PETROLEUM IMPORTS

A REPORT OF

THE NATIONAL PETROLEUM COUNCIL

1955

REPORT OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON PETROLEUM IMPORTS

MAY 5, 1955

CHAIRMAN OF THE COMMITTEE: JAKE L. HAMON

REPORT OF THE COMMITTEE ON PETROLEUM IMPORTS TO THE NATIONAL PETROLEUM COUNCIL

On January 24, 1955, Assistant Secretary of the Interior Felix E. Wormser requested that the National Petroleum Council make a study of petroleum imports, including the effect thereof upon the domestic economy, the domestic industry, and the national security, and formulate such recommendations thereto as the Council may deem appropriate in the light of present conditions. This request is attached as Exhibit A.

Pursuant to that request, this Committee was created to make a factual study of the matter of petroleum imports. It was instructed to confine its report to findings of facts and not to suggest plans or programs in view of the competitive aspects of the problem. A Technical Subcommittee was subsequently appointed to assemble facts pertinent to this study. The report of the Technical Subcommittee, attached as Exhibit B, was adopted as part of the report of this Committee, and served as the basis of the findings set forth herein. These findings deal largely with the postwar period, and particularly with the developments that have occurred since 1950 when reports on this subject were adopted in January and July 1950 by the National Petroleum Council.

I. A Perspective of Postwar Petroleum Demand and Supply

Petroleum imports must be considered in relation to the total picture of demand and supply (See Exhibit B, page 16), as summarized below:

U. S. Petroleum Demand and Supply, Thousand Barrels Daily

		Domestic Supply			Imports			
Year	Total Demand	Crude Oil	Gas Liquids	Total	Crude Oil	Refined Products	Total	% of Total Supply
1946	5331	4751	323	5074	236	141	377	6.9
1950	6812	5407	499	5906	487	363	850	12.6
1954	8108	6346	681	7027	656	396	1052	13.0
Change 1946 1954	2777	1595	358	1953	420	255	675	
Avg. Annual % Change	5.4%	3.7%	9.8%	4.2%	13.7%	13.8%	13.7%	

In general the period 1946-1954 was one of increases in demand, domestic production and imports, except that crude oil production had to be decreased in 1949 and 1954. Imports increased at a faster rate than demand or domestic supply. They provided about one-fourth of the additional new supply and increased their share in total new supply from 6.9 per cent in 1946 to 13.0 per cent in 1954.

Important changes in the domestic fuel economy not the result of imports were also taking place postwar, particularly the increased use of natural gas and the conversion to diesel

engines which caused a sharp decline in the railroad use of both coal and residual fuel oil. (See Exhibit B, pages 14, 26, 27, 29 and 34). The magnitude of these two changes between 1946 and 1953 in terms of fuel oil equivalents was 1,941,000 and over 1,000,000 barrels daily, respectively (Exhibit B, page 29), based on the heat content of the various fuels without respect to the efficiency of their use. The increase of imports was 657,000 barrels daily in the same period.

Numerous other economic variables have affected the post-war period, including the following: (1) A general inflation of substantial magnitude, (2) the deficiency in well completions during World War II, (3) a rapid increase in petroleum demand in 1946-48 and again 1950-51 at the time of the Korean incident, (4) the decrease in domestic output of residual fuel oil, (5) the need for outside supplies of light crude oil in the West Coast area since 1950, (6) the reduction of import excise duties on petroleum effective at the beginning of 1953 and (7) the discovery and development of reserves at a more rapid rate abroad than in the United States.

The numerous changes in the general economy and the technologic and economic developments affecting the fuels economy and the petroleum industry make it extremely difficult to isolate and evaluate the magnitude of the effect of imports. The following analysis is presented in response to the assignment to

this committee with the aim of being informative but also with full recognition of the limitations inherent under the circumstances.

II. Relation of Petroleum Imports to Domestic Operations.

The relation of imports to domestic petroleum operations has become more important as the margin between domestic productive capacity and actual production increased since 1948. This margin ranged between 781,000 to 1,083,000 barrels daily on an annual average basis in 1949-1952 and then increased to more than 2,000,000 barrels daily by 1954. It has been affected by the relative rate of growth in domestic productive capacity and demand as well as by imports.

In the years 1946-48, when there was relatively little margin between domestic productive capacity and production, imports accounted for 6.9% to 8.0% of the new petroleum supplies of the U. S. from domestic sources and imports. By 1950 they represented 12.6% of the U.S. new supply and by 1954 they represented 13.0%. The increase in position since the previous reports on this subject in 1950 has been in crude oil while the relation of product imports to total new petroleum supply has decreased slightly. Of the increase in total new supply between 1946 and 1954, the principal components supplied the following proportions: domestic crude oil, 60.7%; domestic natural gas liquids, 13.6%; imported crude oil, 16.0%; and imported products, 9.7%.

Petroleum imports increased from 377,000 barrels daily in 1946 to 850,000 in 1950 and to 1,052,000 in 1954. Of the amount imported in 1954, about 63% was crude oil, 33% was residual fuel oil, and 4% was other refined products. The increase in imports since 1950 of 202,000 barrels daily has been almost entirely in the lighter crude oils of 25° gravity API or above (+159,000 barrels daily) and residual fuel oils (+24,000 barrels daily).

Western Hemisphere countries (principally Venezuela, the Netherlands West Indies, and Mexico) supply practically all of the petroleum products imported to the United States and about 62 per cent of the crude oil. Imports of crude oil from the Eastern Hemisphere began in 1947, reached a level of 260,000 barrels daily in 1953, and declined to 251,000 barrels daily in 1954.

About 90 per cent of the petroleum imports are to the East Coast. In the East Coast district, foreign crude accounted for 56.8 per cent of the crude runs to stills in 1954 and residual fuel oil imports accounted for 46.8 per cent of the residual fuel oil supply. The amount of domestic oils refined in the East Coast area decreased from 527,000 barrels daily in 1946 to 444,000 barrels daily in 1954, a decrease of 16%, while total runs to stills in the area increased from 758,000 barrels daily in 1946 to 1,029,000 barrels daily in 1954, an increase of 36%.

Petroleum imports to the West Coast on a steady basis began in 1951, increased to 79,000 barrels daily in 1953, and declined to

54,000 barrels daily in 1954.

Data in the report of the Technical Subcommittee were presented on an annual basis through 1954. In order to provide information as current as possible, it may be noted that statistics available from the Bureau of Mines for January and February and estimates based on preliminary weekly data reported for March indicate an increase in the first quarter of 1955 compared with the same period a year ago of about 550,000 barrels daily or 6.4 per cent in demand, about 485,000 barrels daily or 6.8 per cent in domestic production of all petroleum liquids, and about 235,000 barrels daily or 21.3 per cent in imports. Subsequent developments during the year may materially alter the relative changes for 1955 from the experience in the first quarter.

III. The Effect of Imports

A. On the domestic petroleum industry.

In considering the effect of imports, it is necessary to distinguish between residual fuel oil, which is used chiefly for industrial purposes in competition with other fuels, and crude oil that competes directly with domestic production in supplying a variety of refined petroleum products.

Technological changes in refining and in railroad transportation together with economic pressures incident to the lower price of residual fuel oil relative to other refined products have combined to bring about a downward trend in

the yield of residual fuel oil from domestic refinery crude runs since 1946. As a result, the supply of residual fuel oil from domestic sources was less in 1954 than in any other year since 1942 in the area east of District V (which is the West Coast area). (See Exhibit B, Page 31). Increased imports and some receipts from District V, which were substantial in 1949 and 1950, brought about some rise in total supply in the United States, excluding District V, until 1950, after which total supply remained relatively constant through 1953 and decreased in 1954. Total supply and demand for residual fuel oil in 1954 were less than in 1950 on the East Coast (See Exhibit B, Page 33), and in the area east of District V (Exhibit B, Page 31). These circumstances indicate that imports of residual fuel oil have operated largely to fill the gap between the demand that existed and available domestic supplies.

A different situation has existed with respect to crude oil, as indicated by the statistics in Table A following:

Table A.

U. S. PETROLEUM RESERVES, PRODUCTIVE CAPACITY, PRODUCTION, TOTAL DEMAND, RESERVE CAPACITY, AND IMPORTS

	MILLION BBLS.	THOUSAND BARRELS DAILY							
					Margin Between Productive Capacity and:				
					Production		Demand		
Year	Proved Reserves of Pet. Liquids at Year End	Estimated Productive Capacity All Pet. Liq.	Production All Liquids	Total Demand	Amount	% of Cap.	Amount	% of Cap.	Total Imports
1940	21,150	4,945	3,849	3,981	1,096	22.2	964	19.5	229
1946	24,037	5,230	5,068	5,331	162	3.1	-101	- 1.9	377
1947	24,742	5,590	5,450	5,902	140	2.5	-312	- 5.6	437
1948	26,821	5,950	5,921	6,143	29	0.5	-193	- 3.2	514
1949	28,378	6,460	5,476	6,130	984	15.2	330	5.1	645
1950	29,536	6,980	5,906	6,812	1,074	15.4	168	2.4	850
1951	32,193	7,500	6,719	7,475	781	10.4	25	0.3	844
1952	32,958	7,950	6,867	7,712	1,083	13.6	238	3.0	952
1953	34,383	8,471	7,112	8,005	1,359	16.0	466	5.5	1034
1954	34,805	9,096	7,027	8,108	2,069	22.7	988	10.9	1052
Change 1948 1954	7,984	3,146	1,106	1,965	2,040		1181		538
Avg. Annual % Change	4.4	7.3	2.9	4.7					12.7

The increase in crude oil imports has not been due to any lack of domestic productive capacity since 1948. In the two years that a downward adjustment in crude oil production was required, 1949 and 1954, crude oil imports increased. The changes in crude oil in these two years were as follows: in 1949 production

decreased 474,000 barrels daily and imports increased 68,000 barrels daily; in 1954 production decreased 112,000 barrels daily and imports increased 8,000 barrels daily, although there was a downward adjustment of crude oil imports to California in 1954 of 27,000 barrels daily. Apart from small volumes of specialty crudes, these changes have had the effect of taking the place of crude oil that could have been supplied from domestic sources and of increasing the extent of the downward adjustments in domestic crude oil production in 1949 and 1954.

One result of supplying part of the increased demand with imported crude oil instead of domestic production is to decrease the current income and rate of return on domestic producing operations and to increase the current income and rate of return on foreign producing operations. The significance of this development will depend upon its influence on the rate of domestic exploration, drilling, and development of new reserves and productive capacity. Thus far, the number of wells completed has continued a long-term upward trend to a new record in 1954, and there has been only a slight decline in the average number of active geophysical and core drilling crews in the past two years. Domestic productive capacity has increased more rapidly than domestic demand since 1948. The estimates of petroleum reserves summarized in Table A, however, show a growth in proved reserves at a slower rate than the rise in demand since 1948.

In summary, the most apparent effect of the increase in imports on the domestic petroleum industry is to reduce the rate of return on its operations.

B. On the Domestic Economy:

Apart from the effects on the domestic petroleum industry discussed above, we are unable to evaluate the net effect of the 1954 level of imports on the domestic economy. About all that can be said with certainty on this score is that crude oil imports that take the place of domestic crude oil tend to have effects which operate in different directions, as follows:

(1) By reducing the funds available to domestic producers for exploration and drilling, they affect the use of steel and other materials, the employment in industries supplying and servicing domestic drilling and producing operations, and the current tax receipts of the states whose production is directly affected; and

(2) By providing dollar exchange to foreign countries for the purchase of other commodities and services, they create outlets for employment in the industries that benefit from the additional foreign trade.

C. On National Security

There is general agreement as to the paramount importance of domestic resources for national security. The views of the National Petroleum Council on this matter are already on record in

the statement on "A National Oil Policy for the United States." This statement starts with the fundamental principle that:

> "The national security and welfare require a healthy domestic oil industry."

It contains also the following section on imports:

> "The nation's economic welfare and security require a policy on imports which will encourage exploration and development efforts in the domestic industry and which will make available a maximum supply of domestic oil to meet the needs of this nation.
>
> "The availability of petroleum from domestic fields produced under sound conservation practices, together with other pertinent factors, provides the means for determining if imports are necessary and the extent to which imports are desirable to supplement our oil supplies on a basis which will be sound in terms of the national economy and in terms of conservation.
>
> "The implementation of an import policy should, therefore, be flexible so that adjustments may readily be made from time to time.
>
> "Imports in excess of our economic needs, after taking into account domestic production in conformance with good conservation practices and within the limits of maximum efficient rates of production, will retard domestic exploration and

development of new oil fields and the technological progress in all branches of the industry which is essential to the nation's economic welfare and security."

The statement on "A National Oil Policy" also recognizes the relation of foreign oil to national security in the following terms:

"The participation of United States nationals in the development of world oil resources is in the interest of all nations and essential to our national security ....

"Oil from abroad should be available to the United States to the extent that it may be needed to supplement our domestic supplies. The availability of oil outside of the United States, in places well situated to supply our offshore requirements in time of emergency, is of importance to our national security....

"American interests today participate widely in international oil development. Conditions should be fostered that will further this participation but not to the extent that this involves preferential treatment of operations abroad at the expense of the domestic industry."

Circumstances existing through 1954 have not thus far kept domestic exploration and drilling from increasing. Even so, proved domestic reserves have not kept pace with the growth of demand. To the extent that imports exceed the level needed to supplement our

domestic supplies and operate to retard domestic exploration and development, they have an influence contrary to the nation's economic welfare and security.

IV. Conclusion.

Petroleum imports and their relation to domestic production have been the subject of discussion and study within the industry for years. The National Petroleum Council itself dealt with the problem of imports in detail and outlined a policy and principles with regard thereto in "A National Oil Policy" quoted from above. The facts disclosed in the Technical Subcommittees' Report and the findings of fact in this report need to be measured by the policy and principles stated in "A National Oil Policy."

After full study of its Technical Subcommittee's report, and after full discussion of all the pertinent factors since the last reports of the National Petroleum Council on the subject in January and July, 1950, the Committee on Petroleum Imports reports the following conclusions:

1. The continued increase in imports of crude oil coupled with a decline in exports of crude oil and its products has damaged in varying degrees segments of the domestic oil industry.

2. Further increases of imports without regard to the principle of only supplementing the domestic production of crude oil and its products will seriously damage the domestic oil industry and thus affect the domestic economy and the national

security.

3. Fair and equitable relationships have not prevailed between total imports of crude oil and total demands for oil in the United States during periods of excess availability of domestic oil for U.S. consumption. Fair and equitable relationships should obtain at all times between total imports of crude oil and its products and total demand for oil in the U.S.

* * * * * * * * * * *

The petroleum import question has been considered by government appointed groups. The latest of these was the President's Cabinet Committee on Energy Supplies and Resources Policy, which had the matter under study for several months. The report of the Cabinet Committee was released on February 26, 1955 subsequent to the appointment of this Committee by the National Petroleum Council. The Cabinet Committee report recognizes the problem of imports in relation to domestic production, to the orderly industrial growth which assures the military and civilian supplies and reserves that are necessary to the national defense, and to the incentive for exploration and discovery of new sources of supply, and makes specific suggestions for dealing with this problem. That report is worthy of careful study and consideration by all who are interested in this problem and its solution.

Respectfully submitted,

Jake L. Hamon, Chairman,
Committee on Petroleum Imports

EXHIBITS

COMMITTEE MEMBERSHIP LIST

Exhibit A

REPORT OF THE AGENDA COMMITTEE OF THE NATIONAL PETROLEUM COUNCIL

January 24, 1955

Under date of January 24, 1955 Mr. Felix E. Wormser, Assistant Secretary - Mineral Resources, of the Department of the Interior, addressed a letter (copy of which is attached hereto) to Mr. Walter S. Hallanan, Chairman of the National Petroleum Council referring to a previous study made by the Council under date of July 24, 1950 on the matter of petroleum imports including the effect thereof upon the domestic economy, the domestic industry and the national security. Mr. Wormser requested in his letter, that the National Petroleum Council make a study of petroleum imports and in the light of present conditions, formulate such recommendations with respect thereto as the Council may deem appropriate, stating that he believes that such a study and recommendations with respect thereto would be greatly in the public interest and of much value to the Government.

As provided in the Articles of Organization of the Council this letter was considered at a meeting of the Agenda Committee on January 24, 1955 in Washington, D. C., at which meeting the Agenda Committee recommended the appointment of a Committee to make a factual study of the matter of petroleum imports, including the effect thereof on the domestic industry, the domestic economy, and national security, and upon completion of its studies to report its findings to the Council for such action as the Council may deem appropriate. In view of the competitive aspects of the problem, the Committee should not suggest plans or programs, but should confine its report to findings of fact.

Respectfully submitted,

A. Jacobsen, Chairman
Agenda Committee

UNITED STATES
DEPARTMENT OF THE INTERIOR
Office of the Secretary
Washington 25, D. C.

COPY

January 24, 1955

My dear Mr. Hallanan:

In accordance with requests of the Secretary of the Interior the National Petroleum Council has previously reported on the matter of petroleum imports, including the effect upon the domestic economy, the domestic industry, and the national security.

In its report of July 24, 1950, the Council reached certain conclusions and offered suggestions on import statistics. This report, submitted just after the incidence of the Korean war, included the following statement:

> ...."In the light of these short term considerations the Committee finds that the present situation calls for no immediate action. It is, however, recommended that the relationship between imports and domestic demand be again considered if the present trend changes."

The short-term considerations arising from the Korean conflict have passed. Conditions obtaining at this time are therefore changed and I believe that further National Petroleum Council study of the matter of petroleum imports and recommendations with respect thereto would be greatly in the public interest and of much value to the Government.

Accordingly, I request the National Petroleum Council to make a study of petroleum imports and, in the light of present conditions, formulate such recommendations with respect thereto as the Council may deem appropriate.

Sincerely yours,

/S/ Felix E. Wormser

Assistant Secretary - Mineral Resources

Mr. Walter S. Hallanan, Chairman
National Petroleum Council
1625 K Street, N.W.
Washington, D. C.

EXHIBIT B

NATIONAL PETROLEUM COUNCIL
COMMITTEE ON PETROLEUM IMPORTS

CHAIRMAN: Jake L. Hamon
Dallas 2, Texas

VICE CHAIRMAN: Hines H. Baker, President
Humble Oil & Refining Company
Houston 1, Texas

J. S. Bridwell
Bridwell Oil Company
Wichita Falls, Texas

Russell B. Brown, General
Counsel
Independent Petroleum Association
of America
Washington, D. C.

H. S. M. Burns, President
Shell Oil Company
New York, New York

J. P. Coleman, President
National Stripper Well Association
c/o McCarty and Coleman
Wichita Falls, Texas

Wesley E. Downing, President
Independent Oil Men's Association
of New England, Incorporated
c/o State Fuel Company
East Boston, Massachusetts

Paul Endacott, President
Phillips Petroleum Company
Bartlesville, Oklahoma

R. G. Follis, Chairman of the
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Standard Oil Company of California
San Francisco, California

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Independent Producer
Shreveport, Louisiana

Harry B. Hilts
New York, New York

Eugene Holman, Chairman of the
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Standard Oil Company (N.J.)
New York, New York

A. Jacobsen, President
Amerada Petroleum Corporation
New York, New York

B. Brewster Jennings, President
Socony-Vacuum Oil Company, Inc.
New York, New York

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Cities Service Company
New York, New York

Richard Gray Lawton, President
Lawton Oil Corporation
Magnolia, Arkansas

J. Sayles Leach, President
The Texas Company
New York, New York

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Great American Oil Company
Chicago, Illinois

A. C. Mattei, President
Honolulu Oil Corporation
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L. F. McCollum, President
Continental Oil Company
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Oil Department
Farmers Union Central Exchange, Inc.
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American Petroleum Institute
New York, New York

A. S. Ritchie
Independent Producer
Wichita, Kansas

M. H. Robineau, President
Independent Petroleum Refiners
Association of America
c/o The Frontier Refining Company
Denver, Colorado

Roland V. Rodman, President
Western Petroleum Refiners Association
c/o Anderson-Prichard Oil Corporation
Oklahoma City, Oklahoma

P. C. Spencer, President
Sinclair Oil Corporation
New York, New York

Henderson Supplee, Jr., President
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Standard Oil Company (Indiana)
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c/o Nash, Windfohr and Brown
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Jack Woodward, President
Texas Independent Producers and
Royalty Owners Association
Dallas, Texas

C. H. Wright, Chairman of the
Board
Sunray Oil Corporation
Tulsa, Oklahoma

REPORT

of the

TECHNICAL SUBCOMMITTEE

to the

COMMITTEE ON PETROLEUM IMPORTS

of the

NATIONAL PETROLEUM COUNCIL

March 23, 1955

TECHNICAL SUBCOMMITTEE
OF THE NATIONAL PETROLEUM COUNCIL'S
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Houston, Texas

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Bartlesville, Oklahoma

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San Francisco, California

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The Texas Company
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REPORT ON PETROLEUM IMPORTS

by the

TECHNICAL SUBCOMMITTEE OF THE NPC COMMITTEE ON PETROLEUM IMPORTS

Introduction

Pursuant to instructions from the Chairman of the Committee on Petroleum Imports of the National Petroleum Council, the Technical Subcommittee submits this report presenting statistical data and charts considered pertinent to the assignment of the Main Committee. Questions that arose with respect to inclusion and exclusion of material were determined by majority vote. The report does not purport to include all considerations bearing on imports nor to evaluate the effect of imports, as the assignment of the Subcommittee was interpreted by the majority to be limited to presentation of factual data that might be necessary or useful to the Main Committee in its study and analysis of the effects of imports.

The report is limited to comments discussing the highlights of statistics presented in attached tabulations and charts. These comments deal largely with the postwar period because the present study is designed to concentrate on developments that have occurred since an earlier report on this subject was prepared in 1950 by another committee of the National Petroleum Council. As a matter of convenient reference, the tabulations included herein generally cover the 20-year period 1935-1954 to the extent that data are available. The comments are arranged by sections, as indicated by the table of contents.

I. Petroleum Imports--Volume, Destination, Origin, and Excise Tax Rates

Statistics on imports are presented in Tables 1-6 and Charts 1-3. Imports increased in each postwar year except 1951 when they decreased by 6,000 barrels daily. The increase has been almost entirely in the lighter crude oils of 25° gravity API or above and in residual fuel oil. The annual changes in imports are shown in Summary E on Page 13.

Summary A
Volume of Imports, Thousand Barrels Daily

	Crude Oil			Refined Products			
	Below 25°	25° & Above	Total	Residual Fuel Oil	Other	Total	All Oils
1946	98	138	236	122	19	141	377
1950	118	369	487	329	34	363	850
1954	128	528	656	353	43	396	1,052
Increase 1946-54	30	390	420	231	24	255	675

About 90 per cent of the petroleum imports are to the East Coast. Apart from scattered shipments in preceding years, imports to the West Coast, principally crude oil, began in 1951, increased to 79,000 barrels daily in 1953, and declined to 54,000 barrels daily in 1954.

Until 1948 practically all petroleum imports were from the Western Hemisphere, principally Venezuela, the Netherlands West Indies, and Mexico. Imports of crude oil from the Eastern Hemisphere began in 1947, reaching a level of 260,000 barrels daily in 1953, and declining to 251,000 barrels daily in 1954.

