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

October 25, 1949

National Petroleum Council
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NATIONAL PETROLEUM COUNCIL

(Created by the Secretary of the Interior)

SUITE 601, 1625 K STREET, N. W.

WASHINGTON 6, D. C.

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October 24, 1949

Mr. Walter S. Hallanan, Chairman
National Petroleum Council
Washington, D. C.

Dear Mr. Hallanan:

On August 23, 1949 the Committee on Petroleum Imports met in Washington, D. C. and appointed a Statistical Subcommittee to compile and report to the Committee such petroleum statistics as it deemed necessary for the Committee's use in carrying out its assignment to make "a factual study of the matter of petroleum imports, including the effect on the domestic industry, domestic economy and national security". On October 23rd and 24th the Committee convened in Washington, D. C. for its second meeting to study the Statistical Subcommittee's report, discuss its economic implications as related to the Committee's assignment, and consider the nature of the report to be made.

In view of the many factors bearing upon the matters being considered by the Committee, it was the unanimous view of the Committee members that additional time would be required for further study, discussion and preparation of a final report.

We are, therefore, herewith enclosing copy of the Statistical Subcommittee's report, together with copy of letter dated October 12th to the members of the Petroleum Imports Committee, briefly summarizing, in general terms, the findings of the Subcommittee. Also attached is copy of statement of the Chairman of the Committee, dated October 23, 1949. The purpose of this interim report is to advise the Council of the progress of the Committee and to make available to the members of the Council the basic information on which the Committee's considerations have been predicated.

The Committee authorized that a Drafting Subcommittee be appointed to prepare a proposed report. The personnel of such Subcommittee will be notified of their appointment within the next few days and we are hopeful that a report can be prepared and approved by the Committee for submission to the Council at its January meeting.

If any member of the Council, after study of the information herewith submitted, desires to make suggestions with respect to the form or subject matter to be contained in the report, it will be welcomed. Such suggestions, however, should be submitted in writing, as promptly as possible, to me as Chairman of the Committee on Petroleum Imports, c/o National Petroleum Council, Washington, D. C.

Respectfully submitted,

J. D. Porter

Chairman, Committee on
Petroleum Imports

MEETING OF N.P.C. COMMITTEE ON PETROLEUM IMPORTS
WASHINGTON, D. C. - OCTOBER 23, 1949

STATEMENT OF CHAIRMAN:-

For the purpose of opening the discussion of the Committee, I think it might be well for us to review our assignment and the work that has thus far been done.

As you know, on June 14, 1949, Secretary Krug requested formal consideration of the matter of petroleum imports by a Committee of the Council and stated he believed "that a more detailed and specific study, report and recommendations than was contained in the Policy Report is both desirable and necessary".

Pursuant to the Secretary's request, this committee was created. We were directed by the Agenda Committee "to make factual study of the matter of petroleum imports, including the effect thereof on the domestic industry, the domestic economy and national security", as requested by the Secretary's letter, but stated "the Committee should not suggest plans or programs but should confine its report to findings of fact".

So far the Committee has operated on the assumption that although it could not recommend plans or programs for future activity, it was free to make findings of fact with regard to all available statistical information and reach such conclusions as may be warranted as to the effects of imports on the domestic industry, the domestic economy and the national security.

Since our assignment was to make a more detailed and specific study than was contained in the Policy Report, it is probably well that we keep in mind the pertinent provisions of the National Petroleum Policy.

It seems to me that the following provisions of the Policy Report are important and pertinent to our consideration:

"IV. IMPORTS

"1 The nation's economic welfare and security require a policy on petroleum 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, therefore, should 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." (Page 19 of N.P.C. Policy)

"Continuing supply to meet our national oil needs depends primarily on availability from domestic sources. Due consideration should be given to the development of foreign oil resources, but the paramount objective should be to maintain conditions best

suited to a healthy domestic industry which is essential to national security and welfare." (Page 3 of N.P.C. Policy)

"Details of policy relating to production, refining, distribution, and utilization of oil become academic, however, unless provision is made to assure that this oil will be found and brought to the surface. The promotion of new discoveries, therefore, must be the primary consideration of national policy." (Page 6 of N.P.C. Policy)

"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." (Page 17 of N.P.C. Policy)

"It is clearly in the interests of national security that peacetime conditions which encourage the development of available reserves by private industry should be promoted. An active program of exploration by the industry is essential." (Page 20 of N.P.C. Policy)

"A large expansion of reserves can be attained by the active development of foreign sources of supply, particularly those tributary to offshore requirement areas." (Page 21 of N.P.C. Policy)

At our last meeting the Committee authorized the appointment of a Statistical Subcommittee for the purpose of preparing a factual study and agreed to reserve to the main Committee the job of making an economic analysis of such factual study as to the effect of

imports on the domestic industry, the domestic economy and the national security.

The Statistical Subcommittee has completed its work and made a report, a copy of which has been furnished to each of you. In studying this report it should be kept in mind that two limitations were placed upon the members of the Statistical Subcommittee: first, the Subcommittee was directed to refrain from making any forecast; and second, to refrain from making any economic analysis of the factual information assembled by the Subcommittee. Although the Subcommittee made no summary of its work, in transmitting the report to you on October 12th, I attempted to set forth in general terms a brief statement of what appeared to me to be the findings of fact made by the Subcommittee.

It now appears that our Committee has two questions to consider and answer: first, based upon the factual information supplied to us by the Statistical Subcommittee, what have been the economic effects of petroleum imports upon the domestic industry, the domestic economy and the national security; second, what are the future trends of petroleum imports, within a reasonable foreseeable period of time, and what may be the economic effects of such imports on the domestic industry, the domestic economy and the national security?

In studying the National Petroleum Policy Report it seems to me that before we can determine whether past and current imports have been in accord with policy provisions, it will perhaps be necessary for us to agree upon the meaning and application of

certain terminology used in the pertinent provisions of the Policy Report, as: "the needs of this nation", "together with other pertinent factors", "supplement our oil supplies", "supplement our domestic supplies", "our offshore requirements", "our national oil needs", "availability from domestic sources", and "our economic needs".

At present, however, I would like to suggest that we take up the report of the Statistical Subcommittee and determine whether or not all of the factual data necessary for our consideration has been furnished or if it will be necessary to request additional information.

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October 12, 1949

TO MEMBERS OF THE NATIONAL PETROLEUM COUNCIL COMMITTEE ON PETROLEUM IMPORTS:

Gentlemen:

I herewith enclose a copy of the report of the Statistical Subcommittee on Petroleum Imports for your study and consideration in connection with a meeting of your Committee that has been called for October 23, 1949, in Washington, D. C.

The Statistical Subcommittee to the National Petroleum Council Committee on Petroleum Imports was appointed to develop basic statistics relative to the import of crude petroleum and petroleum products as they relate to the petroleum industry, the domestic economy and the national security. In compliance with this, the Subcommittee investigated various sources of information relative to imports and exports of crude petroleum and petroleum products and has summarized its factual observations on such data in the attached report. There were several cases where exact statistics were not available. The Statistical Subcommittee, in such cases, agreed upon reasonable approximations. A complete explanation of sources and bases for approximations is contained in the appendix to the report.

The following summary has been especially prepared for the main Committee to aid in your interpretation of the Subcommittee report. My comments do not necessarily represent a summation of the views of the members of the Subcommittee, although it is based on the written words of the Subcommittee.

Petroleum imports as reported by the Bureau of Mines and Department of Commerce include all petroleum entering the United States except for foreign oil in transit to another country, as in the case of the Portland-Montreal pipe line. Residual fuel brought in in bond for bunkering vessels engaged in foreign trade, bonded imports of crude oil for processing and export of resulting products, and imports by the military in addition to the normal commercial imports are all included in the reported data. A parallel structure on petroleum products moving out of this country does not exist in the reported data by the Bureau of Mines. Commercial transactions are reported by the Bureau of Mines as an "export". Military off-shore requirements are included as a part of domestic demand by the Bureau of Mines. Fuel used in bunkering ships engaged in foreign trade is likewise classified as a portion of

domestic demand. The results of a comparison of imports as reported with movements of petroleum out of this country depend to a large extent upon the definition of exports. The Subcommittee was not charged with the responsibility of defining exports. It is a factual observation, however, that the comparison between imports with exports, according to any one of the three possible definitions representing movements out of the country, has reflected a changed condition in the post-war period wherein the inflow of petroleum represents a growing amount relative to the outflow.

The preponderance of imports during the post-war period is primarily crude oil and residual fuel oil. Crude oils have originated largely from Western Hemisphere sources, with an increasing portion coming from the Eastern Hemisphere. Western Hemisphere crudes brought into the country are partly specialty crudes and heavy crude for residual fuel production.

The Subcommittee, in its effort to reveal the significance of imports on the domestic petroleum industry, has shown the relationship of total imports as a percentage of total petroleum supply and as a percentage of total demand for a series of years. These tables reveal that current percentage of imports to new supply do not constitute a new high in the experience of the industry, but are substantially below the percentage shown for 1919-1924 inclusive. The current percentage, however, is at a higher ratio than existed pre-war after the discovery of the East Texas field. A comparison is also offered concerning the value of imports versus the value of commercial exports. Because of the nature of imports being largely raw products and residual fuel and the nature of our off-shore movement being, to a large extent, highly refined products and higher priced crudes, the export value to the industry is considerably greater than the value of imports.

Imported crude may be interpreted as having a bearing upon industry development in the form of new exploratory efforts and the discovery and development of additional domestic reserves. For this reason, the trends of wells drilled, footage drilled, and stripper well data are summarized in tables and charts.

Domestic production represented approximately 80% of maximum efficient productive capacity in 1940-1941. The Subcommittee has assumed that the industry produced at maximum efficient capacity during 1948 and anticipates that during the year 1949 will produce at 89% of the estimated maximum efficient productive capacity.

No statistical data are presented concerning imports and the national economy except with respect to the significance of petroleum in international trade. The ramifications of such an assignment are so tremendous in number that this did not appear feasible. The Subcommittee did point out the relationship between imports of

petroleum products and total imports into the nation, and a similar comparison with respect to exports. This comparison was predicated upon dollar value. The foreign trade of the petroleum industry constitutes an important segment of our international trade.

The Subcommittee was asked to regard the significance of imports of petroleum upon national security. In an attempt to meet this request it has shown the origin of imports broken down between Western Hemisphere and Eastern Hemisphere sources. This line was adopted by your Subcommittee because Admiral Biggs, in a recent testimony before the House Small Business Committee, stated that the question of national security as regards petroleum involved the entire Western Hemisphere. Accordingly, the examination of this subject resulted in an inclusion of imports, exports, demands, productive capacity, etc., for the entire Western Hemisphere. In round numbers it may be said that in 1948 Western Hemisphere production exceeded the actual consumption in the area by a million barrels daily.

The Subcommittee report attempts to bring out such factual material as is available on the various questions raised by its assignment and by members of your Committee at its first meeting. The subject is covered with a reasonably comprehensive treatment and throughout the presentation, the statements are limited to those of a factual nature as seen by the members of the Subcommittee. The Subcommittee report does not discuss economic implications of the conditions portrayed, since such interpretations are the responsibility of the Committee on Petroleum Imports.

Accordingly, I would request that each member study these facts carefully and be prepared to discuss the economic significance thereof on October 23. Such an evaluation will of necessity constitute the primary substance of our report to the National Petroleum Council.

Upon review of these data, the Committee on Petroleum Imports may decide that additional factual information on specific points is needed. If information on such points is available, the Subcommittee will attempt to bring such information together for your review.

Sincerely,

F. M. Porter

F. M. Porter, Chairman
Committee on Petroleum
Imports

REPORT OF STATISTICAL SUBCOMMITTEE
TO
NATIONAL PETROLEUM COUNCIL COMMITTEE ON IMPORTS

U. S. Imports Of Crude And Products - Charts I and Ia, Tables I, Ia and Ib

Petroleum imports, as reported by the Bureau of Mines and Department of Commerce, include all petroleum entering the United States, except for foreign oil in transit to another country as in the case of the Portland/Montreal pipeline. Some oil is brought into East Coast ports in bond (no duty paid) for bunkering of vessels engaged in foreign trade. Such imports, bonded imports of crude oil for processing and export of resulting products, and imports by the military, in addition to normal commercial imports, are all included in the reported figures.

Imports during the first 6 months of 1949 have been as follows: (Thousands of Barrels Daily)

	Military	Bonded	Duty Paid	Total
Crude Oil	-	-	427	427
Residual Fuel	16	70	81	167
Other Products	1	-	7	8
Total	17	70	515	602

Imports consist primarily of crude oil and residual fuel oil. They take place principally on the East Coast. However, some crude oil has been and is presently imported into Gulf Coast refineries. During 1949 a small amount of light crude oil has been imported into West Coast refineries. All commercial residual imports take place on the East Coast.

"Other Products" imported are of small and diminishing importance. During the first six months of 1949 they represented 1.3% of total imports and consisted of:

	B/D
Gasoline and Kerosine	-
Distillates	3,700
Asphalt	2,700
Unfinished Oils	1,400
Total "Other Products"	7,800

Crude oil imports originated entirely from Western Hemisphere sources until 1947. In that year, crude imports from the Eastern Hemisphere averaged 6,000 barrels daily; in 1948, 63,000 barrels daily; and in 1949, an estimated 92,000 barrels daily.

Crude oils from Western Hemisphere sources are partly specialty crudes and heavy crude for residual fuel oil production. The crude oil imports considered to be specialties - for production of certain grades of asphalt, low cold test lubricating oils and wax - were estimated by the Subcommittee to be about 64,000 barrels daily during 1948 and 1949. The heavy crude oils (under 20° API) imported during the first six months of 1949 principally for residual fuel oil manufacture, were estimated to be approximately an additional 16,000 barrels daily. These two types of crude oil imports represented 19% of total crude oil imports in the period and 26% of the crude oil imports from Western Hemisphere sources.

The imports of heavy crude for residual production are, in effect, an importation of residual fuel oil. The amount of this crude in relation to residual as such which is imported, varies with the availability of foreign refining capacity to convert it into residual for importation.

Prewar, there were cases of crude oil imported in bond with the resulting products shipped export and used for foreign trade bunkers. Under present conditions this is not usually an economical procedure. Therefore, no in-bond crude refining has taken place in postwar years. It is usually more economical to ship foreign crude oil to East Coast ports, pay the 10.5¢ per barrel duty, and export equivalent products from the Gulf Coast, than to import crude to the Gulf Coast and refine in-bond. The in-bond operation would save 10.5¢ per barrel duty payment but would involve added transportation cost of about 18¢ per barrel (Sept. 1 tanker market rates), resulting in a net overall loss of 7.5¢ per barrel. In addition to the financial saving resulting from more efficient use of transportation, the annoyances and inefficiencies of in-bond refining operations are also eliminated. These are the reasons why foreign crudes imported for processing in the United States to supply foreign product markets (because of inadequate foreign refining facilities) do not show up in the statistics as in-bond refining.

A large amount of residual fuel oil, and a very small amount of heavy marine Diesel, are imported to the East Coast in-bond to supply bunkers for vessels engaged in foreign trade. During the first six months of 1949 such bonded imports averaged 70,000 barrels daily and 100 barrels daily, respectively. There is, in addition, a considerable amount of residual imported, duty paid, to the East Coast and used in domestic onshore trade. At the same time bunkers for vessels in foreign trade are supplied at Gulf Coast ports (36,800 barrels daily first six months 1949) from domestic residual sources. Some of these bunkers were sold by companies importing residual duty paid on the East Coast, and to that extent could have been supplied in-bond, duty free, with the foreign residual imported, duty paid, on the East Coast, for onshore consumption. If this had been done, imports in-bond would have been increased proportionately, while imports, duty paid, would have shown a proportionate decrease. Here again the reason why imports were brought in duty paid, rather than in-bond for supplying offshore consumption, was the transportation saving involved in shipping foreign residual to East Coast ports vs. Gulf Coast ports. This saving is about 20.5¢ per barrel. Therefore the saving in using foreign residual on the East Coast to release domestic residual supplies for foreign trade bunkers on the Gulf Coast is 10¢ per barrel net after paying the import duty.

"Exports" - Total "Offshore Movements"

Total petroleum movements offshore are reported in three classifications by official sources:

1. "Export", as reported by the Bureau of Mines. These consist of commerical exports of crude and products.

2. "Military exports", as reported by the Armed Services. These consist of offshore shipments of products from the U. S. by the Armed Services for foreign consumption. They include products for foreign civilian use in occupied areas abroad as well as products to be used by the Armed Services abroad. These movements are referred to in the charts as "Military Offshore".

3. "Foreign trade bunkers", as reported by the Department of Commerce. These consist of bunkers supplied in U. S. ports to vessels engaged in foreign trade and in trade to non-contiguous U. S. territories. They do not include bunkers for vessels in U. S. coastwise trade. Such bunkers are included by the Bureau of Mines in the same category as intercoastal and inland waterway bunkers and are included in onshore demand figures.

Items 2 and 3 are reported by Bureau of Mines as a part of domestic demand.

Offshore movements take place principally from East Coast, Gulf Coast, West Coast and Great Lakes ports. During the first six months of 1949 the offshore movements were:

Reported By		B/D
Bureau of Mines	Commercial Exports- Crude	86,000
	- Products	272,000
	Total Bureau of Mines "Exports"	358,000
Armed Services	Military Exports - Products	70,000
Department of Commerce Foreign Trade Bunkers-Products		164,000
Total Offshore movements of Crude & Products		592,000

Crude oil exports move principally to Canada by pipeline and Great Lakes tankers with some movement by ocean tanker from the West Coast. Other crude oil exports are principally specialty crudes to Europe and South America.

Almost all of the commercial product exports take place on the Gulf Coast and, to a lesser extent, on the West Coast. The same applies to military exports. The latter exports were insignificant in volume prewar and, prior to the war, whatever small amount of military exports took place is not included in the export figures, but shows up in the on-shore demand.

Foreign trade bunkers are supplied at East Coast, Gulf Coast and West Coast ports. During the first six months of 1949, they consist of residual fuel oil (147,000 barrels daily) and marine diesel oil (17,000 barrels daily).

