U.S. PETROLEUM AND GAS TRANSPORTATION CAPACITIES

-1967-

A REPORT OF THE
NATIONAL PETROLEUM COUNCIL

U.S. PETROLEUM AND GAS TRANSPORTATION CAPACITIES

September 15, 1967

A REPORT OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES

JOHN E. SWEARINGEN, CHAIRMAN

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NATIONAL PETROLEUM COUNCIL

(Established by the Secretary of the Interior)

September 15, 1967

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Secretary-Treasurer

1625 K STREET, N. W.
WASHINGTON, D. C. 20006

Mr. J. C. Donnell II, Chairman
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

Dear Mr. Donnell:

On October 26, 1966, you appointed me Chairman of the National Petroleum Council's Committee on Oil and Gas Transportation Facilities (1966). Mr. Onnie P. Lattu, Director, Office of Oil and Gas, United States Department of the Interior, was designated Government Co-Chairman of the Committee by the Hon. J. Cordell Moore, Assistant Secretary of the Interior.

At the meeting of the National Petroleum Council, held on January 31, 1967, I announced the appointment of five subcommittees to make the studies on transportation capacities of petroleum pipelines, gas pipelines, inland waterway barges, tank cars, and tank trucks. The individual studies have been completed and consolidated into the attached report which is now submitted to you for approval by the Council and presentation to the Department of the Interior. This report has been approved by the eighteen members of my committee and the Government Co-Chairman, Mr. Onnie P. Lattu.

In addition to the material contained in this published report, the two pipeline subcommittees are submitting material of a confidential nature directly to the Department of the Interior for its use in emergency planning and defense mobilization studies.

Yours truly,

John E. Swearingen

John E. Swearingen
Chairman
NPC Committee on Oil and
Gas Transportation Facilities

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Ashland Oil & Refining Company

SECTION I

SUMMARY REPORT

OF THE

COMMITTEE ON

OIL AND GAS TRANSPORTATION FACILITIES

NATIONAL PETROLEUM COUNCIL
REPORT OF THE COMMITTEE ON
OIL AND GAS TRANSPORTATION FACILITIES

This report is submitted on behalf of the Committee on Oil and Gas Transportation Facilities of the National Petroleum Council in response to a request made on July 18, 1966, by the Honorable J. Cordell Moore, Assistant Secretary of the Interior.

The report covers a study of the nation's petroleum and natural gas transportation capacities, including crude oil and petroleum products pipelines, natural gas transmission lines, inland waterway barges, tank cars, and tank trucks. The natural gas transmission facilities report is primarily based on data as of January 1, 1966. The tank car report covers capacities as of June 1, 1967. The other reports cover capacities as of January 1, 1967.

The petroleum pipeline report discusses gathering and trunk line bottlenecks and the movement of crude oil from Gulf Coast producing areas to meet unusual requirements occasioned by the drastic reduction in crude oil supply from the Middle East and Africa that commenced early in June, 1967.

Also, in connection with the study of pipelines, data are being prepared to update a similar study made in 1962 by assembling, cataloging, mapping, and indexing information on individual pipeline systems and their pumping stations and river crossings. Master sets of maps containing this information are being compiled and will be kept in the custody of the Office of Oil and Gas, Department of the Interior, for its use in emergency planning and defense mobilization studies. Detailed data on the pipeline systems will be turned over to the Office of Oil and Gas for storage on computers.

In the event that it should be necessary to activate the Emergency Petroleum and Gas Administration, these detailed data will constitute the basic factual files which would be required by the pipeline transportation staff of that agency to coordinate the emergency needs and operations of the pipelines to the emergency needs and operations of the other elements of the oil industry, such as production and refining.

The data contained in this report covering five modes of transportation represent an inventory of aggregate capacities of these transportation facilities. It is not an inventory of the volume of traffic being handled, and oil transportation capacity data do not necessarily represent deliverability. From ground

to consumer, the production, transportation, refining, and distribution of oil is one intricate system. Deliverability cannot be determined by an analysis of the capacity of any one function in this system.

A comprehensive report on oil and gas transportation facilities and capacities as of December 31, 1961 was issued by the Council in 1962. This study contains an equally comprehensive review of transportation facilities and updates the data included in the previous report. Since December 31, 1961 both the number of units and capacities of rail tank cars, petroleum barges, and tank trucks have increased considerably. In addition extensive additions to or new construction of oil and gas pipelines have occurred. A comparison of the totals shown in this study, as of January 1, 1967 with the totals shown in the 1962 study are indicated on the Summary Table on the following page.

Emergency planning for the oil and gas industries includes a standby Federal emergency oil and gas agency. This agency must necessarily be structured to coordinate all operations in the oil industry, including the pipeline link between production and refining, and between refining and distribution areas in order to achieve maximum deliverability when and where needed in emergencies.

The work of assembling the data necessary to provide the requested information was accomplished by the following five Subcommittees:

SUBCOMMITTEE	CHAIRMAN
Petroleum Pipeline Transportation	J. H. Pittinger Shell Pipe Line Corporation
Gas Pipeline Transportation	S. Orlofsky Columbia Gas System Service Corporation
Inland Waterways Transportation	George A. Peterkin, Jr. Dixie Carriers, Inc.
Tank Car Transportation	C. H. Wager Shell Oil Company
Tank Truck Transportation	S. F. Niness Chemical Leaman Tank Lines, Inc.

Committee rosters are included as part of the Subcommittee reports.

SUMMARY TABLE
OIL AND GAS TRANSPORTATION FACILITIES
1967 VS. 1961

	MODE OF TRANSPORTATION				
	RAIL TANK CARS	BARGES (PETROLEUM)	TANK TRUCKS & TRAILERS	PETROLEUM PIPELINES*	GAS PIPELINES*
NUMBER OF UNITS				(Miles)	(Miles)
1961	169,191	2,561	75,089	200,000	238,740
1967	185,228**	2,925	81,300	210,000	284,430
Percent Increase 1967 over 1961	9.5	14.2	8.3	5.0	19.1
TOTAL CAPACITY	(Thousand Gallons)	(Thousand Barrels)	(Thousand Gallons)		
1961	1,591,370	26,959	420,042	-	-
1967	2,126,513**	35,509	497,283	-	-
Percent Increase 1967 over 1961	33.6	31.7	18.3	-	-

* Includes gathering lines.
** As of June 1, 1967.

The Committee should like to express to the chairmen and members of the Subcommittees its deep appreciation for the time and effort they have devoted to compiling the data reported herein and provided the Department of the Interior. The Committee appreciates the excellent cooperation of the many individual companies through response to the questionnaires that made this accumulation of data possible. In particular, the Committee wishes to recognize the assistance of its Secretary, Vincent M. Brown, who also served as Secretary on each of the Subcommittees and directed the work of the Council staff.

The reports of the individual Subcommittees are attached. Following is a summary of some of the more important points contained in the five Subcommittee studies.

PETROLEUM PIPELINES

This report is concerned with the capacities and flow direction of specific crude oil and petroleum products pipelines in the Continental United States. The capacities of each line are stated in tabular form to show pipeline capacities available for the movement of crude oil and refined products into and out of principal demand and supply centers. Summary maps have also been provided to depict the flow direction and capacities of the major pipelines serving each region of the country.

The pipeline information contained herein was generated from pipeline capacity reports which major pipeline owners filed with the Interstate Commerce Commission for December, 1966. In addition, telegram questionnaires were sent to 58 companies to request more information concerning their interstate and intrastate pipelines.

Approximately 23,000 miles of principal crude oil and products pipelines have been constructed during the last five years at a cost of about $1,137 million. More than two-thirds of the new pipelines have been constructed to carry refined products. This results in a total of more than 210,000 miles of petroleum pipelines which currently serve the Continental United States.

This report on pipeline transportation facilities does not include more detailed information which is being collected for submittal to the U.S. Department of the Interior. By June 15, questionnaires had been mailed to 177 crude oil pipeline companies and 137 products pipeline companies to request information about pipeline systems, pump stations, and river crossings. Once collected, this information will be coded and transferred

to punched data cards. The retrieval and dissemination of the data can be accomplished by electronic data processing equipment belonging to the National Resource Analysis Center.

NATURAL GAS PIPELINES

The first time that data on the major natural gas transmission facilities in the United States were included in a National Petroleum Council report was in 1962. The natural gas industry applied itself wholeheartedly to the task of gathering the detailed information requested. Eighty-six companies participated in the Subcommittee's original survey, providing highly detailed information and maps of their facilities. A mapping task force provided by five gas transmission companies prepared two master sets of maps on the U.S. Strategic Map Series depicting the location of lines, compressor stations, interconnections, major river crossings and gas storage fields.

The 1962 National Petroleum Council report took cognizance of the rapid expansion of facilities in the gas transmission industry. For this reason, it was pointed out that the detailed maps and facility data provided to the Department of Interior and that contained in its report would quickly become obsolete if not maintained on a relatively current basis. The 1962 National Petroleum Council report recommended that this information should be updated annually. It was later agreed that updating would be done biannually.

The first updating of the original data as of January 1, 1964 was accomplished with the same wholehearted cooperation and thoroughness as was observed during the processing of the data for the original report. Eighty-seven additional companies were contacted as well as those who originally participated. The two original master sets of maps were updated and eight more sets compiled as requested as well as the new and updated facility information of the various participating companies prepared as required for electronic data processing. This task was accomplished by a 12-man task force provided by eight gas transmission companies.

A second updating as of January 1, 1966 has been accomplished. One hundred and sixty-six additional companies that had not previously participated were contacted at this time in addition to those who participated in the original project and the first updating. A task group from five gas transmission companies performed the data and map updating task. Map and facility data have now been supplied either directly or indirectly on 138 companies for the report. As stated previously, the Subcommittee realizes the importance of the current data and feels that the information should be kept up-to-date as realistically as possible.

The original survey revealed the existence of an inadequate number of emergency interconnections between various transmission systems. Since that time, many more have been installed. The number of adequate emergency headquarters and employee fallout shelters has increased. This shows progress is being made in areas in which the original survey revealed that a serious deficiency existed.

INLAND WATERWAYS BARGES

The data submitted in this report are on a basis identical to that shown in the 1962 study, and include the propelled and non-propelled tank barges in the U.S. suitable for transporting petroleum and petroleum products in bulk on the inland waterways, the Great Lakes, and in some instances, salt water as of January 1, 1967. The primary source of information for this report was a combination of the U.S. Coast Guard's files on inspected tank vessels and the knowledge of the Subcommittee members who cross-checked the Coast Guard information.

As indicated in the detailed tables appended to the report, the trend toward larger barges continues. As of January 1, 1967, there were in operation in the U.S. 2,925 non-propelled and self-propelled barges and small lake tankers, 76% of them operating on the Mississippi River and the Gulf Intracoastal Canal. The total fleet capacity of 35.5 million barrels is 32% higher than the 26.9 million barrels of total capacity on January 1, 1961. This increase has been devoted primarily to crude oil rather than refined products.

Improvements in petroleum barging operations in the different geographic areas are discussed in the report. Considerable improvements have been realized in operating efficiencies and in maintenance capabilities and procedures. The result has been increased speed and carrying capacity, and reduction of crew costs of the petroleum tows. In addition, barge and tow boat operators have continued to increase safety efforts over the years.

TANK CARS

Many changes have occurred in the use and availability of tank cars since the last survey completed in 1962. In arriving at the number of tank cars and capacities shown in the report, the best recognition possible has been taken of these changes.

Further, computer-based means of procuring data have come into existence. These have been employed appropriately. The programming arrangements for the computers are available for future use if needed or in the event of an emergency.

As of June 1, 1967, there were 142,356 U.S. based tank cars having a total capacity of 1.7 billion gallons suitable for carrying petroleum and petroleum products. The total fleet was some 185,000 cars having a capacity of more than 2 billion gallons but, as outlined in the full report, the first figures named represent data most suitable for the purposes of this report.

A significant change noted since the 1962 report is the trend of industry toward the construction of rail tank cars with much greater unit capacity. The figures for the total fleet now show 17,596 cars each having capacities over 20,500 gallons. In 1961 few cars with capacities in this range existed.

Staff representatives of the Office of Oil and Gas of the Department of the Interior and of the National Petroleum Council have been kept in touch with the work on this survey as it progressed and are familiar with its innovations.

TANK TRUCKS

Comparable to the 1962 study, the current report gives the number, capacity, type and general location of all tank motor vehicles in the U.S. (over 2,000 gallons capacity) as of January 1, 1967. The Subcommittee conducted a survey of tank truck equipment which it established on a "sampling basis" using substantially the same type of questionnaire that was used in the 1962 survey. Over 700 questionnaires were sent out to both for-hire and private carriers. Seventy percent were returned, containing data on approximately one-half of the entire U.S. truck and trailer fleet. By using those figures it was possible to expand them to include the entire tank truck fleet in the United States.

There is occurring a significant growing difference between the for-hire tank truck carrier fleet and the private carrier fleet. The latter is mainly devoted to transporting a limited number of products; namely, those products generally produced by the petroleum industry, aside from petrochemicals. In contrast, the for-hire carrier fleet is now being designed to handle a wide variety (over 900) commodities in the complete tank truck transporting of petroleum products, chemicals, corrosive liquids, food products and dry flowables.

The Subcommittee estimates that on January 1, 1967, there were 81,300 tank truck and trailer units in the U.S. in private and for-hire services, having an aggregate capacity of 497 million gallons. The total fleet capacity of all private and for-hire equipment has increased 18% since December 31, 1961, and the total number of units of equipment has increased 8.3 percent over the same period. Of the total fleet of 81,300 units, 32,097 (or 40%) are operated by private carriers; and the for-hire carriers are operating 49,203 units or 60 percent of the overall fleet.

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

C
O
P
Y

July 18, 1966

Dear Mr. Hamon:

The National Petroleum Council has made a number of studies on petroleum transportation in the past. The last such report by the NPC was made on October 4, 1962. These reports have been important to many departments and agencies of the Federal government for emergency planning and other purposes.

In the 1962 report the NPC obtained information on major crude oil, petroleum products and natural gas transmission lines including detailed information on location, capacity and type of pump stations and compressor stations. These data were used by the Department of the Interior for storage on electronic computers for emergency purposes. It is necessary that these data on oil pipelines be up-dated in order to provide current information. The up-dating of this detailed information on natural gas transmission lines is being obtained through the Emergency Advisory Committee for Natural Gas. Also in the 1962 report on Transportation Facilities information on capacities of tank trucks, tank cars and inland waterways was presented.

There is in the United States surplus capacity to produce crude oil with much of this surplus capacity located in Texas and Louisiana. It is desirable that the scope of the 1962 report be expanded to include a study of the ability of the crude oil gathering lines in producing areas with substantial surplus producing capacity to meet possible requirements for higher production.

I request that the National Petroleum Council create a committee to undertake a thorough study to determine current petroleum and gas transportation capacities including natural gas transmission lines, crude oil and petroleum products pipelines, crude oil gathering lines in major surplus production areas, inland waterways barges, tank cars and tank trucks. The new study should include estimates of the pipeline industry's ability to expand capacity over the near term through bottleneck removals. The Office of Oil and Gas will supply further information as desired on the scope and details of the requested study.

Sincerely yours,

Assistant Secretary of
the Interior

Mr. Jake L. Hamon
Chairman
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

SECTION II

REPORT OF

THE SUBCOMMITTEE ON PETROLEUM PIPELINE TRANSPORTATION

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August 1, 1967

Mr. John E. Swearingen
Chairman, Committee on Oil and
Gas Transportation Facilities
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

Dear Mr. Swearingen:

Your Subcommittee on Petroleum Pipeline Transportation submits this report concerning crude oil and refined petroleum products pipelines to your Committee. The report examines the recent changes and trends of the pipeline industry, potential trouble areas in emergencies, and gathering and trunk pipeline bottlenecks. The report also incorporates the changes (from 1962 through 1966) in capacities and flow directions to the crude oil and petroleum products pipelines in the Continental United States.

Another phase of the Subcommittee's actions is currently in progress. More detailed data about pipeline systems, pump stations, and river crossings are being gathered for use by the U.S. Department of the Interior. The data are being compiled through the use of questionnaires sent to pipeline companies. Detailed maps of the pipeline systems will be drafted to aid emergency planning groups in their analysis of pipeline facilities. These data and maps will be completed and forwarded to the Department of the Interior in the Fall of 1967.

The submittal of this report would be incomplete if I failed to acknowledge the contributions of Mr. E. J. Wacker, Jr., Vice Chairman (Crude Lines) and Mr. Fred F. Steingraber, Vice Chairman (Products Lines) and their Task Force on Pipeline Capacities in compiling the data shown herein. Mr. Earl G. Ellerbrake of the Department of the Interior, Mr. J. Donald Durand of the Association of Oil Pipe Lines, Mr. Vincent M. Brown of the National Petroleum Council, and Mr. Harris Squire of Service Pipe Line Company, were instrumental in providing the guidance work necessary for the fruition of our stated objectives. Above all, however, this work could not have been completed without the generous support of all of our Subcommittee members and the many pipeline organizations who participated in our surveys.

Respectfully submitted,

/S/ J. H. PITTINGER

J. H. Pittinger, Chairman
NPC Subcommittee on Petroleum
Pipeline Transportation
Facilities

SUBCOMMITTEE ON PETROLEUM PIPELINE TRANSPORTATION
OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES (1966)

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PART I

CONDENSED REPORT

PART I

CONDENSED REPORT

A. INTRODUCTION

The Subcommittee reports that crude oil and products pipelines are adequate to handle normal pipeline transportation requirements, and in general, can accommodate substantial increases in traffic.

Since the National Petroleum Council's 1962 report on "Oil and Gas Transportation Facilities," construction of pipeline facilities has eliminated bottlenecks, increased capacity, and provided greater flexibility to the nation's network of pipelines. Additionally there are several pipeline systems being built to meet future petroleum demands. The Capline and Chicap pipeline systems are two examples of facilities which, when completed in 1968, will supply future Midwestern petroleum demand with crude oil from South Louisiana.

It is apparent that national emergencies can necessitate the transportation of crude oil or refined products in volumes much higher than normal. These higher volumes, in turn, could create abnormal transportation patterns. It is quite possible that temporary deficiencies in the overall pipeline system could appear at such times. However, until the extent and nature of any emergency is defined and until the attendant accelerated requirements of the pipeline industry are specified, it is virtually impossible to set out specific recommendations which would result in the optimum solution to any bottleneck.

B. SCOPE OF THE REPORT

This report was prepared pursuant to a request from the Assistant Secretary of the Interior, in his letter to the Chairman of the National Petroleum Council, dated July 18, 1966. Specifically, the National Petroleum Council was requested to undertake a thorough study to determine current petroleum and gas transportation capacities. This part of the study concerns the crude oil and petroleum products pipeline capacities of the nation as of January 1, 1967.

It should be noted that this report concerns the capacities of pipelines which move petroleum into, through, and out of the five Petroleum Administration for Defense Districts of the Continental United States. On the other hand, the deliverability of petroleum is not mentioned. To include the ability of the pipelines to deliver specific quantities of petroleum at each geographic location mentioned is far beyond the scope of this

report. Thus, it should be clear that the capacities of pipelines discussed herein does not represent the deliverability of the pipelines at any point.

In the preparation of this report and the detailed supporting data and maps which were submitted to the Department of the Interior, the Subcommittee had the following tasks:

1. To update the petroleum pipeline section of the 1962 National Petroleum Council report on "Oil and Gas Transportation Facilities."

2. To include in this updated report, estimates of the oil pipeline industry's ability to expand capacity over the near term through bottleneck removals.

3. To expand the scope of the 1962 Report to include a study of the ability of crude oil gathering lines in producing areas with substantial surplus producing capacity to meet probable transportation requirements for higher production.

4. To assemble, catalog, map and index the data and information on individual pipeline systems, and their individual pumping stations and river crossings.

The results of Tasks 1, 2, and 3 above are included in this Report. With reference to Task 4, master sets of the maps are being completed and will be stored in the Office of Oil and Gas, U.S. Department of the Interior.

In 1962 the National Petroleum Council obtained highly detailed information on major crude oil and petroleum products pipelines. This included data on location, capacity and type of pump stations along the systems, as well as information on river crossings. The Department of the Interior placed these data on electronic computers at the National Resource Analysis Center for emergency reference purposes.

This information is now being updated by the Subcommittee and will be completed by late Fall, 1967. The data received via questionnaire route is confidential and will be made available only to Governmental Defense agencies for their own use in classified studies. Questionnaires were mailed to 177 crude oil pipeline companies, and 137 products pipeline companies.

The information being obtained through this effort includes:

1. For a Pipeline System - origination and destination; personnel requirements; and whether system is bidirectional.

2. For Pump Stations - name and location by latitude and longitude; number, type and capacity of pumps; number, type, horsepower, motor voltage, and source of power for prime movers; degree of automation and station tankage capacity.

3. For River Crossings - location; length of crossing; wall thickness; pipe specification and grade; diameter of pipe; type of crossing, and replacement time if damaged.

With regard to data requested on latitude and longitude of pumping station locations, as described above, it was determined that this data again be plotted on the Government coordinate maps. The decision to use, as in 1962, the coordinate maps, and plot not only pumping stations, but the entire pipeline system of each company on a master set of maps, will circumvent a great deal of work which the Government agencies would have had to do in an emergency. This mapping system also points out the exact locations of major river crossings along the systems.

A set of maps have been sent to each company, and are being returned with the data plotted as requested. Those companies which participated in the similar 1962 mapping effort had their initial maps returned and they were requested to update them. As noted earlier, a composite master set of maps will be compiled, based on the individual company information, and turned over to the Office of Oil and Gas, Department of the Interior. In the event that it should ever be necessary to activate the Emergency Petroleum and Gas Administration, this detailed data will constitute the basic factual files which would be required by the pipeline transportation staff of that agency.

C. SIGNIFICANT CHANGES AND TRENDS SINCE 1962

In the past five-year period since January 1, 1962, approximately 7,030 miles of crude and 15,890 miles of products pipelines, or a total of 22,920 miles, were constructed at an estimated cost of $1,136,850,000. Some of this new pipeline construction during the period 1962-1966 included (a) replacement for segments of old line in continuation of the safety program of the companies concerned, (b) looping of sections with existing or larger diameter lines, (c) replacement of sections with larger diameter lines, and (d) additional crude, products and LPG lines.

Significant trends brought out in the 1962 Report continued during the period 1962-1966. Large diameter lines, increased automation, centralized controls, automatic custody transfers, expanded use of computers for complex problems in scheduling and operation, joint-venture projects, closer cost controls, and greater segregation of crude oils, are all current programs which have received considerable attention and development.

The foregoing programs result in cost reduction through more efficient operation and upgrading and development of personnel. With much higher levels of technology being applied, the pipeline companies are realizing the need for additional training of existing personnel and management to fully utilize the sophisticated equipment being developed. In addition, technicians and engineers in greater quantity and of higher quality are being sought as they complete and advance their academic education and training.

The law of supply and demand viewed through economic evaluations has brought about the installation of additional pipeline transportation facilities from oil-producing areas to refineries, and from the refineries to distribution terminals.

D. PRINCIPAL PIPELINES UNDER CONSTRUCTION AND PLANNED AS OF 1967

Detail on the major crude oil pipelines under construction or definitely planned as of the time of this Report (Summer 1967) are presented on Table I. Similar data for products pipelines are shown on Table II.

E. PRINCIPAL POTENTIAL TROUBLE SPOTS IN EMERGENCIES

Under normal conditions the refineries in PAD District I receive virtually their entire crude supply by water carrier from District III and foreign sources. The drastic reduction in crude oil supply from the Middle East and Africa which occurred in early June 1967, is an example in which demand for crude oil produced in the Continental United States has increased. Prior to the eruption of hostilities in the Mid-East, the U.S. was importing approximately 200,000 barrels daily of Middle East crude oil into District I. District III was supplying an estimated 400,000 barrels of crude oil daily to the District I refineries. In addition, Caribbean suppliers were exporting almost 500,000 barrels of the crude to the East Coast refineries. Most of the imports to District I are made by tanker.

Bottlenecks can arise in the network of pipelines within District III whenever demand for crude oil heightens. However, pipeline facilities existing within District III are believed to be adequate to meet demands which are larger than normal. After the Middle East's political turmoil had begun in June, it became evident that European crude oil requirements formerly satisfied by Mid-East and African producers would have to be met by increased production in other areas. By early July, Texas and Louisiana pipeline transportation was able to move an approximate total of one million barrels daily for shipment out of the Gulf Coast water terminals.

TABLE I

PRINCIPAL CRUDE OIL PIPELINES UNDER CONSTRUCTION OR PLANNED - 1967

PIPELINE COMPANY	LOCATION	MILES	DIAMETER (INCHES)	APPROXIMATE CAPACITY B/D
Ashland	Patoka, Illinois to Owensboro, Kentucky	140	-	-
Black Lake	Black Lake Field, Louisiana to Mont Belvieu, Texas	192	8	27,000
Buckeye	Marysville to Detroit, Michigan & Toledo Ohio	120	16	130,000
"	Warren Junction to Warren, Pennsylvania	20	8	27,000
Capline	Gulf Coast Louisiana to Patoka, Illinois	600	40	420,000
Chicap	Patoka to Chicago, Illinois	200	26	168,000
Gulf	Venice to Faustina Works, Louisiana	114	8	27,000
Humble	Belle Rose Station to Choctaw, Louisiana	28	16	240,000
Lakehead	Gretna, Manitoba to Superior, Wisconsin	101	34	200,000
"	Loops in Pembina County, North Dakota; Pennington, Polk, Beltrami, Itasca, Charleston Counties, Minnesota; Douglas County, Wisconsin	68	34	200,000
Mid-Continent	Enid to near Orlando, Oklahoma	40	8	27,000
Mobil	In Garvin, Stephens & Carter Counties, Oklahoma	54	6	13,000
"	In Tarrant, Dallas, Ellis & Navarro Counties, Texas	80	8	27,000
Phillips Petroleum	Vicinity Canadian, Texas	35	14	95,000
"	In Kingfisher, Logan, Oklahoma Counties	45	10	48,000
"	From Edgerton to Kansas City, Kansas	49	10	48,000
Red Snapper	Natural Gas & Liquids Line from Fields Offshore Louisiana to Onshore points at Intracoastal City, and between Morgan City and Houma, Louisiana	285	30	-
Service	Loops between Monroe, Texas & Drumright, Oklahoma	75	16	130,000
Shell	Caliota-Coalinga Line to Tidewater Oil Company, Fresno County, California	8	18	170,000
"	South Louisiana, Eugene Island area	44	12	74,000
"	Vicinity Sheridan, Texas	37	6, 10	30,000
"	Offshore Louisiana to Co. Terminal, Gibson, Louisiana (Tarpon Line)	92	12, 16	100,000
Skelly	Cushing, Oklahoma to El Dorado, Kansas	135	8	27,000
Sun	Sun Field to Canales, Texas	60	4	6,000
Texas	Lafitte, Louisiana to Houma, Louisiana	39	12	50,000
Tidewater	Coalinga to Martinez, California	175	20	215,000

TABLE II

PRINCIPAL PRODUCTS PIPELINES UNDER CONSTRUCTION OR PLANNED - 1967

PIPELINE COMPANY	LOCATION	MILES	DIAMETER (INCHES)	APPROXIMATE CAPACITY B/D
Buckeye	Linden, New Jersey to JFK International Airport, dual 12" line	(35	12	96,000
	New York & Long Island City, N. Y.	(35	12	96,000
"	Toledo, Ohio to Samaria, Michigan	12	12	40,000
"	Macungie, Pennsylvania to Dupont, New York	60	16	130,000
Cities Service	Jennings to Grand Chenier, Louisiana	30	6	13,000
Coastal States	Corpus Christi to Houston, Texas	200	12	74,000
Colonial	Planned expansion to be completed by Nov. 1, 1967, Houston to Greensboro			1,092,000
"	Greensboro to Baltimore			768,000
"	Planned expansion to be completed by late summer of 1968			
"	Houston to Greensboro			1,152,000
"	Capacity Greensboro to Baltimore will not be changed			
"	Baltimore to Philadelphia		Expansion to	768,000
"	Philadelphia to Linden		Expansion to	732,000
Dow Chemical	White Castle to Dow Production Plant, Louisiana	10	12	74,000
Gulf Refining	Brazos River to Weatherford Station	18	14	95,000
"	El Paso LP Gas Plant to Roscoe, Texas	9	3	3,000
Hydrocarbon Transportation	Wichita to Bushton, Kansas			35,000
"	Bushton to Des Moines, Iowa			62,000
Jet Lines	New Haven, Connecticut to Westover AFB		Expansion to	70,000
Marathon	Robinson to Martinsville Junction, Illinois	19	12	74,000
"	Martinsville, Illinois to Lima, Ohio	225	10	48,000
"	Former crude line owned by Mobil, bought by Marathon and to be converted to products service linking with Marathon's Robinson, Illinois Refinery	20 spur	10	48,000
Mid-America	Iowa City to Clinton, Iowa	60	8	27,000
Mobil	Kansas City, Kansas to Mid-Continent International Airport, Missouri	17	6	13,000
"	Chitwood Plant, Stephens County, Oklahoma to near Lone Grove, Carter County, Oklahoma	54	6	13,000
"	Keller Station in Tarrant County to Corsicana Station in Navarro County, Texas	80	8	27,000

TABLE II

(Continued)

PRINCIPAL PRODUCTS PIPELINES UNDER CONSTRUCTION OR PLANNED - 1967

PIPELINE COMPANY	LOCATION	MILES	DIAMETER (INCHES)	APPROXIMATE CAPACITY B/D
Phillips Petroleum	Kansas River crossing to Fairfax Terminal, Kansas	16	10	48,000
"	Le Loup to Bonner Springs, Kansas	37	10	48,000
Promix	Bayou Salle to Belle Isle, Louisiana	21	6	13,000
"	Lapeyrouse, Louisiana area to Venice, Louisiana area	86	8	27,000
Shell	Bakersfield to Martinez, California	27	14	95,000
"	Tebone Plant to Norco Refinery, Louisiana	46	6	13,000
Sinclair	Houston to Mont Belvieu, Texas	91	4, 6, 8	13,000
"	Port Arthur to Mont Belvieu, Texas	55	8	27,000
Sun	Blawnox, Pennsylvania to Hudson, Ohio	105	10	48,000
Texas	Convent, Louisiana to Colonial's Baton Rouge, Louisiana Station (Completed 1967)	54	16	115,000
Union Carbide	Port Arthur, Texas to Lake Charles, Louisiana	48	6, 10	13,000
Union Texas	Eunice to near Plaquemine, Louisiana	88	8, 20	100,000
Wanda Petroleum	Morgan City to Breaux Bridge, Louisiana	60	8	27,000
Williams Brothers	Extension of Present System Humbolt, Kansas to Carthage & Springfield, Missouri	118	8	27,000
"	Bateman to Wassau, Wisconsin	79	8	27,000
"	Greenleaf to St. Cloud, Minnesota	44	8	27,000
"	Sioux City to Milford, Iowa	83	6	11,800

Texas and Louisiana, the two larger oil producing states in District III, have increased allowable production beyond the previous highest levels. The Texas Railroad Commission, for example, has allowed its regulated wells to produce in August at 54 percent of rated allowables, but underproduction exists. The West Texas gathering and trunk lines have handled the increase in production; furthermore, additional capacity exists for higher rates of production in this area. In East Texas, a temporary limitation in gathering facilities has hampered oil movements; however, installation of pumping facilities will soon permit the transportation of the increased production from this field.