Summary B
Destination and Origin of Imports, Thousand Barrels Daily

	Receipts by Areas					Origin of Imports					
	Crude Oil			Ref. Prods.		Western Hemisphere				E. Hemis.	
						Venz-N.W.I.		Other			
	East Coast	West Coast	Other U. S.	East Coast	Other U. S.	Crude	Prods	Crude	Prods	Crude Oil	Products
1946	236	-	-	140	1	205	131	31	9	0	1
1950	463	-	24	343	20	295	330	78	28	114	5
1954	585	51	20	378	18	352	350	53	46	251	1
Inc.1946-54	349	51	20	238	17	147	219	22	37	251	0

The import excise rates on crude oil and residual fuel oil and the relation of the rates to the average price of U. S. crude oil at the well and the delivered price of residual fuel oil at New York are shown on Table 6 and Chart 3 and summarized below:

Summary C

Relation of Import Excise Rates on Crude Oil and Residual Fuel Oil To the Average Price of U. S. Crude Oil and the Delivered Price of Residual Fuel Oil at New York

	Crude Oil			Residual Fuel Oil		
	Average U.S. Price At Well	Import Excise Rate		Delv'd. Price At New York	Import Excise Rate	
Year	(Per Bbl.)	Per Barrel	% Of Avg.Price At Well	Per Bbl.	Per Barrel	Per Cent of New York Delvd.Price
1946	$1.41	$ 0.105	7.4	$1.82	$ 0.105	5.8
1950	2.51	0.105	4.2	2.15	0.105	4.9
1954	2.76	0.0525-0.105[a]	3.4	2.31	0.0525	2.3

[a] Rate of 5.25 cents a barrel applies to imports below 25° gravity.

Chart 1

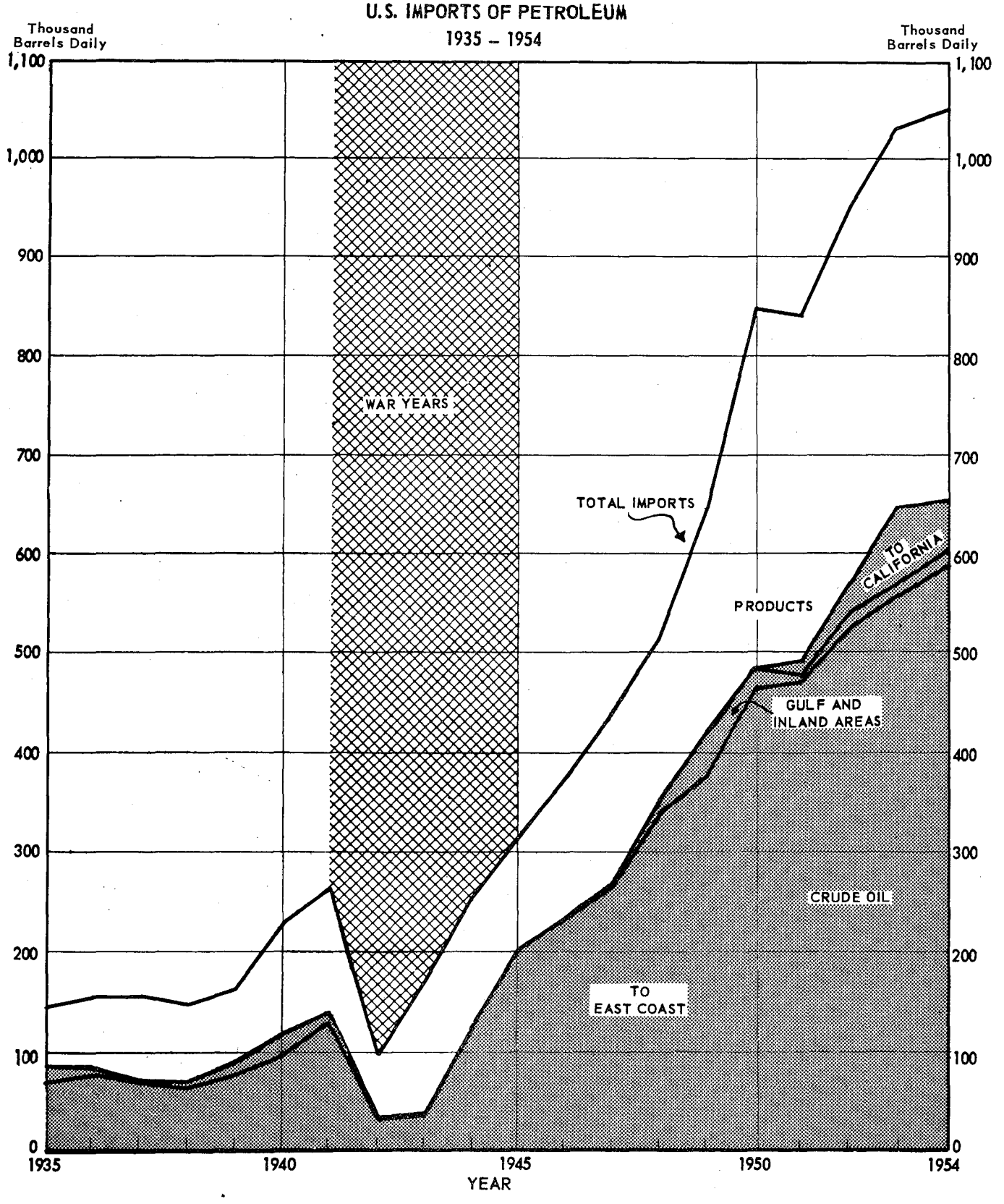

U.S. IMPORTS OF PETROLEUM
1935 – 1954
Thousand Barrels Daily
Thousand Barrels Daily
1,100
1,000
900
800
700
600
500
400
300
200
100
0
WAR YEARS
TOTAL IMPORTS
PRODUCTS
TO CALIFORNIA
GULF AND INLAND AREAS
CRUDE OIL
TO EAST COAST
1935
1940
1945
1950
1954
YEAR

TABLE 1

U. S. IMPORTS OF PETROLEUM, 1935-1954
(Thousand Barrels Daily)

Year	Crude Oil			Refined Products				Total Petroleum
	Total	API 25° and Above	Below[a] API 25°	Total	Residual	Dist.	Other	
1935	88 (18)			56	44 (32)	-	12	144
1936	88 (7)			68	51 (46)	-	17	156
1937	75 (5)			82	61 (54)	-	21	157
1938	72 (10)			76	58 (50)	-	19	148
1939	91 (13)			71	43 (40)	-	28	162
1940	117 (3)			112	80 (29)	9	23	229
1941	139			127	102 (29)	14	11	266
1942	34			65	51 (13)	10	4	99
1943	38			136	75 (1)	42	19	174
1944	122			130	100 (1)	19	11	252
1945	204			107	87 (17)	13	7	311
1946	236	138	98	141	122 (60)	14	5	377
1947	267	157	110	170	149 (69)	11	10	437
1948	353	248	105	161	146 (71)	7	8	514
1949	421	314	107	224	206 (67)	5	13	645
1950	487	369	118	363	329 (62)	7	27	850
1951	491	373	118	353	326 (92)	5	22	844
1952	573	466*	107*	379	351 (89)	7	21	952
1953	648	551	97	386	360 (76)	9	17	1,034
1954	656	528	128	396	353 (68)	9	34	1,052

() Figures in parenthesis, included in total, are bonded imports. For residual fuel oil, the figures are the quantity withdrawn for vessels engaged in foreign trade.

* Estimated.

Source: Bureau of Mines except as noted.

a Data on gravity of crude oil imports based on National Petroleum Council report on Bunker "C" Fuel Oil for 1946-1951. Department of Commerce for 1953-1954, and estimates from 1951 and 1953 data for 1952.

Note: Data may not add to total due to rounding to nearest thousand.

TABLE 2

U. S. IMPORTS OF CRUDE OIL--BY REFINERY AREAS, 1935-1954
(Thousand Barrels Daily)

Year	East Coast	Gulf Coast	Inland Areas	East of Calif.	West Coast	U. S.
1935	72	16	0	88	0	88
1936	80	8	0	88	0	88
1937	70	5	0	75	0	75
1938	66	6	0	72	0	72
1939	79	12	0	91	0	91
1940	94	23	0	117	0	117
1941	128	11	0	139	0	139
1942	30	4	0	34	0	34
1943	37	1	0	38	0	38
1944	122	0	0	122	0	122
1945	204	0	0	204	0	204
1946	236	0	0	236	0	236
1947	265	2	0	267	0	267
1948	338	15	0	353	0	353
1949	374	44	0	418	3	421
1950	463	24	0	487	0	487
1951	471	9	1	481	10	491
1952	526	12	3	541	32	573
1953	555	8	7	570	78	648
1954	585	12	8	605	51	656

Imports Below 25 Degree Gravity and 25 Degree and Above, 1953-1954[a]

1953						
Below 25°	90	7	-	97	-	97
25° and Above	464	2	7	473	78	551
Total	554	9	7	570	78	648
1954						
Below 25°	112	11	2	125	3	128
25° and Above	473	1	6	480	48	528
Total	585	12	8	605	51	656

Source: Bureau of Mines. (a) Department of Commerce data based on API gravity.
Note: Data may not add to total due to rounding to nearest thousand.

TABLE 3

U. S. IMPORTS OF REFINED PRODUCTS BY REFINING AREAS
(Thousand Barrels Daily)
1935-1954

Year	East of California				West Coast	Total U. S.
	East Coast	Gulf Coast	Inland Areas	Total		
1935	52	4	-	56	-	56
1936	62	5	1	68	-	68
1937	74	7	-	82	-	82
1938	55	7	14	76	-	76
1939	67	4	-	71	-	71
1940	107	5	-	112	-	112
1941	124	3	-	127	-	127
1942	63	1	-	65	-	65
1943	134	-	1	135	1	136
1944	129	-	-	129	1	130
1945	106	-	-	106	1	107
1946	140	-	-	140	1	141
1947	168	1	-	170	-	170
1948	160	-	1	161	-	161
1949	219	4	1	224	-	224
1950	343	20	-	363	-	363
1951	341	13	-	353	-	353
1952	371	5	1	376	3	379
1953	378	6	1	385	1	386
1954	378	15	-	393	3	396

Source: Bureau of Mines.

Note: Data may not add to total due to rounding to nearest thousand.

Chart 2

U.S. CRUDE OIL IMPORTS FROM WESTERN AND EASTERN HEMISPHERES
1935–1954

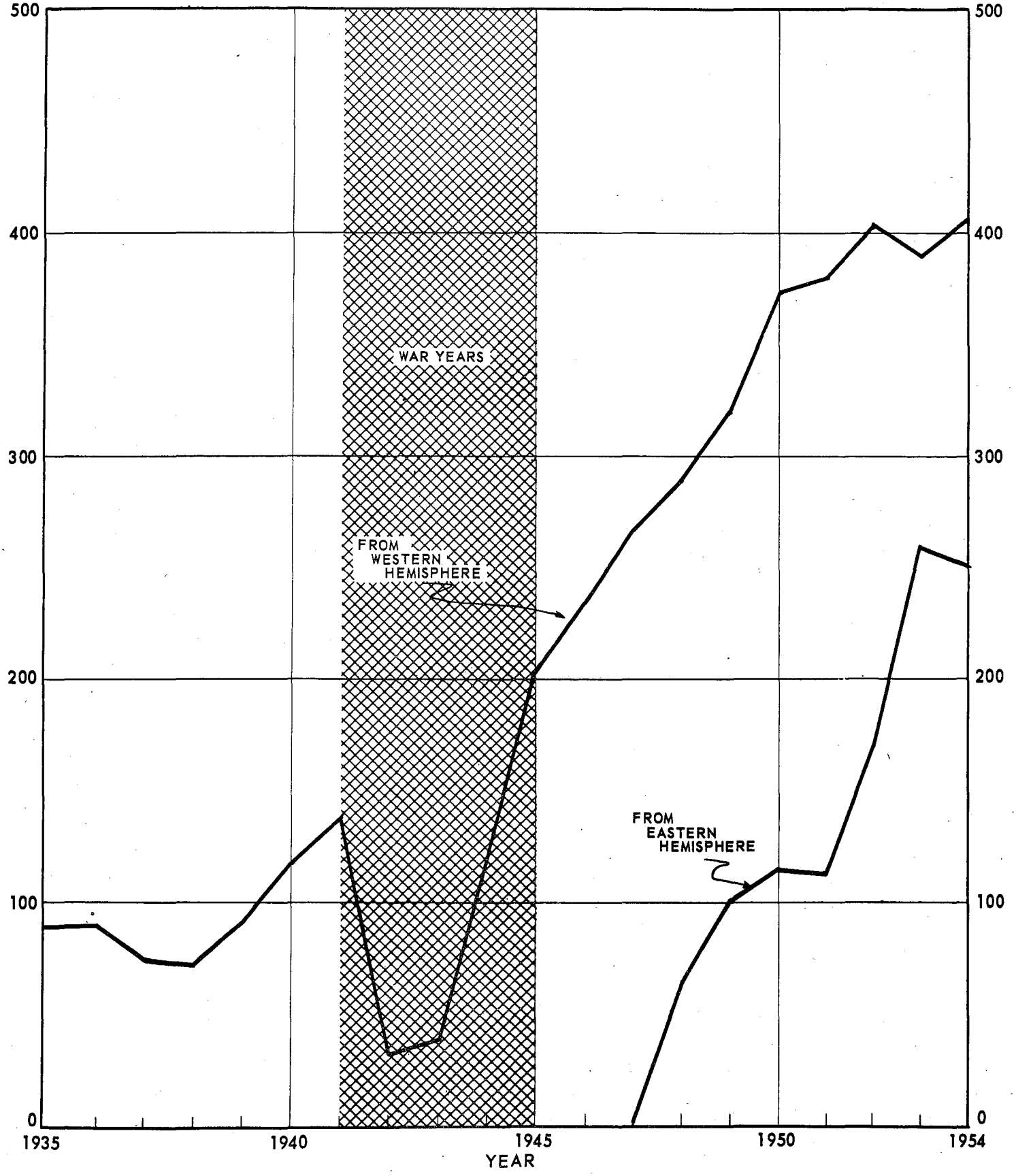


TABLE 4

U. S. CRUDE OIL IMPORTS BY COUNTRY OF ORIGIN
(Thousand Barrels Daily)
1935-1954

Year	Western Hemisphere						Eastern Hemisphere	Total
	Venezuela[a]	Columbia	Mexico	Canada	Other	Total		
1935	69	10	9	-	-	88	-	88
1936	77	-	11	-	-	88	-	88
1937	65	1	9	-	-	75	-	75
1938	65	-	7	-	-	72	-	72
1939	74	3	14	-	-	91	-	91
1940	82	2	33	-	-	117	-	117
1941	103	9[b]	27	-	-	139	-	139
1942	19	6	9	-	-	34	-	34
1943	27	8	3	-	-	38	-	38
1944	99	21	2	-	-	122	-	122
1945	173	24	7	-	-	204	-	204
1946	205	23	8	-	-	236	-	236
1947	221	30	15	-	-	266	1	267
1948	256	24	10	-	-	290	63	353
1949	275	32	13	-	-	320	101	421
1950	295	44	34	-	-	373	114	487
1951	294	45	38	1	-	378	113	491
1952	334	44	23	3	-	404	169	573
1953	329	44	8	7	-	388	260	648
1954	352	34	8	7	4	405	251	656

EASTERN HEMISPHERE BY COUNTRIES OF ORIGIN

	Saudi Arabia	Kuwait	Neutral Zone	Iran	Iraq	Qatar	Borneo	Sumatra
1947	1	-	-	-	-	-	-	-
1948	40	9	-	12	2	-	-	-
1949	33	64	-	3	1	-	-	-
1950	40	73	-	1	-	-	-	-
1951	44	59	-	-	-	-	10	-
1952	80	72	-	-	2	-	5	10
1953	101	106	-	-	6	9	-	38
1954	76	112	8	1	6	10	-	38

IMPORTS TO DISTRICT V (WEST COAST) INCLUDED ABOVE

	Western Hemisphere				Eastern Hemisphere					Total
	Canada	Venez.	Other	Total	Saudi Arabia	Other Middle East	Borneo	Sumatra	Total	
1949	-	3	-	3	-	-	-	-	-	3
1950	-	-	-	-	-	-	-	-	-	-
1951	-	-	-	-	-	-	10	-	10	10
1952	-	5	-	5	12	1	5	10	28	32
1953	-	5	-	5	26	9	-	38	73	78
1954	2	1	3	6	1	8	-	36	45	51

[a] Includes some crude moved through Netherlands West Indies.
[b] Includes small volume from Trinidad and Equador.

Source: Bureau of Mines

Note: Data may not add to total due to rounding to nearest thousand.

TABLE 5

U. S. REFINED PRODUCT IMPORTS BY COUNTRY OF ORIGIN
1935-1954
(Thousand Barrels Daily)

	Western Hemisphere					Eastern Hemisphere	Total
Year	Venezuela	Netherland West Indies	Mexico	Other	Total		
1935		52	2	2	56	-	56
1936		58	8	2	68	-	68
1937		71	9	2	82	-	82
1938		74	2	1	76	-	76
1939		69	1	1	71	-	71
1940		101	10	1	112	-	112
1941	25	92	10	-	127		127
1942	5	55	4	1	65		65
1943	3	127	2	4	136		136
1944	5	117	5	3	130		130
1945	2	102	-	4	107		107
1946	3	128	9	-	140	1	141
1947	4	146	12	1	163	7	170
1948	1	148	4	1	154	7	161
1949	11	197	10	6	224	-	224
1950	61	269	21	7	358	5	363
1951	71	263	13	6	353	-	353
1952	88	273	9	8	378	1	379
1953[a]	121	244	25	9	399	3	386[a]
1954	114	236	42	4	395	1	396

[a] Revised imports for 1953 are 386,000 B/D. It is believed that most of the 16,000 B/D revision took place in the Venezuelan shipments although the exact breakdown of origin is not yet known.

Source: Dept. of Commerce origin data adjusted to Bureau of Mines totals.
Note: Data may not add to total due to rounding to nearest thousand.

Chart 3

IMPORT DUTIES AS PER CENT OF AVERAGE U.S. CRUDE OIL PRICE AT WELL AND OF THE DELIVERED PRICE OF RESIDUAL FUEL OIL AT NEW YORK 1935 – 1954

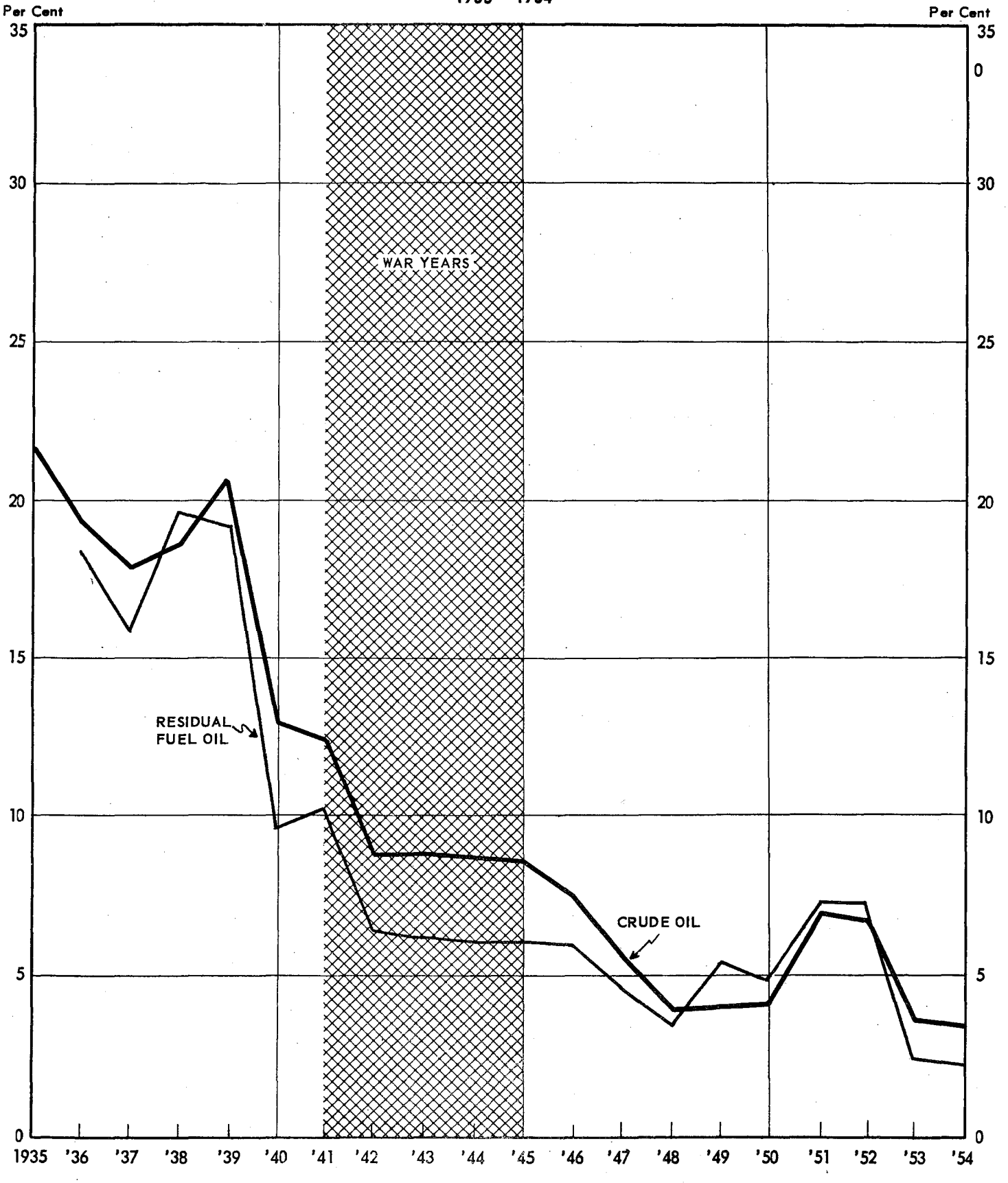


TABLE 6

IMPORT EXCISE RATES ON CRUDE OIL AND RESIDUAL FUEL OIL IN RELATION TO THE AVERAGE PRICE OF U. S. CRUDE OIL AND TO THE DELIVERED PRICE OF RESIDUAL FUEL OIL AT NEW YORK 1935-1954

	Crude Oil			Residual Fuel Oil		
	Average U.S. Price At Well	Import Excise Rate		Delv'd. Price At New York	Import Excise Rate	
Year	($ PerBbl)	Per Barrel	Per Cent of Value At Well	Per Bbl.	Per Barrel	Per Cent of Del. Price at New York
1935	0.97	$ 0.21	21.6	-	$ 0.21	-
1936	1.09	0.21	19.3	1.14	0.21	18.4
1937	1.18	0.21	17.8	1.33	0.21	15.8
1938	1.13	0.21	18.6	1.07	0.21	19.6
1939	1.02	0.21	20.6	1.10	0.21	19.1
1940	1.02	0.105-0.21[a]	12.9[a]	1.37	0.105-0.21[a]	9.6[a]
1941	1.14	0.105-0.21[a]	12.3[a]	1.37	0.105-0.21[a]	10.2[a]
1942	1.19	0.105-0.21[a]	8.8[a]	1.67	0.105-0.21[a]	6.3[a]
1943	1.20	0.105	8.8	1.71	0.105	6.1
1944	1.21	0.105	8.7	1.76	0.105	6.0
1945	1.22	0.105	8.6	1.75	0.105	6.0
1946	1.41	0.105	7.4	1.82	0.105	5.8
1947	1.93	0.105	5.4	2.30	0.105	4.6
1948	2.60	0.105	4.0	3.03	0.105	3.5
1949	2.54	0.105	4.1	1.94	0.105	5.4
1950	2.51	0.105	4.2	2.15	0.105	4.9
1951	2.53	0.105-0.21[a]	6.9[a]	2.39	0.105-0.21[a]	7.3[a]
1952	2.53	0.105-0.21[a]	6.7[a]	2.37	0.105-0.21[a]	7.3[a]
1953	2.68	0.0525-0.105[b]	3.6[b]	2.22	0.0525	2.4
1954	2.76	0.0525-0.105[b]	3.4[b]	2.31	0.0525	2.3

a Rate of 21 cents a barrel applied to imports in excess of quota which was 5 per cent of the prior year's refinery runs. Average import duty calculated on the basis of relation of imports to prior year's refinery runs.

b Rate of 5.25 cents a barrel applies to imports below 25 degree gravity.