U. S. Imports - "Exports", Military Offshore, And Foreign Trade Bunkers - Charts II and IIa, Tables Ia, II and IIa

Data in tables Ia II & IIa and as portrayed by Charts II and IIa permit comparisons to be made between the flow of petroleum into this country or out of the country. The net comparison shown by the statistics, however, depends upon the definition of terms used.

1. A comparison of imports with commercial exports as reported by the Bureau of Mines reveals that imports did not exceed exports from 1922 until 1948. In 1948, imports exceeded commercial exports by 144,000 barrels daily and, by 245,000 barrels daily during the first six months of 1949.
2. The Bureau of Mines reports Military off shore requirements as a portion of Domestic Demand. Such requirements amounted to 92,000 barrels daily during 1948 and are averaging approximately 70,000 barrels daily in 1949. There is no question but that such requirements are shipped out of this country for consumption on foreign soil and at U. S. overseas bases. If included as an export for purposes of drawing comparisons with imports, imports exceeded such exports by 52,000 barrels daily in 1948 and by 175,000 barrels daily in 1949.
3. The net relationship of the comparison of inflow and outflow of petroleum in the third case depends upon the classification of foreign trade bunkers. This volume is made up of bunker fuel sold ships in American ports to fuel shipments to foreign ports. It does not include bunker fuel for ships plying from one American port to another. In the minds of some, such foreign trade bunkers are similar to exports while, in the minds of others,

these bunkers are a Domestic Demand. The Bureau of Mines classifies such sales as a part of Domestic Demand. Foreign trade bunkers amounted to 167,000 barrels daily in 1948 and are running approximately 164,000 barrels daily in 1949. These figures include about 70,000 barrels daily of bunker fuel brought in "in bond" and moved almost immediately to foreign trade bunkers. These bonded receipts are classified by B. of M. as "Imports" and are included by them in Domestic Demand. If foreign trade bunkers are included with exports to evaluate the net comparison between inflow and outflow, then imports were 115,000 barrels daily less than exports so defined (total off-shore movement) in 1948 and are slightly exceeding exports during 1949.

The Statistical subcommittee is not charged with a choice between these definitions. It is a factual observation, however, that the relationship of imports with exports according to all three of the totals representing movements out of the country, represents a changing condition wherein the inflow represents a growing amount relative to the outflow.

Imports --Total Petroleum New Supply - Table I

Table I shows imports as a percent of total petroleum supply (domestic production of crude oil and natural gas liquids plus imports of crude oil and products).

In 1921 imports reached their highest point in relation to total supply - 21 percent. The low point reached in peacetime was in 1938 - 4.1 percent. Over the 30-year period 1919 - 1948 imports averaged 7.2 percent of total petroleum supply. During the ten years prior to World War II the relationship averaged 5.1 percent. Postwar, imports averaged 8.0 percent of total supply in 1948 and

9.8 per cent during the first six months of 1949. During the prewar period 1919-1941 imports averaged 8.0 per cent of total petroleum supply. In the period prior to 1934 the per cent was 10.6, while in the period 1934-1941 inclusive it was 4.9 per cent.

The relationship to total demand is very similar to that of imports to total supply.

FOB Dollar Value Of U. S. (Petroleum) Imports And Commercial Exports - Chart III
Table III

The value of imports has always been lower than the value of commercial exports alone excluding military exports and foreign trade bunkers for which statistics on value are not available. This is shown on Chart III.

Such a situation is to be expected when considering the kinds of petroleum imported and exported. Imports consist almost entirely of crude and residual fuel. In addition the crude oil imported is, on the average, of considerably lower quality than the crude exported. Residual fuel has a lower market value than crude. Exports, on the other hand, include considerable volumes of highly refined products of relatively high market value such as aviation gasoline, motor gasoline, lubricating oils, wax, etc.

In examining the nature of 1949 imports and exports it may be said, roughly, that residual imports will be balanced by offshore movements of residual. Approximately 100,000 barrels daily of crude oil imports balances a like amount of crude oil exports. The remaining net crude oil imports of about 325,000 will be offset by offshore movements of some 300,000 barrels daily of products all of which have a value greater than crude oil. It may be seen by inspection, therefore, that the value of offshore petroleum movements will exceed the value of total imports in 1949 by an appreciable margin.

Table III presents the relationship of total petroleum imports and commercial exports with the foreign trade of all commodities.

U. S. Demands And Total Domestic Production (Crude & Products) - Charts IV and IVa Tables I, II & IIa

Chart IV shows the various demand figures - total demand, "domestic demand" (as reported by Bureau of Mines) and "onshore demand" (including coastwise bunkers) - for the years 1919 through 1949. During the war period some of the detailed statistics were not on a comparable basis to the prewar and postwar periods and, therefore, have been omitted from the chart. The "onshore demand" in the war period is partly estimated using data from reports of the Petroleum Administration for War. The accuracy of these wartime "onshore demand" figures is believed to be within plus or minus 3%.

Domestic production figures are superimposed on this demand chart to show their relationship to the various demands displayed.

Total Demand and domestic production in 1949 are over five times as large as they were just after the first World War in 1919. Also, during the last decade these items have increased at about the same rate. Since the 1929-1933 depression, production has declined from the previous year's level only three times: 1938, 1942 and 1949. While the 1949 domestic production (partly estimated)(a) is 5-1/2% lower than the peak year 1948 it is 11-1/2% higher than the peak war year, 1945.

During the past thirty years domestic production has never exceeded total demand. On the other hand, it has always exceeded domestic onshore demand until 1949.

Comparisons of domestic production are often made with "domestic demand" as reported by Bureau of Mines, which is total demand less the commercial exports. This comparison shows that domestic production has exceeded or approximated "domestic demand" except during 1949. This year domestic production is shown as

(a) See appendix for basis of calculating full year 1949.

277,000 barrels daily (4.7%) less than "domestic demand".

In 1948 domestic production exceeded "domestic demand" by 147,000 barrels daily (2.5% of domestic production) and exceeded domestic onshore demand by 406,000 barrels daily (6.8% of domestic production). During 1948, a record high stock accumulation took place - 291,000 barrels daily - equivalent to 4.9% of domestic production. This large stock accumulation during 1948 was an important factor influencing production during 1949 which declined 321,000 barrels per day from 1948. Indications are that there will be little if any stock change during 1949.

Chart IVa shows the same relationships as Chart IV but for 1946-1949 by quarterly periods.

Domestic production during the postwar period has exceeded domestic "onshore demand" in every quarter except the first quarter of 1947 and third and fourth quarters of 1949. This chart also shows the seasonal nature of the postwar demand. That is, the demands in the winter quarters are considerably higher than the demands in either the preceding or subsequent summer quarters.

The effects of the wide difference in weather during the past three winters may be seen by a comparison of seasonal domestic "onshore demand" increases:

	1946/47	1947/48	1948/49
4th Qtr. demand vs average of preceding 2nd & 3rd Qtr. demands	+10.6%	+13.5%	+ 6.9%
1st Qtr. demand vs average of preceding 2nd & 3rd Qtr. demands	+16.0%	+15.5%	+ 6.9%

If the "onshore demand" during the six months of last winter had increased seasonally in the same relationship as in the preceding winters - i.e., 13.8% above the average of 2nd and 3rd Quarters of 1948, the demand for this past winter period would have been about 67 million barrels (370,000 barrels daily average) higher than actually occurred.

While the sub-committee does not feel that this difference between a reasonable projection of demands and actual demands, which the industry should have been prepared to meet, can be attributed entirely to the unpredictable warm weather of the 1948/49 winter, it was the principal factor involved. This is an excellent example of the large unpredictable changes which can occur in demands.

Total Crude Oil Demand In U. S. Domestic Crude Oil Production And Efficient Productive Capacity - Chart V

Data on estimated efficient domestic crude oil productive capacity are not available before 1940. It is generally recognized that, before state conservation laws were passed, and before underground reservoir behavior was as well understood, there were periods when domestic production exceeded efficient productive capacity as it would be defined with present knowledge.

The estimated efficient productive capacity figures shown on Chart V were obtained as follows:

1940 - 1945 inclusive - Report of Petroleum Administration for War.

1946 - 1947 " - Arbitrary straight line projection from 1945 to 1948.

1948 - Actual production (the sub-committee agreed that, for practical purpose, 1948 production corresponded with maximum efficient productive capacity).

1949 - A range between the average and upper range estimates of the A.P.I. Sub-Committee on Long Term availability (McCollum Committee) given in the report to A.P.I. in November 1948. The Statistical Sub-Committee is of the opinion that, in view of the high level of drilling activity in the last half of 1948 and first six months of 1949, it is reasonable to assume that the 1949 efficient productive capacity is between the ranges used; 5,760,000 barrels daily to 5,850,000 barrels daily. Such capacities are 251,000 barrels daily to 341,000 barrels daily above the 1948 efficient capacity. As a check

on these estimates the Sub-Committee noted that actual production increased 347,000 barrels daily between the fourth quarter of 1947 and fourth quarter of 1948 during which period there was little, if any, shut in efficient production.

Chart V shows actual crude oil production in relation to these productive capacities, both in barrels daily and as a per cent of productive capacity.

In the prewar years 1940 and 1941 domestic production was 78% and 81% of efficient capacity. In the peak war year - 1945 - production was slightly above efficient capacity. In the postwar years production was somewhat above 97% in 1946 and 1947 and 100% of efficient capacity in 1948. Estimated 1949 production averages about 89% of efficient capacity. However, there was a wide variation during the year. In the second quarter production was about 85% of the 1949 capacity estimates and will be higher in the fourth quarter. The comparisons are shown in the following tabulation:

(Thousands of Barrels Daily)

Year	Total Crude Oil Demand	Crude Oil Prodn.	Efficient Productive Capacity	Excess Capacity	% Production Of Capacity
1940	3,746	3,697	4,745	1,048	77.9
1941	4,028	3,842	4,756	914	80.8
1942	3,865	3,799	4,734	935	80.2
1943	4,139	4,125	4,688	563	88.0
1944	4,765	4,584	4,638	54	98.8
1945	4,904	4,695	4,579	- 116	102.5*
1946	4,971	4,751	4,889	138	97.2
1947	5,354	5,088	5,199	111	97.9
1948	5,792	5,509	5,509	0	100.0
(1949 - Average	(5,565	(5,156	(5,760	(604	(89.5
(" - Upper Range	(5,565	(5,156	(5,850	(694	(88.1

* Indicates excess production over Maximum Efficient Rate.

Chart V also shows total crude oil demand in the U. S. since 1940. In every year during this period, total demand for crude oil was higher than domestic production and demands were met by importations. The difference in favor of demand

ranged from a low of 14,000 barrels daily in 1943 to an estimated 409,000 barrels daily in 1949. During the period 1944-1948 inclusive total crude oil demand exceeded estimated efficient productive capacity from a minumum of 82,000 barrels daily in 1946 to a maximum of 283,000 barrels daily in 1948. In 1949, total crude oil demand was less than the upper range of efficient productive capacity by an estimated 285,000 barrels daily.

Total New Supply And Annual (Average) Total Demand - Chart VI

Because of the seasonal nature of petroleum product demands, and the influence of additions and withdrawals from stocks on production, the relationship of supply to demand in short-term periods is often difficult to visualize. In Chart VI total new supply (Domestic production of crude oil and natural gas liquids plus total imports) is plotted by quarterly periods in the postwar years against the annual average total demand for those years.

This chart shows that total supply was less than the annual average demand for the corresponding year in the first quarter of 1946, the first and second quarters of 1947 and the second and third quarters of 1949.

The industry emerged from the war with depleted stocks which proved to be inadequate to provide the flexibility needed to avoid spot shortages in meeting the greatly increased postwar demands. The low supply relative to demand in early 1947 prevented a needed increase in stocks during that year. In 1948, therefore, it was necessary to increase supply, not only to meet increasing demands, but also to rebuild stocks to flexible working levels. This required maximum efforts on the part of the industry and involved maximum possible imports in addition to maximum efficient domestic production. The required stock buildup as well as the required new supply relative to demand was achieved before the end of 1948.

The chart shows that in accomplishing this dual objective - meeting demands plus rebuilding working stocks - total supply reached a level in the fourth quarter

of 1948 which was 548,000 barrels daily above the average 1948 total demand level. Furthermore, this supply was 452,000 barrels daily above the subsequent average 1949 total demand. The reaction of this oversupply situation relative to average demands is seen in the second and third quarters of 1949. In these periods total supply fell far below the average 1949 total demand.

Normally the second and third quarters are periods of large stock accumulations of products. However, the bulk of the 1949 summer stock accumulation took place, in effect, in the fourth quarter of 1948 and first quarter of 1949. This inflated the demand for crude oil in the earlier periods and deflated the demand for crude in the Spring and Summer of 1949.

Product stock levels regained a more normal seasonal relationship to demand at the end of the third quarter of 1949. As a result of this, the estimated total supply shown for the fourth quarter of 1949 bears a more normal relationship to demand than in the prior quarters of 1948 and 1949.

Drilling Activity In The U. S. 1925-1949 - Chart VII to VIIc

Chart VII shows the historical and current trends in wells drilled, broken down into dry holes, gas wells and oil wells. 1948 was a record high year in this activity. The first and second quarters of 1949 are higher than similar quarters in 1948. However, projections for the remainder of the year, based on survey questionnaires of the Oil and Gas Journal, indicate that wells drilled in the last half of 1949 will be less than those drilled in the last half of 1948. For the year as a whole, the actual plus estimated figures indicate that 1949 activities will be slightly less than in 1948.

Chart VIIa, Value of U. S. Crude Oil Production And Footage Drilled 1925-1949, shows an excellent prewar correlation between value of crude production (price times volume) and footage drilled. The governmental wartime restrictions on drilling eliminated any possible theoretical or actual correlation during the war years.

In the postwar years there is no correlation except in direction when using actual dollar value. This is because the yardstick, dollars, was changed by inflation. When a constant purchasing power dollar basis is used the postwar correlation is closer to prewar.

Chart VIIb, Value of U. S. Crude Oil Production And Dry Holes Drilled, 1925-1949, shows a similar relationship between value of production and number of dry holes drilled, which was used as the best available indication of exploratory effort.

Chart VIIc, Footage Drilled In The U. S. And Total Additions To Proved Reserves, 1925-1949, shows the historical relationship between footage drilled and additions to proven reserves (as reported by A.P.I.). Last year (1948) was a record one for both.

National Stripper Well Survey - Table IV

The following tabulation shows a summary of the latest information on production, number of wells, reserves, etc. in the stripper well classification. These data may be used to determine relationships between stripper wells and the total producing industry.

	1947	1948
No. of Stripper Wells - January 1st	291,979	294,672
Abandonments	7,522	
Estimated Reserve - January 1st (M Bbls.)		
Primary Reserves	3,449,289	3,290,598
Probable Secondary	4,575,393	4,546,725
Total	8,024,682	7,837,323
Productive Field Acreage	2,625,427	2,651,409

Production From Stripper Wells:

1946	775,000 b/d
1947	766,000 b/d

The source of the information on Table IV (attached) is from a survey made for the Interstate Oil Compact Commission, which points out that these stripper well

reserves "are producible only under favorable economic conditions and that the maintenance of these conditions is of primary importance to the petroleum industry in the discharge of its national responsibility to maintain sufficient supplies for peace and wartime activities."

Residual Fuel Oil

Description Of Product And Uses:

Residual fuel oil is the product remaining after removal of the lighter products from crude oil. It is usually 10° A.P.I. to 15° A.P.I. gravity and some goes below this range. It is used principally as shown in the following table. It is not suitable for use in home heating.

	1941		1947*	
	M Barrels Daily	% Of Total	M Barrels Daily	% Of Total
Ships Bunkers				
Foreign Trade	56	5.3	176	12.4
Domestic	99	9.4	103	7.3
Gas & Electric Power Plants	92	8.8	167	11.7
Railroads	221	21.0	267	18.8
Smelters, Mines & Mfg. Plants	214	20.3	315	22.2
Heating Oil	128	12.2	155	10.9
Military & Other Uses	240	23.0	238	16.7
Total	1,050	100.0	1,421	100.0

* Latest available by uses from Bureau of Mines.

Competition From Other Fuels And Market Outlets:

Many of the onshore market outlets for Residual Fuel can also be supplied by such fuels as Natural Gas, Bituminous Coal or Diesel Oil. A major postwar development has been the rapid replacement of oil burning steam locomotives by Diesels. The relative efficiency of the latter is so great as to overcome the

large difference in price per gallon between residual and Diesel oils. The effects of this competition with residual, which is mostly felt in inland areas and the West Coast are illustrated by the following table showing quantities consumed.

(Thousands of Barrels Daily)

	1941	1948
Railroad Residual	221	247
Railroad Diesel	8	82

Note: The above increase in use of Diesel fuel by the railroads, if supplied by residual, would have required over 300,000 barrels per day.

In the areas adjacent to large natural gas fields in the Southwest, residual fuel finds very little outlet in stationary installations. Natural Gas at 15¢ per thousand cubic feet delivered to the user is equivalent to about 87¢ per barrel for residual fuel oil delivered to the fuel user. Natural Gas is available at the above indicated price or less over a wide area in the Gulf Coast and Central States, and has a direct bearing on the value of residual fuel oils to the refiner.

The great postwar development of large diameter pipelines, resulted in relatively low cost competition in the large fuel markets --- the Great Lakes and California --- and this competition is developing on the East Coast. This development in natural gas transportation is now reducing the outlet for residual in these large fuel markets. It is also creating a competitive limit on the market price of residual which is even lower, in many areas, and for many uses, than the limits imposed by market prices of bituminous coal.

The spread between crude prices and residual prices has widened greatly in the past year. Residual price on the East Coast (the principal consuming area) is of necessity related to price of its principal competition - bituminous coal.

For a comparison of residual fuel and bituminous coal prices at certain East Coast ports refer to Chart VIII.

