NATIONAL PETROLEUM COUNCIL

REPORT OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

NOVEMBER 28, 1950

HEADQUARTERS

1625 K Street, N. W. Suite 601

Commonwealth Building Washington 6, D. C.

Telephone: EXecutive 5167

NATIONAL PETROLEUM COUNCIL

REPORT OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

NOVEMBER 28, 1950

ORIGINAL TERMS OF REFERENCE

When the Committee on Petroleum Transportation was appointed August 2, 1950, it was given three assignments by the Council for the purpose of carrying out a request of the Secretary of the Interior:

1. To ascertain and bring up to date the facts regarding all transportation facilities, including tankers (ocean and lake), barges, tank cars, transport tank trucks and pipe lines;
2. To report on the adequacy of such facilities to meet the Nation's needs; and
3. To make such recommendations (not involving Industry plans, programs or allocations) as may appear appropriate in assuring the future adequacy of such facilities.

SUBCOMMITTEE ORGANIZATION

The Committee organized for its work by appointing six subcommittees representative of the main divisions of oil and gas transportation. The subcommittee membership is composed of industry specialists and outstanding transportation experts in the several fields. The subcommittees and subcommittee chairmen are set out below and attached as Exhibit I is a roster of membership of the main Committee and all the subcommittees:

Barge and Lake Tankers	- Harry A. Gilbert
Rail (Tank Cars)	- Fayette B. Dow
Tankers	- James P. Patterson
Trucks	- Lee R. Cowles
Natural Gas Pipe Lines	- J. French Robinson
Petroleum Pipe Lines	- W. R. Finney

To expedite the fact-finding work and avoid duplications, the subcommittees have endeavored wherever practicable and permissable to use pertinent factual data heretofore assembled by industry specialists for Governmental agencies.

REVISION OF COMMITTEE ASSIGNMENTS AND REPORTS OF SUBCOMMITTEES

As the Council was advised at its last session, the Committee was not furnished with specifications or a yardstick for the purpose of determining the "Nation's needs," particularly those of an emergency character, and it became necessary to obtain a clarification of the Committee's assignments in this respect. This clarification was accomplished through an interchange of letters between the Chairman of the Committee and the Secretary of the Interior, copies of which are attached hereto as Exhibit II. In accordance with the suggestions outlined in Secretary Chapman's letter of September 12, 1950, the Committee through its subcommittees proceeded to develop detailed reports limited at this time to data "on the existing petroleum transportation facilities and known and projected increases in transportation facilities," with such comments on obvious bottlenecks affecting the future adequacy of such facilities as the subcommittees deemed appropriate. Attached as Exhibit III are the separate reports of the several subcommittees setting forth the results of the studies to date. Since the several subcommittee reports contain the factual data and

specific comment relating to the respective types of facilities, this report is confined to a coordination of the separate findings and to comment on the current overall situation in petroleum transportation.*

SCOPE OF REPORT

For the reasons explained above, the Committee has attempted to do no more in this report than to set out an inventory of existing and presently planned facilities and to measure them broadly against present known requirements. The Committee is not now undertaking to relate such facilities to the Nation's needs beyond near-term known requirements nor to measure their adequacy for any emergency. In so restricting the present scope and content of the study and report, the Committee is performing within the limits of its immediate assignment as suggested by the Secretary of the Interior.

GENERAL COMMENT

Subject to the foregoing, and in general terms, the several subcommittee reports reflect that existing and planned facilities are sufficient to do the job they are presently called on to do. In making such statement as to adequacy, however, the importance of completing the construction of certain planned facilities, as shown in the subcommittee reports, must be particularly emphasized. The completion of such facilities is conditioned upon the availability of steel and other materials in short supply, in proper cases favorable Government action permitting accelerated amortization of privately financed projects, and many other contingent factors.

* The words "petroleum transportation" as used in this report are intended to include natural gas transportation to the extent applicable.

The Nation is fortunate at this time to have as a result of competition and other economic factors transportation facilities of the various types required for oil and gas movements which have been developed and integrated into a highly efficient system.

ADMINISTRATION OF PETROLEUM TRANSPORTATION IN EMERGENCY

The Committee has reviewed and particularly approves that portion of the report of the National Petroleum Council's Committee on National Petroleum Emergency dated January 13, 1949, relating to transportation, one pertinent paragraph of which reads as follows:

> "Because transportation is such an important and integral part of the task of supplying petroleum products to points of need; because petroleum transportation facilities are so highly specialized and, with the exception of tank cars, of a character little used for the movement of other commodities; and because it cannot be separated from the other functions of the Industry and the agency having primary responsibility for petroleum supply, it is imperative that the Petroleum Administration for War should have final determination of the use of all forms of petroleum transportation."

In peace or in war, petroleum transportation can be no more effective than the skill and competence of the heads and hands which direct it. Transportation facilities cannot remain adequate for the Nation's needs, whatever they may be, if the facilities are not administered by experienced industry specialists with the necessary "know-how."

IMPORTANCE OF FUNCTIONAL INTEGRATION IN PERFORMANCE OF PETROLEUM TRANSPORTATION

The character of petroleum transportation facilities is unique. They are mostly one-directional in their use and generally unadaptable to the carriage of other commodities. The secret of successful petroleum transportation is in its "flow." The bulk handling of oil from the well to the consumer is on a scale without parallel. Refineries rely on producing wells for supplies of crude oil. Distributors rely on refineries for supplies of products. Properly coordinated flow of enormous volumes of crude to refineries and of products through distributors to consumers is indispensable if petroleum is to do its part in supplying the energy needs of the United States. It is vital therefore to preserve the closely integrated relationship between transportation and other functions of the petroleum and natural gas industries, if the Committee's evaluation of the adequacy of the transportation facilites for current and expected near-future needs is to continue to hold true.

EMERGENCY FACILITIES

It is urged that the Council or the Committee be notified as promptly as possible through appropriate channels concerning any emergency requirements in order that the Committee, if the Council so desires, may re-examine and re-appraise existing and planned transportation facilities in the light of such emergency demands, and make such recommendations as may be deemed proper. In this connection, an obvious fact should be noted, i.e., the construction of most transportation facilities under the most favorable circumstances requires substantial periods of time. This is especially true of tankers as well as long transmission lines for oil and gas. Consequently, the

needs of tomorrow, of next week, of next month, or of the next year in some cases, cannot be supplied with a facility now on the planning board.

The Committee is aware that emergency conditions may require the installation of transportation facilities which might be considered uneconomic in the normal peacetime operations of the petroleum and natural gas industries. Notwithstanding the uneconomic character of such facilities, whether Government owned or privately owned, it is assumed that the Governmental authorities will wish to have the advantage of the "know-how" of the industry in their design, construction and operation. Under such circumstances, the appropriate Governmental authorities should undertake, of course, to insure the availability of financing, materials, priorities and such other elements as are required to implement such projects.

SUBCOMMITTEE REPORTS

While the subcommittee reports speak for themselves in respect of the several methods of transportation, the following brief summaries may be of interest:

Barges and Lake Tankers

There are certificated, as of October 1, 1950, a total of 2,452 tank vessels (self-propelled and non-propelled) suitable for petroleum and products transportation, having a combined capacity of 20,041,620 Bbls. (42's), and in general having adequate suitable related power for transporting each unit. It now is impossible to determine accurately how much of this equipment might be made available for any particular emergency service, without establishing facilities for compiling the necessary statistics covering current scheduling. The Subcommit-

tee, therefore, recommends the following:

1. That immediate steps be taken to effect the re-delegation from DTA to PAD of authority (outlined in Executive Order 10161) over all petroleum barge and lake tanker transportation facilities and related power particularly with respect to:

   (a) Control of movements.

   (b) Claims for materials covering construction, conversion and repair.

   (c) Allocation of equipment, (existing converted and newly constructed).

   (d) Endorsement for accelerated amortization when justified.

2. That PAD authorize in the event of declared emergency (by Directive if necessary) the establishment of a Barge and Lake Tanker Industry Subcommittee Office, financed by industry, with adequate authority:

   (a) To obtain required vessel movement reports from all operators of inland waterways petroleum equipment.

   (b) To determine those non-essential and cross-haul movements which should be eliminated during full industrial mobilization; and

   (c) To submit this information tabulated to PAD for use in formulating policy. It should be understood that all records of such office should remain under the exclusive jurisdiction of the petroleum industry.

The present equipment and new units and power now building is in balance substantially with inland water transportation requirements on a scheduling basis as contrasted to occasional shortages on a spot basis.

Rail (Tank Cars)

Two thousand general use tank cars (Class 103W) of an average capacity of 10,000 gallons are needed to meet peak shipments due to various causes unrelated to supply and demand, such as railroad performance, adverse weather conditions, etc.; 2,000 more tank cars of same type and capacity are needed to take care of increased consumptive demand in 1951; 3,000 additional tank cars of same type and capacity are needed to replace cars that will be normally dismantled. For movement of liquefied petroleum gas 1,750 Class 105-A-300 cars should be built this year and in 1951 to take care of normally increased consumption. Car builders reported on September 14, 1950, that 1,093 Class 103W (general use) tank cars and 1,521 Class 105-A-300W (LPG) were on firm order for petroleum service. These cars should be constructed as soon as steel is available.

Tankers

In spite of the stringency in tanker supply in recent months, it appears that the freeing up of tankers by the completion of Middle East pipe lines and the launching of tankers now under construction or planned for construction will provide a sufficient supply of tankers to meet the near-term known requirements. Attention is invited to the fact that of the large number of tankers under construction or planned for construction nearly all will be built in shipyards outside the United States.

Transport Tank Trucks

The estimated over-the-road tank truck fleet of the Nation is nearly three times what it was on January 1, 1944.

This is shown in the table below:

	Number of Units	Increase Over 1944	Capacity in Gallons	Increase Over 1944
1944 Actual O.D.T. Count	18,417	-	67,767,364	-
Jan. 1, 1947 Estimated	22,560	23%	83,019,710	23%
Aug. 1, 1950 Estimated	56,010	204%	229,248,856	238%

The increase in capacity in gallons is greater than the increase in number of units, indicating the use of units of larger individual capacity. The figures show how much more the use of tank truck transports has increased in the last three years, than it did during the first three years following the war.

The Subcommittee believes that if wartime measures were adopted, such as 24 hours per day operation, seven days per week, reciprocity as to various state laws and regulations, and freer use or interchange of operating rights, the existing capacity could be increased by 35% to 40%.

Natural Gas Pipe Lines

The conclusions of the Subcommittee are as follows:

Area I (New England States) will be adequately supplied with natural gas in the near future.

Area II (Ohio, Kentucky, West Virginia, Virginia, Pennsylvania, New York, Maryland, New Jersey, Delaware and District of Columbia), Area IV (Wisconsin, Michigan, Illinois, Indiana and Missouri), Area V (North Dakota, South Dakota, Minnesota, Iowa, Nebraska and Kansas) and Area VII (Montana, Idaho, Wyoming, Utah and Colorado) have an adequate supply of natural gas and will continue to have an adequate supply in the future.

Area III (Tennessee, North Carolina, South Carolina, Florida, Alabama, Georgia and Mississippi) has an adequate supply of natural gas at the present time and will continue to have an adequate supply until the end of 1952. During 1953 and 1954 a shortage in pipe line capacity will develop amounting to 337 MMCF daily in 1954.

Area VI (Texas, Oklahoma, Arkansas and Louisiana) has a small deficiency in pipe line capacity in 1950 but will have an adequate supply of natural gas thereafter.

Area VIII (Washington, Oregon, California, Nevada, Arizona and New Mexico) has an adequate supply of natural gas at the present time but by November of 1952 a deficiency in pipe line capacity of 267 MMCF per day will develop and by November of 1953 an additional deficiency of 100 MMCF daily will occur unless Federal Power Commission authorization is received for the construction of additional facilities.

The supply of natural gas on an annual basis is adequate except in Areas III and VIII where daily pipe line deficiencies will develop. In Area III the daily deficiency will increase from 288 MMCF in 1953 to 337 MMCF by 1954. In Area VIII a daily deficiency of 267 MMCF will occur by November of 1952, increasing to 367 MMCF per day by November of 1953.

In cold weather, however, due to the increased number of house heating consumers throughout the Nation(an average of 6,844,000 residential natural gas heating consumers in 1949, or 60% saturation) it will be necessary to curtail severely industrial loads, in order to protect the domestic consumer.

Petroleum Pipe Lines

The existing systems of crude and products pipe lines, to-

gether with projects now under construction, and definitely planned projects which have the recommendation of the Subcommittee, will meet the present known foreseeable needs.

The projects involve pipe and stations for replacements or to eliminate bottlenecks or extend present systems, and intermediate or booster stations to obtain maximum pumping capacities of existing facilities. Material such as line pipe and fittings, pumping equipment, tankage, etc., as well as the manpower to operate same, included in the projects recommended by the Subcommittee must be made available promptly if the improvements and enlargements are to be completed at the earliest possible date.

Respectfully submitted,

P. C. Spencer, Chairman

Committee on Petroleum Transportation of the
National Petroleum Council

November 28, 1950

EXHIBIT I

MEMBERSHIP LISTS

COMMITTEE ON PETROLEUM TRANSPORTATION

AND

SUBCOMMITTEE OF COMMITTEE ON PETROLEUM TRANSPORTATION

November 28, 1950

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - P. C. Spencer
Sinclair Oil Corporation
630 Fifth Avenue
New York 20, New York

SECRETARY - J. E. Dyer
Sinclair Oil Corporation
630 Fifth Avenue
New York 20, New York

K. S. Adams
Phillips Petroleum Company
Bartlesville, Oklahoma

Munger T. Ball
Sabine Transportation Company, Inc.
P. O. Box 1500
Port Arthur, Texas

Lee R. Cowles
Standard Oil Company (Indiana)
910 South Michigan Avenue
Chicago 80, Illinois

A. Homer DeFriest
Socony-Vacuum Oil Company, Inc.
26 Broadway
New York 4, New York

J. C. Donnell II
The Ohio Oil Company
539 South Main Street
Findlay, Ohio

Fayette B. Dow
National Petroleum Association
and
Western Petroleum Refiners
Association
958 Munsey Building
Washington 4, D. C.

H. A. Gilbert
Oil Transfer Corporation
17 Battery Place
New York 4, New York

B. C. Graves
Union Tank Car Company
228 North LaSalle Street
Chicago 1, Illinois

B. I. Graves
Tide Water Associated Oil Company
17 Battery Place
New York 4, New York

Dene B. Hodges
Shell Oil Company
50 West 50th Street
New York 20, New York

Bushrod B. Howard
Standard Oil Company (N.J.)
30 Rockefeller Plaza
New York 20, New York

D. A. Hulcy
Lone Star Gas Company
1915 Wood Street
Dallas 1, Texas

Charles S. Jones
Richfield Oil Corporation
555 South Flower Street
Los Angeles 17, California

W. Alton Jones
Cities Service Company
60 Wall Tower
New York 5, New York

W. G. Maguire
Panhandle Eastern Pipe Line Company
120 Broadway
New York 5, New York

Glenn E. Nielson
Husky Oil Company
P. O. Box 380
Cody, Wyoming

COMMITTEE ON PETROLEUM
TRANSPORTATION (cont'd)

S. F. Niness
National Tank Truck Carriers, Inc.
c/o Leaman Transportation Company, Inc.
520 East Lancaster Avenue
Downingtown, Pennsylvania

J. R. Parten
Woodley Petroleum Company
P. O. Box 1403
Houston 1, Texas

James P. Patterson
Pan American Petroleum and Transport Company
122 East 42nd Street
New York 17, New York

T. S. Petersen
Standard Oil Company of California
225 Bush Street
San Francisco 20, California

W. S. S. Rodgers
The Texas Company
135 East 42nd Street
New York 17, New York

S. A. Swensrud
Gulf Oil Corporation
Gulf Building
Pittsburgh 30, Pennsylvania

L. S. Wescoat
The Pure Oil Company
35 East Wacker Drive
Chicago 1, Illinois

SUBCOMMITTEE ON BARGE AND LAKE TANKER TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - H. A. Gilbert
Oil Transfer Corporation
17 Battery Place
New York 4, New York

VICE CHAIRMAN - Sherman D. Archbold
Esso Standard Oil Company
15 West 51st Street
New York 19, New York

Munger T. Ball
Sabine Transportation Company, Inc.
P. O. Box 1500
Port Arthur, Texas

Andrew P. Calhoun
American Barge Line Company
1520 Grant Building
Pittsburgh 19, Pennsylvania

A. L. Christy
The Pure Oil Company
35 East Wacker Drive
Chicago 1, Illinois

August W. Frey
National Oil Transport Corporation
25 Broadway
New York 4, New York

J. W. Hershey
Commercial Petroleum & Transport Company
344 Mellie Esperson Building
Houston 2, Texas

L. M. Jonassen
Cleveland Tankers, Inc.
P. O. Box 6479
Cleveland 13, Ohio

Harry B. Jordan
Canal Barge Lines
615 Commercial Place
New Orleans, Louisiana

George S. Kimball
Boston Fuel Transport, Inc.
75 Federal Street
Boston, Massachusetts

Charles A. Lockard
Empire State Petroleum Association, Inc.
122 East 42nd Street
New York 17, New York

Thomas B. Mann
Great Lakes Transport Corporation
3112 Book Tower
Detroit 26, Michigan

Chester C. Thompson
The American Waterways Operators, Inc.
1319 F Street, N. W.
Washington 4, D. C.

Parker S. Wise
Socony-Vacuum Oil Company, Inc.
26 Broadway
New York 4, New York

Arthur O. Woll
General Petroleum Corporation
P. O. Box "A"
Terminal Island, California

SUBCOMMITTEE ON NATURAL GAS PIPE LINE TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - J. French Robinson
The East Ohio Gas Company
1405 East Sixth Street
Cleveland 14, Ohio

VICE CHAIRMAN - R. H. Hargrove
Texas Eastern Transmission Corporation
P. O. Box 1612
Shreveport 94, Louisiana

Arthur F. Bridge
Southern Counties Gas Company of California
810 South Flower Street
Los Angeles 17, California

Stuart M. Crocker
The Columbia Gas System, Inc.
120 East 41st Street
New York 17, New York

John A. Ferguson
Independent Natural Gas Association of America
World Center Building
Washington 6, D. C.

Robert W. Hendee
Colorado Interstate Gas Company
P. O. Box 1087
Colorado Springs, Colorado

D. A. Hulcy
Lone Star Gas Company
1915 Wood Street
Dallas 1, Texas

Paul Kayser
El Paso Natural Gas Company
2001 National Standard Building
Houston 2, Texas

W. G. Maguire
Panhandle Eastern Pipe Line Company
120 Broadway
New York 5, New York

N. C. McGowen
United Gas Corporation
P. O. Box 1407
Shreveport 92, Louisiana

Gardiner Symonds
Tennessee Gas Transmission Company
P. O. Box 2511
Houston 1, Texas

SUBCOMMITTEE ON PETROLEUM PIPE LINE TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - Wallace R. Finney
Standard Oil Company (N.J.)
15 West 51st Street
New York 19, New York

VICE CHAIRMAN - W. C. Kinsolving
Sun Pipe Line Company
1608 Walnut Street
Philadelphia 3, Pennsylvania

SECRETARY - J. H. Peper
The Buckeye Pipe Line Company
30 Broad Street
New York 4, New York

Richard Bandy
Midland Cooperative Wholesale
Cushing, Oklahoma

J. L. Burke
Service Pipe Line Company
P. O. Box 1979
Tulsa 2, Oklahoma

George H. Hill, Jr.
Cities Service Company
60 Wall Tower
New York 5, New York

Charles S. Jones
Richfield Oil Corporation
555 South Flower Street
Los Angeles 17, California

Basil H. Lucas
Republic Pipe Line Company
Benedum-Trees Building
Pittsburgh 22, Pennsylvania

R. B. McLaughlin
The Texas Pipe Line Company
P. O. Box 2332
Houston 1, Texas

O. F. Moore
The Ohio Oil Company
539 South Main Street
Findlay, Ohio

R. K. Paine
Standard Oil Company of California
225 Bush Street
San Francisco 20, California

T. E. Swigart
Shell Pipe Line Corporation
P. O. Box 2648
Houston 1, Texas

R. J. Tibbets
Sinclair Refining Company
Sinclair Building
Independence, Kansas

L. H. True
Magnolia Pipe Line Company
P. O. Box 900
Dallas 1, Texas

W. J. Wilkins
Gulf Oil Corporation
Gulf Building
Pittsburgh 30, Pennsylvania

SUBCOMMITTEE ON RAIL TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - Fayette B. Dow
National Petroleum Association
and
Western Petroleum Refiners Association
958 Munsey Building
Washington 4, D. C.

ASSOCIATE CHAIRMAN - B. C. Graves
Union Tank Car Company
228 North LaSalle Street
Chicago 1, Illinois

TRANSPORTATION ANALYST - Porter L. Howard
Sun Oil Company
1608 Walnut Street
Philadelphia 3, Pennsylvania

Andrew G. Anderson
Socony-Vacuum Oil Company, Inc.
26 Broadway
New York 4, New York

P. G. Anderson
Lion Oil Company
Lion Oil Building
El Dorado, Arkansas

John W. Brown
E. I. du Pont de Nemours & Company
1007 Market Street
Wilmington 98, Delaware

E. E. Brumberg
Quaker State Oil Refining
Corporation
P. O. Box 138
Oil City, Pennsylvania

A. D. Carleton
Standard Oil Company of California
225 Bush Street
San Francisco 20, California

H. E. Coyl
General American Transportation
Corporation
135 South LaSalle Street
Chicago 90, Illinois

C. F. Dowd
Tide Water Associated Oil Company
17 Battery Place
New York 4, New York

E. W. Evans
The Ohio Oil Company
539 South Main Street
Findlay, Ohio

Samuel M. Felton
Shippers' Car Line Corporation
30 Church Street
New York 7, New York

Raymond R. Hooper
Cities Service Oil Company (Pa.)
70 Pine Street
New York 5, New York

A. L. Klein
Republic Oil Refining Company
Benedum-Trees Building
Pittsburgh 22, Pennsylvania

Paul H. Kuhns
Continental Oil Company
Ponca City, Oklahoma

J. R. Lewallen
Anderson-Prichard Oil Corporation
1000 Apco Tower
Oklahoma City 2, Oklahoma

SUBCOMMITTEE ON RAIL TRANSPORTATION
(cont'd)

L. C. Monroe
Union Oil Company of California
617 West Seventh Street
Los Angeles 17, California

C. R. Musgrave
Phillips Petroleum Company
Bartlesville, Oklahoma

Glenn E. Nielson
Husky Oil Company
P. O. Box 380
Cody, Wyoming

W. D. Ohle
Sinclair Refining Company
630 Fifth Avenue
New York 20, New York

Douglas L. Orme
Cosden Petroleum Corporation
P. O. Box 1311
Big Spring, Texas

J. R. Parten
Woodley Petroleum Company
P. O. Box 1403
Houston 1, Texas

Louis B. Rada
Deep Rock Oil Corporation
Atlas Life Building
Tulsa 2, Oklahoma

L. H. S. Roblee
North American Car Corporation
231 South LaSalle Street
Chicago 4, Illinois

Ralph P. Russell
Pennsylvania Railroad Company
15 North 32nd Street
Philadelphia 4, Pennsylvania

E. J. Schiffer
Gulf Oil Corporation
Gulf Building
Pittsburgh 30, Pennsylvania

Edward D. Sheffe
Esso Standard Oil Company
15 West 51st Street
New York 19, New York

Charles H. Wager
Shell Oil Company
50 West 50th Street
New York 20, New York

Robert J. Walshe
The Texas Company
135 East 42nd Street
New York 17, New York

W. K. Warren
Warren Petroleum Corporation
P. O. Box 1589
Tulsa 2, Oklahoma

John S. Wertz
Vickers Petroleum Company, Inc.
P. O. Box 2240
Wichita 1, Kansas

James S. White, Jr.
Kendall Refining Company
77 North Kendall Avenue
Bradford, Pennsylvania

L. W. Witte
Mid-Continent Petroleum Corporation
P. O. Box 381
Tulsa 2, Oklahoma

SUBCOMMITTEE ON TANKER TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - James P. Patterson
Pan American Petroleum
& Transport Company
122 East 42nd Street
New York 17, New York

Munger T. Ball
Sabine Transportation Company, Inc.
P. O. Box 1500
Port Arthur, Texas

F. Willard Bergen
Marine Transport Lines, Inc.
11 Broadway
New York 4, New York

T. E. Buchanan
The Texas Company
135 East 42nd Street
New York 17, New York

Millard G. Gamble
Esso Shipping Company
30 Rockefeller Plaza
New York 20, New York

Willard F. Jones
Gulf Oil Corporation
17 Battery Place
New York 4, New York

A. E. Kihn
Standard Oil Company of California
225 Bush Street
San Francisco 20, California

Charles Kurz
Keystone Shipping Company
1000 Walnut Street
Philadelphia 7, Pennsylvania

D. K. Ludwig
National Bulk Carriers, Inc.
630 Fifth Avenue
New York 20, New York

Frederic R. Pratt
Socony-Vacuum Oil Company, Inc.
26 Broadway
New York 4, New York

A. E. Watts
Sinclair Refining Company
630 Fifth Avenue
New York 20, New York

Arthur O. Woll
General Petroleum Corporation
P. O. Box "A"
Terminal Island, California

SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - Lee R. Cowles
Standard Oil Company (Indiana)
910 South Michigan Avenue
Chicago 80, Illinois

Frank Baird-Smith
Refiners Transport & Terminal Corporation
2111 Woodward Avenue
Detroit 1, Michigan

M. M. Beckes
Socony-Vacuum Oil Company, Inc.
26 Broadway
New York 4, New York

L. S. Bessonett
Standard Oil Company of California
225 Bush Street
San Francisco 20, California

L. A. Carlson
Gulf Oil Corporation
357 Gulf Building
Pittsburgh 30, Pennsylvania

Morris Crandall
Illinois Farm Supply
608 South Dearborn Street
Chicago, Illinois

Charles J. Foster
Deep Rock Oil Corporation
1322 Kingsbury Street
Chicago 22, Illinois

A. B. Gorman
Esso Standard Oil Company
15 West 51st Street
New York 19, New York

Ed W. Jarvis
Standard Oil Company (Kentucky)
Starks Building
Louisville 2, Kentucky

Gavin Laurie
The Atlantic Refining Company
260 South Broad Street
Philadelphia 1, Pennsylvania

S. F. Niness
National Tank Truck Carriers, Inc.
c/o Leaman Transportation Company, Inc.
520 East Lancaster Avenue
Downingtown, Pennsylvania

T. L. Preble
Tide Water Associated Oil Company
17 Battery Place
New York 4, New York

Clark E. Seargeant
Seargeant Transportation Company
415 East Montecito Street
Santa Barbara, California

C. Austin Sutherland
National Tank Truck Carriers, Inc.
1424 16th Street, N. W.
Washington 6, D. C.

Charles H. Wager
Shell Oil Company
50 West 50th Street
New York 20, New York

EXHIBIT II

CORRESPONDENCE CONCERNING THE ASSIGNMENT OF THE COMMITTEE

C
O
P
Y

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

September 12, 1950

Dear Mr. Spencer:

Mr. H. A. Stewart, Director of the Oil and Gas Division, advises me that he and Mr. Carroll D. Fentress discussed with you, Mr. Hallanan, Mr. Dyer and Mr. Marshall problems in connection with the report which your committee is preparing on the oil transportation facilities in accordance with my request of July 21, 1950, to Mr. Hallanan.

I concur that, for the time being, the Council can meet the needs of the Department of the Interior by preparing a detailed report on the existing petroleum transportation facilities, and known projected increases in transportation facilities.

It would be most helpful if your committee would include appropriate comments on probable transportation bottlenecks along with recommendations on appropriate means of eliminating them.

I realize that in view of the present uncertainties your committee cannot at this time go beyond obtaining the essential basic data as to existing and planned facilities.