Source: Bureau of Mines, Bureau of Census, and Platt's Oilgram residual fuel oil prices at New York Harbor adjusted to delivered price (See Table 17).

II. Relation of Imports to Domestic Operations

A summary of U. S. petroleum demand and supply is presented in Table 7 and Chart 4. The relation of imports to domestic operations is presented in Tables 8-10 and Charts 5-8 and also in Summary D on this page.

Imports have exceeded exports in volume since 1948 and in value in 1950 and 1953-1954 (Table 11 and Chart 9).

Imports have increased their position relative to domestic petroleum operations in the postwar period except for 1951. The relation of imports to domestic operations is summarized below:

Summary D
Relation of Imports to Domestic Operations

	U. S. Imports as Per Cent of:							East Coast Imports Relative to Operations in Area	
	U. S. Crude Production				U.S. Total Demand			Foreign Crude Runs as Per	Residual Fuel Imports as Per Cent
Year	Crude Oil	Resid F. O.	Other Prods	Total	Crude Oil	Refined Prods	Total	Cent of Total	Total New Supply
1946	5.0	2.6	0.4	8.0	4.4	2.7	7.1	30.5	24.2
1950	9.0	6.1	0.6	15.7	7.1	5.3	12.4	50.6	43.1
1954	10.3	5.6	0.7	16.6	8.1	4.9	13.0	56.8	46.8

In the East Coast district, where the bulk of imports are received, foreign crude accounted for 56.8 per cent of the crude runs to stills in 1954 and residual fuel oil imports accounted for 46.8 per cent of the residual fuel oil supply. The amount of domestic crude oil refined in the East Coast area decreased in the postwar period.

The annual increments in the major elements of supply and demand are set forth below:

Summary E
Annual Changes in U. S. Demand and Supply, Thousand Barrels Daily

		Domestic Supply			Imports		
Year	Total Demand	Crude Oil	Gas Liquids	Total	Crude Oil	Residual Fuel Oil	All Oils
1947	571	337	41	378	31	27	60
1948	241	432	38	470	86	- 3	77
1949	- 13	-474	29	-445	68	60	131
1950	682	361	68	429	66	123	205
1951	663	751	63	814	4	- 3	- 6
1952	237	98	50	148	82	25	108
1953	293	202	43	245	75	9	82
1954	103	-112	26	- 86	8	- 7	18
Total	2,777	1,595	358	1,953	420	231	675
Avg.Annual % Change	5.4%	3.7%	9.8%	4.2%	13.7%	14.2%	13.7%

Domestic demand increased in every year, total demand increased except in 1949, domestic supply increased except in 1949 and 1954 when crude oil production was lower, and imports increased in every year except 1951.

The change in total supply between 1946 and 1954 was 2,629,000 barrels daily. Of this amount, the principal components supplied the following proportions: domestic crude oil, 60.7 per cent; domestic natural gas liquids, 13.6 per cent; imported crude oil, 16.0 per cent; and imported products, 9.7 per cent.

Some additional relations of imports to domestic productive capacity and operations are shown in Summary N.

The relation of petroleum imports to total energy supply for the United States is shown in Table 12 and Chart 10. The participation of the principal energy sources in total supply is summarized below:

Summary F

Per Cent Participation of Principal Energy Sources in Total U. S. Supply

	Domestic Production				Petroleum Imports				
Year	Crude Oil	Gas Liquids	Natural Gas	Total	Crude Oil	Refined Products	Total	Coal	Water Power
1946	30.92	1.45	13.01	45.38	1.59	0.97	2.56	47.74	4.32
1950	31.11	1.98	17.92	51.01	2.80	2.10	4.90	39.80	4.27
1954	35.17	2.61	23.92	61.70	3.64	2.18	5.82	28.42	4.06
Points Chg. 1946-54	4.25	1.16	10.91	16.32	2.05	1.21	3.26	-19.32	-.26

The principal gain has been by natural gas, with an increase of 10.91 percentage points. Both domestic production of liquids and imports have gained position in total energy supply since 1946 while coal has lost position.

Chart 4

U.S. PETROLEUM SUPPLY
1935 - 1954

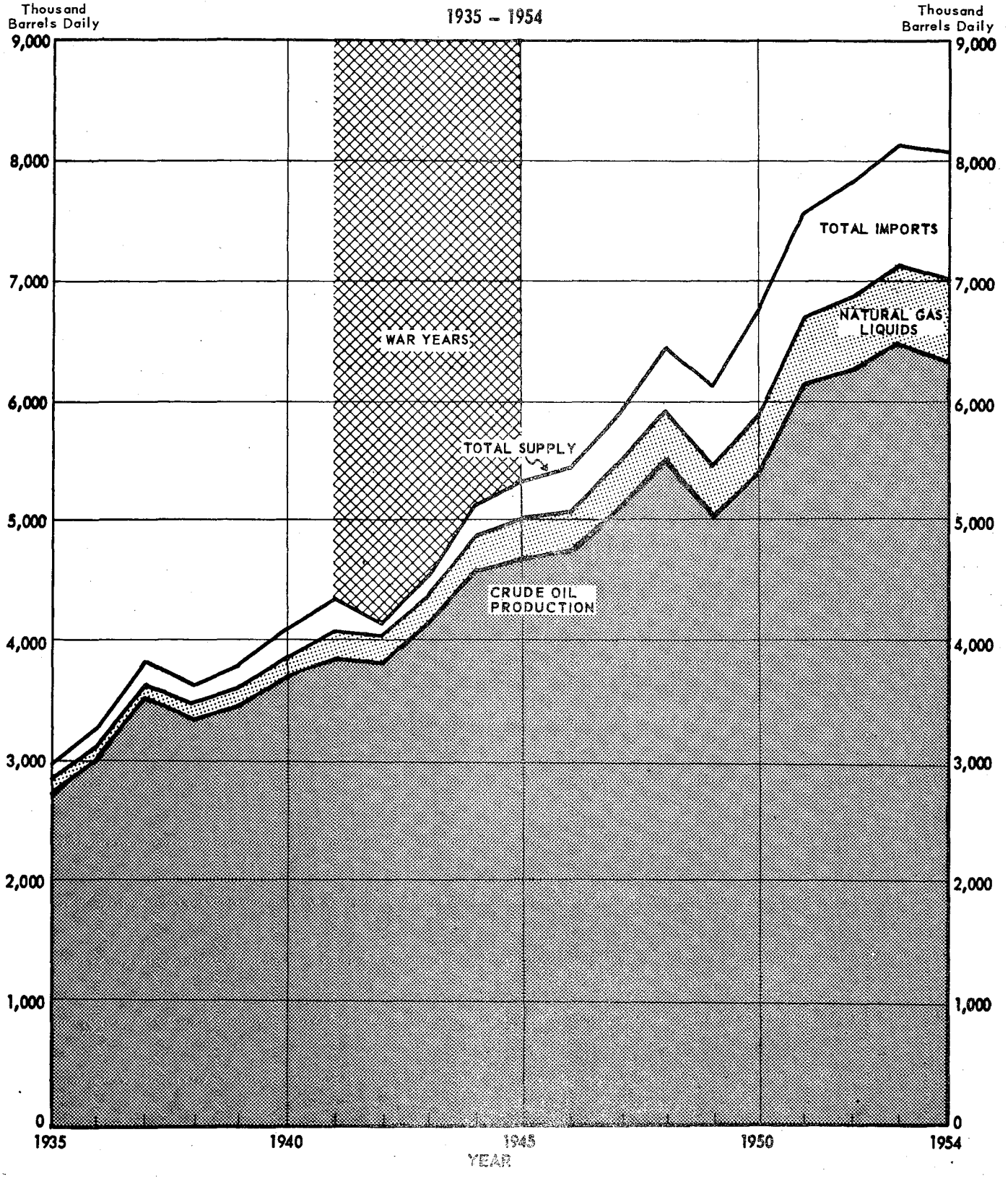


TABLE 7

U. S. PETROLEUM DEMAND AND SUPPLY, 1935-1954
(Thousand Barrels Daily)

	Demand							
	Domestic					Total		
Year	Foreign Trade Bunkers	Residual# Fuel Oil	Other Products	Total	Export	Residual	Other Products	Total Demand
1935	80	769	1,926	2,695	353	804	2,244	3,048
1936	86	841	2,145	2,986	360	881	2,465	3,346
1937	99	891	2,314	3,205	473	934	2,744	3,678
1938	95	796	2,319	3,115	531	849	2,697	3,646
1939	98	872	2,501	3,373	518	924	2,967	3,891
1940	90	924	2,701	3,625	356	973	3,008	3,981
1941	78	1,044	3,027	4,071	298	1,089	3,280	4,369
1942	*	1,111	2,861	3,972	321	1,145	3,148	4,293
1943	*	1,322	2,846	4,168	411	1,320	3,259	4,579
1944	*	1,446	3,120	4,566	568	1,433	3,701	5,134
1945	*	1,486	3,371	4,857	501	1,466	3,892	5,358
1946	167	1,315	3,597	4,912	419	1,340	3,991	5,331
1947	193	1,421	4,031	5,452	450	1,450	4,452	5,902
1948	167	1,368	4,407	5,775	368	1,403	4,740	6,143
1949	154	1,359	4,444	5,803	327	1,394	4,736	6,130
1950	154	1,518	4,989	6,507	305	1,562	5,250	6,812
1951	196	1,546	5,507	7,053	422	1,625	5,850	7,475
1952	207	1,517	5,763	7,280	432	1,592	6,120	7,712
1953	213	1,536	6,068	7,604	401	1,607	6,398	8,005
1954	196	1,430	6,322	7,752	356	1,504	6,604	8,108

	Supply						
	Crude Oil	Natural Gas	Imports			Total	Stock
Year	Prod.	Liquids	Crude	Products	Total	Supply	Change
1935	2,730	113	88	56	144	2,987	- 61
1936	3,005	124	88	68	156	3,284	- 62
1937	3,505	142	75	82	157	3,803	+125
1938	3,327	146	72	76	148	3,621	- 25
1939	3,466	148	91	71	162	3,776	-115
1940	3,697	161	117	112	229	4,087	+106
1941	3,842	231	139	127	266	4,339	- 30
1942	3,799	235	34	65	99	4,133	-160
1943	4,125	247	38	136	174	4,545	- 34
1944	4,584	281	122	130	252	5,117	- 17
1945	4,695	315	204	107	311	5,321	- 37
1946	4,751	323	236	141	377	5,450	+119
1947	5,088	364	267	170	437	5,888	- 14
1948	5,520	402	353	161	514	6,436	+293
1949	5,046	431	421	224	645	6,123	- 7
1950	5,407	499	487	363	850	6,756	- 56
1951	6,158	562	491	353	844	7,564	+ 89
1952	6,256	612	573	379	952	7,820	+108
1953	6,458	655	648	386	1,034	8,147	+142
1954	6,346	681	656	396	1,052	8,079	- 29

* Bureau of Mines data for war years not consistently domestic demand.
# Foreign trade bunkers included
Note: Data may not add to total due to rounding to nearest thousand.

Chart 5

PERCENTAGE OF U.S. PETROLEUM SUPPLIES FROM DOMESTIC SOURCES AND IMPORTS 1935 – 1954

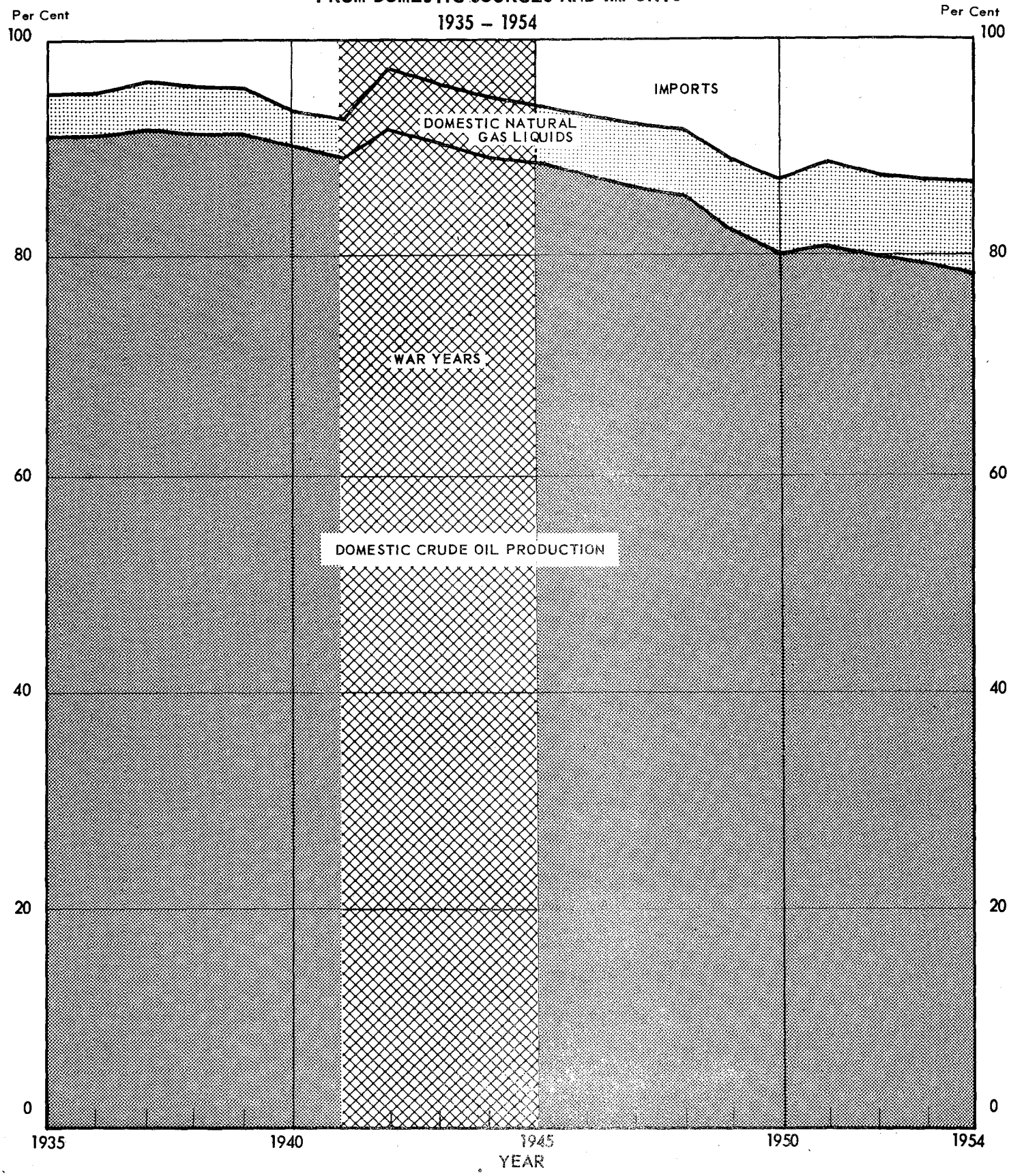


TABLE 8

PERCENT OF TOTAL NEW SUPPLY FROM
U. S. DOMESTIC SOURCES AND FROM IMPORTS, 1935-1954
(per Cent of Total)

	Crude Oil New Supply					
	East of Calif.		California		Total U. S.	
Year	Domestic	Imports	Domestic	Imports	Domestic	Imports
1935	96.1	3.9	100.0	-	96.9	3.1
1936	96.5	3.5	100.0	-	97.1	2.9
1937	97.4	2.6	100.0	-	97.9	2.1
1938	97.3	2.7	100.0	-	97.9	2.1
1939	96.9	3.1	100.0	-	97.5	2.5
1940	96.4	3.6	100.0	-	96.9	3.1
1941	95.9	4.1	100.0	-	96.5	3.5
1942	98.9	1.1	100.0	-	99.1	0.9
1943	98.9	1.1	100.0	-	99.1	0.9
1944	96.8	3.2	100.0	-	97.4	2.6
1945	94.9	5.1	100.0	-	95.8	4.2
1946	94.3	5.7	100.0	-	95.3	4.7
1947	94.0	6.0	100.0	-	95.0	5.0
1948	92.9	7.1	100.0	-	94.0	6.0
1949	90.8	9.2	99.7	0.3	92.3	7.7
1950	90.3	9.7	100.0	-	91.7	8.3
1951	91.5	8.5	99.0	1.0	92.6	7.4
1952	90.7	9.3	96.8	3.2	91.6	8.4
1953	90.6	9.4	92.8	7.2	90.9	9.1
1954	89.9	10.1	95.1	4.9	90.6	9.4

	Residual Fuel New Supply		Total New Supply				
			Domestic		Imports		
Year	Domestic	Imports	Crude	Gas Liquids	Crude	Refined Products	Total
1935	94.2	5.8	91.4	3.8	2.9	1.9	100.0
1936	93.9	6.1	91.5	3.8	2.7	2.0	100.0
1937	93.4	6.6	92.1	4.4	2.0	1.5	100.0
1938	93.3	6.7	91.9	4.0	2.0	2.1	100.0
1939	95.1	4.9	91.8	3.9	2.4	1.9	100.0
1940	91.5	8.5	90.5	3.9	2.9	2.7	100.0
1941	90.2	9.8	88.5	5.3	3.2	3.0	100.0
1942	95.1	4.9	91.9	5.7	0.8	1.6	100.0
1943	93.9	6.1	90.7	5.4	0.8	3.1	100.0
1944	92.7	7.3	89.6	5.5	2.4	2.5	100.0
1945	93.7	6.3	88.2	5.9	3.8	2.1	100.0
1946	91.1	8.9	87.2	5.9	4.3	2.6	100.0
1947	89.7	10.3	86.4	6.2	4.5	2.9	100.0
1948	90.0	10.0	85.7	6.3	5.5	2.5	100.0
1949	85.0	15.0	82.4	7.0	6.9	3.7	100.0
1950	78.1	21.9	80.0	7.4	7.2	5.4	100.0
1951	80.0	20.0	81.4	7.4	6.5	4.7	100.0
1952	78.1	21.9	80.0	7.8	7.3	4.9	100.0
1953	77.6	22.4	79.3	8.0	8.0	4.7	100.0
1954	76.6	23.4	78.6	8.4	8.1	4.9	100.0

Source: Calculated from data in Tables 2, 3, 6, and 24.

Chart 6

PERCENTAGE RELATION OF IMPORTS TO U.S. CRUDE PRODUCTION

1935–1954

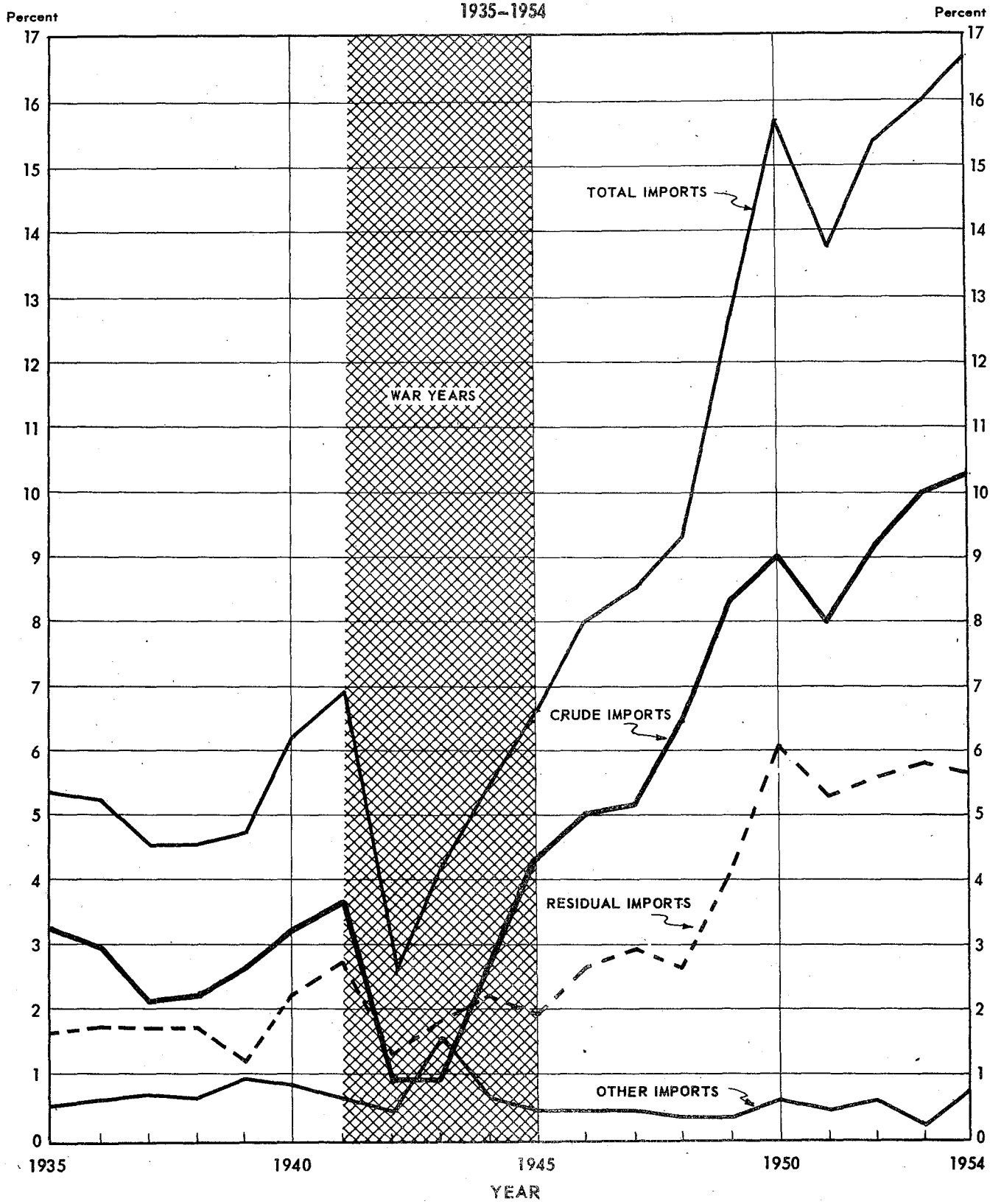
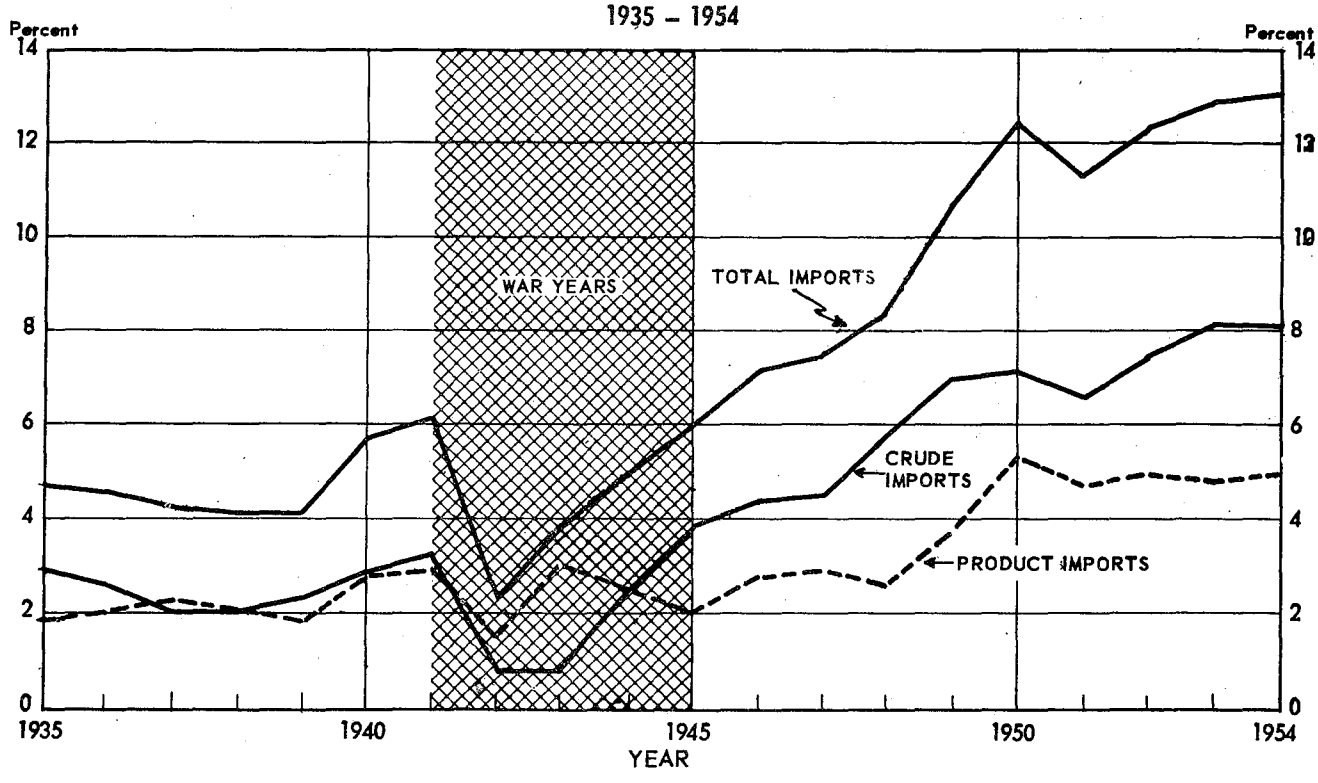