The postwar trends in these prices have been as follows:

Eastern Seaboard Prices

Year	#6 Fuel Oil ¢ Per Gal.	#6 Fuel Oil Index (1935-39 100)	Bituminous Coal $ Per Ton	Bituminous Coal Index (1935-39 100)
1935-39 Avg.	2.62	100	5.32	100
1946	4.22	161	7.26	136
1947	5.33	203	8.35	157
1948	7.17	274	9.55	180
1949(7 Mos. Avg.)	4.57	174	10.00	188

It thus can be said that in normal refinery operation, and therefore for the industry as a whole, residual fuel is a by-product; either because the price received for it is less than the cost of the crude oil required in its production, or because the alternate utilization of residual for further processing into other products would result in a greater revenue to the refiner.

Residual Fuel Yield from (Refinery) Crude Runs* - Chart IX
Table V

There has been an almost continuous decline in the refinery yields of residual fuel over the last several years; even prewar. In the postwar years this decline has been accelerated in the area East of California. This has been furthered by the availability of catalytic cracking equipment capable of efficiently cracking the heavier distillates obtained from vacuum distillation, and other methods used to produce the maximum possible distillates from residual.

The postwar trend in the yield of residual fuel oil in the area East of

* The West Coast figures for 1949 have been adjusted to the pre-1949 reporting basis in order that the chart will show comparable changes.

California has been as follows:

Year	% Yield From Crude
1946	21.6
1947	21.4
1948	20.1
1949 - 1st Qtr	19.7
2nd Qtr	17.5

The spread between crude oil costs to the refiner and competitive values of residual in the large fuel markets, has provided incentive for the installation of such costly refinery equipment in order to lower the yields of residual, and to increase the yields of more valuable products. The relative value of the other products of crude and the total value of refinery output have also tended to reduce the production of residual fuel.

Residual Fuel Imports - East and Gulf Coast Demands and Supply - Table VI and Chart X

Residual imports take place almost entirely on the East Coast. The sources of residual for the East Coast are (1) the refineries of the Gulf Coast and East Coast refining districts, (2) imports - principally from Caribbean refineries, (3) supplies by tanker from California from time to time. Very little residual from inland areas finds its way into the Gulf/East Coast markets because of the high costs of transportation of residual by rail. Conversely very little residual from the Gulf/East Coast finds its way into inland areas for the same reason. This factual statement should not be interpreted as implying that there is no economic relation between these areas.

Residual imports into the Gulf/East Coast area were 167,000 barrels daily during the first six months of 1949. Commerical exports were 9,000 barrels daily and foreign trade bunkers were 116,000 barrels daily - a total offshore movement of 125,000 barrels daily from this area, exclusive of military offshore for which area data are not available.

About 42,000 barrels daily of imported residual, therefore, on an overall industry basis, was used for onshore purposes. During the same period, 47,000 barrels daily were withdrawn from residual stocks in the area. Thus, domestic

production of residual was around 89,000 barrels daily short of the onshore requirements. Furthermore, domestic production was 214,000 barrels daily short of total demand (167,000 b/d imports plus 47,000 b/d stock draft).

Chart X reflects both the relationship of domestic supplies to various demands, and imports to commercial exports and foreign trade bunkers. It will be noted that the East and Gulf Coasts areas are not large commercial exporters of residual fuel. What commercial exporting has been done from East Coast and Gulf Coast ports traditionally has been to nearby foreign ports. On the other hand, the major portion of the U. S. foreign trade bunkering takes place in this area. During the first six months of 1949 bonded fuel oil imports were 42% of total residual receipts from abroad, and this portion of imports was transferred almost immediately to bunkers of ships engaged in foreign trades. This volume of bonded residual accounted for roughly seven-eighths of all the foreign trade bunkers supplied vessels at East Coast ports. Such bunkering as took place at Gulf Coast ports, was supplied from locally produced residual.

Chart X also shows that residual fuel oil production at East and Gulf Coast plants has never** equalled the domestic demand (Bureau of Mines basis) for this product in these combined areas and has exceeded the "onshore" demand in only a few years. It will be noted, however, that during the first six months of 1949 locally produced fuel showed a sizeable deficiency when compared with the onshore demand.

** Since records are available.

* * * * * * * * *

World Petroleum Balance - Table VII

WESTERN HEMISPHERE

This table shows the interhemisphere movements of petroleum in 1938 and 1948. Last year, net exports from the Western Hemisphere (not including bunkers or military for which data on destinations are not available) were 523,000 barrels daily. Stock build-up in the Western Hemisphere was 339,000 barrels daily. Therefore, Western Hemisphere production during 1948 exceeded Western Hemisphere consumption by 862,000 barrels daily - plus an unknown amount of bunkers and military products shipped out of the Western Hemisphere for consumption in the Eastern Hemisphere (probable amount 100,000 - 150,000 barrels daily). In round numbers it may be said that in 1948 Western Hemisphere production exceeded the actual consumption in the area by a million barrels daily.

In 1938, net exports (excluding bunkers and negligible military shipments) from the Western Hemisphere to the Eastern Hemisphere were 732,000 barrels daily. There was a stock draft in this year of 4,000 barrels daily. Net bunkers and military movements out of the Western Hemisphere were probably 60,000 - 80,000 barrels daily. Therefore, production in 1938, in round numbers, was about 800,000 barrels daily greater than consumption.

The decrease in net commercial exports from 732,000 barrels daily to 523,000 barrels daily is significant as it indicates the postwar trend toward petroleum self-sufficiency in the Eastern Hemisphere.

Productive Capacity

During the second quarter of 1945, the peak war period, total petroleum production in the Western Hemisphere was 6,400,000 barrels daily. At that time production was about 300,000 barrels daily above maximum efficient productive capacity.

In the fourth quarter of 1948, the peak peacetime period, total petroleum production in the Western Hemisphere was 7,900,000 barrels daily - 1,500,000 barrels daily higher than the peak wartime quarter.

The present maximum efficient productive capacity of the Western Hemisphere is estimated to be 8,200,000 to 8,300,000 barrels daily.(1) The present capacity is therefore 2,100,000 to 2,200,000 barrels daily above the peak wartime productive capacity. It represents an average increase in productive capacity of more than 500,000 barrels daily each year, or 6 to 8% annually, for the past four postwar years. Also, the present productive capacity in the Western Hemisphere is 3,400,000 to 3,500,000 barrels daily greater than the actual production in this area during the first year of the war - 1942.

EASTERN HEMISPHERE

Petroleum production in the Eastern Hemisphere increased 734,000 barrels daily, from 1,362,000 b/d in 1938 to 2,096,000 b/d in 1948. At the same time, Eastern Hemisphere demands increased 458,000 b/d, from 2,029,000 b/d to 2,487,000 b/d. These data show that the increase in Eastern Hemisphere production has been sufficient to meet the increase in demands and at the same time reduce slightly the dependency, in petroleum, of the Eastern Hemisphere on the Western Hemisphere.

(1) This includes present productive capacity of Elk Hills Naval Reserve at 100,000 b/d. This Naval Reserve was producing in 1945 and its production is included in the 1945 figure. The total figure was obtained by adding together the maximum actual monthly production attained during the past 12 months for Canada, Venezuela and "Other Western Hemisphere" to U. S. at an industry capacity of 6,210,000 to 6,300,000 b/d. (Average and higher estimates of total petroleum capacity in McCollum report estimate for 1949.)

APPENDIX

Basis For Calculation Of Data For Last Six Months 1949

The Committee on Imports requested that figures be shown for the entire year 1949 in order that consistent annual figures would be available and to show the up-to-date situation. The Sub-committee was not to forecast but to use official estimates and bases from public sources.

The Sub-committee on September 8th decided on the following basis for the 1949 figures:

1. First Six Months - Bureau of Mines, where available, except for crude oil imports. For this figure, Department of Commerce reports were used.

2. Total Demand, commercial exports, and stock changes for the year 1949 - These were taken directly from the latest 1949 estimate published by the Bureau of Mines in August. The quarterly breakdown was adjusted slightly to reflect actual results in the first half of the year, which were not available when the Bureau published its annual forecast. Stock changes by quarters - for the third quarter, the difference between Bureau of Mines forecast demand and preliminary indications of New Supplies. For the fourth quarter, calculated balances to meet Bureau's annual forecast.

3. Imports of crude oil - July and August as indicated by A.P.I. refining reports and Bureau of Mines weekly stock reports for the weeks ending July 9th to September 3rd inclusive. September - December, as reported by importing companies to the Texas Railroad Commission.

4. Imports of residual fuel oil and other products - July - December the same as the average of the actual imports in June and July, as reported by the Department of Commerce. This is arbitrary. There are indications contained in an incomplete survey made by the State Department that the residual imports may be appreciably higher.

5. Military Exports - Average of the first six months assumed to be the annual average. These data were prepared by the Munitions Board and were published in the Oil and Gas Journal (July 28th).

6. Foreign Trade Bunkers - Average of the first six months assumed to be the annual average. These data are published in the Bureau of Mines Monthly Report and by the Bureau of Census.

7. Natural Gasoline Production - As estimated by Bureau of Mines in their August forecast for the year.

8. Domestic Crude Oil Production - Year 1949 - The Bureau of Mines forecast of Total New Supply was used as a base. From this total was deducted their estimate of Natural Gasoline production and the Sub-committee's assumed import total (previously detailed). The resultant figure indicates required crude production to meet the Bureau's estimated supply.

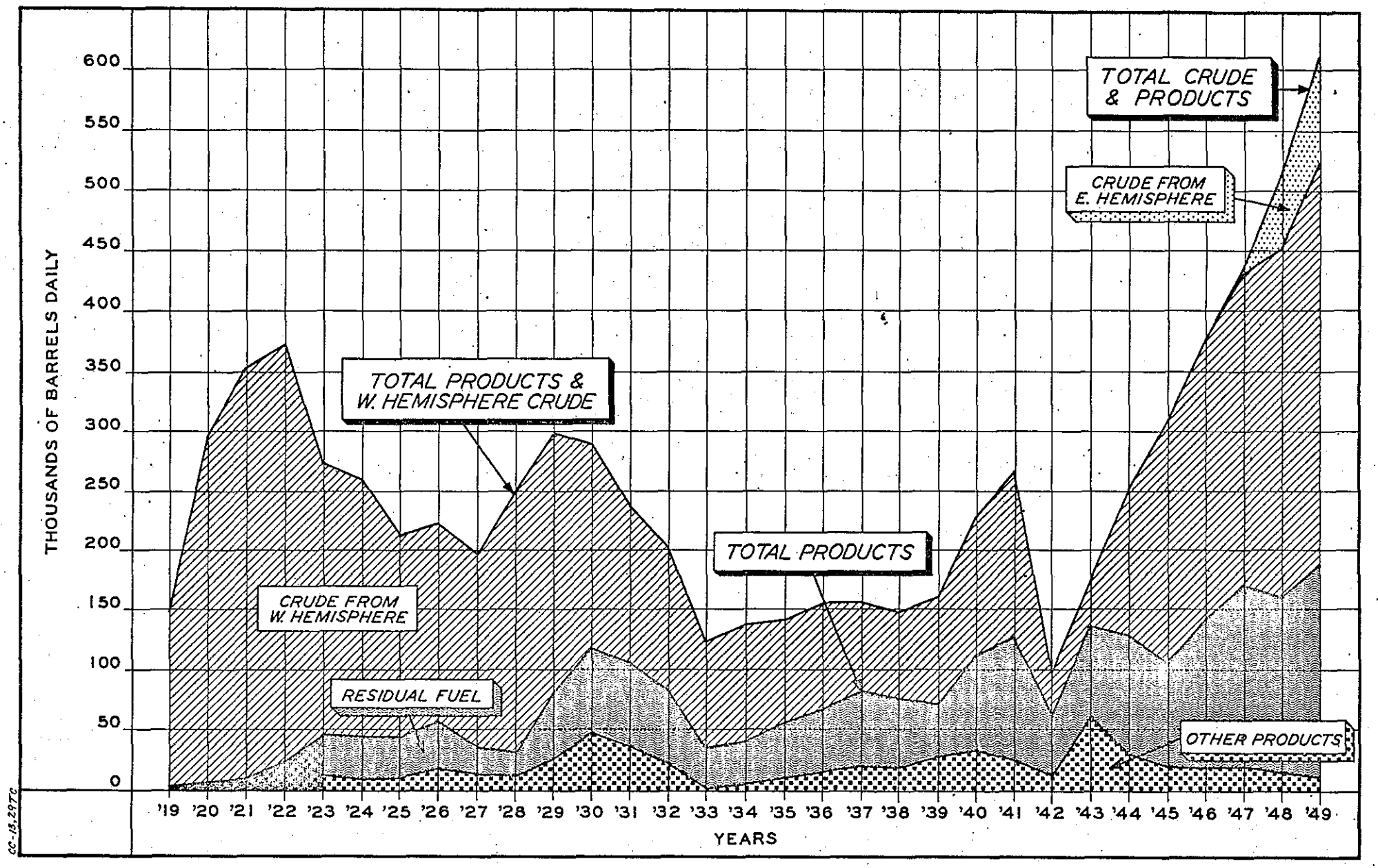
Assumed producing levels for the third quarter of the year are A.P.I. indications for July and August plus an added 150,000 barrels daily for September to reflect higher State Allowables for that month.

Assumed levels for the fourth quarter were calculated balances.