Sincerely yours,

/s/ Oscar L. Chapman

Secretary of the Interior

Mr. P. C. Spencer, Chairman
Transportation Committee
National Petroleum Council
630 Fifth Avenue
New York, N. Y.

C
O
P
Y

SINCLAIR OIL CORPORATION
630 Fifth Avenue
New York 20, N. Y.

Office of the President

September 6, 1950

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

Dear Mr. Hallanan:

Re: Committee on Petroleum Transportation
National Petroleum Council

The Council's direction to the current Transportation Committee sets forth three assignments:

1 - To ascertain and bring up to date the facts regarding all transportation facilities, including tankers (ocean and lake), barges, tank cars, over-the-road transport trucks and pipelines;

2 - To report on the adequacy of such facilities to meet the Nation's needs; and

3 - To make such recommendations (not involving industry plans, programs or allocations) as may appear appropriate in assuring the future adequacy of such facilities.

As you know, I have appointed six subcommittees representing the various forms of transportation involved. The members of these subcommittees are now actively engaged in assembling the necessary information and data as to existing facilities with which to respond to item 1 of our assignments, which is quite clear.

There is considerable uncertainty and confusion, however as to what the functions of our Committee and subcommittees are intended to be with respect to items 2 and 3. Obviously, we cannot report on the adequacy of existing petroleum transportation facilities "to meet the Nation's needs" and make recommendations to assure the future adequacy of such facilities without the use of some kind of a yardstick as to what our future needs are likely to be. Our conclusions in this respect must be based upon some estimates or assumptions as to the quantity and location of materials to be moved, as well as the destination to which they should be moved and the time of moving.

In order to avoid duplications of effort and to expedite completion of its work, the Transportation Committee undertook through appropriate channels to obtain such relevent factual data as had heretofore been gathered by industry transportation experts for Governmental agencies, particularly the National Security Resources Board. As we understand it the National Security Resources Board has agreed to make available certain data in respect of tankers and pipelines but subject to restrictions as to public distribution and disclosure. We also understand that NSRB contemplates that the NPC Transportation Committee studies will deal with peacetime operations and not plans for National Defense. If our Committee's studies are to deal only with peacetime operations and not plans for National Defense then it is obvious that the Committee's assignments should be redefined.

The suggestion has been made from within our Committee that in lieu of any specific information as to extraordinary requirements the Transportation Committee should make certain assumptions as to possible emergency needs and then set out to what extent existing facilities are adequate to meet such needs and make recommendations accordingly.

We are quite prepared to make appropriate estimates as to future peacetime needs, but for reasons which you can fully understand I believe it would be quite unwise for the Committee to make its own estimates or assumptions as to future war or defense needs.

It seems to me that we urgently need clarification of the Committee's assignments. If we are to determine the adequacy of petroleum transportation facilities "to meet the Nation's needs" we should have an appropriate definition of these needs. This clarification should come from Governmental sources at a level where we can be assured that whatever we are called upon to do is properly integrated in the overall program. As matters now stand it would appear that the only thing we may safely proceed to do is to make a current plysical inventory of existing transportation facilities. That work is under way.

I believe this is a subject matter of sufficient urgency to warrant your presenting the situation, as head of the National Petroleum Council, to the Secretary of the Interior for his consideration. If I can be helpful in the matter, please call on me.

Yours very truly,

P. C. Spencer, Chairman
Transportation Committee
National Petroleum Council

EXHIBIT III

REPORTS OF SUBCOMMITTEES

(a) Barge and Lake Tankers

(b) Rail (Tank Cars)

(c) Tankers

(d) Tank Trucks

(e) Natural Gas Pipe Lines

(f) Petroleum Pipe Lines

EXHIBIT III
(a)

REPORT OF THE
SUBCOMMITTEE ON BARGE AND LAKE TANKER TRANSPORTATION
OF THE
COMMITTEE ON PETROLEUM TRANSPORTATION

November 22, 1950

C
O
P
Y

17 BATTERY PLACE
NEW YORK, NEW YORK

November 22, 1950

Mr. P. C. Spencer, Chairman
Transportation Committee
National Petroleum Council
Sinclair Oil Corporation
630 Fifth Avenue
New York, New York

Dear Mr. Spencer:

Supplementing the reports, dated September 28 and October 3, of the Subcommittee on Barge and Lake Tanker Transportation of the National Petroleum Council, we submit the following up-to-date data.

Inland Waterways and Great Lakes Petroleum Tank Vessels under 31,300 Bbls. (42's) capacity - as of October 1, 1950

Area	Propelled Units	Propelled Bbls.(42's) Capacity	Non-Propelled Units	Non-Propelled Bbls.(42's) Capacity	Total Units	Total Bbls.(42's) Capacity
Active 6/30/50						
East Coast (A)(B)	181	1,007,706	376	2,953,880	557	3,961,586
Western Rivers	1	8,000	1,397	12,800,296	1,398	12,808,296
Great Lakes (B)	18	715,320	16	117,509	34	832,829
West Coast	15	103,960	123	694,842	138	798,802
Sub-Total	215	1,834,986	1,912	16,566,527	2,127	18,401,513
Tank vessels under the jurisdiction of the Armed Services (C)					120	462,142
Tank vessels impossible of classification a/c incomplete data (C)					14	23,456
Total tank vessels inspected as of June 30, 1950					2,261	18,887,478
Inspected tank vessels certified between June 30 and October 1, 1950(C)					45	424,142
Active in 1949 but not recertified by October 1, 1950 (C)					146	730,000(D)
Total indicated U.S. Inland Waterways petroleum fleet as of October 1, 1950					2,452	20,041,620

(A) In addition, the S/S "Natalie D. Warren" (32,840 Bbls.-42's capacity) is certified for L.P.G.

(B) Included in the East Coast totals are 19 self-propelled vessels having a total capacity of 286,660 Bbls. (42's) and 47 non-propelled vessels having a total capacity of 788,915 Bbls. (42's), or a grand total of 66 vessels with a combined capacity of

1,075,575 Bbls. (42's), which are capable of operating, and at times do operate, on the Great Lakes.

(C) Impossible of breakdown by "area" or "classification."

(D) Estimated capacity.

The Committee has made arrangements with the appropriate Government Recording Agency, so that information will be available to permit maintaining the statistical data set forth above on a current basis, with prompt dispatch.

In addition to the vessels reported above as "Active", there were building (as of October 1, 1950), according to the best information available, 50 tank barges with an estimated combined capacity of approximately 650,000 Bbls. There also was building one L.P.G. barge of 1600 DWT capacity.

It is pertinent to point out, however, that the above data do not reflect how much equipment might be made available for any particular emergency service, in case of full mobilization. The only way in which such a determination can be made with any degree of soundness is to establish the necessary facilities for obtaining daily barge reports, such as was done during the last war; for tabulating and analyzing such reports; and for establishing and cataloguing thoroughly those non-essential and cross-haul movements which conceivably could be, or should be, eliminated in time of national emergency.

It is suggested, therefore, subject to your concurrence, that the general Transportation Committee recommend that the Petroleum Administration for Defense authorize (by directive, if necessary) the establishment of a Barge and Lake Tanker Industry Subcommittee Office

with authority to require such barge reports from operators. It is assumed that such a Committee would be financed by industry as was done during World War II. The information obtained by it would be submitted to the Petroleum Administration for Defense, only in tabulated form, for use by that agency in formulating policy. All records of such a Committee should remain under the exclusive jurisdiction of the petroleum industry.

The Committee also wishes to reaffirm its previous recommendation that petroleum inland transportation be transferred to the jurisdiction of the Interior Department from the jurisdiction of the Interstate Commerce Commission (DTA). We understand that some steps already have been taken to effectuate this recommendation, but we urge the constant vigilance of the General Transportation Committee toward complete accomplishment of this objective.

In the case of complete mobilization of transportation facilities, Inland Waterways petroleum transportation obviously will suffer to some extent from potential shortages of manpower and materials. Nevertheless, it is the belief of your Committee that, with the Petroleum Administration for Defense being the claiming agency for both manpower and materials, this important segment of general transportation will be able to meet, within reasonable tolerances, any demands which may be placed upon it.

Respectfully submitted,

/s/ H. A. Gilbert,

H. A. Gilbert, Chairman
Subcommittee on Barge & Lake Tanker Transportation

17 BATTERY PLACE
NEW YORK 4, NEW YORK

September 28, 1950

Mr. P. C. Spencer, Chairman
Transportation Committee
National Petroleum Council
Sinclair Oil Corporation
630 Fifth Avenue
New York, New York

Dear Mr. Spencer:

The following report has been compiled in accordance with your request of September 15, 1950 and reflects not only the statistical data which you requested, but also the views of your subcommittee on barge and lake tanker transportation, regarding the type of organization structure which they consider essential to effectuate fully the total mobilization of inland waterways petroleum facilities for an all-out emergency effort. Your careful consideration of these proposals, as well as the factual data enclosed herein, is urgently and respectfully requested.

Without the opportunity of canvassing directly all the various tank vessel operators in the country, due to the limitations of time, your Committee has compiled data with respect to existing petroleum equipment, based upon the U.S. Coast Guard official list of inspected tank vessels. This data has been augmented also by additional information obtained directly from the Coast Guard in Washington and from other public factual publications. It is the belief of your Committee that this tabulation can be considered accurate.

For the purpose of this study, the country has been divided into four areas of operation, as follows:

1. The Mississippi River System (including The Gulf Intra-Coastal Canal).

All tank barges operating on the Mississippi River System, as of August 1, 1950, have been tabulated in Table I, according to the year built. This shows that there were a total of 1722 tank barges in operation with a total capacity of 14,768,610 bbls.

Note: (These figures are subject to some slight reduction due to retirements. Data regarding these will not be available until about November 1, 1950, when the next issue of the Coast Guard Tank Vessel Report is released.)

Information available to the Committee indicates the towing power already built is adequate, under present day operating conditions, to move today's requirements in petroleum barges.

2. The East Coast Waterways (including the New York State Barge Canal).

All non-propelled and self-propelled petroleum barge equipment, presently trading in the east coast area and on the New York State Barge Canal, has been tabulated in Table II, according to the year built. This shows that there were in operation 567 units having a total capacity of 4,079,099 bbls. (See "Note" in (1.) above.)

3. The Great Lakes.

Table III represents the tabulation of the American Flag Tanker Fleet operating on the Great Lakes, broken down by the year built. It excludes the present equipment which seasonally operates on the New York State Barge Canal or in short coastwise trade, but which is capable of, and sometimes does, operate on the Great Lakes. This shows available 19 units having a total capacity of 705,121 bbls. (See "Note" in (1.) above.)

On this same tabulation there is shown, purely as a matter of memorandum, the available self-propelled tanker fleet in the Canadian Registry presently operating on the Great Lakes or capable of engaging in such service - 42 units having a total capacity of 893,000 bbls.

4. The Inland Waterways System of the West Coast.

Table IV gives the latest available data as to barge and self-propelled equipment operating in the West Coast

waterways, broken down by the year built. This equipment is concentrated principally in the San Francisco Bay area and the Columbia River. This shows there are 91 units, having a total capacity of 441,554 bbls. These figures do not include any equipment built prior to 1926, as such data presently is not available. (See "Note" in (1) above.)

The summary of the above mentioned four tables shows that as of August 1, 1950 there were in petroleum service in this country a total of 2,399 units with a combined capacity of 19,994,384 bbls. (42's).

In order to report with reasonable accuracy on the new projected increase in transportation facilities, reference has been made to the Bulletin of the American Bureau of Shipping and to several trade journals and other sources of public information. Based on the most complete data which your Committee has been able to develop, the following tabulation shows the barge building status as of September 1, 1950:

	No. of Vessels	Bbls. (42's) Total Capacity
Mississippi River System (including Gulf Intra-Coastal Canal)	4	23,695
Inland Waterways System of the West Coast	1	9,000

Note: No data presently is available regarding vessels under construction but not contemplating American Bureau Classification.

It is pertinent to point out that all the inland waterways petroleum equipment, to which reference is made in this report, is equipment which is of highly technical design and construction. For the specialized uses to which it is put, it is equipped with specialized power and pumping machinery; specially protected electrical facilities, all installed for the utmost possible safety and all inspected and approved. This is done for the protection of the equipment itself,

the people who operate it and for the public safety. Such equipment, carefully constructed, also must be maintained at a high standard. It is subject to annual inspection and certification or recertification by the U.S. Coast Guard. Personnel to operate such equipment likewise must have the necessary experience, training and skill to meet requirements for certification by the same agency. These requirements for safety, both of equipment and personnel, are in excess of the corresponding requirements which apply to all other run-of-the-mill types of inland waterways marine equipment. In the judgment of the Committee, it is important that great consideration be given to the manpower needs of the petroleum inland waterways transportation facilities, in view of the fact above stated.

As your Committee reported under date of August 21, 1950, it is their considered judgment that under the free enterprise method of operation, based on today's needs, the floating equipment outlined above is substantially in balance with the demands for its services. It is pertinent to point out, however, that under a full mobilization economy severe dislocations could, and probably would, occur to normal operating programs. The experience of the various members of the Committee gained in combatting this same problem in World War II lead them to state unequivocally that if the fullest possible utilization of this equipment is to be obtained under a condition of total economic mobilization, adequate safeguards for its direction must be established. With this in mind, your Committee wishes to submit the following views:

It is of paramount importance that the <u>complete</u> <u>direction</u> of the inland waterways petroleum carrying facilities of this country be

concentrated in a single agency directly allied with petroleum, and not separated for direction between several agencies. It is axiomatic in the petroleum industry that petroleum supply cannot be separated from its transportation. Therefore, the directing and planning of such distribution, including transportation, must originate simultaneously in a single agency if the hour to hour arrangements required are to be met and a successfully coordinated program be made effective. Also, historically, the inland waterways transportation of petroleum always has been a specialized problem.

Your Committee recognizes that there might be some possible points of conflict between the petroleum industry; the general towing industry; the agencies for critical material or manpower; or other parts of government. On the other hand, they believe that if a petroleum authority is established to supervise all phases of the petroleum business from the well to the ultimate consumer, (whether that be a military or civilian segment of the Nation) the overall efficiency of petroleum distribution will be served in a more positive manner in this suggested way, than by any other arrangement. Under such a program, should there be a conflict between petroleum and general transportation for manpower for example, the manpower needs of the petroleum barge transportation industry could be presented to the manpower authority and weighed by them against the needs of other segments of the general barge transportation industry. The same thing would hold good with respect to critical materials.

It is the considered opinion of your Committee that you should lend your full support toward having petroleum inland waterways

transportation placed under the jurisdiction of the Interior Department, rather than under the jurisdiction of the Interstate Commerce Commission. This step also should make easier, when the present emergency is over, the orderly return to a free economy of that vital segment to the petroleum business -- inland waterways transportation.

Sincerely yours,

(s) H. A. Gilbert

H. A. Gilbert, Chairman
Subcommittee on Barge & Lake Tanker Transportation

PETROLEUM TANK VESSEL EQUIPMENT - 8/1/50 - TABLE I
MISSISSIPPI RIVER SYSTEM
(INCLUDING THE GULF INTRA-COASTAL CANAL)

YEAR BUILT	NO. OF UNITS	BBLS. (42's) CAPACITY
1950	58	825,013
1949	60	855,615
1948	142	1,898,727
1947	91	983,193
1946	50	539,137
1945	106	982,595
1944	43	415,108
1943	92	838,676
1942	102	953,313
1941	175	1,534,129
1940	139	1,084,825
1939	86	634,693
1938	32	213,133
1937	103	734,453
1936	82	471,369
1935	45	251,165
1934	28	130,591
1933	24	127,195
1932	23	92,706
1931	18	102,960
1930	10	9,189
1929	16	111,330
1928	31	147,196
1927	10	30,417
1926	19	139,060
SUB TOTAL	1,585	14,105,788
PRIOR TO 1926	137	662,822
TOTAL	1,722	14,768,610

PETROLEUM TANK VESSEL EQUIPMENT - 8/1/50 - TABLE II
EAST COAST AREA
(INCLUDING THE N. Y. STATE BARGE CANAL)

YEAR BUILT	NO. OF UNITS	BBLS. (42's) CAPACITY
1950	23	273,099
1949	9	102,448
1948	14	186,740
1947	12	134,872
1946	7	78,267
1945	9	70,595
1944	4	14,610
1943	4	21,667
1942	6	22,889
1941	6	49,556
1940	12	98,625
1939	13	58,159
1938	9	47,699
1937	37	329,109
1936	15	186,316
1935	10	41,328
1934	14	168,415
1933	9	86,834
1932	13	43,644
1931	9	35,724
1930	6	36,679
1929	6	22,811
1928	6	31,480
1927	8	36,172
1926	8	37,464
SUB TOTAL	269	2,215,202
PRIOR TO 1926	298	1,863,897
TOTAL	567	4,079,099

GREAT LAKES - U.S. FLAG TANK VESSELS - 8/1/50 - TABLE III

YEAR BUILT	NO. OF UNITS	BBLS. (42's) CAPACITY
1950	2	1,200
1949	1	38,190
1944	1	43,784
1942	2	88,000
1940	1	35,890
1938	1	28,794
1937	2	86,681
1933	1	31,766
1930	1	50,720
1928	2	85,042
1920	1	16,666
1918	1	66,600
1912	1	43,788
1898	1	48,000
1896	1	40,000
	19	705,121

MEMO ONLY

Canadian Flag Tonnage on the Great Lakes or capable of being brought into the Lakes - 8/1/50.

42 vessels - capacity 893,000 Bbls. (42's).

PETROLEUM TANK VESSEL EQUIPMENT - 8/1/50 - TABLE IV

WEST COAST

YEAR BUILT	NO. OF UNITS	BBLS. (42's) CAPACITY
1950	6	50,810
1949	2	19,212
1948	5	27,898
1947	1	12,000
1946	13	37,114
1945	8	35,014
1944	8	38,251
1943	5	35,920
1942	3	18,613
1941	7	30,576
1940	7	35,115
1939	4	18,737
1938	4	20,128
1935	2	745
1933	1	400
1932	1	450
1931	1	450
1930	2	10,762
1929	2	10,304
1928	1	1,547
1927	4	13,904
1926	4	23,604
TOTAL	91	441,554

SUBCOMMITTEE ON BARGE AND LAKE TANKER TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - H. A. Gilbert
Oil Transfer Corporation

VICE CHAIRMAN - Sherman D. Archbold
Esso Standard Oil Company

Munger T. Ball
Sabine Transportation Company, Inc.

Andrew P. Calhoun
American Barge Line Company

A. L. Christy
The Pure Oil Company

August W. Frey
National Oil Transport Corporation

J. W. Hershey
Commercial Petroleum and Transport Company

L. M. Jonassen
Cleveland Tankers, Inc.

Harry B. Jordan
Canal Barge Lines

George S. Kimball
Boston Fuel Transport, Inc.

Charles A. Lockard
Empire State Petroleum Association, Inc.

Thomas B. Mann
Great Lakes Transport Corporation

Chester C. Thompson
The American Waterways Operators, Inc.

Parker S. Wise
Socony-Vacuum Oil Company, Inc.

Arthur O. Woll
General Petroleum Corporation

EXHIBIT III
(b)

REPORT OF THE
SUBCOMMITTEE ON RAIL TRANSPORTATION
OF THE
COMMITTEE ON PETROLEUM TRANSPORTATION

September 27, 1950

REPORT OF THE
SUBCOMMITTEE ON RAIL TRANSPORTATION
OF THE
COMMITTEE ON PETROLEUM TRANSPORTATION

A census taken by the Association of American Railroads shows that as of January 1, 1950, there were available approximately 116,000 privately owned TM and TMI general purpose tank cars including government-owned cars but excluding 9,000 railroad-owned tank cars. Of the above 116,000 privately owned tank cars, it is estimated that 32,000 are in other service leaving 84,000 available for petroleum service. Of this latter number it is estimated that 3,000 are in service in Canada upon which duty has been paid, or is being paid, leaving 81,000 TM and TMI tank cars in the United States for petroleum service, plus the 9,000 railroad-owned tank cars generally used for railroad needs for hauling Diesel oil, fuel oil and water.

It is estimated that 2,000 more general use cars of an average capacity of 10,000 gallons should be added promptly to the tank car fleet for use in petroleum service in order to provide facilities to meet peak shipments that are due to various causes some of which have no relation to supply and demand, such as railroad performance, adverse weather conditions, etc.

No figures are available as to the anticipated movements in tank cars for 1951, but it is estimated that 2,000 general purpose tank cars of an average capacity of 10,000 gallons will be needed to handle the increased consumptive demands estimated by the Oil and Gas Division of the Department of the Interior that will move by rail in tank cars.

The number of cars in addition to the foregoing that should be constructed is dependent entirely upon the number of cars now available but which will be removed from service during the balance of this year and through 1951 because of age and condition. The best estimates available of general purpose cars which will be retired is approximately 3,000 although some of these cars which were earmarked for dismantling may be reconditioned and have AB brakes applied in the light of the present high cost of building tank cars.

It will be noted from the foregoing that 2,000 tank cars are estimated to be needed promptly: 2,000 to take care of increased consumptive demand in 1951 and 3,000 to replace cars to be dismantled, or a total of 7,000 general service tank cars of an average capacity of 10,000 gallons.

As to tank cars for movement of Liquefied Petroleum Gas, it is estimated that to meet the needs of the industry 1,750 Class 105-A-300 cars should be built this year and during 1951 to meet increased consumption.

The foregoing is based entirely on requirements deemed necessary to meet the rising demands of our domestic economy, and in the case of pressure cars does not include cars that might be needed to transport avgas components or products used for increased synthetic rubber requirements.

Car builders reported on September 14, 1950, that 1,093 Class 103W (general use) tank cars are on their order books and that 1,512

Class 105-A-300W (LPG) tank cars have also been ordered built. All these cars are to be constructed as soon as steel is available.

Respectfully submitted,

Fayette B. Dow, Chairman
Subcommittee on Rail Transportation

SUBCOMMITTEE ON RAIL TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - Fayette B. Dow
National Petroleum Association
and
Western Petroleum Refiners Association

ASSOCIATE CHAIRMAN - B. C. Graves
Union Tank Car Company

TRANSPORTATION ANALYST - Porter L. Howard
Sun Oil Company

Andrew G. Anderson
Socony-Vacuum Oil Company, Inc.

P. G. Anderson
Lion Oil Company

John W. Brown
E. I. du Pont de Nemours & Company

E. E. Brumberg
Quaker State Oil Refining Corporation

A. D. Carleton
Standard Oil Company of California

H. E. Coyl
General American Transportation Corporation

C. F. Dowd
Tide Water Associated Oil Company

E. W. Evans
The Ohio Oil Company

Samuel M. Felton
Shippers' Car Line Corporation

Raymond R. Hooper
Cities Service Oil Company (Pa.)

A. L. Klein
Republic Oil Refining Company

Paul H. Kuhns
Continental Oil Company

J. R. Lewallen
Anderson-Prichard Oil Corporation

L. C. Monroe
Union Oil Company of California

C. R. Musgrave
Phillips Petroleum Company

Glenn E. Nielson
Husky Oil Company

W. D. Ohle
Sinclair Refining Company

Douglas L. Orme
Cosden Petroleum Corporation

J. R. Parten
Woodley Petroleum Company

Louis B. Rada
Deep Rock Oil Corporation

L. H. S. Roblee
North American Car Corporation

Ralph P. Russell
Pennsylvania Railroad Company

E. J. Schiffer
Gulf Oil Corporation

SUBCOMMITTEE ON RAIL TRANSPORTATION
(cont'd)

Edward D. Sheffe
Esso Standard Oil Company

W. K. Warren
Warren Petroleum Corporation

Charles H. Wager
Shell Oil Company

John S. Wertz
Vickers Petroleum Company, Inc.

Robert J. Walshe
The Texas Company

James S. White, Jr.
Kendall Refining Company

L. W. Witte
Mid-Continent Petroleum Corporation

EXHIBIT III
(c)

REPORT OF THE

SUBCOMMITTEE ON TANKER TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

September 28, 1950

October 2, 1950.

Mr. P. C. Spencer, Chairman,
Transportation Committee,
National Petroleum Council,
c/o Sinclair Oil Corporation,
630 Fifth Avenue,
New York, 20, N.Y.

Dear Mr. Spencer:

Pursuant to your instructions, your Committee has met and considered the tanker fleet availability for the carriage of petroleum. Your letter of September 15th clarified the assignment which has been carefully noted and our comments will therefore deal primarily with the U. S. flag and foreign flag tanker fleets as they exist today.

At the outset, we should like to point out that the privately owned tanker fleet is the greatest in the history of the world, industry having recognized its obligation to have available in sufficient numbers, suitable types of tank vessels to meet normal transportation requirements.

The detailed report which is appended hereto, in addition to indicating the tanker fleet carrying capacity, also projects through the years 1951 and 1952, the tankers of the world, equated for T-2 SE-A1 equivalent ships (16,765 D.W.T. x 14-1/2 knots). The number of tankers under construction or on order throughout the world is 290 vessels of 6000 D.W.T. and over, equal to about 5,000,000 D.W.T.

In projecting the tankship availability, and without taking into consideration the factor of obsolescence, there would be an increase of nearly 14% at the end of 1952. Making an allowance for obsolescence, there would be an increase of about 9% at the end of 1952, or an increase in carrying capacity of about 4% per year.

It is the opinion of your Committee that based upon normal requirements, there is carrying capacity under U. S. and foreign flags, sufficient to take care of the presently known world-wide requirements. In addition, the Committee has been informed that the pipe line from Arabia to the eastern Mediterranean will be in operation early in 1951, which should have the effect of increasing the availability of the present world tank fleet by approximately 5% or 70 T-2 SE-A1 tankers.

We should, however, not like to have the above construed to mean that the carrying capacity is sufficient to take care of additional demands which might result from increased requirements on the part of the military or any substantial changes in the normal routing of vessels, i.e., ports of loading or ports of discharge. It is conceivable that any such changed conditions could have a profound effect upon the carrying capacity of the tanker fleet.

Very truly yours,

J. P. Patterson

J. P. Patterson - Chairman
Subcommittee on Tanker Transportation

REPORT OF THE

SUBCOMMITTEE ON TANKER TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

ANALYSIS OF WORLD TANK SHIP FLEETS SEPTEMBER 1, 1950

(Ocean-Going Vessels 6,000 Deadweight Tons and Over)

An inventory of world tank ship fleets having an effective date approximating September 1, 1950 indicates a total of 1,822 tank vessels of slightly more than 26,000,000 deadweight tons with an average speed of 13.4 knots. On an actual basis, the increase for the fiscal year ended September 1, 1950 was 104 vessels and slightly more than 2,000,000 deadweight tons. These net new additions, representing the difference between new construction and the elimination of vessels from the world fleets for various causes, reflect an increase in carrying capacity amounting to 118 T2 equivalents. On balance, therefore, it is indicated that the net additions to the fleet were substantially of a size comparable to the modulus T2 and the deletions from the fleet were appreciably smaller than this notional example utilized for measurement.

On an individual fleet basis, the largest gain quantitatively and relatively for major countries occurred in the Norwegian fleet which increased by 38 actual vessels having an equivalent capacity of 33 T2's. Great Britain's net increase amounts to about 11 T2 equivalents and 16 actual vessels. In the United States fleet, however, there occurred only a nominal change in the military and government owned portion of the fleet while a decline of 22 vessels

was registered in the privately owned segment which was equivalent to a loss of 10 T2's in capacity. This change in the United States flag privately owned tank ship fleet is to be contrasted with a net increase of United States controlled tonnage worldwide, either directly or through foreign subsidiary companies, amounting to the equivalent of 39 T2's in capacity. For example, the loss in the registered tonnage under the United States flag is more than offset by a gain of 36.5 T2's owned or controlled by American companies and registered under the Panamanian, Honduran and Liberian flags.

Substantial increases also occurred for the fleets registered under the E.C.A. country flags which show a net carrying capacity greater by 71 T2 equivalents as compared with a year ago. In essence, world tanker fleets increased 9% during the year ended September 1, 1950; the capacity of total United States controlled vessels under all flags was higher by 5.6%; the balance of the world gained capacity greater than 12% over a year ago; and the United States privately owned fleet declined by 2.4%.