A significant increase in Louisiana production has been experienced during the Mid-East Crisis. Through mid-July, estimated actual production has risen by 200,000 barrels per day, and this amount has been successfully moved out of the state by tanker loadings. Further increases in Louisiana production are expected; however, the ability to move more crude oil out of the state may be limited by the availability of tankers and the related loading facilities.

Other Potential Serious Problem Areas

With the trend towards electrification, the pipeline industry has become highly dependent upon electric power to energize its prime movers. This fact points up a serious situation in the event of a catastrophe involving possible destruction or failure of power plants and transmission systems. The volume of spare diesel or gas engines and gas turbines would be very inadequate to meet the needs caused by a reduction in electrical power. Those who are responsible for disaster planning should give serious consideration to reducing delivery time on such critical items as diesel equipment, motors, pumps, valves, and related equipment and to plans to maintain electricity grid systems.

F. GATHERING AND TRUNK PIPELINE BOTTLENECKS

Distribution of petroleum products for the satisfaction of business and consumer demands is dependent upon a number of factors. The proven reserves of petroleum, rate of production, up to or exceeding MER capacity of gathering and trunk pipelines, truck, rail car or barge capacities, refinery capacity, loading terminal capacities and demand are some of these factors. This segment of the Report is concerned with the existence of distribution bottlenecks caused by gathering and trunk pipelines.

A pipeline bottleneck may be defined as a restriction to the movement of petroleum from the supply to the demand points. In this sense, limited pipeline capacity may obstruct the free movement of petroleum to satisfy demand; however, demand can be a shifting phenomenon. In the long run, the economics of a supply bottleneck dictate the optimum method of elimination. In a competitive economy, the removal of a bottleneck resulting from a temporary change in demand may not be economically justifiable. On the other hand, the need for a free flow may be such that the bottleneck must be eliminated in the national interest. The following paragraphs describe the non-economic problems involved in projecting the elimination of bottlenecks in gathering and trunk pipelines.

A gathering line system is usually composed of several small diameter (2"-6") pipes used to collect crude oil from several producing units in a field and transport it to a tank farm, or in specific instances, inject the oil directly into a main trunk line. According to a report by the U.S. Bureau of Mines in 1965, there were about 77,000 miles of crude oil gathering lines, 72,000 miles of crude oil trunk lines, and 61,000 miles of products trunk lines. The crude oil gathering lines may be thought of as the roots which feed the growth of a towering pine tree; whereas trunk pipelines are analogous to the long trunk of the plant.

Many state governments have established a monthly proration upon the amount of producible oil in their fields. Since the amount of production allowed is usually set in advance, it could be assumed that a uniform rate of production from producers' batteries is obtained. But to the contrary, often there is a period of high-volume flow which may be several times the average daily rate necessary to meet the monthly allowable imposed by the state. This situation is magnified because many field units have a normal operating routine of pumping only during daylight. Thus, peak loading results in the necessity for larger pipe sizes that could permit highly increased pumpings over a sustained period in case of an emergency.

Flow through gathering systems may be increased by the addition of portable pumping equipment or the installation of additional lines on short notice. Since gathering lines use small diameter pipe, the cost of pipe and pumping equipment is relatively low in comparison to trunk line equipment. Thus, pipeline companies usually store equipment to facilitate the construction of additional gathering lines if increased capacity is needed in a specific area. Spare pumping equipment also may be used to increase capacity over the near term. The use of plastic pipe in low-pressure gathering systems is another method of increasing gathering ability in a short period of time. Even though this material is more expensive than steel, it is light weight and readily adaptable on short notice to many applications.

In general, the pipeline industry has the ability to increase the flow of crude oil through its gathering systems in a short period of time. Use of better scheduling techniques, flexible equipment which is easily transportable, the availability of substitute materials such as plastic and aluminum, and the relatively low cost of reserve pipe mean that gathering system throughputs can be expanded significantly.

The ability of the pipeline industry to quickly expand trunk capacity to major refining centers in the event of a national emergency presents a different problem. The maximum capacity of a pipeline is determined by the size and quality of pipe in the ground and the motors, engines, and pumps installed to supply power to move oil through the pipe. The installation of new trunk pipelines, or the looping of existing lines, to acquire additional capacity should not be considered a short- or near-term project. Most large diameter pipelines probably can achieve only modest increases by the addition of pumping equipment. Increasing pumping equipment requires the purchase of engines or motors, switchgear, valves, and pumps; consequently, suitable fuel or electric power also must be made available at the equipment location. Currently new engines, motors, and switchgear arrive approximately six months after the initiation of a purchase order; furthermore, some pumps require almost a year's lead time.

In order to increase pipeline capacity in a short period, say one to two months, it would be necessary to relocate motors or engines and pumps from one pipeline to another since the industry carries only a minimal supply of such equipment. Substitution of pumping equipment from one pipeline segment or system to another would obviously reduce the capacity of the original pipeline. The combination of these factors points out that purchase of new equipment or relocation of existing pumping equipment would not increase the capacity of most pipelines very quickly.

Actual experience, both within the U.S. and in troubled foreign areas, has demonstrated that pipelines are not very vulnerable to sabotage or damage by enemy action. Damaged pipelines can usually be restored to service quickly by the replacement of the damaged sections with new pieces of pipe which are maintained in stock by all operating pipeline companies. Pump stations and tanks, usually located above ground, are more vulnerable to damage, but a large portion of normal deliverability can usually be restored within a few days. This can be achieved by installing standby equipment or replacing the damaged items with equipment removed from less critical pipeline segments.

The re-routing of pipeline traffic and the transfer of equipment between pipeline systems to maintain maximum supply to the refineries still operable in the event of a national emergency, involves

an infinite number of hypothetical situations. It would not be practical to develop specific alternate supply routings in advance of theoretical demand shifts. In addition, any solutions presented for the removal of bottlenecks could create a reliance upon data which conceivably could vary significantly from actual emergency conditions. In effect, this could compound confusion at a critical time.

On the other hand, data specifying the capacity of most trunk lines in the Continental United States is presently being collected by the National Petroleum Council. By December 1967, current data concerning pipeline capacities will be furnished the Department of the Interior by the National Petroleum Council. These data will constitute the basic files for removing bottlenecks that may occur in an actual emergency.

PART II

GENERAL DISCUSSION

PART II

GENERAL DISCUSSION

A. INTRODUCTION

Some changes have taken place in the petroleum pipeline network of the United States since the 1962 study was made by the National Petroleum Council for the Government. The physical pipeline network has continued to expand and modernize.

One purpose of this Report is to bring up to date the 1962 study showing primarily the pipeline traffic flow pattern of the oil industry in the United States.

About 23,000 miles of principal crude oil and products pipelines have been constructed at an estimated cost of about $1,137 million during the last five years, 1962-1966 inclusive. The greatest expansion has been in products and liquefied petroleum gas pipelines to consuming areas which heretofore were served by other modes of transportation. As to the immediate future, the more than 210,000 miles of petroleum pipelines in the United States will increase with the completion of additional projects planned or scheduled for construction in 1967 and 1968. The lists of the principal crude oil and products pipelines planned or underway for 1967 are contained in Part I.

This pipeline network is part of the most efficient and modern oil industry in the world. No other nation has the facilities and means of providing comparable nationwide transportation and distribution of petroleum and its related products.

At present, there appears to be enough surplus capacity in the production, refining and transportation segments of the oil industry to take care of a normal annual increase in domestic demands under peacetime operations. The situation abroad today has created concern about the oil outlook for the future. The recent Mid-East crisis has shown that a heavy burden within a short period of time can be placed upon the U.S. oil industry to meet increased military and civilian demands for oils. The emergency could force a change in the present world crude oil and products supply pattern. Under normal peacetime operations there are no major bottlenecks in connection with the transportation of oil.

The importance of pipeline transportation can readily be appreciated when it is realized that this form of moving oil is less vulnerable to enemy attack or adverse weather conditions than any other mode of transportation. Pipelines are underground

and unseen. Furthermore, they are not readily usable for moving any products other than petroleum. Statistics show that approximately 75 percent of the domestically produced crude oil reaching refineries is moved by pipeline. In 1966, this meant the movement of more than about 6,768,000 barrels per day. In addition, most of the oil imported from Canada reaches U.S. refineries via pipelines.

The geographical location of refineries naturally governs the need for crude oil pipelines to serve them. The principal refining centers in the United States are situated in tidewater cities along the eastern seaboard, Gulf Coast and Pacific Coast, and in the Midwest and Midwestern Great Lakes region.

The geographical area composed of the states of Texas, Louisiana, New Mexico, Arkansas, Mississippi and Alabama, is the principal source of crude oil supply in the United States. The pipelines in this area are connected to Gulf Coast refineries and deep water terminals, and they extend northward into the Great Lakes refining areas picking up en route considerable crude oil produced in Mid-Continent fields. In addition, they connect with other pipelines bringing oil from the Rocky Mountain region and the Illinois Basin.

The use of pipelines for the transportation of gasoline and other light products came into existence about thirty-five years ago. In 1930 there were only 371 miles of such lines. Prior to World War II, there were about 9,000 miles. The development of product pipelines since the end of World War II has been at a rapid pace. By the end of 1966, it is estimated there were over 62,000 miles of such lines located in most states and the District of Columbia.

A more accurate appraisal of the development of products pipelines can be gained from figures relating to the growth of the movement of light refined products the past 28 years. In 1938 products pipelines were delivering only 234,000 barrels daily, whereas in 1966 the volume had increased to about 4,600,000 barrels per day, including gasoline, kerosine, distillate, liquefied petroleum gas, and natural gas liquids. This enlarged movement is outstanding when consideration is given to the fact that many of the major refineries are located in close proximity to heavily populated and industrialized cities that can be served by tank trucks for shorter hauls.

In general, the products pipelines originate at refineries or water terminals and extend to bulk terminals located in or near principal points of consumption. From these bulk terminals distribution is made by tank trucks to cities within a radius of 100 miles, or tank cars and trucks for longer hauls. Barge delivery is another principal means of delivery from bulk terminals located close to adequate waterways.

Noteworthy in the postwar development of products pipelines has been the expanded use by the military in bringing jet fuels directly to major air bases. This method of delivery of fuels has saved the Government millions of dollars in transportation charges over what it formerly cost by means of tank cars and trucks. Presently many civilian airports are being serviced by pipeline deliveries.

Many miles of new lines are being added for the movement of liquefied petroleum gases, principally butane and propane.

From a technological standpoint, the pipeline industry has continued steady progress in increasing the efficiency of operations. Automation continues to advance. New pump stations being built are generally automatically controlled and equipped with more powerful electrically driven prime movers. The microwave with its large number of circuits has proved an important aid in remotely controlled operations, and has lessened the chance of losing communication in times of emergency. Therefore, manpower requirements are being reduced. Dispatching practices have benefited from the adoption of electronic analyzing and computing machines. Methods of metering oil have been greatly improved. The trend is definitely toward the construction of larger diameter pipelines having wider pump station spacing. With big-inch lines, the savings in power and reduction of construction costs per barrel-mile of capacity is substantial. The pipelines are now in their greatest era of improvement, and the future holds much promise of continued betterment.

During periods of past emergencies, such as World War II, the Korean conflict, the Iranian Crisis, the Suez Crisis, and the present Mid-East Crisis that resulted in abnormal operations in all segments of the oil industry, the petroleum pipeline industry showed initiative and the ability to overcome the emergency. The pipelines' place in transportation is well established, and its network will continue to grow to whatever extent is necessary to meet this nation's needs. The following paragraphs give certain salient facts applicable to the five PAD Districts of the United States.

B. CRUDE OIL PIPELINES

B.2 PAD DISTRICT I (EAST COAST REGION)

District I is composed of the 17 states shown on Appendix Map. This region is divided into two general areas, namely East Coast and Appalachian.

The East Coast area is heavily populated and industrialized; consequently, demands for refined oils greatly exceed any other area of the country. Pipelines play only a minor role in the movement of crude oil to refineries in this region. The eastern seaboard refineries have deep water terminals and receive all their crude oil supplies by tankers from the Gulf Coast, California, or from foreign countries.

In the Appalachian region, pipelines are located in western New York, western Pennsylvania, and West Virginia. The Buckeye Pipe Line comprises a connecting link between Districts I and II at the Ohio-Pennsylvania line that permits the delivery of crude oil to Buffalo and intermediate refineries. The capacity between the two districts is 58,000 barrels per day. Crude oil produced in Canada is imported into Buffalo via the Interprovincial-Lakehead Pipe Line. This system has a capacity of 45,000 barrels per day into Buffalo.

The Portland Pipe Line Corporation system extends from South Portland, Maine, and runs northwesterly through New Hampshire and Vermont to a connection with the Montreal Pipe Line at the United States/Canadian border near North Troy. The two lines form a through route for the potential delivery of 400,000 barrels per day of foreign crude oil received by tanker at South Portland, Maine, to refineries at Montreal, Quebec, Canada.

CRUDE OIL PIPELINE CAPACITIES

(THOUSANDS OF BARRELS DAILY)

as of December 31, 1966

NATIONAL PETROLEUM COUNCIL

PIPELINE TRANSPORTATION SUB-COMMITTEE

Legend

- CRUDE OIL PRODUCING AREA
- REFINING AREA
- PLANNED OR UNDER CONSTRUCTION

PAD DISTRICT I

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
Into International Boundary		
Portland	400,000	From Portland, Maine. Crude oil is received by tanker and moved to Montreal, Canada, through pipeline
Into Buffalo, New York		
Buckeye	30,000	Will reduce to 18,000 by end of 1967
Lakehead	45,000	
Total	75,000	
Into Bayonne, New Jersey		
Tidewater	9,500	From Bradford, Pennsylvania area. Idle, except Esso uses this system to move heating oil
Into Oil City, Pennsylvania Area		
National Transit	6,000	Into Emlenton, Pennsylvania
" "	22,200	Into Oil City, Pennsylvania
" "	8,500	Into Warren, Pennsylvania
" "	6,000	Into Ashland, Freedom, Pennsylvania
Total	42,700	
Into Falling Rock, West Virginia		
Eureka	8,400	From Buckeye Pipe Line at Bear Creek, Pennsylvania
Into St. Mary's, West Virginia		
Eureka	10,000	From Ohio oil fields via Buckeye Pipe Line at Ohio-West Virginia state line; also, from local fields in West Virginia

B.3 PAD DISTRICT II (MIDWEST AND MID-CONTINENT REGION)

District II is composed of 15 states shown on Appendix Map. This region covers a wide area of Central United States that extends from the Oklahoma/Texas border on the south to the United States/Canadian border on the north, and includes states east of the Mississippi River and its tributaries, and along the Great Lakes as far as the Ohio/Pennsylvania line. This area is likewise heavily populated and industrialized. Demands for refined oils in this region are large, but not of the magnitude of those required in the East Coast states.

Production of crude oil within District II is insufficient to meet refining requirements; consequently there is a large dependence on oil brought in from other regions.

There are 12 pipelines with a combined capacity of 1,285,000 barrels per day that move crude oil from District III into District II. These lines move oil produced principally in Texas, New Mexico and Louisiana. A recent planned important addition to the pipelines that move crude oil from District III into District II will be the Capline. This 625-mile, 40-inch pipeline will be capable initially of moving an additional 420,000 barrels per day from St. James, in southern Louisiana, to Patoka, Illinois. Construction of the Capline is expected to be under way soon and the project is planned for completion in 1968. A planned 200-mile extension pipeline, Chicap, will be capable of moving 168,000 barrels per day of this crude oil into the Chicago area. Chicap is in the planning stage for completion in 1968.

There are five pipelines with a combined capacity of 443,400 barrels per day that move crude oil from District IV into District II. These lines move oil produced in Wyoming, Colorado, Utah and Montana.

Some crude oil produced in Canada is imported into the Great Lakes area via the Interprovincial-Lakehead Pipe Line system, and a connecting carrier, the Minnesota Pipe Line, which delivers crude into the Minneapolis-St. Paul area.

The 11 lines that supply the District II area east of the Mississippi River have a combined capacity of 1,676,200 barrels daily.

The only means of crude oil supply by pipeline between District II and District I is through two sections of the Buckeye system. One section has a capacity of 56,500 barrels per day (by the end of 1967 this will be reduced to about 38,000 barrels per day), and the other section is a 6,500 barrels per day line for delivery to the Eureka Pipe Line at the Ohio/West Virginia border.

On the other hand, there are two pipelines with an aggregate capacity of 56,000 barrels daily for delivery of crude oil from District II southward into District III. These are the Sinclair and Mobil lines extending from Oklahoma into Texas.

There are also two lines with a total capacity of 52,600 barrels per day that move crude oil from District II into District IV. These lines are the Arapahoe and Sterling which move oil from Gurley, Nebraska to Merino, Colorado. They ultimately return to District II.

PAD DISTRICT II

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into Chicago Area		
Service	273,700	
Sinclair-Pure	280,000	Pure owns 30% and Sinclair owns 70%, known as Cushing-Chicago Pipe Line System
Texaco-Cities Service	101,400	LPG and Crude from Patoka and Mid-Continent Area
" " "	160,750	From Patoka, Illinois
Total	815,850	
Into Lawrenceville, Illinois		
Texas	87,000	From Utah, New Mexico, Texas and Illinois
Into Pana, Illinois		
Loudon	5,000	Gathering System
Into Robinson, Illinois		
Marathon	70,000	From Illinois
Into St. Louis, Illinois and Missouri		
Mobil	37,000	From Patoka
Ozark System	320,000	
Platte	114,000	
Service	104,400	Lateral off East Chicago area line
Shell	42,000	
Total	617,400	
Into Laketon, Indiana		
Buckeye	6,000	
Into Coffeyville, Kansas		
Cooperative	33,000	Gathering System in Southern Kansas
Into Kansas City, Kansas and Missouri		
Phillips	70,000	From Panhandle, Oklahoma and Kansas
Service	102,500	
Total	172,500	
Into McPherson, Kansas		
Jayhawk	N. A.	Gathering System in Southwest Kansas
Into Phillipsburg, Kansas		
Cooperative	19,500	Gathering System in Kansas
Into Potwin, Kansas		
Arapahoe	N. A.	
Vickers	N. A.	Gathering System in Kansas

PAD DISTRICT II

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into Wichita, Augusta and El Dorado, Kansas		
American Petrofina	N. A.	From El Dorado Field
Jayhawk	N. A.	Gathering System in Southwest Kansas
Kaw	108,500	Gathering System in Kansas
Mobil	64,000	Gathering System in Kansas
Rock Island	N. A.	Gathering System
Skelly	82,000	Gathering System in Kansas
Total	254,500	
Into Owensboro, Kentucky		
Ashland	14,000	
Into Alma, Bay City, Carson City, Elsie and Mt. Pleasant, Michigan		
Michigan-Ohio	66,000	From Canada, Mid-Continent and Rocky Mountain areas. From Toledo, 18,000; connection w/Lakehead 12,000; Michigan area 28,000 B/D
Into Detroit, Michigan (Earhart)		
Buckeye	93,000	From Lima, Ohio and Marysville, Michigan (connection with Lakehead)
Into Muskegon, Michigan		
Kaybee	8,400	Gathering System
Marathon	25,000	From E. Chicago area
Total	33,400	
Into Minneapolis-St. Paul, Minnesota		
Minnesota	86,000	From Canada - Lakehead Pipe Line Company and North Dakota-Portal Pipe Line Company. Expanding in 1967 to 112,000 B/D
Into Duluth, Minnesota		
Lakehead	490,000	From Canada
Into Mandan, North Dakota		
Service	60,200	From Williston Basin, North Dakota
Into Canton (Newark), Ohio		
Marathon	43,000	From Illinois points
Into Cincinnati, Ohio		
Gulf	31,000	From Patoka (67,500 capacity) to Dublin where line forks to Spencerville Jct. (45,500 capacity) and Cincinnati
Mid-Valley	240,000	To Gulf refinery at Cleves, Ohio
Total	271,000	
Into Heath, Ohio		
Marathon	30,000	From Illinois points

PAD DISTRICT II

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY		AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into Lima, Ohio			
Buckeye		40,000	Gulf receipts at Spencerville Jct. thru Buckeye to Adgate, Ohio
Marathon		200,000	From Patoka area
Mid-Valley		240,000	
Mobil		46,000	From Patoka area
Sohio		76,000	
Tecumseh		105,000	From Chicago area
	Total	707,000	
Into Toledo, Ohio (Bayshore)			
Buckeye		330,000	From Lima
Into Ardmore and Grandfield, Oklahoma			
Bell		72,000	Gathering System in North Texas and Southern Oklahoma
Into Cushing, Oklahoma			
Kerr-McGee		58,000	Gathering System
Midland		15,700	Gathering System
	Total	73,700	
Into Duncan, Oklahoma			
Mid-Continent		36,000	
Into Enid, Oklahoma			
Champlin		50,000	Gathering System in Oklahoma
Into Ponca City, Oklahoma			
Cities Service		22,000	From Oklahoma area
" "		18,000	From Kansas
Continental		73,000	From Oklahoma City, Oklahoma
"		26,000	From Kansas
	Total	139,000	
Into Tulsa, Oklahoma			
Mid-Continent		80,000	
Into Wynnewood, Oklahoma			
Kerr-McGee		11,000	Gathering System in Oklahoma
Into International Boundary (Sarnia, Ontario)			
Lakehead		416,000	Oil also moves to Toronto - capacity 220,000
Sun		22,600	Moves both crude and LPG. Duplicated with products line
	Total	438,600	
Into Patoka Area			
Gulf		57,000	From Oklahoma
Mobil		158,000	
	Total	215,000	

CRUDE OIL PIPELINE CAPACITIES
LINES CONNECTING DISTRICT II WITH ADJACENT DISTRICTS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into District II from International Boundary		
Lakehead	490,000	Most of the oil from this line goes to Sarina and Toronto, Canada, but line also connects to Buckeye at Marysville, Michigan. Capacity 130,000 B/D for delivery to Detroit and Toledo by year end 1967
Into District II from District III		
Basin	385,000	Connects with Ozark System at Cushing, Oklahoma
Bell	26,500	To Grandfield, Oklahoma
Continental	44,000	Wichita Falls, Texas to Oklahoma City, Oklahoma
Gulf	59,500	Chambers, Oklahoma on Gulf System to Tulsa and East
Mid-Valley	240,000	Longview, Texas to Lima, Ohio where it connects with Buckeye
Mobil	158,000	To Patoka, Illinois
Phillips	38,400	Borger to Yale, Oklahoma, then Kansas City, Kansas
Service	169,000	Slaughter, W. Texas to Drumright, Oklahoma, thence Whiting, Indiana
"	70,200	North Texas to Drumright, Oklahoma
Shell	32,000	To Wood River, Illinois from McCamey, Texas
Sinclair	44,000	From Muenster, North Texas areas to Ringling, Oklahoma
Texas	17,750	Covey, Texas to Seminole, Oklahoma. Connects with Texaco-Cities Service to Tulsa, Oklahoma and Chicago
Total	1,284,350	
Into District II from District IV		
Arapahoe	105,000	Into Kansas - Capacity Schurr to Humbolt, Kansas 129,000 B/D
Platte	154,000	Connects with Sinclair at Salisbury, Missouri and delivers into Wood River
Service	152,900	Into Kansas
"	7,500	Into Scottsbluff, Nebraska
Sterling	24,000	To Gurley, Nebraska (connects with Platte)
Total	443,400	
From District II into District I		
Buckeye	6,500	From Ohio to Eureka and Ashland Stations in West Virginia
"	56,500	From Ohio to refineries in Warren, Pennsylvania and to Buffalo, New York. Will be reduced to 38,000 B/D by end of 1967
Total	63,000	
From District II into District III		
Mobil	32,000	From Addington, Oklahoma to Ringgold, Texas
Sinclair	24,000	From Panova, Oklahoma to Jacksboro, Texas
Total	56,000	
From District II into District IV		
Arapahoe	28,600	To Merino, Colorado and various locations in Kansas from Enders, Nebraska
Sterling	24,000	From Platte at Gurley to Merino
Total	52,600	

PAD DISTRICT II

CRUDE OIL PIPELINES SUPPLYING AREAS EAST OF THE MISSISSIPPI RIVER

COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	CROSSES RIVER AT	REMARKS
Gulf	57,000	Jefferson County, Missouri	Tulsa to Cincinnati & Lima, Ohio
Lakehead	(496,000)*		From Gretna, Manitoba to Superior, Wisconsin. Crude is delivered via connecting lines to Minneapolis-St. Paul area, Upper Michigan and Buffalo.
Mobil	158,000	Chester, Illinois	Corsicana, Texas to Patoka, Illinois
Mid-Valley	240,000**	Mayersville, Mississippi	East Texas, Arkansas and Louisiana to Lima
Ozark	320,000	Wood River, Illinois	Cushing, Oklahoma to Wood River, Illinois. (Basin System - Jal to Cushing)
Platte	114,000	Wood River, Illinois	Wyoming to Wood River, Illinois
Service	273,700	E. Ft. Madison, Illinois	Drumright, Oklahoma to Whiting, Indiana
Service	104,400	Wood River, Illinois	Drumright, Oklahoma to Wood River, Illinois (Lateral off main line)
Shell	42,000	Wood River, Illinois	Cushing, Oklahoma to Wood River, Illinois
Sinclair-Pure	280,000	Quincy, Illinois	Cushing, Oklahoma to East Chicago, Indiana
Texaco-Cities Service	87,100	Hannibal, Missouri	Tulsa, Oklahoma & Wichita, Kansas to E. Chicago
Total	1,676,200		

* Not included in total.
** 200,000 from Longview, South Arkansas and North Louisiana, 40,000 from Delhi (N. E. Louisiana).

