.0	1.8	43.8
Overall	16.3	20.3	124.6

TYPE: PRODUCT—CHANGE IN AVERAGE DAILY VOLUME—Continued

	Preembargo seasonal (thousands of barrels) (1)	Embargo (thousands of barrels) (2)	Percent (2)/(1)
IMPORTER—NETHERLANDS			
Exporter:			
United States	.5	.5	100.0
Belgium/Luxembourg	17.0	15.5	91.2
Italy	1.5	0	0
Overall	19.0	16.0	84.2
IMPORTER—BELGIUM/LUXEMBOURG			
Exporter:			
Other Mid-East and neutral	0	2.5	(1)
France	0	.3	(1)
Netherlands	.5	1.0	200.0
Italy	0	.5	(1)
Other	.3	0	0
Overall	.8	4.3	566.7
IMPORTER—JAPAN			
Exporter:			
Other Mid-East and neutral	2.5	4.3	170.0
Libya	0	8.3	(1)
Indonesia	10.3	10.3	100.0
United States	6.0	3.0	50.0
United Kingdom	0	.3	(1)
Overall	18.8	26.0	138.7
IMPORTER—IRELAND			
Exporter:			
Indonesia	2.3	0	0
United Kingdom	3.5	3.3	92.9
Overall	5.8	3.3	56.5
IMPORTER—OTHER			
Exporter:			
Venezuela	4.3	5.0	117.6
Other Mid-East and neutral	9.5	21.3	223.7
Libya	17.3	9.5	55.1
United States	2.8	3.5	127.3
United Kingdom	7.0	3.5	50.0
West Germany	.5	1.8	350.0
Belgium/Luxembourg	5.0	3.5	70.0
Italy	1.0	0	0
Denmark	0	1.8	(1)
Other	8.0	9.3	115.6
Overall	55.3	59.0	106.8

[1] Infinite.