An analysis of the speed and deadweight tonnage characteristics of the present fleet shows once again the concentration within the 16,000-16,999 deadweight tonnage range and 14-14.99 knot group. On a capacity basis, this modal concentration represented 82.7% of the speed and nearly 80% of the deadweight tonnage groupings for the entire world fleet.

A growing proportion of the world carrying capacity is also indicated for the higher speed, larger tanker types beyond this modal group. For example, tank vessels having a deadweight tonnage greater than 16,999 and faster than 14.99 knots on September 1, 1949

were equivalent to 106.3 T2's, while in the current fleet their capacity is equal to 167.5 T2's for an increase of 57.5%. In addition, these vessels represented only 8.1% of the total world capacity a year ago, while today their proportion is nearly 12% of the total world capacity.

An age distribution of the present world fleet emphasizes the heavy concentration of war construction. Although no change has occurred in the average age of all vessels on a world basis when compared with a year ago, some marked changes have occurred in individual flag registries. Last year the average age of the United States fleet was six years and eleven months as against the current average of seven years and seven months. Obviously, this older average age reflects the lack of older tonnage replacements by current construction. For the British fleet there is an increase in the average age amounting to four months, while the Norwegian fleet currently is one full year younger on the average. A very marked decline in age has occurred in the Panamanian fleet which last year showed an average of ten years and two months, while currently the age of the fleet registered under that flag is seven years and eleven months. It is apparent, therefore, that a large concentration of newer vessels exists in the Panamanian fleet today as compared with a year ago.

In the attached tabulations age has also been expressed in terms of cumulative percentages of the total fleet distribution by years. Some exceedingly old vessels are still in existence as evidenced by the fact that more than 5% of the world fleet is over 27 years of age. Ten per cent of the Panamanian fleet and of the "rest of the world" when excluding the United States, British Empire, and Norway also fall in this category. Norway predominates in a more even distribution

of its fleet by annual age groups than any other major country. For example, 51% of the Norwegian fleet is less than seven years old and 33% of it is less than three years old. In contrast, 49% of the United States flag capacity is less than seven years old but only 4% is less than 5 years old. Again, the pattern of war constructed vessels is apparent in the cumulative age distribution of world tanker fleets for, in the aggregate, 18% were built in 1944, and slightly over half in the years 1942 to 1945, inclusive. Of the world capacity, 6% is less than one year old and in actual numbers 83 vessels were added to the world fleet in the first eight months of 1950. This is on the average of about ten vessels per month, whereas in 1949, 98 tankers were added to the world fleets for an average of approximately eight vessels per month. Of the 181 vessels delivered between January 1, 1949 and September 1, 1950, only six were registered under the United States flag, three in 1949 and three during the first eight months of 1950.

In the matter of ownership distribution, it is found that a slight increase has occurred during the past year in the percentage of total world capacity owned by non-oil companies at the expense primarily of oil companies and, nominally, of government-owned ships. Non-oil company owners which a year ago accounted for 41% of the total capacity, now control 44.2% of the total as against 42.7% for all oil companies worldwide. For the first time since records have been maintained, the proportion of world capacity owned by non-oil companies has exceeded that controlled by the oil group. Government ownership has remained fairly stable changing from 14.0% a year ago to 13.1% currently of world capacity.

In Table X there is attached a listing of the United States flag privately owned tank ship fleet as of September 1, 1950. Earlier in the analysis it was shown that this fleet has a carrying capacity of some ten T2 equivalents less than a year ago. Also, the age of these vessels has increased some seven months as compared with a year ago and is now seven years and ten months old on the average.

Tank ships under construction or on order currently number 290 vessels of about 5,000,000 deadweight tons. Of these, 8 are on order in the United States while 154 contracts for construction are placed with the United Kingdom and 66 with Sweden. Norway is building 13, the Netherlands have orders for 12, Denmark is scheduled for 9, France for 7, Japan has orders for 6 tankers, while Italy, Belgium, Portugal and Germany have 4, 3, 2 and 1, respectively. Nearly three-quarters of the total world tank ship construction is scheduled for United Kingdom and Swedish shipyards which account for 50.9% and 23.4%, respectively, of the world program.

On the average, size and speed of these vessels on order or under construction are approximately the same as a T2 so that the 290 actual vessels have a carrying capacity equivalent to about 292 T2's. Nearly 35% of the capacity of these vessels (101 ships of 1,773,000 deadweight tons) is slated for Norwegian registry, while some 25% (78 ships of 1,255,390 deadweight tons) is for the United Kingdom. Present expectations are that 5.4% of the total construction and 2.3% of the registry will occur under the United States flag. It should be noted that the average speed of the vessels scheduled for United States flag registry is 17 knots as compared with 16.1 knots for tank ships on order for the Italian flag, 15.8 for Japanese registry,

15.1 for the Grecian flag and 13.9 both for the United Kingdom and Norwegian flags of registry.

Of the 290 tank vessels on order and under construction, 39 are greater than 16,999 deadweight tons and have a speed in excess of 14.9 knots. This group alone represents more than 21% of the total capacity of the tankers on order and under construction worldwide and indicates a continuation of the trend toward larger and faster vessels experienced since the end of World War II.

In the matter of the expectations for the future size of world tank ship fleets, certain assumptions must be made concerning the factors of additions to and deletions from the present capacity of world tank vessels. These assumptions take the following form: (1) no additional vessels other than those on order or on construction will be completed by the end of 1952; (2) obsolescence rates may range from (a) none, (b) those vessels 25 years of age and over or (c) those ships 20 years old and above; (3) no marine losses will be experienced during the next two years; and (4) no interflag transfers will occur within the present fleet. On the basis of these assumptions, the total world fleet will be as follows:

ESTIMATED FUTURE SIZE OF TANK SHIP FLEET

Date	T2 Equivalents Obsolescence			Indexes Obsolescence		
	None	25-yr. Ships	20-yr. Ships	None	25-yr. Ships	20-yr. Ships
TOTAL WORLD						
9/ 1/50	1,430.2	1,430.2	1,430.2	100.0	100.0	100.0
12/31/51	1,580.6	1,522.2	1,471.6	110.5	106.4	102.9
12/31/52	1,628.2	1,563.6	1,484.9	113.8	109.3	103.8
U. S. CONTROL, WORLDWIDE						
9/ 1/50	727.9	727.9	727.9	100.0	100.0	100.0
12/31/51	749.9	723.2	706.6	103.0	99.4	97.1
12/31/52	755.9	727.7	683.6	103.8	100.0	93.9
ALL OTHERS						
9/1/50	702.3	702.3	702.3	100.0	100.0	100.0
12/31/51	830.7	799.0	765.0	118.3	113.8	108.9
12/31/52	872.3	835.9	801.3	124.2	119.0	114.1
U. S. FLAG ONLY						
9/ 1/50	500.2	500.2	500.2	100.0	100.0	100.0
12/31/51	506.9	497.2	486.6	101.3	99.4	97.3
12/31/52	506.9	495.7	486.6	101.3	99.1	97.3

On the basis of no scrappage, obsolescence of 25-year old vessels, and of 20-year old ships, respectively, total world fleets by the end of 1952 will have a capacity greater than that shown for September 1, 1950 by 13.8%, 9.3% and 3.8%. For the United States controlled, worldwide, under these same three assumptions of obsolescence the fleet will be 3.8% greater with the allowance for no scrappage; it will be the same should the 25-year old vessels be deleted; and 6.1% less in capacity when the 20-year old vessels are eliminated. Correspondingly, the balance of the world fleets would be 24.2% greater on the assumption of no obsolescence, 19% larger when allowing for the elimination of the 25-year and older vessels, and 14.1% greater when the 20-year old vessels are removed and considered

obsolete. Specifically, the fleet under the United States flag will increase by 1.3% over the present by the end of 1952 when retaining all the present vessels. It will be less by about 1% when scrapping the 25-year old ships and the capacity registered under the United States flag will be lower by 2.7% when full allowance is made for the 20-year old vessels and over. On the basis of these assumptions, therefore, it is indicated that the rate of increase in the world tanker fleets, which was 9% during the fiscal year ended September 1, 1950, would be in the order of 9% also over the next two years when allowing for the obsolescence factor relating to the 25-year old vessels, and less than 4% when allowance is made for the elimination of the 20-year old vessels over the next two years.

Respectfully submitted,

/s/ James P. Patterson

JAMES P. PATTERSON, Chairman
Subcommittee on Tanker Transportation

September 28, 1950

SUBCOMMITTEE ON TANKER TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - James P. Patterson
Pan American Petroleum
& Transport Company

Munger T. Ball
Sabine Transportation Company, Inc.

F. Willard Bergen
Marine Transport Lines, Inc.

T. E. Buchanan
The Texas Company

Millard G. Gamble
Esso Shipping Company

Willard F. Jones
Gulf Oil Corporation

A. E. Kihn
Standard Oil Company of California

Charles Kurz
Keystone Shipping Company

D. K. Ludwig
National Bulk Carriers, Inc.

Frederic R. Pratt
Socony-Vacuum Oil Company, Inc.

A. E. Watts
Sinclair Refining Company

Arthur O. Woll
General Petroleum Corporation

WORLD TANK SHIP FLEET BY FLAG, ACTUAL AND T2-SE-A1 EQUIVALENTS
AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Flag	Actual				T2-SE-A1 Equivalents		
	No.	Gross Tons	D.W.T.	Average Speed	No.	D.W.T.	As % Of World
WESTERN HEMISPHERE							
United States	528	5,234,953	8,364,500	14.5 K.	500.2	8,385,900	35.0%
Government	108	1,105,472	1,740,700	16.0	114.6	1,921,300	8.0
U.S.M.A.	15	108,656	163,700	10.9	7.3	122,400	0.5
Military	93	996,816	1,577,000	16.5	107.3	1,798,900	7.5
Private	420	4,129,481	6,623,800	14.2	385.6	6,464,600	27.0
Oil Companies	290	2,856,644	4,595,600	14.2	267.7	4,488,000	18.7
Non-Oil Companies	130	1,272,837	2,028,200	14.1	117.9	1,976,600	8.3
Panama	162	1,681,799	2,660,400	14.0	152.9	2,563,400	10.7
U. S. Citizen	123	1,371,354	2,175,600	14.6	130.4	2,186,200	9.1
Canada	11	121,152	185,400	14.5	11.1	186,100	0.8
Others:							
Argentina	23	185,019	255,700	12.6	13.2	221,300	0.9
Brazil	5	34,957	51,100	11.8	2.5	41,900	0.2
Honduras	11	140,322	223,400	14.8	13.6	228,000	0.9
Mexico	15	103,240	158,100	10.6	6.9	115,700	0.5
Philippine Islands	1	10,052	13,500	16.0	0.9	15,100	0.1
Uruguay	2	20,592	32,600	14.5	1.9	31,800	0.1
Venezuela	1	5,011	7,400	11.5	0.3	5,000	0.0
Sub-Total	58	499,193	741,800	12.9	39.3	658,800	2.7
TOTAL WESTERN HEMISPHERE (Incl. Philippine Islands)	759	7,537,097	11,952,100	14.3	703.5	11,794,200	49.2
EUROPE							
E.C.A. Countries	980	8,542,006	12,865,200	12.5	659.5	11,056,500	46.1
Belgium	9	74,587	109,000	12.2	5.5	92,200	0.4
Denmark	19	172,674	269,900	12.4	13.7	229,700	1.0
France	66	624,645	944,200	12.9	50.0	838,300	3.5
Germany	3	28,050	43,200	10.4	1.9	31,900	0.1
Greece	11	94,077	148,400	13.6	8.3	139,100	0.6
Italy	66	514,511	792,400	12.7	41.4	694,100	2.9
Netherlands	60	474,189	700,200	12.5	36.0	603,500	2.5
Norway	271	2,487,834	3,784,500	12.7	198.3	3,324,500	13.9
Portugal	4	35,440	52,700	13.1	2.8	46,900	0.2
Sweden	37	341,302	524,800	13.4	28.8	482,800	2.0
Switzerland	3	20,786	32,400	10.4	1.4	23,500	0.1
Turkey	3	24,389	39,600	13.5	2.2	36,900	0.1
United Kingdom	428	3,649,522	5,423,900	12.1	269.2	4,513,100	18.8
Others:							
Finland	6	44,461	67,500	10.2	2.8	46,900	0.2
Poland	1	6,487	9,300	12.0	0.5	8,400	0.0
Spain	19	125,697	172,400	11.6	8.2	137,500	0.6
U.S.S.R.	16	111,559	162,100	10.9	7.3	122,400	0.5
Yugoslavia	1	6,074	9,400	11.5	0.4	6,700	0.0
Sub-Total	43	294,278	420,700	11.1	19.2	321,900	1.3
TOTAL EUROPE	1,023	8,836,284	13,285,900	12.4	678.7	11,378,400	47.4
CHINA	5	41,089	62,400	12.4	3.2	53,600	0.2
JAPAN	16	161,927	241,600	12.8	12.7	212,900	0.9
LIBERIA	18	276,144	467,800	16.1	31.1	521,400	2.2
UNION OF SOUTH AFRICA	1	10,448	16,600	14.5	1.0	16,800	0.1
TOTAL WORLD	1,822	16,862,989	26,026,400	13.4	1,430.2	23,977,300	100.0
TOTAL BRITISH EMPIRE	440	3,781,122	5,625,900	12.2	281.3	4,716,000	19.7
TOTAL UNITED STATES CONTROL, ALL FLAGS	755	7,722,645	12,293,400	14.4	727.9	12,203,200	50.9

TABLE I

SPEED AND DEADWEIGHT TONNAGE GROUPS OF ACTUAL WORLD TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

D.W.T. Groups	Speed Groups													
	7.00 to 7.99 K.		8.00 to 8.99 K.		9.00 to 9.99 K.		10.00 to 10.99 K.		11.00 to 11.99 K.		12.00 to 12.99 K.		13.00 to 13.99 K.	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
6,000 to 6,999	-	-	2	12,100	7	44,500	11	70,200	5	33,200	1	6,100	-	-
7,000 to 7,999	1	7,900	-	-	7	53,700	18	134,900	5	36,700	7	53,100	1	7,300
8,000 to 8,999	-	-	1	8,400	9	76,300	29	245,800	16	134,900	12	99,800	-	-
9,000 to 9,999	-	-	-	-	3	28,100	37	353,500	30	284,200	27	249,200	5	47,300
10,000 to 10,999	-	-	3	31,100	5	52,900	57	605,200	59	622,300	9	94,500	4	41,800
11,000 to 11,999	-	-	1	11,000	9	100,300	33	372,900	27	310,600	21	244,900	5	57,900
12,000 to 12,999	-	-	-	-	3	37,200	13	160,500	119	1,465,100	87	1,066,600	23	289,700
13,000 to 13,999	-	-	-	-	3	40,600	11	147,300	9	122,500	9	121,700	24	320,500
14,000 to 14,999	-	-	-	-	2	28,300	15	216,100	36	527,100	31	455,200	10	145,100
15,000 to 15,999	-	-	-	-	1	15,000	12	183,900	11	167,800	24	365,800	22	337,900
16,000 to 16,999	-	-	-	-	-	-	5	83,200	-	-	7	113,300	18	293,800
17,000 to 17,999	-	-	-	-	1	17,200	2	35,200	1	17,600	5	88,000	-	-
18,000 to 18,999	-	-	-	-	-	-	2	36,100	4	72,100	3	55,000	-	-
19,000 to 19,999	-	-	-	-	2	39,000	-	-	-	-	2	39,300	6	118,500
20,000 to 20,999	-	-	-	-	-	-	1	20,500	1	20,600	-	-	1	20,100
21,000 to 21,999	-	-	-	-	-	-	-	-	3	64,700	4	85,800	-	-
22,000 to 22,999	-	-	-	-	-	-	-	-	-	-	1	22,100	1	22,100
23,000 to 23,999	-	-	-	-	-	-	1	23,400	-	-	1	23,300	-	-
24,000 to 24,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25,000 to 25,999	-	-	-	-	-	-	-	-	-	-	-	-	1	25,000
26,000 to 26,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27,000 to 27,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28,000 to 28,999	-	-	-	-	-	-	-	-	1	28,500	-	-	-	-
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	7,900	7	62,600	52	533,100	247	2,688,700	327	3,907,900	251	3,183,700	121	1,727,000

SPEED AND DEADWEIGHT TONNAGE GROUPS OF ACTUAL WORLD TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

D.W.T. Groups	Speed Groups													
	14.00 to 14.99 K.		15.00 to 15.99 K.		16.00 to 16.99 K.		17.00 to 17.99 K.		18.00 to 18.99 K.		19.00 to 19.99 K.		Total	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
6,000 to 6,999	1	6,400	-	-	-	-	-	-	-	-	-	-	27	172,500
7,000 to 7,999	-	-	-	-	-	-	-	-	-	-	-	-	39	293,600
8,000 to 8,999	3	26,300	-	-	-	-	-	-	-	-	-	-	70	591,500
9,000 to 9,999	4	37,500	2	18,300	-	-	-	-	-	-	-	-	108	1,018,100
10,000 to 10,999	-	-	-	-	-	-	-	-	-	-	-	-	137	1,447,800
11,000 to 11,999	8	94,300	1	11,900	-	-	-	-	-	-	-	-	105	1,203,800
12,000 to 12,999	20	243,500	1	12,900	1	12,100	-	-	-	-	-	-	267	3,287,600
13,000 to 13,999	17	228,400	-	-	4	54,000	-	-	-	-	-	-	77	1,035,000
14,000 to 14,999	3	42,700	-	-	6	85,400	-	-	-	-	-	-	103	1,499,900
15,000 to 15,999	30	467,600	3	45,900	3	47,700	3	46,500	-	-	-	-	109	1,678,100
16,000 to 16,999	481	7,976,800	42	690,900	41	673,800	-	-	4	65,600	1	16,500	599	9,913,900
17,000 to 17,999	12	207,600	2	35,500	1	17,500	-	-	-	-	-	-	24	418,600
18,000 to 18,999	8	146,200	13	239,300	10	183,900	1	18,400	29	527,300	-	-	70	1,278,300
19,000 to 19,999	1	19,000	-	-	-	-	-	-	-	-	-	-	11	215,800
20,000 to 20,999	-	-	-	-	-	-	-	-	-	-	-	-	3	61,200
21,000 to 21,999	1	21,500	-	-	-	-	-	-	-	-	-	-	8	172,000
22,000 to 22,999	-	-	-	-	-	-	-	-	-	-	-	-	2	44,200
23,000 to 23,999	1	23,000	-	-	4	92,000	-	-	-	-	-	-	7	161,700
24,000 to 24,999	5	124,100	-	-	-	-	-	-	-	-	-	-	5	124,100
25,000 to 25,999	-	-	-	-	-	-	-	-	-	-	-	-	1	25,000
26,000 to 26,999	-	-	1	26,000	19	508,000	1	26,800	-	-	-	-	21	560,800
27,000 to 27,999	-	-	1	27,900	4	108,000	-	-	-	-	-	-	5	135,900
28,000 to 28,999	-	-	1	28,000	17	480,500	-	-	-	-	-	-	19	537,000
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	2	60,000	3	90,000	-	-	5	150,000
Total	595	9,664,900	67	1,136,600	110	2,262,900	7	151,700	36	682,900	1	16,500	1,822	26,026,400

TABLE III

T2-SE-A1 EQUIVALENTS OF SPEED AND DEADWEIGHT TONNAGE GROUPS OF WORLD TANK SHIP FLEETS AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

D.W.T. Groups	Speed Groups																				
	7.00 to 7.99 K.			8.00 to 8.99 K.			9.00 to 9.99 K.			10.00 to 10.99 K.			11.00 to 11.99 K.			12.00 to 12.99 K.			13.00 to 13.99 K.		
	No.	% of Total		No.	% of Total		No.	% of Total		No.	% of Total		No.	% of Total		No.	% of Total		No.	% of Total	
		Speed Group	DWT Group		Speed Group	DWT Group		Speed Group	DWT Group		Speed Group	DWT Group		Speed Group	DWT Group		Speed Group	DWT Group		Speed Group	DWT Group
6,000 to 6,999	-	-	-	0.4	18.2%	5.5%	1.7	8.2%	23.3%	3.0	2.6%	41.1%	1.5	0.8%	20.5%	0.3	0.2%	4.1%	-	-	-
7,000 to 7,999	0.2	100.0%	1.6%	-	-	-	2.1	10.1	16.5	5.6	4.9	44.1	1.7	0.9	13.4	2.7	1.7	21.3	0.4	0.4%	3.1%
8,000 to 8,999	-	-	-	0.3	13.6	1.1	3.0	14.5	11.5	10.3	9.1	39.3	6.2	3.4	23.7	4.9	3.1	18.7	-	-	-
9,000 to 9,999	-	-	-	-	-	-	1.1	5.3	2.3	14.9	13.1	31.5	13.0	7.2	27.5	12.4	7.7	26.2	2.6	2.8	5.5
10,000 to 10,999	-	-	-	1.1	50.0	1.7	2.0	9.7	3.1	25.5	22.4	39.9	28.3	15.6	44.2	4.8	3.0	7.5	2.3	2.4	3.6
11,000 to 11,999	-	-	-	0.4	18.2	0.7	3.9	18.9	6.9	15.7	13.8	27.9	14.5	8.0	25.8	12.4	7.7	22.0	3.1	3.3	5.5
12,000 to 12,999	-	-	-	-	-	-	1.4	6.8	0.9	6.8	6.0	4.2	68.7	37.9	42.4	53.4	33.4	33.0	15.6	16.5	9.6
13,000 to 13,999	-	-	-	-	-	-	1.6	7.7	3.0	6.2	5.5	11.5	5.7	3.1	10.5	6.2	3.9	11.5	17.5	18.6	32.4
14,000 to 14,999	-	-	-	-	-	-	1.1	5.3	1.5	9.3	8.2	12.6	24.4	13.5	33.1	22.9	14.3	31.0	7.9	8.4	10.7
15,000 to 15,999	-	-	-	-	-	-	0.6	2.9	0.7	7.9	7.0	8.8	7.9	4.4	8.8	18.4	11.5	20.5	18.3	19.4	20.4
16,000 to 16,999	-	-	-	-	-	-	-	-	-	3.6	3.2	0.6	-	-	-	5.8	3.6	1.0	16.3	17.3	2.7
17,000 to 17,999	-	-	-	-	-	-	0.7	3.4	3.0	1.4	1.2	6.1	0.8	0.4	3.5	4.4	2.7	19.0	-	-	-
18,000 to 18,999	-	-	-	-	-	-	-	-	-	1.5	1.3	1.8	3.3	1.8	3.9	2.8	1.8	3.3	-	-	-
19,000 to 19,999	-	-	-	-	-	-	1.5	7.2	13.6	-	-	-	-	-	-	1.9	1.2	17.3	6.5	6.9	59.1
20,000 to 20,999	-	-	-	-	-	-	-	-	-	0.9	0.8	31.0	0.9	0.5	31.0	-	-	-	1.1	1.2	38.0
21,000 to 21,999	-	-	-	-	-	-	-	-	-	-	-	-	3.0	1.7	35.3	4.3	2.7	50.6	-	-	-
22,000 to 22,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	0.7	47.8	1.2	1.3	52.2
23,000 to 23,999	-	-	-	-	-	-	-	-	-	1.0	0.9	10.2	-	-	-	1.2	0.8	12.2	-	-	-
24,000 to 24,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25,000 to 25,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.5	100.0
26,000 to 26,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27,000 to 27,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28,000 to 28,999	-	-	-	-	-	-	-	-	-	-	-	-	1.4	0.8	4.0	-	-	-	-	-	-
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	0.2	100.0%	0.0%	2.2	100.0%	0.2%	20.7	100.0%	1.4%	113.6	100.0%	7.9%	181.3	100.0%	12.7%	159.9	100.0%	11.2%	94.2	100.0%	6.6%

T2-SE-A1 EQUIVALENTS OF SPEED AND DEADWEIGHT TONNAGE GROUPS OF WORLD TANK SHIP FLEETS AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

D.W.T. Groups	Speed Groups: 14.00 to 14.99 K.			15.00 to 15.99 K.			16.00 to 16.99 K.			17.00 to 17.99 K.			18.00 to 18.99 K.			19.00 to 19.99 K.			Total		
	No.	% of Total Speed Group	% of Total DWT Group	No.	% of Total Speed Group	% of Total DWT Group	No.	% of Total Speed Group	% of Total DWT Group	No.	% of Total Speed Group	% of Total DWT Group	No.	% of Total Speed Group	% of Total DWT Group	No.	% of Total Speed Group	% of Total DWT Group	No.	% of Total Speed Group	% of Total DWT Group
6,000 to 6,999	0.4	0.1%	5.5%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.3	0.5%	100.0%
7,000 to 7,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12.7	0.9	100.0
8,000 to 8,999	1.5	0.3	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26.2	1.8	100.0
9,000 to 9,999	2.2	0.4	4.7	1.1	1.5%	2.3%	-	-	-	-	-	-	-	-	-	-	-	-	47.3	3.3	100.0
10,000 to 10,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	64.0	4.5	100.0
11,000 to 11,999	5.6	1.0	10.0	0.7	1.0	1.2	-	-	-	-	-	-	-	-	-	-	-	-	56.3	3.9	100.0
12,000 to 12,999	14.5	2.5	8.9	0.8	1.1	0.5	0.8	0.5%	0.5%	-	-	-	-	-	-	-	-	-	162.0	11.3	100.0
13,000 to 13,999	13.2	2.3	24.4	-	-	-	3.6	2.4	6.7	-	-	-	-	-	-	-	-	-	54.0	3.8	100.0
14,000 to 14,999	2.6	0.5	3.5	-	-	-	5.6	3.7	7.6	-	-	-	-	-	-	-	-	-	73.8	5.1	100.0
15,000 to 15,999	27.3	4.7	30.4	2.8	3.9	3.1	3.2	2.1	3.6	3.3	30.6%	3.7%	-	-	-	-	-	-	89.7	6.3	100.0
16,000 to 16,999	475.4	82.7	79.9	43.6	61.0	7.3	44.4	29.7	7.5	-	-	-	4.9	9.7%	0.8%	1.3	100.0%	0.2%	595.3	41.6	100.0
17,000 to 17,999	12.3	2.1	53.2	2.3	3.2	10.0	1.2	0.8	5.2	-	-	-	-	-	-	-	-	-	23.1	1.6	100.0
18,000 to 18,999	8.6	1.5	10.2	15.2	21.3	18.1	12.3	8.2	14.6	1.3	12.0	1.6	39.1	77.3	46.5	-	-	-	84.1	5.9	100.0
19,000 to 19,999	1.1	0.2	10.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.0	0.8	100.0
20,000 to 20,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	0.2	100.0
21,000 to 21,999	1.2	0.2	14.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.5	0.6	100.0
22,000 to 22,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	0.2	100.0
23,000 to 23,999	1.4	0.2	14.3	-	-	-	6.2	4.2	63.3	-	-	-	-	-	-	-	-	-	9.8	0.7	100.0
24,000 to 24,999	7.2	1.3	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	0.5	100.0
25,000 to 25,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	0.1	100.0
26,000 to 26,999	-	-	-	1.6	2.2	4.3	33.4	22.4	90.5	1.9	17.6	5.2	-	-	-	-	-	-	36.9	2.6	100.0
27,000 to 27,999	-	-	-	1.7	2.4	19.3	7.1	4.8	80.7	-	-	-	-	-	-	-	-	-	8.8	0.6	100.0
28,000 to 28,999	-	-	-	1.7	2.4	4.9	31.6	21.2	91.1	-	-	-	-	-	-	-	-	-	34.7	2.4	100.0
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	4.3	39.8	39.4	6.6	13.0	60.6	-	-	-	10.9	0.8	100.0
Total	574.5	100.0%	40.2%	71.5	100.0%	5.0%	149.4	100.0%	10.4%	10.8	100.0%	0.8%	50.6	100.0%	3.5%	1.3	100.0%	0.1%	1,430.2	100.0%	100.0%