PAD DISTRICT II

CRUDE OIL PIPELINE CAPACITIES AND MOVEMENTS BETWEEN PRODUCING/REFINING AREAS

(AVERAGE ANNUAL CAPACITY IN THOUSANDS OF BARRELS PER DAY - DECEMBER, 1966)

CAPACITY OUT		TO																	
LOCATION AND COMPANY	TOTAL	CANADA	CANTON-HEATH	CHICAGO	CINCINNATI	DETROIT AREA	KANSAS	KANSAS CITY	LAWRENCEVILLE	LIMA	CENTRAL MICHIGAN	MINNEAPOLIS-ST. PAUL	CENTRAL MISSOURI	MUSKEGON	NORTH TEXAS	OKLAHOMA	TOLEDO	WOOD RIVER-PATOKA AREA
CANADA																			
Michigan-Ohio	12										12								
Minnesota	86											86							
TOTAL	98										12	86							
CHICAGO AREA																			
Marathon	25													25					
Tecumseh	105									105									
TOTAL	136									111				25					
KANSAS																			
Cities Service	18															18			
Continental	26															26			
Phillips	70							70											
Service	449							103					346						
Sinclair-Pure	270												270						
Texaco-Cities Service	87			87															
TOTAL	920			87				173					616			44			
LIMA AREA																			
Buckeye	423					93											330		
Marathon	73		73																
Michigan-Ohio	18										18								
Sun	23	23																	
TOTAL	537	23	73			93					18						330		

PAD DISTRICT II

CRUDE OIL PIPELINE CAPACITIES AND MOVEMENTS BETWEEN PRODUCING/REFINING AREAS

(AVERAGE ANNUAL CAPACITY IN THOUSANDS OF BARRELS PER DAY - DECEMBER, 1966)

CAPACITY OUT		TO																
LOCATION AND COMPANY	TOTAL	CANADA	CANTON-HEATH	CHICAGO	CINCINNATI	DETROIT AREA	KANSAS	KANSAS CITY	LAWRENCEVILLE	LIMA	CENTRAL MICHIGAN	MINNEAPOLIS-ST. PAUL	CENTRAL MISSOURI	MUSKEGON	NORTH TEXAS	OKLAHOMA	TOLEDO	WOOD RIVER-PATOKA AREA
CENTRAL MISSOURI																		
Platte	114																	114
Service	378			274														104
Sinclair-Pure	280			280														
TOTAL	772			554														218
OKLAHOMA																		
Gulf	57																	57
Mobil	32														32			
Ozark	320																	320
Phillips	53						53											
Service	286						286											
Shell	42																	42
Sinclair	44						20								24			
Sinclair-Pure	235						235											
Texaco-Cities Service	50						50											
TOTAL	1,119						644								56			419
ROCKY MOUNTAIN AREA																		
Arapahoe	105						105											
Platte	154												154					
Service	163						163											
TOTAL	422						268						154					
WOOD RIVER - PATOKA AREA																		
Gulf	77				31					46								
Mobil	46									46								
Marathon	200									200								
Sohio	76									76								
Texas	87								87									
Texaco-Cities Service	163			163														
TOTAL	649			163	31				87	368								

B.4 PAD DISTRICT III (GULF COAST REGION)

District III is composed of six states shown on the Appendix Map.

From an operating standpoint, this region is the nation's principal source of petroleum supply. Its proven reserves of crude oil and natural gas liquids, production, and refinery capacity exceed any other region in the United States. Pipeline transportation is therefore an important factor in this region. There is a great potential for the discovery of large volumes of additional crude oil in the offshore regions south of Louisiana and Texas.

Production of crude oil in District III is in excess of refinery requirements; consequently, there is a heavy movement to Districts I and II to meet demands in those regions. Twelve pipelines with a combined capacity of 1,285,000 barrels per day, are available for moving crude oil from District III into District II.

There are two pipelines with a capacity of 56,000 barrels daily for moving crude oil south from Oklahoma, District II, into District III. The Texas-New Mexico Pipe Line Company has a line with a capacity of 75,000 barrels per day for movement of crude oil produced in Utah (Four Corners area), District IV, to Jal, New Mexico, District III.

A large volume of crude oil reaching Gulf Coast refineries is moved in barges operated along the intracoastal waterways. Here water and pipeline transportation are important factors.

Production in the Permian Basin of West Texas and southeastern New Mexico exceeds that of other areas of District III. Many pipelines radiate from the Permian Basin, bringing the crude oil to Gulf Coast refineries and to deep water terminals for transshipment to the eastern seaboard or north across the Texas/Oklahoma border for movement to District II refineries. Also, pipelines move crude oil locally from North and West Central Texas, the Texas Panhandle, East Texas, North Louisiana, Arkansas, Mississippi, South and Southwest Texas, South and Southwest Louisiana, and Alabama, to refineries or deep water terminals. Capacities of pipelines into Gulf Coast refineries and deep water terminals are as follows:

Into Beaumont, Texas area	1,635,500 Barrels Daily
Into Corpus Christi, Texas area	552,300 Barrels Daily
Into Brownsville-Port Isabel area	34,500 Barrels Daily
Into Houston-Texas City, Texas area	1,100,100 Barrels Daily

Into Miscellaneous Texas water terminals	81,200 Barrels Daily
Into Baton Rouge, Louisiana area	743,500 Barrels Daily
Into New Orleans, Louisiana area	317,000 Barrels Daily
Into Lake Charles, Louisiana area	202,700 Barrels Daily
Into Miscellaneous Louisiana water terminals	316,800 Barrels Daily
Into Mobile, Alabama area	82,000 Barrels Daily

As previously pointed out, the recently planned important addition to the pipelines that move crude from District III into District II will be Capline. This system will be capable of moving an additional 420,000 barrels a day from South Louisiana to Patoka, Illinois. The planned pipeline extension, Chicap, will be capable of moving 168,000 barrels per day into the Chicago area.

PAD DISTRICT III

CRUDE OIL PIPELINE CAPACITIES
INTO GULF COAST REFINERIES AND DEEP WATER TERMINALS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into Mobile, Alabama		
Citmoco	40,000	From Citronelle Field, Alabama
Hess	42,000	From Mississippi (Eucutta and Lumberton)
Total	82,000	
Into Baton Rouge Area		
Humble	140,000	From North Louisiana and East Texas
"	95,000	From Mississippi
"	140,500	From Southwest Louisiana
"	200,000	From Southeast Louisiana
Texas	168,000	From South Louisiana
Total	743,500	
Into Louisiana Water Terminals		
Continental	21,600	From Golden Meadow
Gulf (Ostrica, Louisiana on Mississippi River)	132,000	Gathering System from South Louisiana (Timbalier Bay and adjacent areas)
Pure (Mermantau on Mermantau River)	5,000	From Gueydan
"	2,000	From Rollover
" (Chalkey on Intracoastal Canal)	3,000	From Creole
Service (Hackberry on Calcasieu River)	22,000	From South Louisiana (Hackberry)
" (Jennings on Mermentau River)	5,700	From South Louisiana (Jennings)
" (Port Sulphur on Mississippi River)	35,000	From South Louisiana (Lake Washington)
Texas (Pilottown on Mississippi River)	50,000	From Garden Island, Delta Duck
" (Davant on Mississippi River)	4,000	From DeLacroix
" (Amesville on Mississippi River)	36,500	From Lafitte and Lake Salvador
Total	316,800	
Into Lake Charles Area		
Cities Service	26,000	From Jennings and Catc (Grand Chenier)
" "	168,000	From Houston and Sour Lake. From Houston capacity 60,000 B/D. Connects with East Texas Main Line System at Sour Lake - capacity 62,000
Continental	5,800	From Southwest Louisiana (Ville Platte)
"	2,900	From Southwest Louisiana (Vinton and Cooley)
Total	202,700	
Into New Orleans Area		
Cal-Ky	152,000	From South Louisiana
Shell	165,000	From South Louisiana
Total	317,000	

PAD DISTRICT III

CRUDE OIL PIPELINE CAPACITIES INTO GULF COAST REFINERIES AND DEEP WATER TERMINALS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into Beaumont Area (Jefferson County, Texas)		
Atlantic to Port Arthur (Atreco)	48,000	From New Mexico and West Texas
" " " " "	22,000	From Longview, East Texas
" " " " "	10,000	From Neal, Louisiana
West Texas Gulf to Port Arthur (Nederland)	335,000	Delivers at Sour Lake and Lucas as well as Nederland
Mobil to Beaumont	250,000	From New Mexico, West Texas, East Texas and Oklahoma via Corsicana, Texas
" " "	25,000	Mixed stream via Corsicana, Texas
" " "	49,000	From Southwest and South Texas
Gulf to Lucas and Port Arthur	207,000	From East Texas, Louisiana and South Texas points
East Texas Main Line System to Port Arthur	62,000	Delivers to Sour Lake
Texas to Port Arthur	159,500	From East Houston (New Mexico, West Texas, North Texas, West Central Texas, East Texas, South Texas and Southwest Texas)
" " " "	298,000	From South Louisiana
Pure to Port Arthur (Nederland)	78,000	From East Texas
Sun to Sun Station and/or Sour Lake	48,000	From Seabreeze, South Texas
" " " " " " " "	7,000	From Rose City, South Texas
" " " " " " " "	37,000	From Conroe and Barbers Hill
" " Mid-Valley at Longview	(50,000)	From Sour Lake (Normally moved North, but could be moved South)
Total	1,635,500	
Into Brownsville-Port Isabel Area		
Continental	20,000	From Southwest Texas (Rincon)
Service	14,500	From Southwest Texas (Willamar)
Total	34,500	
Into Corpus Christi Area		
Atlantic to Corpus Christi	74,000	From Southwest Texas, New Mexico and West Texas
Humble to Ingleside	20,000	From West Texas and Southwest Texas (Kemper 12,000 Southwest Texas Lytle 20,000)
" " "	72,000	From Southwest Texas (Refugio area). 137,000 B/D Ingleside to Harbor Island
" " Corpus Christi	124,000	From Southwest Texas-Benavides, Borregas-142,600 B/D; 72,000-Viola-Ingleside; 35,600-Ingleside to Viola
Mobil to Corpus Christi	14,000	From Southwest Texas (Tilden)
" " " "	27,000	From Southwest Texas (Seelig)
Republic to Corpus Christi	15,000	From Southwest Texas (Plymouth, Midway and Harvey, San Patricio County; Mud Flat, Aransas, County)
" " " "	8,000	From Southwest Texas (East White Point, San Patricio County)
" " " "	10,000	From Southwest Texas (Benavides, Magnolia City, Agua Dulce)
Southern to Corpus Christi	28,600	From Southwest Texas (Richard King, F. Stratton-Nueces County)
" " " "	28,600	From Southwest Texas (Luby and London Gin, Nueces County)
" " " "	21,600	From Southwest Texas (Plymouth, Taft and White Point, San Patricio County)
Sun into Ingleside	60,000	From Southwest Texas
Suntide to Corpus Christi	37,500	From Southwest Texas (Victoria County, 13,500; Pettus, 17,500)
Texas to Corpus Christi	12,000	From Southwest Texas (Saxet)
Total	552,300	

( ) Indicates lines for which capacities are included in other movements.

PAD DISTRICT III

CRUDE OIL PIPELINE CAPACITIES INTO GULF COAST REFINERIES AND DEEP WATER TERMINALS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER, 1966	REMARKS
Into Houston-Texas City Area		
Humble to Baytown	85,000	From Ingleside
" " "	167,000	From Satsuma
" " "	118,000	From Webster
" " "	27,900	From Hull, Anahuac and Cedar Point
Humble to Texas City	31,000	From Webster
Rancho System to Houston	266,000	From New Mexico and West Texas areas
Service to Houston and Texas City	51,500	From North Central and South Texas. 38,000 B/D Mexia to Hufsmith, 51,500 into Houston
" " " " " "	31,700	From East Texas
" " " " " "	26,000	From Hastings Field
Shell to Houston	45,000	From East Texas and South Texas
" " "	12,000	From South Texas
Sinclair to Houston	170,000	From Oklahoma, North Texas and East Texas
Texas-New Mexico to Houston	69,000	From New Mexico and West Texas areas
Total	1,100,100	
Into Miscellaneous Texas Water Terminals		
Atlantic (Oak Point on Intracoastal Canal)	12,000	From South Texas (Japhet and Jergens, Chambers County)
Republic (Port Lavaca)	5,000	From South Texas (Heyser, Calhoun County)
Service (High Island)	45,000	South Texas (High Island)
Southern (Port Comfort on Lavaca Bay)	9,600	South Texas (Jackson and Calhoun Counties)
" (Lamar Terminal-Rockport)	9,600	From South Texas (Aransas County)
Total	81,200	

CRUDE OIL PIPELINE CAPACITIES INTO INLAND REFINERIES

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
Into El Dorado, Arkansas		
Service	45,000	North Louisiana and Arkansas
Lion	31,000	Gathering System
Total	76,000	
Into Stephens, Arkansas		
Berry	3,700	Gathering System
Into Waterloo, Arkansas		
Berry	1,600	Gathering System
Into Big Spring, Colorado City, Texas		
Cosden	43,000	Gathering System
Into Borger-Amarillo, Texas Area		
Phillips (Borger)	72,500	From West Texas (Odessa)
Texas (Amarillo)	19,500	From Texas Panhandle (Wheeler, LeFors, Kings Mill)
Total	92,000	
Into El Paso, Texas		
Chevron	80,000	From New Mexico and West Texas
Into Fort Worth, Texas		
Premier	8,200	
Into Longview, Texas		
Premier	5,000	
Into Tyler and Mt. Pleasant, Texas		
McMurrey	18,000	Gathering System
American Liberty	23,000	Gathering System
Total	41,000	

CRUDE OIL PIPELINE CAPACITIES
STATE OF NEW MEXICO

COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
Atlantic	28,000	Hobbs to Midland, Texas (Includes movements of West Texas crude from Gaines County)
Basin System	(350,000)	Jal into Midland, Texas
Continental	29,000	Maljamar area to Artesia, New Mexico
Mobil	36,000	From Crossroads to Seminole, Texas
Shell	115,000	Hobbs to Jal, New Mexico (Includes movements of West Texas crude from Wasson)
Service	60,000	Artesia and Gathering System
Texas-New Mexico	75,000	Lea and Eddy Counties into Crane, Texas; Aneth, Utah to Jal, New Mexico
Total	343,000	

( ) Indicates lines for which capacities are included in other movements.

CRUDE OIL PIPELINE CAPACITIES
OUT OF DISTRICT III AREAS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	DESTINATION	REMARKS
Alabama			
Citmoco	20,000	Mobile	
South Louisiana			
Atlantic	10,000	Atreco (Port Arthur)	
Continental	5,800	Lake Charles	From Ville Platte
"	2,900	" "	From Vinton and Cooley
Gulf	30,000	Lucas-Port Arthur	From Port Neches, Orange and Vinton
"	132,000	Ostrica Terminal	Gathering system from Timbalier Bay and adjacent areas
Humble	140,500	Baton Rouge	From Southwest Louisiana
"	200,000	" "	" " "
Pure	7,000	Mermentau River Terminal	5,000 from Gueydon, 2,000 DeLacroix
"	3,000	Chalkey Intracoastal Canal	
Shell	165,000	Norco	From South Louisiana
Texas	50,000	Pilottown Dock	
"	298,000	Port Neches and Port Arthur	
Total	1,044,200		
North Louisiana, Arkansas and Mississippi			
Arkansas	25,000	To East Texas Main Line	System connection in East Texas
Ashland	77,000	Delhi-Mid-Valley Pipe Line	From Liberty, Mississippi
Hess	42,000	Mobile, Alabama	From Eucutta and Lumberton, Mississippi
Humble	140,000	Baton Rouge	From North Louisiana and East Texas
"	95,000	" "	From Mississippi
Service	45,000	El Dorado, Arkansas	From North Louisiana and Arkansas
Total	424,000		
Panhandle			
Humble	39,700	Into Comyn	Increases to 66,000 capacity at Hawley
Phillips	38,400	District II	
Total	78,100		

CRUDE OIL PIPELINE CAPACITIES
OUT OF DISTRICT III AREAS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	DESTINATION	REMARKS
East Texas			
Arkansas	(25,000)	Longview area	From Louisiana and Arkansas - Connects with East Texas Main Line System (See North Louisiana and Arkansas)
Atlantic	22,000	Atreco (Port Arthur	
Gulf	59,500	District II - Chambers, Oklahoma	On Gulf System to Tulsa and East
"	80,000	Gulf Coast - Port Arthur	
Humble	45,000	Shreveport	
"	27,900	Gulf Coast - Houston	
Mid-Valley	200,000	District II - Lima	
Mobil	35,000	Gulf Coast or District II	Into Corsicana
Pure	78,000	Nederland	
Service	31,700	Texas City	
Shell	36,000	Houston	
Sinclair	40,000	"	Ties into N. Texas-Houston line
East Texas Main Line System	62,000	Sour Lake and Port Arthur	
Total	717,100		
North and West Central Texas			
Bell	26,500	District II	Grandfield, Oklahoma
Continental	44,000	" "	Into Oklahoma City from Wichita Falls
Mobil	80,000	Beaumont via Corsicana	
Service	70,200	District II	70,200 Bowie to Healdton
"	51,500	Texas City	38,000 capacity Mexia south to Hufsmith; 51,500 out of Hufsmith
Sinclair	170,000	Houston	East Texas line comes into this main line with 40,000 capacity at Teaque Station, 170,000 capacity below Teaque
"	65,000	District II	Jacksboro and Muenster thence North
Texas	17,700	" "	From Covey
"	56,000	Port Arthur	From Wichita Falls
Total	580,900		

( ) Indicates lines for which capacities are included in other movements.

CRUDE OIL PIPELINE CAPACITIES
OUT OF DISTRICT III AREAS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	DESTINATION	REMARKS
South Texas			
Atlantic	12,000	Texas City area (Oak Pt.)	Barged to Corpus Christi area
Gulf	35,000	Port Arthur	From Almeda-Lynchburg area
Humble	118,000	Baytown	From fields in South Texas area
"	31,000	Texas City	" " " " " "
Mobil	49,000	Beaumont	Includes capacity from S.W. Texas and Luling
Phillips	44,100	Sweeney	From Chocolate Bayou and Damon
Republic	5,000	Port Lavaca	
Service	26,000	Texas City	From Hastings
Shell	12,000	Houston	From Sheridan area
Sun	7,000	Gladys	From Orange
"	48,000	"	From Seabreeze, Chambers County
"	37,000	Sour Lake	From Conroe-Cotton Lake
"	50,000	District II	Connects w/Mid-Valley at Longview
Texas	99,000	Houston	Into East Houston from West Columbia area. Capacity from East Houston, where N. Texas line comes into Port Arthur 159,500
"	21,600	Texas City	From West Columbia area
Total	594,700		
Southwest Texas			
Atlantic	74,000	Harbor Island	From Refugio area
Continental	20,000	Port Isabel	" " "
Humble	68,000	Ingleside)	
"	124,000	Corpus Christi)	From Benavides and Borregas. 104,000 Borregas to Viola; 72,000 Viola to Ingleside; 35,600 Ingleside to Viola; 124,000 Viola to Corpus Christi
Mobil	(14,500)	Beaumont	Tilden to Luling. (See South Texas)
"	14,000	Corpus Christi	From Tilden
"	27,000	" "	From Seelig
Republic	15,000	" "	From San Patricio County
"	8,000	" "	From E. White Point
"	10,000	" "	Benavides, Magnolia City and Agua Dulce
Service	14,500	Port Isabel	From Willamar
Southern	28,600	Corpus Christi	R. King and F. Stratton-Nueces County
"	28,600	" "	Luby and London Gin
"	21,600	" "	San Patricio County
Sun	60,000	Ingleside	From Seeligson-Agua Dulce
Suntide	37,500	Corpus Christi	Victoria Co. 13,500, Pettus 17,500
Texas	12,000	" "	From Saxet
Total	562,800		

( ) Indicates lines for which capacities are included in other movements.

CRUDE OIL PIPELINE CAPACITIES
OUT OF DISTRICT III AREAS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	DESTINATION	REMARKS
West Texas-New Mexico			
Atlantic	46,000	Corpus Christi	
"	48,000	Port Arthur	
Basin	350,000	District II-Cushing area	385,000 capacity out of Wichita Falls
Chevron	94,000	El Paso	
Humble	48,000	Baytown via Comyn	
"	12,000	Ingleside	
"	103,000	Baytown via Kemper-Satsuma	
Mesa System and West Texas Gulf	440,000	Port Arthur or District II	335,000 capacity Wortham to Nederland; 140,000 to Mid-Valley at Longview
Mobil	250,000	Beaumont or District II into Corsicana	
Phillips	72,500	Borger	
Rancho	266,000	Houston-Texas City area	
Service	169,000	District II	Into Drumright main line from Slaughter
"	26,700	Texas City or District II	From Cogdell to Bowie
Shell	32,800	District II	Into Cushing area
Texas-New Mexico	69,000	Houston	
Total	2,027,000		

CRUDE OIL PIPELINE CAPACITIES
LINES CONNECTING DISTRICT III WITH ADJACENT DISTRICTS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
From District III into District II		
Basin	385,000	Connects with Ozark System at Cushing, Oklahoma
Bell	26,500	To Grandfield, Oklahoma
Continental	44,000	Wichita Falls, Texas to Oklahoma City, Oklahoma
Gulf	59,500	Chambers, Oklahoma on Gulf System to Tulsa and East
Mobil	158,000	To Patoka, Illinois
Mid-Valley	240,000	Longview, Texas to Lima, Ohio, where it connects with Buckeye Pipe Line
Phillips	38,400	Borger to Yale, Oklahoma, then Kansas City, Kansas
Service	169,000	Slaughter, W. Texas to Drumright, Oklahoma, thence to Whiting, Indiana
"	70,200	North Texas to Drumright, Oklahoma
Shell	32,800	To Wood River, Illinois, from McCamey, Texas
Sinclair	44,000	From Muenster, N. Texas areas to Ringling, Oklahoma
Texas	17,700	Covey, Texas, to Seminole, Oklahoma. Connects with Texaco-Cities Service Pipe Line to Chicago
Total	1,285,100	
Into District III from District II		
Mobil	32,000	From Addington, Oklahoma
Sinclair	24,000	From Panova, Oklahoma to Jacksboro, Texas
Total	56,000	
Into District III from District IV		
Texas-New Mexico	75,000	From Aneth, Utah to Jal, New Mexico

U. S. CRUDE OIL FLOW
CRUDE OIL PIPELINE CAPACITIES AND MOVEMENTS
BETWEEN PRODUCING/REFINING AREAS

Expressed in Thousands of Barrels per day

	IN December 1966 Capacity	OUT December 1966 Capacity
West Texas-New Mexico		
Corpus Christi	-	58
East Central Texas Area	-	690
El Paso	-	80
Houston-Port Arthur	-	486
North Texas	-	405
Oklahoma	-	169
Panhandle	-	73
Total	-	1,961
East Central Texas		
Houston-Port Arthur	50	1,146
Louisiana	25	245
North Texas	294	-
Oklahoma	-	60
Patoka-Wood River	-	158
West Texas	690	-
Total	1,059	1,609
North Texas		
East Central Texas Area	-	294
Oklahoma	56	642
West Texas	405	-
Total	461	936
Lower Gulf Coast (Corpus Christi & Brownsville)		
West Texas	58	-
Houston-Port Arthur Area		
East Central Texas Area	1,146	50
Louisiana	308	168
West Texas-New Mexico	486	-
Total	1,940	218
Louisiana		
East Central Texas Area	75	-
Houston-Port Arthur	168	308
Mississippi	95	-
Total	338	308
Mississippi		
Louisiana	-	95
Oklahoma		
East Central Texas Area	60	-
Kansas	44	644
North Texas	642	56
Patoka-Wood River	-	419
West Texas-New Mexico	169	-
Total	915	1,119

	IN December 1966 Capacity	OUT December 1966 Capacity
Kansas-Missouri		
Oklahoma	644	44
Rocky Mountain Area	268	-
Wood River-Patoka & Chicago Areas	-	641
Total	912	685
Rocky Mountain Area		
Kansas	-	268
Wood River-Patoka Area	-	114
Total	-	382
Wood River-Patoka Area		
Chicago Area	-	163
East Central Texas Area	158	-
Kansas	104	-
Lawrenceville	-	87
Lima	-	368
Oklahoma	419	-
Rocky Mountain Area	114	-
Total	795	618
Lawrenceville	87	-
Chicago Area		
Kansas	641	-
Lima	-	111
Wood River-Patoka Area	163	-
Total	804	111
Lima Area		
Central Michigan	-	18
Detroit Area	-	120
Louisiana-Mississippi Area	240	-
Toledo	-	330
Wood River-Patoka Area	368	-
Total	608	468
Cygnet Area		
Chicago Area	100	-
Detroit Area		
Lima Area	93	-
Michigan (Other)		
Lima Area	18	-

CRUDE OIL PIPELINE CAPACITIES AND MOVEMENTS BETWEEN PRODUCING/REFINING AREAS

(IN THOUSANDS OF BARRELS PER DAY - DECEMBER 1986)

LOCATION AND COMPANY	CAPACITY AVAILABLE TOTAL	PERMIAN/WEST TEXAS NEW MEXICO	LOUISIANA AREA	CORPUS CHRISTI	CRANFILLS GAP	EAST TEXAS	JACKSONVILLE/TYLER	KILGORE AREA	BEAUMONT/PORT ARTHUR	N. TEXAS	NORTH LOUISIANA	PORT ISABEL-BROWNSVILLE	REFUGIO AREA	LAKE CHARLES	HOUSTON AREA	MIDLAND/ODESSA	MIDDLE KANSAS	LIMA AUTA-TEXAS	NEW ORLEANS
PERMIAN AREA																			
Texas-New Mexico	75	75																	
WEST TEXAS-NEW MEXICO																			
Atlantic	94								46										48
Daly	200																		
Humble	113								13										100
Mobil	30																		
Mobil	250		250																
Phillips	90																		42
Sinclair	73	73																	
Texaco	266																		266
Service	196								169										27
Shell	29																		29
Texas-New Mexico	69																		69
West Texas Gulf	440		440																
TOTAL	1,777	73	690	58	168		30		93	630		405							
PANHANDLE																			
Humble	99																99		
Phillips	36																		
TOTAL	135				36				99										
CORPUS CHRISTI AREA																			
Mobil	406																		
Service	38																		
Sinclair	170																		
Texas	56																		
West Texas Gulf	475																		
TOTAL	1,145																		
NORTH TEXAS																			
Basin	305																		
Bell	27																		
Continental	44																		
Mobil	80																		
Service	108																		
Shell	33																		
Sinclair	165																		
Texas	74																		
TOTAL	836																		
EAST TEXAS																			
Atlantic	27																		
East Texas Main Line	62																		
Gulf	140																		
Humble	57																		
Mobil	33																		
Mid-Valley	200																		
Plato	62																		
Service	32																		
Shell	36																		
Sinclair	80																		
TOTAL	729																		
SOUTH TEXAS & GULF COAST																			
Gulf	33																		
Humble	221																		
Mobil	69																		
Phillips	44																		
Service	26																		
Shell	32																		
Sun	42																		
Texas	160																		
TOTAL	627																		
CORPUS CHRISTI AREA																			
Humble	85																		
EASTERN TEXAS																			
Atlantic	26																		
Continental	25																		
Humble	13																		
Humble	116																		
Mobil	41																		
Republic	23																		
Service	15																		
Sinclair	19																		
Sun	68																		
Service	18																		
Texas	12																		
TOTAL	351																		
CENTRAL TEXAS																			
Humble	48																		
HOUSTON-PORT ARTHUR																			
Cities Service	159																		
Sun	50																		
TOTAL	209																		
NORTH LOUISIANA, ARKANSAS and MISSISSIPPI																			
Arkansas	25																		
Knox	42																		
Humble	235																		
Mid-Valley	240																		
TOTAL	542																		
SOUTH LOUISIANA																			
Atlantic	18																		
Cal-Ky	193																		
Continental	29																		
Cities Service	26																		
Humble	360																		
Shell	185																		
Texas	296																		
TOTAL	1,311																		
OKLAHOMA																			
Cimarron	40																		

* Represents increase in capacity in lines collocating in West Texas. We are unable to verify these numbers.

B.5 PAD DISTRICT IV (ROCKY MOUNTAIN REGION)

District IV, consisting of the states of Colorado, Utah, Wyoming, Montana and Idaho, is shown on Appendix Map. Crude oil production exceeds refining capacity in this area. Therefore, in addition to providing crude oil to local refineries, it is partly able to supply the requirements of Districts II and V.

Arapahoe, Platte, Service, and Sterling pipelines have a combined capacity of 453,400 barrels daily for moving crude oil from District IV into District II.

The Texas-New Mexico pipeline extending from Aneth, Utah, District IV to Jal, New Mexico, District III, has a capacity of 75,000 barrels per day.

The Four Corners pipeline is an 80,000 barrel per day line extending from Aneth, Utah, District IV to Los Angeles, California, District V.

The Arapahoe pipeline and the Sterling pipeline have a combined capacity of 52,000 barrels daily for movement of crude from District II to District IV. However, most of this crude ultimately returns to District II.

There are several smaller pipelines that move oil to local refineries or serve as feeder lines to the interdistrict pipelines.