Chart 7

A. PERCENTAGE RELATION OF IMPORTS TO TOTAL U.S. DEMAND

1935 – 1954



B. PERCENTAGE RELATION OF IMPORTS TO U.S. DOMESTIC DEMAND

1935 – 1954

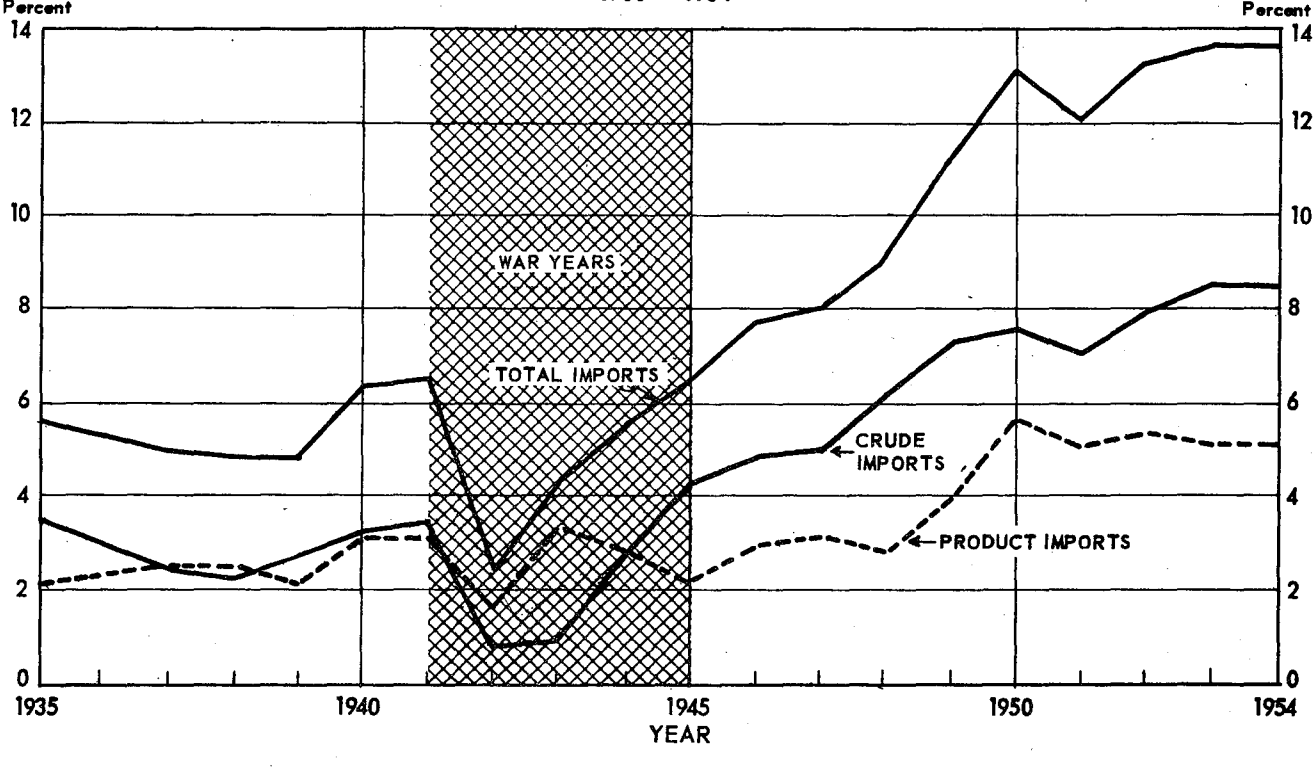


TABLE 9

RELATION OF U. S. PETROLEUM IMPORTS TO U. S. PRODUCTION AND DEMANDS (1935-1954)
(Per Cent)

	Imports to U.S. Crude Production				Residual Imports to:	
	Crude Imports	Residual Imports	Other Imports	Total Imports	Domestic Residual Demand	Total U.S. Residual Demand
1935	3.2	1.6	0.5	5.3	5.7	5.5
1936	2.9	1.7	0.6	5.2	6.1	5.8
1937	2.1	1.7	0.7	4.5	6.8	6.5
1938	2.2	1.7	0.6	4.5	7.2	6.8
1939	2.6	1.2	0.9	4.7	4.8	4.7
1940	3.2	2.2	0.8	6.2	8.6	8.2
1941	3.6	2.7	0.6	6.9	9.7	9.4
1942	0.9	1.3	0.4	2.6	4.5	4.4
1943	0.9	1.8	1.5	4.2	5.8	5.7
1944	2.7	2.2	0.6	5.5	7.1	7.0
1945	4.3	1.9	0.4	6.6	6.0	5.9
1946	5.0	2.6	0.4	8.0	9.3	9.1
1947	5.2	2.9	0.4	8.5	10.5	10.3
1948	6.4	2.6	0.3	9.3	10.7	10.4
1949	8.3	4.1	0.3	12.7	15.2	14.8
1950	9.0	6.1	0.6	15.7	21.7	21.1
1951	8.0	5.3	0.4	13.7	21.1	20.0
1952	9.2	5.6	0.6	15.4	23.1	22.0
1953	10.0	5.8	0.2	16.0	23.4	23.2
1954	10.3	5.6	0.7	16.6	24.7	23.5

	Imports to Total Domestic Demand			Imports to Total Domestic and Export Demand		
	Crude Imports	Product Imports	Total Imports	Crude Imports	Product Imports	Total Imports
1935	3.5	2.1	5.6	2.9	1.8	4.7
1936	3.0	2.3	5.3	2.6	2.0	4.6
1937	2.4	2.5	4.9	2.0	2.2	4.2
1938	2.3	2.5	4.8	2.0	2.1	4.1
1939	2.7	2.1	4.8	2.3	1.8	4.1
1940	3.2	3.1	6.3	2.9	2.8	5.7
1941	3.4	3.1	6.5	3.2	2.9	6.1
1942	0.8	1.6	2.4	0.8	1.5	2.3
1943	0.9	3.3	4.2	0.8	3.0	3.8
1944	2.7	2.8	5.5	2.4	2.5	4.9
1945	4.2	2.2	6.4	3.8	2.0	5.8
1946	4.8	2.9	7.7	4.4	2.7	7.1
1947	4.9	3.1	8.0	4.5	2.9	7.4
1948	6.1	2.8	8.9	5.7	2.6	8.3
1949	7.2	3.9	11.1	6.9	3.7	10.6
1950	7.5	5.6	13.1	7.1	5.3	12.4
1951	7.0	5.0	12.0	6.6	4.7	11.3
1952	7.9	5.3	13.2	7.4	4.9	12.3
1953	8.5	5.1	13.6	8.1	4.8	12.9
1954	8.5	5.1	13.6	8.1	4.9	13.0

Source: Calculated from data in Table 1.

Chart 8

PERCENTAGE RELATION OF FOREIGN CRUDE OIL RUNS TO STILLS
TO TOTAL CRUDE OIL RUNS BY DOMESTIC AREAS
1935 – 1954

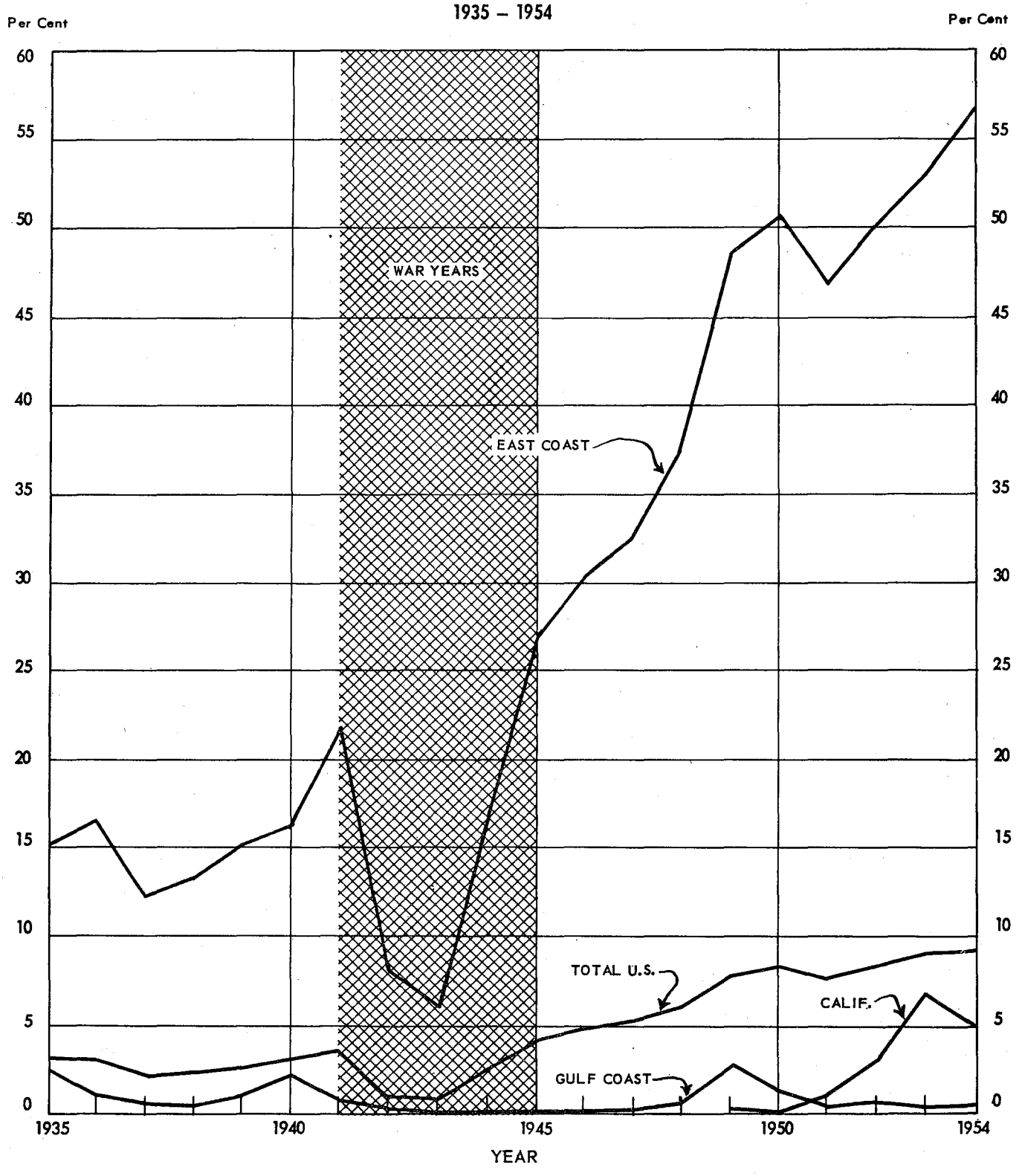


TABLE 10

FOREIGN CRUDE RUNS TO STILLS
AS PERCENTAGE OF TOTAL RUNS BY U. S. REFINERY AREAS, 1935-1954
(Thousand Barrels Daily)

	East Coast			Gulf Coast			Inland		
	Total Runs	Foreign Crude	Foreign %	Total Runs	Foreign Crude	Foreign %	Total Runs	Foreign Crude	Foreign %
1935	467	71	15.2	668	17	2.5	1,025	-	-
1936	507	84	16.6	764	8	1.0	1,131	-	-
1937	543	67	12.3	912	5	.5	1,231	-	-
1938	495	66	13.4	973	5	.5	1,176	-	-
1939	527	80	15.1	1,048	12	1.1	1,272	-	-
1940	559	91	16.3	1,046	23	2.2	1,382	-	-
1941	595	129	21.7	1,144	10	.9	1,538	-	-
1942	441	36	8.1	987	4	.4	1,596	-	-
1943	532	32	6.0	1,075	1	.1	1,588	-	-
1944	702	118	16.8	1,350	*	-	1,694	-	-
1945	750	202	26.9	1,377	-	-	1,725	-	-
1946	758	231	30.5	1,495	*	-	1,707	-	-
1947	815	265	32.5	1,580	2	.1	1,854	-	-
1948	867	326	37.6	1,827	13	.7	2,008	-	-
1949	768	374	48.7	1,714	46	2.7	1,965	-	-
1950	908	460	50.6	1,783	23	1.3	2,169	-	-
1951	1,015	477	47.0	2,069	10	.5	2,454	1	-
1952	1,029	517	50.2	2,121	12	.6	2,530	3	.1
1953	1,045	552	52.9	2,248	8	.4	2,660	7	.3
1954	1,029	585	56.8	2,262	12	.5	2,647	7	.3

	West Coast			Total U. S.		
	Total Runs	Foreign Crude	Foreign %	Total Runs	Foreign Crude	Foreign %
1935	487	-	-	2,646	88	3.3
1936	518	-	-	2,920	93	3.2
1937	557	-	-	3,242	71	2.2
1938	549	-	-	3,192	72	2.3
1939	544	-	-	3,391	92	2.7
1940	549	-	-	3,536	114	3.2
1941	584	-	-	3,861	140	3.6
1942	631	-	-	3,655	40	1.1
1943	723	-	-	3,917	33	.9
1944	805	-	-	4,551	118	2.6
1945	859	-	-	4,711	202	4.3
1946	781	-	-	4,740	231	4.9
1947	826	-	-	5,075	266	5.3
1948	848	-	-	5,549	339	6.1
1949	879	3	.3	5,327	423	7.9
1950	880	-	-	5,739	482	8.4
1951	957	10	1.0	6,494	498	7.7
1952	989	31	3.1	6,670	563	8.4
1953	1,046	71	6.8	7,000	638	9.1
1954	1,020	51	5.0	6,958	654	9.4

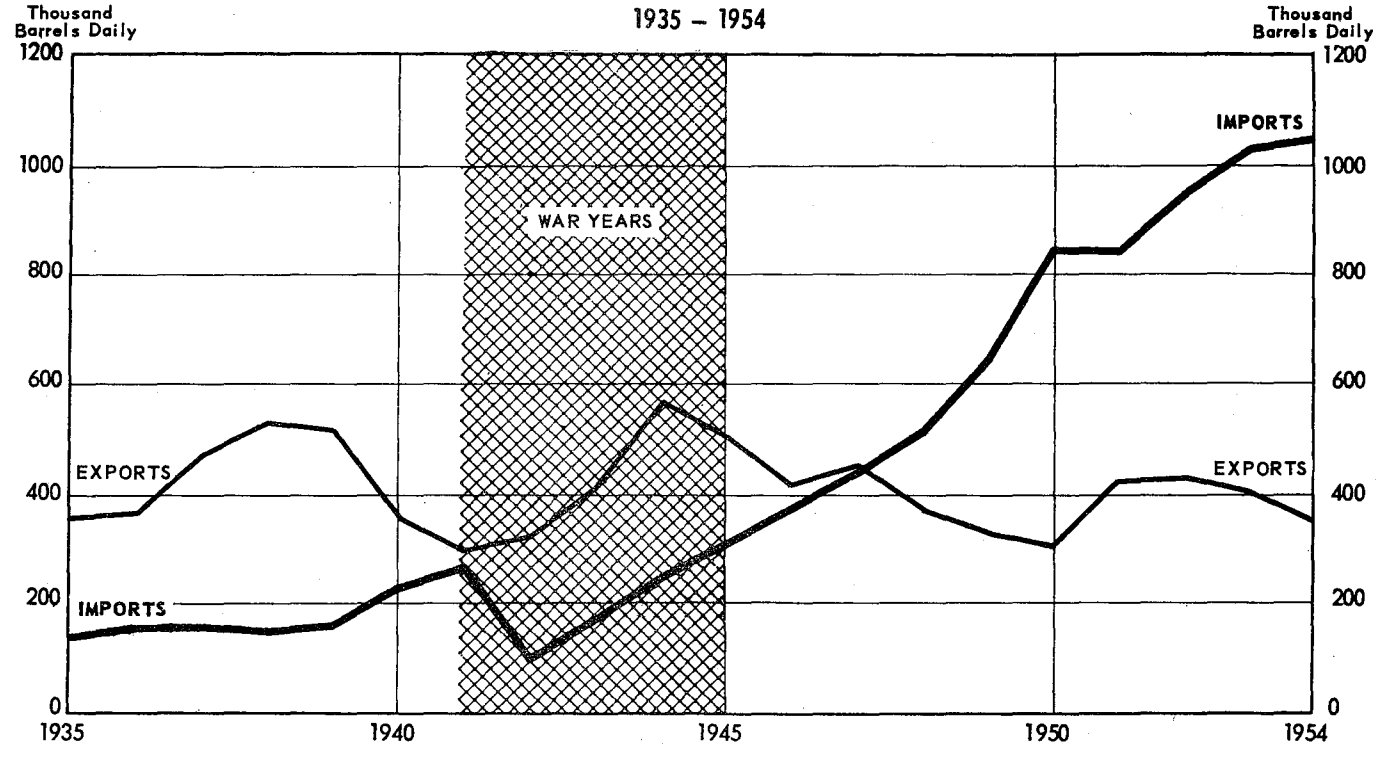
Source: Bureau of Mines

Note: Data may not add to total due to rounding to nearest thousand.

* Less than 500 barrels daily

Chart 9

A. VOLUME OF U.S. PETROLEUM EXPORTS AND IMPORTS
1935 – 1954



B. VALUE OF U.S. PETROLEUM EXPORTS AND IMPORTS
1935 – 1954

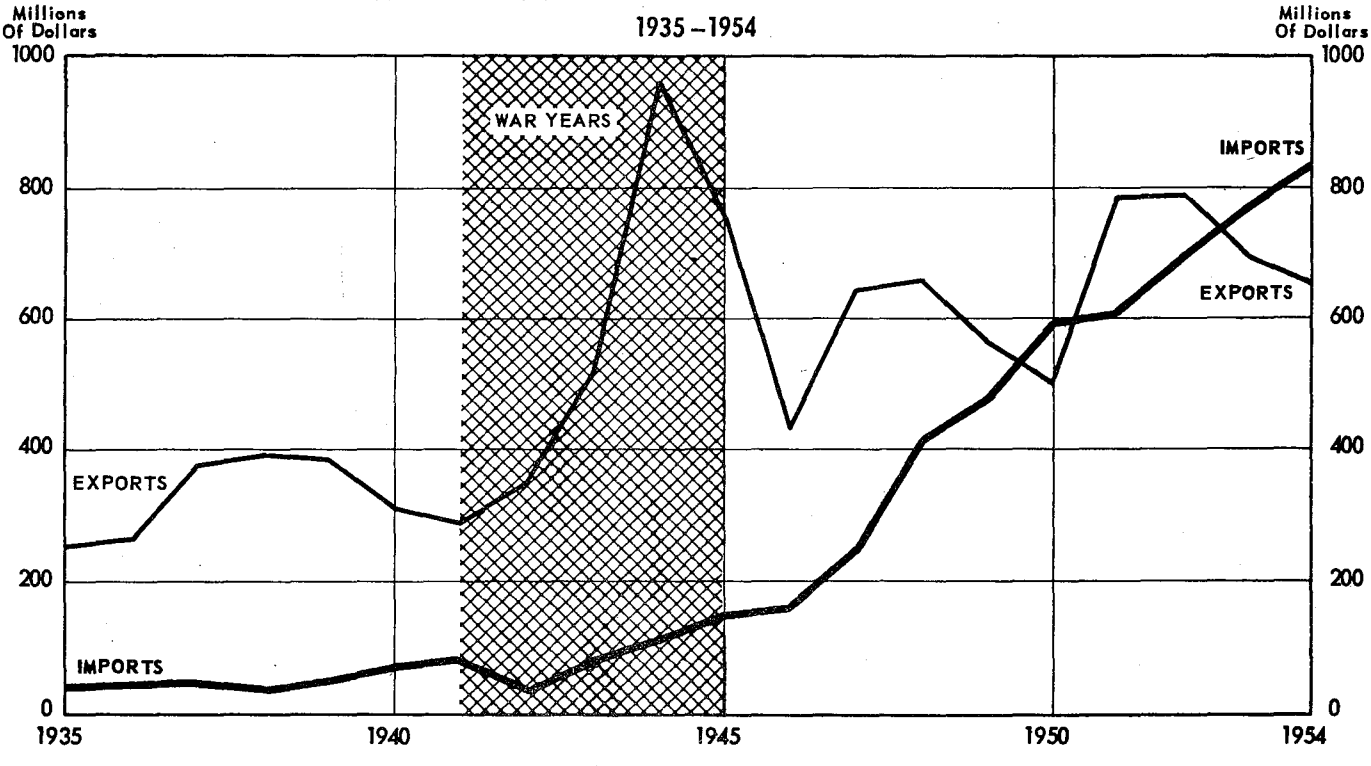


TABLE 11

VALUE OF U. S. EXPORTS AND IMPORTS OF CRUDE OIL AND PETROLEUM PRODUCTS "a"

(Million Dollars)

1935-1954

	Exports[b]			Imports[c]			Petroleum Trade Balance	
	Crude[d]	Products	Total	Crude[d]	Products	Total	Net Exports	Net Imports
1935	61.2	189.9	251.1	23.4	14.5	37.9	213.2	
1936	66.1	198.4	264.5	23.2	17.4	40.6	223.9	
1937	96.4	281.7	378.1	20.8	23.8	44.6	333.5	
1938	111.6	278.6	390.2	18.6	20.9	39.5	350.7	
1939	92.8	292.3	385.1	23.3	20.2	43.5	341.6	
1940	67.8	242.3	310.1	32.2	37.9	70.1	240.0	
1941	49.5	235.2	284.7	43.4	39.1	82.5	202.2	
1942	51.6	298.5	350.1	12.8	24.1	36.9	313.2	
1943	66.5	450.3	516.8	14.7	70.5	85.2	431.6	
1944	58.9	900.7	959.6	49.0	64.4	113.4	846.2	
1945	58.3	694.8	753.1	79.2	72.8	152.0	601.1	
1946	74.1	361.7	435.8	101.6	57.8	159.4	276.4	
1947	99.1	542.3	641.4	161.5	88.9	250.4	391.0	
1948	116.8	540.2	657.0	284.2	131.5	415.7	241.3	
1949	98.5	463.4	561.9	348.1	129.7	477.8	84.1	
1950	103.2	396.3	499.5	379.4	212.5	591.9		92.4
1951	82.8	700.2	783.0	385.5	215.8	601.3	181.7	
1952	79.1	714.1	793.2	444.9	247.0	691.9	101.3	
1953p	61.3	629.6	690.9	505.7	255.9	761.6		70.7
1954p	46.9	610.6	657.5	550.6	277.7	828.3		170.8

p Preliminary

a Refers to U. S. customs area: including continental U. S., Alaska, Hawaii, Puerto Rico, and in 1935-39 Virgin Islands.

b Exports as here reported do not include shipments by the U. S. Armed Forces' tankers for their own use abroad, nor any bunkers.

c For domestic consumption, excluding bonded imports. Does not include items such as purchases by military and other U. S. agencies abroad for consumption abroad. Values are f.o.b. shipping points.

d Includes topped crude and unfinished oils.