ANALYSIS OF AGE DISTRIBUTION OF ACTUAL WORLD TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Year of Construction	Ownership											
	United States Oil Company Owned		United States Non-Oil Company Owned		United States Total Privately Owned		United States Military		United States Maritime Administration		Total United States	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
1897	-	-	-	-	-	-	-	-	-	-	-	-
1898	-	-	-	-	-	-	-	-	-	-	-	-
1899	-	-	-	-	-	-	-	-	-	-	-	-
1900	-	-	-	-	-	-	-	-	-	-	-	-
1901	-	-	-	-	-	-	-	-	-	-	-	-
1902	-	-	-	-	-	-	-	-	-	-	-	-
1903	-	-	-	-	-	-	-	-	-	-	-	-
1904	-	-	-	-	-	-	-	-	-	-	-	-
1905	-	-	-	-	-	-	-	-	-	-	-	-
1906	-	-	-	-	-	-	-	-	-	-	-	-
1907	-	-	-	-	-	-	-	-	-	-	-	-
1908	-	-	-	-	-	-	-	-	-	-	-	-
1909	-	-	-	-	-	-	-	-	-	-	-	-
1910	-	-	-	-	-	-	-	-	-	-	-	-
1911	-	-	-	-	-	-	-	-	-	-	-	-
1912	-	-	-	-	-	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-
1914	-	-	-	-	-	-	-	-	-	-	-	-
1915	1	9,100	-	-	1	9,100	-	-	-	-	1	9,100
1916	-	-	-	-	-	-	-	-	-	-	-	-
1917	1	11,200	-	-	1	11,200	-	-	-	-	1	11,200
1918	-	-	-	-	-	-	-	-	-	-	-	-
1919	2	18,000	1	12,600	3	30,600	-	-	-	-	3	30,600
1920	3	29,100	3	36,200	6	65,300	-	-	-	-	6	65,300
1921	7	81,400	-	-	7	81,400	-	-	-	-	7	81,400
1922	-	-	-	-	-	-	-	-	-	-	-	-
1923	-	-	-	-	-	-	-	-	-	-	-	-
1924	1	10,500	-	-	1	10,500	-	-	-	-	1	10,500
1925	-	-	-	-	-	-	-	-	-	-	-	-
1926	1	15,300	-	-	1	15,300	-	-	-	-	1	15,300
1927	2	34,900	-	-	2	34,900	-	-	-	-	2	34,900
1928	4	65,600	-	-	4	65,600	-	-	-	-	4	65,600
1929	-	-	-	-	-	-	-	-	-	-	-	-
1930	5	75,100	1	9,300	6	84,400	-	-	-	-	6	84,400
1931	3	45,900	-	-	3	45,900	-	-	-	-	3	45,900
1932	-	-	-	-	-	-	-	-	-	-	-	-
1933	-	-	-	-	-	-	-	-	-	-	-	-
1934	-	-	-	-	-	-	-	-	-	-	-	-
1935	2	29,800	-	-	2	29,800	-	-	-	-	2	29,800
1936	5	68,600	1	15,300	6	83,900	-	-	-	-	6	83,900
1937	12	159,000	-	-	12	159,000	-	-	-	-	12	159,000
1938	7	102,300	1	13,000	8	115,300	-	-	-	-	8	115,300
1939	4	66,000	-	-	4	66,000	2	36,400	-	-	6	102,400
1940	8	118,000	-	-	8	118,000	4	72,800	-	-	12	190,800
1941	13	196,600	-	-	13	196,600	3	49,200	2	25,400	18	271,200
1942	28	442,100	7	115,200	35	557,300	10	163,600	-	-	45	720,900
1943	55	882,800	65	942,300	120	1,825,100	20	339,700	10	106,300	150	2,271,100
1944	64	1,046,700	30	512,500	94	1,559,200	37	618,500	3	32,000	134	2,209,700
1945	53	889,000	20	353,600	73	1,242,600	12	206,200	-	-	85	1,448,800
1946	2	25,400	-	-	2	25,400	5	90,600	-	-	7	116,000
1947	-	-	-	-	-	-	-	-	-	-	-	-
1948	1	12,900	1	18,200	2	31,100	-	-	-	-	2	31,100
1949	3	79,900	-	-	3	79,900	-	-	-	-	3	79,900
1950	3	80,400	-	-	3	80,400	-	-	-	-	3	80,400
Total	290	4,595,600	130	2,028,200	420	6,623,800	93	1,577,000	15	163,700	528	8,364,500

TABLE IV

ANALYSIS OF AGE DISTRIBUTION OF ACTUAL WORLD TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Year of Construction	Ownership									
	British Empire		Norway		Panama		All Others		Total World	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
1897	1	7,600	-	-	-	-	2	14,200	3	21,800
1898	-	-	-	-	-	-	-	-	-	-
1899	-	-	-	-	-	-	1	6,000	1	6,000
1900	-	-	-	-	-	-	-	-	-	-
1901	-	-	1	13,500	-	-	-	-	1	13,500
1902	-	-	-	-	-	-	-	-	-	-
1903	-	-	-	-	1	6,800	-	-	1	6,800
1904	-	-	-	-	-	-	-	-	-	-
1905	1	6,700	1	11,500	-	-	-	-	2	18,200
1906	1	7,600	-	-	-	-	-	-	1	7,600
1907	-	-	-	-	-	-	-	-	-	-
1908	-	-	-	-	-	-	1	7,100	1	7,100
1909	-	-	-	-	-	-	-	-	-	-
1910	-	-	-	-	-	-	1	8,100	1	8,100
1911	-	-	-	-	-	-	1	7,400	1	7,400
1912	-	-	-	-	-	-	2	17,800	2	17,800
1913	3	28,400	2	28,300	1	8,400	6	55,200	12	120,300
1914	2	18,000	1	16,100	2	24,500	6	61,700	11	120,300
1915	-	-	-	-	-	-	-	-	1	9,100
1916	1	8,500	-	-	3	28,600	6	58,800	10	95,900
1917	2	17,100	-	-	1	8,400	3	28,700	7	65,400
1918	5	42,300	1	10,900	2	23,800	6	55,700	14	132,700
1919	2	22,800	-	-	3	29,700	4	41,000	12	124,100
1920	4	33,300	-	-	10	103,100	10	97,600	30	299,300
1921	8	109,700	2	16,200	7	84,200	13	121,000	37	412,500
1922	7	73,800	1	11,000	1	13,000	9	87,600	18	185,400
1923	4	41,800	-	-	1	13,900	6	52,400	11	108,100
1924	3	31,200	-	-	-	-	3	26,500	7	68,200
1925	1	10,800	2	25,200	1	7,900	1	10,100	5	54,000
1926	3	33,900	-	-	1	13,100	5	45,100	10	107,400
1927	14	140,800	5	49,600	-	-	11	110,300	32	335,600
1928	11	123,300	8	91,400	2	28,700	15	167,100	40	476,100
1929	7	76,700	7	70,900	2	31,700	10	127,300	26	306,600
1930	8	121,300	21	250,600	2	28,800	14	168,900	51	654,000
1931	8	91,100	19	229,800	3	43,600	14	171,100	47	581,500
1932	2	28,400	3	29,000	1	18,100	10	107,200	16	182,700
1933	3	54,000	2	23,800	-	-	2	36,000	7	113,800
1934	-	-	3	34,900	-	-	6	59,500	9	94,400
1935	10	115,000	12	162,800	-	-	5	59,900	29	367,500
1936	13	141,100	7	99,100	2	26,600	8	95,700	36	446,400
1937	20	258,300	13	196,100	3	28,700	4	56,900	52	699,000
1938	11	139,700	5	71,900	1	17,200	17	209,000	42	553,100
1939	15	186,000	15	210,800	1	18,400	16	203,600	53	721,200
1940	3	40,100	8	119,300	-	-	5	81,500	28	431,700
1941	17	210,500	4	56,300	3	46,300	2	33,000	44	617,300
1942	27	350,600	5	69,000	3	55,700	4	55,700	84	1,251,900
1943	24	298,500	7	96,300	19	320,600	36	520,800	236	3,507,300
1944	59	893,000	12	166,100	23	380,100	40	632,900	268	4,281,800
1945	37	559,300	20	309,200	34	559,300	27	418,800	203	3,295,400
1946	35	430,800	3	29,100	-	-	14	157,000	59	732,900
1947	10	113,900	7	125,200	-	-	15	196,200	32	435,300
1948	19	231,700	18	286,000	1	9,500	8	139,900	48	698,200
1949	21	280,100	28	427,800	15	373,600	31	618,900	98	1,780,300
1950	18	248,200	28	446,800	13	308,100	21	361,900	83	1,445,400
Total	440	5,625,900	271	3,784,500	162	2,660,400	421	5,591,100	1,822	26,026,400

TABLE IV CONT.

T2-SE-A1 EQUIVALENT ANALYSIS OF AGE DISTRIBUTION OF WORLD TANK SHIP FLEET
AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Year of Construction	Ownership											
	United States Oil Company Owned		United States Non-Oil Company Owned		United States Total Privately Owned		United States Military		United States Maritime Administration		Total United States	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
1897	-	-	-	-	-	-	-	-	-	-	-	-
1898	-	-	-	-	-	-	-	-	-	-	-	-
1899	-	-	-	-	-	-	-	-	-	-	-	-
1900	-	-	-	-	-	-	-	-	-	-	-	-
1901	-	-	-	-	-	-	-	-	-	-	-	-
1902	-	-	-	-	-	-	-	-	-	-	-	-
1903	-	-	-	-	-	-	-	-	-	-	-	-
1904	-	-	-	-	-	-	-	-	-	-	-	-
1905	-	-	-	-	-	-	-	-	-	-	-	-
1906	-	-	-	-	-	-	-	-	-	-	-	-
1907	-	-	-	-	-	-	-	-	-	-	-	-
1908	-	-	-	-	-	-	-	-	-	-	-	-
1909	-	-	-	-	-	-	-	-	-	-	-	-
1910	-	-	-	-	-	-	-	-	-	-	-	-
1911	-	-	-	-	-	-	-	-	-	-	-	-
1912	-	-	-	-	-	-	-	-	-	-	-	-
1913	-	-	-	-	-	-	-	-	-	-	-	-
1914	-	-	-	-	-	-	-	-	-	-	-	-
1915	0.4	6,700	-	-	0.4	6,700	-	-	-	-	0.4	6,700
1916	-	-	-	-	-	-	-	-	-	-	-	-
1917	0.5	8,400	-	-	0.5	8,400	-	-	-	-	0.5	8,400
1918	-	-	-	-	-	-	-	-	-	-	-	-
1919	0.8	13,400	0.5	8,400	1.3	21,800	-	-	-	-	1.3	21,800
1920	1.3	21,800	1.5	25,100	2.8	46,900	-	-	-	-	2.8	46,900
1921	3.6	60,400	-	-	3.6	60,400	-	-	-	-	3.6	60,400
1922	-	-	-	-	-	-	-	-	-	-	-	-
1923	-	-	-	-	-	-	-	-	-	-	-	-
1924	0.5	8,400	-	-	0.5	8,400	-	-	-	-	0.5	8,400
1925	-	-	-	-	-	-	-	-	-	-	-	-
1926	0.6	10,100	-	-	0.6	10,100	-	-	-	-	0.6	10,100
1927	1.5	25,100	-	-	1.5	25,100	-	-	-	-	1.5	25,100
1928	2.9	48,600	-	-	2.9	48,600	-	-	-	-	2.9	48,600
1929	-	-	-	-	-	-	-	-	-	-	-	-
1930	3.5	58,700	0.5	8,400	4.0	67,100	-	-	-	-	4.0	67,100
1931	2.2	36,900	-	-	2.2	36,900	-	-	-	-	2.2	36,900
1932	-	-	-	-	-	-	-	-	-	-	-	-
1933	-	-	-	-	-	-	-	-	-	-	-	-
1934	-	-	-	-	-	-	-	-	-	-	-	-
1935	1.6	26,800	-	-	1.6	26,800	-	-	-	-	1.6	26,800
1936	3.6	60,400	0.8	13,400	4.4	73,800	-	-	-	-	4.4	73,800
1937	8.5	142,500	-	-	8.5	142,500	-	-	-	-	8.5	142,500
1938	5.5	92,200	0.7	11,700	6.2	103,900	-	-	-	-	6.2	103,900
1939	3.7	62,000	-	-	3.7	62,000	2.7	45,300	-	-	6.4	107,300
1940	6.4	107,300	-	-	6.4	107,300	5.4	90,500	-	-	11.8	197,800
1941	11.1	186,100	-	-	11.1	186,100	3.5	58,700	1.1	18,400	15.7	263,200
1942	27.6	462,700	7.0	117,400	34.6	580,100	10.9	182,700	-	-	45.5	762,800
1943	53.2	891,800	53.0	888,500	106.2	1,780,300	22.5	377,200	4.8	80,600	133.5	2,238,100
1944	62.6	1,049,500	31.2	523,100	93.8	1,572,600	41.4	694,100	1.4	23,400	136.6	2,290,100
1945	53.2	891,900	21.6	362,100	74.8	1,254,000	14.2	238,100	-	-	89.0	1,492,100
1946	1.5	25,200	-	-	1.5	25,200	6.7	112,300	-	-	8.2	137,500
1947	-	-	-	-	-	-	-	-	-	-	-	-
1948	0.8	13,400	1.1	18,500	1.9	31,900	-	-	-	-	1.9	31,900
1949	5.2	87,200	-	-	5.2	87,200	-	-	-	-	5.2	87,200
1950	5.4	90,500	-	-	5.4	90,500	-	-	-	-	5.4	90,500
Total	267.7	4,488,000	117.9	1,976,600	385.6	6,464,600	107.3	1,798,900	7.3	122,400	500.2	8,385,900
Avg. Age	8 Yrs., 2 Mos.		7 Yrs., 1 Mo.		7 Yrs., 10 Mos.		6 Yrs., 9 Mos.		7 Yrs., 3 Mos.		7 Yrs., 7 Mos.	

TABLE V

T2-SE-A1 EQUIVALENT ANALYSIS OF AGE DISTRIBUTION OF WORLD TANK SHIP FLEET
AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Year of Construction	Ownership									
	British Empire		Norway		Panama		All Others		Total World	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
1897	0.3	5,100	-	-	-	-	0.7	11,700	1.0	16,800
1898	-	-	-	-	-	-	-	-	-	-
1899	-	-	-	-	-	-	0.2	3,400	0.2	3,400
1900	-	-	-	-	-	-	-	-	-	-
1901	-	-	0.7	11,700	-	-	-	-	0.7	11,700
1902	-	-	-	-	-	-	-	-	-	-
1903	-	-	-	-	0.3	5,000	-	-	0.3	5,000
1904	-	-	-	-	-	-	-	-	-	-
1905	0.3	5,000	0.5	8,400	-	-	-	-	0.8	13,400
1906	0.3	5,000	-	-	-	-	-	-	0.3	5,000
1907	-	-	-	-	-	-	-	-	-	-
1908	-	-	-	-	-	-	0.3	5,000	0.3	5,000
1909	-	-	-	-	-	-	-	-	-	-
1910	-	-	-	-	-	-	0.3	5,000	0.3	5,000
1911	-	-	-	-	-	-	0.3	5,000	0.3	5,000
1912	-	-	-	-	-	-	0.7	11,700	0.7	11,700
1913	1.1	18,400	1.2	20,100	0.3	5,000	2.3	38,600	4.9	82,100
1914	0.7	11,700	0.7	11,700	1.0	16,800	2.4	40,300	4.8	80,500
1915	-	-	-	-	-	-	-	-	0.4	6,700
1916	0.4	6,800	-	-	1.2	20,100	2.4	40,200	4.0	67,100
1917	0.8	13,400	-	-	0.3	5,000	1.3	21,800	2.9	48,600
1918	1.7	28,500	0.5	8,400	1.0	16,800	2.4	40,200	5.6	93,900
1919	0.9	15,100	-	-	1.3	21,800	1.7	28,500	5.2	87,200
1920	1.4	23,500	-	-	4.2	70,400	4.0	67,100	12.4	207,900
1921	4.4	73,800	0.7	11,700	3.7	62,000	5.0	83,800	17.4	291,700
1922	3.1	52,000	0.4	6,700	0.5	8,400	3.6	60,300	7.6	127,400
1923	1.7	28,500	-	-	0.7	11,700	2.2	36,900	4.6	77,100
1924	1.3	21,800	-	-	-	-	1.1	18,400	2.9	48,600
1925	0.4	6,700	1.1	18,500	0.3	5,000	0.5	8,400	2.3	38,600
1926	1.5	25,100	-	-	0.6	10,100	1.9	31,800	4.6	77,100
1927	5.9	98,900	2.2	36,900	-	-	4.7	78,800	14.3	239,700
1928	5.1	85,500	4.0	67,100	1.3	21,800	7.5	125,700	20.8	348,700
1929	3.4	57,100	3.2	53,600	1.4	23,500	5.8	97,200	13.8	231,400
1930	5.4	90,400	11.4	191,100	1.4	23,500	7.8	130,800	30.0	502,900
1931	4.0	67,100	10.6	177,600	1.9	31,900	8.2	137,500	26.9	451,000
1932	1.2	20,100	1.3	21,900	0.8	13,400	5.3	88,800	8.6	144,200
1933	2.4	40,300	1.2	20,100	-	-	1.7	28,500	5.3	88,900
1934	-	-	1.7	28,500	-	-	3.1	52,000	4.8	80,500
1935	5.3	88,900	7.7	129,100	-	-	3.0	50,300	17.6	295,100
1936	6.7	112,300	5.0	83,800	1.3	21,800	4.7	78,800	22.1	370,500
1937	12.2	204,500	9.9	166,000	1.3	21,800	2.8	46,900	34.7	581,700
1938	6.7	112,300	3.6	60,400	0.9	15,100	11.3	189,400	28.7	481,100
1939	8.8	147,500	11.1	186,100	1.3	21,800	10.3	172,700	37.9	635,400
1940	1.8	30,200	6.6	110,600	-	-	4.3	72,100	24.5	410,700
1941	9.9	165,900	2.7	45,300	2.3	38,600	1.8	30,200	32.4	543,200
1942	16.4	275,000	3.6	60,300	3.6	60,300	3.0	50,400	72.1	1,208,800
1943	14.4	241,500	5.3	88,900	19.4	325,200	29.6	496,200	202.2	3,389,900
1944	52.2	875,100	9.1	152,600	22.7	380,600	36.6	613,600	257.2	4,312,000
1945	31.9	534,800	17.6	295,100	33.3	558,300	23.7	397,300	195.5	3,277,600
1946	22.5	377,200	1.5	25,100	-	-	8.4	140,900	40.6	680,700
1947	5.5	92,200	6.9	115,700	-	-	10.8	181,000	23.2	388,900
1948	11.7	196,100	16.4	274,900	0.5	8,400	8.5	142,500	39.0	653,800
1949	14.5	243,100	24.0	402,400	24.2	405,700	39.1	655,500	107.0	1,793,900
1950	13.1	219,600	25.9	434,200	19.9	333,600	22.2	372,300	86.5	1,450,200
Total	281.3	4,716,000	198.3	3,324,500	152.9	2,563,400	297.5	4,987,500	1,430.2	23,977,300
Avg. Age	9 Yrs., 7 Mos.		9 Yrs., 1 Mo.		7 Yrs., 11 Mos.		10 Yrs., 6 Mos.		8 Yrs., 10 Mos.	

TABLE V CONT.

CUMULATIVE T2-SE-A1 EQUIVALENT ANALYSIS OF AGE DISTRIBUTION OF WORLD TANK SHIP FLEET
AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Year of Construction	Age	Flag					
		United States	British Empire	Norway	Panama	All Others	Total World
1950	Less than 1 year	5.4	13.1	25.9	19.9	22.2	86.5
1949	" " 2 years	10.6	27.6	49.9	44.1	61.3	193.5
1948	" " 3 "	12.5	39.3	66.3	44.6	69.8	232.5
1947	" " 4 "	12.5	44.8	73.2	44.6	80.6	255.7
1946	" " 5 "	20.7	67.3	74.7	44.6	89.0	296.3
1945	" " 6 "	109.7	99.2	92.3	77.9	112.7	491.8
1944	" " 7 "	246.3	151.4	101.4	100.6	149.3	749.0
1943	" " 8 "	379.8	165.8	106.7	120.0	178.9	951.2
1942	" " 9 "	425.3	182.2	110.3	123.6	181.9	1,023.3
1941	" " 10 "	441.0	192.1	113.0	125.9	183.7	1,055.7
1940	" " 11 "	452.8	193.9	119.6	125.9	188.0	1,080.2
1939	" " 12 "	459.2	202.7	130.7	127.2	198.3	1,118.1
1938	" " 13 "	465.4	209.4	134.3	128.1	209.6	1,146.8
1937	" " 14 "	473.9	221.6	144.2	129.4	212.4	1,181.5
1936	" " 15 "	478.3	228.3	149.2	130.7	217.1	1,203.6
1935	" " 16 "	479.9	233.6	156.9	130.7	220.1	1,221.2
1934	" " 17 "	479.9	233.6	158.6	130.7	223.2	1,226.0
1933	" " 18 "	479.9	236.0	159.8	130.7	224.9	1,231.3
1932	" " 19 "	479.9	237.2	161.1	131.5	230.2	1,239.9
1931	" " 20 "	482.1	241.2	171.7	133.4	238.4	1,266.8
1930	" " 21 "	486.1	246.6	183.1	134.8	246.2	1,296.8
1929	" " 22 "	486.1	250.0	186.3	136.2	252.0	1,310.6
1928	" " 23 "	489.0	255.1	190.3	137.5	259.5	1,331.4
1927	" " 24 "	490.5	261.0	192.5	137.5	264.2	1,345.7
1926	" " 25 "	491.1	262.5	192.5	138.1	266.1	1,350.3
1925	" " 26 "	491.1	262.9	193.6	138.4	266.6	1,352.6
1924	" " 27 "	491.6	264.2	193.6	138.4	267.7	1,355.5
1923	" " 28 "	491.6	265.9	193.6	139.1	269.9	1,360.1
1922	" " 29 "	491.6	269.0	194.0	139.6	273.5	1,367.7
1921	" " 30 "	495.2	273.4	194.7	143.3	278.5	1,385.1
1920	" " 31 "	498.0	274.8	194.7	147.5	282.5	1,397.5
1919	" " 32 "	499.3	275.7	194.7	148.8	284.2	1,402.7
1918	" " 33 "	499.3	277.4	195.2	149.8	286.6	1,408.3
1917	" " 34 "	499.8	278.2	195.2	150.1	287.9	1,411.2
1916	" " 35 "	499.8	278.6	195.2	151.3	290.3	1,415.2
1915	" " 36 "	500.2	278.6	195.2	151.3	290.3	1,415.6
1914	" " 37 "	500.2	279.3	195.9	152.3	292.7	1,420.4
1913	" " 38 "	500.2	280.4	197.1	152.6	295.0	1,425.3
1912	" " 39 "	500.2	280.4	197.1	152.6	295.7	1,426.0
1911	" " 40 "	500.2	280.4	197.1	152.6	296.0	1,426.3
1910	" " 41 "	500.2	280.4	197.1	152.6	296.3	1,426.6
1909	" " 42 "	500.2	280.4	197.1	152.6	296,3	1,426.6
1908	" " 43 "	500.2	280.4	197.1	152.6	296.6	1,426.9
1907	" " 44 "	500.2	280.4	197.1	152.6	296.6	1,426.9
1906	" " 45 "	500.2	280.7	197.1	152.6	296.6	1,427.2
1905	" " 46 "	500.2	281.0	197.6	152.6	296.6	1,428.0
1904	" " 47 "	500.2	281.0	197.6	152.6	296.6	1,428.0
1903	" " 48 "	500.2	281.0	197.6	152.9	296.6	1,428.3
1902	" " 49 "	500.2	281.0	197.6	152.9	296.6	1,428.3
1901	" " 50 "	500.2	281.0	198.3	152.9	296.6	1,429.0
1900	" " 51 "	500.2	281.0	198.3	152.9	296.6	1,429.0
1899	" " 52 "	500.2	281.0	198.3	152.9	296.8	1,429.2
1898	" " 53 "	500.2	281.0	198.3	152.9	296.8	1,429.2
1897	" " 54 "	500.2	281.3	198.3	152.9	297.5	1,430.2

TABLE VI

CUMULATIVE PERCENTAGE T2-SE-A1 ANALYSIS OF AGE DISTRIBUTION OF WORLD TANK SHIP FLEET
AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Year of Construction	Age	Flag					
		United States	British Empire	Norway	Panama	All Others	Total World
1950	Less than 1 Year	1.1%	4.7%	13.1%	13.0%	7.5%	6.0%
1949	" " 2 Years	2.1	9.8	25.2	28.8	20.6	13.5
1948	" " 3 "	2.5	14.0	33.4	29.2	23.5	16.3
1947	" " 4 "	2.5	15.9	36.9	29.2	27.1	17.9
1946	" " 5 "	4.1	23.9	37.7	29.2	29.9	20.7
1945	" " 6 "	21.9	35.3	46.5	50.9	37.9	34.4
1944	" " 7 "	49.2	53.8	51.1	65.8	50.2	52.4
1943	" " 8 "	75.9	58.9	53.8	78.5	60.1	66.5
1942	" " 9 "	85.0	64.8	55.6	80.8	61.1	71.5
1941	" " 10 "	88.2	68.3	57.0	82.3	61.7	73.8
1940	" " 11 "	90.5	68.9	60.3	82.3	63.2	75.5
1939	" " 12 "	91.8	72.1	65.9	83.2	66.7	78.2
1938	" " 13 "	93.0	74.4	67.7	83.8	70.5	80.2
1937	" " 14 "	94.7	78.8	72.7	84.6	71.4	82.6
1936	" " 15 "	95.6	81.2	75.2	85.5	73.0	84.2
1935	" " 16 "	95.9	83.0	79.1	85.5	74.0	85.4
1934	" " 17 "	95.9	83.0	80.0	85.5	75.0	85.7
1933	" " 18 "	95.9	83.9	80.6	85.5	75.6	86.1
1932	" " 19 "	95.9	84.3	81.2	86.0	77.4	86.7
1931	" " 20 "	96.4	85.7	86.6	87.2	80.1	88.6
1930	" " 21 "	97.2	87.7	92.3	88.2	82.8	90.7
1929	" " 22 "	97.2	88.9	93.9	89.1	84.7	91.6
1928	" " 23 "	97.8	90.7	96.0	89.9	87.2	93.1
1927	" " 24 "	98.1	92.8	97.1	89.9	88.8	94.1
1926	" " 25 "	98.2	93.3	97.1	90.3	89.4	94.4
1925	" " 26 "	98.2	93.5	97.6	90.5	89.6	94.6
1924	" " 27 "	98.3	93.9	97.6	90.5	90.0	94.8
1923	" " 28 "	98.3	94.5	97.6	91.0	90.7	95.1
1922	" " 29 "	98.3	95.6	97.8	91.3	91.9	95.6
1921	" " 30 "	99.0	97.2	98.2	93.7	93.6	96.8
1920	" " 31 "	99.6	97.7	98.2	96.5	95.0	97.7
1919	" " 32 "	99.8	98.0	98.2	97.3	95.5	98.1
1918	" " 33 "	99.8	98.6	98.4	98.0	96.3	98.5
1917	" " 34 "	99.9	98.9	98.4	98.2	96.8	98.7
1916	" " 35 "	99.9	99.0	98.4	99.0	97.6	99.0
1915	" " 36 "	100.0	99.0	98.4	99.0	97.6	99.0
1914	" " 37 "	100.0	99.3	98.8	99.6	98.4	99.3
1913	" " 38 "	100.0	99.7	99.4	99.8	99.2	99.7
1912	" " 39 "	100.0	99.7	99.4	99.8	99.4	99.7
1911	" " 40 "	100.0	99.7	99.4	99.8	99.5	99.7
1910	" " 41 "	100.0	99.7	99.4	99.8	99.6	99.7
1909	" " 42 "	100.0	99.7	99.4	99.8	99.6	99.7
1908	" " 43 "	100.0	99.7	99.4	99.8	99.7	99.8
1907	" " 44 "	100.0	99.7	99.4	99.8	99.7	99.8
1906	" " 45 "	100.0	99.8	99.4	99.8	99.7	99.8
1905	" " 46 "	100.0	99.9	99.6	99.8	99.7	99.8
1904	" " 47 "	100.0	99.9	99.6	99.8	99.7	99.8
1903	" " 48 "	100.0	99.9	99.6	100.0	99.7	99.9
1902	" " 49 "	100.0	99.9	99.6	100.0	99.7	99.9
1901	" " 50 "	100.0	99.9	100.0	100.0	99.7	99.9
1900	" " 51 "	100.0	99.9	100.0	100.0	99.7	99.9
1899	" " 52 "	100.0	99.9	100.0	100.0	99.8	99.9
1898	" " 53 "	100.0	99.9	100.0	100.0	99.8	99.9
1897	" " 54 "	100.0	100.0	100.0	100.0	100.0	100.0