PAD DISTRICT IV

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
Into Denver, Colorado		
Continental	38,000	From Cheyenne, Wyoming
Into Cut Bank, Montana		
Toronto	6,000	
Into Kevin, Montana		
Big West	5,000	From Kevin-Sunburst Field
Into Laurel and Billings, Montana		
Continental	53,000	From Canadian Border
Humble	60,000	From Wyoming. Receives oil from connection with Marathon Pipe Line Company at Silvertip, Montana
Total	113,000	
Into Sunburst, Montana		
Texas	3,000	From Cutbank and Kevin areas
Into Salt Lake City, Utah		
Chevron	72,000	From Rangely, Colorado
Service	38,500	From Iles and Rangely, Colorado and La Barge, Wyoming
Total	110,500	
Into Casper and Glenrock, Wyoming		
Butte	96,000	From Montana and Wyoming
Continental	4,500	From Lance Creek and Big Muddy, connects with Platte at Glenrock, Wyoming
Forest	16,000	From Grieve
Mobil	5,500	From Cole Creek and Big Muddy, Wyoming - Field lines
Platte	84,000	From Big Horn Basin, Wyoming, Wyoming area. 154,000 B/D capacity out of Casper. Connects with Service and Sinclair at Casper
Service	90,000	From Big Horn Basin, Wyoming, Wyoming area
Sinclair	10,000	From Sand Draw and Bairoil, Wyoming
Total	306,000	

PAD DISTRICT IV

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
Into Cheyenne, Wyoming		
Continental	45,000	From Lance Creek and Guernsey, Wyoming
Into Cody, Wyoming		
Marathon	9,000	
Service	8,000	Line idle
Total	17,000	
Into Lovell, Wyoming		
Marathon	2,000	From Byron, Wyoming (disconnected)
Into Newcastle, Wyoming		
Plains	5,500	From Mush Creek-Fiddler Creek-Skull Creek areas and the Clareton Field of Westers County to Lance Creek, Wyoming
Into Sinclair, Wyoming		
Sinclair	28,000	From Casper-Sand Draw, Wyoming area
Into Thermopolis, Wyoming		
Hamilton	11,000	From Hamilton Dome, Wyoming

CRUDE OIL PIPELINE CAPACITIES
LINES CONNECTING DISTRICT IV WITH ADJACENT DISTRICTS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
From District IV to District II		
Arapahoe	105,000	Into Kansas - capacity Schurr to Humboldt, Kansas 129,000 B/D
Platte	154,000	Into Wood River - capacity from Casper, Wyoming to Salisbury, Missouri 154,000 B/D. Capacity from Salisbury to Wood River 114,000. Delivers to Sinclair and Pure at Salisbury for delivery to Chicago area. Delivers to Marathon and Sinclair at Wood River
Service	162,900	Into Laton, Kansas - capacity Laton, Kansas to Freeman, Missouri 231,600 B/D. Delivers into Drumright, Oklahoma, to Whiting, Indiana Line
"	7,500	To Scottsbluff, Nebraska
Sterling	24,000	To Platte at Gurley, Nebraska
Total	453,400	
From District IV to District III		
Texas-New Mexico	75,000	From Aneth, Utah to Jal, New Mexico
From District IV to District V		
Four Corners	80,000	To Los Angeles
Into District IV from District II		
Arapahoe	28,600	To Merino, Colorado from Nebraska Gathering System
Sterling	24,000	From Platte at Gurley to Merino
Total	52,600	
Into District IV from International Boundary		
Continental	53,000	Into Byron Delivery Station, Wyoming from Canadian border to roundup 36,000 B/D from roundup to Billings and Laurel 53,000 B/D

B.6 PAD DISTRICT V (PACIFIC COAST REGION)

The area represented by District V is shown on Appendix Map. The Pacific Coast region is dependent chiefly upon petroleum produced and refined in California. Additional oil is imported from foreign countries or brought in from the Four Corners region.

Oil demands are quite heavy in District V due to the rapidly expanding population and industrial activity.

The intrastate pipeline movement of crude oil in California dominates the transportation situation. There are four pipelines with a combined capacity of 294,000 barrels daily extending from the San Joaquin Valley area to the San Francisco Bay area refineries; two pipelines with an aggregate capacity of 160,000 barrels from the San Joaquin Valley area to Los Angeles refineries; one pipeline with a total capacity of 65,000 barrels daily from the San Joaquin Valley area to the deep water marine terminal at Estero Bay and one pipeline from the San Joaquin Valley area to Avilo with a total capacity of 24,000 barrels per day. There are three pipelines with a combined capacity of 106,500 barrels per day extending from coastal fields to the Los Angeles Basin; one line with a capacity of 30,000 barrels per day from coastal fields to a line connecting the San Joaquin Valley to Los Angeles, and three lines with a total capacity of 127,000 barrels daily running from coastal fields to marine terminals. Pipelines extending from southern California fields to Los Angeles Basin refineries contain an aggregate capacity of 791,900 barrels per day. These local lines are now used only to a limited extent because of decline in production.

The Four Corners Pipe Line Company has a pipeline with a capacity of 80,000 barrels per day from Aneth, Utah, District IV, to Los Angeles, California, District V.

The Kenai Pipe Line Company has a 22-mile line with a capacity of 37,000 barrels daily from Swanson Field, Kenai Peninsula to Nikiski on Cooke Inlet, Alaska. It also has a 100,000 barrel a day line which connects with offshore pipelines in the Cooke Inlet to Nikiski Terminal. The crude oil is shipped in tankers to California.

Trans Mountain Pipeline, extending from Edmonton, Alberta, has a capacity of 220,000 barrels per day into District V and supplies refineries at Ferndale and Anacortes, Washington.

PAD DISTRICT V

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	DECEMBER, 1966 CAPACITY B/D	TOTAL
FROM CANADA -		
To Ferndale and Anacortes, Washington		
Trans Mountain	220,000	220,000
FROM SAN JOAQUIN VALLEY FIELDS, CALIFORNIA -		
To San Francisco Bay Area		
Shell	66,000	
Standard of California	105,000	
Tidewater	45,000	
Union	78,000	
Total		294,000
To Marine Terminals		
Standard of California	65,000	
Union	24,000	
Total		89,000
To Los Angeles Basin		
Mobil	50,000	
Richfield	110,000	
Total		160,000
To Shell's San Joaquin Valley-San Francisco Bay Line		
Vallecitos	(11,000)	
Total from San Joaquin Valley Fields		543,000

( ) Indicates lines for which capacities are included in other movements.

PAD DISTRICT V

CRUDE OIL PIPELINE CAPACITIES

LOCATION AND COMPANY	DECEMBER, 1966 CAPACITY B/D	TOTAL
FROM COASTAL FIELDS, CALIFORNIA -		
To Los Angeles Basin		
Mobil	10,500	
Shell	48,000	
Union	48,000	
Total		106,500
To Marine Terminals		
Mobil	60,000	
Tidewater	43,000	
Union	24,000	
Total		127,000
To Union's San Joaquin Valley-San Francisco Bay Lines		
Union	28,800	28,800
To Richfield's San Joaquin Valley-Los Angeles Basin Line		
Texaco	30,000	30,000
Total from Coastal Fields		292,300
FROM SOUTHERN CALIFORNIA FIELDS -		
To Los Angeles Basin Refineries		
Golden Eagle	18,000	
Mobil	60,500	
Richfield	209,000	
Shell	102,000	
Standard of California	133,000	
Texaco	51,400	
Tidewater	48,000	
Union	100,000	
Wilshire	70,000	
Total from Southern California Fields		791,900

CRUDE OIL PIPELINE CAPACITIES
LINES CONNECTING DISTRICT V WITH ADJACENT DISTRICTS

LOCATION AND COMPANY	AVERAGE ANNUAL CAPACITY B/D DECEMBER 1966	REMARKS
Into District V from District IV		
Four Corners	80,000	To Los Angeles, California
Into District V from International Boundary		
Trans Mountain	220,000	From Canada
From District V into Adjacent Districts		
None		

C. PRODUCTS PIPELINES

The products pipeline industry has made great advances in the past few years in all phases of design, construction, and operation. Many miles of new pipelines have been constructed throughout the United States. The construction of more products pipelines has led and will continue to lead to changes in the crude oil and products distribution patterns by concentrating refining in areas close to the sources of supply and the closing of small, outdated and submarginal refineries. Pipeline transportation is a proven means of safe, economical, and reliable movement of products from the refineries to the consuming areas. It is obvious that when population density increases in various areas not served by pipelines at the present time, lines will be constructed into these areas by extensions and expansions of existing systems or the construction of completely new lines.

Techniques for the maintenance of product integrity are constantly improving and it is a relatively simple matter to transport the full range of products to distant distribution centers with minimal contamination.

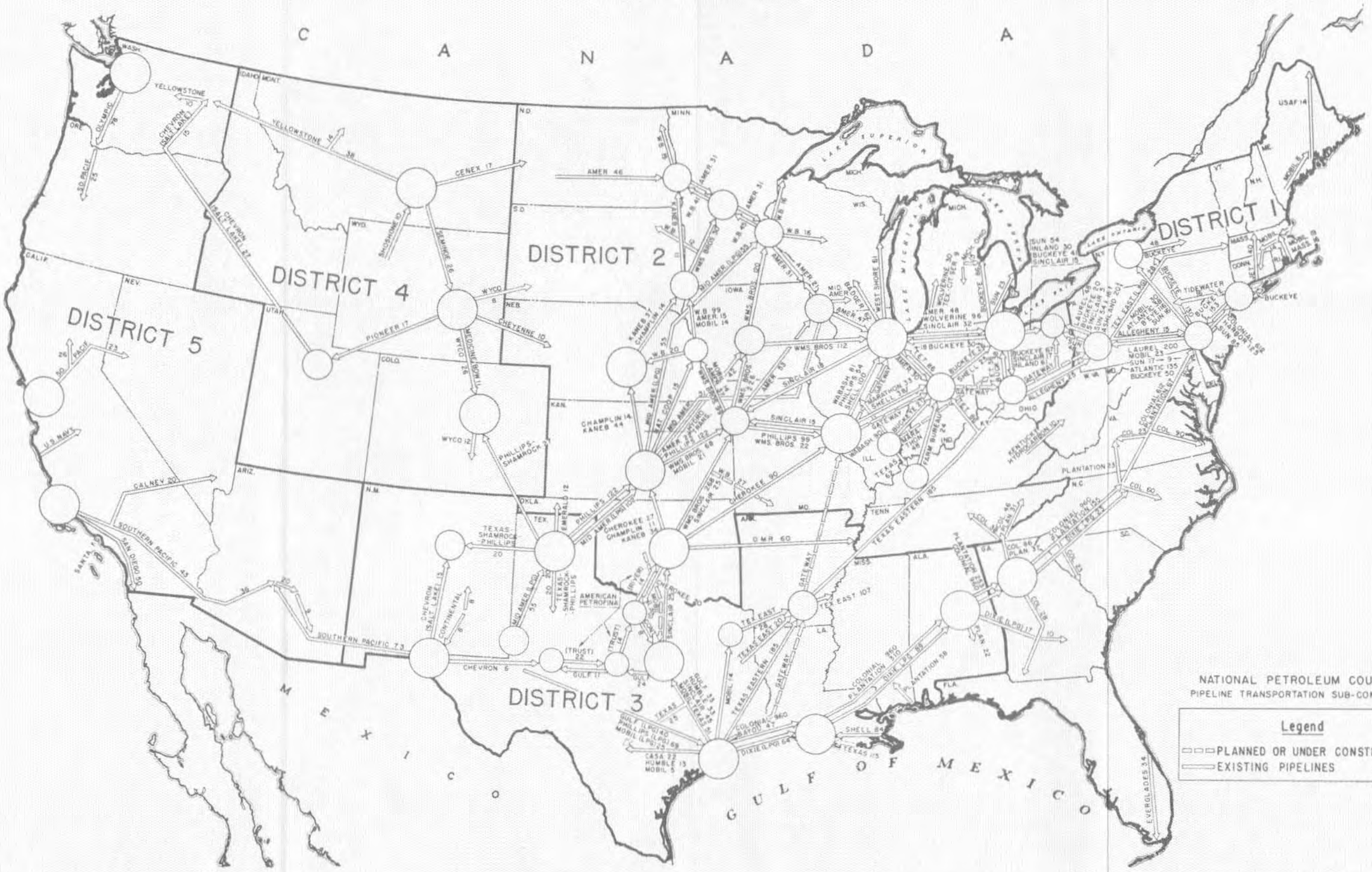
The trend in products pipeline construction is definitely toward larger diameter, jointly owned lines as witnessed by the Colonial Pipeline (36"-30") and Olympic (20"-16") systems in recent years.

It seems reasonable to anticipate even greater growth and utilization of products pipelines in the years ahead.

PRODUCT PIPELINE CAPACITIES

(THOUSANDS OF BARRELS DAILY)

as of December 31, 1966



C.2 PAD DISTRICT I (EAST COAST REGION)

District I comprises the 17 states shown on Appendix Map. Products pipelines in this district fall into three main groups. The Northern group consists of pipelines in New England that extend from the Coast to large inland cities such as Worcester and Springfield, Massachusetts; Hartford, Connecticut; and Bangor, Maine.

The Central group distributes products generally westward throughout an area bounded on the north by Buffalo, Rochester and Syracuse, New York; on the west by Pittsburgh, Pennsylvania, and Cleveland, Ohio; on the south by Pittsburgh and Philadelphia, Pennsylvania, and on the east by Bayonne, Linden and Newark, New Jersey. The Central group, serving most of the important cities of eastern United States, consists of Laurel, Buckeye, Atlantic, Mobil and Sun pipeline companies, and Allegheny and Texas Eastern LPG lines. The Central group pipelines originate at two principal refining centers; the New York area, and the Philadelphia complex. Three pipelines run from the Philadelphia area to the New York area - the Harbor system, Colonial and Sun pipeline companies.

The Southern group consists of the Plantation and Colonial pipelines. The Plantation pipeline originates at Baton Rouge Louisiana, in District III and is fed from refineries by connecting lines from Houston, Texas, New Orleans and Baton Rouge, Louisiana, and Pascagoula, Mississippi. The Colonial pipeline originates in the Gulf Coast refining areas of Houston, Beaumont and Port Arthur, Texas, and Lake Charles and Baton Rouge, Louisiana, and has injections at Collins, Mississippi, all in District III. These two lines serve Georgia, South Carolina, North Carolina, Virginia and Washington, D. C. Colonial extends through Maryland, Pennsylvania and New Jersey into the Linden, Bayonne, and the Newark area, with connections to Laurel at Booth Station in Pennsylvania and to the Buckeye system at Linden, New Jersey.

The Capacity of interdistrict pipeline movements are as follows:

Into District I from District II	74,000 B/D	Products
	32,000 B/D	LPG
Into District I from District III	1,213,000 B/D	Products
	79,700 B/D	LPG
Into District II from District I	225,000 B/D	Products
	-0-	LPG

Principal new products lines to be constructed or expansion of existing systems that are either under construction or are planned are as follows:

Buckeye: Linden and Long Island City and J.F.K. International Airport (dual line)		12"	192,000 B/D
Buckeye: Macungie, Pennsylvania, to Dupont, Pennsylvania	60 miles	16"	130,000 B/D
Jet Lines: New Haven, Connecticut, to Westover AFB	expansion to		70,000 B/D

Colonial Pipe Line Company

Planned expansion to be completed by November 1, 1967

Houston to Greensboro	expansion to	1,092,000 B/D
Greensboro to Baltimore (Capacity to Linden remains 612,000 B/D)	expansion to	768,000 B/D

Planned expansion to be completed by late summer 1968

Houston to Greensboro (Capacity Greensboro to Baltimore will not be changed)	expansion to	1,152,000 B/D
Baltimore to Philadelphia	expansion to	768,000 B/D
Philadelphia to Linden	expansion to	732,000 B/D

PRINCIPAL REFINED PRODUCTS PIPE LINES

THROUGHPUT CAPACITIES FOR DEC., 1966

P A D DISTRICT I

NOTE - Figures indicate capacity in thousands of barrels per calendar day.

PAD DISTRICT I

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

		AVERAGE ANNUAL CAPACITY B/D	REMARKS
CONNECTICUT -			
New Haven			
Jet		40,000	To Hartford, Connecticut, and Springfield, Massachusetts
FLORIDA -			
Port Everglades			
Everglades		34,000	To Miami International Airport
MAINE -			
Portland			
Mobil		9,400	To Bangor, Maine. Capacity to Hallowell 7,500; to Bangor 4,700
Searsport			
U.S. Airforce		14,400	To Loring AFB at Limestone, Maine, and Dow AFB
MASSACHUSETTS -			
Boston			
Massachusetts		30,000	To Waltham and Dracut (8,000), Mass.
Fall River			
Massachusetts		16,000	To West Boylston and Waltham, Mass.
NEW JERSEY -			
Changewater			
Tidewater		18,000	To Bayonne, New Jersey
Linden Area			
Buckeye		153,000	To Macungie and Pittsburgh, Pennsylvania, Cleveland, Ohio, and Rochester, Syracuse and Utica, New York
Tidewater (Bayonne)		18,000	To South Plainsfield, New Jersey, and Hudsondale and Pennsdale, Pennsylvania (1-6" line idle from Hudsondale to Pennsdale and 2-6" lines idle from Pennsdale to Rixford, Pennsylvania)
	Total	171,000	
Paulsboro			
Mobil		6,000	To Gibson Point, New Jersey
"		48,000	To Malvern, Pennsylvania; 23,000 to Midland, Pennsylvania; 21,600 to Buffalo and Syracuse, New York
	Total	54,000	
NEW YORK -			
Buffalo			
Mobil		15,700	To Rochester and Syracuse, New York. Capacity to Syracuse 8,400

PAD DISTRICT I

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
PENNSYLVANIA -		
Freedom		
Ashland	20,000	To Findlay, Ohio, with Spur to Canton (line reversible Freedom to Canton)
Greensburg		
TET (LPG)	27,500	To Albany, New York (Selkirk Terminal) via Watkins Glen Terminal (34,200 Watkins Glen to Selkirk)
Philadelphia Area		
Atlantic (Philadelphia)	135,000	To Pittsburgh, Fullerton (Allentown) and Kingston (Wilkes-Barre), Pennsylvania, and Rochester and Tonawanda, New York
Harbor (Woodbury)	125,000	To Linden, Bayonne, New Jersey, and Gulf Port, New York
Laurel (Sinclair-Chelsea, Gulf-Girard Point, Texas-Eagle Point and connection with Colonial)	200,000	To Pittsburgh, Pennsylvania, and Cleveland, Ohio
Sinclair (Marcus Hook)	44,400	To North Philadelphia and Woodbury
Sun (Marcus Hook)	84,800	To Newark, New Jersey
" " "	34,000	To Syracuse, New York, and Cleveland, Ohio, via Icedale, Pennsylvania
Total	623,200	
Scheafferstown		
Sinclair (from Laurel Pipeline)	14,000	To York, Pennsylvania
Warren		
United Refining Company	6,000	To Bradford, Pennsylvania
RHODE ISLAND -		
Providence		
Mobil	19,000	To Springfield and Worcester, Massachusetts, and Hartford, Conn.

PETROLEUM PRODUCTS PIPELINE CAPACITIES
LINES CONNECTING DISTRICT I WITH ADJACENT DISTRICTS
YEAR-END 1966

		AVERAGE ANNUAL CAPACITY B/D	REMARKS
Into District I from District II			
Allegheny (LPG)		25,000	To Greensburg, Pennsylvania
Ashland		20,000	To Freedom, Pennsylvania (reversible line between Canton and Freedom)
Kentucky Hydrocarbons (LPG)		7,000	To Institute, Virginia
Sun		54,000	To Pittsburgh, Pennsylvania
	Total	106,000	
Into District I from District III			
Colonial		960,000	To Atlanta, Georgia
Dixie (LPG)		62,400	To Milner, Georgia
" "		17,300	To Albany, Georgia
Plantation		253,000	To Bremen, Georgia
	Total	1,292,700	
From District I into District II			
Ashland		20,000	To Canton and Findlay, Ohio (reversible between Canton and Freedom, Penna.)
Buckeye		20,000	To Rogers Junction, Ohio
Colonial		46,000	To Chattanooga and Knoxville, Tennessee
"		38,000	To Chattanooga and Nashville, Tennessee
Laurel		48,000	To Cleveland, Ohio
Plantation		36,500	To Chattanooga and Knoxville, Tennessee
Sun		16,500	To Youngstown, Ohio
	Total	225,000	

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIBUTION TERMINALS

(EXPESSED IN THOUSANDS OF BARRELS PER CALENDAR DAY)

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AIRFORCE PIPELINE	ALLEGHENY (LPG)	ASHLAND	ATLANTIC	BUCKEYE	COLONIAL	DIXIE (LPG)	EVERGLADES	HARBOR	JET LINES	KENTUCKY HYDRO-CARBONS (LPG)	LAUREL	MOBIL	PLANTATION	MASSACHUSETTS	SINCLAIR	SUN	TEXAS EASTERN TRANSMISSION (LPG)	TIDEWATER	UNITED REFINING
CONNECTICUT																						
Hartford	Hartford	47										40			7							
DELAWARE																						
Marcus Hook	New Castle	612						612														
FLORIDA																						
Miami Int'l Airport	Dade	34								34												
GEORGIA																						
Albany	Dougherty	45						28				17										
Alma	Bacon	10										10										
Americus	Sumter	28						28														
Athens	Clarke	1165						960								205						
Atlanta	Fulton	1180						960								220						
Atlanta Air Port	Fulton	19														19						
Augusta	Richmond	20						20														
Bainbridge	Decatur	28						28														
Bremen	Haralson	253														253						
Columbus	Muscogee	9														9						
Griffin	Spalding	28						28														
Macon	Bibb	35						28								7						
Milner	Lamar	62							62													
Rome	Floyd	86						86														
MAINE																						
Auburn	Androscoggin	9														9						
Bangor	Penobscot	5														5						
Dow AFB	Penobscot	14						14														
Hallowell	Kennebec	8														8						
Loring	Aroostock	14						14														
MARYLAND & WASHINGTON D.C.																						
Baltimore	Baltimore	111						111														
Finksburg	Baltimore	7						7														
Washington	D.C.	74						13								61						
MASSACHUSETTS																						
Dracut	Middlesex	8														8						
Springfield	Hampden	54						40								14						
W. Boylston	Worcester	15														15						
Westover AFB	Hampden	30						30														
Worcester	Worcester	5														5						
Waltham	Suffolk	15														15						
NEW JERSEY																						
Bayonne	Hudson	294						156		120							18					
Carteret	Middlesex	312						312														
Changewater	Warren	18															18					
Eagle Point & Gloucester	Camden	60						60														
Elizabeth	Union	156						156														
Flemington	Hunterdon	153						153														
Linden	Union	737						612		125												
Newark	Essex	397						312								85						
Paulsboro	Gloucester	60						60														
Pennsauken & Petty Island	Burlington	33						33														
Port Socony	Middlesex	156						156														
South Plainfield	Middlesex	18															18					
Trenton	Mercer	72						72														
Woodbury	Gloucester	612						612														
NEW YORK																						
Albany (Selkirk)	Albany	34															34					
Batavia	Genesee	16														16						
Bath	Steuben	38						38														
Big Flats	Chemung	38						38														
Binghampton	Broome	143						116							11		16					
Brewerton	Oswego	77						77														
Caledonia	Livingston	48						46														
Cortland	Cortland	16															16					
Dewitt	Onondaga	50						50														
Elmira	Erie	2														2						
Geneva	Ontario	58						48								10						
Ithaca	Tompkins	1														1						
JFK Int'l Airport	Brooklyn	168						168														
Long Island City	Queens	168						168														
Oneonta	Otsego	34															34					
Rochester	Monroe	98						38	46							14						
Rome	Oneida	21						21														
Staten Island	Richmond	156						156														
Syracuse	Onondaga	101						77							8		16					
Tonawanda	Erie	25						25														
Utica	Oneida	48						48														
Verona	Madison	55						55														
Watkins Glen	Schuyler	28															28					
Wayland	Steuben	38						38														
Weedsport	Cayuga	8														8						
NORTH CAROLINA																						
Charlotte	Mecklenberg	1150						960								190						
Fayetteville	Cumberland	21						21														
Greensboro	Guilford	1115						960								155						
Raleigh (Apex)	Wake	61						38	23													
Salisbury	Rowan	155														155						
Selma	Johnston	60						60														
PENNSYLVANIA																						
Aliquippa	Beaver	150										150										
Allegheny	Allegheny	70						23								47						
Allentown	Lehigh	171						37	116							18						
Altoona	Blair	33						23								10						
Barnesville	Schuylkill	12						12														
Bradford	McKean	6															6					
Booth	Delaware	612						612														
Cessna	Bedford	17															17					
Chamlersburg	Franklin	17															17					
Chester (Chelsea)	Delaware	15						15														
Coraopolis	Allegheny	184						34								150						
Delmont	Westmoreland	173						23								150						
Du Bois	Clearfield	28															28					
Duncannon	Perry	47						47														
Duncansville	Blair	184										173	11									
Dupont	Luzerne	116						116														
Eagle	Chester	15						15														
East Freedom	Blair	34						34														
Eldorado	Blair	150										150										
Exeter	Luzerne	29													13		16					
Exton	Chester	335						135				200										
Freedom	Beaver	20						26														
Gibson Point	Philadelphia	6														6						
Greensburg	Westmoreland	192						25				150					17					
Harrisburg	Dauphin	226										200	5				17					
Hudsondale	Carbon	16															16					
Irwin	Westmoreland	8														8						
Icedale	Chester	34															34					
Indianola	Indiana	34						34														
Inglenook	Dauphin	50						50														
Johnstown	Cambria	32						23								9						
Kingston	Luzerne	7						7														
Lancaster	Lancaster	54													23		14	17				

C.3 PAD DISTRICT II (MIDWEST AND MID-CONTINENT REGION)

District II consists of the fifteen states depicted on the Appendix Map. The greatest concentration of products pipelines is found in the midwestern states of this district. The more important lines extend between the Chicago, St. Louis, Kansas City, and Tulsa-Ponca City refinery areas and serve most of the important cities throughout the entire territory. The most extensive systems are those owned by the American Oil Company, Williams Brothers Pipeline Company, Wabash Pipe Line Company, Cherokee Pipe Line Company, Phillips Pipe Line Company, Shell Oil Company, Kaneb Pipe Line Company, Texas Eastern Transmission Corporation, Buckeye Pipe Line Company and Sinclair Pipe Line Company. The Plantation and Colonial pipeline companies which serve the southeastern states project into Tennessee, serving Chattanooga, Knoxville, and Nashville. In addition to these products lines, Mid-America Pipe Line Company, Allegheny Pipe Line Company and Hydrocarbon Transportation, Inc., transport LPG products throughout this district. The heavy demands for refined products in District II make it necessary to move supplies into the district from adjacent districts. The capacity of these interdistrict pipeline movements are as follows:

Into District II from District III	361,100 B/D	Products
	102,000 B/D	LPG
Into District II from District I	225,000 B/D	Products
	-0-	LPG
Into District II from District IV	34,600 B/D	Products
	-0-	LPG
Into District II from International Boundary	7,500 B/D	Products
	-0-	LPG
From District II into District I	74,000 B/D	Products
	32,000 B/D	LPG
From District II into District III	80,400 B/D	Products
	-0-	LPG
From District II into International Boundary	22,600 B/D	Products
	-0-	LPG

Principal new products lines either in planning or under construction are as follows:

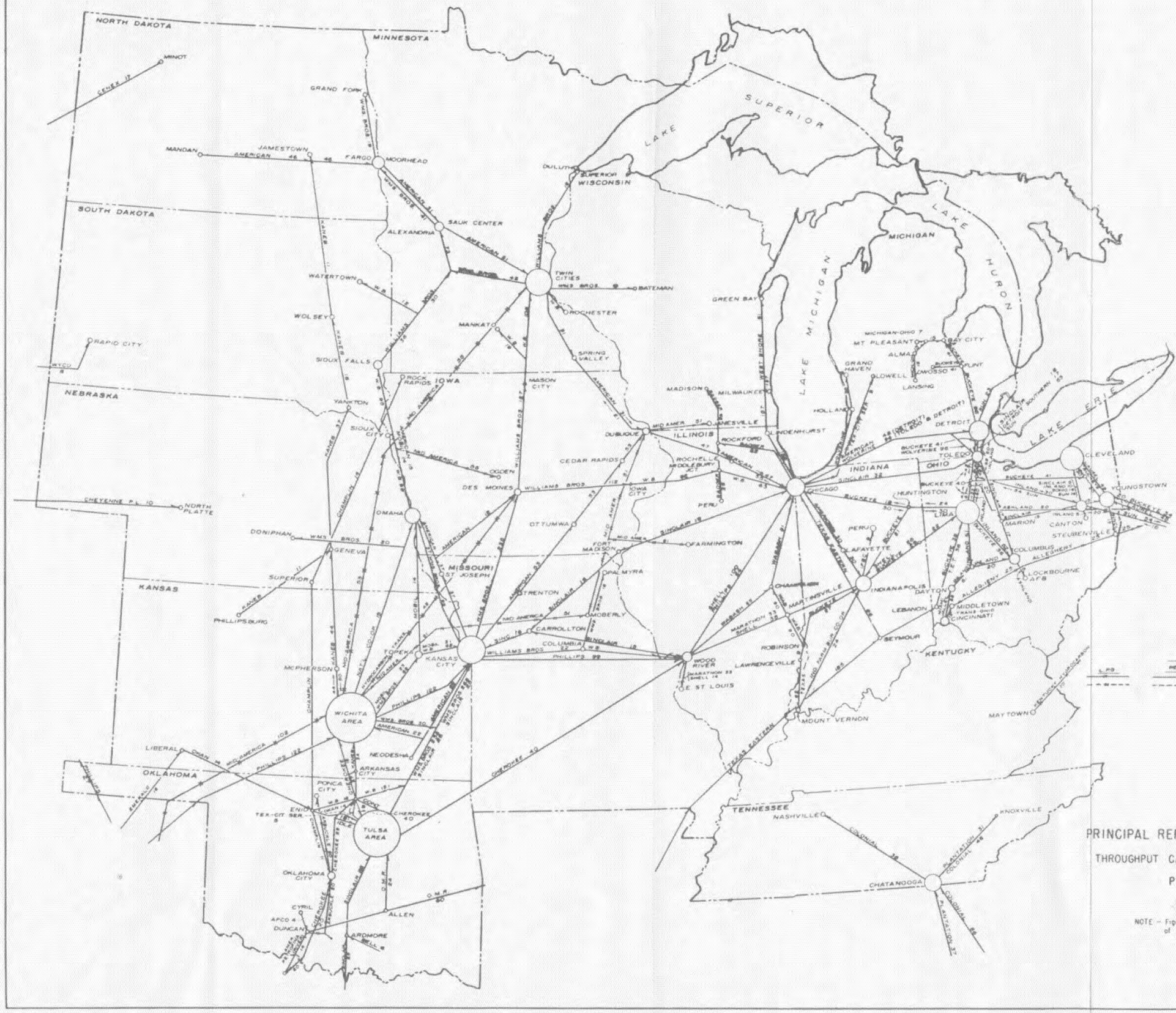
> Mobil Oil Company: New LPG system consisting of two new lines connected into existing lines and extending from the Chitwood plant in Stephens County, Oklahoma, to Beaumont, Texas, of which 54 miles (6-inch, capacity of 13,000 barrels per day) are in District II.