Sources: All data for 1954 from U. S. Customs House in N. Y.; total petroleum trade 1935-1953, and crude imports and exports 1935-1948 from Bureau of Census as reported in Statistical Abstract; crude imports and exports, 1949-1951 from Mineral's Yearbook, and 1952 and 1953 from Census Reports No. F. T. 110 and F. T. 410. Products data are derived by subtraction, prior to 1954.

Chart 10

PERCENTAGES OF U.S. PRODUCTION AND IMPORTS OF ENERGY SUPPLIED BY PRINCIPAL SOURCES 1935–1954

TABLE 12

U. S. PRODUCTION AND IMPORTS OF ENERGY BY PRINCIPAL SOURCES EXPRESSED AS A PER CENT OF TOTAL ENERGY, 1935-1954

	Petroleum Liquids[a]									
	Domestic Petroleum Liquids			Imports						
Year	Crude Oil	Nat.Gas Liquids	Total	Crude Oil	Refined Products	Total	Grand Total	Natural Gas	Total Petroleum Liquids & Nat. Gas	Coal	Total Mineral Energy	Water Power	Total[a] Energy
1935	28.71	0.82	29.53	0.93	0.51	1.44	30.96	9.99	40.96	55.04	96.00	4.00	100.00
1936	27.92	0.80	28.72	0.82	0.53	1.34	30.06	9.96	40.02	56.42	96.45	3.55	100.00
1937	30.51	0.86	31.37	0.65	0.57	1.23	32.59	10.40	42.99	53.43	96.42	3.58	100.00
1938	33.44	1.01	34.35	0.72	0.63	1.35	35.71	11.41	47.12	48.78	95.90	4.10	100.00
1939	31.99	0.95	32.93	0.84	0.43	1.27	34.20	11.34	45.54	50.80	96.35	3.65	100.00
1940	30.67	0.92	31.59	0.97	0.80	1.77	33.36	10.91	44.28	52.28	96.56	3.44	100.00
1941	29.23	1.21	30.45	1.06	0.96	2.02	32.46	10.62	43.08	53.56	96.64	3.36	100.00
1942	27.05	1.16	28.20	0.24	0.47	0.71	28.91	10.78	39.69	56.49	96.18	3.82	100.00
1943	27.87	1.15	29.02	0.26	0.86	1.11	30.13	11.44	41.58	54.26	95.84	4.16	100.00
1944	28.82	1.22	30.04	0.77	0.81	1.58	31.62	11.54	43.16	52.86	96.02	3.98	100.00
1945	29.99	1.39	31.38	1.29	0.69	1.99	33.36	12.42	45.78	49.87	95.65	4.35	100.00
1946	30.92	1.45	32.38	1.59	0.97	2.55	34.93	13.01	47.94	47.74	95.68	4.32	100.00
1947	29.54	1.46	31.00	1.58	1.01	2.59	33.59	13.20	46.79	49.30	96.09	3.91	100.00
1948	31.29	1.58	32.86	2.00	0.94	2.94	35.80	14.43	50.23	45.81	96.05	3.95	100.00
1949	32.89	1.94	34.84	2.74	1.49	4.24	39.07	17.52	56.60	38.66	95.26	4.74	100.00
1950	31.11	1.98	33.10	2.80	2.10	4.90	38.00	17.92	55.92	39.80	95.73	4.27	100.00
1951	32.50	2.05	34.55	2.59	1.90	4.49	39.04	19.52	58.56	37.56	96.11	3.89	100.00
1952	33.65	2.28	35.93	3.08	2.10	5.18	41.10	21.29	62.39	33.60	95.99	4.01	100.00
1953	34.31	2.41	36.71	3.44	2.13	5.57	42.29	22.20	64.49	31.70	96.19	3.81	100.00
1954	35.17	2.61	37.78	3.64	2.18	5.82	43.60	23.92	67.52	28.42	95.94	4.06	100.00

Computed from U. S. Bureau of Mines data and conversion factors set forth below:

Crude Oil	5,800,000 Btu/Bbl.	Refined Prods.	6,300,000 Btu/Bbl.	Bit. Coal	13,100 Btu/lb
Nat.Gas Liq.	4,011,000 Btu/Bbl.	Natural Gas	1,050 Btu/c.f.	Anth.Coal	12,700 Btu/lb

a - Includes supplies which were exported. Figures may not total due to rounding.

III. Residual Fuel Oil Imports and Competitive Fuels

Residual fuel oil imports are almost entirely confined to the East Coast. In Tables 13-17 and Chart 11 data are presented on residual fuel oil supply and demand and on the prices of residual fuel oil and coal at New York.

The total residual fuel oil demand in Districts I to IV since 1946 increased 185,000 barrels daily or 19 per cent, compared with an increase of about 50 per cent for the consumption of all products. During the period, imports increased 231,000 barrels daily. The increase in imports of residual fuel oil supplied the increase in demand and offset the decline in production from domestic refineries.

There has been a downward trend in the yield of residual fuel oil from refinery crude oil runs since 1946. As a result, the supply of residual fuel oil from domestic sources was less in 1954 than in any other year since 1942 in the area east of District V. Increased imports and some receipts from District V, which were substantial in 1949 and 1950, brought about some rise in total supply until 1950, after which total supply remained relatively constant through 1953 and decreased in 1954.

Summary G
Residual Fuel Oil Supply, Thousand Barrels Daily

	Districts I-IV			District I (East Coast)		
Year	From Domestic Sources	From Imports	Total	From Domestic Sources	From Imports	Total
1946	866	122	988	382	122	504
1950	893	329	1,222	435	329	764
1954	791	353	1,144	401	353	754
Change 1946-54	- 75	231	156	119	231	250

Residual fuel oil did not increase its share in U. S. competitive fuel uses between 1946 and 1953, as indicated by the data in Table 16 and the following summary:

Summary H

Competitive Fuel Consumption Expressed in Residual Fuel Oil Equivalents, Thousand Barrels Daily

	Coal	Residual Fuel Oil	Distillate Fuel Oil	Natural Gas	Total
1946	6,308	1,224	575	1,892	9,999
1953	5,181	1,446	1,123	3,833	11,583
Total Change	-1,127	222	548	1,941	1,584
Change by Uses					
Railroads	- 966	-197	149*	-	-1,014
Space Heating	- 737	88	343	653	347
Industrial	86	133	44	955	1,218
Elec. Utilities	499	127	-	333	959
Bunkers	- 9	71	12	-	74
Total	-1,127	222	548	1,941	1,584
Per Cent Change by Uses					
Railroads	- 74	- 72	339	-	- 63
Space Heating	- 43	65	91	158	13
Industrial	3	27	40	71	28
Elec. Utilities	61	149	-	238	90
Bunkers	- 56	29	39	-	26
Total	- 18	18	95	103	16

* In order to express the diesel fuel replacement in terms of work done, it must be considered that one barrel of diesel fuel oil replaces 7.5 barrels of residual fuel oil or coal equivalent in railroad use.

The change to diesel engines caused a sharp decline in the railroad use of both coal and residual fuel oil. In space heating, coal lost ground while natural gas and distillate fuel oil gained. In electric utilities, coal gained more outlets than residual fuel oil and natural gas combined. In industrial use, gains by coal and residual fuel oil were small by comparison with the large increase by natural gas.

The principal competition between residual fuel oil and coal is in the East Coast area. The competitive position of coal, residual fuel oil, and

natural gas is affected by many variables in both supply and demand, including the cost of delivery to plants, the ability to use fuels alternatively, and the relative efficiency with which plants can use the alternate fuels. These matters are extremely complex and do not lend themselves to generalized statistical treatment or broad generalization. Therefore, this report does not attempt to cover the varied aspects of this question.

TABLE 13

RESIDUAL FUEL OIL SUPPLY & DEMAND, 1935-1954
IN DISTRICTS I-IV, INCLUSIVE (EAST OF DISTRICT V)
(Thousand Barrels Daily)

Year	Refinery Production & Transfers From Crude	% Yield On Crude	Imports	Receipts From Dist. V	Total New Supply	Local Demand	Total Demand	Stock Change
1935	498	23.0	44	-	542	548	552	- 10
1936	562	23.4	51	-	613	615	624	- 11
1937	615	22.9	61	-	676	644	652	+ 24
1938	572	21.7	58	1	631	612	632	- 1
1939	627	21.7	43	6	676	675	692	- 16
1940	645	21.3	80	2	727	703	716	+ 11
1941	707	21.2	102	-	809	791	804	+ 5
1942	710	23.1	51	-	761	779	794	- 33
1943	810	24.9	75	-	885	842	873	+ 12
1944	904	23.7	100	-	1,004	974	997	+ 7
1945	891	22.8	87	-	978	976	991	- 13
1946	866	21.6	122	-	988	969	974	+ 14
1947	925	21.5	149	-	1,074	1,062	1,071	+ 3
1948	957	20.1	145	1	1,103	1,056	1,066	+ 37
1949	823	18.3	206	18	1,047	1,074	1,083	- 36
1950	850	17.3	329	43	1,222	1,218	1,228	- 6
1951	930	16.6	326	2	1,258	1,226	1,245	+ 13
1952	894	15.5	350	1	1,245	1,216	1,242	+ 3
1953	873	14.5	360	1	1,235	1,226	1,241	- 7
1954	789	13.1	353	2	1,144	1,140	1,159	- 15

Source: Bureau of Mines.

Note: Data may not add to total due to rounding to nearest thousand.

TABLE 14

CONSUMPTION OF RESIDUAL FUEL OILS
IN DISTRICTS I-IV INCLUSIVE, 1937-1954
(Thousand Barrels Daily)

	Rail-roads	Vessels	Utilities			Mining & Mfg.	Heat-ing	Oil Co Use	Other Domes.	Total Domes.	Exports	Total Use
			Gas	Elec.	Total							
1937	106	143	25	30	55	158	81	104	- 4	643	8	652
1938	89	127	27	31	58	128	85	104	21	612	20	632
1939	98	129	28	42	70	140	95	109	34	675	17	692
1940	103	121	30	39	69	154	110	116	30	703	13	716
1941	124	117	31	52	83	182	113	125	47	791	13	804
1942	152	82	32	26	59	191	113	103	79	779	15	794
1943	190	121	32	27	59	190	98	109	75	842	31	873
1944	187	182	37	40	77	195	89	124	120	974	23	997
1945	178	189	41	38	78	207	97	129	98	976	15	991
1946	163	196	45	58	103	224	108	133	42	969	6	974
1947	161	219	50	62	113	264	129	150	26	1,062	8	1,071
1948	155	215	53	57	110	272	137	142	25	1,056	10	1,066
1949	114	197	47	121	168	289	147	117	42	1,074	9	1,083
1950	104	195	50	164	214	360	178	125	42	1,218	9	1,228
1951	101	224	20	116	136	383	187	133	62	1,226	18	1,245
1952	68	229	13	130	143	378	191	131	76	1,216	25	1,242
1953	45	227	10	162	172	405	202	127	48	1,226	14	1,241
1954p	19	211	7	140	147	367	240	113	45	1,142	16	1,159

DETAIL OF RESIDUAL FUEL OIL FOR VESSELS, 1946-1954

	Vessels in Foreign Trade			Vessels in Domestic Trade	Total
	Bonded Imports	Domestic Fuel Oil	Total		
1946	60	62	122	74	196
1947	69	72	141	79	219
1948	71	50	121	94	215
1949	67	41	108	89	197
1950	62	39	101	94	195
1951	90	33	123	101	224
1952	89	39	128	102	229
1953	76	47	123	104	227
1954p	68	47	115	96	211

Source: Bureau of Mines annual summaries.

p - Preliminary estimate.

Note: Data may not add to total due to rounding to nearest thousand.

TABLE 15

RESIDUAL FUEL OIL SUPPLY AND DEMAND IN DISTRICT 1 (EAST COAST), 1935-1954
(Thousand Barrels Daily)

Year	From Domestic Refineries In: District 1	District 3	District 2 & 5	U. S.	Imports: Bonded[a]	Imports: Commercial	Imports: Military	Imports: Total Imports	Total Supply	Per Cent of Supply From Imports	Total Demand[b]
1935	137	113E	-	250	32	12	N.A.	44	294	15.0	302
1936	157	146E	-	303	46	5	"	51	354	14.4	352
1937	157	156	-	313	54	7	"	61	374	16.3	366
1938	145	156	1	302	50	8	"	58	360	16.1	361
1939	156	179	6	341	40	3	"	43	384	11.2	383
1940	153	184	2	339	29	51	"	80	419	19.1	412
1941	147	208	-	355	29	73	"	102	457	22.3	458
1942	137	74	-	211	13	35	"	48	259	18.5	277
1943	167	36	-	203	1	74	"	75	278	27.0	271
1944	231	56	-	287	1	99	"	100	387	25.8	385
1945	245	102	-	347	17	70	"	87	434	20.0	434
1946	231	151	-	382	60	62	"	122	504	24.2	500
1947	251	168	-	419	69	80	"	149	568	25.2	570
1948	243	188	2	433	71	61	12	144	577	25.0	565
1949	199	182	22	403	67	127	11	205	608	33.8	611
1950	219	170	46	435	62	257	10	329	764	43.1	766
1951	242	164	9	415	92	223	11	326	741	43.8	740
1952	247	166	11	424	89	251	10	350	774	45.2	770
1953	246	179	6	431	76	267	16	359	790	45.4	791
1954	220	170	11	401	68	270	15	353	754	46.8	761

a - Withdrawn from "Bond" for use by vessels engaged in foreign trade.
b - Including exports in small amounts of 1 to 7 thousand barrels daily.
E - Estimated. N.A. - Not Available.
Note: Data may not add to total due to rounding to nearest thousand.

TABLE 16

U. S. COMPETITIVE FUEL CONSUMPTION BY USES, 1946-1953
(Expressed in Equivalent of Thousand Barrels Daily of Heavy Fuel Oil)

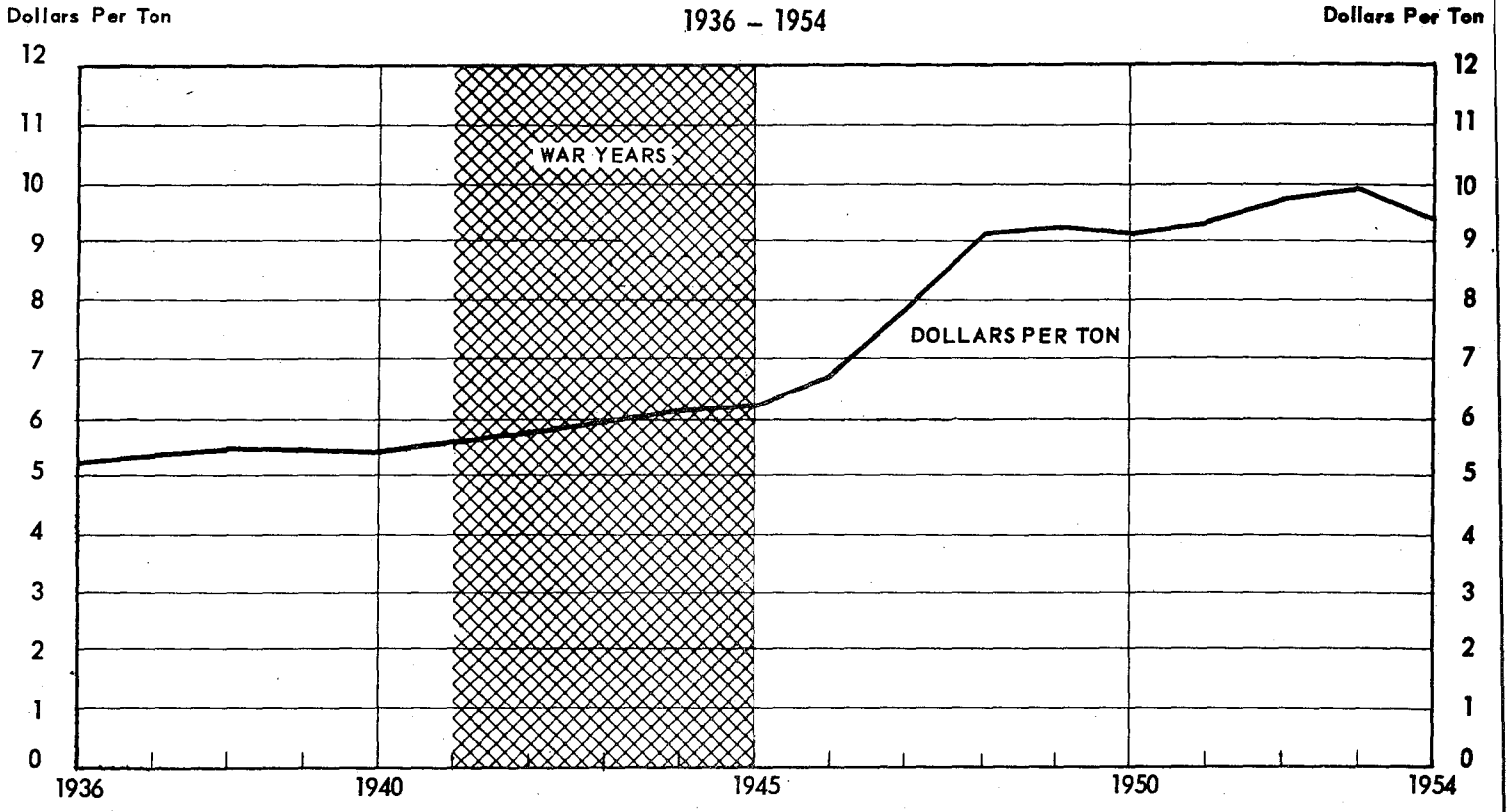
Year	Railroads	Bunkers	Elec. Utilities	Space Heating	Industrial	Total Competitive	Non-Competitive[a]	Total
				COAL				
1946	1,302	16	824	1,706	2,460	6,308	-	6,308
1947	1,298	19	1,022	1,632	2,766	6,737	-	6,737
1948	1,149	12	1,137	1,532	2,662	6,492	-	6,492
1949	824	10	959	1,417	2,294	5,504	-	5,504
1950	739	8	1,049	1,396	2,435	5,627	-	5,627
1951	649	10	1,207	1,251	2,646	5,763	-	5,763
1952	463	8	1,222	1,138	2,338	5,169	-	5,169
1953	336	7	1,323	969	2,546	5,181	-	5,181
				HEAVY FUEL OIL				
1946	275	242	85	136	486	1,224	91	1,315
1947	267	279	109	155	525	1,335	86	1,421
1948	245	262	100	160	492	1,259	109	1,368
1949	174	245	165	166	526	1,276	83	1,359
1950	167	255	191	199	604	1,416	101	1,517
1951	151	293	159	209	620	1,432	113	1,545
1952	111	302	170	216	598	1,397	120	1,517
1953	78	313	212	224	619	1,446	102	1,548
				DIESEL & DISTILLATE FUEL OIL				
1946	44	31	13	376	111	575	42	617
1947	60	37	14	482	96	689	68	757
1948	79	37	15	542	117	790	74	864
1949	98	33	15	515	110	771	65	836
1950	124	33	15	598	164	934	68	1,002
1951	152	37	14	675	178	1,056	80	1,136
1952	173	44	13	709	179	1,118	100	1,218
1953	193	43	13	719	155	1,123	118	1,241
				NATURAL GAS				
1946	-	-	140	413	1,339	1,892	-	1,892
1947	-	-	171	498	1,419	2,088	-	2,088
1948	-	-	219	558	1,570	2,347	-	2,347
1949	-	-	252	613	1,606	2,471	-	2,471
1950	-	-	287	726	1,849	2,862	-	2,862
1951	-	-	349	887	2,165	3,401	-	3,401
1952	-	-	419	978	2,260	3,657	-	3,657
1953	-	-	473	1,066	2,294	3,833	-	3,833

a - Non-Competitive uses include Military, Tractor, Bus, and Truck Fuel.

Source: Federal Power Commission and Bureau of Mines data converted to heavy fuel oil equivalent on the basis of 6,287,400 B.t.u. per barrel of heavy fuel and on conversion factors shown in Table 11.
Note: Data may not add to total due to rounding to nearest thousand.