TABLE VII

TABLE VIII

ANALYSIS OF OWNERSHIP WITHIN FLAGS OF THE ACTUAL WORLD TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Tons and Over

Flag	Total Actual			All Oil Companies			U. S. Oil Companies			Non-Oil Companies			Governments		
	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed	No.	D.W.T.	Average Speed
WESTERN HEMISPHERE															
United States	528	8,364,500	14.5 K.	290	4,595,600	14.2 K.	290	4,595,600	14.2 K.	130	2,028,200	14.1 K.	108	1,740,700	16.0 K.
Panama	162	2,660,400	14.0	77	1,333,500	14.6	77	1,333,500	14.6	85	1,326,900	13.4	-	-	-
Canada	11	185,400	14.5	7	126,100	14.8	7	126,100	14.8	4	59,300	13.9	-	-	-
Others:															
Argentina	23	255,700	12.6	-	-	-	-	-	-	10	96,500	11.0	13	159,200	13.5
Brazil	5	51,100	11.8	-	-	-	-	-	-	2	17,400	10.1	3	33,700	12.7
Honduras	11	223,400	14.8	-	-	-	-	-	-	11	223,400	14.8	-	-	-
Mexico	15	158,100	10.6	-	-	-	-	-	-	-	-	-	15	158,100	10.6
Philippine Island	1	13,500	16.0	-	-	-	-	-	-	1	13,500	16.0	-	-	-
Uruguay	2	32,600	14.5	-	-	-	-	-	-	-	-	-	2	32,600	14.5
Venezuela	1	7,400	11.5	1	7,400	11.5	1	7,400	11.5	-	-	-	-	-	-
Sub-Total	58	741,800	12.9	1	7,400	11.5	1	7,400	11.5	24	350,800	13.6	33	383,600	12.3
TOTAL WESTERN HEMISPHERE (Incl. Philippine Islands)	759	11,952,100	14.3	375	6,062,600	14.3	375	6,062,600	14.3	243	3,765,200	13.8	141	2,124,300	15.3
EUROPE															
E.C.A. Countries	980	12,865,200	12.5	392	4,935,900	12.0	77	1,150,600	12.3	533	7,264,800	12.7	55	664,500	13.4
Belgium	9	109,000	12.2	7	83,500	12.0	7	83,500	12.0	2	25,500	13.0	-	-	-
Denmark	19	269,900	12.4	3	46,400	11.1	3	46,400	11.1	16	223,500	12.6	-	-	-
France	66	944,200	12.9	18	261,300	12.8	8	124,900	12.8	35	521,100	12.7	13	161,800	13.6
Germany	3	43,200	10.4	1	13,500	9.8	1	13,500	9.8	2	29,700	10.7	-	-	-
Greece	11	148,400	13.6	-	-	-	-	-	-	10	140,100	13.8	1	8,300	10.0
Italy	66	792,400	12.7	2	27,200	11.5	2	27,200	11.5	61	733,800	12.8	3	31,400	12.4
Netherlands	60	700,200	12.5	52	585,900	12.4	9	144,400	14.3	8	114,300	13.0	-	-	-
Norway	271	3,784,500	12.7	8	106,600	12.3	8	106,600	12.3	263	3,677,900	12.7	-	-	-
Portugal	4	52,700	13.1	-	-	-	-	-	-	4	52,700	13.1	-	-	-
Sweden	37	524,800	13.4	-	-	-	-	-	-	37	524,800	13.4	-	-	-
Switzerland	3	32,400	10.4	-	-	-	-	-	-	3	32,400	10.4	-	-	-
Turkey	3	39,600	13.5	-	-	-	-	-	-	3	39,600	13.5	-	-	-
United Kingdom	428	5,423,900	12.1	301	3,811,500	11.9	39	604,100	12.0	89	1,149,400	11.9	38	463,000	13.4
Others:															
Finland	6	67,500	10.2	-	-	-	-	-	-	6	67,500	10.2	-	-	-
Poland	1	9,300	12.0	-	-	-	-	-	-	-	-	-	1	9,300	12.0
Spain	19	172,400	11.6	-	-	-	-	-	-	-	-	-	19	172,400	11.6
U.S.S.R.	16	162,100	10.9	-	-	-	-	-	-	-	-	-	16	162,100	10.9
Yugoslavia	1	9,400	11.5	-	-	-	-	-	-	-	-	-	1	9,400	11.5
Sub-Total	43	420,700	11.1	-	-	-	-	-	-	6	67,500	10.2	37	353,200	11.3
TOTAL EUROPE	1,023	13,285,900	12.4	392	4,935,900	12.0	77	1,150,600	12.3	539	7,332,300	12.6	92	1,017,700	12.6
CHINA	5	62,400	12.4	-	-	-	-	-	-	5	62,400	12.4	-	-	-
JAPAN	16	241,600	12.8	-	-	-	-	-	-	16	241,600	12.8	-	-	-
LIBERIA	18	467,800	16.1	6	163,500	16.0	6	163,500	16.0	12	304,300	16.2	-	-	-
UNION OF SOUTH AFRICA	1	16,600	14.5	-	-	-	-	-	-	1	16,600	14.5	-	-	-
TOTAL WORLD	1,822	26,026,400	13.4	773	11,162,000	13.3	458	7,376,700	14.0	816	11,722,400	13.1	233	3,142,000	14.5
TOTAL BRITISH EMPIRE	440	5,625,900	12.2	308	3,937,600	12.0	46	730,200	12.5	94	1,225,300	12.1	38	463,000	13.4
TOTAL U. S. CONTROL, ALL FLAGS	755	12,293,400	14.4	458	7,376,700	14.0	458	7,376,700	14.0	188	3,164,600	14.4	109	1,752,100	16.0

TABLE IX

ANALYSIS OF OWNERSHIP WITHIN FLAGS OF THE WORLD T2-SE-A1 EQUIVALENT TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Flag	Total T2-SE-A1 Equivalent			Total All Oil Companies			U. S. Oil Companies			Non-Oil Companies			Governments		
	No.	D.W.T.	% of Flag Capacity	No.	D.W.T.	% of Flag Capacity	No.	D.W.T.	% of Flag Capacity	No.	D.W.T.	% of Flag Capacity	No.	D.W.T.	% of Flag Capacity
WESTERN HEMISPHERE															
United States	500.2	8,385,900	100.0%	267.7	4,488,000	53.5%	267.7	4,488,000	53.5%	117.9	1,976,600	23.6%	114.6	1,921,300	22.9%
Panama	152.9	2,563,400	100.0	79.9	1,339,600	52.3	79.9	1,339,600	52.3	73.0	1,223,800	47.7	-	-	-
Canada	11.1	186,100	100.0	7.7	129,100	69.4	7.7	129,100	69.4	3.4	57,000	30.6	-	-	-
Others:															
Argentina	13.2	221,300	100.0	-	-	-	-	-	-	4.4	73,800	33.3	8.8	147,500	66.7
Brazil	2.5	41,900	100.0	-	-	-	-	-	-	0.7	11,700	28.0	1.8	30,200	72.0
Honduras	13.6	228,000	100.0	-	-	-	-	-	-	13.6	228,000	100.0	-	-	-
Mexico	6.9	115,700	100.0	-	-	-	-	-	-	-	-	-	6.9	115,700	100.0
Philippine Islands	0.9	15,100	100.0	-	-	-	-	-	-	0.9	15,100	100.0	-	-	-
Uruguay	1.9	31,800	100.0	-	-	-	-	-	-	-	-	-	1.9	31,800	100.0
Venezuela	0.3	5,000	100.0	0.3	5,000	100.0	0.3	5,000	100.0	-	-	-	-	-	-
Sub-Total	39.3	658,800	100.0	0.3	5,000	0.8	0.3	5,000	0.8	19.6	328,600	49.9	19.4	325,200	49.3
TOTAL WESTERN HEMISPHERE (incl. Philippine Islands)	703.5	11,794,200	100.0	355.6	5,961,700	50.5	355.6	5,961,700	50.5	213.9	3,586,000	30.4	134.0	2,246,500	19.1
EUROPE															
E.C.A. Countries	659.5	11,056,500	100.0	244.4	4,097,400	37.1	58.4	979,100	8.9	378.5	6,345,600	57.4	36.6	613,500	5.5
Belgium	5.5	92,200	100.0	4.1	68,700	74.5	4.1	68,700	74.5	1.4	23,500	25.5	-	-	-
Denmark	13.7	229,700	100.0	2.1	35,200	15.3	2.1	35,200	15.3	11.6	194,500	84.7	-	-	-
France	50.0	838,300	100.0	13.8	231,400	27.6	6.6	110,700	13.2	27.2	456,000	54.4	9.0	150,900	18.0
Germany	1.9	31,900	100.0	0.6	10,100	31.6	0.6	10,100	31.6	1.3	21,800	68.4	-	-	-
Greece	8.3	139,100	100.0	-	-	-	-	-	-	7.9	132,500	95.2	0.4	6,600	4.8
Italy	41.4	694,100	100.0	1.3	21,800	3.1	1.3	21,800	3.1	38.5	645,500	93.0	1.6	26,800	3.9
Netherlands	36.0	603,500	100.0	29.9	501,300	83.1	8.5	142,500	23.6	6.1	102,200	16.9	-	-	-
Norway	198.3	3,324,500	100.0	5.4	90,500	2.7	5.4	90,500	2.7	192.9	3,234,000	97.3	-	-	-
Portugal	2.8	46,900	100.0	-	-	-	-	-	-	2.8	46,900	100.0	-	-	-
Sweden	28.8	482,800	100.0	-	-	-	-	-	-	28.8	482,800	100.0	-	-	-
Switzerland	1.4	23,500	100.0	-	-	-	-	-	-	1.4	23,500	100.0	-	-	-
Turkey	2.2	36,900	100.0	-	-	-	-	-	-	2.2	36,900	100.0	-	-	-
United Kingdom	269.2	4,513,100	100.0	187.2	3,138,400	69.5	29.8	499,600	11.1	56.4	945,500	21.0	25.6	429,200	9.5
Others:															
Finland	2.8	46,900	100.0	-	-	-	-	-	-	2.8	46,900	100.0	-	-	-
Poland	0.5	8,400	100.0	-	-	-	-	-	-	-	-	-	0.5	8,400	100.0
Spain	8.2	137,500	100.0	-	-	-	-	-	-	-	-	-	8.2	137,500	100.0
U.S.S.R.	7.3	122,400	100.0	-	-	-	-	-	-	-	-	-	7.3	122,400	100.0
Yugoslavia	0.4	6,700	100.0	-	-	-	-	-	-	-	-	-	0.4	6,700	100.0
Sub-Total	19.2	321,900	100.0	-	-	-	-	-	-	2.8	46,900	14.6	16.4	275,000	85.4
TOTAL EUROPE	678.7	11,378,400	100.0	244.4	4,097,400	36.0	58.4	979,100	8.6	381.3	6,392,500	56.2	53.0	888,500	7.8
CHINA	3.2	53,600	100.0	-	-	-	-	-	-	3.2	53,600	100.0	-	-	-
JAPAN	12.7	212,900	100.0	-	-	-	-	-	-	12.7	212,900	100.0	-	-	-
LIBERIA	31.1	521,400	100.0	10.8	181,000	34.7	10.8	181,000	34.7	20.3	340,400	65.3	-	-	-
UNION OF SOUTH AFRICA	1.0	16,800	100.0	-	-	-	-	-	-	1.0	16,800	100.0	-	-	-
TOTAL WORLD	1,430.2	23,977,300	100.0	610.8	10,240,100	42.7	424.8	7,121,800	29.7	632.4	10,602,200	44.2	187.0	3,135,000	13.1
TOTAL BRITISH EMPIRE	281.3	4,716,000	100.0	194.9	3,267,500	69.3	37.5	628,700	13.3	60.8	1,019,300	21.6	25.6	429,200	9.1
TOTAL U. S. CONTROL, ALL FLAGS	727.9	12,203,200	100.0	424.8	7,121,800	58.4	424.8	7,121,800	58.4	188.1	3,153,500	25.8	115.0	1,927,900	15.8

ANALYSIS OF UNITED STATES FLAG PRIVATELY OWNED TANK SHIP FLEET AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Owner (Including Subsidiaries)	Actual			T2-SE-A1 Equivalents				Average Age	
	No.	D.W.T.	Average Speed	No.	D.W.T.	% of Total	Rank	Years	Months
OIL COMPANIES									
The Atlantic Refining Company	13	226,600	14.0 K.	13.0	217,900	3.4%	8	7	7
Barber Oil Corporation	9	150,600	14.5	9.0	150,900	2.3	13	5	9
Cities Service Oil Company	17	284,300	14.6	17.0	285,000	4.4	6	5	9
Gulf Oil Corporation	38	584,400	13.6	32.7	548,200	8.5	2	9	9
The Pure Oil Company	9	120,100	14.1	6.9	115,700	1.8	15	10	5
Sinclair Refining Company	12	166,900	14.1	9.7	162,600	2.5	12	10	1
Socony-Vacuum Oil Company, Inc.	21	339,600	14.8	20.7	347,000	5.4	4	8	4
Standard Oil Company (Indiana)	13	199,100	13.7	11.2	187,800	2.9	10	9	0
Standard Oil Company (New Jersey)	52	896,200	14.6	53.9	903,600	14.0	1	6	7
Standard Oil Company of California	15	215,100	14.2	12.6	211,200	3.2	9	7	1
Standard-Vacuum Oil Company	5	82,900	14.5	4.9	82,200	1.3	22	6	2
Sun Oil Company	18	291,800	13.6	16.3	273,300	4.2	7	12	1
The Texas Company	22	337,700	14.4	20.0	335,300	5.2	5	8	7
Tide Water Associated Oil Company	14	197,500	12.8	10.4	174,400	2.7	11	13	3
Union Oil Company of California	7	101,700	13.7	5.7	95,600	1.5	20	7	5
Other Oil Companies	25	401,100	14.3	23.7	397,300	6.1	-	6	5
Sub-Total Oil Companies	290	4,595,600	14.2	267.7	4,488,000	69.4	-	8	2
NON-OIL COMPANIES									
Bernuth, Lembcke Company, Inc.	5	67,400	13.3	3.7	62,000	0.9	24	7	4
Independent Tankships, Inc.	6	100,000	14.5	5.9	98,900	1.5	19	7	0
Keystone Tankship Corporation	6	100,300	14.5	6.0	100,600	1.6	17	7	10
Charles Kurz & Company, Inc.	6	87,200	13.6	4.9	82,100	1.3	23	7	0
National Bulk Carriers, Inc.	25	452,000	15.4	28.6	479,500	7.4	3	6	2
North American Shipping & Trading Co., Inc.	6	100,000	14.5	6.0	100,600	1.6	18	5	10
Paco Tankers, Inc.	8	120,100	13.9	6.8	114,000	1.8	16	7	2
Southern Trading Company	5	84,000	14.5	5.0	83,800	1.3	21	5	9
United States Petroleum Carriers, Inc.	7	117,000	14.5	7.0	117,400	1.8	14	6	9
Other Non-Oil Companies	56	800,200	13.4	44.0	737,700	11.4	-	7	11
Sub-Total Non-Oil Companies	130	2,028,200	14.1	117.9	1,976,600	30.6	-	7	1
TOTAL UNITED STATES PRIVATELY OWNED FLEET	420	6,623,800	14.2	385.6	6,464,600	100.0	-	7	10

TANK SHIPS UNDER CONSTRUCTION OR ON ORDER AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Country of Registry	Country of Construction													
	United States		United Kingdom		Sweden		Denmark		Netherlands		France		Belgium	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
United States	3	96,000	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	-	-	78	1,255,390	-	-	-	-	-	-	-	-	-	-
Sweden	-	-	3	46,100	16	268,800	-	-	-	-	-	-	-	-
Denmark	-	-	1	12,600	3	48,900	2	31,500	-	-	-	-	-	-
Netherlands	-	-	-	-	1	16,300	-	-	-	-	-	-	-	-
France	-	-	2	36,700	-	-	-	-	3	65,000	7	140,000	-	-
Norway	-	-	41	746,200	37	677,250	6	86,250	4	64,000	-	-	-	-
Spain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Argentina	-	-	5	81,850	2	27,000	-	-	3	40,500	-	-	-	-
Brazil	-	-	4	64,000	5	81,200	-	-	2	40,000	-	-	-	-
Greece	-	-	6	134,000	-	-	-	-	-	-	-	-	-	-
Poland	-	-	2	22,000	-	-	-	-	-	-	-	-	-	-
U.S.S.R.	-	-	-	-	-	-	1	13,250	-	-	-	-	-	-
Panama	1	28,000	12	199,000	2	34,800	-	-	-	-	-	-	3	49,500
Liberia	4	112,000	-	-	-	-	-	-	-	-	-	-	-	-
Total	8	236,000	154	2,597,840	66	1,154,250	9	131,000	12	209,500	7	140,000	3	49,500

TANK SHIPS UNDER CONSTRUCTION OR ON ORDER AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Country of Registry	Country of Construction													
	Norway		Spain		Japan		Italy		Portugal		Germany		Total	
	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.	No.	D.W.T.
United States	-	-	-	-	-	-	-	-	-	-	-	-	3	96,000
United Kingdom	-	-	-	-	-	-	-	-	-	-	-	-	78	1,255,390
Sweden	-	-	-	-	-	-	-	-	-	-	-	-	19	314,900
Denmark	-	-	-	-	2	32,500	-	-	-	-	1	14,200	9	139,700
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	1	16,300
France	-	-	-	-	-	-	-	-	-	-	-	-	12	241,700
Norway	13	199,750	-	-	-	-	-	-	-	-	-	-	101	1,773,450
Spain	-	-	5	54,500	-	-	-	-	-	-	-	-	5	54,500
Japan	-	-	-	-	4	68,500	-	-	-	-	-	-	4	68,500
Italy	-	-	-	-	-	-	4	87,000	-	-	-	-	4	87,000
Portugal	-	-	-	-	-	-	-	-	2	20,000	-	-	2	20,000
Argentina	-	-	-	-	-	-	-	-	-	-	-	-	10	149,350
Brazil	-	-	-	-	-	-	-	-	-	-	-	-	11	185,200
Greece	-	-	-	-	-	-	-	-	-	-	-	-	6	134,000
Poland	-	-	-	-	-	-	-	-	-	-	-	-	2	22,000
U.S.S.R.	-	-	-	-	-	-	-	-	-	-	-	-	1	13,250
Panama	-	-	-	-	-	-	-	-	-	-	-	-	18	311,300
Liberia	-	-	-	-	-	-	-	-	-	-	-	-	4	112,000
Total	13	199,750	5	54,500	6	101,000	4	87,000	2	20,000	1	14,200	290	4,994,540

T2-SE-A1 EQUIVALENTS OF TANK SHIPS UNDER CONSTRUCTION OR ON ORDER AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Country of Registry	Country of Construction																				
	United States			United Kingdom			Sweden			Denmark			Netherlands			France			Belgium		
	No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent	
		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.
United States	6.7	42.7%	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	-	-	-	71.7	48.3%	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sweden	-	-	-	2.6	1.7	14.1	15.8	23.2%	85.9%	-	-	-	-	-	-	-	-	-	-	-	-
Denmark	-	-	-	0.7	0.5	8.4	3.0	4.4	36.2	1.8	23.7%	21.7%	-	-	-	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-	1.0	1.5	100.0	-	-	-	-	-	-	-	-	-	-	-	-
France	-	-	-	2.2	1.5	15.5	-	-	-	-	-	-	3.8	30.6%	26.8%	8.2	100.0%	57.7%	-	-	-
Norway	-	-	-	42.0	28.3	41.3	39.8	58.3	39.1	5.0	65.8	4.9	3.5	28.2	3.5	-	-	-	-	-	-
Spain	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Japan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Italy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Argentina	-	-	-	4.7	3.2	52.2	1.6	2.3	17.8	-	-	-	2.7	21.8	30.0	-	-	-	-	-	-
Brazil	-	-	-	3.7	2.5	33.6	4.9	7.2	44.6	-	-	-	2.4	19.4	21.8	-	-	-	-	-	-
Greece	-	-	-	8.3	5.6	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	-	-	-	1.1	0.7	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
U.S.S.R.	-	-	-	-	-	-	-	-	-	0.8	10.5	100.0	-	-	-	-	-	-	-	-	-
Panama	1.8	11.5	9.8	11.5	7.7	62.5	2.1	3.1	11.4	-	-	-	-	-	-	-	-	-	3.0	100.0%	16.3%
Liberia	7.2	45.8	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	15.7	100.0	5.4	148.5	100.0	50.9	68.2	100.0	23.4	7.6	100.0	2.6	12.4	100.0	4.2	8.2	100.0	2.8	3.0	100.0	1.0
Average Speed	16.3K			13.9K			14.4K			14.0K			14.4K			14.3K			14.5K		

T2-SE-A1 EQUIVALENTS OF TANK SHIPS UNDER CONSTRUCTION OR ON ORDER AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

Country of Registry	Country of Construction																				Average Speed
	Norway			Spain			Japan			Italy			Portugal			Germany			Total			
	No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		No.	Per Cent		
		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.		Country of Const.	Country of Reg.	
United States	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	2.3%	100.0%	17.0 K
United Kingdom	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71.7	24.6	100.0	13.9
Sweden	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.4	6.3	100.0	14.2
Denmark	-	-	-	-	-	-	2.0	30.8%	24.1%	-	-	-	-	-	-	0.8	100.0%	9.6%	8.3	2.8	100.0	14.4
Netherlands	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0	0.3	100.0	15.0
France	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.2	4.9	100.0	14.3
Norway	11.4	100.0%	11.2%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	101.7	34.8	100.0	13.9
Spain	-	-	-	2.8	100.0%	100.0%	-	-	-	-	-	-	-	-	-	-	-	-	2.8	1.0	100.0	12.8
Japan	-	-	-	-	-	-	4.5	69.2	100.0	-	-	-	-	-	-	-	-	-	4.5	1.5	100.0	15.8
Italy	-	-	-	-	-	-	-	-	-	5.8	100.0%	100.0%	-	-	-	-	-	-	5.8	2.0	100.0	16.1
Portugal	-	-	-	-	-	-	-	-	-	-	-	-	1.0	100.0%	100.0%	-	-	-	1.0	0.3	100.0	12.0
Argentina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	3.1	100.0	14.7
Brazil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11.0	3.8	100.0	14.4
Greece	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.3	2.8	100.0	15.1
Poland	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	0.4	100.0	12.5
U.S.S.R.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	0.3	100.0	14.0
Panama	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18.4	6.3	100.0	14.3
Liberia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	2.5	100.0	15.8
Total	11.4	100.0%	3.9	2.8	100.0	1.0	6.5	100.0%	2.2	5.8	100.0	2.0	1.0	100.0	0.3	0.8	100.0	0.3	291.9	100.0	100.0	14.2
Average Speed	13.8K			12.8K			15.4K			16.1K			12.0K			13.8K			14.2K		

SPEED AND DEADWEIGHT TONNAGE GROUPS OF TANK SHIPS UNDER CONSTRUCTION OR ON ORDER AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

D.W.T. Groups	Speed Groups														
	11.0 to 11.9 K.			12.0 to 12.9 K.			13.0 to 13.9 K.			14.0 to 14.9 K.			15.0 to 15.9 K.		
	No.	D.W.T.	T-2	No.	D.W.T.	T-2	No.	D.W.T.	T-2	No.	D.W.T.	T-2	No.	D.W.T.	T-2
6,000 to 6,999	-	-	-	2	12,090	0.6	-	-	-	-	-	-	-	-	-
7,000 to 7,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8,000 to 8,999	6	50,250	2.3	-	-	-	-	-	-	-	-	-	-	-	-
9,000 to 9,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10,000 to 10,999	-	-	-	7	74,500	3.8	-	-	-	-	-	-	-	-	-
11,000 to 11,999	-	-	-	2	22,000	1.1	-	-	-	-	-	-	-	-	-
12,000 to 12,999	13	158,000	7.5	7	84,500	4.2	10	123,400	6.7	-	-	-	-	-	-
13,000 to 13,999	-	-	-	-	-	-	11	148,000	8.2	7	93,400	5.4	-	-	-
14,000 to 14,999	-	-	-	7	101,500	5.2	1	14,200	0.8	1	14,500	0.9	-	-	-
15,000 to 15,999	-	-	-	5	75,000	3.8	-	-	-	26	404,400	23.7	-	-	-
16,000 to 16,999	-	-	-	2	33,000	1.7	21	339,500	18.8	45	732,800	43.0	10	163,300	10.1
17,000 to 17,999	-	-	-	1	17,000	0.9	-	-	-	14	243,150	14.4	-	-	-
18,000 to 18,999	-	-	-	-	-	-	-	-	-	17	309,300	18.5	12	216,700	13.4
19,000 to 19,999	-	-	-	-	-	-	-	-	-	1	19,000	1.1	1	19,000	1.2
20,000 to 20,999	-	-	-	-	-	-	-	-	-	2	40,000	2.4	-	-	-
21,000 to 21,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22,000 to 22,999	-	-	-	-	-	-	-	-	-	2	45,600	2.7	-	-	-
23,000 to 23,999	-	-	-	-	-	-	-	-	-	2	46,000	2.8	-	-	-
24,000 to 24,999	-	-	-	-	-	-	-	-	-	24	582,150	33.6	-	-	-
25,000 to 25,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26,000 to 26,999	-	-	-	-	-	-	-	-	-	1	26,000	1.5	-	-	-
27,000 to 27,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28,000 to 28,999	-	-	-	-	-	-	-	-	-	1	28,800	1.7	4	112,000	7.2
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31,000 to 31,999	-	-	-	-	-	-	-	-	-	-	-	-	4	124,000	7.8
32,000 to 32,999	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	19	208,250	9.8	33	419,590	21.3	43	625,100	34.5	143	2,585,100	151.7	31	635,000	39.7

SPEED AND DEADWEIGHT TONNAGE GROUPS OF TANK SHIPS UNDER CONSTRUCTION OR ON ORDER AS OF SEPTEMBER 1, 1950
Ocean-Going Vessels 6,000 Deadweight Tons and Over

D.W.T. Groups	Speed Groups											
	16.0 to 16.9 K.			17.0 to 17.9 K.			18.0 to 18.9 K.			Total		
	No.	D.W.T.	T-2	No.	D.W.T.	T-2	No.	D.W.T.	T-2	No.	D.W.T.	T-2
6,000 to 6,999	-	-	-	-	-	-	-	-	-	2	12,090	0.6
7,000 to 7,999	-	-	-	-	-	-	-	-	-	-	-	-
8,000 to 8,999	-	-	-	-	-	-	-	-	-	6	50,250	2.3
9,000 to 9,999	-	-	-	-	-	-	-	-	-	-	-	-
10,000 to 10,999	-	-	-	-	-	-	-	-	-	7	74,500	3.8
11,000 to 11,999	-	-	-	-	-	-	-	-	-	2	22,000	1.1
12,000 to 12,999	-	-	-	-	-	-	-	-	-	30	365,900	18.4
13,000 to 13,999	3	40,500	2.7	-	-	-	-	-	-	21	281,900	16.3
14,000 to 14,999	-	-	-	-	-	-	-	-	-	9	130,200	6.9
15,000 to 15,999	-	-	-	-	-	-	-	-	-	31	479,400	27.5
16,000 to 16,999	-	-	-	-	-	-	-	-	-	78	1,268,600	73.6
17,000 to 17,999	-	-	-	-	-	-	-	-	-	15	260,150	15.3
18,000 to 18,999	-	-	-	2	36,000	2.5	1	18,000	1.3	32	580,000	35.7
19,000 to 19,999	-	-	-	-	-	-	-	-	-	2	38,000	2.3
20,000 to 20,999	-	-	-	-	-	-	-	-	-	2	40,000	2.4
21,000 to 21,999	-	-	-	-	-	-	-	-	-	-	-	-
22,000 to 22,999	-	-	-	-	-	-	-	-	-	2	45,600	2.7
23,000 to 23,999	-	-	-	-	-	-	-	-	-	2	46,000	2.8
24,000 to 24,999	-	-	-	-	-	-	-	-	-	24	582,150	33.6
25,000 to 25,999	1	25,000	1.6	-	-	-	-	-	-	1	25,000	1.6
26,000 to 26,999	1	26,000	1.7	-	-	-	-	-	-	2	52,000	3.2
27,000 to 27,999	-	-	-	-	-	-	-	-	-	-	-	-
28,000 to 28,999	10	280,000	18.4	-	-	-	-	-	-	15	420,800	27.3
29,000 to 29,999	-	-	-	-	-	-	-	-	-	-	-	-
30,000 to 30,999	-	-	-	-	-	-	-	-	-	-	-	-
31,000 to 31,999	-	-	-	-	-	-	-	-	-	4	124,000	7.8
32,000 to 32,999	-	-	-	3	96,000	6.7	-	-	-	3	96,000	6.7
Total	15	371,500	24.4	5	132,000	9.2	1	18,000	1.3	290	4,994,540	291.9

EXHIBIT III
(d)

REPORT OF THE
SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION
OF THE
COMMITTEE ON PETROLEUM TRANSPORTATION

September 10, 1950

REPORT OF THE
SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION
OF THE COMMITTEE ON PETROLEUM TRANSPORTATION

The Petroleum Tank Truck Transportation Subcommittee of the Transportation Committee of the National Petroleum Council, appointed for the purpose of studying and reporting on the adequacy of over-the-road petroleum tank truck transportation facilities to meet the Nation's needs, submits the following report:

This same Committee conducted a survey and forecast in April 1947 and submitted the report to the Chairman of the National Petroleum Council under date of April 16, 1947.