CHART I

U. S. IMPORTS OF CRUDE AND PRODUCTS BY PRODUCTS

ANNUALLY 1919–1949

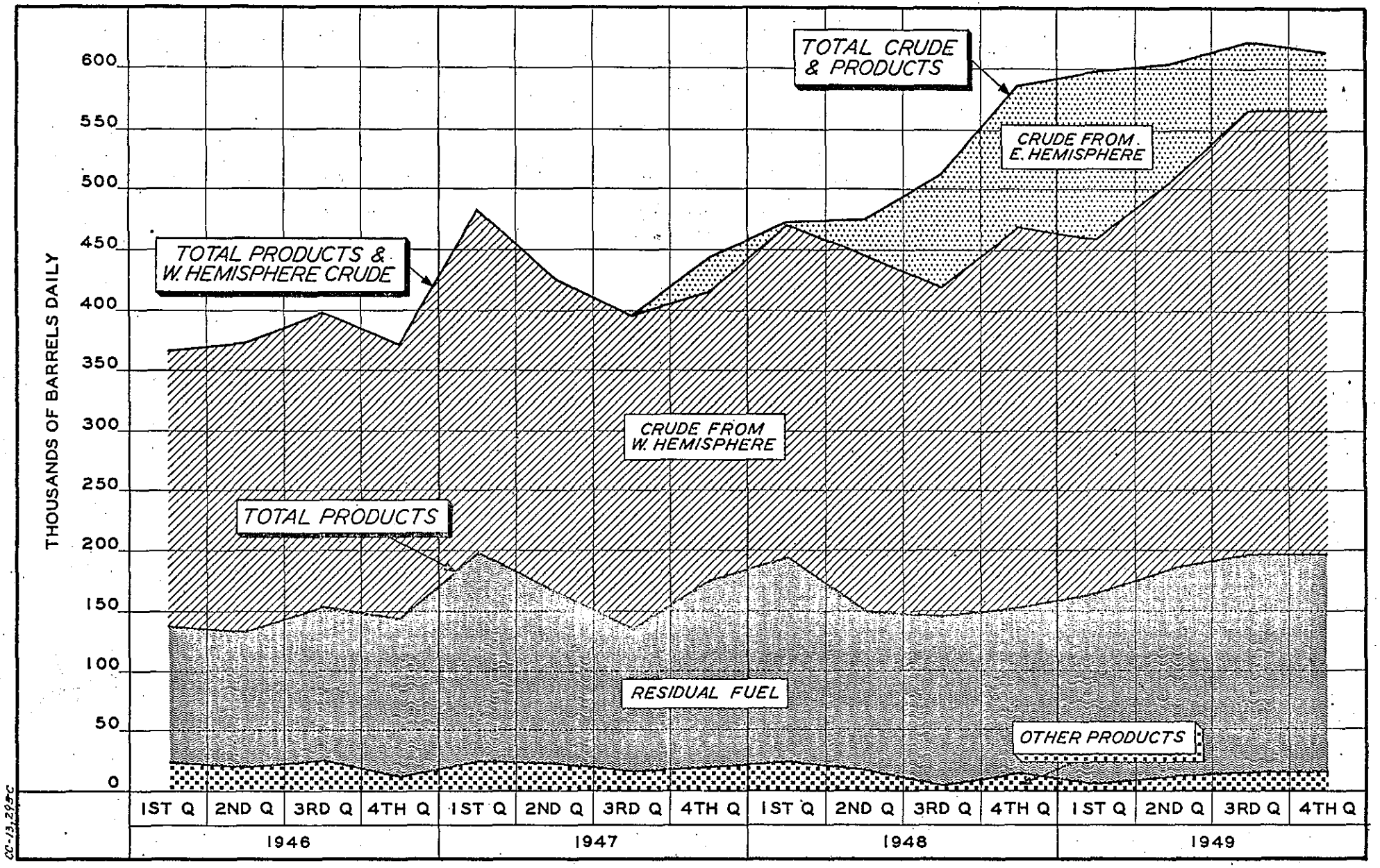


CC-13.29TC

CHART IA

U. S. IMPORTS OF CRUDE AND PRODUCTS BY PRODUCTS

QUARTERLY 1946–1949



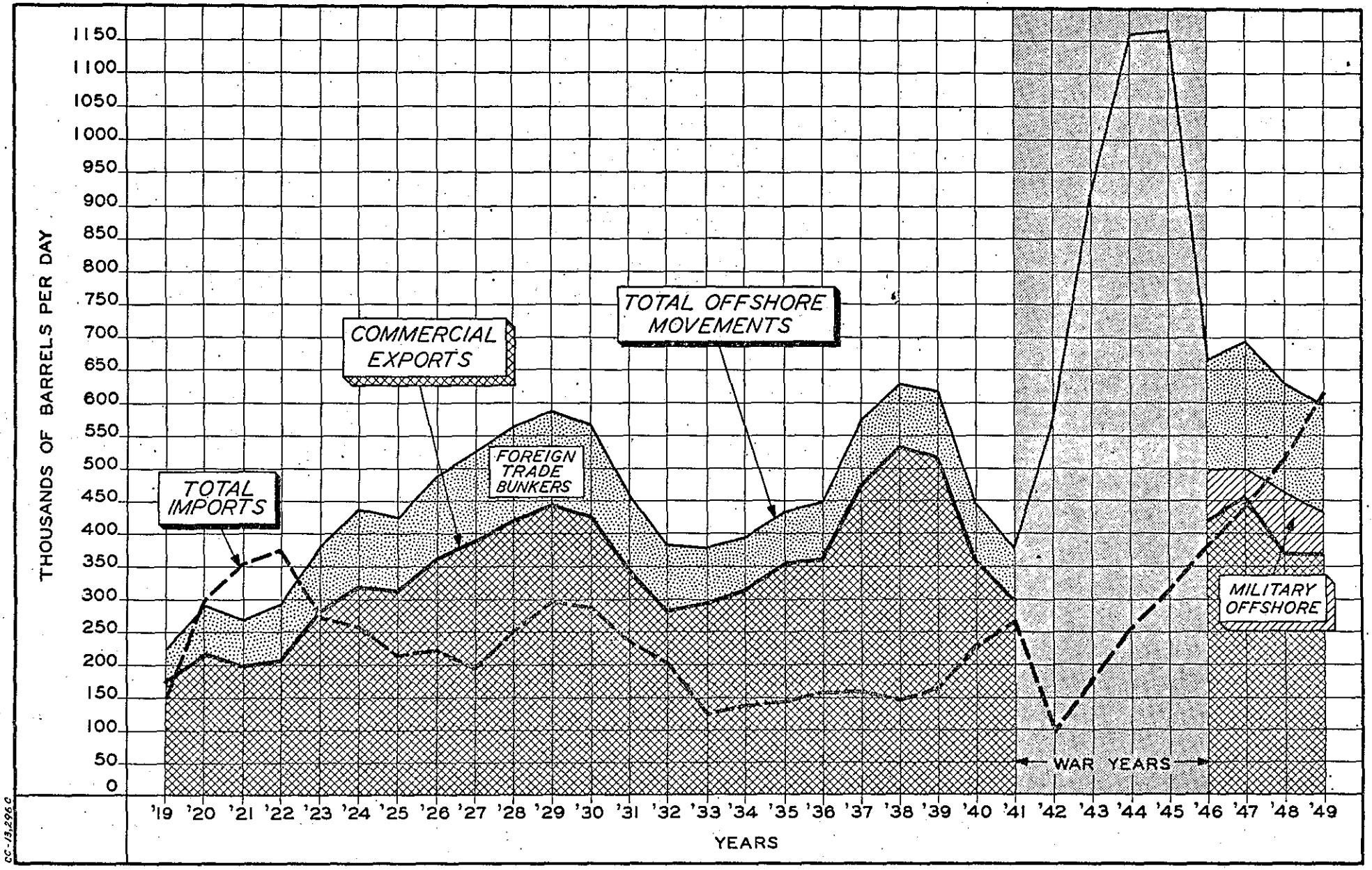
CC-13,294C

CRUDE AND PRODUCTS

CHART II

U. S. IMPORTS--EXPORTS, MILITARY OFFSHORE, AND FOREIGN TRADE BUNKERS

ANNUALLY 1919-1949



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CRUDE AND PRODUCTS

CHART II A

U. S. IMPORTS--EXPORTS, MILITARY OFFSHORE, AND FOREIGN TRADE BUNKERS

QUARTERLY 1946-1949

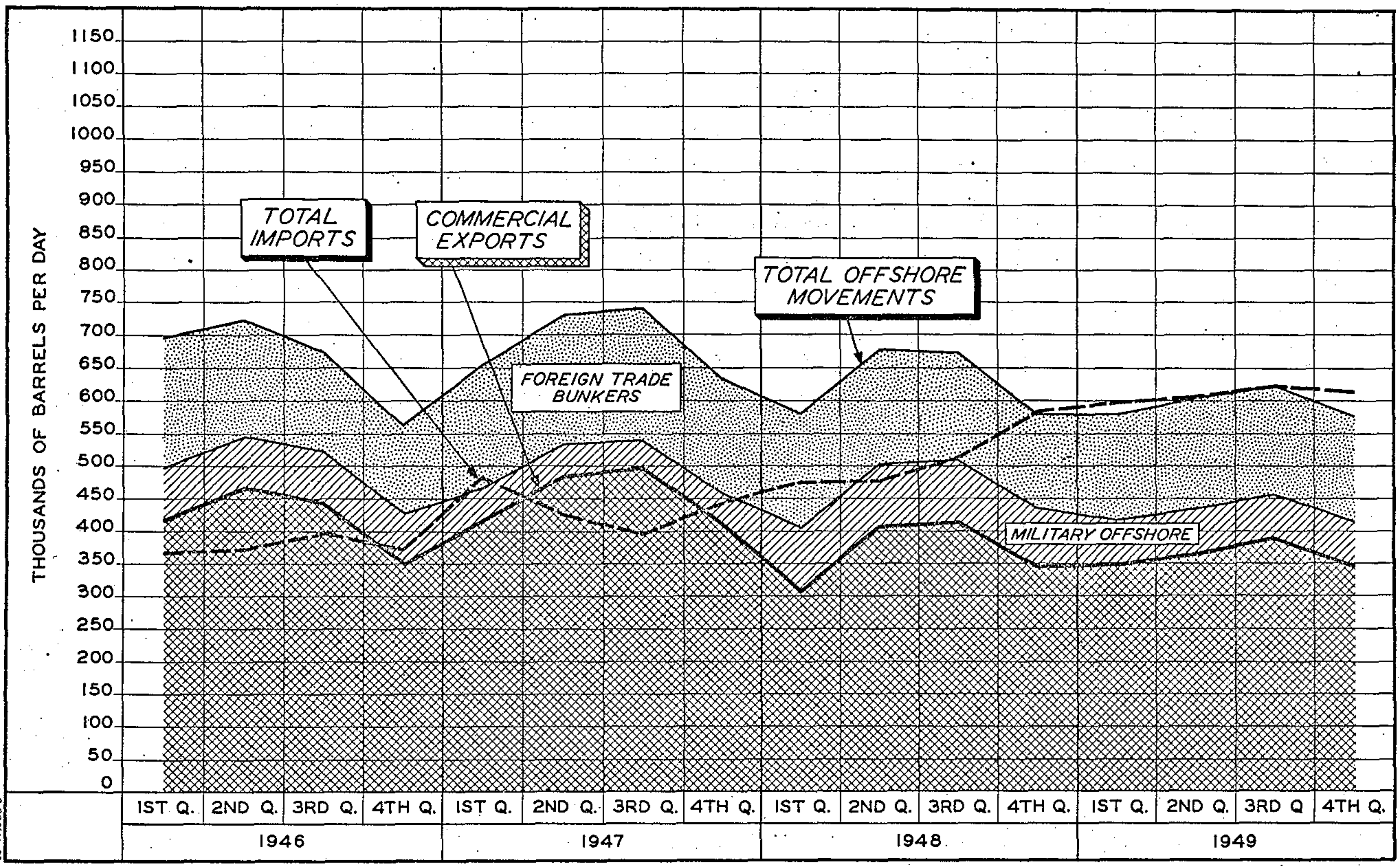
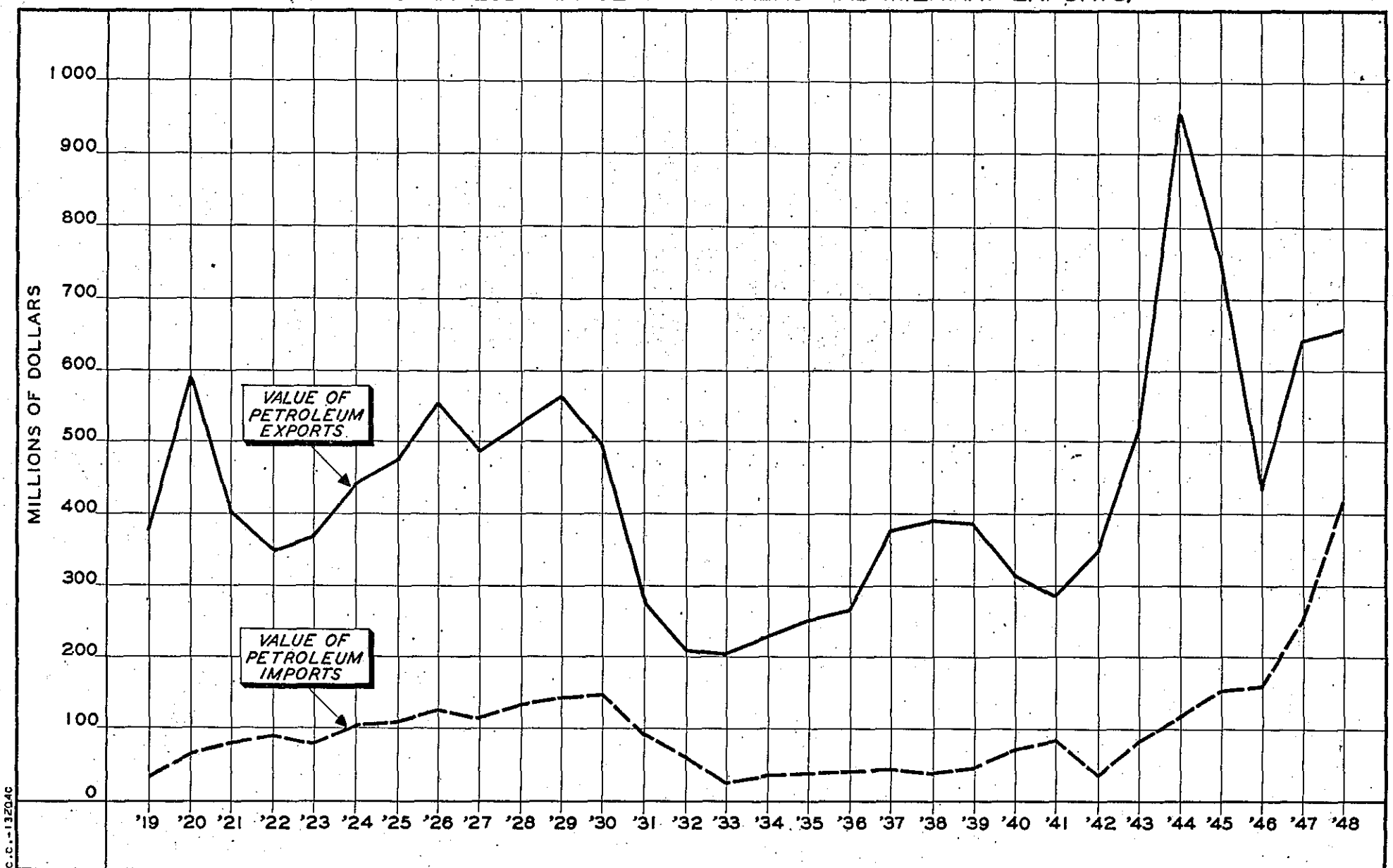


CHART III

F.O.B. DOLLAR VALUE OF UNITED STATES IMPORTS AND COMMERCIAL EXPORTS OF CRUDE AND PRODUCTS

(EXPORTS EXCLUDE VALUE OF BUNKERS AND MILITARY EXPORTS)



C.C.-132046

SOURCE: SURVEY OF CURRENT BUSINESS, FOREIGN COMMERCE AND NAVIGATION, STATISTICAL ABSTRACT OF UNITED STATES

CHART IV

CRUDE AND PRODUCTS
U. S. DEMANDS AND TOTAL DOMESTIC PRODUCTION
ANNUALLY 1919-1949

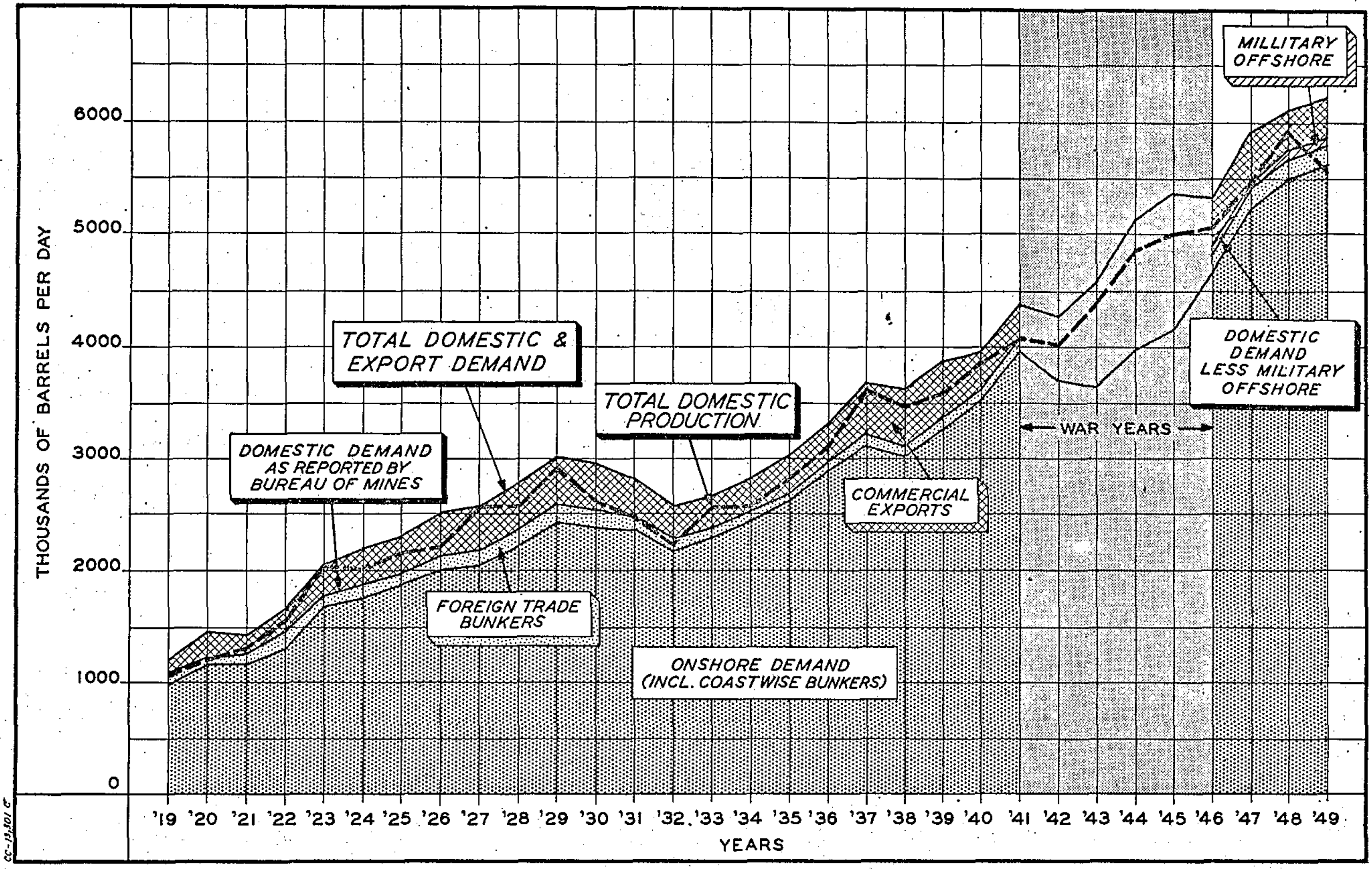
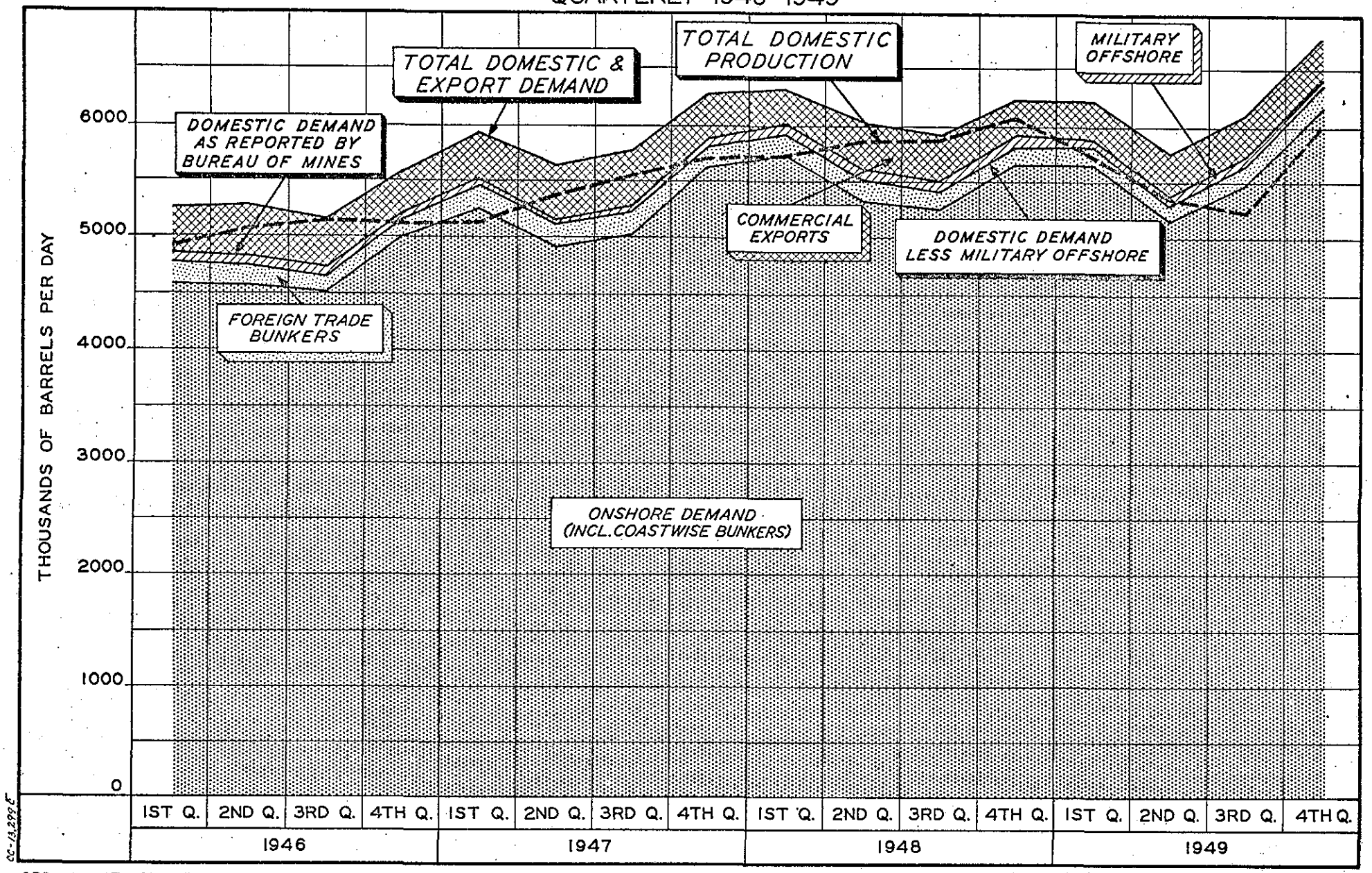