Chart 11

A. ESTIMATED DELIVERED COAL PRICE AT NEW YORK CITY 1936 – 1954



B. RESIDUAL FUEL OIL PRICE AT NEW YORK CITY 1936 – 1954

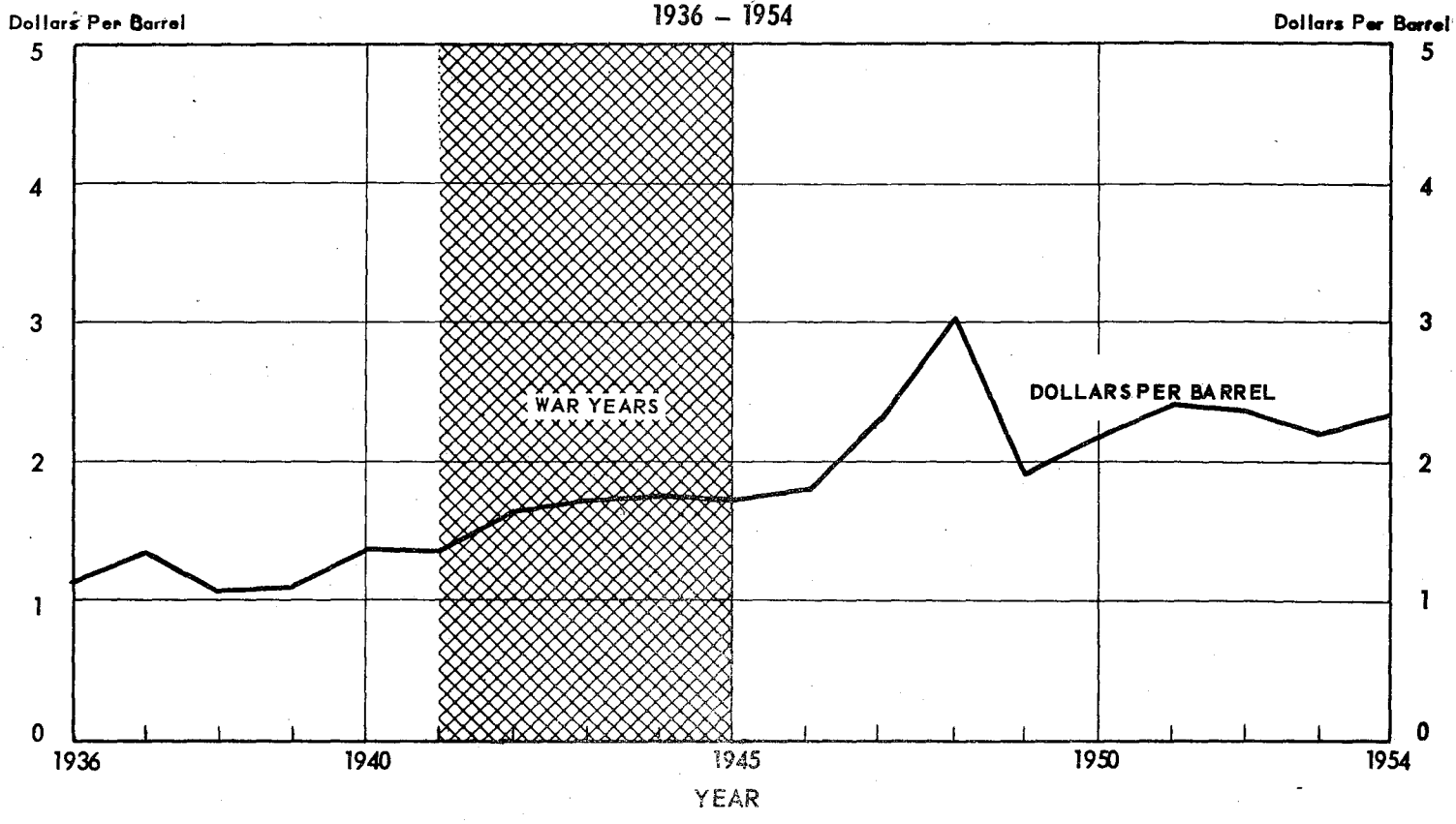


TABLE 17

COMPARISON OF PRICES FOR BITUMINOUS COAL
AND NO. 6 FUEL IN NEW YORK CITY, 1936-1954

Year	Delivered Price of Low Volatile Run of Mine Central Pennsylvania Coal to N.Y.C. $ Per Net Ton (a)	New York Harbor Barge Price Plus Delivery Charge to N.Y.C. No. 6 Fuel Oil $ Per Bbl.(b)
1936	$ 5.20	$ 1.14
1937	5.36	1.33
1938	5.43	1.07
1939	5.44	1.10
1940	5.41	1.37
1941	5.56	1.37
1942	5.83	1.67
1943	5.99	1.71
1944	6.11	1.76
1945	6.22	1.75
1946	6.76	1.82
1947	7.83	2.30
1948	9.11	3.03
1949	9.24	1.94
1950	9.11	2.15
1951	9.32	2.39
1952	9.76	2.37
1953	9.99	2.22
1954	9.39	2.31

Notes:

(a) Delivered coal price based on low mine price of Central Pennsylvania run of mine coal and the rail freight from Clearfield, Pa. to Greenville Piers, N. J. (Source: Saward's Annuals) plus necessary barging charges for delivery to N. Y. dockside. For the period 1936-1945 there was no information available on the barging charges for coal or oil. It was, therefore, necessary to assume that the rates in effect on January 1, 1946 would also have been in effect on January 1, 1936. These barging charges were only 6¢ for oil and 8¢ for the coal equivalent of a barrel of fuel oil. The heat content of a ton of bituminous coal is 26,200,000 British thermal units.

(b) Based on Platt's Oilgram Low Price Quotation of New York Harbor Barge Price for Residual Fuel. The heat content of a barrel of residual fuel oil is 6,287,400 British thermal units.

IV. Comparison of Domestic and Foreign Producing Operations

Statistics on estimated reserves and their relation to production and consumption in foreign areas are shown in Tables 18-19 for purposes of comparison with similar data for the United States. Reserves, production, and consumption have increased at a faster rate postwar in foreign countries than in the United States, as shown by the following summary:

Summary I
Estimated Reserves, Production, and Consumption in the Free World

	Est. Cr. Oil Reserves Billion Barrels			Crude Oil Production Million Barrels			Petroleum Consumption Million Barrels		
Year	U. S.	Other W.Hemis.	East. Hemis.	U. S.	Other W.Hemis.	East. Hemis.	U. S.	Other W.Hemis.	East. Hemis.
1946	20.9	9.3	28.7	1,734	524	279	1,793	299	496
1950	25.3	13.0	43.9	1,974	746	760	2,375	446	848
1954	29.6	17.2	101.0	2,316	990	1,174	2,829	619	1,267
Chg. 1946-54	8.7	7.9	72.3	582	466	895	1,136	320	771
% Chg.1946-54	+41.6	+84.9	+251.9	+33.6	+88.9	+320.8	+57.8	+107.0	+155.4

The ratio of reserves to production and consumption is higher in foreign areas than in the United States.

Summary J
Ratio of Estimated Proved Crude Oil Reserves to Production of Crude Oil and Petroleum Consumption in the Free World

	Ratio of Reserves to Production				Ratio of Reserves to Consumption			
Year	U.S.	Other Western Hemisphere	Eastern Hemisphere	Free World	U.S.	Other Western Hemisphere	Eastern Hemisphere	Free World
1946	12.1	17.7	102.9	23.2	11.7	31.1	57.9	22.8
1950	12.8	17.4	57.8	23.6	10.7	29.1	51.8	22.4
1954	12.8	17.4	86.0	33.0	10.4	27.8	79.7	31.3

The foreign area in 1954 accounted for 40 per cent of total free world demand, compared with 79 per cent of free world reserves. The Eastern Hemisphere had 27 per cent of demand and 68 per cent of reserves. The U. S. had 60 per cent of total demand and 21 per cent of reserves.

For the year 1953, the relation of estimated proved reserves and petroleum consumption to population was as follows

Summary K
Per Capita Petroleum Reserves and Consumption in the Free World, 1953

Area	Est. Proved Reserves Per Capita Barrels	Petroleum Consumption Per Capita Barrels
United States	178	17.4
Other Western Hemisphere	73	2.9
Free Eastern Hemisphere	55	0.8
Free Foreign	57	1.1
Free World	69	2.6

Statistics on the number of producing wells, production per well, and estimated reserves per well for the United States and the three countries that are the source of 80 per cent of the petroleum imports to the U. S. are shown in Tables 20 and 21. The United States has more wells, about two-thirds of which are stripper wells, and less reserves and production per well than the principal foreign oil producing countries, as shown by the following summary:

Summary L
Producing Wells and Reserves and Production Per Well in Principal Producing Countries, 1954

	Number of Producing Wells	Est.Proved Reserves Per Well	Production Per Well Barrels Daily
United States	514,808	57,421	12.5
Venezuela	8,897	1,200,000	212
Saudi Arabia	139	259,000,000	6,856
Kuwait	156	192,300,000	6,051

Table 22 shows the movement of crude oil and petroleum products between the Western and Eastern Hemispheres. The Western Hemisphere is now a net importer of crude oil instead of a net exporter as it was prior to 1949, and continues to be a net exporter of products, although in decreasing volume. In 1954 there was a net movement of crude oil into the Western Hemisphere and of products to the Eastern Hemisphere, and a net balance of all oils to the Eastern Hemisphere.

TABLE 18

RELATION OF ESTIMATED CRUDE OIL RESERVES & PRODUCTION BY MAJOR COUNTRIES & AREAS IN THE FREE WORLD, EXCLUDING U.S.S.R. AND SATELLITES

	1946	1947	1948	1949	1950	1951	1952	1953	1954
Proved Reserves (Year End)				Billion Barrels					
United States	20.9	21.5	23.3	24.6	25.3	27.5	28.0	28.9	29.6
Canada	0.1	0.1	0.5	1.2	1.5	1.6	1.8	2.0	2.9
Venezuela	7.0	8.5	9.0	9.5	9.0	9.0	8.9	9.9	10.9
Other Latin America	2.2	2.4	1.9	1.9	2.5	2.9	3.0	3.3	3.4
Total Western Hemis.	30.2	32.5	34.7	37.3	38.3	40.9	41.6	44.1	46.8
Iran	7.0	9.5	7.0	7.0	12.0	15.0	15.0	15.0	15.0
Iraq	5.0	7.5	5.0	5.3	8.3	10.0	12.0	14.0	14.3
Kuwait	9.0	5.0	11.0	11.0	11.0	15.0	20.0	22.0	30.0
Saudi Arabia	5.0	6.0	9.0	9.0	9.0	12.0	16.0	28.0	36.0
Other Eastern Hemis.	2.7	2.0	2.1	2.8	3.6	4.0	4.4	5.3	5.7
Total Eastern Hemis.	28.7	30.0	34.1	35.1	43.9	56.0	67.4	84.3	101.0
Total Foreign	38.0	41.0	45.5	47.7	56.9	69.4	81.0	99.5	118.2
Total Free World	58.9	62.5	68.8	72.3	82.1	96.9	109.0	128.5	147.8
Crude Oil Production				Million Barrels					
United States	1,734	1,857	2,020	1,842	1,974	2,248	2,290	2,357	2,316
Canada	8	8	12	21	29	48	61	81	96
Venezuela	388	435	490	482	547	622	660	644	692
Other Latin America	128	139	144	152	170	182	184	185	202
Total Western Hemis.	2,258	2,439	2,666	2,497	2,720	3,100	3,195	3,267	3,306
Iran	147	155	190	205	242	128	10	10	22
Iraq	36	36	26	31	50	65	141	210	229
Kuwait	6	16	47	90	126	205	273	315	348
Saudi Arabia	60	90	143	174	200	278	302	308	348
Other Eastern Hemis.	31	49	89	114	142	166	185	207	264
Total Eastern Hemis.	279	346	495	614	760	841	911	1,050	1,174
Total Foreign	803	928	1,141	1,270	1,505	1,693	1,816	1,960	2,163
Total Free World	2,537	2,785	3,161	3,112	3,479	3,941	4,106	4,317	4,479
Ratio of Reserves to Production									
United States	12.1	11.6	11.5	13.4	12.8	12.2	12.2	12.3	12.8
Canada	12.5	12.5	41.7	57.1	51.7	33.3	29.5	24.7	30.2
Venezuela	18.0	19.5	18.4	19.7	16.5	14.5	13.5	15.4	15.8
Other Latin America	17.2	17.3	13.2	12.5	14.7	15.9	16.3	17.8	16.8
Total Western Hemis.	13.4	13.3	13.0	14.9	14.1	13.2	13.0	13.5	14.2
Iran	47.6	61.3	36.8	34.1	49.6	117.2	1500.0	1500.0	681.8
Iraq	138.9	208.3	192.3	171.0	166.0	153.8	85.1	66.7	62.4
Kuwait	1500.0	312.5	234.0	122.2	87.3	73.2	73.3	69.8	86.2
Saudi Arabia	83.3	66.7	62.9	51.7	45.0	43.2	53.0	90.9	103.4
Other Eastern Hemis.	87.1	40.8	23.6	24.6	25.4	24.1	23.8	25.6	21.6
Total Eastern Hemis.	102.9	86.7	68.9	57.2	57.8	66.6	74.0	80.3	86.0
Total Foreign	47.3	44.2	39.9	37.6	37.8	41.0	44.6	50.8	54.6
Total Free World	23.2	22.4	21.8	23.2	23.6	24.6	26.5	29.8	33.0

Sources: American Petroleum Institute for U. S. Reserves; Oil & Gas Journal for foreign reserves; Bureau of Mines for production other than preliminary estimate for 1954.

TABLE 19

RELATION OF ESTIMATED CRUDE OIL RESERVES AND
ESTIMATED PETROLEUM CONSUMPTION BY MAJOR AREAS
IN THE FREE WORLD, EXCLUDING U.S.S.R. AND SATELLITES

	1946	1947	1948	1949	1950	1951	1952	1953	1954
Crude Reserves (Year End) - Billion Barrels									
United States	20.9	21.5	23.3	24.6	25.3	27.5	28.0	28.9	29.6
Other Western Hemis.	9.3	11.0	11.4	12.6	13.0	13.5	13.7	15.2	17.2
Total Western Hemis.	30.2	32.5	34.7	37.2	38.3	41.0	41.7	44.1	46.8
Eastern Hemis.	28.7	30.0	34.1	35.1	43.9	56.0	67.4	84.3	101.0
Total Free World	58.9	62.5	68.8	72.3	82.1	96.9	109.0	128.5	147.8
Petroleum Consumption (Local) - Million Barrels									
United States	1,793	1,990	2,114	2,118	2,375	2,574	2,664	2,775	2,829
Other Western Hemis.	299	341	386	399	446	492	542	571	619
Total Western Hemis.	2,092	2,331	2,500	2,517	2,821	3,066	3,206	3,346	3,448
Eastern Hemis.	496	608	657	749	848	1,002	1,057	1,154	1,267
Total Free World	2,588	2,939	3,157	3,266	3,669	4,068	4,263	4,500	4,715
Ratio of Reserves to Consumption									
United States	11.7	10.8	11.0	11.6	10.7	10.7	10.5	10.4	10.4
Other Western Hemis.	31.1	34.0	29.5	31.6	29.1	27.4	25.3	26.6	27.8
Total Western Hemis.	14.4	13.9	13.9	14.8	13.6	13.4	13.0	13.2	13.6
Eastern Hemis.	57.9	49.3	51.9	46.9	51.8	55.9	63.8	73.1	79.7
Free World	22.8	21.3	21.8	22.1	22.4	23.8	25.6	28.6	31.3

Note: Data may not add to total due to rounding to nearest billion.

Sources: American Petroleum Institute for U. S. reserves; Oil & Gas Journal for foreign reserves; Coordination and Economics Department of Standard Oil (New Jersey) for consumption estimates.

TABLE 20

PRODUCING OIL WELLS IN THE UNITED STATES,
AVERAGE RESERVES, CAPACITY, AND PRODUCTION PER WELL, 1935-1954

Year	Producing Oil Wells		Crude Oil Reserves Per Well (Barrels)	Crude Oil Capacity Per Well (Bbls.Daily)	Crude Oil Production Per Well (Bbls.Daily)
	End of Year	Average			
1935	340,990				
1936	349,450	345,220	35,942	N.A.	8.7
1937	363,030	356,240	41,043	N.A.	9.8
1938	369,640	366,335	45,179	N.A.	9.1
1939	380,390	375,015	46,689	N.A.	9.2
1940	389,010	384,700	47,570	12.5	9.6
1941	399,960	394,485	47,030	11.9	9.7
1942	404,840	402,400	47,723	11.7	9.4
1943	407,170	406,005	47,425	11.5	10.2
1944	412,220	409,695	47,996	11.3	11.2
1945	415,750	413,985	47,966	11.0	11.3
1946	421,460	418,605	49,528	11.7	11.3
1947	426,280	423,870	50,408	12.3	12.0
1948	437,880	432,080	53,165	12.8	12.8
1949	448,680	443,280	54,937	13.6	11.4
1950	465,870	457,275	54,238	14.1	11.8
1951	474,990	470,430	57,829	14.7	13.1
1952	488,520	481,755	57,236	15.2	13.0
1953	501,859	495,190	57,676	15.7	13.0
1954	514,808	508,334	57,421	16.4	12.5

Source: World Oil for producing oil wells. Other data calculated by relating average number of wells to reserves, capacity, and production reported in other tables.
N.A. - Not Available.

TABLE 21

DRILLING ACTIVITY, PRODUCING WELLS, PRODUCTION AND PROVED RESERVES IN THREE PRINCIPAL COUNTRIES[a] SUPPLYING OIL TO THE UNITED STATES, 1946-1954

	Wells Completed				Producing Wells (Number)	Crude Oil Production		Proved Reserves	
	Oil	Gas	Dry	Total		Thousand Barrels Daily	Barrels Daily Per Well	Million Barrels	Thousand Barrels Per Well
					VENEZUELA				
1946	574	--	53	627	N.A.	1,065	N.A.	7,000	N.A.
1947	689	9	89	787	N.A.	1,191	N.A.	8,500	N.A.
1948	793	7	89	889	N.A.	1,339	N.A.	9,000	N.A.
1949	598	3	69	670	5,872	1,322	225	9,500	1,600
1950	326	4	63	393	6,294	1,498	238	9,000	1,400
1951	1,056	8	140	1,204	7,316	1,705	233	9,000	1,200
1952	1,161	27	125	1,313	7,915	1,804	228	8,900	1,100
1953	775	18	158	951	8,175	1,765	216	9,900	1,200
1954	N.A.	N.A.	N.A.	N.A.	8,897	1,893	212	10,900	1,200
					SAUDI ARABIA				
1946	11	--	--	11	N.A.	165	N.A.	5,000	N.A.
1947	22	--	2	24	N.A.	246	N.A.	6,000	N.A.
1948	24	--	--	24	N.A.	390	N.A.	9,000	N.A.
1949	19	1	3	23	97	477	4,918	9,000	92,800
1950	19	--	2	21	103	547	5,311	9,000	87,400
1951	31	--	1	32	109	561	5,147	12,000	110,000
1952	35	--	5	40	124	825	6,653	16,000	129,000
1953	33	--	--	33	138	845	6,123	28,000	202,900
1954	N.A.	N.A.	N.A.	N.A.	139	953	6,856	36,000	259,000
					KUWAIT				
1946	--	--	--	--	N.A.	16	N.A.	9,000	N.A.
1947	5	--	--	5	N.A.	45	N.A.	5,000	N.A.
1948	24	--	--	24	N.A.	127	N.A.	11,000	N.A.
1949	49	--	--	49	61	247	4,049	11,000	180,300
1950	13	--	--	13	73	355	4,863	11,000	150,700
1951	20	--	1	21	92	762	8,283	15,000	163,000
1952	21	--	2	23	115	747	6,496	20,000	173,900
1953	17	--	--	17	138	861	6,239	22,000	159,400
1954	N.A.	N.A.	N.A.	N.A.	156	944	6,051	30,000	192,300

[a] These countries were the source of 80 per cent of the imports of crude oil and refined products into the United States in 1954.

N.A. - Not Available.

Source: Wells completed from World Oil. Producing wells, crude oil production and proved reserves from Oil and Gas Journal, except that producing wells in Venezuela are from private sources. Production and reserves per producing well calculated from basic sources.

TABLE 22

ESTIMATED
INTERNATIONAL OIL MOVEMENTS
(Thousand Barrels Daily)

Between United States and Other Areas

	U. S. Imports					U. S. Exports				
	Crude Oil From		Products From		All	Crude Oil To		Products To		All
	W.Hem.	E.Hem.	W.Hem.	E.Hem.	Oils	W.Hem.	E.Hem.	W.Hem.	E.Hem.	Oils
1938	72	-	76	-	148	75	137	99	220	531
Postwar										
1946	236	-	140	1	377	106	10	64	239	419
1947	266	1	163	7	437	113	13	106	218	450
1948	290	63	154	7	514	99	10	120	140	368
1949	320	101	224	0	645	87	3	111	126	327
1950	373	114	358	5	850	91	4	121	89	305
1951	378	113	353	0	844	67	11	143	201	422
1952	404	169	378	1	952	67	6	167	192	432
1953	388	260	383	3	1,034	48	6	165	183	401
1954	405	251	395	1	1,052	32	5	150	169	356

Between Western and **Eastern** Hemispheres

	Western Hemisphere Total						Western Hemisphere Net					
	Exports to E.Hem.			Imports From E.Hem.			Net Receipts			Net Shipments		
	Crude Oil	Prod-ucts	Total	Crude Oil	Prod-ucts	Total	Crude Oil	Prod-ucts	Total	Crude Oil	Prod-ucts	Total
1938	224	511	735	0	3	3				224	508	732
Postwar												
1946	72	579	651	2	1	3				70	578	648
1947	117	618	735	6	9	15				111	609	720
1948	116	500	616	86	8	94				30	492	522
1949	111	449	560	153	2	155	42				447	405
1950	91	401	492	201	11	212	110				390	280
1951	106	620	726	185	4	189	79				616	537
1952	113	590	703	224	7	231	111				583	472
1953	86	512	598	311	6	317	225				506	281
1954												
Total	92	430	522	302	1	303	210				429	219
U. S.	5	169	174	251	1	252	246		78		168	-
Other W.H.	87	261	348	51	-	51				36	261	297

Source: Department of Commerce and Bureau of Mines for U. S. imports and exports, private source for Western and Eastern Hemisphere shipments.

Note: Data may not add to total due to rounding to nearest thousand.

V. Domestic Petroleum Reserves, Productive Capacity, Production, Exploration, and Drilling

Statistics on domestic exploration and producing operations are presented in Tables 23-28 and in Charts 12-15. They show an increase postwar in exploratory wells drilled, total drilling, proved reserves, productive capacity, production, and value of production.

Domestic proved reserves of petroleum liquids increased less rapidly than production during World War II. Postwar, proved reserves have increased at a rate less than demand and more than production, as indicated by the following summary:

Summary M
Relation of Reserves of Petroleum
Liquids to Production and Demand in the U. S.