The 1947 Report contained pertinent observations with respect to the utilization and the operations of the then existing fleets and what steps could be taken, if necessary, to increase their efficiency. The Committee is of the opinion that the observations made at that time hold equally true as of this date and that this report should be considered as supplemental to the 1947 Report.

In 1947, that part of the Committee's report dealing with capacity was based on actual known capacity in 1944 as shown by the O.D.T. inventory of tank trucks. The forecast as to capacity by 1950 was based on carrier estimates of anticipated fleet expansion. The 1947 Report showed that in 1944 total carrying capacity of tank trucks of 2,000 gallons capacity or greater amounted to 67,767,364 gallons, of which 43.3% of the capacity was that operated by private carriers and 56.7% operated by for-hire carriers.

Using the same method of spot checking or sampling as was used in making the 1947 Report, we are in a position now to verify or adjust the 1950 forecast to what we believe to be a more accurate report of the present carrying capacity. The significant part of this report is that the forecast made in 1947 as to the total capacity by 1950 was far below what actually took place. It now appears that the Nation's over-the-road tank truck fleet of for-hire and private carriers is over twice that of January 1, 1944.

The figures as developed by our spot check would indicate the 1950 capacity of for-hire carrier owned units of 2,000 gallons capacity and over to be 140,632,187 gallons and the private carrier capacity to be 88,616,669 gallons, which results in a total of 229,248,856.

The total number of units appears to have increased from 18,417 in 1944 to a total of 56,010 in 1950. There has also been a definite trend toward increase in the average capacity of each unit.

The foregoing may be summarized as follows:

	Number of Units	Capacity in Gallons
1944 Actual Count	18,417	67,767,364
January 1, 1947 Estimated	22,560	83,019,710
August 1, 1950 Estimated	56,010	229,248,856

In considering this report, we wish to emphasize that the figures showing capacities and total number of units of 1950 over-the-road tank truck facilities are estimates based entirely on a hurried sampling of the industry which can be made accurate only by a more complete and detailed survey of all individual operators. This could be conducted if the emergency should justify it, but would take a considerable length of time.

It was the consensus of the group that if the wartime measures were adopted, such as 24 hours per day operation, 7 days per week, reciprocity as to various state laws and regulations, the freer use or interchange of operating rights, the existing carrying capacity could be increased by 35% to 40%.

Respectfully submitted,

SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION

Lee R. Cowles, Chairman

September 10, 1950

REPORT OF THE
SUBCOMMITTEE ON PETROLEUM TRUCK TRANSPORTATION
OF THE
NATIONAL PETROLEUM COUNCIL

April 3, 1947

REPORT OF THE
SUBCOMMITTEE ON PETROLEUM TRUCK TRANSPORTATION
OF THE NATIONAL PETROLEUM COUNCIL
April 3, 1947

The Petroleum Truck Transportation Subcommittee appointed by the National Petroleum Council to study the adequacy of the petroleum truck transportation facilities to meet the National defense, or other emergency, met in Chicago April 3, 1947. Eight of the twelve members were present and participated in the discussion.

The Committee submits the following report:

At the close of World War II the petroleum industry, and that branch of the for-hire trucking industry serving the petroleum industry, owned and operated approximately 105,000 tank trucks and tank trailers of all sizes and types. In addition to the tank trucks and tank trailers, the petroleum industry owned and operated approximately 17,700 conventional type trucks. Inasmuch as these last mentioned trucks do not differ in body type and construction in any substantial degree from the many thousands of trucks operated in other industries and by highway carriers of general freight (Package goods and so-called dry freight) and can, therefore, be substituted one for the other, the Committee feels that no appraisal at this time of this type of transportation is necessary. The Committee therefore has confined itself to the study of the adequacy of petroleum tank truck and tank trailer transportation facilities.

Of the 105,000 tank trucks and tank trailers, the vast majority were small in capacity, and their use was restricted to purely local

and rural distribution. Over 50,000 (chiefly small trucks) of the 105,000 were owned by companies or individuals who operated only one or two tucks each. The balance were in fleets of three or more units.

Believing that any National emergency would throw the principal burden on the larger trucks, the Committee further restricts this report to the tank trucks and tank trailers of 2,000 gallons capacity and over.

At the outset of the war the Office of Defense Transportation, after consultation with the petroleum industry, arrived at 2,000 gallons capacity as the line of demarkation between tank trucks and tank trailers used in purely local distribution and those used in over-the-road or bulk transportaion. In view of the fact that the Committee is relying upon the official ODT records compiled from information shown on the certificates of war necessity, required for each truck at that time, in determining the adequacy of present facilities, the Committee also has used 2,000 gallons as the minimum size of unit which would be useful in moving a large quantity of product over a reasonable distance.

Average gallonage capacity of this type of unit in each PAW district was: District I - 3,320; District II - 3,590; District III - 3,421; District IV - 3,430; District V - 4,630.

An analysis of the total tank truck and tank trailer census (ODT 1944) indicates that approximately 18,417 were large capacity units ranging in size from 2,000 gallons to combination units of 8,000 gallons capacity. The total carrying capacity of these units was 67,767,364 gallons. (Note 1)

(Note 1) Office of Defense Transportation "Review of Highway Transport and Transit Industries During the War", published November 30, 1945.

A survey of the ownership of these trucks and trailers shows that 49.6% were owned by the oil industry (private carriers) and 50.4% were owned by for-hire carriers. Because of slightly larger average capacity of the units operated by the for-hire carriers, the total carrying capacity is divided, 43.3% for private carriers and 56.7% for for-hire carriers.

From a spot check necessitated by the limited time allowed, the Committee finds that the for-hire carriers had, as of January 1, 1947, increased their capacity approximately 16% over 1944; and that the private carriers had increased their capacity approximately 31% over 1944. This indicates that the total capacity as of January 1, 1947, was 83,019,710 gallons, an increase of 22.5%.

Estimates on further changes in the fleet capacity show that the private carriers expect a 67% increase over January 1, 1945, during the next three years; and that the for-hire carriers anticipate an increase of 26.6% for the same period. If these estimates are borne out, the total tank truck carrying capacity by 1950 should be approximately 97,697,545 gallons, an increase of 44% over January 1, 1945.

The estimated increase appears to be fairly general throughout the country, with a slightly larger increase on the Eastern Seaboard, and a smaller increase in the West Coast area.

When considering the total carrying capacity of the tank trucks and tank trailers with other forms of petroleum transportation, it is vital that full consideration be given to the turnaround time of each mode of transportation.

In making this report, the Committee wishes to point out that this particular time is a difficult period in which to measure accura-

tely the adequacy of the present facilities. The private carriers and the for-hire carriers are still suffering from the impact of the past war.

Each is going through an extensive replacement program. This program is handicapped by existing delays in securing new trucks and trailers, and a heavy demand for transportation service. Many units already past the retirement age are being kept in service to meet this demand, and others are being used in dual service, that is operating in over-the-road service during one part of the day and in local distribution during another part of the day.

Sufficient replacements have been made, however, to show a marked trend toward larger units. The extent of the trend to larger equipment is influenced considerably by varying state and city laws, regulations and ordinances restricting the type of trucks and carrying capacity; and by the size of storage facilities at receiving points.

The adequacy of the present petroleum truck facilities, or the facilities that we might safely expect to have in the forseeable future, to meet the National defense or other emergencies, can best be measured by the pattern set during the past war. Tank trucks and trailers, both private and for-hire, of the larger size discussed in the principal portion of this report, increased their deliveries from a pre-war level of 25,000,000 gallons per day to over 128,000,000 gallons per day through co-operation between Government, carriers, and shippers, and without any appreciable increase in the total number of units. It is the opinion of the Committee that the Nation's tank truckers could have attained the increased volume earlier in the war, if they had not had to overcome the various state barriers, such as different laws and

regulations governing length, weight, and sizes of vehicles, and lack of full reciprocity on licenses and calibrations.

While the traffic load of tank trucks has not receded to pre-war levels, it is believed that, given a sufficient supply of rubber, replacement trucks, trailers, and parts; along with the added experience of present operators, the decided growth in the size of the individual operator, the greater number of truck loading and unloading facilities, and the more clearly defined pattern of truck operations a similar increase in volume could be moved with existing facilities.

Respectfully submitted,

/s/ Lee R. Cowles

LEE R. COWLES, Chairman
Subcommittee on Petroleum Truck Transportation

SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - Lee R. Cowles
Standard Oil Company (Indiana)

Frank Baird-Smith
Refiners Transport & Terminal Corporation

M. M. Beckes
Socony-Vacuum Oil Company, Inc.

L. S. Bessonett
Standard Oil Company of California

L. A. Carlson
Gulf Oil Corporation

Morris Crandall
Illinois Farm Supply

Charles J. Foster
Deep Rock Oil Corporation

A. B. Gorman
Esso Standard Oil Company

Ed W. Jarvis
Standard Oil Company (Kentucky)

Gavin Laurie
The Atlantic Refining Company

S. F. Niness
National Tank Truck Carriers, Inc.

T. L. Preble
Tide Water Associated Oil Company

Clark E. Seargeant
Seargeant Transportation Company

C. Austin Sutherland
National Tank Truck Carriers, Inc.

Charles H. Wager
Shell Oil Company

EXHIBIT III
(e)

REPORT OF THE
SUBCOMMITTEE ON NATURAL GAS PIPE LINE TRANSPORTATION
OF THE
COMMITTEE ON PETROLEUM TRANSPORTATION

November 20, 1950

REPORT OF THE SUBCOMMITTEE ON NATURAL GAS PIPE LINE TRANSPORTATION OF THE COMMITTEE ON PETROLEUM TRANSPORTATION

At the first meeting of the Subcommittee on August 23, 1950, Mr. P. C. Spencer, Chairman of the National Petroleum Council Committee on Petroleum Transportation, asked that we determine the answers to the following questions:

(1) Does the natural gas industry have adequate transportation facilities?

(2) What are the total natural gas requirements in the United States?

He also asked the Subcommittee, "To make such recommendations (not involving industry plans, programs or allocations) as may appear appropriate in assuring the future adequacy of such facilities."

The Subcommittee arrived at its conclusions after studying a draft of the report compiled from available natural gas statistics and a questionnaire sent to the natural gas industry in the United States. Copies of the proposed report were mailed November 7, 1950, to each member of the Subcommittee for approval. The letter of transmittal is as follows:

> "I am sending you two copies of the proposed report of the Natural Gas Pipe Line Transportation Subcommittee to the National Petroleum Council Committee on Petroleum Transportation. Will you please wire me your approval or criticisms and suggestions immediately, since we must have this report in final form by November 20, 1950." Signed J. French Robinson, Chairman, Subcommittee on Natural Gas Pipe Line Transportation.

Due to the limited time available the following telegram was sent on November 16, 1950, to members of the Subcommittee who had not

replied as of that date:

> "Unless you wire otherwise we will assume that you approve Natural Gas Pipe Line Transportation Subcommittee report draft mailed November 7." Signed J. French Robinson, Chairman.

Responses to the letter and telegram were received from eight members of the Subcommittee of which all approved with no exceptions.

The conclusions of the Subcommittee regarding the adequacy of the industry's facilities to provide for the transportation demands of the future were predicated upon the assumption that the natural gas industry will receive approval from the Federal Power Commission for pending and future applications for the construction of new facilities and that necessary steel pipe and other equipment will be available.

The conclusions of the Subcommittee are as follows:

Area I will be adequately supplied with natural gas in the near future. (See Page 6)

Areas II, IV, V and VII have an adequate supply of natural gas and will continue to have an adequate supply in the future. (See Pages 7, 8, 9 and 10)

Area III has an adequate supply of natural gas at the present time and will continue to have an adequate supply until the end of 1952. During 1953 and 1954 a shortage in pipe line capacity will develop amounting to 337 MMCF daily in 1954. (See Pages 7 and 8)

Area VI has a small deficiency in pipe line capacity in 1950 but will have an adequate supply of natural gas thereafter. (See Pages 9 and 10)

Area VIII has an adequate supply of natural gas at the present time but by November of 1952 a deficiency in

pipe line capacity of 267 MMCF per day will develop and by November of 1953 an additional deficiency of 100 MMCF daily will occur unless Federal Power Commission authorization is received for the construction of additional facilities. (See Pages 10 and 11)

The supply of natural gas on an annual basis is adequate except in Areas III and VIII where daily pipe line deficiencies will develop. In Area III the daily deficiency will increase from 288 MMCF in 1953 to 337 MMCF by 1954. In Area VIII a daily deficiency of 267 MMCF will occur by November of 1952, increasing to 367 MMCF per day by November of 1953.

In cold weather, however, due to the increased number of house heating consumers throughout the nation (an average of 6,844,000 residential natural gas heating consumers in 1949, or 60% saturation) it will be necessary to curtail severely industrial loads, in order to protect the domestic consumer.

In order to carry out the assignments mentioned above a questionnaire was designed by the Subcommittee and mailed to more than two hundred gas companies throughout the nation in an attempt to assemble the required information. In addition to this, pertinent information was taken from the annual publication of the American Gas Association entitled "Gas Facts" and from the report of the National Security Resources Board on the Gas Industry, dated January 28, 1949.

Table A, attached hereto, shows in the United States for the

years 1933 through 1949, the marketed production of natural gas and the total utility sales while the total utility supply is shown for the years 1945 through 1949, all in billions of cubic feet. Table A also shows the total proven reserves of natural gas in the United States in trillions of cubic feet for the years 1925, 1930, 1934, 1937, 1938 and 1940 through 1949.

It was estimated that if the growth of the natural gas industry continued at its present rate during the next five years, in the year 1955 the total marketed production of the United States would be approximately 8.1 trillion cubic feet, the total utility supply would be approximately 5.1 trillion cubic feet and the total utility sales would be approximately 4.3 trillion cubic feet.

No estimate has been made of the proven reserves of the United States beyond the year 1949 (180.4 trillion cubic feet) but we point out that Mr. Lyon F. Terry in an address to the American Gass Association convention in October 1950, estimated the total recoverable reserves of natural gas in the United States at approximately 500 trillion cubic feet.

Table B, attached hereto, shows the percentage of the total supply of energy from mineral fuels and water power in the United States which is derived from natural gas, bituminous coal, petroleum, anthracite coal and water power. It shows that from 1933 to 1949 the percentage of energy derived from natural gas has increased from 9.4% to 19.4% of the total.

In making our study it was decided to use the same breakdown of the United States into gas market areas as was used by the National Security Resources Board in their report on the Gas Industry submitted

by Mr. Edward Falck on January 28, 1949. These areas are outlined on the maps, Nos. 1, 2, 3, and 4 which are attached hereto as follows:

Map No. 1 - Eight gas market areas in the United States.

Map No. 2 - Major natural gas pipe line companies serving each area and list of companies.

Map No. 3 - Estimated recoverable natural gas reserves for each area.

Map No. 4 - Total natural gas sales in each area during 1949 and estimated sales for the year 1955.

Table C, attached hereto, shows the total annual natural gas sales, by gas market areas for the years 1933 through 1955. The actual sales for the years 1933 through 1949 were taken from the American Gas Association book entitled "Gas Facts." Answers received to the questionnaire which contained sales for the year 1949 were tabulated and indicate that the sales reported in "Gas Facts" are accurate. Except for Area I the total sales used throughout this report are for the most part sales of gas transported by the pipe line companies plus the local production within the area.

These sales by areas have been placed on the graph which is Chart No. 1 in this report. This chart shows the actual natural gas sales in each gas market area for the years 1933 to 1949 inclusive and estimates of sales for the years 1950 through 1955. These estimates are based upon answers shown on the questionnaire sent out by the Subcommittee, and in our opinion reflect the reasonably expected increases in sales through 1955. The sales for the entire United States are estimated at 4.3 trillion cubic feet in 1955 which is an increase of 38.4 per cent over 1949. The increases for the different areas range from 17.2 per cent in Area VII to 55.8 per cent in Area IV.

AREA I

Area I, the New England area, comprising the six New England States has never had any natural gas service. Two pipe line companies, Northeastern Gas Transmission Company and Algonquin Gas Transmission Company have applied to the Federal Power Commission for authority to construct pipe lines to serve this area. On November 8, 1950, the Federal Power Commission issued an opinion and order in Docket Nos. G-1248, et al authorizing Northeastern Gas Transmission Company to supply part of the New England area. The Federal Power Commission further stated it was of the opinion that the balance of the markets in this area should be served by Algonquin Gas Transmission Company upon a showing that it has an adequate supply of gas.

Northeastern Gas Transmission Company expects to obtain part of its supply from Tennessee Gas Transmission Company's pipe line at a point near Albany, New York, and the remainder of its supply from Transcontinental Gas Pipe Line Corporation.

Algonquin Gas Transmission Company expects to obtain its supply from Texas Eastern Transmission Corporation. Delivery will be made at a connection near Lambertville, New Jersey.

It appears from the answers to the questionnaire sent out by the Subcommittee, that both Texas Eastern and Tennessee will have adequate transportation facilities to serve this area.

According to present plans it is expected that ultimately up to 610 million cubic feet daily will be delivered to this area. Annual sales are estimated at from 40 billion cubic feet in 1952 to 100 billion cubic feet in 1955.

AREA II

Area II, comprises the States of Ohio, Kentucky, West Virginia, Virginia, Pennsylvania, New York, Maryland, New Jersey, Delaware and District of Columbia and might be called the Appalachian Area. In this section of the country natural gas was first found and put into public service. It is now served with gas from the southwest by Texas Eastern Transmission Corporation, Tennessee Gas Transmission Company, Panhandle Eastern Pipe Line Company, Texas Gas Transmission Corporation, Commonwealth Natural Gas Corporation and will soon be served by Transcontinental Gas Pipe Line Corporation and Piedmont Natural Gas Corporation.

The total natural gas sales in this area have increased from 195 billion cubic feet in 1933 to 575 billion cubic feet in 1949. It is estimated that by 1955 these sales will have increased to 800 billion cubic feet annually.

The answers to the questionnaire sent out by the Subcommittee, indicate that the pipe line companies have sufficient pipe line capacity to serve this area at the present time and will continue to have adequate capacity during the next five years if they receive the necessary authorization from the Federal Power Commission and are able to purchase the steel pipe and other equipment required to construct the additional facilities they have now proposed or may propose during this period.

AREA III

Area III, is made up of the following states: Tennessee, North Carolina, South Carolina, Florida, Alabama, Georgia and Mississippi. This area is served by the Southern Natural Gas Company, United Gas Pipe Line Company and Tennessee Gas Transmission Company and will in

the future be served by Atlantic Gulf Gas Company, Transcontinental Gas Pipe Line Corporation and Piedmont Natural Gas Corporation. The annual sales in this area increased from 27 billion cubic feet in 1933 to 220 billion cubic feet during the year 1949. It is estimated that by the year 1955 the annual sales in this area will amount to 340 billion cubic feet. Replies to the questionnaire show that two of the present pipe line companies, United Gas Pipe Line Company and Tennessee Gas Transmission Company serving this area have adequate transportation facilities to meet the natural gas requirements at the present time and will continue to have adequate transportation facilities during the next five years if government authorization, steel pipe and other equipment can be obtained. The other pipe line company, Southern Natural Gas Company reports a deficiency in pipe line capacity of 288 MMCF daily in 1953 and 337 MMCF daily in 1954.

AREA IV

Area IV, includes the states of Wisconsin, Michigan, Illinois, Indiana and Missouri. This area is served by Panhandle Eastern Pipe Line Company, The Michigan-Wisconsin Pipe Line Company, Natural Gas Pipe Line Company of America, Mississippi River Fuel Corporation, Cities Service Gas Company and Texas Eastern Transmission Corporation, and will be served by Texas-Illinois Natural Gas Pipe Line Company.. The Valley Gas Pipe Line Corporation proposes to serve this area sometime in the near future and Trunkline Gas Supply Company will furnish Panhandle Eastern Pipe Line Company with additional gas. The total natural gas sales in this area have increased from 41 billion cubic feet in 1933 to 321 billion cubic feet in 1949. It is estimated that by 1955 the annual sales will amount to 500 billion cubic feet.

The above mentioned pipe line companies have reported to us that they have adequate transportation facilities to serve this area at the present time and will continue to have adequate facilities if Federal Power Commission authorization, steel pipe and other equipment can be obtained.

AREA V

Area V, includes North Dakota, South Dakota, Minnesota, Iowa, Nebraska and Kansas. This area is served by Northern Natural Gas Company, Panhandle Eastern Pipe Line Company, Natural Gas Pipe Line Company of America, Cities Service Gas Company, Michigan-Wisconsin Pipe Line Company, Montana-Dakota Utilities Company and North Central Gas Company. The annual sales in this area have increased from 74 billion cubic feet in 1933 to 318 billion cubic feet in 1949. It is expected that by 1955 the total sales in this area will be approximately 390 billion cubic feet. Transportation facilities appear adequate to serve this area at the present time and until 1955 providing necessary government authorization and materials can be obtained.

AREA VI

Area VI, is made up of Texas, Oklahoma, Arkansas and Louisiana. This area is by far the largest producing section of the United States. Nearly all of the large pipe line companies in the United States have their origin somewhere in this area. The area is served by the Lone Star Gas Company, Mississippi River Fuel Corporation, Interstate Natural Gas Company, Inc., Southern Natural Gas Company, El Paso Natural Gas Company and United Gas Pipe Line Company. The reports from these pipe line companies indicate that, except for the Lone Star

Gas Company, transportation facilities are adequate at the present time and will continue to be so until 1955, providing that Federal Power Commission authorization, steel pipe and other equipment can be obtained. The Lone Star Gas Company reports a deficiency in pipe line capacity of 115 MMCF daily in 1949, 10 MMCF daily in 1950 and none thereafter.

The total sales in this area have increased from 276 billion cubic feet in 1933 to 1.023 trillion cubic feet in 1949. It is estimated that by 1955 the total sales will be approximately 1.32 trillion cubic feet.

AREA VII

Area VII, includes the states of Montana, Idaho, Wyoming, Utah and Colorado. This area is served by the Colorado Interstate Gas Company, Montana-Dakota Utilities Company, The Montana Power Company, Mountain Fuel Supply Company, North Central Gas Company and Northern Utilities Company. The Pacific Northwest Pipe Line Corporation proposes to serve part of this area in the near future. The annual sales in this area have increased from 36 billion cubic feet in 1933 to 145 billion cubic feet in 1949. It is estimated that by 1955 the annual sales in this area will amount to 170 billion cubic feet. No deficiency in pipe line capacity at the present time or during any year to 1955 was indicated providing that Federal Power Commission authorization, steel pipe and other equipment can be obtained.

AREA VIII

Area VIII, includes the states of Washington, Oregon, California, Nevada, Arizona and New Mexico. It is served by El Paso Natural Gas Company, Pacific Gas and Electric Company, Southern California Gas Company and Southern Counties Gas Company. The Pacific Northwest Pipe

Line Corporation, Northwest Natural Gas Company and Westcoast Transmission Company propose to serve the state of Washington in the near future. The annual sales in this area have increased from 143 billion cubic feet in 1933 to 506 billion cubic feet in 1949. It is estimated that the annual sales in this area will amount to 680 billion cubic feet in 1955.

The Southern California Gas Company and Southern Counties Gas Company (serving the Los Angeles area) and Pacific Gas and Electric Company (serving the San Francisco area) estimate their pipe line deficiency at 200 MMCF per day by November 1952 (100 MMCF daily, both in the Los Angeles and the San Francisco areas). A further pipe line deficiency of 50 MMCF per day will develop by November 1953, for each of these areas. In addition a deficiency of 67 MMCF daily will occur in Arizona by 1952.

It therefore follows that since El Paso Natural Gas Company is the supplier of all of this gas, they will have a deficiency in pipe line capacity of 267 MMCF per day by November 1952, and a further deficiency of 100 MMCF daily by November 1953. In order to alleviate this deficiency, authorization must be obtained from the Federal Power Commission and the necessary pipe and other equipment secured.

Respectfully submitted by

(sgd) J. French Robinson
J. French Robinson, Chairman
Subcommittee on Natural Gas
Pipe Line Transportation

SUBCOMMITTEE ON NATURAL GAS PIPE LINE TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - J. French Robinson
The East Ohio Gas Company

VICE CHAIRMAN - R. H. Hargrove
Texas Eastern Transmission Corporation

Arthur F. Bridge
Southern Counties Gas Company of California

Stuart M. Crocker
The Columbia Gas System, Inc.