Sun Pipe Line Company: Blawnox, Pennsylvania in District I to Hudson, Ohio; 105 miles, 10-inch, 48,000 barrels per day.

Marathon Pipe Line Company: Martinsville, Illinois to Lima, Ohio (former 225-mile, 10-inch crude line owned by Mobil and purchased by Marathon to be converted to products service and which will be linked through a new 19-mile, 12-inch line with a capacity of 74,000 barrels per day from Marathon's Robinson, Illinois refinery. The converted line will be tied in to the existing Marathon 10-inch product line in the Indianapolis area from Wood River to Indianapolis to provide a 33,000 barrels per day capacity from Wood River to Lima).

Williams Brothers: Extension of existing system: Humboldt, Kansas to Carthage and Springfield, Missouri, 118 miles, 8-inch, 27,000 barrels per day; Bateman to Wassau, Wisconsin, 79 miles, 8-inch, 27,000 barrels per day; Greenleaf to St. Cloud, Minnesota, 44 miles, 8-inch, 27,000 barrels per day.

Hydrocarbon Transportation: Expansion to be completed by November 1967. Will increase capacity between Wichita and Bushton, Kansas to 35,000 barrels per day and between Bushton and Des Moines, Iowa to 62,000 barrels per day.


NORTH DAKOTA
MINNESOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
IOWA
MISSOURI
ILLINOIS
WISCONSIN
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
MINOT
GRAND FORK
MANDAN
JAMESTOWN
FARGO
MOORHEAD
DULUTH
SUPERIOR
SAUK CENTER
ALEXANDRIA
WATERTOWN
WOLSEY
RAPID CITY
SIOUX FALLS
ROCK RAPIDS
YANKTON
SIOUX CITY
TWIN CITIES
BATEMAN
ROCHESTER
MANKATO
SPRING VALLEY
MASON CITY
GREEN BAY
MADISON
MILWAUKEE
JANESVILLE
DUBUQUE
LINDENHURST
ROCKFORD
CEDAR RAPIDS
ROCHELLE
MIDDLEBURY JCT.
CHICAGO
IOWA CITY
DES MOINES
OTTUMWA
FORT MADISON
OFARMINGTON
PERU
OMAHA
DONIPHAN
GENEVA
SUPERIOR
PHILLIPSBURG
ST. JOSEPH
PALMYRA
TRENTON
MOBERLY
CARROLLTON
COLUMBIA
KANSAS CITY
TOPEKA
MCPHERSON
WICHITA AREA
LIBERAL
MEDICINE LODGE
ARKANSAS CITY
PONCA CITY
ENID
TULSA AREA
CHEROKEE
OKLAHOMA CITY
CYRIL
APCO 4
DUNCAN
ALLEN
ARDMORE
CHEYENNE PL. 10
NORTH PLATTE
WOOD RIVER
LAWRENCEVILLE
E. ST. LOUIS
MOUNT VERNON
ROBINSON
CHARLESTON
MARTINSVILLE
INDIANAPOLIS
DAYTON
LEBANON
SEYMOUR
MIDDLETOWN
CINCINNATI
LOCKBOURNE A.F.B.
LAFAYETTE
PERU
HUNTINGTON
LIMA
MARION
CANTON
STEUBENVILLE
COLUMBUS
ALLEGHENY
YOUNGSTOWN
CLEVELAND
TOLEDO
DETROIT
MICHIGAN-OHIO T.
MT. PLEASANT
BAY CITY
ALMA
FLINT
GRAND HAVEN
OWOSSO
LOWELL
LANSING
HOLLAND
MAYTOWN
NASHVILLE
KNOXVILLE
CHATANOOGA
COLONIAL
PLANTATION
TEXAS EASTERN
WILLIAMS BROS
AMERICAN
MID AMERICA
PHILLIPS
CHAMPLIN
CONOCO
SINCLAIR
BUCKEYE
MARATHON
SHELL
OMPL
TEX-CITY SER.
APCO
ABERLAND
INLAND
SUN
LEGEND
REFINED
Existing Lines
Lines Under Construction
PRINCIPAL REFINED PRODUCTS PIPE LINES
THROUGHPUT CAPACITIES FOR DEC., 1966
P A D DISTRICT 2
NOTE -- Figures indicate capacity in thousands of barrels per calendar day

PAD DISTRICT II

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
ILLINOIS AND INDIANA -		
Chicago Area		
American (Whiting, Indiana)	55,000	To Chicago and Rochelle, Illinois
" " "	30,300	To Indianapolis, Indiana
" " "	74,600	To River Rouge, Michigan
Badger System (E. Chicago and Lemont)	71,300	To Chicago, Illinois and Madison, Wis.
Buckeye (E. Chicago)	30,000	To Lima, Ohio and Clermont, Indiana
Sinclair (E. Chicago, Indiana)	17,800	To Fort Madison, Iowa and Kansas City
" " " "	32,000	To Detroit, Michigan; Columbus, Cleveland, Toledo and Steubenville, Ohio
Texaco-Cities Service (LPG)	10,900	To South Bend, Indiana and Lowell, Michigan. Capacity 8,500 B/D to Lowell (line reversible)
Texas (Lockport, Illinois)	23,000	To E. Chicago, Indiana
West Shore (Whiting and Hammond, Indiana; Blue Island and Romeo, Illinois)	188,200	To Green Bay, Wisconsin
Wolverine (Hammond, Indiana)	96,000	To Detroit, Michigan and Toledo, Ohio (30,000 to Grand Haven, Michigan)
Total	629,100	
Robinson and Lawrenceville, Illinois		
Buckeye (Lawrenceville and Robinson)	27,000	To Indianapolis, Indiana and Ohio, and Indiana points via Lima, Ohio
Texas	68,700	To Mount Vernon, Indiana
Wabash (Robinson)	49,440	To Martinsville, Illinois, to points East, and 81,000 to E. Chicago via Champaign, Illinois
Total	145,140	
Middlebury, Illinois		
Badger System	49,200	To Rockford, Illinois and Madison, Wis.
" " (LPG)	12,000	To Rockford, Illinois
Total	61,200	
Mount Vernon, Indiana		
Indiana Farm Bureau Coop. Association	24,000	To Peru, Indiana (9,000 Jolietville to Peru)
Peru, Illinois		
Badger System	26,000	To Rockford, Illinois and Madison, Wis.

PAD DISTRICT II

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
Wood River Area, Illinois		
Marathon (Wood River and E. St. Louis)	33,000	To Clermont and Speedway Terminals in the Indianapolis area
Phillips (E. St. Louis)	54,200	To E. Chicago (included in capacity out of Borger and Kansas City)
Shell	100,000	To E. Chicago, Indiana and Argo, Illinois
"	38,000	To Lima, Ohio
"	14,000	To St. Louis, Missouri
Sinclair (Wood River)	14,800	To Kansas City via Carrollton, Missouri
Wabash (Wood River)	65,000	To E. Chicago, Indiana via Champaign, Ill.
Total	319,300	
KANSAS -		
Kansas City		
Phillips	50,500	To E. St. Louis and E. Chicago
Williams Bros.	99,000	To Doniphan, Nebraska and Grand Forks, N. Dakota via Nebraska City, Nebraska
" "	235,200	To Minneapolis, Rochester and Duluth, Minnesota and Chicago, Illinois via Des Moines, Iowa
Total	384,700	
Southeastern Kansas		
American (Neodesha)	22,000	To Sugar Creek, Missouri with Spur to Wichita, Kansas
Hydrocarbon Transportation, Inc. (Bushton, Hutchinson and Wichita) (LPG)	42,000 (62,000 by 11/1/67)	To Plattsmouth, Nebraska and Des Moines, Iowa with connections to Williams Bros.
Kaneb (Wichita area)	44,000	To Geneva, Nebraska (10,500 to Jamestown, North Dakota). (Capacity into El Dorado 42,000 from Wichita and Augusta excluded because of deliveries to Williams Bros. at El Dorado)
Mobil (Augusta)	23,300	To Kansas City, Kansas and Sioux Falls, South Dakota
National Coop. Refinery Association (McPherson)	14,000	To Council Bluff, Iowa and Irvington Terminal at Omaha, Nebraska with connection to Williams Bros. Pipe Line
Williams Bros. (El Dorado)	67,200	To Kansas City, Kansas
" " " "	30,000	To Kansas City, via Humboldt, Kansas
" " (Coffeyville)	33,600	To Kansas City, via Independence, Kansas
Total	276,100	

PAD DISTRICT II

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
Southwestern Kansas		
Okan (out of Liberal from gasoline plants in Southwestern Kansas and Oklahoma Panhandle with receipts from Emerald Pipe Line) (LPG)	14,400	To Tulsa with connections to Mid-America, Williams Bros., Shell and Service Pipe Lines
KENTUCKY -		
Latonia (Covington)		
Sohio Petroleum	24,000	To Cincinnati, Ohio (direction of flow reversible)
Maytown		
Kentucky Hydrocarbons (LPG)	7,000	To Institute, West Virginia
MICHIGAN -		
Alma		
Michigan-Ohio	15,000	To Bay City, Lansing and Mount Pleasant, Michigan
Bay City		
Michigan-Ohio	15,000	To Alma, Lansing and Mount Pleasant, Mich.
Detroit		
Buckeye	41,000	To Flint, Michigan, Cleveland, Columbus and Lima, Ohio and Huntington, Indiana via Cygnet, Ohio
Lowell		
Texaco-Cities Service (LPG)	10,900	To Southbend and E. Chicago, Indiana (capacity 8,700) (line reversible)
Mount Pleasant		
Michigan-Ohio	7,000	To Bay City, Alma and Lansing, Michigan
MISSOURI -		
Sugar Creek		
American	37,000	To Sioux Falls, South Dakota and Des Moines, Iowa
"	53,200	To Spring Valley, Minnesota and Chicago, Illinois via Dubuque, Iowa
Total	90,200	

PAD DISTRICT II

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

		AVERAGE ANNUAL CAPACITY B/D	REMARKS
NORTH DAKOTA -			
Mandan (Bismarck)			
American		45,500	To Spring Valley, Minnesota
OHIO -			
Canton			
Ashland		20,000	To Findlay, Ohio and Freedom, Pennsylvania
Cleveland			
Inland Corporation		34,500	To Akron and Canton, Ohio
Standard of Ohio		14,000	To Girard, Ohio (Mahoning Valley Terminal) via Mogadore
" " "		12,600	To Cleveland Airport
	Total	61,100	
Cleves			
Trans Ohio (LPG)		12,000	To Toddhunter Terminal and underground storage at Middletown, Ohio
Dayton			
Miami Valley		28,000	To Cincinnati, Ohio
Heath			
Pure		12,500	To Dayton, Ohio
Lima			
Inland Corporation		32,800	To Cleveland, Toledo and Canton, Ohio via Fostoria
" "		61,100	To Columbus and Dayton, Ohio via Springfield
" "		52,000	To Columbus, Ohio
	Total	145,900	
Middletown (Toddhunter)			
Allegheny (LPG)		25,000	To Philadelphia via Greensburg, Penna. (15,000 Greensburg to Philadelphia)
Toledo			
Buckeye		71,000	To Cleveland, Lima and Columbus, Ohio and Huntington, Indiana via Cygnet, Ohio
"		41,000	To Detroit and Flint, Michigan
Inland Corporation		62,000	To Akron, Canton, Cleveland, Columbus and Dayton, Ohio via Fostoria
" "		90,000	To Cleveland, Ohio
Pure (formerly Detroit Southern)		17,000	To Detroit, Michigan
Sun		22,600	To Sarnia, Ontario
"		26,500	To Detroit (River Rouge), Michigan
"		42,900	To Cleveland, Ohio (30,400 capacity) via Fostoria, Ohio (connects with Inland)
	Total	373,000	

PETROLEUM PRODUCTS PIPELINE CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
OKLAHOMA -		
Ardmore		
Bell	25,000	To Sinclair Pipeline at Ardmore, Oklahoma
Cleveland		
Williams Bros.	10,800	To Kansas City, Kansas via Barnsdall, Oklahoma
Cyril		
APCO	4,000	To Duncan, Oklahoma with connection to OMR Pipe Line
Duncan		
OMR (receipts from American Petrofina and APCO Pipelines)	60,000	To Drumright and Tulsa, Oklahoma and West Memphis, Arkansas
Enid		
Champlin	14,000	To Rock Rapids, Iowa
"	11,300	To Oklahoma City, Oklahoma
Total	25,300	
Oklahoma City-Duncan Area		
Arbuckle (LPG)	20,000	To storage at Medford, Oklahoma with connection with Cherokee Pipe Line
Ponca City Area		
Cherokee	27,600	To Arkansas City, Kansas and 12,480 into Wichita; 21,600 into Kaneb connection and 10,800 to Potwin Junction
	28,800	To Oklahoma City and 20,400 to Wichita Falls, Texas
	90,000	To Wood River with deliveries at Glenpool, Mt. Vernon, Belle and Wood River with connections to Marathon and Wabash Pipe Lines and Lambert AFB (4,080)
Continental	9,000	To Hominy, Oklahoma (connects with Sinclair)
Williams Bros. (Enid, Arkansas City and Ponca City)	131,400	To Kansas City, Kansas via Barnsdall, Okla.
Total	286,800	
Tulsa Area		
OMR (Tulsa and Drumright)	24,000	To West Memphis, Arkansas and connects with Cherokee and Williams Bros. at Drumright, Oklahoma
Williams Bros. (Cushing, Drumright, Okmulgee and Tulsa)	224,000	To Kansas City, Kansas
Total	248,000	

PAD DISTRICT II

PETROLEUM PRODUCTS PIPELINE CAPACITIES
LINES CONNECTING DISTRICT II WITH ADJACENT DISTRICTS
YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
Into District II from District I		
Ashland	20,000	To Canton and Findlay, Ohio (reversible between Canton and Freedom, Penna.)
Buckeye	20,000	To Rogers Junction, Ohio
Colonial	46,000	To Chattanooga and Knoxville, Tennessee
"	38,000	To Chattanooga and Nashville, Tennessee
Laurel	48,000	To Cleveland, Ohio
Plantation	36,500	To Chattanooga and Knoxville, Tennessee
Sun	16,500	To Youngstown, Ohio
Total	225,000	
Into District II from District III		
American Petrofina (River Pipeline under lease)	13,500	To Duncan, Oklahoma
Emerald	15,500	To Turpin Terminal, Oklahoma
Mid-America (LPG)	102,000	To Conway, Kansas
Mobil	-	Taken out of service, April 1967
Phillips	122,100	To Laverne, Oklahoma
Sinclair	25,000	To Ardmore, Oklahoma
Texas Eastern	185,000	To Cape Girardeau, Missouri
Total	463,100	
Into District II from District IV		
Cenex	17,000	To Minot, North Dakota
Cheyenne	10,000	To North Platte via Sidney, Nebraska
Wyco	7,600	To Rapid City, South Dakota
Total	34,600	
Into District II from International Boundary		
Sun	7,500	To Toledo, Ohio (combination crude and products)
From District II into District I		
Allegheny (LPG)	25,000	To Greensburg, Pennsylvania
Ashland	20,000	To Freedom, Pennsylvania (reversible line between Canton and Freedom
Kentucky Hydrocarbons (LPG)	7,000	To Institute, West Virginia
Sun	54,000	To Pittsburgh, Pennsylvania
Total	106,000	
From District II into District III		
Cherokee	20,400	To Wichita Falls, Texas
OMR	60,000	To Fort Smith, Arkansas
Total	80,400	
From District II to International Boundary		
Sun	22,600	To Sarnia, Ontario (combination crude and products lines)

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIBUTION TERMINALS
YEAR-END 1966

(EXPRESSED IN THOUSAND BARRELS PER DAY)

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AMERICAN	AMERICAN PETROFINA	APCO	ARBUCKLE (LPG)	ASHLAND	BADGER	BUCKEYE	CENEX	CHAMPLIN	CHEROKEE	CHEYENNE	COLONIAL	EMERALD	HYDROCARBON TRANSP. (LPG)	IND. FARM BUREAU	INLAND CORP.	KANEB	LAUREL	MARATHON	MIAMI VALLEY	MICHIGAN-OHIO	MID-AMERICA (LPG)	MOBIL	NATIONAL COOP.	OKAN	OMR	PHILLIPS	PLANTATION	PURE	SHELL	SINCLAIR	STD. OF OHIO	SUN	TEXACO-CITIES SERVICE (LPG)	TEXAS	TEXAS EASTERN	TRANS OHIO (LPG)	WABASH	WEST SHORE	WILLIAMS BROS.	WOLVERINE	WYCO
ILLINOIS																																												
Amboy	Lee	89																																									89		
Argo Terminal	Cook	100																														100												
Chicago	Cook	397	55					70								42																							86		81	63			
Champaign	Champaign	116																																				116						
Chillicothe	Peoria	18																															18											
Decatur	Macon	54																												54													
Des Plaines	Cook	259						71																																		188		
East St. Louis	St. Clair	159							60																					99													
Effingham	Effingham	38																														38											
Farmer City	De Witt	100																														100											
Farmington	Peoria	50																						50																			
Harris Town	Macon	100																														100											
Kankakee	Kankakee	154																												54		100											
Marshall	Clark	33																				33																						
O'Hare International Airport	Du Page	75	55					20																																				
Rochelle	Ogle	102	102																																								
Rockford	Winnebago	111						111																																				
Sibley	Ford	100																														100											
St. Elmo	Fayette	33																				33																						
INDIANA																																												
Avon	Marion	21							21																																			
Clermont	Marion	81							48													33																						
East Chicago	Lake	284	47						18							42														54		100						23					
Gary	Lake	11																																				11					
Huntington	Huntington	54							54																																			
Indianapolis	Marion	176	30						27													33																						
Jolietville	Hamilton	24																																									
Lafayette	Tippecanoe	30	30																																								
Mt. Vernon	Posey	69																																									
Muncie	Delaware	64							26																																			
New Goshen	Vigo	33																				33																						
Peru	Miami	9																																									
Princeton	Gibson	185																																								185		
Seymour	Jackson	185																																								185		
South Bend	St. Joseph	118	75																																								
Switz City	Greene	24																																									
Terre Haute	Vigo	38																														38											
Zionsville	Boone	71																				33										38											
IOWA																																												
Cantrill	Van Buren	51																						51																			
Cedar Rapids	Johnson	53	53																																								
Council Bluffs	Pottawattamie	51	37																													14											
Des Moines	Polk	309	12													62																											235	
Dubuque	Dubuque	138	74																													51											13	
Fort Madison	Lee	18																																									
Iowa City	Johnson	163																														51											112
Mason City	Cerro Gordo	126																																									126
Milford	Dickinson	12																																									12
Odgen	Boone	55																														55											
Ottumwa	Wapello	53	53																																								
Rock Rapids	Lyon	14								14																																	
Sanborn	O'Brien	55																						55																			
Sioux City	Woodbury	128	15																													14											99
Waterloo	Blackhawk	20																																									20
KANSAS																																												
Augusta	Butler	36																			36																							
Clay Center	Clay	55																						55																			
Coffeyville	Montgomery	25																																									
Concordia	Cloud	44																			44																							
Hutchinson	Reno	14							14																																			
Kansas City	Wyandotte	452																														21		72		24							335
McPherson	McPherson	44																			44																							
Olathe	Johnson	98																																									98
Paola	Miami	172																														172											
Rago	Kingman	122																														122											
Salina	Saline	44																			44																							
Schilling Jct.	Saline	44																			44																							
Topeka	Shawnee	90																														23											67
Wichita	Sedgwick	22	22																																								
KENTUCKY																																												
Latonia (Covington)	Campbell	24																																									

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIBUTION TERMINALS
YEAR-END 1986

(EXPRESSED IN THOUSAND BARRELS PER DAY)

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AMERICAN	AMERICAN PETROFINA	APCO	ARBUCKLE (LPG)	ASHLAND	BALDGH	BUCKEYE	CENEX	CHAMPLIN	CHEROKEE	CHEVENNE	COLONIAL	DIXIELAND	HYDROCARBON TRANSP. (LPG)	IND. FARM BUREAU	INLAND CORP.	KANEB	LAKEHEAD	MARATHON	MIAMI VALLEY	MICHIGAN OHIO	MID-AMERICA (LPG)	MOBIL	NATIONAL COOP.	OGAK	OHIO	PHILLIPS	PLANTATION	PURE	SHELL	SINCLAIR	SUN, OF OHIO	SUN	TEXACO-CITIES SERVICE (LPG)	TEXAS	TEXAS EASTERN	TRANS OHIO (LPG)	WABASH	WEST SHORE	WILLIAMS BROS.	WOLVERINE	WYCO
MICHIGAN																																												
Alma	Gratiot	15																					15																					
Bay City	Bay	56							42														14																					
Colon	St. Joseph	61	61																																									
Dearborn	Wayne	48	48																																									
Detroit	Wayne	224							42																						47		37		NA								98
Detroit Airport	Wayne	98																																									98
Flint	Genesee	84							84																																		
Girard	Branch	63	63																																								
Grand Haven	Ottawa	91																																								91
Holland	Ottawa	90																																								90
Jackson	Jackson	98	13																																								85
Lansing	Ingham	33																					33																				
Lowell	Kent	9																																								9	
Marshall	Calhoun	94																																									94
Mt. Pleasant	Isabella	7																					7																				
Niles	Berrien	96																																									96
Novi	Oakland	85							85																																		
Oshtemo	Kalamazoo	41							41																																		
River Rouge	Wayne	98	98																																								
MINNESOTA																																											
Alexandria	Douglas	73																																									73
Duluth	St. Louis	16																																									16
Mankato	Blue Earth	79																																									79
Marshall	Lyon	36																																									36
Minneapolis	Hennepin	140	31																																								109
Moorhead	Clay	66	66																																								
Pine Bend	Dakota	81																						81																			
Rochester	Olmsted	17																																									17
Sauk Centre	Stearns	31	31																																								
Spring Valley	Fillmore	31	31																																								
MISSOURI																																											
Bethany	Harrison	113																																									113
Cape Girardeau	Scott	185																																									185
Carrollton	Carroll	19																																								19	
Columbia	Boone	32																																									32
Jefferson City	Cole	90																																									
Kearney	Clay	50																																									
Mexico	Audrain	43																																									
Mid-Cont. Airport	Platte	13																																									
Moberly	Randolph	50																																									
Mt. Vernon	Lawrence	42																																									
Palmyra	Marion	19																																									
St. Charles	St. Charles	22																																									
St. Joseph	Andrew	37	37																																								
Trenton	Grundy	52	52																																									
NEBRASKA																																											
Columbus	Platte	14																																									
Doniphan	Hall	20																																									
Geneva	Fillmore	44																																									
Greenwood	Cass	55																																									
Lincoln	Lancaster	38																																									
Lincoln NPS		18																																									
McCook	Polk	25																																									
Norfolk	Madison	37																																									
North Platte	Lincoln	18																																									
Omaha	Douglas	86																																									
Plattsmouth	Cass	62																																									
Sidney	Cheyenne	20																																									
Superior	Nuckolls	14																																									
NORTH DAKOTA																																											
Fargo	Cass	41																																									
Grand Forks	Forks	19																																									
Jamestown	Stutsman	56	41																																								
Minot	Ward	17																																									

PAD DISTRICT II

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIBUTION TERMINALS
YEAR-END 1986

(EXPRESSED IN THOUSAND BARRELS PER DAY)

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AMERICAN	AMERICAN PETROFINA	ARCO	ARBUCKLE (LPG)	ASHLAND	BADGER	BUCKEYE	CITGO	CHAMPLIN	CHEROKEE	CHEYENNE	COLONIAL	EMERALD	HYDROCARBON TRANSP. (LPG)	IND. FARM BUREAU	ILAND CORP.	KAIER	LAUREL	MARATHON	MIAMI VALLEY	MICHIGAN OHIO	MID AMERICA (LPG)	MOBIL	NATIONAL COOP.	OKAN	OPR	PHILLIPS	PLANTATION	PURE	SHELL	SINCLAIR	STE. OF OHIO	SUN	TEXACO-CITIES SERVICE (LPG)	TEXAS	TEXAS EASTERN	TRANS OHIO (LPG)	WABASH	WEST SHORE	WILLIAMS BROS.	WOLVERINE	WPCO
OHIO																																												
Akron	Summit	59																17																14											
Alliance	Portage	48																	23																										
Aurora	Portage	41							41																										14										
Boardman	Mahoning	56																			49																								
Boston Heights	Summit	49																																										
Brecksville	Cuyahoga	41							42																																			
Bayou Terminal	Williams	32																		13																									
Canton	Stark	33					20																																					
Cincinnati	Hamilton	72																																										
Cleveland	Cuyahoga	217																	70																										
Clyde	Sandusky	15																																										
Columbus	Franklin	138								16																																		
Dayton	Montgomery	74																																										
Gilmourah	Mahoning	68																																										
Findlay	Hancock	97																																										
Fostoria	Seneca	177																																										
Girard	Trumbull	19																																										
Hartville	Stark	13																																										
Hudson	Summit	54																																										
Lebanon	Warren	185																																										
Lima	Allen	277																																										
Lorain	Lorain	33																																										
Lockbourne AFB	Franklin	5																																										
Middletown	Butler	32																																										
Mogadore	Summit	132																																										
Niles	Trumbull	20																																										
Norwalk	Huron	61																																										
Randolph	Portage	66																																										
Springfield	Clark	62																																										
Steubenville	Jefferson	14																																										
Toledo	Lucas	181																																										
Tiffin	Seneca	28																																										
Woodland	Mahoning	56																																										
Youngstown	Mahoning	67																																										
OKLAHOMA																																												
Ardmore	Carter	35																																										
Duncan	Stephens	18																																										
Enid	Garfield	18																																										
Laverne	Harper	122																																										
Medford	Grant	20																																										
Oklahoma City	Oklahoma	61																																										
Sand Springs	Tulsa	3																																										
Shawnee	Pottawatomie	23																																										
Tulsa	Tulsa	39																																										
Turpin	Beaver	10																																										
SOUTH DAKOTA																																												
Aberdeen	Brown	19																		12																										
Watertown	Codington	14																		10																										
Rapid City	Pennington	9																																										
Sioux Falls	Minnehaha	124																																										
Watertown	Codington	14																																										
Wolsey	Beadle	14																																										
Yankton	Yankton	17																																										
TENNESSEE																																												
Chattanooga	Hamilton	134																		94																										
Knoxville	Knox	79																		46																										
Nashville	Davidson	58																		33																										
WISCONSIN																																												
Bellman	Chippewa	15																																										
Chippewa Falls	Chippewa	19																																										
Cranville	Milwaukee	6																																										
Green Bay	Brown	6																																										
Janesville	Rock	53																																										
Madison	Dane	42																		12																										
Milwaukee	Milwaukee	157																																										
Superior	Douglas	15																																										

C.4 PAD DISTRICT III (GULF COAST REGION)

Products pipelines in District III may be divided into two categories; those that distribute refined oils consumed within the Gulf Coast region, and those moving refined oils consumed in other districts. There are many natural gasoline and petrochemical plants in the Gulf Coast region, and the movement of natural gasoline and liquefied petroleum gases through pipelines is quite extensive.