Year	Ratio of Average Proved Reserves to: Production	Domestic Demand	Total Demand
1940	14.7	15.7	14.3
1946	12.7	13.1	12.1
1950	13.4	12.6	11.7
1954	13.5	12.2	11.7

Estimated productive capacity has increased more rapidly than proved reserves postwar. The present reserve productive capacity has been developed since 1948. The average productive capacity in 1954, based on estimates as of July 1954 submitted by the Committee on Petroleum Availability to the National Petroleum Council, exceeded production by 2,069,000 barrels daily and exceeded total demand by 988,000 barrels daily. About three-fourths of reserve productive capacity in 1954 was in District III. In District V, the crude oil reserve capacity of 154,000 barrels daily in 1954 was almost entirely in the Elk Hills Naval Reserve. The relation of capacity to production and total demand is shown on Charts 12 and 13, and summarized as follows:

Summary N

U. S. Productive Capacity, Production, Total Demand, Reserve Capacity, and Imports
Thousand Barrels Daily

Year	Estimated Productive Capacity All Pet.Liq.	Production All Liquids	Total Demand	Margin Between Productive Capacity and: Production Amount	Production % of Cap.	Demand Amount	Demand % of Cap.	Total U.S.Imports
1940	4,945	3,849	3,981	1,096	22.2	964	19.5	229
1946	5,230	5,068	5,331	162	3.1	-101	-1.9	377
1947	5,590	5,450	5,902	140	2.5	-312	-5.6	437
1948	5,950	5,921	6,143	29	0.5	-193	-3.2	514
1949	6,460	5,476	6,130	984	15.2	330	5.1	645
1950	6,980	5,906	6,812	1,074	15.4	168	2.4	850
1951	7,500	6,719	7,475	781	10.4	25	0.3	844
1952	7,950	6,867	7,712	1,083	13.6	238	3.0	952
1953	8,471	7,112	8,005	1,359	16.0	466	5.5	1,034
1954	9,096	7,027	8,108	2,069	22.7	988	10.9	1,052
Change 1948-54	3,146	1,106	1,965	2,040		1,181		538
Avg.Annual % Chg.	7.3	2.9	4.7					12.7

The annual increments in capacity postwar are compared below with the increments in total demand, production, and imports:

Summary O
Annual Increments in Capacity, Demand, Production, and Imports
Thousand Barrels Daily

Year	Productive Capacity All Liquids	Total Demand	Domestic Production All Liquids	Imports	Reserve Productive Capacity
1947	360	571	378	60	-22
1948	360	241	470	77	-111
1949	510	- 13	-445	131	955
1950	520	682	429	205	90
1951	520	663	814	- 6	-293
1952	450	237	148	108	302
1953	521	293	245	82	276
1954	625	103	- 86	18	710
Total	3,866	2,777	1,953	675	1,913
Avg. 1946-51	454	425	329	93	125
Avg. 1951-54	532	211	102	69	430

Production of crude oil and natural gas liquids and the value of production are shown on Table 26. There was a decline in volume of crude oil production in 1949 and 1954 and in value only in 1949. The major part of the changes in volume was in District III, the principal producing area, as shown by the following summary:

Summary P
Postwar Changes in Production, Thousand Barrels Daily

Period	Crude Oil Production						U.S.Gas Liquids	Total Production
	Dist.I	Dist.II	Dist.III	Dist.IV	Dist.V	U. S.		
1946-1948	- 2	56	586	62	67	769	79	848
1948-1949	- 3	- 24	-428	-2	-17	-474	29	-445
1949-1953	- 3	196	990	141	88	1,412	224	1,636
1953-1954	- 6	- 4	-125	48	-25	-112	26	- 86
1946-1954	-14	224	1,023	249	113	1,595	358	1,953
Amt.,1954	43	1,170	3,746	412	975	6,346	681	7,027

During the war years 1942-1945 there was a deficiency in well completions. Well completions in the United States averaged 22,816 annually, or some 24 per cent less than the total of 30,000 in 1940. After the war, drilling increased as shown in Table 27, Chart 15, and the following summary:

Summary Q
Wells Completed in the United States

Year	Exploration	Development	Service	Total	Dry Holes	Dry Holes as Per Cent of Total, Ex. Service
1940	28,094		1,947	30,041	6,617	23.6
1946	4,518	22,473	2,237	29,228	8,050	29.8
1950	10,302	31,728	1,249	43,279	14,757	35.1
1954	11,280	41,638	1,012	53,930	19,168	36.2

The average number of exploratory crews active decreased by about 5 per cent between 1952 and 1954, the number of active rigs decreased about 4 per cent (Table 28), and completions increased about 5 per cent for exploratory wells and 18 per cent for total wells.

Chart 15 shows the relation of footage drilled to the value of crude oil production measured in current dollars and in constant purchasing power, and of footage drilled and gross additions of new reserves of petroleum liquids. Over

the long run there has been a similarity in the trends of footage drilled, gross additions of new reserves, and the value of domestic production measured in constant dollars.

Respectfully submitted,

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W. G. Moore
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H. N. F. Schwall
Paul D. Williams
Fred Van Covern
Richard J. Gonzalez,
Chairman

March 23, 1955

TABLE 23

RELATION OF PROVED PETROLEUM RESERVES IN THE UNITED STATES TO PRODUCTION AND DEMAND

A. Petroleum Liquids, 1937-1954

	Estimated Proved Reserves at End of Year[a]--Million Barrels			Ratio of Average Proved Reserves for Year to:		
	Crude Oil	Nat.Gas Liquids	Total Petroleum	Production of Petroleum Liquids	Domestic Demand	Total Demand
1936	12,560	1,940	14,500			
1937	14,900	2,300	17,200	11.9	13.6	11.8
1938	16,700	2,600	19,300	14.4	16.1	13.7
1939	17,760	2,740	20,500	15.1	16.2	14.0
1940	18,300	2,850	21,150	14.7	15.7	14.3
1941	18,810	2,940	21,750	14.4	14.5	13.4
1942	19,320	3,000	22,320	15.0	15.2	14.1
1943	19,310	2,990	22,300	14.0	14.6	13.3
1944	19,785	3,045	22,830	12.7	13.5	12.0
1945	19,942	3,078	23,020	12.5	12.9	11.7
1946	20,874	3,163	24,037	12.7	13.1	12.1
1947	21,488	3,254	24,742	12.3	12.2	11.3
1948	23,280	3,541	26,821	11.9	12.2	11.4
1949	24,649	3,729	28,378	13.8	13.0	12.4
1950	25,268	4,268	29,536	13.4	12.6	11.7
1951	27,468	4,725	32,193	13.0	12.4	11.7
1952	27,961	4,997	32,958	12.9	12.2	11.3
1953	28,945	5,438	34,383	12.9	12.1	11.5
1954	29,561	5,244	34,805	13.5	12.2	11.7

a - As reported by the Reserves Committee of the American Petroleum Institute, except that estimates were made from data published on crude oil and condensate reserves for 1936-1943 on the basis of relations for 1944-1945 for which the API Committee on Reserves published estimates on both bases.

B. Natural Gas[b], 1946-1954

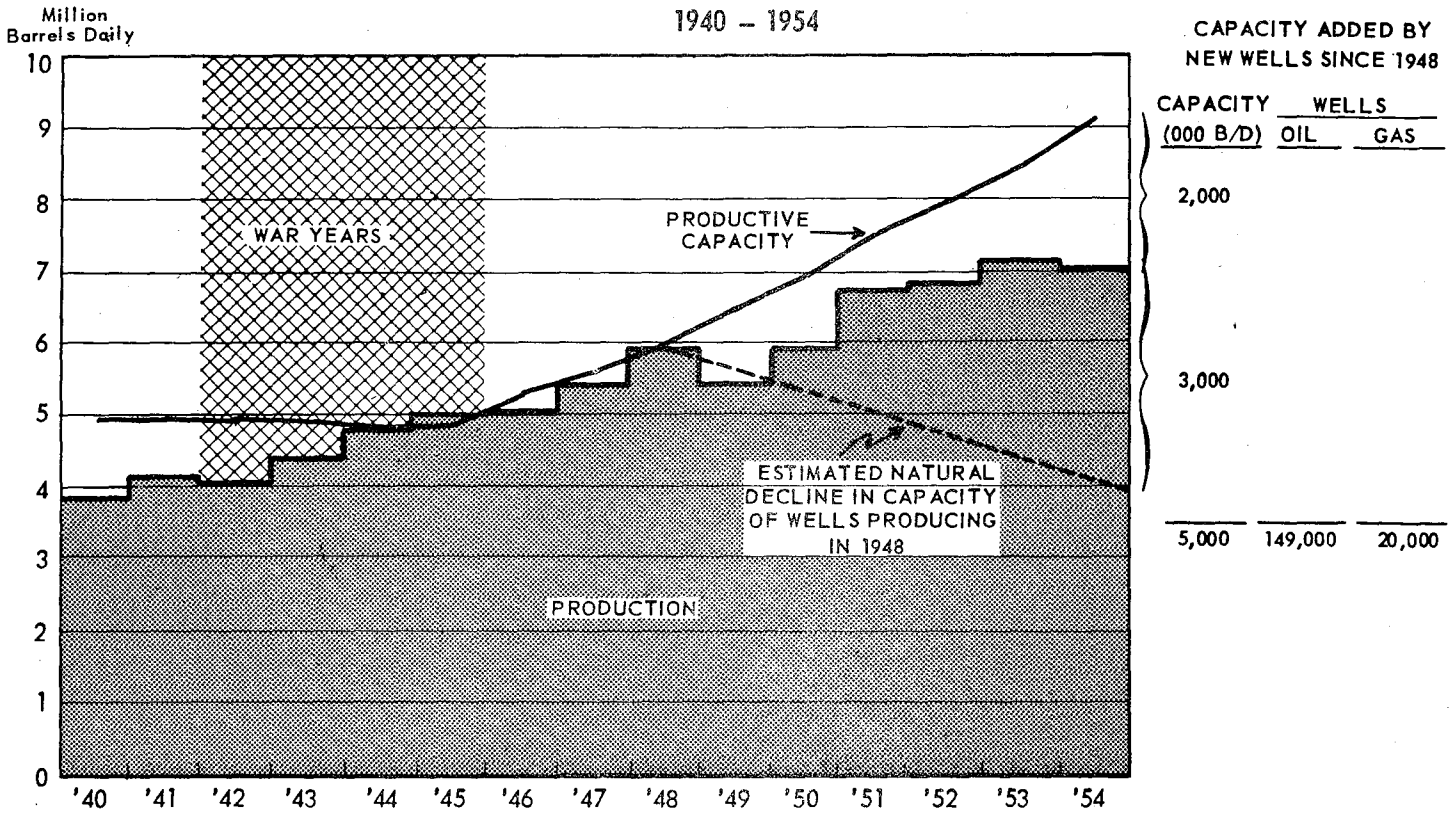
	Estimated Proved Reserves, At End of Year[b] Billion Cubic Feet	Production Billion Cubic Feet	Ratio of Average Proved Reserves to Production
1945	147,789		
1946	160,576	4,943	31.2
1947	165,927	5,630	29.0
1948	173,869	6,008	28.4
1949	180,381	6,245	28.4
1950	185,593	6,893	26.6
1951	193,812	7,967	23.8
1952	199,716	8,640	22.8
1953	211,447	9,239	22.4
1954	211,711	9,427	22.4

b - Basic data on reserves and production reported by the American Gas Association.

Chart 12

A. U.S. PRODUCTIVE CAPACITY AND PRODUCTION OF PETROLEUM LIQUIDS

1940 – 1954



B. RESERVE CAPACITY AS PER CENT OF PRODUCTIVE CAPACITY

1940 – 1954

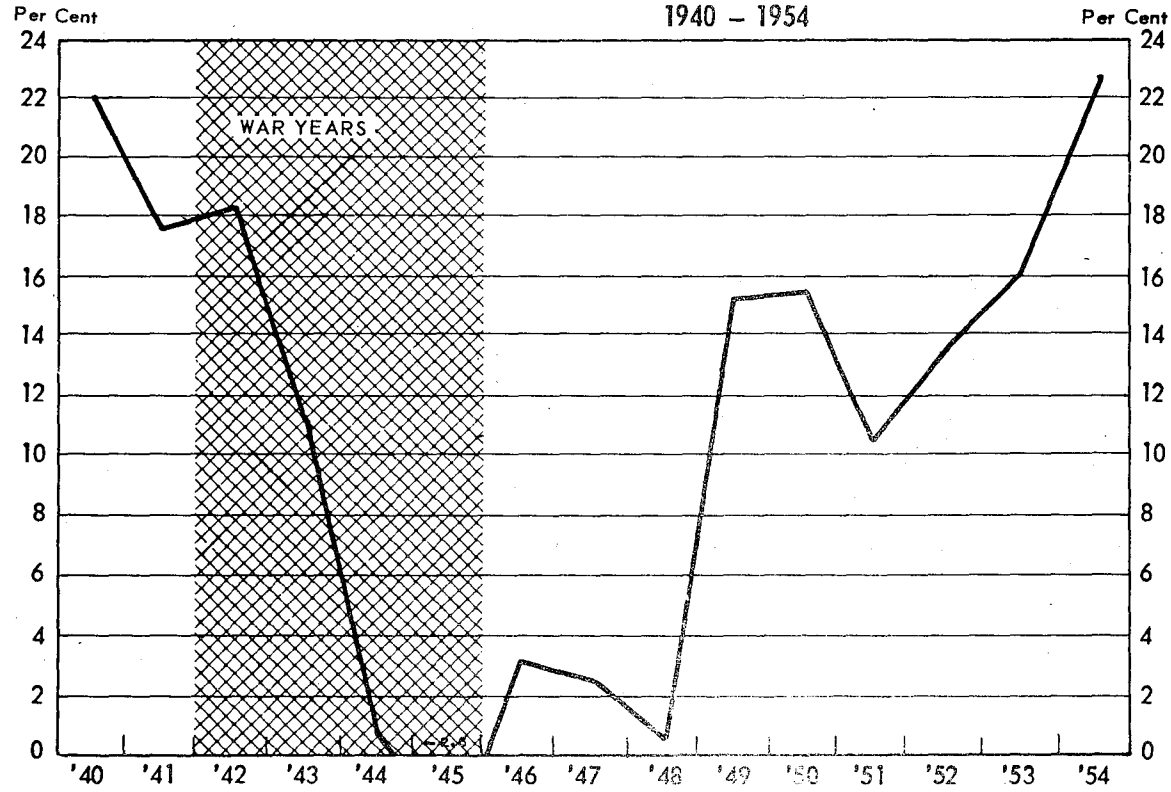
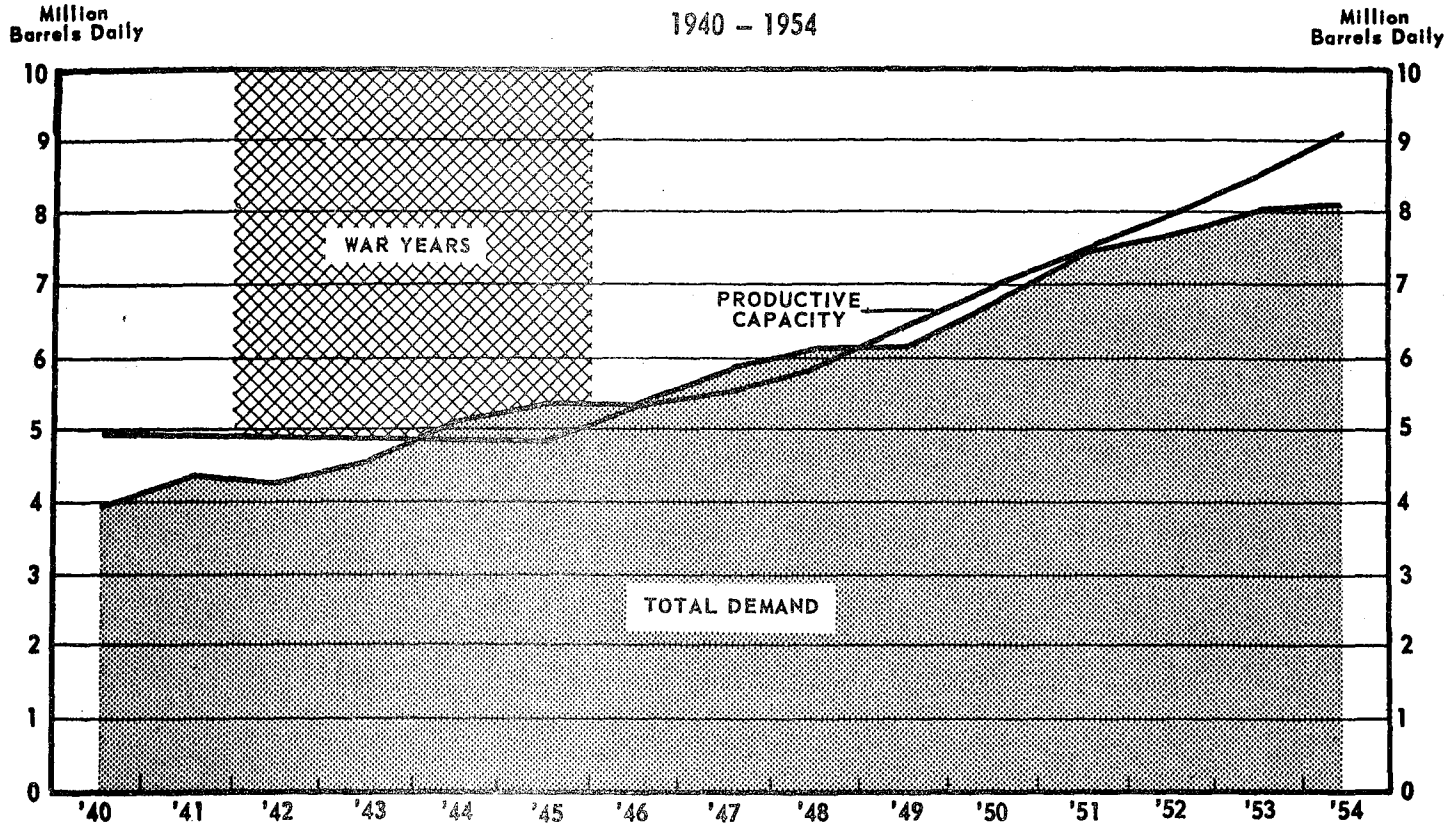


Chart 13

A. U.S. PRODUCTIVE CAPACITY OF CRUDE OIL AND NATURAL GAS LIQUIDS AND TOTAL DEMAND
1940 – 1954



B. PER CENT BY WHICH TOTAL DEMAND VARIES FROM PRODUCTIVE CAPACITY
1940 – 1954

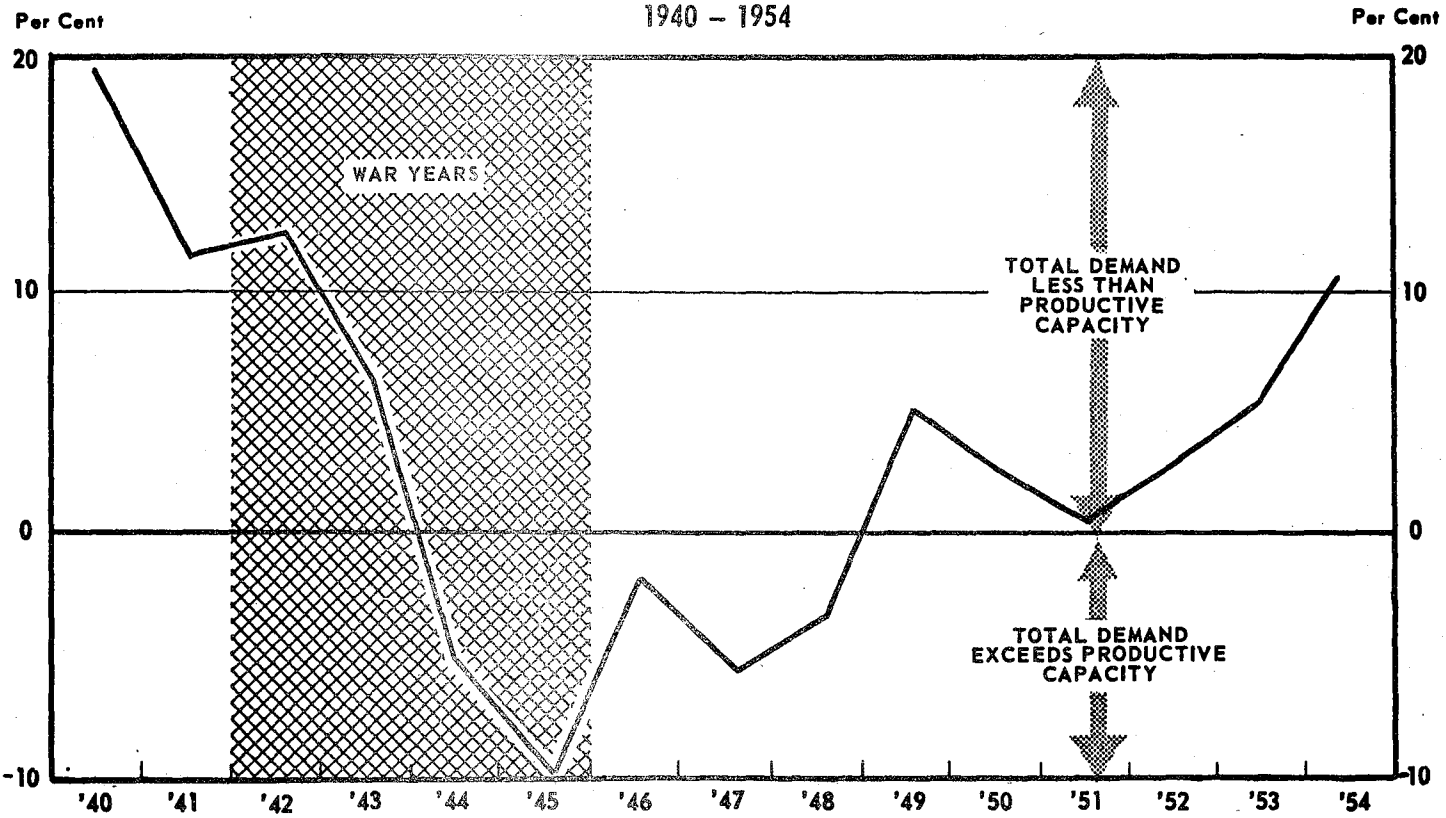


TABLE 24

U. S. PETROLEUM PRODUCTIVE CAPACITY
AND PRODUCTION
1940-1954
(Thousand Barrels Daily)

	Productive Capacity			Production		
Year Avge.	Crude Oil[b]	Natural Gas Liquids	Total Liquid Hydrocarbons[b]	Crude Oil	Natural Gas Liquids	Total Liquid Hydrocarbons
1940	4,793	152[a]	4,945	3,697	152	3,849
1941	4,713	222[a]	4,935	3,842	222	4,064
1942	4,692	228[a]	4,920	3,799	228	4,027
1943	4,665	240[a]	4,905	4,125	240	4,365
1944	4,617	274[a]	4,891	4,584	274	4,858
1945	4,568	307[a]	4,875	4,695	307	5,002
1946	4,913	317[a]	5,230	4,751	317	5,068
1947	5,228	362[a]	5,590	5,088	362	5,450
1948	5,545	405[a]	5,950	5,520	401	5,921
1949	6,021	439[a]	6,460	5,046	430	5,476
1950	6,466	514[a]	6,980	5,407	499	5,906
1951	6,922	578[a]	7,500	6,158	561	6,719
1952	7,310	640[a]	7,950	6,256	611	6,867
1953	7,753	718	8,471	6,458	654	7,112
1954	8,331	765	9,096	6,346	681	7,027

	Reserve Productive Capacity			Reserve Capacity as % of Productive Capacity		
	Crude Oil	Natural Gas Liquids	Total Liquid Hydrocarbons	Crude Oil	Natural Gas Liquids	Total Liquid Hydrocarbons
1940	1,096	-	1,096	22.9%	-	22.2%
1941	871	-	871	18.5	-	17.7
1942	893	-	893	19.0	-	18.2
1943	540	-	540	11.6	-	11.0
1944	33	-	33	0.7	-	0.7
1945	(127)	-	(127)	(2.8)	-	(2.6)
1946	162	-	162	3.3	-	3.1
1947	140	-	140	2.6	-	2.5
1948	25	4	29	0.5	1.0%	0.5
1949	975	9	984	16.2	2.0	15.2
1950	1,057	15	1,074	16.4	3.0	15.4
1951	764	17	781	11.0	3.0	10.4
1952	1,054	29	1,083	14.4	4.5	13.6
1953	1,295	64	1,359	16.7	8.9	16.0
1954	1,985	84	2,069	23.8	11.0	22.7

[a] All year average figures of total capacity taken from N.P.C. report on "Oil & Gas Exploration & Production Requirements" - Dec. 1953, page 14. Year averages of crude oil only have been obtained by subtracting estimates described below for natural gas liquid productive capacities from total capacity of liquid hydrocarbons.

[b] Natural gas liquids productive capacity has been accepted as being equal to production for all years prior to and including 1947. Reserve productive capacity of natural gas liquids for years 1948, -49, -50, -51, and -52 was estimated as follows:

1948 1% of total capacity NGL
1949 2% of total capacity NGL
1950 3% of total capacity NGL
1951 3% of total capacity NGL (same as Jan. 1, 1951, N.P.C.)
1952 4.5% of total capacity NGL

All production figures are Bureau of Mines.