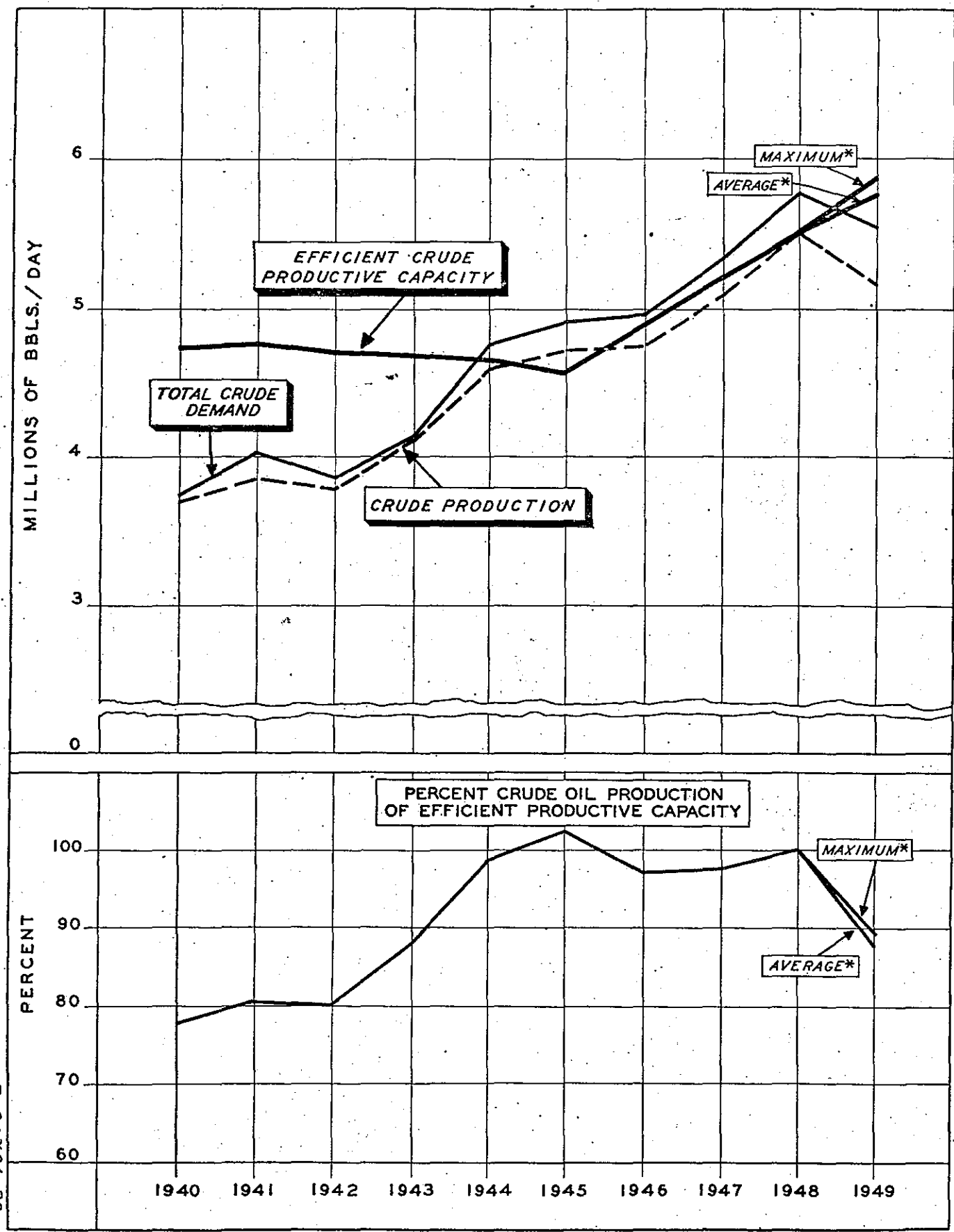
CHART IX A

CRUDE AND PRODUCTS
U. S. DEMANDS AND TOTAL DOMESTIC PRODUCTION
QUARTERLY 1946–1949



3RD AND 4TH QUARTERS OF 1949 ESTIMATED

TOTAL CRUDE OIL DEMAND IN U.S., DOMESTIC CRUDE OIL PRODUCTION AND EFFICIENT PRODUCTIVE CAPACITY



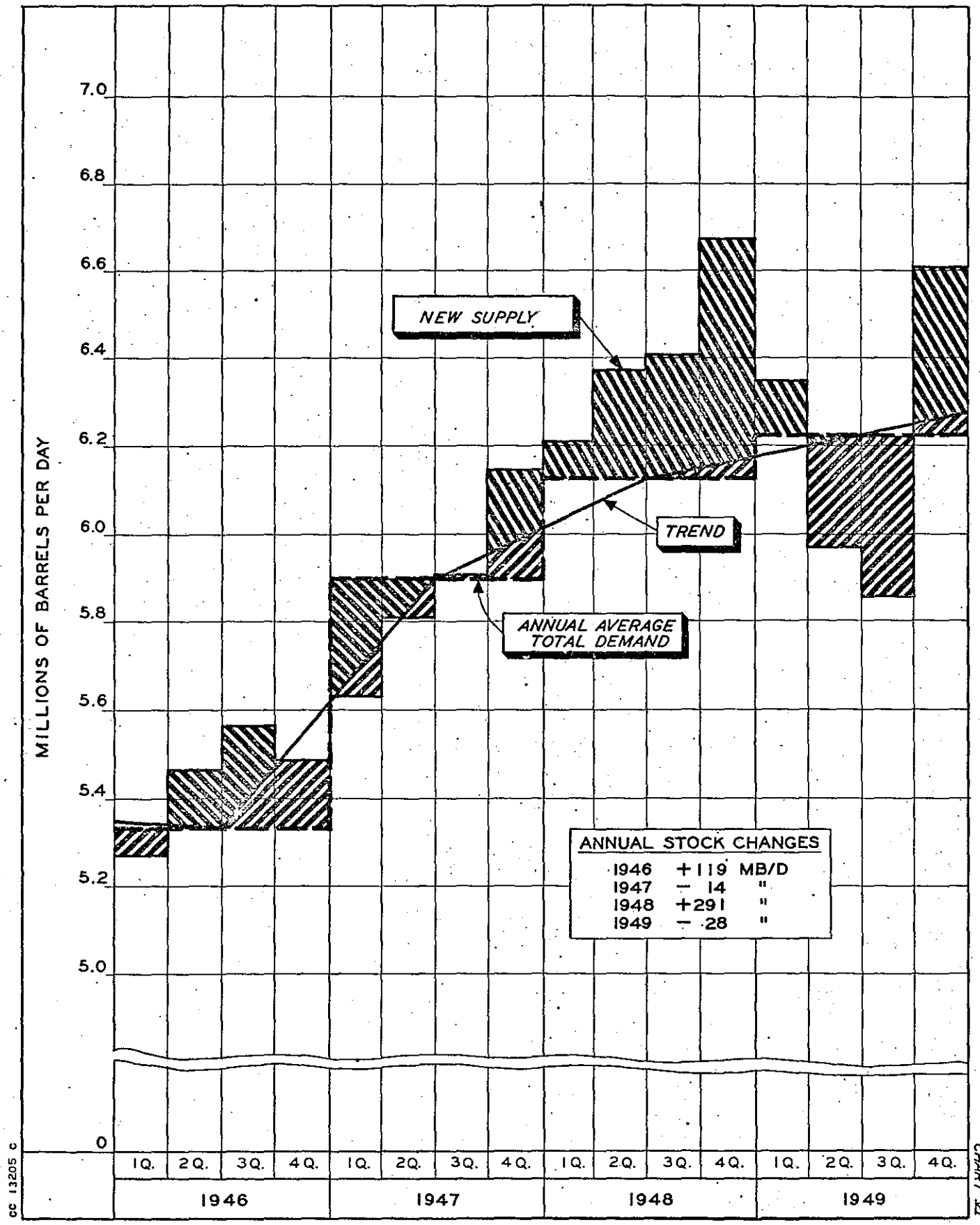
*FROM REPORT OF API SUBCOMMITTE ON LONG TERM AVAILABILITY—SEE TEXT.

EE-13206-C

CHART V

U. S. QUARTERLY TOTAL NEW SUPPLY AND ANNUAL TOTAL DEMAND

SHADED AREAS DO NOT SHOW QUARTERLY STOCK CHANGES



CC 13205 c

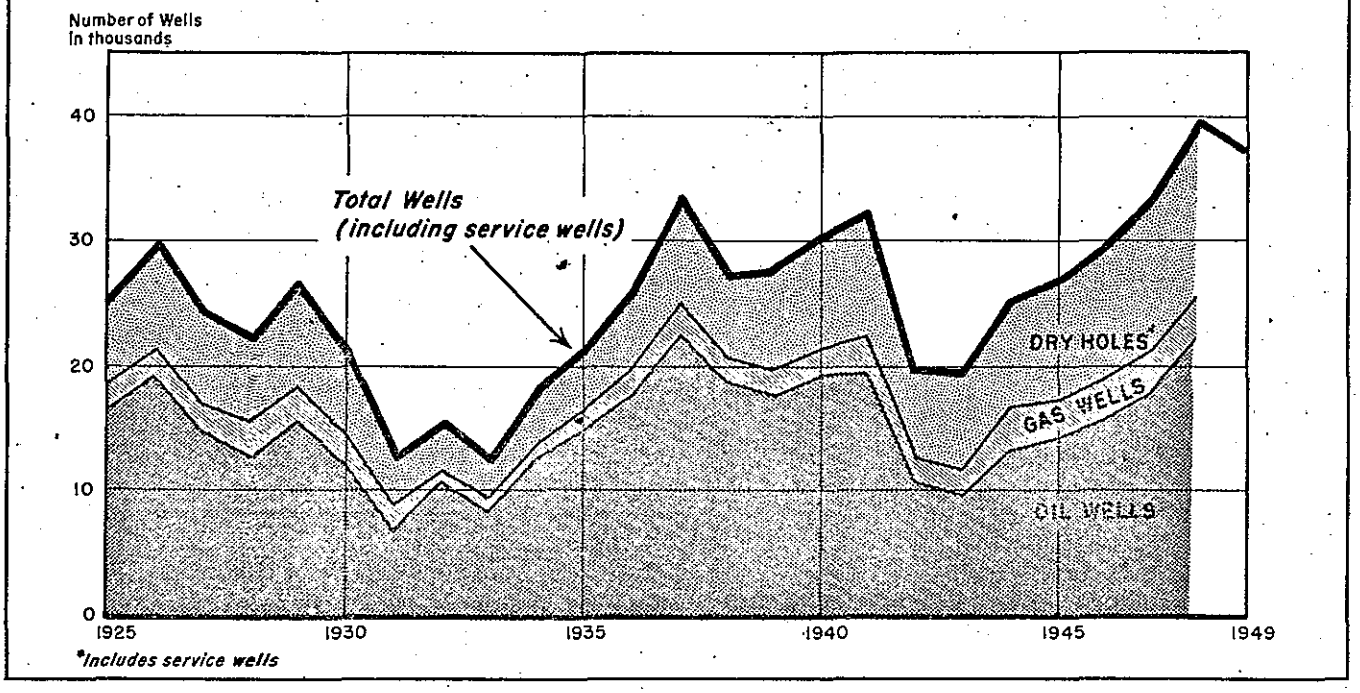
CHART VI

NOTE: 3RD AND 4TH QUARTERS 1949 ESTIMATED BY B. OF M.

DRILLING ACTIVITY IN THE U.S.