In general, the products pipelines originate at refineries. The more important lines extend from refineries located in the Houston, Port Arthur, Beaumont, Baton Rouge, Amarillo, El Paso, New Orleans and El Dorado areas, serving principal cities throughout the district. Three lines terminate on the Mississippi River at Arkansas City, Helena and West Memphis, Arkansas. At these points the products are transshipped in barges.

The more important pipelines are described by the following information. Texas Eastern Transmission Corporation has pipelines extending from Houston, Texas to Lebanon, Ohio, and Chicago, Illinois. Phillips Pipe Line Company's pipelines extend from Borger, Texas to Chicago, Illinois, via St. Louis, Missouri, and from Borger to Denver, Colorado, and Odessa to Sweeney, Texas. Sinclair Pipe Line Company's line extends from Houston to Chicago. Magnolia and Texas pipeline companies own lines which exist between Houston and the Dallas-Ft. Worth area. Southern Pacific pipelines extend from El Paso to Phoenix, Arizona.

Two large pipeline systems originate in the Gulf Coast refining area and extend into District I. These are the Plantation system and the Colonial system. The Plantation Pipe Line Company system originates at Baton Rouge, Louisiana, and is fed by the following systems: the Bayou pipeline which originates in the Houston area; a Shell Pipe Line Company line which moves products from the Norco refinery to Baton Rouge; and a Plantation Pipe Line lateral extending from the Standard Oil Company of California refinery at Pascagoula, Mississippi, to Collins, Mississippi. The Plantation system has a capacity of 310,000 barrels per day out of Baton Rouge and 253,000 barrels per day into District I.

Presently the largest and most important products pipeline system in the world is owned by the Colonial Pipeline Company. This system extends from the Houston-Beaumont, area to the New York Harbor area with origins at Houston, Beaumont, Port Arthur, Lake Charles, and Baton Rouge, and injections at Collins, Mississippi. This line serves the principal cities throughout the Atlantic Seaboard states with a capacity of

960,000 barrels per day into Greensboro, North Carolina, and 612,000 barrels per day to Linden, New Jersey. With the construction of Colonial Pipeline, such areas as Richmond and Norfolk, Virginia, Washington, D. C., Baltimore, Maryland, and the New York Harbor now have an assured source of supply for products that is less susceptible to emergency conditions.

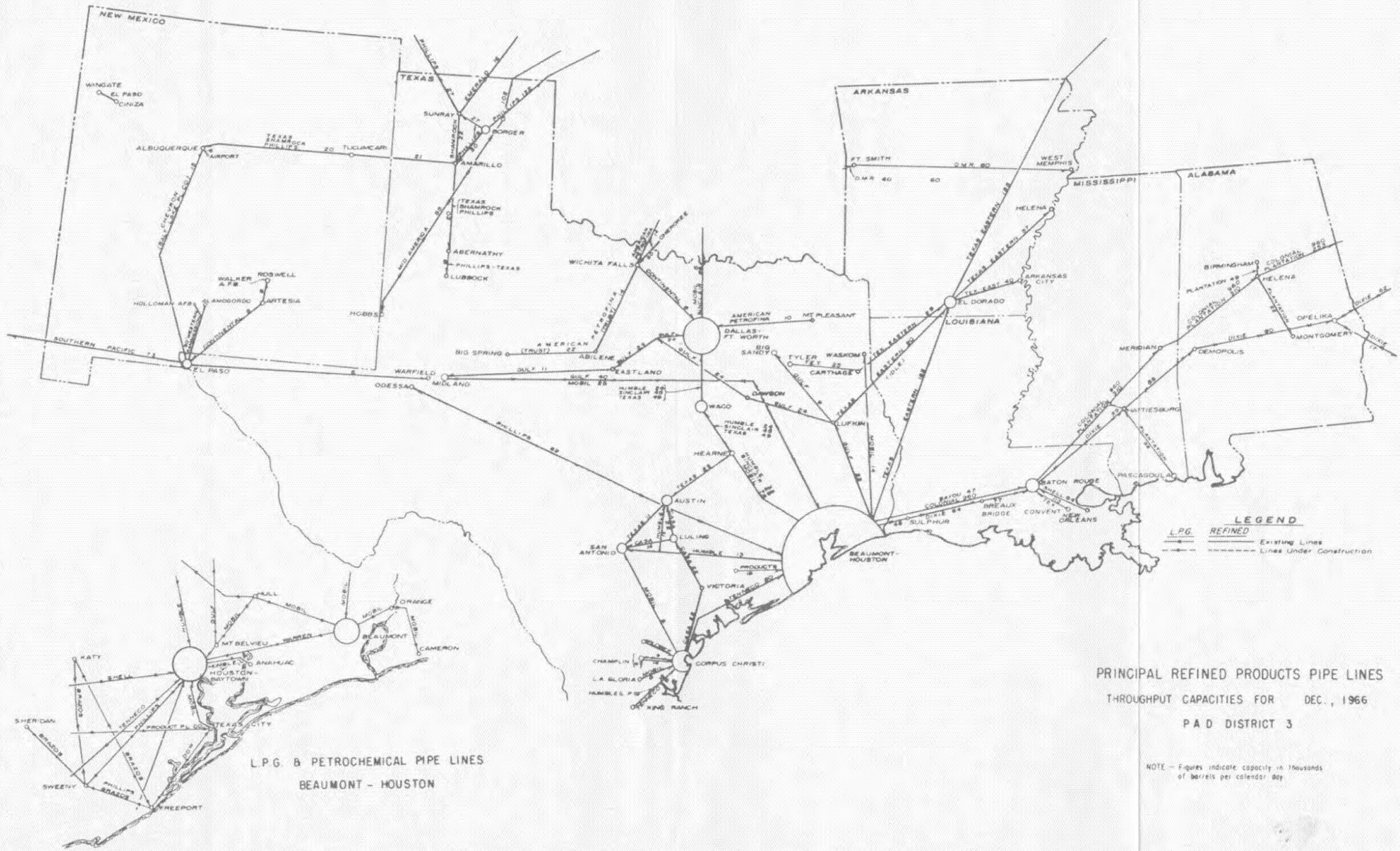
In addition to these products lines there are two extensive LPG systems originating in this district. The Dixie Pipe Line system originates at Mont Belview, Texas, and extends to Raleigh, North Carolina, with a branch to Alma, Georgia. The Mid-America Pipe Line system originates in West Texas near Hobbs, New Mexico, and extends into Wichita, Kansas, with branches to the Minneapolis/St. Paul area and to the Dubuque, Iowa, area.

With refinery capacity far in excess of the demand for products in District III, interdistrict movements are as follows:

Into District III from District II	80,400 B/D	Products
	-0-	LPG
From District III into District I	1,213,000 B/D	Products
	79,700 B/D	LPG
From District III into District II	361,100 B/D	Products
	102,000 B/D	LPG
From District III into District IV	26,700 B/D	Products
	-0-	LPG
From District III into District V	72,800 B/D	Products
	-0-	LPG

Principal new products lines either in planning or under construction are as follows:

			APPROXIMATE
Coastal States	Corpus Christi to Houston, Texas	200 mi. 12"	74,000 B/D
Mobil Oil Company	New LPG system consisting of some new lines connected into existing lines and extending from the Chitwood plant in Stephens County, Oklahoma, to Beaumont, Texas, of which 80 miles (8-inch, capacity of 27,000 barrels per day) are in District III.		



L.P.G. & PETROCHEMICAL PIPE LINES

BEAUMONT - HOUSTON

PRINCIPAL REFINED PRODUCTS PIPE LINES

THROUGHPUT CAPACITIES FOR DEC., 1966

P A D DISTRICT 3

NOTE — Figures indicate capacity in thousands of barrels per calendar day.

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE DAILY CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

		AVERAGE ANNUAL CAPACITY B/D	REMARKS
ARKANSAS -			
El Dorado			
Texas Eastern	(from Tyler, Lufkin, East Texas, North Louisiana)	57,000	To Helena, Arkansas
" "	" " "	40,000	To Arkansas City, Arkansas
" "	(Houston, Beaumont and Texas City)	185,000	To Chicago, Illinois, Lebanon and Lima, Ohio
	Total	282,000	
LOUISIANA -			
Baton Rouge			
Plantation		310,000	To Birmingham, Alabama, to 61,000 at Washington, D. C.
Convent			
Texas		115,000	To Colonial's Baton Rouge Station
Lake Charles			
Colonial		960,000	To Greensboro, North Carolina, and 612,000 to Linden, New Jersey
New Orleans			
Shell		84,000	To Baton Rouge, Louisiana
MISSISSIPPI -			
Collins			
Colonial		307,000	To Greensboro, North Carolina and 612,000 to Linden, New Jersey
Pascagoula			
Plantation		58,000	To Collins, Mississippi
NEW MEXICO -			
Artesia			
Continental		8,100	To El Paso, Texas
"		7,800	To Walker Air Force Base
	Total	15,900	

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE DAILY CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

		AVERAGE ANNUAL CAPACITY B/D	REMARKS
TEXAS -			
Amarillo Area			
Emerald-McKee		15,500	To Turpin Terminal, Oklahoma with connections to Okan Pipeline east of Liberal, Kansas
Phillips-Borger and McKee		26,700	To Denver, Colorado (joint ownership with with Shamrock)
Phillips-Borger		122,100	To Wichita, with spur to Kansas City, Kansas and East Chicago via East St. Louis
Shamrock-McKee		22,000	To Amarillo and Abernathy (20,000), Texas (jointly owned)
Shamrock-Texas-Phillips		20,900	To Tucumcari and Albuquerque, New Mexico (jointly owned)
	Total	207,200	
Big Spring and Colorado City			
American Petrofina (Trust and River Pipelines under lease)		22,000	To Abilene and Wichita Falls, Texas; with connection to Okan Pipeline at Duncan, Oklahoma (13,500 from Abilene to Duncan)
Corpus Christi			
Casa		21,800	To Luling, San Antonio and Austin, Texas
Champlin (LPG)		8,570	To Harlan and Bishop, Texas
Champlin-Harlan		13,750	To Corpus Christi, Texas
Mobil		5,200	To Luling and San Antonio, Texas
	Total	49,320	

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE DAILY CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
El Paso		
Chevron	15,000	To Biggs Air Force Base (base closed)
"	14,500	To Albuquerque, New Mexico
"	5,500	To Warfield, Texas
Southern Pacific	72,800	To Tucson and Phoenix, Arizona - Deliveries to Southwestern Transmission Corp. near Newman, Texas for movement to Almagordo and Holloman Air Force Base, New Mexico
Total	107,800	
Gaines County Underground Storage		
Mid-America (Gathering from Southeast New Mexico and West Texas) (LPG)	55,000	To Skellytown Station with 102,000 to Conway Station, Kansas, with branches to Janesville, Wisconsin and to Pinebend, Minnesota
Hearne		
Texas	49,200	To Waco, Dallas and Fort Worth, Texas
"	25,200	To Austin and San Antonio, Texas
Total	74,400	
Houston-Beaumont Area		
Bayou System (Houston and Port Arthur)	47,000	To Baton Rouge, Louisiana (connects to Plantation)
Colonial (Houston, Beaumont and Port Arthur)	960,000	To Greensboro, North Carolina and 612,000 to Linden, New Jersey
Dixie (Mont Belvieu)	47,800	To Raleigh, North Carolina and Alma, Georgia (capacity out of Baker, Louisiana 88,700)
Gulf (Port Arthur)	32,600	To Fort Worth, Eastland, Midland and Big Sandy, Texas
Humble (Baytown)	32,600	To Houston, Hearne and Waco, Texas (Hearne to Fort Worth, Dallas-Lovefield-24,000)
" "	23,500	To Houston and 13,300 to San Antonio and Austin, Texas
Mobil (Beaumont and Port Arthur)	76,000	To Houston and Hearne, Texas (connects with Texas Pipeline)
" " " " "	14,000	To Center and Waskom, Texas
Sinclair (Houston)	45,000	To Waco, Dallas and Fort Worth, Texas and Kansas City, Kansas
Texas Eastern (Texas City, Houston and Beaumont)	185,000	To El Dorado, Arkansas
Total	1,463,500	

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE DAILY CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
LaGloria		
Mobil	6,300	To Corpus Christi, Texas
Mount Pleasant		
American Petrofina	10,000	To Grapevine Terminal in Dallas, Fort Worth area, Texas
Newman		
Southwestern	12,000	To Alamagordo, New Mexico
Odessa		
Phillips	69,000	To Sweeny, Texas
Sheridan		
Shell (LPG)	8,800	To Houston, via Katy, Texas
Products Pipeline (LPG)	18,000	To Texas City, Texas
Total	26,800	
Sweeny		
Phillips (Clemons)	37,000	To Houston, Texas
" (Sweeny Refinery)	100,000	To Houston, Texas
Total	137,000	
Three Rivers		
Wilobee (LPG)	8,000	To Corpus Christi, Texas
Wichita Falls		
Continental	8,000	To Dallas and Fort Worth (Grapevine), Texas

PETROLEUM PRODUCTS PIPELINE CAPACITIES
LINES CONNECTING DISTRICT III WITH ADJACENT DISTRICTS
YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
Into District III from District II		
Cherokee	20,400	To Wichita Falls, Texas
OMR	60,000	To Fort Smith, Arkansas
Total	80,400	
From District III into District I		
Colonial	960,000	To Alanta, Georgia
Dixie (LPG)	62,400	To Milner, Georgia
" "	17,300	To Albany, Georgia
Plantation	253,000	To Bremen, Georgia
Total	1,292,700	
From District III into District II		
American Petrofina (River Pipeline under lease)	13,500	To Duncan, Oklahoma
Emerald	15,500	To Turpin Terminal, Oklahoma
Mid-America (LPG)	102,000	To Conway, Kansas
Mobil		To Oklahoma City, Oklahoma (taken out of service April, 1967)
Phillips	122,100	To Laverne, Oklahoma
Sinclair	25,000	To Ardmore, Oklahoma
Texas Eastern	185,000	To Cape Girardeau, Oklahoma
Total	463,100	
From District III into District IV		
Phillips-Shamrock	26,700	To Denver, Colorado, via Boise City, Oklahoma (District II)
From District III into District V		
Southern Pacific	72,800	To Phoenix, Arizona

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIPUTION TERMINALS
YEAR-END 1966

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AMERICAN PETROFINA	BAYOU	CASA	CHAMPLIN	CHEROKEE	CHEVRON	COLONIAL	CONTINENTAL	DIXIE (LPG)	EL PASO	GULF	HUMBLE	MOBIL	OMR	PHILLIPS	PLANTATION	SHAMROCK	SHELL	SINCLAIR	SOUTHWEST TRANSMISSION	TEXAS	TEXAS EASTERN	WEST EMERALD
ALABAMA																									
Birmingham	Jefferson	49																49							
Demopolis	Morengo	85									85														
Helena	Shelby	598							288									310							
Montgomery	Montgomery	22																22							
Moundville	Hale	310																310							
Opelika	Lee	80									80														
Oxford	Calhoun	1,213							960									253							
ARKANSAS																									
Arkansas City	Desha	40																						40	
Conway	Faulkner	60														60									
El Dorado	Union	242																						242	
Fort Smith	Sebastian	60														60									
Helena	Phillips	57																						57	
Little Rock AFB	Pulaski	15														15									
McRae Junction	White	185																						185	
N. Little Rock	Pulaski	185																						185	
West Memphis	Crittenden	60														60									

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIPUTION TERMINALS
YEAR-END 1966

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AMERICAN PETROFINA	BAYOU	CASA	CHAMPLIN	CHEROKEE	CHEVRON	COLONIAL	CONTINENTAL	DIXIE (LPG)	EL PASO	GULF	HUMBLE	MOBIL	OMR	PHILLIPS	PLANTATION	SHAMROCK	SHELL	SINCLAIR	SOUTHWEST TRANSMISSION	TEXAS	TEXAS EASTERN	WEST EMERALD
LOUISIANA																									
Arcadia	Lincoln	185																						185	
Baton Rouge	E. Baton Rouge	1,007		47					960																
Barksdale AFB	Bossier	6																						6	
Bossier City	Bossier	28																						28	
Dubberly	Webster	20																						20	
Opelousas	St. Landry	960							960																
Shreveport	Caddo	28																						28	
MISSISSIPPI																									
Collins	Covington	1,328							960									368							
Hattiesburg	Lamar	147								89								58							
Lockhart	Lauderdale	310																310							
Meridian	Lauderdale	1,270							960									310							
NEW MEXICO																									
Alamagordo	Otero	12																				12			
Albuquerque	Bernalilo	35						15																20	
Albuquerque Airport	Bernalilo	6						6																	
Belen	Valencia	15						15																	
Holloman AFB	Otero	12																				12			
Las Cruces	Dona Ana	15						15																	
Tucumcari	Quay	21																						21	
Walker AFB		8						8																	

PAD DISTRICT III

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIBUTION TERMINALS
YEAR-END 1966

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	AMERICAN PETROFINA	BAYOU	CASA	CHAMPLIN	CHEROKEE	CHEVRON	COLONIAL	CONTINENTAL	DIXIE (LPG)	EL PASO	GULF	HUMBLE	MOBIL	OMR	PHILLIPS	PLANTATION	SHAMROCK	SHELL	SINCLAIR	SOUTHWEST TRANSMISSION	TEXAS	TEXAS EASTERN	WEST EMERALD
TEXAS																									
Abernathy	Hale	20																	20						
Abilene	Taylor	22		22																					
Amarillo	Potter	22																	22						
Austin	Travis	60			22									13									25		
Beeville	Bee	5													5										
Biggs AFB	El Paso	15				15																			
Big Sandy	Upshur	9											9												
Bishop	Nueces	9				9(LPG)																			
Brown	Brazos	45																				45			
Center	Shelby	14													14										
Corpus Christi	Nueces	14				14																			
Dallas	Dallas	73												24									49		
Dawson	Navarro	24													24										
Dyess AFB	Taylor	22		22																					
Eastland	Eastland	24													24										
El Paso	El Paso	8													8										
Fort Worth	Tarrant	88													24						19		45		
Grapevine	Tarrant	18		10											8										
Hearne	Robertson	109												33	76										
Houston	Harris	226												56	24				137		9(LPG)				
Kenedy	Karnes	5													5										
Lubbock	Lubbock	20																				20			
Luling	Caldwell	22			22																				
Midland	Midland	11													11										
San Antonio	Bexar	43			14									13	5								11		
Victoria	Victoria	22			22																				
Waco	McLennan	118												24							45		49		
Warfield	Midland	5				5																			
Waskom	Harrison	12													12										
Webb AFB	Howard	22		22																					
Wichita Falls	Wichita	34		14		20																			

C.5 PAD DISTRICT IV (ROCKY MOUNTAIN REGION)

District IV comprises the five states shown on the Appendix Map. This district has refining capacity in excess of its demand for products; thus, it serves as a source of supply to those states in Districts II and V lying adjacent to the District IV boundaries. These product lines originate at District IV refineries located at Billings, Casper, Cheyenne, Cody, Laurel, Sinclair, and Salt Lake City.

The Chevron (Salt Lake) pipeline with an initial capacity of 56,000 barrels per day distributes products in southwestern Idaho, western Oregon and Washington of District V, terminating at Spokane, Washington. The Yellowstone Pipeline Company with an initial capacity of 49,000 barrels per day extends from Billings, Montana through western Montana and northern Idaho to terminate at Moses Lake, Washington in District V.

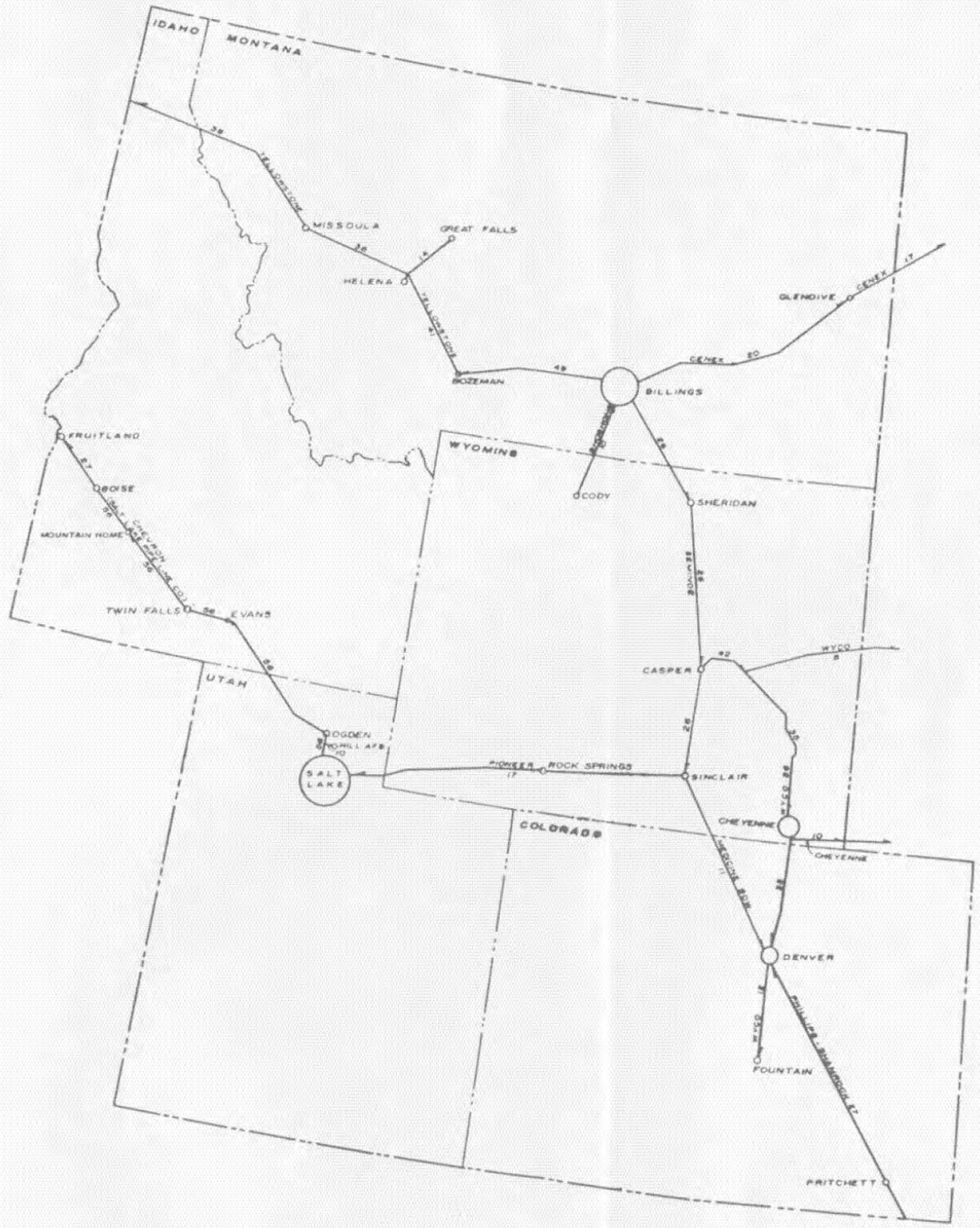
The Cheyenne Pipeline Company, originating in Cheyenne, Wyoming with an initial capacity of 10,000 barrels per day, moves products to North Platte, Nebraska in District II. The Wyco Pipeline Company, originating at Casper, Wyoming with an initial capacity of 8,000 barrels per day, delivers products to Rapid City, South Dakota in District II. Cenex Pipeline Company originates at Billings, Montana with an initial capacity of 20,000 barrels per day and delivers to Minot, North Dakota in District II.

The only products system delivering into District IV is that owned by Phillips-Shamrock. It originates in District III and delivers products at the rate of 27,000 barrels per day to its terminus at Denver, Colorado.

The surplus of refining capacity to the requirements of District IV coupled with natural geographic barriers existing in the northeastern portion of District V and the limited refining capacity in the northwestern portion of District II establishes a product transportation pattern that is predominantly out of District IV into the adjacent districts. The capacity of inter-district pipeline movements are as follows:

Into District IV from District III	26,700 B/D	Products
	-0-	LPG
From District IV into District II	34,600 B/D	Products
	-0-	LPG
From District IV into District V	65,500 B/D	Products
	-0-	LPG

There are no new products pipelines scheduled to be constructed in District IV at the present time.



LEGEND

L.P.G. — Existing Lines

REFINED — Lines Under Construction

PRINCIPAL REFINED PRODUCTS PIPE LINES

THROUGHPUT CAPACITIES FOR DEC., 1966

P A D DISTRICT 4

NOTE – Figures indicate capacity in thousands of barrels per calendar day.

PAD DISTRICT IV

PETROLEUM PRODUCTS PIPELINES
DAILY CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS
YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
MONTANA -		
Billings		
Seminoe (Continental)	26,000	To Pioneer pump station at Sinclair, Wyoming. Deliveries at Sheridan and Casper, Wyoming
Yellowstone	49,300	To Spokane, Washington. Deliveries at Bozeman, Helena and Missoula, Montana, with Spur to Great Falls, Montana, and Salt Lake City Pipeline Co. at Spokane, Washington
Total	75,300	
Laurel		
Cenex (with receipts at Billings)	19,500	To Glendive, Montana and 17,500 to Minot, North Dakota
UTAH -		
Salt Lake City		
Chevron	56,000	To Spokane, Washington. Deliveries at Boise, Idaho, Baker, Oregon, and Pasco, Washington, with Spur to Pocatello, Idaho
WYOMING -		
Casper		
Wyco	42,200	To Cheyenne, Wyoming, and Denver and Fountain (Colorado Springs), Colorado with Spur to Rapid City, S. Dakota
Cheyenne		
Cheyenne	10,000	To Sidney and North Platte, Nebraska
Cody		
Shoshone	12,000	To Billings, Montana
Sinclair		
Medicine Bow	11,000	To Denver, Colorado
Pioneer	16,800	To Salt Lake City, Utah
Total	27,800	

PETROLEUM PRODUCTS PIPELINE CAPACITIES
LINES CONNECTING DISTRICT IV WITH ADJACENT DISTRISTS
YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
Into District IV from District III		
Phillips-Shamrock	26,700	From Borger, Texas, to La Junta and Denver, Colorado, via Boise City, Oklahoma (District II)
From District IV into District II		
Cenex	17,000	From Glendive, Montana, to Minot, North Dakota
Cheyenne	10,000	From Cheyenne, Wyoming, to North Platte via Sidney, Nebraska
Wyco	7,600	From Douglas, Wyoming, to Rapid City, South Dakota
Total	34,600	
From District IV into District V		
Chevron (Salt Lake)	32,500	From Salt Lake, Utah, to Spokane, Washington, via Baker, Oregon
Yellowstone	38,500	From Billings, Montana, to Spokane, Washington
Total	71,000	

PAD DISTRICT IV

PETROLEUM PRODUCTS PIPELINE
CAPACITIES INTO DISTRIBUTION TERMINALS
YEAR-END 1966

DISTRIBUTIO TERMINAL CITY	COUNTY	TOTAL	CENEX	CHEYENNE	CHEVRON	MEDICINE BOW	PHILLIPS-SHAMROCK	PIONEER	SEMINOLE (CONTINENTAL)	SHOSHONE	YELLOWSTONE	WYCO
COLORADO												
Denver	Adams	72,300				11,000	26,700					34,600
Fountain	El Paso	12,000										12,000
LaJunta	Otero	26,700					26,700					
IDAHO												
Boise	Ada	56,000			56,000							
Evans	Cassia	56,000			56,000							
Fruitland	Fayette	26,500			26,500							
Mtn. Home	Elmore	56,000			56,000							
Pocatello	Bannock	30,000			30,000							
Twin Falls	Twin Falls	56,000			56,000							
MONTANA												
Billings	Yellowstone	12,000								12,000		
Bozeman	Gallatin	49,300									49,300	
Glendive	Dawson	19,500	19,500									
Great Falls	Cascade	14,400									14,400	
Helena	Lewis & Clark	41,500									41,500	
Missoula	Missoula	38,500									38,500	
Sidney	Richland	17,000	17,000									
UTAH												
Hill AFB	Weber	10,000			10,000							
Ogden	Weber	56,000			56,000							
Salt Lake City	Salt Lake	16,800						16,800				
WYOMING												
Casper	Natrona	26,000							26,000			
Cheyenne	Laramie	34,600										34,600
Rock Spring	Sweetwater	16,800						16,800				
Sheridan	Sheridan	26,000							26,000			
Sinclair	Carbon	26,000							26,000			

C.6 PAD DISTRICT V (PACIFIC COAST REGION)

The land area represented by District V is shown on Appendix Map. The transportation pattern within District V is determined by the concentration of refineries in three main areas along the Pacific Seaboard. These refineries with the exception of those located in the State of Washington are concentrated in the Los Angeles and San Francisco areas. These municipalities represent the areas of greatest consumption for refined products. Even though the demand for refined products in these particular areas is increasing at a more rapid rate than that prevailing in other portions of District V, refined products, surplus to the needs of the areas, are available for shipment to other portions of the district. Distribution is largely by means of trucks, tank cars, barges and tankers, although a few local pipelines are available for products distribution within the particular areas. All refineries have extensive pipelines to seaboard terminals for loading products on barges and tankers.