TABLE 25

PETROLEUM PRODUCTIVE CAPACITY AND PRODUCTION
(Thousand Barrels Daily)

A U. S. By Districts, 1951-1954

	Productive Capacity			Production			Reserve Productive Capacity		
	Crude Oil	Nat Gas Liquids	All Oils	Crude Oil	Nat. Gas Liquids	All Oils	Crude Oil	Nat. Gas Liquids	All Oils
January 1951									
I East Coast	54	19	73	54	19	73	0	0	0
II Mid-Continent	1,083	72	1,155	1,077	72	1,149	6	0	6
III Southwest	4,161	383	4,544	3,525	377	3,902	636	6	642
IV Rocky Mountain	350	9	359	292	7	299	58	2	60
V California a	1,079	90	1,169	959	83	1,042	120	7	127
U. S. Total	6,727	573	7,300	5,907	558	6,465	820	15	835
January 1953									
I East Coast	49	19	68	49	19	68	0	0	0
II Mid-Continent	1,238	98	1,336	1,181	89	1,270	57	9	66
III Southwest	4,686	481	5,167	4,004	456	4,460	682	25	707
IV Rocky Mountain	394	9	403	327	8	335	67	1	68
V California[a]	1,098	87	1,185	990	81	1,071	108	6	114
U. S. Total	7,465	694	8,159	6,551	653	7,204	914	41	955
July 1954									
I East Coast	43	12	55	43	12	55	0	0	0
II Mid-Continent	1,380	127	1,507	1,126	88	1,214	254	39	293
III Southwest	5,224	521	5,745	3,673	451	4,124	1,551	70	1,621
IV Rocky Mountain	561	12	573	431	9	440	130	3	133
V California[a]	1,123	93	1,216	969	82	1,051	154	11	165
U. S Total	8,331	765	9,096	6,242	642	6,884	2,089	123	2,212

B Free World Foreign by Hemispheres, 1951

January 1951									
Canada	165	2	167	95	2	97	70	-	70
Latin America	2,130	22	2,152	2,126	22	2,148	4	-	4
Total	2,295	24	2,319	2,221	24	2,245	74	-	74
Europe & Africa	86	24	110	86	24	110	-	-	-
Middle East	2,000	-	2,000	1,874	-	1,874	126	-	126
Far East	270	4	274	265	4	269	5	-	5
Total	2,356	28	2,384	2,225	28	2,253	131	-	131
Free Foreign	4,651	52	4,703	4,446	52	4,498	205	-	205

a California includes Elk Hills Naval Reserve.

Source: National Petroleum Council

TABLE 26

U. S. PRODUCTION OF CRUDE OIL BY DISTRICTS, 1935-1954
(Thousand Barrels Daily)

	District I East Coast	District II Mid-Cont.	District III South-west	District IV Rocky Mtn.	District V Cali-fornia	Total United States	Value of Production (Million Dollars) Reported	Value of Production (Million Dollars) *In 1954 Values
1935	65	741	1,300	55	569	2,730	961	2,041
1936	70	797	1,491	60	587	3,005	1,200	2,521
1937	78	915	1,786	73	653	3,505	1,513	2,973
1938	72	789	1,713	69	684	3,327	1,367	2,953
1939	72	957	1,743	79	615	3,466	1,295	2,851
1940	70	1,102	1,820	93	612	3,697	1,385	2,992
1941	70	1,108	1,925	108	631	3,842	1,602	3,111
1942	73	1,048	1,880	118	680	3,799	1,644	2,824
1943	66	958	2,201	122	778	4,125	1,809	2,980
1944	60	922	2,627	123	852	4,584	2,033	3,317
1945	55	949	2,660	136	895	4,695	2,094	3,356
1946	57	946	2,723	163	862	4,751	2,443	3,421
1947	56	953	2,977	189	913	5,088	3,578	4,094
1948	55	1,002	3,309	225	929	5,520	5,245	5,539
1949	52	978	2,881	223	912	5,046	4,675	5,200
1950	53	1,030	3,168	258	898	5,407	4,963	5,308
1951	52	1,107	3,734	293	972	6,158	5,690	5,466
1952	51	1,120	3,803	300	982	6,256	5,785	5,717
1953	49	1,174	3,871	364	1,000	6,458	6,327	6,340
1954	43	1,170	3,746	412	975	6,346	6,393	6,393

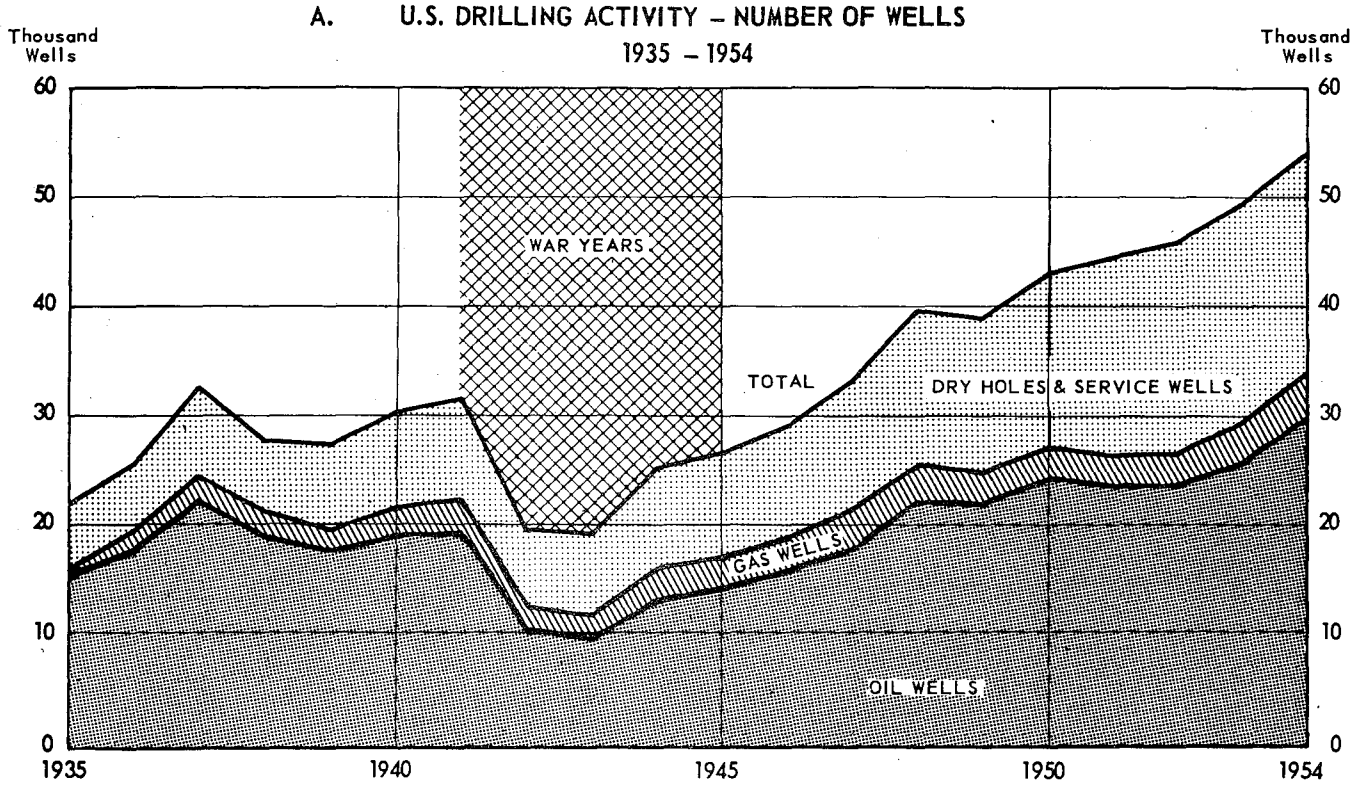
U. S. PRODUCTION OF NATURAL GAS LIQUIDS BY DISTRICTS, 1941-1954
(Thousand Barrels Daily)

1941	7	44	124	3	43	222	119	231
1942	8	46	130	3	41	228	122	210
1943	8	49	136	3	45	240	147	242
1944	7	49	164	4	50	274	183	299
1945	7	48	191	4	58	307	188	301
1946	9	48	198	3	59	317	182	255
1947	10	51	228	4	69	362	295	338
1948	11	52	261	5	73	401	459	485
1949	11	55	285	5	74	430	402	447
1950	13	64	339	6	78	499	420	449
1951	14	74	384	8	81	561	508	488
1952	16	83	420	9	82	611	533	527
1953	20	94	455	8	85	654#		
1954	14	103	471	9	84	681		

* Adjusted by Wholesale Commodity Price Index (1947-49=100)
# 1953 U. S. total revised, revisions by districts unknown.
Note: Data may not add to total due to rounding to nearest thousand.

Chart 14

A. U.S. DRILLING ACTIVITY – NUMBER OF WELLS
1935 – 1954



B. PER CENT DRY HOLES OF WELLS OTHER THAN SERVICE WELLS
1935 – 1954

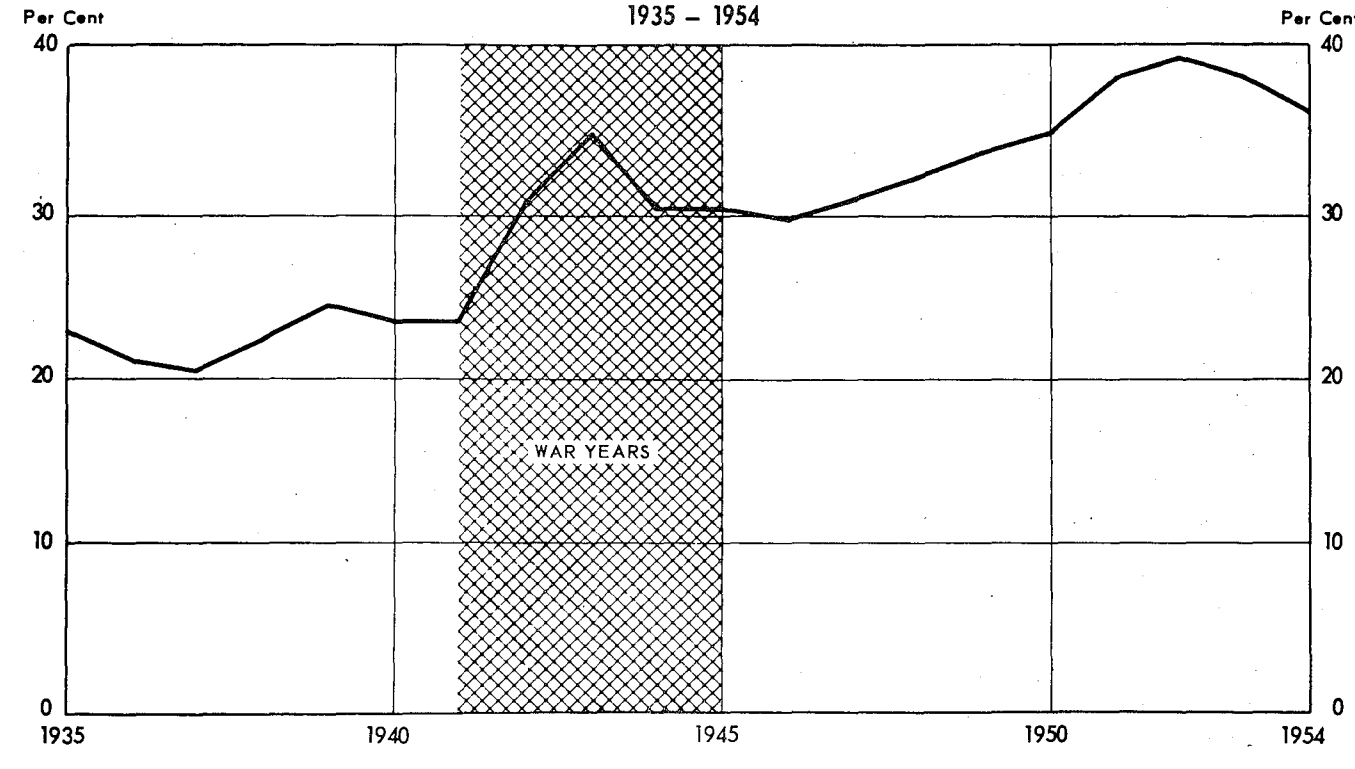


TABLE 27

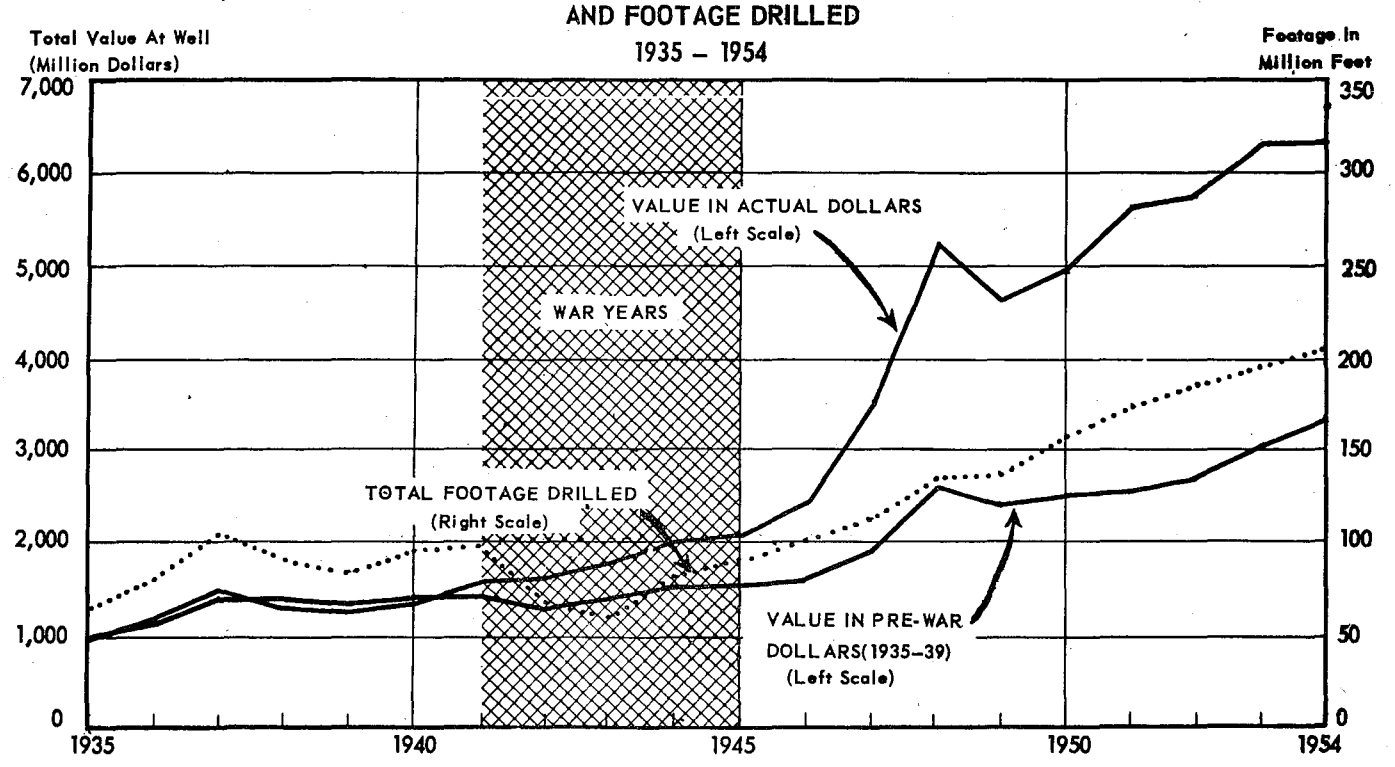
WELLS COMPLETED IN THE UNITED STATES, 1935-1954

Year	Oil Wells	Gas Wells	Dry Holes	Service Wells	Total Completions	Dry Holes As Per Cent of Total Ex. Service	Footage Drilled Million Feet
1935	15,108	1,401	4,911	445	21,865	22.9	67.8
1936	17,800	2,070	5,297	723	25,890	21.0	81.0
1937	22,143	2,543	6,420	1,453	32,559	20.6	105.1
1938	19,121	1,985	6,043	688	27,837	22.3	90.6
1939	17,485	2,046	6,357	1,420	27,308	24.6	85.5
1940	19,125	2,352	6,617	1,947	30,041	23.6	96.2
1941	19,195	2,990	6,885	2,366	31,436	23.7	99.3
1942	10,302	2,100	5,532	1,760	19,694	30.8	67.9
1943	9,717	1,897	6,270	1,547	19,431	35.1	62.0
1944	13,029	3,065	7,012	2,156	25,262	30.3	84.4
1945	14,297	2,899	7,471	2,209	26,876	30.3	93.0
1946	15,851	3,090	8,050	2,237	29,228	29.8	101.1
1947	17,999	3,305	9,538	2,280	33,122	30.9	112.8
1948	22,585	2,897	12,026	2,270	39,778	32.1	136.7
1949	22,042	2,887	12,727	1,382	39,038	33.8	138.6
1950	24,430	2,843	14,757	1,249	43,279	35.1	159.8
1951	23,453	3,030	16,653	1,380	44,516	38.6	176.8
1952	23,466	3,255	17,618	1,482	45,821	39.7	188.4
1953	25,762	3,806	18,449	1,262	49,279	38.4	198.4
1954	29,773	3,977	19,168	1,012	53,930	36.2	209.5

Source: Oil & Gas Journal and Bureau of Mines for wells completed, World Oil (February 15, 1955, Page 118) for footage.

Chart 15

VALUE OF U.S. CRUDE OIL PRODUCTION AND FOOTAGE DRILLED 1935 – 1954



FOOTAGE DRILLED IN THE U.S. AND TOTAL ADDITIONS TO PROVED RESERVES OF CRUDE OIL AND NATURAL GAS LIQUIDS 1935 – 1954

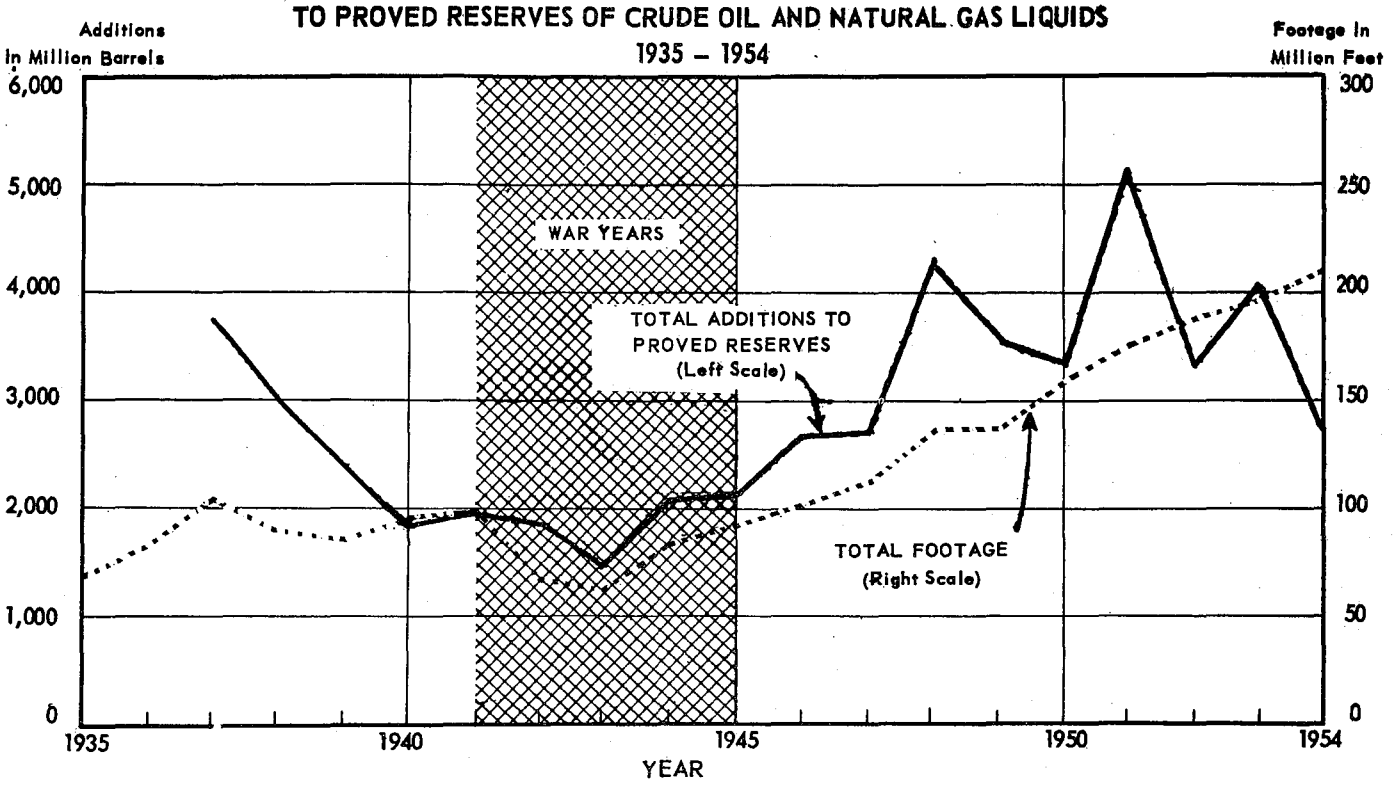


TABLE 28

U. S. PETROLEUM EXPLORATION AND DEVELOPMENT ACTIVITY
1946-1954

	Exploratory Wells Drilled					Average Number of Exploratory Crews Active (a)
	Oil Wells	Gas Wells	Dry Holes Number	Dry Holes % of Total	Total	
1946	635	127	3,756	83.1	4,518	421
1947	864	248	4,349	79.6	5,461	421
1948	1,029	246	5,602	81.5	6,877	565
1949	1,086	196	6,012	82.4	7,294	519
1950	1,293	221	7,040	82.3	8,554	481
1951	1,531	259	8,512	82.6	10,302	570
1952	1,488	268	8,815	83.4	10,571	751
1953	1,575	367	9,120	82.4	11,062	741
1954	1,598	399	9,283	82.3	11,280	713

	Development Wells Drilled						Average Number of Active Rigs	
	Oil Wells	Gas Wells	Dry Holes Number	Dry Holes % of Total Ex-Service Wells	Service Wells	Total	All Rigs	Rotary Rigs
1946	15,216	2,963	4,294	19.1	2,237	24,710	4,353	1,556
1947	17,135	3,057	5,189	20.4	2,280	27,661	4,741	1,783
1948	21,556	2,651	6,424	21.0	2,270	32,901	4,950	2,160
1949	20,956	2,691	6,715	22.1	1,382	31,744	4,290	2,017
1950	23,137	2,622	7,717	23.1	1,249	34,725	4,517	2,154
1951	21,922	2,771	8,141	24.8	1,380	34,214	4,844	2,543
1952	21,978	2,987	8,822	26.1	1,482	35,269	4,857	2,641
1953	24,187	3,439	9,329	25.2	1,262	38,217	4,784	2,613
1954	28,175	3,578	9,885	23.7	1,012	42,650	4,635	2,508

(a) Geophysical, seismic, and core drilling crews

Sources: Exploratory and development wells from Oil and Gas Journal. Exploratory crews from Interstate Oil Compact Commission. All rigs from World Oil. Rotary Rigs from Hughes Tool Company.