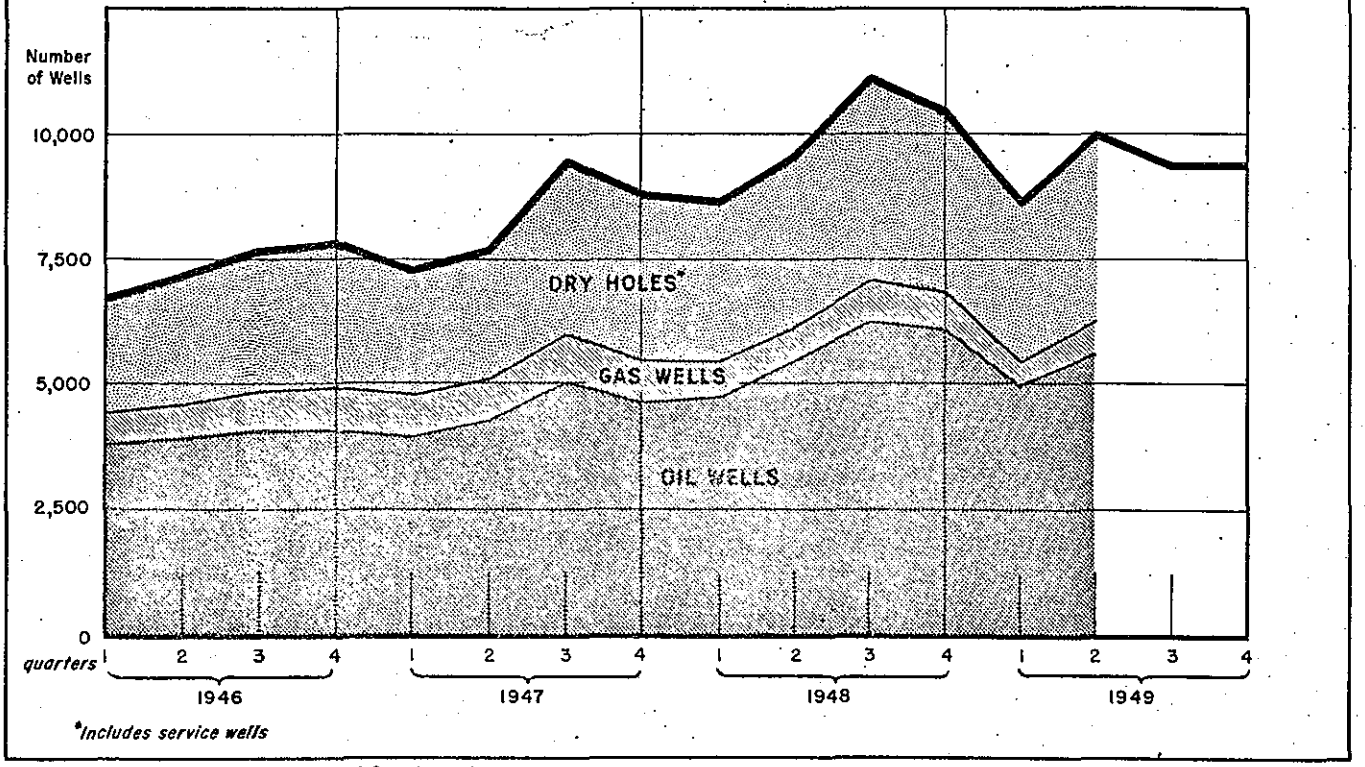
1925-1949

NUMBER OF WELLS DRILLED BY YEARS



*Includes service wells

NUMBER OF WELLS DRILLED BY QUARTERS

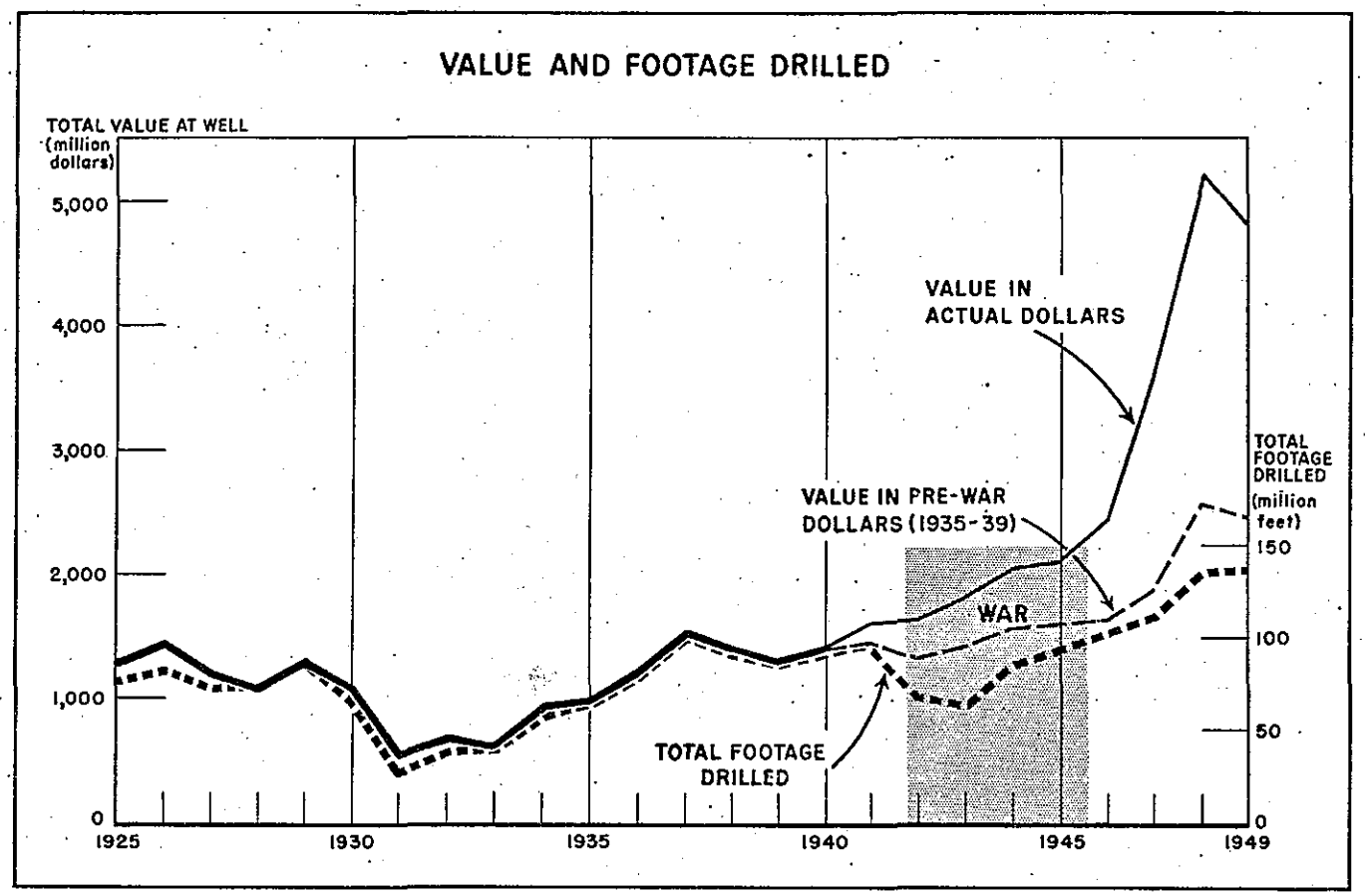


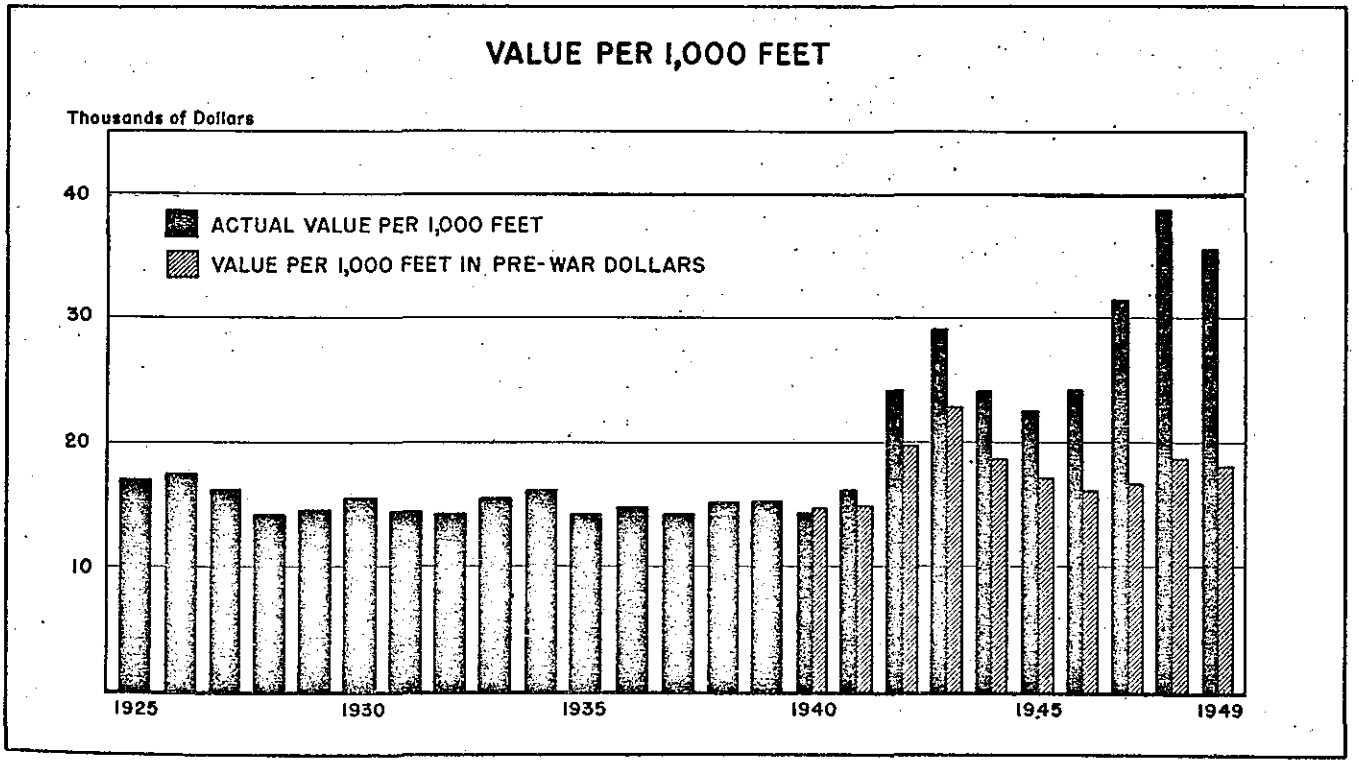
*Includes service wells

Source: U.S. Bureau of Mines & Oil and Gas Journal,
last half of 1949 from survey by Oil and Gas Journal

VALUE OF U.S. CRUDE OIL PRODUCTION AND FOOTAGE DRILLED

1925-1949

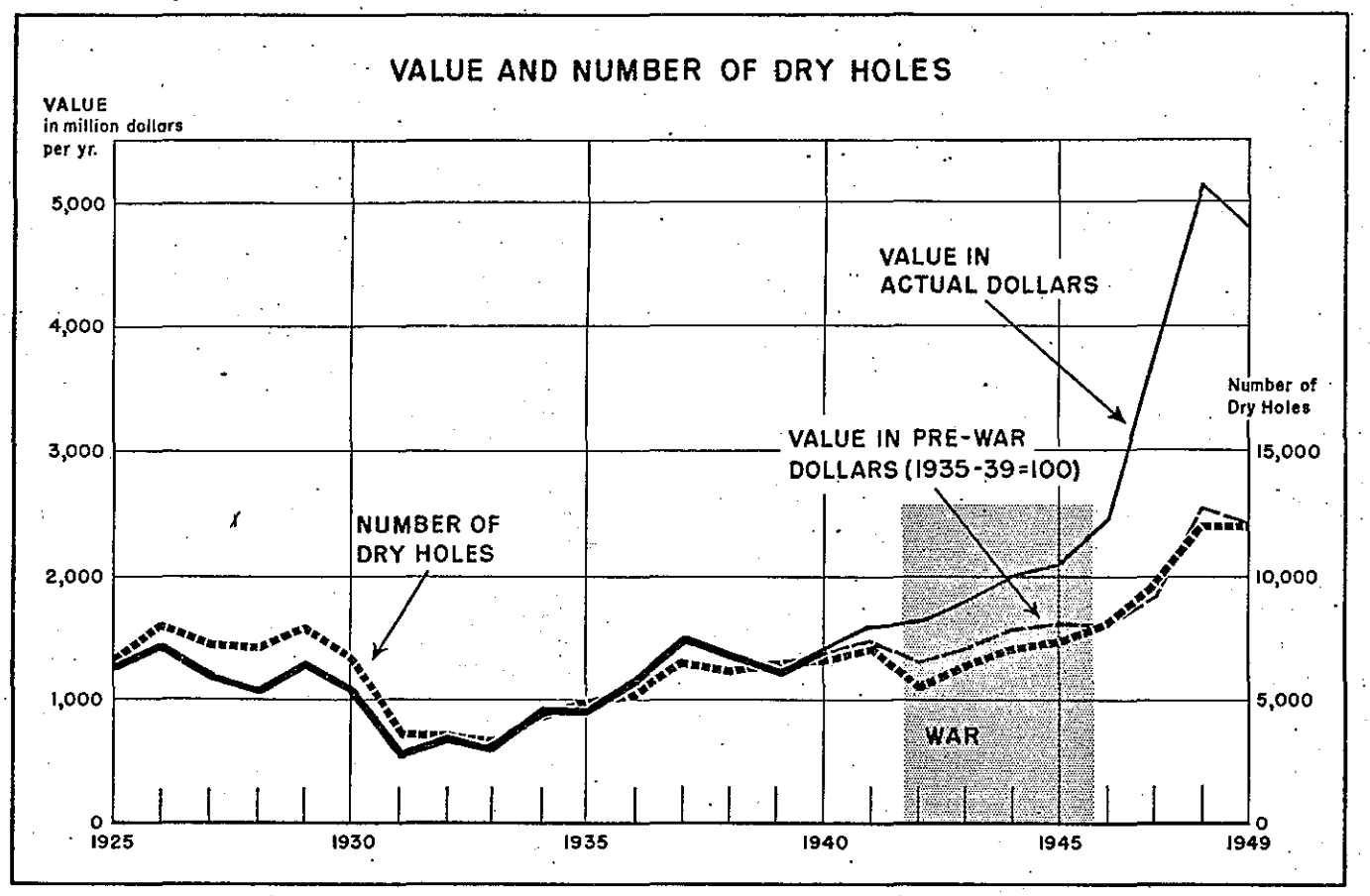


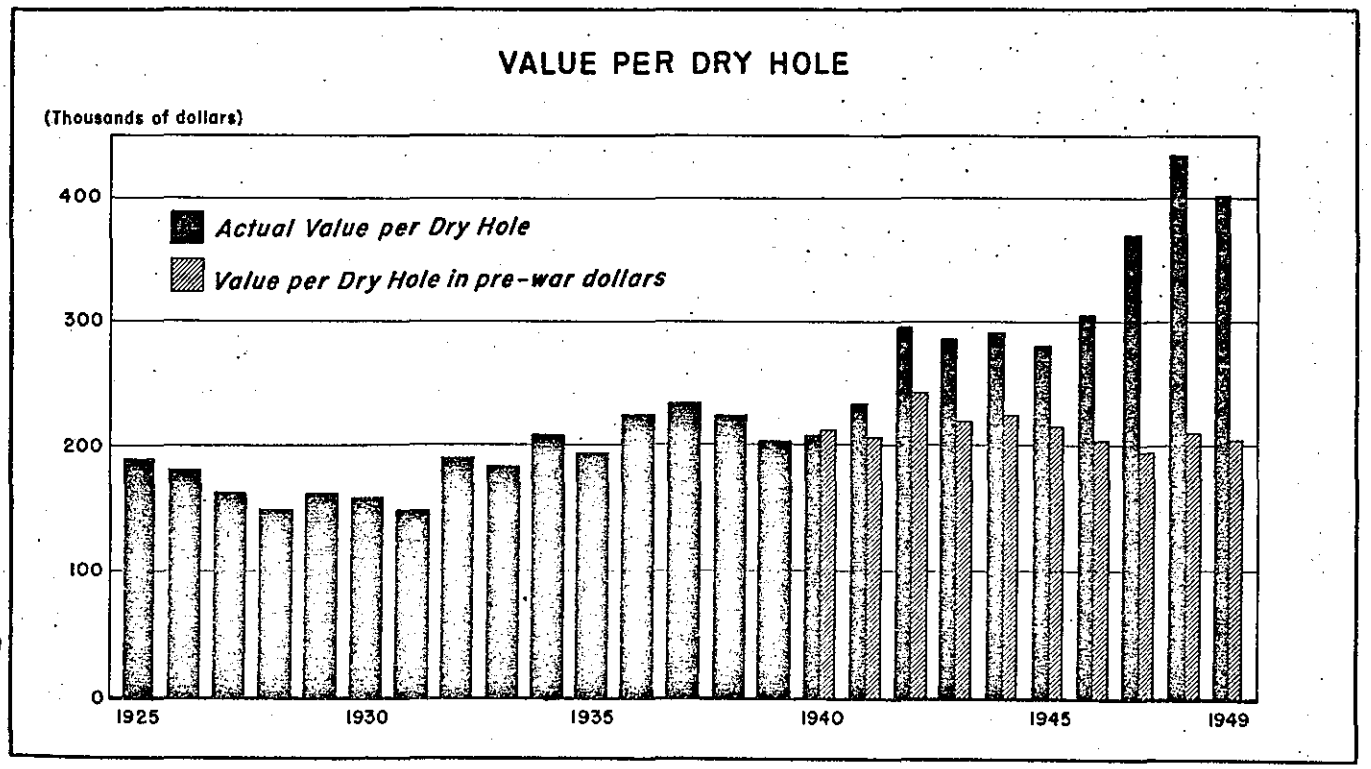


Sources: Value at wells from U.S. Bureau of Mines except 1949 which is partly estimated.
Value in pre-war dollars calculated from changes in wholesale price index for all commodities (1935-39), from U.S. Bureau of Labor Statistics.
Footage from World Oil, last half of 1949 estimated.

VALUE OF U.S. CRUDE OIL PRODUCTION AND DRY HOLES DRILLED 1925-1949

(DRY HOLES USED AS BEST AVAILABLE MEASURE OF EXPLORATORY EFFORT)

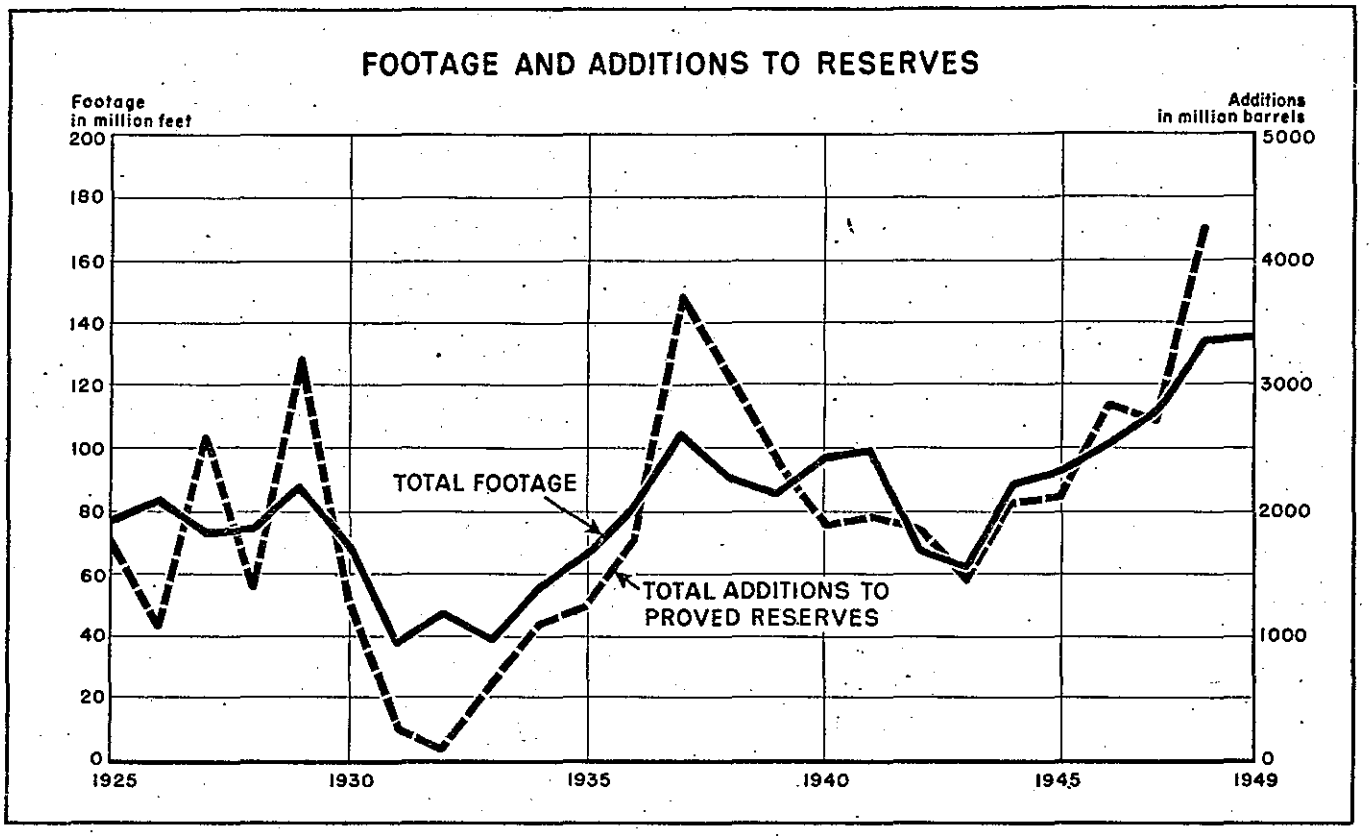


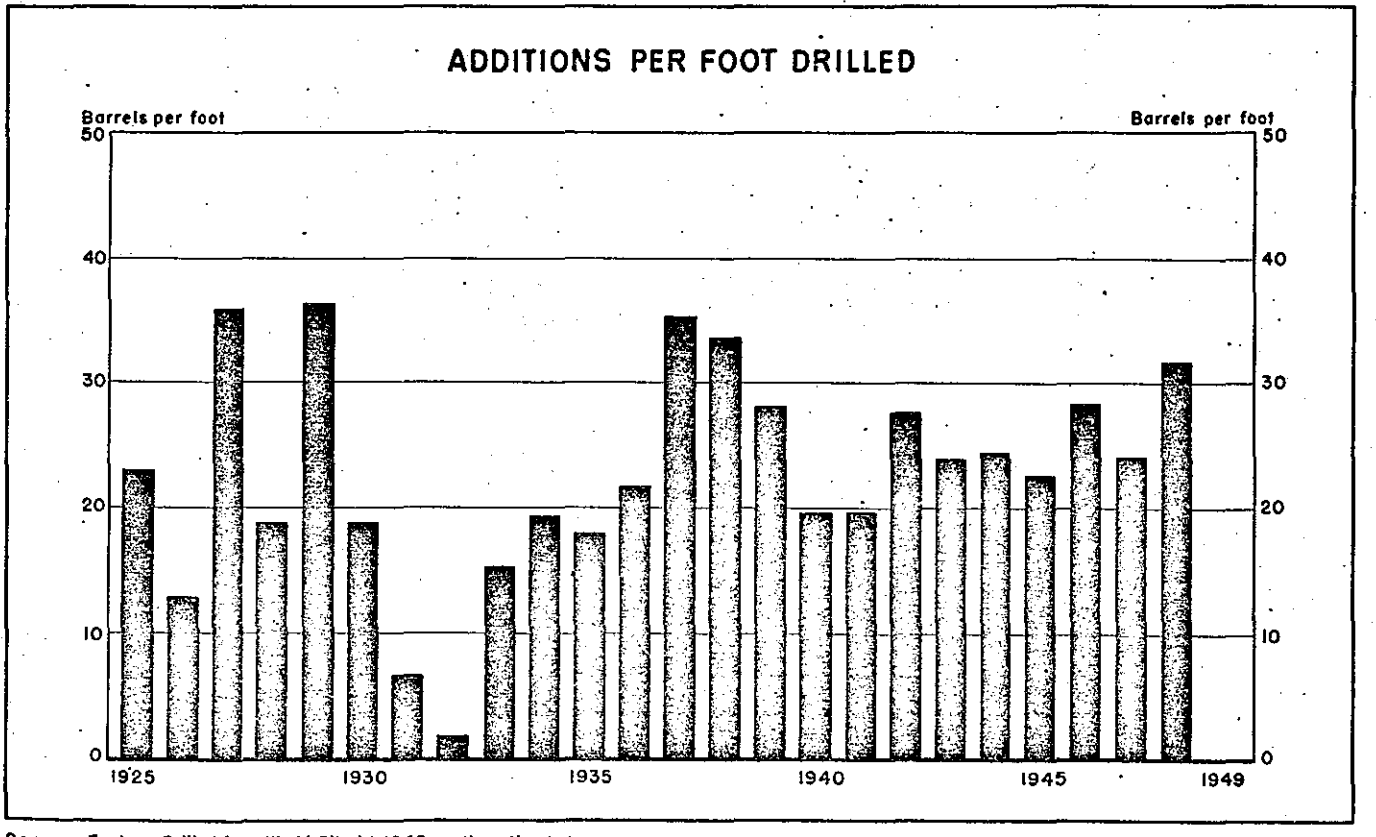


Sources: Value at wells from U.S. Bureau of Mines except 1949 which is partly estimated.
Value in pre-war dollars calculated from changes in wholesale price index for all commodities (1935-39=100) from U.S. Bureau of of Labor Statistics. Number of Dry Holes from Oil and Gas Journal.