In the State of Washington, the refineries are positioned to take advantage of the crude oil sources and, although they are a long distance from the larger metropolitan centers, they deliver products by pipeline to major population centers in the Pacific Northwest. Distribution inland from the coastal areas is handled by truck and tank car.

Southern Pacific Pipe Lines, Inc. has a line with an initial capacity of 83,000 B/D extending from Los Angeles to Phoenix with branches serving several military bases and the Imperial Valley. It also has an 80,000 barrel per day initial capacity line extending from San Francisco area to Reno and Fallon, Nevada with branches to Chico and Atwater, California and connections to several Air Force bases. Southern Pacific also has a line with a capacity of 30,000 barrels per day which originates in Bakersfield and terminates at Fresno, and a line of 44,000 barrels per day which originates at Concord, California, and terminates at San Jose.

Southern Pacific delivers products into Tucson and Phoenix through two pipelines which originate in El Paso, Texas in District III and which have an initial capacity of 72,800 barrels per day.

San Diego Pipe Line Company has a line with a capacity of 50,000 barrels per day which originates at Orange in the Los Angeles area and delivers products to the San Diego area.

Calnev Pipe Line Company has a line with an initial capacity of 37,500 barrels per day which originates at Colton on the Southern Pacific line to Phoenix, and delivers products to Barstow, California, and Las Vegas, Nevada, and several Air Force bases.

Olympic Pipe Line Company, with a line originating at Ferndale and Anacortes, Washington, can deliver products in the Seattle area at the rate of 135,000 barrels per day and into Portland, Oregon at the rate of 78,000 barrels per day.

Southern Pacific delivers products to Albany and Eugene, Oregon through a 25,400 barrel per day pipeline which originates in Portland, Oregon.

The Chevron Pipe Line Company enters District V with a capacity of 27,000 barrels per day and delivers into Spokane with a capacity of 15,000 barrels per day.

The Yellowstone Pipe Line Company enters District V with a line having a capacity of 38,500 barrels per day and delivers to Spokane and Moses Lake.

The capacity of interdistrict pipeline movements are as follows:

Into District V from District III	72,800 B/D	Products
	-0-	LPG
Into District V from District IV	65,500 B/D	Products
	-0-	LPG

Very little pipeline construction is planned or under way in District V. The longest line consists of 27 miles of 14-inch with a planned capacity of 95,000 barrels per day between Bakersfield and Martinez, California for Shell Oil Company.

PRINCIPAL REFINED PRODUCTS PIPE LINES

THROUGHPUT CAPACITIES FOR DEC. , 1956

P A D DISTRICT 5

NOTE -- Figures indicate capacity in thousands of barrels per calendar day.

PAD DISTRICT V

PETROLEUM PRODUCTS PIPELINES DAILY CAPACITIES AND MOVEMENTS OUT OF REFINING AREAS AND DEEP WATER TERMINALS YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
CALIFORNIA -		
Bakersfield		
Southern Pacific	30,000	To Fresno, California
Los Angeles Basin Area		
Cal-Nev.-Colton	37,500	To Las Vegas, Nevada (20,000)
Mobil	121,000	
Richfield	358,000	
San Diego	50,000	To Mission Valley (North San Diego, Calif.)
Shell	292,500	
Southern Pacific	105,600	To Phoenix, Arizona. Capacity to Norwalk 105,600; to Colton 82,500; to Niland, California 43,200; to Phoenix 36,000
Standard of California-El Segundo	38,000	To Huntington Beach and Watson, California
" " " " "	21,000	To Van Nuys, California
" " " " "	70,000	To San Pedro, California
Union	144,000	From Los Angeles refinery to Torrance (Reversible - 26,000 B/D)
"	29,800	From Torrance tank farm to Rosecrans Terminal
"	31,500	From Torrance tank farm to S. P. Watson Terminal
"	30,000	From Los Angeles refinery to Los Angeles International Airport
Wilshire	48,000	To Norwalk with connection to Southern Pacific Pipeline
"	15,000	To Huntington Beach
Total	1,391,900	
San Francisco Bay Area		
Shell	50,400	To Oakland, San Francisco/San Jose
Southern Pacific	80,000	To Fallon, Nevada and Chico and Atwater, California. Capacity 23,000 Roseville to Reno and 9,600 Reno to Fallon
" "	44,000	To San Jose, California
" "	28,800	To Travis Air Force Base
Standard of California	36,000	To Sacramento, Banta and San Jose, California
Union	20,000	
Total	259,200	
OREGON -		
Portland		
Southern Pacific	25,400	To Albany and 22,300 to Eugene, Oregon
WASHINGTON -		
Ferndale and Anacortes		
Olympic	135,000	To Portland, Oregon and Seattle, Olympia and Tacoma, Washington

PETROLEUM PRODUCTS PIPELINE CAPACITIES
LINES CONNECTING DISTRICT V WITH ADJACENT DISTRICTS
YEAR-END 1966

	AVERAGE ANNUAL CAPACITY B/D	REMARKS
Into District V from District III		
Southern Pacific	72,800	From El Paso, Texas, to Phoenix, Arizona
Into District V from District IV		
Chevron (Salt Lake)	26,500	From Salt Lake City, Utah, to Spokane, Washington, via Baker, Oregon
Yellowstone	38,500	From Billings, Montana, to Spokane, Washington
Total	65,000	

PAD DISTRICT V

PETROLEUM PRODUCTS PIPELINE CAPACITIES INTO DISTRIBUTION TERMINALS YEAR-END 1966

DISTRIBUTION TERMINAL CITY	COUNTY	TOTAL	CAL-NEV.	CHEVRON	OLYMPIC	SAN DIEGO	SHELL	SOUTHERN PACIFIC	STANDARD OF CALIFORNIA	YELLOWSTONE
ARIZONA										
Davis Montham AFB	Tima	22,900						22,900		
Luke AFB	Maricopa	18,000						18,000		
Phoenix	Maricopa	76,800						76,800		
Tucson	Pima	72,800						72,800		
Williams AFB	Maricopa	19,900						19,900		
Yuma MCAAS	Yuma	33,600						33,600		
CALIFORNIA										
Atwater	Merced	14,200						14,200		
Banta	San Joaquin	36,000							36,000	
Barstow	San Bernardino	35,000	35,000							
Beale AFB	Yuba	30,000						30,000		
Bradshaw	Sacramento	65,000						65,000		
Castle AFB	Merced	14,200						14,200		
Chico	Butte	26,000						26,000		
Colton	San Bernardino	82,500						82,500		
El Centro	Imperial	2,700						2,700		
Fresno	Fresno	30,000						30,000		
George AFB	San Bernardino	37,500	37,500							
Huntington Beach	Orange	38,000							38,000	
Imperial	Imperial	24,000						24,000		
Los Angeles Airport	Los Angeles	19,400					19,400			
March AFB	Riverside	18,100						18,100		
Mather AFB	Sacramento	17,800						17,800		
McClellan AFB	Sacramento	9,900						9,900		
Mission Valley	San Diego	50,000				50,000				
Miramar	San Diego	50,000				50,000				
Niland	Imperial	43,200				43,200				
Oakland	Alameda	50,400					50,400			
Orange	Orange	100,000						100,000		
Roseville	Placer	55,200						55,200		
Sacramento	Sacramento	36,000							36,000	
San Francisco Airport	San Mateo	50,400					50,400			
San Francisco	San Mateo	50,400					50,400			
San Jose	Santa Clara	124,400					44,400	44,000	36,000	
San Pedro	Los Angeles	70,000							70,000	
Stockton	San Joaquin	67,000						67,000		
Travis AFB	Solano	28,800						28,800		
Van Nuys	Los Angeles	29,600					8,600		21,000	
Ventura	Los Angeles	4,000					4,000			
Watson	Los Angeles	38,000							38,000	
NEVADA										
Fallon	Churchill	9,600						9,600		
Las Vegas	Clark	20,000	20,000							
Nelles AFB	Clark	20,000	20,000							
Reno	Washoe	23,000						23,000		
OREGON										
Adams	Umatilla	26,500		26,500						
Albany	Linn	25,440						25,440		
Baker	Baker	26,500		26,500						
Eugene	Lane	22,320						22,320		
Portland	Multnomah	78,000			78,000					
Southern Pac. R. R.	Lane	6,000						6,000		
WASHINGTON										
Fairchild AFB		22,800								22,800
Geiger AFB		22,800								22,800
Larsen AFB	Grant	10,300								10,300
Moses Lake	Grant	10,300								10,300
Olympia	Thurston	25,900			25,900					
Pasco	Franklin	26,500		26,500						
Seattle	King	135,000			135,000					
Spokane	Spokane	53,500		15,000						38,500
Tacoma	Pierce	31,100			31,100					

SECTION III

REPORT OF

THE SUBCOMMITTEE ON GAS PIPELINE TRANSPORTATION

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B. Exhibit No. 10 - Map, Pipeline Facility Mapping Prepared on U.S. Strategic Maps 185

C. Exhibit No. 11 - Map, Major Natural Gas Pipelines as of December 31, 1966 187

D. List of Companies that Participated in the Gas Pipeline Transportation Survey 189

August 14, 1967

Mr. John E. Swearingen
Chairman, Committee on Oil and
Gas Transportation Facilities
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

Dear Mr. Swearingen:

The National Petroleum Council's Subcommittee on Natural Gas Pipeline Transportation Facilities has completed its assignment of updating the 1961 National Petroleum Council's Oil and Gas Transportation Report.

This report was first prepared in response to the request received December 19, 1960 from the Secretary of the Interior. On July 18, 1966, the Assistant Secretary, Honorable J. Cordell Moore, asked the National Petroleum Council to bring the Natural Gas Pipeline Facilities data and information from the January 1, 1961 level of understanding to include the growth and changes as of January 1, 1966. In response to the Secretary's request, the National Petroleum Council authorized the reformation of a Subcommittee on Natural Gas Pipeline Transportation Facilities on December 27, 1966. The Subcommittee has obtained the necessary transmission pipeline information from the participating pipeline companies and prepared a report consisting of the following:

PART I Natural Gas Pipeline Transportation Facilities

PART II Summary Report

PART III Natural Gas Pipeline Transportation Facilities Data (Unrestricted)

PART IV Assignment and Method of Obtaining Information and Data

The Subcommittee is appreciative of the very fine assistance given by the 113 companies that cooperated in the assignment. Also the Subcommittee is grateful for the guidance provided by the staff of the National Petroleum Council and Department of the Interior, Office of Oil and Gas.

Very truly yours,

/S/ S. ORLOFSKY

S. Orlofsky, Chairman
NPC Subcommittee on Gas
Pipeline Transportation

SUBCOMMITTEE ON GAS PIPELINE TRANSPORTATION
OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES (1966)

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National Petroleum Council

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Southern California Gas Company

O. W. Clark
Senior Vice President
Southern Natural Gas Company

J. T. Innis
Vice President
Northern Natural Gas Company

Robert D. McClintock
Vice President, Administrative Services
Michigan Wisconsin Pipe Line Co.

F. J. McElhatton
Vice President
Panhandle Eastern Pipeline Co.

George W. White
Chief Engineer
Tennessee Gas Pipeline Company

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* Ferdinand L. Gagne', Office of Oil and Gas, served as Government Co-Chairman until July 1, 1967

PART I

NATURAL GAS PIPELINE TRANSPORTATION FACILITIES

PART I

NATURAL GAS PIPELINE TRANSPORTATION FACILITIES

The information requested by the Secretary of the Interior with respect to the country's natural gas transmission facilities has been obtained from the industry by means of questionnaires and submission of pipeline maps.

This information, since the 1961 work, has been revised twice by the Emergency Advisory Committee for Natural Gas. It was first updated to include January 1, 1964 and again recently to include January 1, 1966. The National Petroleum Council Subcommittee on Natural Gas Pipeline Facilities used as its source the January 1, 1966 data and mapping information obtained from the industry by the Emergency Advisory Committee for Natural Gas and placed it in the statistical form that is presented in this report. The master pipeline facility map sets that were constructed by the 1961 Subcommittee on Natural Gas Pipeline Facilities have been turned over to the Emergency Advisory Committee for Natural Gas. This Committee updated the facility mapping as of January 1, 1964 and again as of January 1, 1966.

These questionnaires and the master map sets are by their very nature confidential and are made available only to the Department of the Interior and the Emergency Advisory Committee for Natural Gas for use in classified defense and mobilization studies. The questionnaires and mapping information supplied by the participating companies have been used only for the purposes intended and are filed in accordance with their security classification.

Attached hereto as Part III are certain charts, tables and statistical information that have been derived from information provided by the Emergency Advisory Committee for Natural Gas from questionnaires and mapping information forwarded by the participating companies.

PART II

COMMENTS AND FINDINGS

PART II

COMMENTS AND FINDINGS

The function of the Gas Pipeline Facilities Subcommittee was primarily to prepare a transportation study of the major natural gas pipeline transmission properties in the United States from data supplied by the Emergency Advisory Committee for Natural Gas. This study was to be used for damage assessment and defense planning by the Department of the Interior and the defense agencies in the event of nuclear attacks on the United States.

Formulated from the experiences encountered in collecting, preparing and subsequent updating of the natural gas pipeline facilities data for the study, the Subcommittee submits the following comments:

1. Experience so far has verified the plan of vesting the responsibility for the development of emergency preparedness plans for mobilization and rehabilitation for the natural gas pipeline transmission industry with a single federal agency. The Committee is in full accord with the Executive Order issued February 16, 1962, which placed the overall coordination of national emergency planning of the energy industries with the Department of the Interior. To be effective, the entire program should be channeled through and under the direction of the Department of the Interior, Office of Oil and Gas.

   Since the Government will not take over industry directly, in the event of an emergency, an organization must be instituted and trained to administer the industry in accordance with the necessary government controls and regulations as well as to work out the intricate matching up of supply plans. The Emergency Petroleum and Gas Administration was established by the Secretary of the Interior on August 28, 1963 to accomplish these objectives. The Secretary of the Interior heads the Emergency Petroleum and Gas Administration as National Administrator.

   The Emergency Advisory Committee for Natural Gas was formally established July 1, 1962 by the Secretary of the Interior in connection with the performance of the emergency preparedness functions relating to natural gas for which the Secretary is responsible under various authorities. The Emergency Advisory Committee for Natural Gas has prepared a plan and

established an organization for the operation of the natural gas industry in the event of a national emergency. The plan and organization would be activated depending on the extent of the emergency at the discretion of the Secretary of the Interior. Since the National Petroleum Council Subcommittee on Gas Pipeline Transportation Facilities fully realized the importance of maintaining the data in connection with this activity on a reasonably accurate and up-to-date basis, one of the assignments given to the Emergency Advisory Committee for Natural Gas was to maintain this detailed and highly technical information, maps and other facility data on as current and accurate a basis as was deemed necessary.

In connection with the 1961 report, requests for data were made to 103 companies. Facility information and maps were obtained from 86 companies. From this data, two master map sets were compiled and all the facility information recorded for electronic data processing for the damage assessment requirements phase of the project. In conformance with the thinking of the National Petroleum Council's Subcommittee, the Emergency Advisory Committee for Natural Gas updated the maps and facility data as of January 1, 1964. Eighty-seven additional companies were contacted along with those originally included in the project. Thirty-three of the new companies along with 70 of the original participants supplied the required information. At that time, eight more master map sets were compiled in addition to updating the two original sets. The facility information for use by the electronic data processing damage assessment phase of the project was also updated.

Conforming to its plan of maintaining the information required for the study as accurate and up-to-date as possible, the Emergency Advisory Committee for Natural Gas again updated the ten master map sets and the electronic data processing facilities information as of January 1, 1966. Information for this second updating was requested from 78 of the companies participating originally, 67 initially contacted during the first updating and 166 new companies. Maps and facility information were received from 62, 19 and 25 respectively of those companies contacted.

2. Analysis of statistics pertinent to the gas transmission facilities has revealed the following information. The natural gas industry accounted for 30.1% of the total energy requirements for the U.S. in 1966, as compared to 28.4% in 1960. The number of customers

has increased, 7.8 million to 38.3 million. The miles of pipelines have increased, 45,690 miles to a 1966 total of 284,430 miles with 2,541,000 horsepower having been added for a total of 10,141,000 compressor horsepower. This growth in facilities has added an approximate cost of 3-1/3 billion dollars making the total gross cost of such facilities approximately 12-1/3 billion dollars in 1966. This expansion has permitted an increase in the annual interstate shipment of natural gas, 7.5 trillion cubic feet in 1960 to 9.8 trillion in 1965. A map of the major natural gas pipelines in the United States is shown as Exhibit No. 11.

3. A total of 68 emergency connections were shown in the 1961 report. This revised report data lists 307 such connections. Although the number installed has increased, additional installations should be made. The Federal Power Commission has on numerous occasions encouraged natural gas companies to install emergency interconnections. A simplified procedure still needs to be instituted by the Commission whereby an abbreviated format can be used to expedite the approval of the applications for such connections. Such a procedure would be of assistance in expediting approval of additional emergency interconnections to existing natural gas transmission industry facilities.

4. The 1961 National Petroleum Council Subcommittee on Gas Pipeline Facilities questionnaire revealed that 35 companies had dispatching centers that were classified for radiation fallout protection. This last updating facility questionnaire sponsored by the Emergency Advisory Committee for Natural Gas showed an increase of only 19 such installations for a total of 54. Companies need to be again encouraged to make provisions for emergency operating headquarters. The consideration of financial incentives should be continued in an effort to increase the number of such vital installations.

PART III

NATURAL GAS PIPELINE TRANSPORTATION FACILITIES DATA

TABLE 1

NATURAL GAS TRANSMISSION COMPANY

COMPRESSOR STATION INSTALLATIONS

ABOVE 1,000 HORSEPOWER

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Alabama-Tennessee Natural Gas Company				
1	G	4	1,400	5
Algonquin Gas Transmission Company				
1	G	4	10,800	7
2	G	6	12,000	11
3	G	3	8,100	7
	TOTAL	13	30,900	25
Arkansas Louisiana Gas Company				
9	G	2	1,500	2
12	G	5	1,300	1
15	G	3	1,050	1
18	G	3	1,405	4
21	G	4	1,800	8
24	G	8	2,680	4
27	G	2	1,320	1
30	G	7	2,725	0
33	G	4	1,870	1
36	G	2	1,100	1
39	G	8	2,400	0
42	G	4	2,000	1
45	G	5	7,500	13
48	G	5	7,000	14
57	G	2	2,400	3
66	G	6	1,875	6
69	G	10	10,000	17
78	G	7	10,500	17
84	G	4	1,810	1
87	G	1	1,500	1
E-88	G	1	4,000	2
90	G	1	4,000	3
	TOTAL	94	71,735	101
Arkansas Western Gas Company				
E-1	G	7	2,100	4
E-2	G	10	4,840	2
	TOTAL	17	6,940	6
Atlantic Seaboard Corporation				
-1	G	3	3,960	1
3	G	4	8,000	7
6	G	8	10,600	13
9	G	7	8,600	12
12	G	1	5,500	8
15	G	6	7,920	10
18	G	4	4,400	11
30	G	5	3,825	14
33	G	4	3,200	13
	TOTAL	42	56,005	89
Cabot Corporation, G. L. Cabot Div.				
10	G	6	2,370	6
13	G	5	1,730	6
16	G	6	1,920	8
	TOTAL	17	6,020	20
Cabot Corporation, Oil and Gas Division				
1045	G	3	2,650	5
3902	G	21	6,790	5
3903	G	30	10,790	5
	TOTAL	54	20,230	15
Carolina Pipeline Company				
3	G	4	2,400	3
6	G	3	3,240	0
E-7	G	3	3,240	1
	TOTAL	10	8,880	4
Cities Service Gas Company				
331	G	4	6,000	6
332	G	1	1,800	0
333	G	7	11,850	15
334	G	3	5,440	0
411	G	15	14,470	20
505	G	8	3,505	8
506	G	10	1,700	6
507	G	10	1,700	8
508	G	8	1,360	6
511	G	7	8,600	20
512	G	6	2,925	0
513	G	7	7,000	16
514	G	4	4,000	17
515	G	9	11,000	22
516	G	7	11,200	21
517	G	5	5,000	16
518	G	16	25,600	45
519	G	6	6,000	17
520	G	5	5,000	16
521	G	7	7,000	18
522	G	6	6,000	23
523	G	5	4,760	17
524	G	9	7,000	25
531	G	4	6,900	17
532	G	4	8,000	6
533	G	1	1,100	1
534	G	2	4,000	6
535	G	3	4,050	7
536	G	8	10,600	18
537	G	2	4,000	0
538	G	3	6,000	6
539	G	2	2,700	5
540	G	3	6,000	6
541	G	15	15,000	28
542	G	6	5,110	14
543	G	2	4,000	6
	TOTAL	220	236,370	462
Citizens Gas and Coke Utility				
E-1	G	4	1,880	10
Colorado Interstate Gas Company				
1	G	13	9,560	36
E-1A	G	2	2,880	5
7	G	4	3,200	7
8	G	12	14,400	28
9	G	10	12,360	17
10	G	11	14,520	24
11	G	4	5,400	7
12	G	4	5,400	7
13	G	7	9,980	22
14	G	3	4,500	7
15	G	7	5,320	17
16	G	1	2,000	0
	TOTAL	78	89,520	177
Columbia Gulf Transmission Company				
1	G	5	24,500	11
2	G	7	14,000	14
2	G	1	10,500	0
3	G	5	24,500	11
4	G	7	14,000	14
4	G	2	13,000	0
5	G	5	24,500	11
6	G	8	25,300	12
7	G	5	24,500	11
8	G	8	23,000	14
9	G	5	24,500	11
10	G	8	24,500	16
10A	G	1	10,500	0
	TOTAL	67	257,300	125
Commonwealth Natural Gas Corporation				
1	G	3	2,400	10
1	G	1	1,100	0
	TOTAL	4	3,500	10

NOTE: G = Gas E = Electric S = Steam

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY
COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER
AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1/]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Consolidated Gas Supply Corporation				
1	G	2	2,200	7
E-1A	G	2	1,320	0
E-1B	G	2	3,200	3
2	G	8	4,000	22
3	G	11	14,460	27
3	G	5	7,750	14
4	G	2	2,000	6
5	G	5	2,500	6
6	G	7	4,920	14
7	S	18	32,100	91
8	G	4	1,980	7
9	G	2	1,320	4
9	G	12	30,000	50
10	G	1	1,250	2
11	G	4	3,200	11
12	G	6	4,800	13
12	G	8	9,630	18
13	G	4	2,000	9
14	G	4	5,400	11
15	G	6	7,200	16
15	G	6	12,000	18
16	G	5	3,300	2
17	G	1	1,100	2
18	G	2	4,000	11
21	G	11	19,000	26
24	G	3	1,200	6
27	G	6	11,100	17
30	G	7	10,500	16
33	G	6	11,100	16
36	G	7	5,200	17
39	G	9	8,580	10
42	G	5	5,000	1
45	G	3	3,300	0
48	G	5	8,200	16
	TOTAL	189	244,810	489
Consumers Power Company				
E-1	G	2	5,500	17
3	G	4	10,800	15
6	G	7	19,040	16
12	G	6	13,490	10
	TOTAL	19	48,830	58
East Ohio Gas Company, The				
1	G	7	4,200	14
2	G	4	5,400	15
3	G	1	660	0
4	G	3	4,500	13
	TOTAL	15	14,760	42
East Tennessee Natural Gas Company				
3101	G	2	2,000	0
3308	G	2	2,000	0
3311	G	2	1,320	0
	TOTAL	6	5,320	0
El Paso Natural Gas Company				
1	G	7	14,000	10
E-1A	G	1	1,040	0
E-1B	G	2	5,400	3
E-1C	G	1	5,500	3
2	G	4	8,000	4
4	G	4	8,000	7
6	G	4	6,000	13
7	G	3	4,500	7
8	G	3	6,000	6
9	G	3	6,000	4
10	G	3	6,000	10
11	G	3	6,000	5
12	G	3	4,500	9
13	G	3	4,500	7
14	G	4	4,000	11
18	G	4	8,000	13
19	G	2	4,000	2
20	G	1	1,040	0
21	G	1	10,500	2
23	G	7	5,500	24
24	G	3	1,980	1
25	G	7	14,000	11
26	G	15	20,300	22
27	G	5	6,750	9
28	G	6	6,600	21
29	G	3	1,980	3
30	G	4	2,120	3
31	G	15	11,660	16
32	G	28	56,120	40
33	G	1	1,100	0
34	G	3	1,980	0
35	G	3	1,650	0
36	G	5	3,520	0
37	G	3	4,000	0
38	G	7	10,500	13
39	G	3	3,300	5
41	G	10	10,760	9
42	G	23	25,500	32
43	G	6	5,915	0
44	G	9	11,210	15
45	G	12	16,500	21
46	G	23	16,000	26
47	G	6	6,600	9
48	G	4	1,230	0
49	G	2	1,320	2
50	G	4	2,380	5
51	G	2	2,000	3
52	G	8	16,000	15
53	G	11	12,000	27
54	G	5	6,750	7
55	G	7	4,340	7
56	G	9	11,150	14
57	G	3	1,320	0
58	G	4	4,400	10
59	G	5	5,980	4
60	G	7	5,600	13
61	G	6	4,400	10
62	G	7	5,600	0
63	G	6	4,800	19
64	G	6	4,800	17
65	G	15	24,000	28
66	G	12	12,100	20
67	G	3	17,100	8
68	G	25	25,600	36
69	G	3	17,100	8
70	G	3	17,100	8
71	G	25	28,000	33
72	G	3	17,100	8
73	G	3	17,100	8
74	G	21	23,100	29
75	G	6	4,800	0
76	G	2	11,400	8
77	G	3	17,100	7
78	G	2	1,600	8
79	G	15	24,320	29
80	G	3	2,400	0
81	G	2	11,400	8
82	G	3	2,400	0
83	G	3	17,100	8
84	G	17	18,700	29
85	G	3	17,100	8
86	G	15	17,100	22
87	G	15	25,450	22
88	G	2	10,000	8
89	G	3	10,200	9
90	G	12	17,100	19
91	G	2	10,000	8
92	G	3	10,200	9
93	G	10	15,240	21
94	G	11	27,000	29
95	G	18	29,000	34
96	G	18	33,000	34
97	G	14	31,800	30
98	E	2	12,000	2
99	G	10	28,400	17
100	G	25	32,380	36
101	G	4	1,650	7
102	G	4	3,520	7
103	G	7	4,520	6
104	G	5	3,980	5
105	G	4	2,640	5
106	G	11	23,200	31
107	G	5	5,440	10
108	G	12	18,560	22
	TOTAL	743	1,151,595	1,233