John A. Ferguson
Independent Natural Gas Association of America

Robert W. Hendee
Colorado Interstate Gas Company

D. A. Hulcy
Lone Star Gas Company

Paul Kayser
El Paso Natural Gas Company

W. G. Maguire
Panhandle Eastern Pipe Line Company

N. C. McGowen
United Gas Corporation

Gardiner Symonds
Tennessee Gas Transmission Company

TABLE A

NATURAL GAS STATISTICS - UNITED STATES

Year	Marketed Production (A) (Billions of Cubic Feet) (1)	Total Utility Supply (B) (Billions of Cubic Feet) (2)	Total Utility Sales (C) (Billions of Cubic Feet) (3)	Total Proven Reserves (D) (Trillions of Cubic Feet) (4)
1925				23.0
1930				46.0
1933	1,555		792	
1934	1,771		933	62.0
1935	1,917		1,010	
1936	2,168		1,200	
1937	2,408		1,284	66.0
1938	2,296		1,185	70.0
1939	2,477		1,298	
1940	2,660		1,406	85.0
1941	2,813		1,570	113.8
1942	3,053		1,729	110.0
1943	3,415		1,959	110.0
1944	3,711		2,114	133.5
1945	3,919	2,711	2,156	147.8
1946	4,031	2,757	2,195	160.6
1947	4,582	3,133	2,515	165.9
1948	5,148	3,563	2,895	173.9
1949	5,750	3,927	3,108	180.4
1950	6,100*	4,100*	3,300*	
1951	6,500*	4,300*	3,500*	
1952	6,900*	4,500*	3,700*	
1953	7,300*	4,700*	3,900*	
1954	7,700*	4,900*	4,100*	
1955	8,100*	5,100*	4,300*	

NOTES: (A) From Gas Facts (1949) Page 119. These marketed production figures were taken by A. G. A. from the Bureau of Mines and "is equivalent to natural gas production usefully consumed. It includes natural gas sold by producers and other non-utilities to industrial consumers and includes natural gas mixed with manufactured gas for consumption." Since 1947 the figures as revised by the Bureau of Mines also include gas lost in transmission. These figures are, therefore, much larger than the quantities in Column 3.

(B) From Gas Facts (1949) Page 44. The figures include gas produced, purchased, withdrawn from storage and other receipts.

(C) From Gas Facts (1949) Page 104. Includes sales by utilities only. Difference between Column 3 and Column 2 is that Column 3 does not include gas used by utilities in operations in the production of other gases, in reforming, in enriching, in producing mixed gas as fuel, etc. and gas unaccounted for.

(D) From Gas Facts (1949) Pages 21-22. Total proven recoverable gas reserves.

*Estimated by Subcommittee.

TABLE B

ANNUAL SUPPLY OF ENERGY FROM MINERAL FUELS AND WATER POWER IN THE UNITED STATES (A)

Year (1)	Natural Gas (2)	Bituminous Coal (3)	Total Petroleum (4)	Anthracite Coal (5)	Water Power (6)	Total Energy (7)
1933	9.4%	49.1%	30.5%	7.1%	3.9%	100%
1934	10.0	49.7	28.9	7.7	3.7	100
1935	10.3	49.0	30.0	6.7	4.0	100
1936	10.3	50.9	29.1	6.1	3.6	100
1937	10.8	48.6	31.5	5.5	3.6	100
1938	11.8	43.8	34.6	5.6	4.2	100
1939	11.7	45.6	33.2	5.8	3.7	100
1940	11.3	47.9	32.1	5.2	3.5	100
1941	11.1	49.3	30.9	5.3	3.4	100
1942	11.2	52.0	27.7	5.2	3.9	100
1943	11.9	50.2	28.6	5.0	4.3	100
1944	12.0	48.9	30.1	4.9	4.1	100
1945	12.9	46.5	31.9	4.3	4.4	100
1946	13.6	44.0	33.2	4.8	4.4	100
1947	13.8	46.3	31.8	4.1	4.0	100
1948*	15.1	42.9	34.0	4.0	4.0	100
1949*	19.4	35.9	36.4	3.4	4.9	100

Notes: * Subject to Revision
(A) Derived from Gas Facts, (1949) Page 28.

CHART I

Nov. 20, 1950

NATURAL GAS SALES BY AREAS 1933-1955

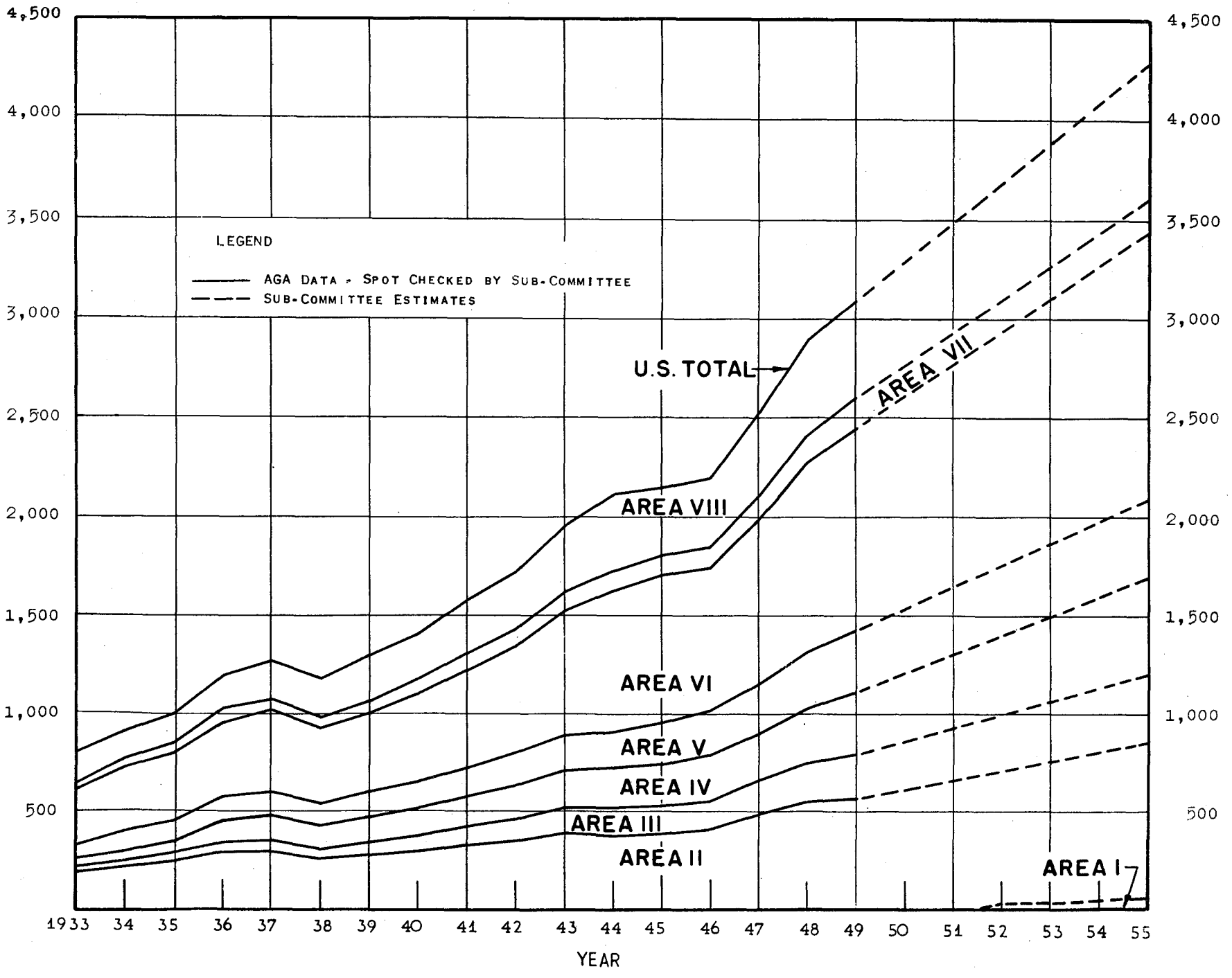


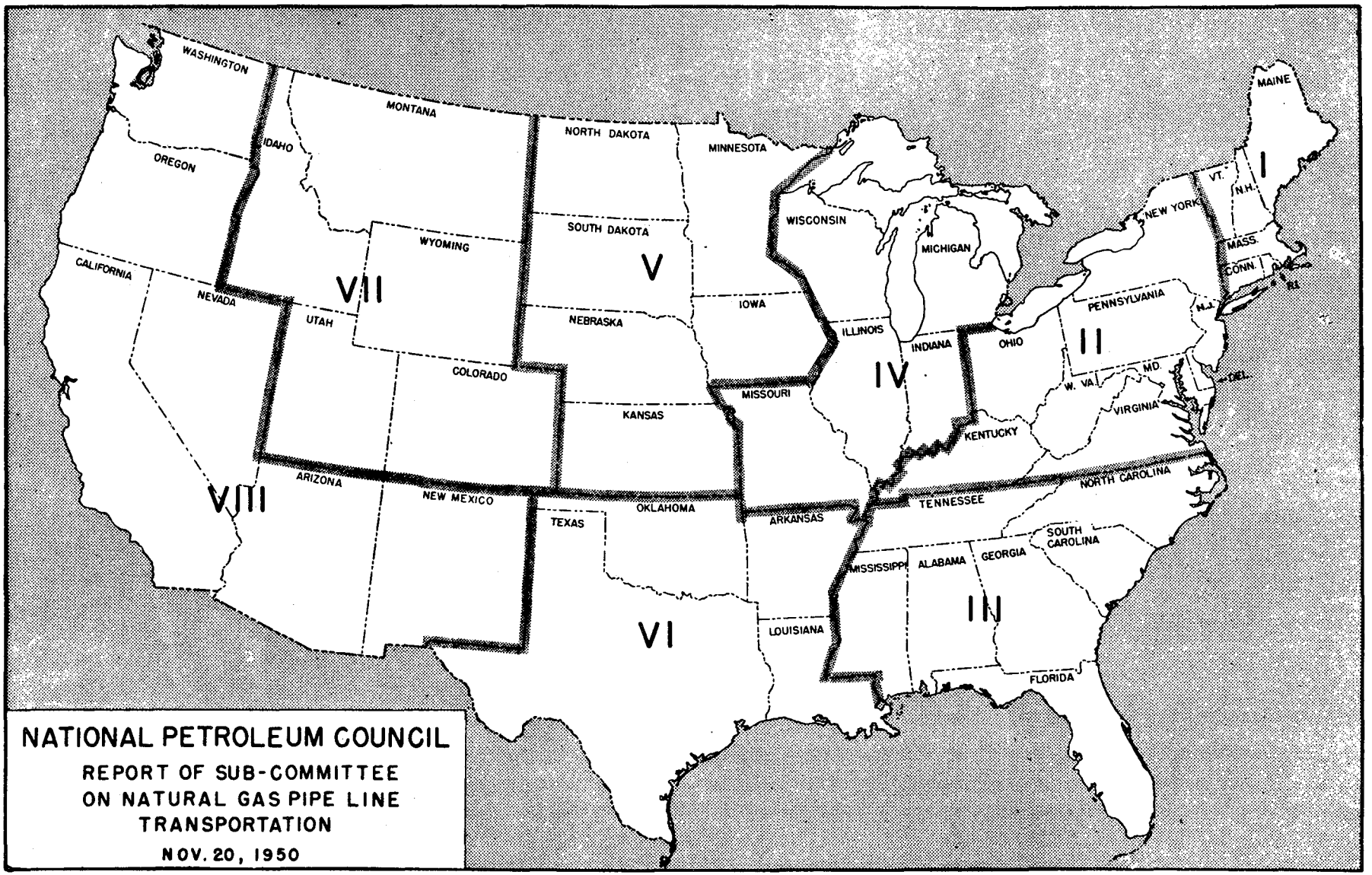
CHART NO. 1

Total Natural Gas Sales of Utilities, by Areas,
Years 1933 - 1955
(Billions of Cubic Feet)

Year	GAS MARKET AREAS I	II	III	IV	V	VI	VII	VIII	Total United States
1933		195	27	41	74	276	36	143	792
1934		224	30	57	91	327	37	167	933
1935		248	38	69	97	345	44	169	1,010
1936		300	47	115	113	379	59	188	1,200
1937		303	54	123	121	414	63	206	1,284
1938		258	52	118	115	381	59	202	1,185
1939		283	59	136	121	402	64	233	1,298
1940		301	71	146	133	444	76	235	1,406
1941		332	88	161	145	497	85	262	1,570
1942		351	108	178	165	535	93	299	1,729
1943		393	124	195	175	635	99	338	1,959
1944		378	140	205	189	717	98	387	2,114
1945		387	140	216	205	760	97	351	2,156
1946		414	143	228	225	735	97	353	2,195
1947		493	169	243	258	827	115	410	2,515
1948		555	197	282	284	966	128	483	2,895
1949		575	220	321	318	1,023	145	506	3,108
1950*		620	240	350	330	1,070	150	540	3,300
1951*		670	260	380	340	1,130	160	560	3,500
1952*	40	680	280	410	350	1,180	165	595	3,700
1953*	50	720	300	440	365	1,235	165	625	3,900
1954*	80	760	320	470	375	1,275	170	650	4,100
1955*	100	800	340	500	390	1,320	170	680	4,300
% Increase - (1955 over 1949)		39.1%	54.5%	55.8%	22.6%	29.0%	17.2%	34.4%	38.4%

TABLE C

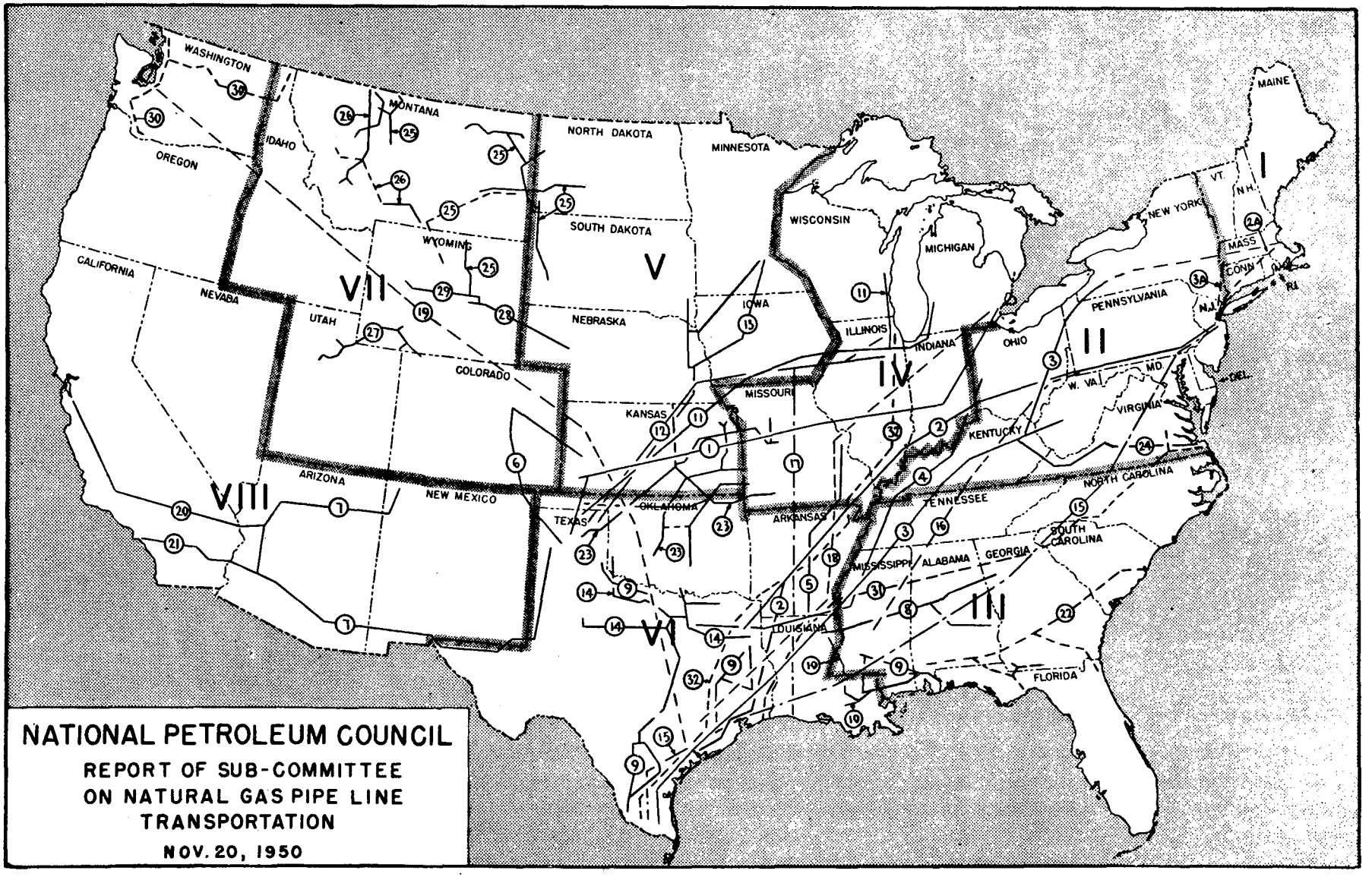
Note: * Estimated by Subcommittee



UNITED STATES - DIVISION BY AREAS

MAP NO. 1

AREA MAP



MAJOR NATURAL GAS PIPE LINES

MAP NO. 2

MAP NO. 2
List of Companies

Pipe Line Companies on Map No. 2*

1 Panhandle Eastern Pipe Line Company
2 Texas Eastern Transmission Corporation
2a Algonquin Gas Transmission Company (Proposed)
3 Tennessee Gas Transmission Company
3a Northeastern Gas Transmission Company (Proposed)

4 Texas Gas Transmission Corporation
5 Mississippi River Fuel Corporation
6 Colorado Interstate Gas Company and
Canadian River Gas Company
7 El Paso Natural Gas Company

8 Southern Natural Gas Company
9 United Gas Pipe Line Company
10 Interstate Natural Gas Company, Inc.
11 Michigan-Wisconsin Pipe Line Company
12 Natural Gas Pipe Line Company of America

13 Northern Natural Gas Company
14 Lone Star Gas Company
15 Transcontinental Gas Pipe Line Corporation (Proposed)
16 Texas Eastern Transmission Corporation (Proposed)
17 Trunkline Gas Supply Company (Proposed)

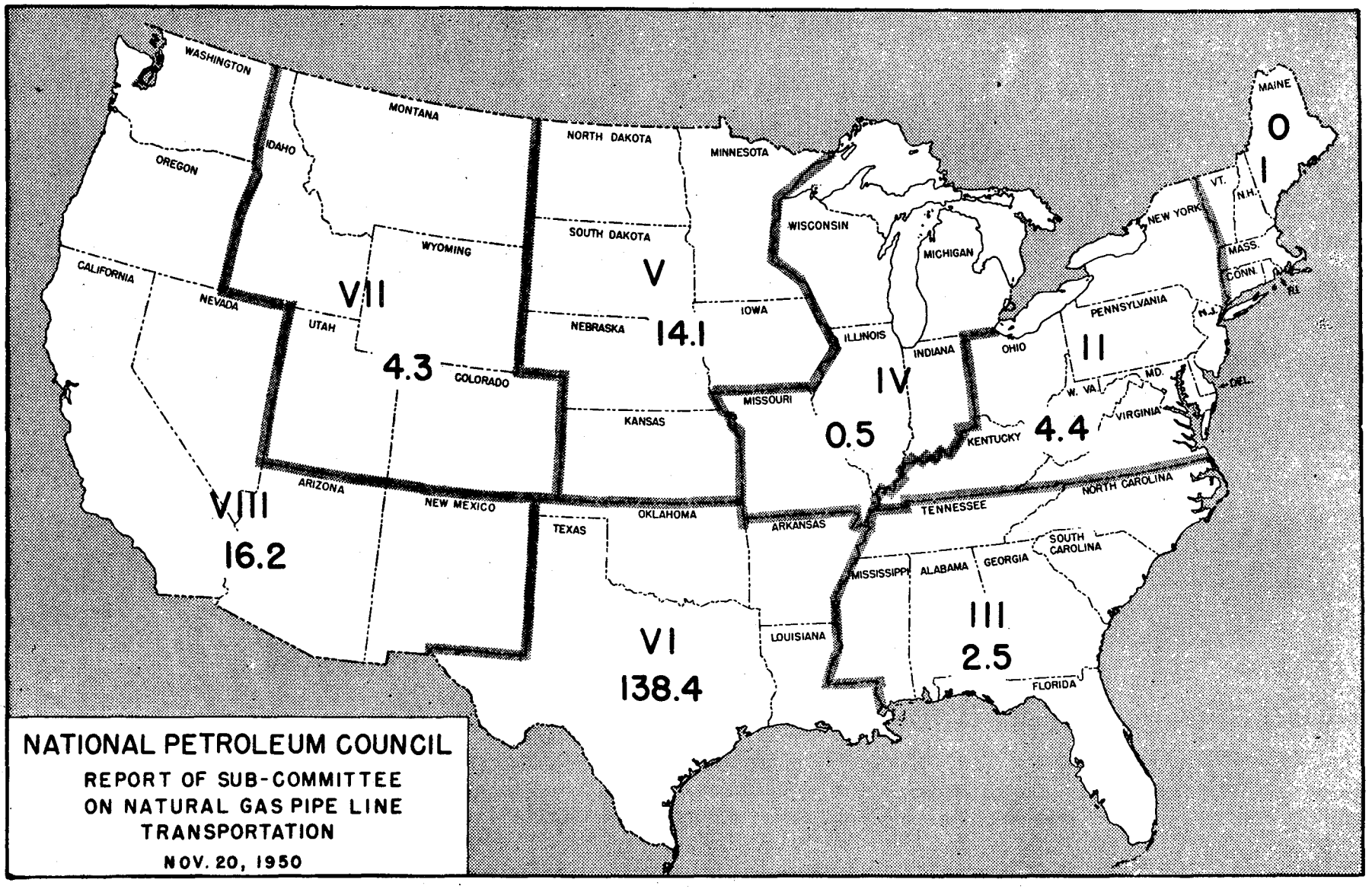
18 Valley Gas Pipe Line Company, Inc. (Proposed)
19 Pacific Northwest Pipe Line Corporation (Proposed)
20 Pacific Gas and Electric Company
21 Southern California Gas Company and
Southern Counties Gas Company
22 Atlantic Gulf Gas Company (Proposed)

23 Cities Service Gas Company
24 Commonwealth Natural Gas Corporation
25 Montana-Dakota Utilities Company
26 Montana Power Company, The
27 Mountain Fuel Supply Company

28 North Central Gas Company
29 Northern Utilities Company
30 Northwest Natural Gas Company (Proposed)
31 Piedmont Natural Gas Corporation (Proposed)
32 Texas-Illinois Natural Gas Pipe Line Company (Proposed)

Note: *This map does not purport to show all pipe line companies in the United States but only the major pipe line companies serving each area with the exception of the Consolidated Natural Gas Company System and the Columbia Gas System both in Area II.

AREA MAP

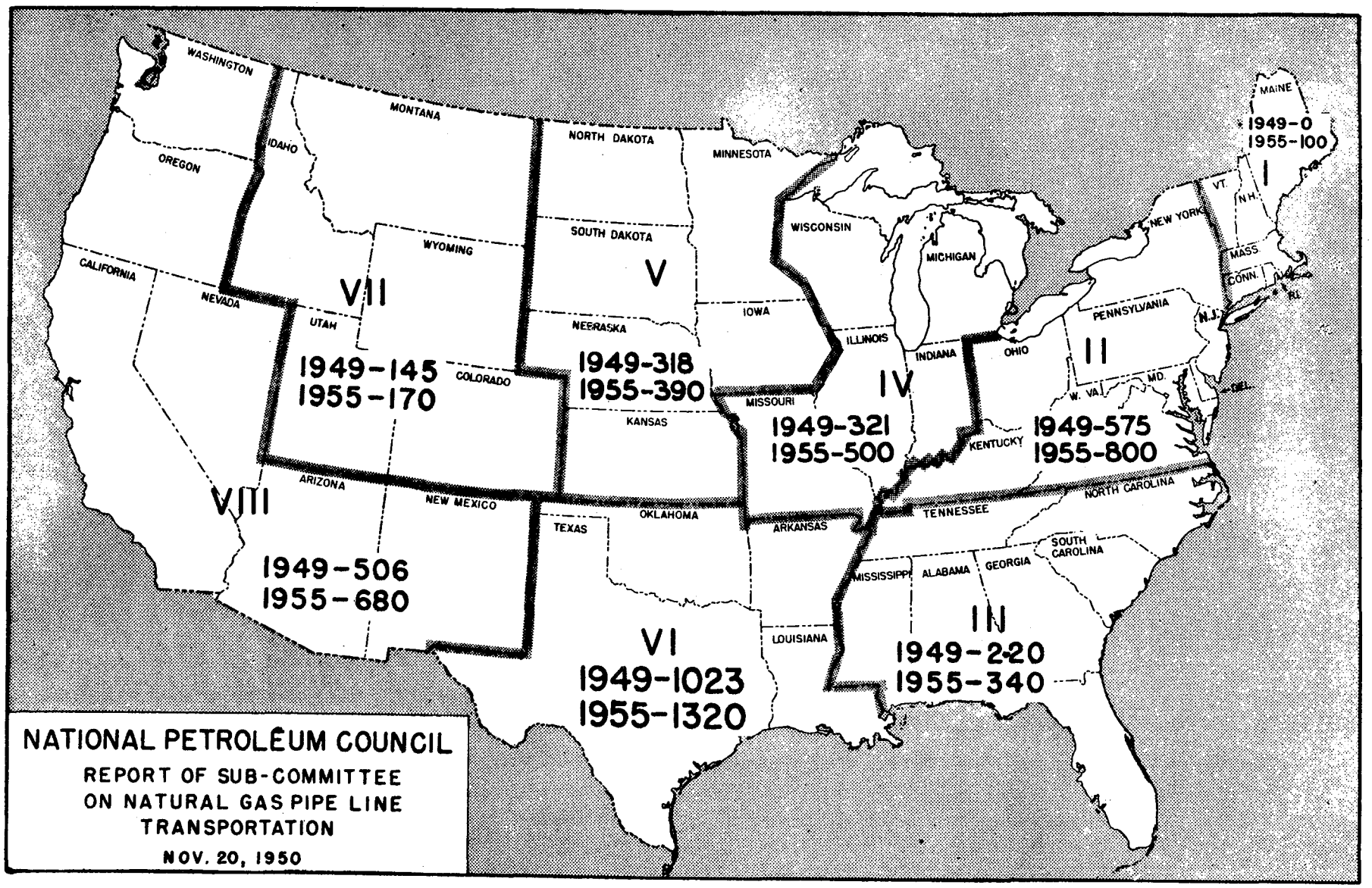


RECOVERABLE NATURAL GAS RESERVES - TRILLIONS OF CUBIC FEET

180.4 AS OF DECEMBER 31, 1949

MAP NO. 3

AREA MAP



TOTAL NATURAL GAS SALES - BILLIONS CF CUBIC FEET

1949	3,108
1955	4,300 (ESTIMATED)

MAP NO. 4

EXHIBIT III
(f)

REPORT OF THE

SUBCOMMITTEE ON PETROLEUM PIPE LINE TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

November 22, 1950

C
O
P
Y

November 22, 1950

Mr. P. C. Spencer
Transportation Committee
National Petroleum Council
630 Fifth Avenue
New York, New York

Dear Mr. Spencer:

In conformity with the request contained in your letter of September 15, 1950, and Secretary of the Interior Chapman's letter of September 12, 1950, to you, the Pipe Line Transportation Subcommittee submits this report on crude oil and products pipe line facilities, showing those in existence today, known projected increases in such facilities, and appropriate comments on probable transportation bottlenecks along with recommendations of appropriate means of eliminating them. Consideration of potential bottlenecks inevitably involved general study of major contemplated new projects, and comment upon these is included. As to existing facilities, detailed maps and data have been assembled and filed with Mr. J. E. Boice of the Oil and Gas Division, Department of the Interior, Washington, D. C.

This general report is based upon consideration by the Subcommittee at three meetings over a period of more than two months. At the last meeting held October 24, 1950, in Tulsa, Oklahoma, the Subcommittee minutely went over detailed reports submitted by a chairman for each of the former five PAW districts. The individual district

reports, included maps showing capacities of existing facilities and projects proposed or under consideration for increasing such facilities and for new projects, as well as statistical analyses of the demands for and ability to meet pipe line transportation requirements.

This report is a general summary pointing out only the substantial factors in the crude oil and products pipe line transportation picture. A more detailed report can be prepared if required, but the Pipe Line Subcommittee considers that by the filing of this report the task assigned to it is hereby completed.