FOOTAGE DRILLED IN THE UNITED STATES and TOTAL ADDITIONS TO PROVED RESERVES

1925-1949

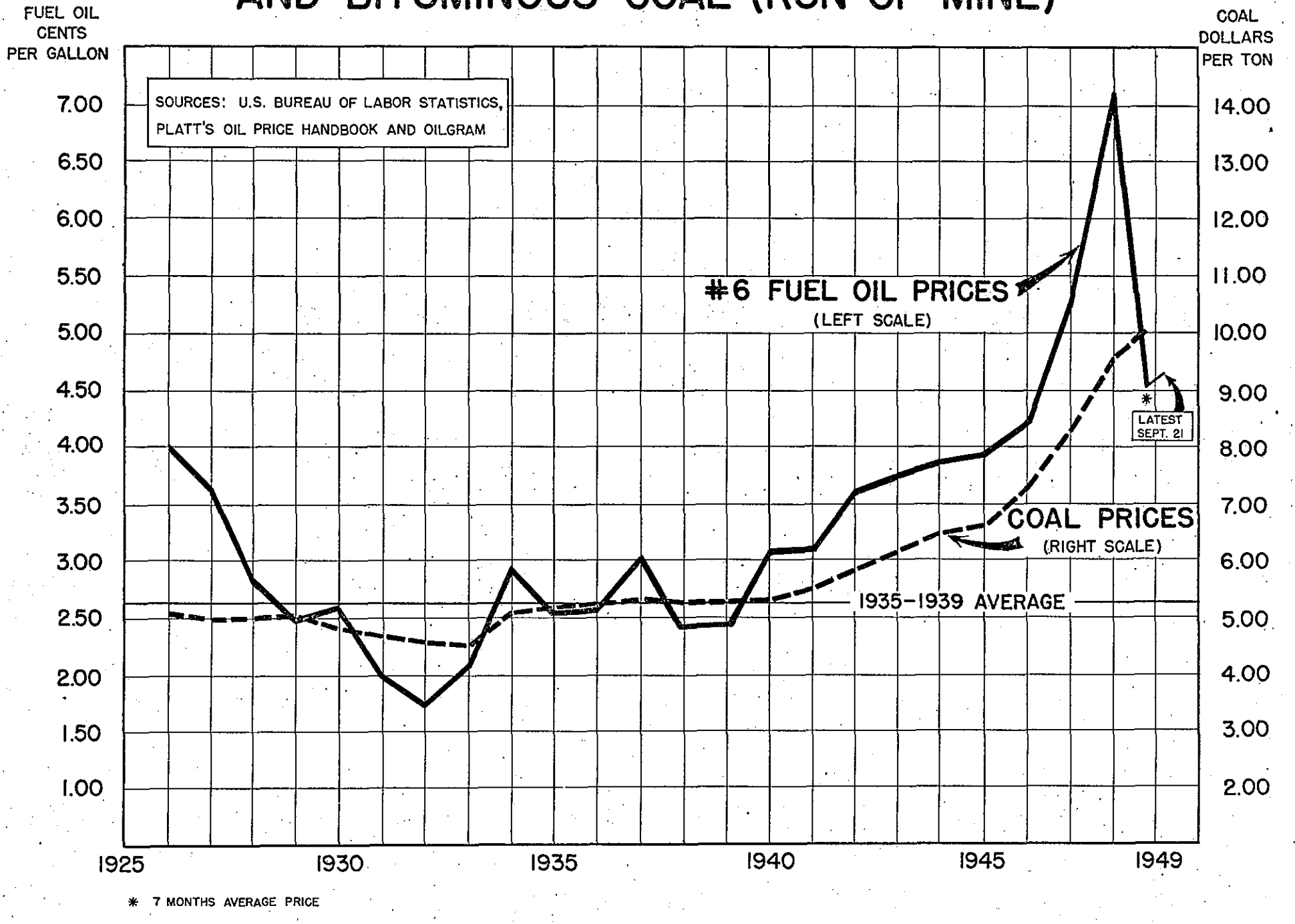




Sources: Footage Drilled from World Oil with 1949 partly estimated.
Additions to Proved Reserves from American Petroleum Institute.

Chart VIII

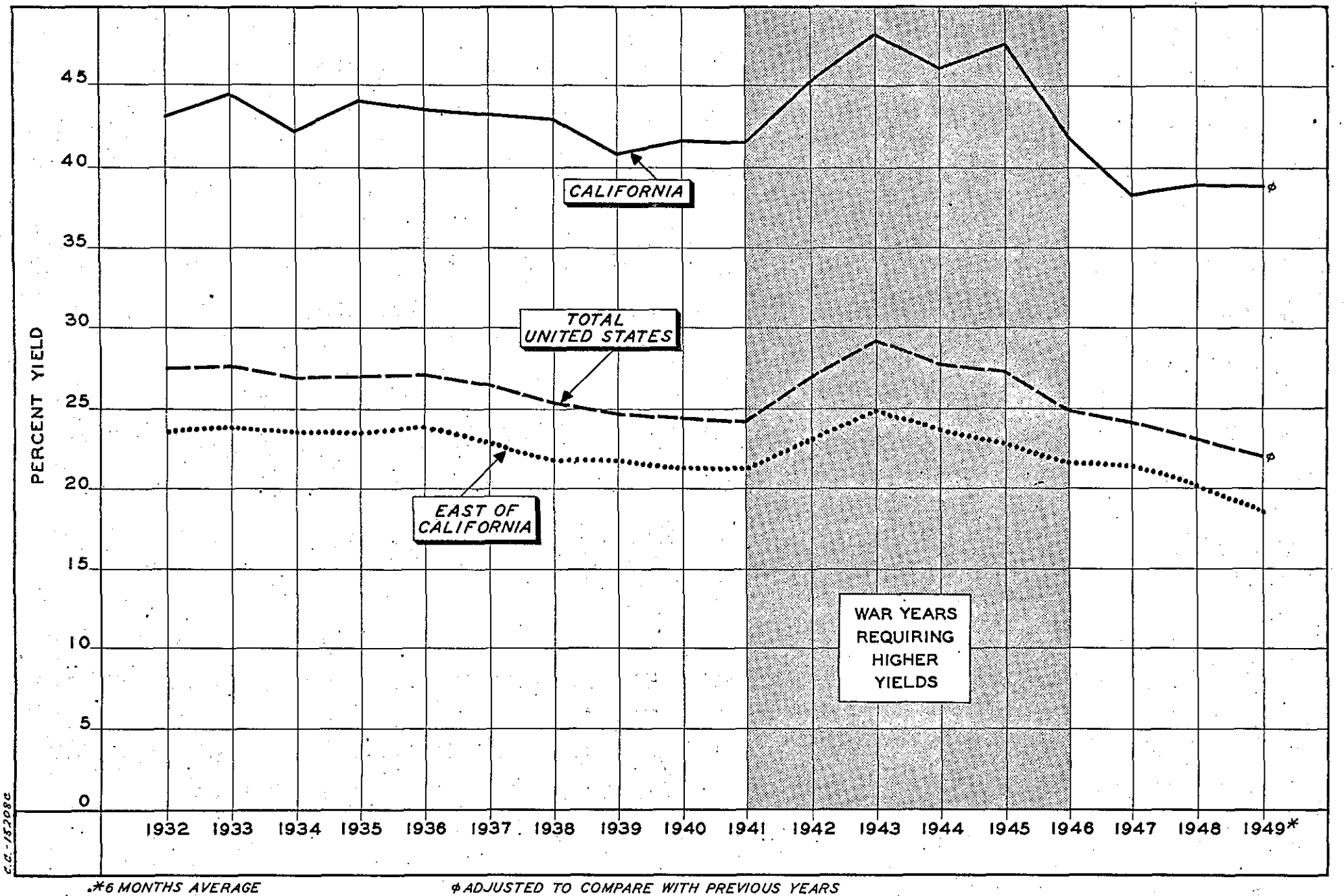
EASTERN SEABOARD PRICES OF #6 FUEL OIL AND BITUMINOUS COAL (RUN OF MINE)



* 7 MONTHS AVERAGE PRICE

CHART IX

RESIDUAL FUEL YIELD FROM CRUDE RUNS



C.C.-15208a

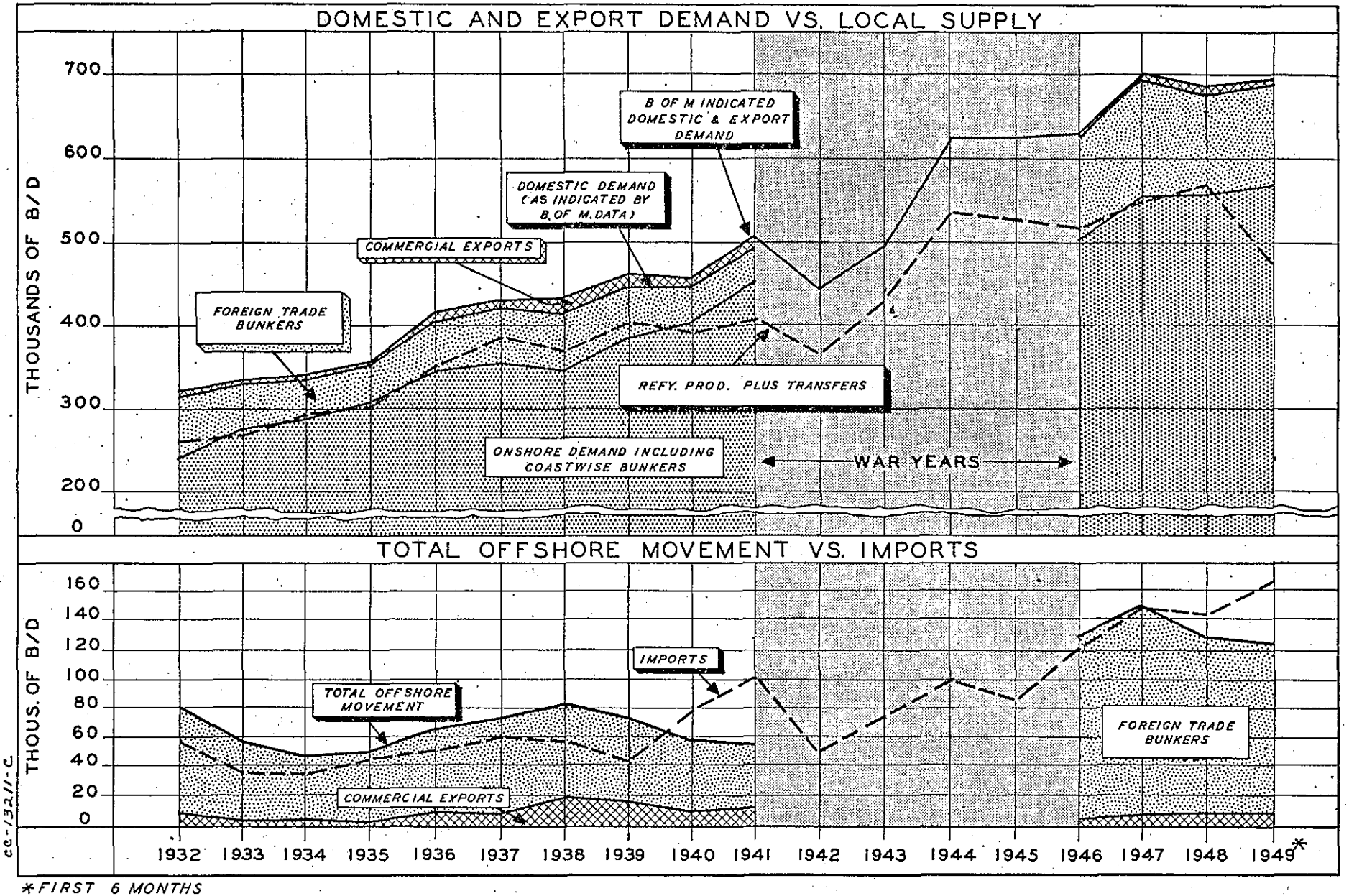
*6 MONTHS AVERAGE

φ ADJUSTED TO COMPARE WITH PREVIOUS YEARS

CHART X

RESIDUAL FUEL OIL

EAST AND GULF COAST DEMAND AND SUPPLY



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*FIRST 6 MONTHS

Total Petroleum New Supplies In U. S.
Crude And Products

Table I

(Thous. of B/D)

Year	Crude Oil Prodn.	Natural Gaso. & Benzol Production	Total Domestic Prodn.	* Total Imports	Total New Supply	Imports % of New Supply
1919	1,037	27	1,064	148	1,212	12.2
1920	1,210	30	1,240	297	1,537	19.3
1921	1,294	33	1,327	353	1,680	21.0
1922	1,527	38	1,565	373	1,938	19.2
1923	2,007	59	2,066	273	2,339	11.7
1924	1,951	67	2,018	258	2,276	11.3
1925	2,093	77	2,170	214	2,384	9.0
1926	2,112	94	2,206	223	2,429	9.2
1927	2,469	113	2,582	196	2,778	7.1
1928	2,463	123	2,586	250	2,836	8.8
1929	2,760	152	2,912	298	3,210	9.3
1930	2,460	152	2,612	289	2,901	10.0
1931	2,332	124	2,456	236	2,692	8.8
1932	2,145	102	2,247	204	2,451	8.3
1933	2,481	96	2,577	124	2,701	4.6
1934	2,488	105	2,593	138	2,731	5.1
1935	2,730	113	2,843	144	2,987	4.8
1936	3,005	124	3,129	156	3,285	4.7
1937	3,505	142	3,647	157	3,804	4.1
1938	3,327	146	3,473	149	3,622	4.1
1939	3,466	148	3,614	162	3,776	4.3
1940	3,697	161	3,858	229	4,087	5.6
1941	3,842	231	4,073	266	4,339	6.1
1942	3,799	235	4,034	99	4,133	2.4
1943	4,125	247	4,372	174	4,546	3.8
1944	4,584	280	4,864	252	5,116	4.9
1945	4,695	315	5,010	311	5,321	5.8
1946	4,751	323	5,074	377	5,451	6.9
1947	5,088	364	5,452	437	5,889	7.4
1948	5,509	398	5,907	513	6,420	8.0
1949	5,156	430	5,586	611	6,197	9.9
By Quarters						
1946 - 1st	4,586	324	4,910	367	5,277	7.0
2nd	4,784	312	5,096	372	5,468	6.8
3rd	4,849	316	5,165	399	5,564	7.2
4th	4,779	339	5,118	371	5,489	6.8
1947 - 1st	4,797	354	5,151	482	5,633	8.6
2nd	5,039	347	5,386	427	5,813	7.3
3rd	5,190	363	5,553	397	5,950	6.7
4th	5,318	392	5,710	441	6,151	7.2
1948 - 1st	5,347	393	5,740	474	6,214	7.6
2nd	5,510	388	5,898	477	6,375	7.5
3rd	5,512	387	5,899	513	6,412	8.0
4th	5,665	426	6,091	586	6,677	8.8
1949 - 1st	5,328	420	5,748	599	6,347	9.4
2nd	4,963	404	5,367	605	5,972	10.1
3rd	4,807	429	5,236	624	5,860	10.6
4th	5,527	463	5,990	616	6,606	9.3

* For Details See Table Ia and Table Ib.