Attention is directed to the fact that this report is based on the best information presently available to the Subcommittee and is the Subcommittee's best judgment as of October, 1950. As a natural development of the pipe line and petroleum industries, requirements for transportation and plans for construction or expansion of pipe line facilities are constantly changing. The Subcommittee recommends, therefore, that this report be revised periodically to keep your Committee and the government agencies interested in pipe line transportation, abreast of developments.

At the first meeting of the Pipe Line Subcommittee, held in New York, on August 17, it was agreed to use the latest available statistics and maps showing June 1950 capacities and throughput of the crude and products lines obtained from individual companies in August 1950, by G. S. Douglass, Director, Bureau of Valuation, Interstate Commerce Commission, Washington, D. C., copies of which are on file in Mr. J. E. Boice's office, Oil and Gas Division.

At the second meeting of the Pipe Line Subcommittee in Washington, D. C., on September 11, a chairman for each of the former five PAW

districts was appointed to obtain supplemental data to that which had been reported by the individual companies to the Bureau of Valuation, and to include any project under construction or contemplated, with the individually reported data to be compiled statistically and on maps for each district. The chairmen appointed were:

District I	J. H. Peper	The Buckeye Pipe Line Company New York, New York
District II	O. F. Moore	The Ohio Oil Company Findlay, Ohio
District III	T. E. Swigart	Shell Pipe Line Corporation Houston, Texas
District IV	J. L. Burke	Service Pipe Line Company Tulsa, Oklahoma
District V	C. S. Jones	Richfield Oil Corporation Los Angeles, California

Only three copies of these detailed studies were prepared and for security reasons they are not available for public inspection. One copy of the report for each respective district has been retained by the district chairman, one copy of each district report by the chairman of this Subcommittee, and the third copy of said reports has been furnished to Mr. J. E. Boice for filing in the Oil and Gas Division.

The following summary of the general pipe line situation prevailing in each district and between districts is the result of the Subcommittee's consideration of these detailed studies.

DISTRICT I

CRUDE OIL PIPE LINES

There are nine companies operating crude oil pipe line systems in District I, which covers the East Coast states and adjoins District II at the western border of Pennsylvania, West Virginia, Virginia, North Carolina, Georgia and Florida as follows:

The Eureka Pipe Line Company
Freedom-Valvoline Oil Company
National Transit Company
New York Transit Company, Inc.
Northern Pipe Line Company.
Portland Pipe Line Corporation
Southern Pipe Line Company
South West Pennsylvania Pipe Lines
The Tide-Water Pipe Company, Ltd.

These pipe lines are important insofar as they supply crude oil to refineries which they are presently serving within the district. In general, they gather and deliver crude to small refineries in western Pennsylvania and New York. In addition, approximately 100,000 b/d of crude oil is received from District II connecting pipe lines destined mainly to refineries at Buffalo and in the Pittsburgh area.

The largest refineries are situated along the Atlantic Seaboard in the New York, Philadelphia, Baltimore and Boston areas. Practically the entire crude supply for the tidewater refineries is delivered by tankers operating out of Gulf Coast ports and from foreign countries. Although these refineries have a large combined capacity, the heavy demand of the densely populated and industrialized East Coast is such that vast quantities of finished products must be brought in by tankers from available sources in the Gulf Coast and foreign areas to augment local supplies.

The several refineries at Montreal, Canada, are likewise dependent upon crude oil brought in from outside sources. The Portland Pipe Line, for instance, receives crude delivered by means of ocean-going tankers at South Portland, Maine, and moves it through its system running north via Maine, New Hampshire, and Vermont to Montreal. The original 12-inch line had a capacity of 69,000 b/d with eight stations operating. A new 18-inch parallel line, however, has recently been completed, which with only three stations operating, now gives the Portland Pipe Line system a combined delivering capacity of 127,000 b/d. This system can be further increased by adding stations.

REFINED PRODUCTS PIPE LINES

The products pipe lines in District I are comprised of nine companies:

Esso Standard Oil Company
Keystone Pipe Line Company (includes Buffalo Pipe Line)
Plantation Pipe Line Company
Shell Oil Company
Sinclair Refining Company
Socony-Vacuum Oil Company
Southeastern Pipe Line Company
Susquehanna Pipe Line Company
Tuscarora Oil Company, Ltd.

The majority of these lines move products from the New York and Philadelphia refineries west across Pennsylvania and north into New York State, and represent a combined capacity of approximately 250,000 b/d with considerable seasonable variation in throughput. There are four lines in New England extending from refineries or deep water terminals.

In addition to the above, the Southeastern, with a capacity of 40,000 b/d, extends north from a water terminal at Port St. Joe, Florida, and serves several southeastern states. Likewise, Plantation with a 12-inch trunk line from Baton Rouge, Louisiana, traverses most

of the southeastern states and terminates at Greensboro, North Carolina. The present 12-inch line has a gasoline capacity of 100,000 b/d but due to substantial increases in requirements in the area, Plantation has already undertaken an expansion program consisting of an 18-inch line from Baton Rouge paralleling the existing line to Bremen, Georgia, with a new 14-inch line from Bremen to Charlotte, North Carolina. The new system, which is now under construction and will be completed the latter part of 1951, will have a combined capacity of 167,000 b/d which, if necessary, can be further increased to 221,000 b/d by adding more pumping stations. This Subcommittee recognizes the possibilities of this pipe line system which, if tanker transportation were not available, could be extended to Norfolk, Richmond or farther north. This would provide a safe and economical method of transporting a substantial volume of gasoline from a large group of Gulf Coast refineries to the Atlantic Seaboard.

The gasoline lines of District I, with the Plantation expansion and other normal improvements, will serve the area economically and well, with some exceptions. For example, the refineries in the New York and Philadelphia area need some more pipe line outlets in Eastern Pennsylvania and in the central and western part of New York State. This can be handled by a new products line such as that proposed, consisting of a 14-inch line from Linden, N. J., to Allentown, Pennsylvania (71,000 b/d) together with an 8-inch line from Philadelphia to Allentown (25,000 b/d), and a 12-inch line from Allentown through Auburn, N. Y., to Syracuse, N. Y., and an 8-inch branch line from Auburn to Rochester, N. Y. The capacity made available by this new 14-inch trunk line, when constructed, will eliminate the need for re-

placing three old 8-inch lines of Tuscarora's. The balance of the Tuscarora main line running west to Pittsburgh is currently being rebuilt by replacing small-diameter pipe with new 10- and 12-inch pipe. The above described 14-inch project will provide economical transportation for all shippers and will shorten tanker hauls. This project has the endorsement of the Pipe Line Subcommittee.

The crude oil and products pipe lines, upon completion of the expansions mentioned, appear to be sufficient to meet the foreseeable normal needs of District I providing there is no disruption to the normal means of bringing in petroleum supplies by tankers from the Gulf Coast and foreign sources. Should water movements be restricted the entire transportation situation involving the East Coast area would have to be resurveyed. Partial relief could be gained by constructing a 30-inch crude line from Lima, Ohio, to the refineries in the New York and Philadelphia areas as mentioned elsewhere in this report. No recommendations can be made on converting or reversing existing refined products pipe lines across Pennsylvania due to the age of these systems, the small size of the lines, and the probable disruption of the essentail services now being rendered.

DISTRICT II

CRUDE OIL PIPE LINES

The area is served by the following companies:

Ajax Pipe Line Corporation
Basin Pipe Line System (operated by the Texas Pipe Line)
The Buckeye Pipe Line Company
Cimmarron Valley Pipe Line Company
Phillips Pipe Line Company
Pure Transportation Company
Service Pipe Line Company
Shell Pipe Line Corporation
Skelly Oil Company
Sinclair Refining Company
Socony-Vacuum Oil Company, Inc.

Gulf Refining Company
Interstate Oil Pipe Line Company
Kaw Pipe Line Company
Magnolia Pipe Line Company
Mid-Continent Pipe Line Company
Mid-Valley Pipeline Company
The Ohio Oil Company
Ozark Pipe Line System (operated by Shell Pipe Line)
Sohio Western Pipelines, Inc.
Sohio Pipe Line Company
The Texas Pipe Line Company
The Texas-Empire Pipe Line Company
Transit and Storage Company

The movement through the above systems is both intra-district and between districts and is further complicated by the production within the area and movements across the border to Canada.

There are a number of new pipe line projects under way (see table below) to augment the supply of crude into District II in order to cover possible decline in production in the region and allow for the normal increase in requirements:

	Future Capacity b/d
District IV into District II	
Platte Pipe Line Co. (Start February, 1951 - Finish late 1951) 20-inch from Casper, Wyo., to Wood River, Ill.	73,000
Canada into District II	
Lakehead Pipe Line Company (to be completed November, 1950) 18-inch from International Boundary to Superior, Wisconsin	55,000
District III into District II	
Phillips Pipe Line Company 280 miles of 10-inch from Borger, Texas, to Yale, Okla.	24,000
TOTAL NEW CAPACITY	152,000

In addition to these new lines, capacity of existing lines within the district is being enlarged by building additional pumping stations. This is particularly true of the Ozark Pipe Line System from Cushing, Oklahoma, to Patoka, Illinois (76,000 b/d increase) and the Texas-Empire line from Patoka to Wilmington, Illinois, (40,000 b/d increase).

The Lakehead Pipe Line, which will provide Canadian crude for refining at Sarnia, Ontario, has the effect of releasing an equivalent amount U. S. crude in District II. The Platte Pipe Line will provide a needed outlet for Rocky Mountain production for use in the great refining centers in the Illinois-Ohio basin.

The Subcommittee endorses the above new pipe lines and enlargements and other crude oil pipe line projects now underway or planned to eliminate bottlenecks and increase the capacity of existing facilities, as referred to in the detailed report for District II, to provide additional transportation for normal increases in refinery demand in District II and for delivery to connecting carriers for movement into the other areas dependent on it.

There are other ways of increasing pipeline deliveries into District II. For example: Mid-Valley Pipeline, which now has a capacity of 157,000 b/d, could be increased 78,000 b/d to a new capacity of 235,000 b/d by adding intermediate pump stations. This added to the 152,000 b/d shown above will give an additonal capacity of 230,000 b/d for the ever increasing requirements of District II.

If a situation develops whereby all the crude needed by the East Coast refineries could not be delivered by tanker, a new crude oil pipe line 30 inches in diameter could be built from Lima, Ohio

to refineries in the New York and Philadelphia areas. The new projects mentioned,as well as improvements in existing systems under way such as the completion of The Ohio Oil Company's new large-diameter line from Wood River to Lima, could make available 300,000 b/d or more in the Lima area for movement through such a 30-inch line to the East Coast. This big line should only be considered as an emergency measure, but if needed, because of diversion of tankers, could be completed within six months after pipe is made available.

REFINED PRODUCTS PIPE LINES

The following pipe lines mentioned under District I have capacity totaling 69,000 b/d for delivering products from District I into District II - Plantation, Sinclair, Southeastern and Susquehanna. The Magnolia, Phillips and Sinclair pipe lines have a combined capacity of 73,000 b/d for moving an additional amount from District III into District II. An out of district delivery of 3,000 b/d results in a net movement of 139,000 b/d into District II. In all, there are eighteen companies operating refined products lines in District II, and capacity ranges from a few thousand barrels a day to as high as 177,000 b/d for the Great Lakes system to Kansas City. (See list following.)

Products Pipe Line Systems - District II

Bell Oil and Gas Company
The Buckeye Pipe Line Company
Champlin Refining Company
Detroit Southern Pipe Line Company
Great Lakes Pipe Line Company
Magnolia Petroleum Company
The National Cooperative Refinery Association
Susquehanna Pipe Line Company
Phillips Petroleum Company
Plantation Pipe Line Company
Shell Oil Company
Sinclair Refining Company
Socony-Vacuum Oil Company, Inc.
Southeastern Pipe Line Company
Standard Oil Company (Indiana)
The Standard Oil Company (Ohio)
Sunray Pipe Line Company
The Texas Pipe Line Company

Full detail on the routes and capacities together with a complete map are all contained in the District II report. There are a number of expansion projects underway or authorized:

Great Lakes Pipe Line Company

Has authorized 355 miles of 12-inch products line from Kansas City to Sioux Falls, South Dakota, through Omaha, Nebraska, and Sioux City, Iowa. A large portion of this new line is already laid.

The Texas Pipe Line Company

Has awarded contract for constructing 57 miles of 10-inch products line from Lawrenceville, Illinois to Mount Vernon, Indiana, to be completed about February 1951.

Essaness Corporation

Will acquire Shell's lines connecting Lima, Springfield, and Columbus and Sohio's lines from Toledo to Lima and from Springfield to Dayton, all in Ohio. Latter will connect with one being built from Cincinnati to Dayton by Miami Valley Corporation.

Will build 57 miles of 8-inch between Lima and Springfield (paralleling present 6-inch).

Standard Oil Company (Indiana)

Has authorized construction of 139 miles of 8-inch from Neodesha, Kansas, to Sugar Creek, Missouri (20,000 b/d capacity). This company also plans to increase the capacity of its present Sugar Creek, Missouri, to Council Bluffs, Iowa, line to 35,000 b/d.

Miami Valley Corporation

57 miles of 8-inch from Dayton to Cincinnati, Ohio.

Pure Transportation Company

100 miles of 6-inch from Heath to Dayton, Ohio (capacity 10,000 b/d).

Susquehanna Pipe Line Company

125 miles of 8-inch from Toledo, Ohio, to Sarnia, Ontario - to be completed by December 1, 1950.

All of the above offer economical and safe transportation and have the endorsement of the Pipe Line Subcommittee. There appears to be a bottleneck in the pipe line facilities for moving products south and east from the Toledo refining area and this is now being studied by interested companies.

DISTRICT III

District III comprises the states of Texas, New Mexico, Louisiana, Arkansas, Mississippi and Alabama. These combined states were producing an average of approximately 3,542,000 b/d during the first four weeks of October, of which some 2,232,000 b/d was refined in the area. The surplus of crude over local refinery requirements is shipped to Districts I and II. Likewise, the surplus of refined products over local area requirements furnishes a part of the essential supply for the East Coast. There are a number of trunk lines extending from District III into District II for the movement of crude to the refining centers in the north and east. At the end of June these lines had an aggregate capacity of approximately 1,000,000 b/d but will be increased early in 1951. The capacity of the crude pipe lines reaching the Gulf Coast refineries and deep water loading terminals exceeded 2,300,000 b/d. These figures do not include crude run at inland refineries within the district.

CRUDE OIL PIPE LINES

The network of pipe lines in Texas and Louisiana as well as the trunk lines moving north is so widespread and continually changing that no list can be complete. The best guide is the map contained in the detailed report for District III.

The following list shows the expansion of existing lines or new lines planned or under construction:

Basin Pipe Line System

Will increase capacity from Colorado City to Wichita Falls, Texas, from 250,000 to 350,000 b/d, and from Wichita Falls, to Cushing, Oklahoma, from 270,000 to 385,000 b/d by the construction of four additional pump stations which, when completed May 1951, will furnish an additional outlet for West Texas production.

Gulf Refining Company

Has under construction a 160-mile crude pipe line from from Heidelberg, Mississippi, to Mobile, Alabama. The line will consist of 63 miles of 10-inch with 25,000 b/d capacity from Heidelberg to Lumberton, Mississippi, and 88 miles of 14-inch with a capacity of 40,000 b/d from Lumberton to Mobile.

Phillips Pipe Line Company

Has under construction 50 miles of 6- and 8-inch from Phillips' tank farm at Sweeney, Texas, to Humble's Webster Station, Galveston County.

Has work underway for 281 miles of 10-inch line from Borger, Texas, to Yale, Oklahoma. When completed this line will afford additional outlet for West Texas and Panhandle crude which will be delivered to refineries in District II.

Is considering increasing the capacity of its 12-inch line from Odessa to Borger, Texas, from 32,000 to 70,000 b/d by adding additional pumping stations. If this work is undertaken the capacity of the new line mentioned above from Borger to Yale can be increased from 24,000 to 50,000 b/d by adding pumping equipment.

The Texas Pipe Line Company

Has authorized 230 miles of 22-inch line from Houma, Louisiana, to Port Arthur, Texas. The line will have a capacity of 205,000 b/d to Erath, Texas, and 245,000 b/d from Erath to Port Arthur.

Has authorized 37 miles of 12-inch line with a capacity of 60,000 b/d from Bay St. Elaine to Houma, Louisiana.

Service Pipe Line Company

Plans to lay 73 miles of 16-inch pipe to complete a second 16-inch line paralleling its existing system from Slaughter, Texas, to Drumright, Oklahoma.

Existing crude oil pipe lines are not adequate to move the new production being brought in daily in District III, nor are they able to supply increasing refinery requirements on the Texas Gulf Coast without some major additions. The projects listed above will alleviate this situation. In addition, however, there is now under study by several companies a large-diameter line of perhaps 24- or 26-inch pipe to run from a mid-point in West Texas to Wortham, Texas from which point an 18-inch line could be constructed to Longview to augment the supply to Mid Valley Pipeline Company for movement into District II, and a 22-inch line could be constructed to the Beaumont-Sabine area. Such a line would provide an outlet for anticipated large production from the reef fields in West Texas and an expanded outlet from West Texas, as well as permit the retirement and salvage of a number of parallel small-diameter crude lines which presently extend from this area and are inadequate to handle additional demand.

This project appears feasible to the Subcommittee. If it is carried out, it should provide adequate outlet for all West Texas production with a minimum expenditure of critical material.

REFINED PRODUCTS PIPE LINES

There are eighteen companies operating refined products pipe line systems in District III, as follows:

Bayou Pipe Line System
Bell Oil and Gas Company
Claiborne Pipe Line Company
Continental Oil Company
Gulf Refining Company
Humble Pipe Line Company
Lion Oil Company
Magnolia Petroleum Company
Magnolia Pipe Line Company
Phillips Petroleum Company
Plantation Pipe Line Company
Project Five Pipe Line Corp.
Shell Pipe Line Corporation
Sinclair Refining Company
Stratton Pipe Line Corporation
The Texas Pipe Line Company
Triangle Pipe Line Company
Warren Petroleum Corporation

The only well-advanced products line project is Triangle Pipe Line Company's 90-mile 10-inch extension of existing facilities from El Dorado, Arkansas, to the Arkansas City barge terminus on the west bank of the Mississippi with a capacity of 60,000 b/d to be completed early in 1951.

Most of the products pipe lines are local to District III and they serve the local areas adequately.

DISTRICT IV

The district comprises the Rocky Mountain states of Colorado, Wyoming, Montana, Utah, and Idaho. Production exceeds local demand now. Both crude and refined products are moving out of the district, and the area has possibilities of even greater production for use outside.

CRUDE OIL PIPE LINES

There are only a few comments necessary, as the existing pipeline facilities are primarily intra-district and are adequately taking care of the crude requirements of local refineries and at the same time delivering more than 60,000 b/d through Service Pipe Line Company's system to Freeman, Missouri, for processing in District II. It was

immediately apparent to the Committee that District IV needs another pipe line outlet to move the increasing crude production to the refining centers in the Middle West, as well as augment the supply for Chicago, Wood River, and the Cleveland areas. This is being provided by the construction of the new Platte Pipe Line which will begin in February 1951, and which has already been commented on under District II in this report. The Subcommittee endorses the Platte Pipe Line project from Casper, Wyoming, to Wood River, Illinois but understands that considerable capacity is and will be available through existing connecting pipe line facilities in central Wyoming for use west of Casper. The proposed extension of the Platte line west of Casper to Chatham would duplicate these existing facilities which can be expanded to deliver the required volumes to Casper, for movement into District II by Platte, by using approximately one-fifth of the steel tonnage required to build a new line. The Subcommittee considers that careful study should be made of this expansion of existing facilities in arriving at the most economical use of steel.

The possibility, during an emergency, of reversing and converting some crude lines to products service between Casper and Salt Lake City, Utah, was considered. The object would be to make additional products available for movement to the Pacific Northwest. Such a plan is not recommended because it would disrupt supplies of crude to refineries at Casper, Sinclair (Wyoming), and Salt Lake City.

REFINED PRODUCTS PIPE LINES

There are three refined products pipe line systems in District IV. Wyco Pipe Line Company transports products from Casper refineries to Cheyenne, Wyoming, and Denver, Colorado. A Phillips-

Shamrock line moves products from the Texas Panhandle to LaJunta, Colorado, and the system is being extended to Denver. Salt Lake Pipe Line Company has a new 8-inch line extending from Salt Lake City through southern Idaho to Pasco, Washington, in District V. All the systems are capable of expansion. Salt Lake's system to Pasco now has a capacity of 15,000 b/d. Potential increase of this system is strategically important as a means of supplying the Pacific Northwest in event water transportation is curtailed or the output of the California refineries is not available.

DISTRICT V

The Pacific Coast area is isolated petroleum-wise from all other regions of the United States and is practically self-sufficient insofar as balance between crude oil production and refining is concerned. Included in District V are the states of Arizona, California, Nevada, Oregon,and Washington. However, all of these states, with minor exceptions, are dependent upon the petroleum activities carried on in California. It is within the boundaries of this state that all production and most of the refining activities are conducted.

The State of California is currently producing approximately 900,000 barrels of crude oil per day. It is presently capable of producing, at a maximum efficient rate, an estimated 1,045,000 b/d from its oil fields including an estimated 80,000 b/d from Elk Hills Naval Petroleum Reserve No. 1. California has adequate refining capacity to process all of this crude as its present aggregate capacity is 1,138,000 b/d of which 1,067,000 is operative and 71,800 is inoperative.

California does not import any crude and its exports are minor, amounting to some 20,000 b/d destined to refineries in British Columbia.

CRUDE OIL PIPE LINES

There are no crude oil pipelines in District V that extend beyond the California boundary lines. Crude oil is moved from three distinct areas of California; namely, San Joaquin Valley, Coastal, and Southern California, to the principal refining centers of Los Angeles and San Francisco.

The San Joaquin Valley area is the source of greatest crude supply and therefore presents the main transportation problem. In addition to gathering lines that move crude to small local refineries in the Bakersfield area, there are important pipeline outlets going north to refineries in the San Francisco Bay area, south to refineries in the Los Angeles area and westward to marine terminals located on the Pacific Coast, from which terminals the crude is moved in tankers to California refineries and to British Columbia. There are three crude oil pipeline systems extending north to the San Francisco Bay area with a combined capacity of 238,000 b/d. Two pipeline systems extend south to the Los Angeles area and have a total capacity of 87,000 b/d. However Richfield Oil Corporation is currently constructing a 14-inch oil line paralleling its existing line which will increase the total capacity to the Los Angeles area to 149,000 b/d after January, 1951. There are three pipeline systems extending to marine terminals in the vicinity of San Luis Obispo having a combined capacity of 153,000 b/d. The pipeline capacity out of the San Joaquin Valley extending directly to refineries north or south and to deep water terminals will aggregate 540,000 b/d after January, 1951.

Under normal peacetime operations there is ample pipeline capacity with the aid of tankers to move all the crude oil produced in the

San Joaquin Valley. However, in the event of the cessation of coastwise tanker movements, there would be a deficiency of 100,000 b/d in pipeline capacity from that area to refineries in the San Francisco Bay area. This could be made up by laying a new 210-mile 18-inch line from Kettleman Hills to the San Francisco Bay area. It would also be necessary to lay about 65 miles of at least 12-inch pipe from Elk Hills to connect with the 18-inch line at Kettleman Hills. The solution offered is entirely feasible and has the support of the Subcommittee in case of emergency.

The Coastal oil fields are located between Santa Maria and Ventura and inland to the vicinity of Newhall. There are two pipelines extending from the area that move crude to refineries in the Los Angeles area with a combined capacity of 81,000 b/d. A large portion of the crude produced in the Coastal area is handled through marine terminals at Ventura, Avila, Capitan, and Elwood and thence loaded in tankers for delivery to San Francisco or Los Angeles refineries. Normally, no difficulties are encountered in moving all production with existing transportation facilities. Here again, however, should there be a cessation of coastwise tanker movements a deficiency of about 100,000 b/d in pipeline outlet would have to be overcome. A good portion of this 100,000 b/d would be heavy oil produced in the Santa Maria area. The suggestion was made that a heavy oil pipeline could be constructed from Santa Maria to the Los Angeles refining area, a distance of some 200 miles. The solution offered of serving the area in case of a tanker shortage may not be a desirable project due to the high viscosity oil. The Pipe Line Subcommittee believes that a further study of this problem should be made at the time an emergency arises.

The Southern California area includes a number of oil fields concentrated within a radius of 20 miles, the center of which is within 20 miles of the coast and the City of Los Angeles. This area is heavily netted with pipeline systems composed of small, short lines which were built in flush production days. These combined lines are more than adequate to handle present maximum efficient rate of production. The comparatively small area is also heavily sprinkled with refineries and tank storage farms and the pipeline systems act as gathering and transfer lines as well as truck lines to refineries. No deficiencies in pipeline transportation are apparent. As previously indicated the refineries in the Los Angeles area receive their crude supply from the San Joaquin Valley and Coastal area as well as from Southern California sources.

A summary of the crude oil pipe line movements follows:

CALIFORNIA CRUDE OIL PIPE LINE CAPACITY VS. PRODUCTION

	Barrels per day
SAN JOAQUIN VALLEY AREA	
PRODUCTION VS. PIPE LINE CAPACITY WITH MARINE TERMINALS OPERATING	
Estimated M.E.R. production of San Joaquin Valley including 80,000 b/d Elk Hills	520,000
Less requirements at local refineries	60,000
Net volume to be moved out of San Joaquin Valley	460,000
Capacity out of San Joaquin Valley to refineries and marine terminals after January 1951	540,000
Excess pipe line capacity	80,000
PRODUCTION VS. PIPE LINE CAPACITY WITH MARINE TERMINALS CLOSED	
Net volume to be moved out of San Joaquin Valley	460,000
Capacity out of San Joaquin Valley to refineries after January 1951	387,000
Deficiency in pipe line capacity out of San Joaquin Valley	73,000
Refining capacity San Francisco Bay Area	338,000
Pipe line capacity to San Francisco Bay Area	238,000
Deficiency in pipe line capacity to San Francisco Bay Area	100,000
COASTAL AREA	
PRODUCTION VS. PIPE LINE CAPACITY WITH MARINE TERMINALS OPERATING	
Estimated M.E.R. production Coastal Area	190,000
Less amount moved by truck	10,000
Net volume to be moved out of Coastal Area	180,000
Capacity out of Coastal Area to refineries and marine terminals	207,000
Excess pipe line capacity	27,000
PRODUCTION VS. PIPE LINE CAPACITY WITH MARINE TERMINALS CLOSED	
Net volume to be moved out of Coastal Area	180,000
Capacity out of Coastal Area to refineries	81,000
Deficiency in pipe line capacity out of Coastal Area	99,000
SOUTHERN CALIFORNIA AREA	
Estimated M.E.R. production Southern California Area	335,000
Pipe line capacity to refineries	960,000
Excess pipe line capacity	625,000

SUBCOMMITTEE ON PETROLEUM PIPE LINE TRANSPORTATION

OF THE

COMMITTEE ON PETROLEUM TRANSPORTATION

CHAIRMAN - Wallace R. Finney
Standard Oil Company (N.J.)

VICE CHAIRMAN - W. C. Kinsolving
Sun Pipe Line Company

SECRETARY - J. H. Peper
The Buckeye Pipe Line Company

Richard Bandy
Midland Cooperative Wholesale

J. L. Burke
Service Pipe Line Company

George H. Hill, Jr.
Cities Service Company

Charles S. Jones
Richfield Oil Corporation

Basil H. Lucas
Republic Pipe Line Company

R. B. McLaughlin
The Texas Pipe Line Company

O. F. Moore
The Ohio Oil Company

R. K. Paine
Standard Oil Company of California

T. E. Swigart
Shell Pipe Line Corporation

R. J. Tibbets
Sinclair Refining Company

L. H. True
Magnolia Pipe Line Company

W. J. Wilkins
Gulf Oil Corporation