Total U. S. Imports

Table Ia

(Thousands of Barrels Daily)

Year	Crude Oil Total	Crude Oil (Bonded Included In Total)	Residual Total	Residual (Bonded Included In Total)	Other Products	Total Imports
1919	145	-	-	-	3#	148
1920	290	-	-	-	7#	297
1921	343	-	-	-	10#	353
1922	349	-	-	-	24#	373
1923	225	-	34	-	14	273
1924	213	-	35	-	10	258
1925	169	-	34	-	11	214
1926	165	-	40	-	18	223
1927	160	-	22	-	14	196
1928	218	-	20	-	12	250
1929	216	-	56	-	26	298
1930	170	-	71	-	48	289
1931	130	-	68	-	38	236
1932	122	-	58	(5)	24	204
1933	87	-	36	(19)	1	124
1934	97	(13)	35	(23)	6	138
1935	88	(18)	44	(32)	12	144
1936	88	(7)	51	(46)	17	156
1937	75	(5)	61	(54)	21	157
1938	72	(10)	58	(50)	19	149
1939	91	(13)	43	(40)	28	162
1940	117	(3)	80	(29)	32	229
1941	139	-	102	-	25	266
1942	34	-	51	-	14	99
1943	38	-	75	-	61	174
1944	122	-	100	-	30	252
1945	204	-	87	-	20	311
1946	236	-	122	(60)	19	377
1947	267	-	149	(69)	21	437
1948	353	-	145	(71)	15	513
1949	425	-	175	-	11	611
By Quarters						
1946 - 1st	228	-	117	(65)	22	367
2nd	241	-	111	(64)	20	372
3rd	247	-	129	(50)	23	399
4th	227	-	132	(61)	12	371
1947 - 1st	283	-	175	(80)	24	482
2nd	259	-	146	(69)	22	427
3rd	263	-	117	(61)	17	397
4th	264	-	157	(66)	20	441
*1948 - 1st	279	-	173	(79)	22	474
2nd	327	-	132	(71)	18	477
3rd	368	-	140	(76)	5	513
4th	435	-	136	(59)	15	586
*1949 - 1st	434	-	160	(65)	5	599
2nd	420	-	174	(74)	11	605
3rd	427		182		15	624
4th	419		182		15	616

* For Details by origin see Table Ib.
\# Includes Residual Fuel

IMPORTS OF CRUDE PETROLEUM AND PETROLEUM PRODUCTS

(All figures in thousands of barrels daily)

	QUARTERLY AVERAGES					
	1948				1949	
	1st	2nd	3rd	4th	1st	2nd
CRUDE PETROLEUM						
Middle East						
Iraq	---	---	6	2	3	---
Iran	---	---	29	20	15	---
Kuwait	---	3	10	25	62	60
Saudia Arabia	1	29	49	78	60	36
Total M. E.	1	32	94	125	140	96
Venezuela	250	262	240	274	251	270
Colombia	14	23	26	29	29	29
Mexico	15	10	7	7	14	25
Total Crude	280	327	367	435	434	420
REFINED PRODUCTS						
Resid. Fuel Oil						
Neth. W.Indies	165	128	134	130	161	176
From Others	14	7	6	8	1	---
Total Resid.	179	135	140	138	162	176
Dist. Fuel Oil	11	10	---	5	1	8
Motor Gasoline	---	---	---	2	---	---
Other Products	5	4	7	6	2	3
Total Products	195	149	147	151	165	187
TOTAL IMPORTS	475	476	514	586	599	607
TOTAL IMPORTS						
By Country						
Venezuela	254	262	240	274	251	271
Net.W.Indies	170	137	139	142	164	182
Middle East	9	41	99	128	140	96
Colombia	14	23	26	29	29	29
Mexico	26	12	8	7	14	25
All Other	2	1	2	6	1	4
Total	475	476	514	586	599	607

All figures from U.S. Department of Commerce, except those for crude oil in 1948, which are from Bureau of Mines. Crude from Netherlands W.Indies included under Venezuela for 1948 to compare with Dept. of Commerce 1949 figures. Breakdown by country not shown for all refined products because of small volume.

Table II

Total U. S. Demands

(Thous. of B/D)

Year	Commercial Exports	Included In Domestic Demand As Reported By Bureau of Mines: Offshore Military	Foreign Trade Bunkers	Onshore Demand (Incl. Coastwise Bunkers)	Total Domestic Demand	Total Domestic & Export Demand
1919	175		39	987	1,026	1,201
1920	218		72	1,173	1,245	1,463
1921	196		74	1,178	1,252	1,448
1922	204		87	1,367	1,454	1,658
1923	280		103	1,684	1,787	2,067
1924	320		118	1,762	1,880	2,200
1925	312		117	1,875	1,992	2,304
1926	361		128	2,012	2,140	2,501
1927	388		137	2,061	2,198	2,586
1928	423		138	2,213	2,351	2,774
1929	447		141	2,435	2,576	3,023
1930	429		134	2,402	2,536	2,965
1931	341		117	2,357	2,474	2,815
1932	282		102	2,181	2,283	2,565
1933	292		87	2,292	2,379	2,671
1934	314		79	2,442	2,521	2,835
1935	353		80	2,615	2,695	3,048
1936	361		86	2,900	2,986	3,347
1937	473		99	3,106	3,205	3,678
1938	531		95	3,020	3,115	3,646
1939	518		98	3,275	3,373	3,891
1940	356		90	3,535	3,625	3,981
1941	298		78	3,993	4,071	4,369
1942*	321		69	3,903	3,972	4,293
1943*	411		131	4,037	4,168	4,579
1944*	568		191	4,375	4,566	5,134
1945*	501		218	4,639	4,857	5,358
1946	420	78	167	4,667	4,912	5,332
1947	451	48	193	5,211	5,452	5,903
1948	369	92	167	5,501	5,760	6,129
1949	362	70	164	5,629	5,863	6,225

* Bureau of Mines figures for the War Period are not on a comparable basis with prewar and postwar data. Charts II and IV were plotted from figures based on Petroleum Administration for War Reports as follows:

Year	Total Offshore Movements	Onshore Demands	Total Domestic & Export Demand
1942	572	3,721	4,293
1943	922	3,657	4,579
1944	1,159	3,975	5,134
1945	1,164	4,194	5,358

Table IIa

Total U. S. Demands

(Quarterly Data)

(Thousands of Barrels Daily)

Year	Commercial Exports	Included In Domestic Demand As Reported By Bureau of Mines: Offshore Military	Foreign Trade Bunkers	Onshore Demand (Incl. Coastwise Bunkers)	Total Domestic Demand	Total Domestic & Export Demand
1946						
1st Qtr.	418	78	200	4,575	4,853	5,271
2nd Qtr.	467	78	177	4,572	4,827	5,294
3rd Qtr.	443	78	154	4,502	4,734	5,177
4th Qtr.	350	78	137	5,016	5,231	5,581
1947						
1st Qtr.	418	48	192	5,262	5,502	5,920
2nd Qtr.	485	48	200	4,911	5,159	5,644
3rd Qtr.	491	48	202	5,028	5,278	5,769
4th Qtr.	408	48	177	5,640	5,865	6,273
1948						
1st Qtr.	309	92	179	5,737	6,008	6,317
2nd Qtr.	409	92	178	5,343	5,613	6,022
3rd Qtr.	415	92	165	5,259	5,516	5,931
4th Qtr.	342	92	146	5,669	5,907	6,249
1949						
1st Qtr.	349	70	161	5,667	5,898	6,247
2nd Qtr.	365	70	168	5,151	5,389	5,754
3rd Qtr.	389	70	164	5,497	5,731	6,120
4th Qtr.	345	70	164	6,195	6,429	6,774

Table III

Total Imports And Exports Of U. S. Merchandise And Imports And Exports Of Petroleum And Products

(Thousands of Dollars)

Year	Exports Of U. S. Merchandise			Imports For Consumption (1)		
	Total U. S.	Commercial Petroleum Exports	Percent Petroleum	Total U. S.	Petroleum Imports	Per cent Petroleum
1919	$7,749,816	$377,124	4.9	$3,904,365	$ 33,029	0.8
1920	8,080,481	592,868	7.3	5,278,481	67,792	1.3
1921	4,378,928	401,229	9.2	2,509,148	78,844	3.1
1922	3,765,091	345,509	9.2	3,112,747	89,485	2.9
1923	4,090,715	366,790	9.0	3,792,066	79,793	2.1
1924	4,497,649	443,783	9.9	3,609,963	102,560	2.8
1925	4,818,722	474,027	9.8	4,226,589	108,601	2.6
1926	4,711,721	555,433	11.8	4,430,888	125,602	2.8
1927	4,758,864	486,772	10.2	4,184,742	114,574	2.7
1928	5,030,099	526,742	10.5	4,091,444	133,707	3.3
1929	5,157,083	562,117	10.9	4,399,361	144,514	3.3
1930	3,781,172	495,262	13.1	3,060,908	145,573	4.8
1931	2,377,982	271,288	11.4	2,090,635	93,467	4.5
1932	1,576,151	208,992	13.3	1,322,774	60,881	4.6
1933	1,647,220	200,685	12.2	1,449,559	26,165	1.8
1934	2,100,135	228,313	10.9	1,636,003	36,743	2.2
1935	2,243,081	251,125	11.2	2,038,905	37,891	1.9
1936	2,418,969	264,535	10.9	2,423,977	40,570	1.7
1937	3,298,929	378,128	11.5	3,009,852	44,586	1.5
1938	3,057,169	390,216	12.8	1,949,624	39,461	2.0
1939	3,123,343	385,069	12.3	2,276,099	43,541	1.9
1940	3,934,181	310,145	7.9	2,540,656	70,110	2.8
1941	5,019,877	284,653	5.7	3,221,954	82,455	2.6
1942	8,003,113	350,122	4.4	2,769,285	36,918	1.3
1943	12,841,542	516,762	4.0	3,389,951	85,223	2.5
1944	14,161,544	959,606	6.8	3,877,895	113,352	2.9
1945	9,584,684	753,084	7.9	4,086,017	151,959	3.7
1946	9,502,513	435,794	4.6	4,792,368	159,439	3.3
1947	15,162,337	641,680	4.2	5,665,689	250,409	4.4
1948	12,494,004	656,882	5.3	7,038,343	417,757	5.9
6 Mos. 1949	6,549,000	314,274	4.8	3,346,880	228,898	6.8

(1) General Imports through 1933, imports for consumption thereafter.

Source: Statistical Abstract of the United States and Survey of Current Business. (Department of Commerce)

Table IV

NATIONAL STRIPPER WELL SURVEY

January 1, 1948

*Estimates made on totals. All others sum of individual areas or fields.

State	Number of Stripper Wells	Production From Stripper Well Fields 1947	Productive Acres in Stripper Well Fields	1947 Abandonments	Thousands of Barrels: Accumulative Production From Stripper Well Fields To 1-1-48	Thousands of Barrels: Estimated Primary Reserves In Stripper Well Fields 1-1-48	Thousands of Barrels: Estimated Probable Secondary Reserves in Stripper Well Fields	Thousands of Barrels: Estimated Total Reserves in Stripper Well Fields 1-1-48
Arkansas	2,507	6,033,534	55,724	91	542,381	194,286	80,663	274,949
California	13,296	55,732,513	82,732	158	3,283,306	631,044	799,060	1,430,104
Colorado	100	151,226	6,250	3	20,935	1,563	-	1,563
Illinois	14,886	64,134,300	162,450	856	1,298,358	331,766	450,000	781,766
Indiana	1,675	6,868,845	147,040	47	152,500	70,336	53,000	123,336
Kansas	16,364	16,506,000	203,400	749	780,766	155,747	300,000	455,747
Kentucky*	14,300	3,483,000	69,500	145	183,483	36,517	50,000	86,517
Louisiana	3,312	5,876,632	32,264	75	395,904	80,610	49,115	129,725
Michigan	3,125	9,191,000	80,365	267	251,279	39,769	10,000	49,769
Mississippi	92	300,000	2,300	25	12,404	1,000	-	1,000
Missouri*	76	40,962	700	-	-	-	-	-
Montana	2,751	5,880,445	60,872	42	123,233	45,955	7,500	53,455
Nebraska	53	224,450	2,440	18	5,430	1,150	-	1,150
New Mexico	1,498	3,083,980	62,240	208	518,253	390,681	64,185	454,866
New York	22,541	4,507,813	71,000	425	163,869	16,132	70,000	86,132
Ohio*	21,970	3,618,000	88,000	-	607,641	57,000	30,000	87,000
Oklahoma	43,626	33,500,000	258,000	1,696	4,063,500	437,632	1,500,000	1,937,632
Pennsylvania	81,188	12,976,000	622,737	-	1,111,507	42,866	447,067	489,933
Tennessee*	21	8,796	145	2	356	-	-	-
Texas, Total	32,528	38,727,015	339,735	1,933	3,016,350	630,235	538,385	1,168,620
North Texas*	15,360	14,076,000	76,800	1,283	997,960	153,600	230,400	384,000
W.Cent.Texas*	5,423	3,973,023	27,115	215	440,313	54,230	40,525	94,755
Panhandle*	2,512	4,670,000	60,660	12	593,644	253,000	130,000	383,000
Texas, Other	9,233	16,007,992	175,160	423	984,433	169,405	137,460	306,865
West Virginia*	16,251	2,670,000	260,015	763	439,162	57,400	74,500	131,900
Wyoming	2,512	6,144,688	43,500	19	422,360	68,909	23,250	92,159
TOTAL UNITED STATES	294,672	279,659,199	2,651,409	7,522	17,392,977	3,290,598	4,546,725	7,837,323

Table V

Residual Fuel Oil

Refinery Production

(Thousands of Barrels Daily)

B. of M. Districts	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
East Coast	149	146	137	125	154	218	234	219	238	230
Gulf Coast	248	242	268	237	272	311	289	294	309	337
Total	397	388	405	362	426	529	523	513	547	567
Total Appalachian	15	17	21	26	28	25	25	23	28	26
Ind., Ill., Ky., etc.	79	103	128	152	163	155	147	149	157	157
Okla., Kan., Mo., etc.	52	54	62	68	69	66	68	64	69	76
Texas Inland	40	38	39	45	62	65	62	55	58	61
Ark., La. Inland, etc.	17	17	20	18	20	18	17	14	15	18
*Rocky Mountain	16	18	21	26	28	31	36	37	37	39
East of California	616	635	696	697	796	889	878	855	911	944
California	222	229	242	286	347	372	408	327	316	330
Total U. S.	838	864	938	983	1,143	1,261	1,286	1,182	1,227	1,274

Residual Fuel Oil

% Yield From Crude

B. of M. Districts										
East Coast	28.3	26.0	23.1	28.3	28.8	31.1	31.2	28.9	29.2	26.5
Gulf Coast	23.7	23.2	23.4	24.0	25.3	23.1	21.0	19.6	19.6	18.4
Total	25.2	24.2	23.3	25.4	26.5	25.8	24.6	22.8	22.8	21.0
Total Appalachian	12.4	13.2	14.4	16.5	18.7	16.3	16.3	15.5	17.0	16.7
Ind., Ill., Ky., etc.	15.1	16.7	18.6	21.0	22.5	20.4	19.4	19.4	19.0	17.3
Okla., Kan., Mo., etc.	16.9	17.2	17.6	19.2	20.1	18.0	17.8	16.9	16.5	16.7
Texas Inland	22.6	22.2	21.4	24.3	31.2	28.8	26.6	25.5	24.9	24.7
Ark., La. Inland, etc.	24.8	25.3	24.5	23.5	26.9	23.0	22.7	23.1	21.8	22.7
*Rocky Mountain	21.8	21.9	22.7	27.0	29.1	27.2	28.8	27.9	26.2	24.1
East of California	21.7	21.3	21.2	23.1	24.9	23.7	22.8	21.6	21.4	20.1
California	40.8	41.6	41.5	45.3	48.1	46.1	47.5	41.8	38.2	38.9
Total U. S.	24.7	24.4	24.3	26.9	29.2	27.7	27.3	24.9	24.2	23.0

* Includes New Mexico.

Table VI

Residual Fuel Oil
East And Gulf Coast
Supply and Demand
(Thousands of Barrels Daily)

Note: Difference between last two columns indicates commercial exports.

* Foreign Trade Bunkers estimated prior to 1940.

	Local Production	Imports	Receipts from California	Total Supply	Onshore Demand (Incl. Coast-wise Bunkers)	# Foreign Trade Bunkers	Domestic Demand as Indicated by B. of M.	Total Domestic & Export Demand
1932	260	57	1	318	240	71	311	320
1933	270	36	14	320	273	55	328	331
1934	292	35	32	359	288	43	331	335
1935	301	44	-	345	305	46	351	354
1936	351	51	-	402	348	56	404	413
1937	388	60	-	448	357	66	423	431
1938	370	58	1	429	349	64	413	432
1939	402	43	6	451	387	59	446	462
1940	392	80	2	474	401	48	449	459
1941	409	102	-	511	458	42	495	508
1942	368	50	-	418				443
1943	432	75	-	507				495
1944	533	99	-	632				626
1945	528	87	-	615				627
1946	517	122	-	639	501	122	623	629
1947	550	148	-	698	551	141	692	700
1948	570	144	-	714	554	121	675	684
1949 (6 Mos.)	479	167	-	646	569	116	685	693
By Quarters								
1946 1st Qtr	534	117	-	651	521	148	669	671
2nd	548	111	-	659	493	128	621	628
3rd	513	129	-	642	442	110	552	559
4th	473	132	-	605	552	101	653	659
1947 1st Qtr	523	175	-	698	602	136	738	746
2nd	543	145	-	688	510	141	651	659
3rd	576	117	-	693	480	152	632	644
4th	559	157	-	716	614	134	748	753
1948 1st Qtr	576	173	1	750	643	128	771	776
2nd	585	132	-	717	548	126	674	685
3rd	559	140	-	699	479	119	598	612
4th	558	130	-	688	546	111	657	663
1949 1st Qtr	522	160	-	682	630	114	744	752
2nd	436	174	-	610	506	120	626	634

Table VII

WORLD PETROLEUM BALANCE

(Includes U.S.)

(Thousands of Barrels Daily)

	Year 1948	Year 1938
Western Hemisphere		
Total Liquid Production	7,680	4,331
Domestic Demand	6,818	3,603
Change In Stocks	+ 339	- 4
Net Movement To Eastern Hemisphere	523	732
Eastern Hemisphere		
Total Liquid Production	2,096	1,362
Domestic Demand	2,487	2,029
Change in Stocks	+ 132	+ 65
Net Receipts from Western Hemisphere	523	732