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY
COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER
AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Equitable Gas Company				
18	S	2	3,200	17
26	S & G	5	5,680	19
29	S	4	4,000	18
30	S	3	4,950	19
31	S	4	6,400	18
37	G	4	1,200	10
43	G	10	1,820	12
45	G	4	1,200	11
47	G	5	4,400	17
48	G	3	3,300	12
49	G	2	1,320	12
	TOTAL	46	37,470	165
Florida Gas Transmission Company				
2	G	2	4,000	10
3	G	2	3,000	10
4	G	2	4,000	10
6	G	3	6,000	10
7	G	3	6,000	10
8	G	3	6,000	10
9	G	3	6,000	10
10	G	3	6,000	10
11	G	3	6,000	10
12	G	3	6,000	10
13	G	3	6,000	10
14	G	3	6,000	10
15	G	3	6,000	10
16	G	3	6,000	10
17	G	3	6,000	10
	TOTAL	42	83,000	150
Home Gas Company				
3	G	5	2,280	11
Houston Pipe Line Company				
E-1	G	3	1,500	1
E-2	G	3	3,000	1
E-3	G	4	2,000	1
	TOTAL	10	6,500	3
Humble Gas Transmission Company				
1	G	10	11,250	24
2	G	7	8,900	8
	TOTAL	17	20,150	32
Illinois Power Company				
3	E	4	2,800	4
6	E	3	2,400	2
9	E	2	2,000	2
	TOTAL	9	7,200	8
Industrial Gas Supply Corporation				
E-1	G	4	2,640	5
Inland Gas Company, Inc.				
2	G	7	1,120	9
3	G	9	1,440	10
	TOTAL	16	2,560	19
Kansas-Nebraska Natural Gas Company, Inc.				
1	G	3	3,000	10
2	G	4	1,375	2
3	G	2	2,000	5
4	G	3	2,550	7
5	G	2	1,600	5
6	G	2	1,600	6
8	G	3	1,550	5
9	G	2	1,100	6
10	G	3	3,000	5
11	G	3	2,040	4
12	G	9	12,450	14
13	G	2	2,200	1
14	G	8	10,200	14
15	G	6	5,450	10
16	G	1	1,800	1
17	G	6	6,950	10
18	G	2	1,000	1
19	G	1	1,000	1
20	G	3	2,100	1
	TOTAL	65	62,965	108
Kansas Power and Light Company, The				
1	G	4	4,000	11
2	G	7	7,150	18
3	G	9	11,900	17
4	G	4	5,600	11
5	G	5	9,000	0
	TOTAL	29	37,650	57
Kentucky Gas Transmission Corporation				
3	G	4	3,520	9
9	G	4	2,400	6
	TOTAL	8	5,920	15
Kentucky-West Virginia Gas Company				
3	G	6	4,760	31
6	G	6	1,800	9
9	G	9	2,790	13
12	G	2	1,000	2
	TOTAL	23	10,350	55
Lone Star Gas Company				
1	G	3	2,010	7
3	G	6	1,020	5
6	G	2	1,750	2
9	G	9	3,660	10
12	G	7	2,170	10
15	G	2	2,880	4
18	G	4	3,280	6
21	G	2	2,200	2
24	G	10	3,380	12
27	G	17	2,890	11
30	G	3	2,640	9
33	G	12	3,280	4
36	G	14	2,380	10
42	G	2	2,670	8
45	G	2	2,670	2
48	G	4	1,320	3
51	G	3	4,050	10
54	G	2	3,200	4
	TOTAL	104	47,450	119
Louisville Gas and Electric Company				
E-1	G	5	6,690	15
E-2	G	8	7,200	19
	TOTAL	13	13,890	34
Manufacturers Light and Heat Company, The				
3	G	5	6,640	10
6	G	2	1,760	6
9	G	4	1,800	9
12	G	2	2,200	6
15	G	5	2,880	11
18	G	4	1,000	10
21	G	2	2,200	5
24	G	3	1,050	8
27	G	3	1,600	10
30	G	4	5,280	12
33	G	3	3,500	12
36	G	3	2,640	9
39	G	2	3,000	6
	TOTAL	42	35,550	114

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY
COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER
AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1/]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Michigan Consolidated Gas Company				
1	G	21	40,000	20
E-1A	G	2	2,000	0
E-1B	G	4	4,000	7
E-1C	G	4	6,000	6
E-1D	G	2	2,200	5
E-1E	G	2	2,200	5
	TOTAL	35	56,400	43
Michigan Gas Storage Company				
1	G	13	15,700	23
3	G	19	37,300	18
	TOTAL	32	53,000	41
Michigan Wisconsin Pipe Line Company				
1	G	9	13,240	20
E-1A	G	15	36,000	36
E-1B	G	1	2,750	0
E-1C	G	6	15,250	13
E-1D	G	6	16,250	13
E-1E	G	6	12,000	12
E-1F	G	5	13,500	13
2	G	6	12,000	17
2	G	8	10,560	21
3	G	6	12,000	18
3	G	8	10,560	20
4	G	8	10,560	20
5	G	6	12,000	19
5	G	7	11,600	23
6	G	6	12,000	18
6	G	7	10,400	19
7	G	8	10,560	20
8	G	6	12,000	18
8	G	7	10,400	21
9	G	6	12,000	19
9	G	7	10,400	20
10	G	7	10,590	22
11	G	6	12,000	18
11	G	4	6,200	16
12	G	5	7,750	17
13	G	5	7,750	14
13A	G	15	29,280	45
14	G	11	17,450	22
15	G	5	3,740	6
16	G	3	6,000	7
17	G	2	3,000	5
	TOTAL	207	369,790	552
Midwestern Gas Transmission Company				
2101	G	4	8,940	9
2110	G	3	8,100	8
2201	G	3	5,100	8
2213	G	3	5,100	9
	TOTAL	13	27,240	34
Mississippi River Transmission Corporation				
1	G	3	2,250	0
2	G	2	1,320	0
3	G	9	9,400	18
4	G	6	3,600	8
5	G	8	7,040	10
6	G	8	8,000	12
6A	G	7	7,000	12
7	G	6	6,600	12
8	G	6	3,600	10
9	G	8	8,600	13
9A	G	5	5,500	12
10	G	7	7,000	12
11	G	6	6,000	12
12	G	6	3,600	9
12A	G	6	4,600	10
13	G	8	6,495	12
14	G	7	7,000	12
15	G	6	6,400	12
15A	G	1	1,850	5
16	G	4	3,200	9
17	G	8	5,890	10
	TOTAL	127	114,945	210
Montana-Dakota Utilities Company				
	G	3	2,400	0
1	G	10	4,050	6
2	G	8	2,790	5
3	G	9	2,870	6
4	G	3	1,980	1
5	G	5	3,520	2
6	G	8	2,400	1
7	G	7	2,160	5
8	G	4	2,640	5
9	G	5	1,335	6
10	G	7	6,160	12
	TOTAL	69	32,305	49
Montana Power Company, The				
1	G	3	1,980	1
2	G	4	4,400	2
3	G	3	3,300	2
4	E	3	3,500	2
5	G	7	2,120	4
6	G	1	660	2
	TOTAL	21	15,960	13
Mountain Fuel Supply Company				
1	G	2	1,320	8
E-1A	G	1	1,760	1
E-1B	G	1	1,000	4
E-1C	G	2	1,320	1
2	G	6	1,515	4
3	G	3	1,040	4
	TOTAL	15	7,955	22
Natural Gas Pipeline Company of America				
101	G	5	8,750	25
102	G	8	15,650	34
103	G	11	20,245	42
104	G	12	25,500	39
105	G	13	27,250	40
106	G	12	25,500	66
107	G	12	24,300	49
108	G	11	21,500	49
109	G	11	21,500	49
110	G	9	17,400	36
111	G	20	20,000	94
112	G	17	20,250	92
113	G	6	6,000	3
155	G	5	3,901	8
156	G	3	8,280	11
157	G	1	2,745	0
158	G	1	2,745	0
159	G	1	2,745	0
201	G	9	22,640	46
203	G	4	3,250	5
204	G	2	1,760	7
300	G	4	11,550	14
301	G	6	15,840	29
302	G	6	15,840	29
303	G	7	18,480	28
304	G	8	22,480	31
305	G	8	21,280	28
306	G	8	21,280	39
307	G	8	22,480	33
308	G	8	22,480	31
309	G	8	21,280	30
310	G	7	18,640	28
311	G	7	18,480	29
341	G	2	5,490	0
	TOTAL	260	537,511	1,044
Niagara Mohawk Power Corporation				
E-1	E	3	2,200	0
E-2	E	3	1,200	0
	TOTAL	6	3,400	0

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER [1/]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
North Penn Gas Company				
E-1	G	19	5,000	9
E-2	G	4	1,685	4
	TOTAL	23	6,685	13
Northern Illinois Gas Company				
50	G	12	39,230	21
70	G	2	2,000	5
	TOTAL	14	41,230	26
Northern Indiana Public Service Company				
1	E	6	4,400	4
1	G	1	1,000	4
3	G	3	2,400	4
5	G	4	5,320	4
7	G	2	1,200	3
9	E	4	1,990	4
9	G	1	1,000	4
	TOTAL	21	17,310	27
Northern Natural Gas Company				
E-1	G	17	21,400	0
E-1A	G	1	1,600	0
2	G	2	1,100	0
18	G	4	5,600	44
I-62	G	16	22,700	31
I-63	G	13	18,250	22
I-64	G	5	4,400	9
I-65	G	7	10,000	7
I-67	G	4	8,000	5
I-69	G	2	1,100	0
K-19	G	4	24,800	13
K-20	G	6	10,560	13
K-21	G	29	49,200	45
K-22	G	29	40,100	45
K-25	G	24	40,400	38
K-28	G	14	18,200	33
K-32	G	9	14,800	18
K-34	G	4	6,400	12
K-36	G	11	14,520	19
K-38	G	6	3,080	0
K-40	G	4	24,800	13
K-45	G	4	3,000	0
K-46	G	3	2,560	0
K-47	G	3	2,450	0
K-53	G	2	1,050	0
M-80	G	4	7,960	5
M-81	G	4	3,520	5
N-41	G	25	46,800	41
N-42	G	8	7,740	10
N-43	G	25	42,000	41
N-44	G	6	5,100	13
O-18	G	18	32,200	27
O-20	G	2	1,100	0
T-4	G	5	5,940	5
T-6	G	4	4,510	7
T-7	G	11	14,700	17
T-10	G	5	1,980	0
T-11	G	6	6,600	11
T-13	G	16	28,200	24
T-15	G	3	1,150	0
T-16	G	4	3,360	8
T-17	G	4	1,430	0
T-33	G	11	16,650	14
T-34	G	11	16,650	20
T-43	G	5	12,000	12
T-45	G	3	3,960	11
T-61	G	19	35,750	32
T-67	G	2	6,800	5
T-72	G	4	2,720	0
NM-77	G	5	2,420	0
NM-80	G	6	6,600	0
NM-91	G	4	5,280	0
	TOTAL	443	673,190	675
Northern Utilities, Inc.				
E-1	G	6	1,335	7
Ohio Fuel Gas Company, The				
1	G	19	18,650	51
3	G	4	1,440	10
6	G	3	2,700	9
9	G	6	3,600	13
12	G	7	3,500	16
15	G	2	2,200	5
18	G	4	6,000	10
21	G	3	3,300	5
24	G	3	3,300	5
27	G	5	6,800	21
30	G	8	12,050	36
33	G	7	4,320	14
36	G	5	11,120	5
	TOTAL	76	78,980	200
Okaloosa County Gas District				
E-1	G	3	1,200	1
Oklahoma Natural Gas Company				
E-1	G	6	3,000	20
E-2	G	5	5,500	0
E-3	G	5	12,500	0
E-4	G	2	2,700	0
	TOTAL	18	23,700	20
Pacific Gas and Electric Company				
E-1	G	12	21,680	36
3	G	10	35,000	38
6	G	10	25,100	36
12	G	3	1,580	0
15	E	2	5,250	0
18	E	2	5,500	0
	TOTAL	39	94,110	110
Pacific Gas Transmission Company				
4	G	1	6,000	6
8	G	2	10,000	8
13	G	2	10,000	7
	TOTAL	5	26,000	21
Pacific Lighting Corporation				
E-1	G	26	8,020	18
E-2	G	1	1,100	2
11	G	16	11,560	21
14	G	9	5,800	21
18	G	4	2,670	13
19	G	9	13,900	16
20	G	3	1,320	0
21	G	2	8,000	6
246	G	9	12,220	32
262	G	15	25,280	38
366	G	1	6,200	6
370	G	1	6,200	4
485	G	7	14,000	24
	TOTAL	103	116,270	201
Panhandle Eastern Pipe Line Company				
1	G	15	10,800	25
E-1A	G	2	2,200	2
E-1B	G	2	2,200	0
E-1C	E	1	1,000	1
E-1D	G	3	3,300	2
E-1E	G	1	1,100	1
2	G	22	37,500	47
3	G	15	28,200	46
4	G	16	32,400	49
5	G	21	33,050	50
6	G	19	29,900	50
7	G	16	32,600	45
8	G	16	26,800	46
9	G	16	26,800	45
10	G	14	21,200	43
11	G	17	28,700	43

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY
COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER
AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Panhandle Eastern Pipe Line Company (Cont'd.)				
12	G	14	24,700	40
13	G	14	27,550	40
14	G	13	23,700	39
15	G	10	11,000	30
16	G	9	9,900	20
17	G	5	5,500	5
18	G	2	2,200	3
19	G	8	7,500	9
20	G	12	18,100	26
21	G	3	2,640	3
22	G	9	3,200	3
23	G	5	6,840	4
24	G	1	1,100	0
25	G	3	4,000	4
26	G	5	5,800	3
	TOTAL	309	471,480	724
Pennsylvania Gas Company				
E-1	G	17	8,380	37
Peoples Natural Gas Company, The				
1	G	5	2,800	7
3	G	3	1,600	4
4	G	1	1,000	1
5	G	2	1,320	7
6	G	5	3,580	4
	TOTAL	16	10,300	23
Pioneer Natural Gas Company				
1	G	3	1,800	0
3	G	3	1,100	0
6	G	4	4,400	6
9	G	7	3,180	6
12	G	11	3,940	6
15	G	6	2,870	6
18	G	2	1,500	3
21	G	4	4,000	2
25	G	12	7,610	7
	TOTAL	52	30,400	36
Plateau Natural Gas Company				
E-1	G	18	5,725	10
Rio Grande Valley Gas Company				
1	G	3	1,100	1
San Diego Gas and Electric Company				
1	G	3	3,300	5
2	G	4	3,060	4
	TOTAL	7	6,360	9
South Carolina Electric and Gas Company				
E-1	G	1	1,000	0
E-2	G	3	3,000	0
	TOTAL	4	4,000	0
South Georgia Natural Gas Company				
1	G	1	1,100	0
Southeastern Michigan Gas Company				
E-1	G	3	1,980	5
Southern Natural Gas Company				
401	G	3	3,300	19
403	G	4	4,800	15
405	G	13	13,900	24
407	G	10	10,000	19
409	G	8	10,400	21
411	G	20	22,100	38
413	G	17	22,050	37
415	G	11	11,700	23

COMPANY AND STATION NUMBER	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Southern Natural Gas Company (Cont'd.)				
417	G	10	10,080	21
421	G	10	14,030	25
422	G	1	6,500	2
423	G	7	14,260	25
424	G	1	6,500	2
425	G	7	14,050	24
426	G	1	6,500	2
427	G	8	11,600	18
428	G	1	6,500	2
429	G	6	10,100	18
431	G	6	9,000	15
432	G	1	3,400	5
454	G	6	4,950	9
458	G	3	1,650	5
462	G	4	2,970	3
466	G	14	20,600	27
468	G	2	5,000	2
470	G	12	11,830	20
474	G	3	1,320	3
476	G	5	6,050	13
478	G	1	6,500	2
479	G	2	2,700	1
487	G	3	2,120	7
	TOTAL	200	276,460	447
Southern Union Gas Company				
1	G	7	3,980	7
2	G	7	4,320	10
	TOTAL	14	8,300	17
Tennessee Gas Pipeline Company				
1	G	12	17,800	27
9	G	12	22,000	19
17	G	17	21,700	32
25	G	16	25,600	36
32	G	20	26,400	39
40	G	19	30,400	38
47	G	25	31,500	38
54	G	28	38,970	35
63	G	32	38,150	40
71	G	23	34,350	46
79	G	30	39,100	46
87	G	33	49,500	45
96	G	32	41,200	50
106	G	29	42,600	52
110	G	4	26,800	13
114	G	20	23,750	34
200	G	12	18,700	25
204	G	12	22,970	18
209	G	13	21,000	22
214	G	13	19,880	15
219	G	14	21,550	15
224	G	4	8,000	8
229	G	6	8,400	13
233	G	1	3,500	6
237	G	3	6,500	6
241	G	2	6,800	6
245	G	5	7,000	9
249	G	2	5,500	5
254	G	6	6,000	9
261	G	4	2,650	3
267	G	1	1,000	1
307	G	4	8,000	8
313	G	11	16,200	17
321	G	5	5,000	1
504	G	1	10,500	2
507F	G	1	7,500	1
524	E	3	4,500	1
527	G	4	16,000	16
530	G	8	16,000	9
534	G	5	15,000	7
538	G	8	16,000	9
542	G	3	16,500	8
546	G	6	15,000	9
550	G	3	16,500	6
555	G	6	15,000	8
823	G	12	27,150	27
827	G	2	13,400	3
834	G	7	11,350	8
838	G	8	16,350	10
843	G	9	14,350	11
847	G	2	13,400	8

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY
COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER
AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Tennessee Gas Pipeline Company (Cont'd.)				
851	G	8	13,600	12
856	G	2	12,500	10
860	G	13	31,600	16
871	G	2	8,000	4
	TOTAL	583	1,008,670	962
Texaco Inc.				
1	G	16	11,220	12
2	G	4	6,880	8
E-3	G	5	3,430	0
E-4	G	5	2,970	0
E-5	G	9	7,250	0
E-6	G	3	3,000	0
E-7	G	9	4,685	0
E-8	G	4	2,330	1
E-9	G	3	1,140	1
E-10	G	9	5,460	1
E-11	G	5	2,500	1
E-12	G	4	2,110	1
E-13	G	2	2,000	1
E-14	G	3	1,255	0
E-15	G	2	1,320	0
E-16	G	1	1,320	0
E-17	G	6	7,620	0
E-18	G	3	1,430	0
E-19	G	2	1,060	0
E-20	G	2	1,660	0
E-21	G	2	1,660	0
E-22	G	2	1,260	0
E-23	G	6	3,080	0
E-24	G	8	5,280	1
	TOTAL	115	81,920	27
Texas Eastern Transmission Corporation				
1	E	1	2,000	0
1A	G	3	7,500	2
2	E	4	8,000	10
3	G	8	8,360	12
4	E	4	8,000	11
5	E	4	7,750	10
6	G	8	8,800	12
7	E	4	8,000	11
8	E	3	4,500	8
9	G	10	10,000	16
10	E	2	4,000	6
11	G	7	7,000	13
12	E	2	3,500	7
13	G	7	7,000	12
14	E	2	4,000	7
15	E	2	3,500	7
16	E	3	4,750	7
16A	G	7	9,550	11
17	E	3	6,000	7
18	G	7	7,700	13
19	E	4	6,500	8
20	E	4	7,250	0
21A	G	4	4,400	3
22A	G	9	11,880	15
23	E	3	7,500	8
24A	G	6	10,560	11
25	E	1	2,000	1
26	G	4	4,400	11
27	G	3	6,150	1
110	G	4	4,400	10
112	G	3	7,500	1
211	E	7	30,000	13
212	G	4	30,400	13
213	E	7	30,000	10
308	G	1	2,500	0
309	G	1	10,500	0
309	G	10	14,600	12
310	G	3	15,000	10
311	G	6	18,300	9
313	G	3	15,000	8
314	G	3	15,000	8
315	G	17	26,200	17
316	G	1	13,400	1
317	G	1	13,400	1
318	G	1	13,400	1
319	G	1	13,400	1
401	G	2	2,000	1
402	G	9	12,100	20
403	G	2	15,200	10
404	G	9	18,450	14
405	G	4	4,000	8
406	G	4	30,400	15
407	G	13	32,050	19
408	G	5	10,250	13
501	G	4	30,400	13
502	G	15	47,500	19
503	E	2	30,000	7
504	E	7	30,000	13
505	E	2	30,000	8
506	E	7	30,000	14
507	E	2	30,000	8
508	G	10	18,470	14
508	G	2	16,000	0
509	G	4	30,400	13
512	G	1	8,000	1
601	G	6	6,600	13
602	G	7	4,200	13
603	G	2	2,000	8
921	G	1	5,500	0
	TOTAL	322	907,010	599
Texas Gas Transmission Corporation				
*	G	3	3,760	10
*	G	3	1,800	3
*	G	2	1,100	8
1	G	2	2,640	6
2	G	11	11,900	21
3	G	10	20,420	20
4	G	9	16,080	20
5	G	8	24,500	19
6	G	9	16,000	20
7	G	10	17,000	20
8	G	11	22,560	21
9	G	11	16,560	18
10	G	11	15,570	20
10A	G	8	21,000	16
11	G	9	13,500	17
12	G	8	10,560	19
14	G	6	6,600	8
15	G	8	5,640	10
19	G	7	9,200	20
20	G	7	5,400	0
21*	G	4	1,760	8
22	G	8	19,000	18
23	G	8	15,800	17
24	G	4	5,960	8
	TOTAL	177	284,310	347
Transcontinental Gas Pipeline Corporation				
20	G	5	8,320	19
30	G	7	17,000	21
35	G	4	14,910	17
40	G	6	14,400	20
45	G	7	17,500	17
50	S	3	13,040	12
51	G	5	10,000	11
52	G	3	6,000	12
60	G	9	21,800	22
62	G	5	9,820	6
63	G	5	8,960	6
65	G	4	17,600	16
70	S	5	26,630	22
80	G	11	28,600	23
90	G	11	28,600	22
100	S	5	27,130	22
110	G	12	32,000	23
120	G	10	25,200	22
130	G	13	22,720	25
140	G	11	28,700	21
145	E	2	25,000	8
150	G	11	22,400	21
155	G	4	15,860	17
160	G	12	24,000	22
165	G	9	18,000	18
170	G	9	23,800	20
175	G	4	17,600	17
180	G	12	24,000	23
185	G	9	18,000	19

* Underground Storage Field Stations.

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STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY
COMPRESSOR STATION INSTALLATIONS ABOVE 1,000 HORSEPOWER
AS OF JANUARY 1, 1966

COMPANY AND STATION NUMBER[1]	PRIME MOVER	NUMBER OF UNITS	HORSEPOWER	EMPLOYEES
Transcontinental Gas Pipeline Corporation (Cont'd.)				
190	G	10	19,000	21
195	G	4	15,460	17
200	G	10	19,000	23
505	G	4	8,000	9
515	G	3	10,200	10
520	G	4	8,000	12
535	G	3	4,000	10
	TOTAL	251	651,250	626
Transwestern Pipeline Company				
3	G	2	9,000	6
5	G	2	9,000	6
7	G	2	9,000	7
9	G	2	9,000	6
10	G	2	9,000	7
11	G	5	6,600	4
12	G	2	1,760	5
13	G	2	2,460	5
	TOTAL	19	55,820	46
Trunkline Gas Company				
8	G	1	6,350	15
16	G	3	6,000	18
23	G	1	6,350	15
31	G	3	6,000	19
40	G	1	6,350	15
57	G	6	17,000	23
66	G	8	21,400	24
75	G	8	17,000	23
84	G	11	21,200	23
93	G	6	17,000	22
103	G	8	21,100	23
112	G	8	21,100	23
121	G	3	6,000	16
128	G	3	6,000	16
210	G	6	6,300	9
	TOTAL	76	185,150	284
United Fuel Gas Company				
21	G	4	6,000	15
24	G	3	2,480	7
27	G	4	3,200	12
31	G	9	9,000	42
36	G	7	19,500	18
E-36A	G	2	6,000	2
39	G	16	15,550	66
41	G	6	5,500	15
47	G	6	7,250	16
54	G	1	1,100	6
55	G	3	3,240	20
63	G	7	4,125	25
64	G	7	9,300	18
76	G	4	4,000	14
78	G	3	3,000	14
79	G	12	17,000	33
80	G	1	1,050	1
81	G	2	1,320	2
	TOTAL	97	118,615	326
United Gas Pipe Line Company				
2351	G	2	1,100	0
2701	G	9	6,160	15
2702	G	3	2,640	3
2752	G	3	3,000	5
2754	G	4	2,640	0
4062	G	8	12,500	15
4063	G	1	5,000	7
4111	G	6	6,000	14
4204	G	6	6,000	3
4205	G	10	9,400	13
4311	G	24	3,840	0
4312	G	8	12,000	21
4313	G	3	3,000	2
4314	G	6	7,920	15
4315	G	6	7,920	14
4316	G	8	1,280	2
4317	G	8	12,000	20
4351	G	4	2,350	3
4353	G	4	8,000	14
4354	G	7	11,000	15
4381	G	16	2,720	9
4382	G	4	4,400	3
4383	G	2	13,400	3
4502	G	4	4,000	14
4503	G	4	4,000	9
4506	G	4	13,200	8
4507	G	1	6,700	3
4751	G	4	4,000	11
4752	G	8	8,000	13
4754	G	5	3,800	9
	TOTAL	182	187,970	263
West Ohio Gas Company				
E-1	G	3	1,680	2
Western Slope Gas Company				
1	G	10	5,834	12
E-1A	G	6	1,140	3
	TOTAL	16	6,974	15
	GRAND TOTAL		9,245,040	11,881

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TABLE 2

NATURAL GAS TRANSMISSION COMPANY

MAIN SYSTEM PIPELINES

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAIN SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Alabama-Tennessee Natural Gas Company		3	18
		4	1
		6	46
		8	46
		10	98
		12	72
TOTAL	48		281
Algonquin Gas Transmission Company		4	37
		6	94
		8	54
		10	52
		12	32
		16	22
		20	23
		22	2
		24	100
		26	168
		30	125
TOTAL	189		709
Arkansas Louisiana Gas Co.		4	12
		6	415
		7	12
		8	614
		10	439
		12	303
		14	280
		16	223
		18	364
		20	547
		24	270
TOTAL	515		3,479
Arkansas Western Gas Company		3	51
		4	118
		5	48
		6	446
		8	193
		12	80
TOTAL	30		936
Atlantic Richfield Company		5	21
		6	24
		8	38
		10	103
		12	47
		14	13
		20	59
		22	3
TOTAL	0		308
Atlantic Seaboard Corporation		6	1
		8	1
		10	5
		20	283
		24	52
		26	532
		30	40
		36	10
TOTAL	124		924
Blue Dolphin Pipeline Company		16	9
		20	42
TOTAL	0		51
Brazos Oil and Gas Company		4	9
		7	10
		8	79
		10	22
		12	49
		14	50
		16	91
TOTAL	47		310
Cabot Corporation (G. L. Cabot Division)		6	46
		8	80
		10	9
		12	45
TOTAL	215		180
California-Pacific Utilities Company		4	19
		6	21
		8	4
		10	29
TOTAL	95		73
Carolina Pipeline Company		6	13
		8	124
		10	82
		12	24
TOTAL	30		243
Cascade Natural Gas Corp.		6	33
		10	39
		14	93
TOTAL	36		165
Central Hudson Gas and Electric Corporation		10	110
TOTAL	0		110
Central Illinois Public Service Company		2	35
		3	206
		4	177
		5	205
		6	27
		8	9
		10	8
TOTAL	8		667
Chandeleur Pipe Line Company		12	80
TOTAL	0		80
Chicago District Pipeline Company		12	3
		22	2
		24	164
		30	46
		36	74
TOTAL	38		289
Cities Service Gas Company		6	11
		8	245
		10	12
		12	515
		16	665
		18	96
		20	789
		24	10
		26	835
		30	119
TOTAL	315		3,297
Citizens Gas and Coke Utility		6	2
		10	6
		12	5
		16	41
		20	79
TOTAL	2		133
Colorado Interstate Gas Co.		2	15
		3	4
		4	12
		6	12
		8	91
		10	31
		12	24
		16	16
		20	730
		22	425
		24	24
		26	9
TOTAL	36		1,393
Columbia Gulf Transmission Co.		12	52
		16	4
		20	142
		24	209
		30	1,785
TOTAL	92		2,192
Commonwealth Natural Gas Corp.		8	41
		10	5
		12	124
		16	22
		18	197
TOTAL	23		389
Consolidated Gas Supply Corp.		6	29
		8	150
		10	134
		12	733
		14	182
		16	466
		18	104
		20	958
		24	34
		26	14
		30	140
TOTAL	741		2,944

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAIN SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Consumers Power Company		8	12
		10	3
		12	74
		16	24
		20	4
		24	106
		26	145
TOTAL	31		368
Cumberland and Allegheny Gas Company		6	28
		8	28
		10	59
		12	86
TOTAL	42		201
Cut Bank Gas Utilities		4	8
TOTAL	10		8
East Ohio Gas Company, The		8	30
		10	46
		12	126
		16	94
		18	788
		20	937
		24	176
		26	180
		30	414
TOTAL	171		2,791
East Tennessee Natural Gas Company		2	1
		3	31
		4	107
		6	117
		8	200
		12	235
		16	148
		22	169
TOTAL	44		1,008
Eastern Shore Natural Gas Company, Inc.		6	128
		8	33
TOTAL	13		161
El Paso Natural Gas Company		2	44
		3	52
		4	393
		5	143
		6	705
		8	687
		10	756
		12	684
		14	63
		16	823
		18	29
		20	621
		22	674
		24	775
		26	1,636
		30	2,072
		34	441
TOTAL	224		10,598
Equitable Gas Company		8	18
		10	21
		12	73
		16	470
		20	77
		24	12
TOTAL	626		671
Florida Gas Transmission Co.		4	58
		6	79
		8	204
		10	14
		12	150
		14	36
		16	67
		18	168
		20	249
		22	63
		24	925
TOTAL	100		2,013
Fort Smith Gas Corporation		2	36
		3	21
		4	56
		6	109
		8	102
		10	45
		12	13
TOTAL	21		382
Gas Transport, Inc.		14	39
TOTAL	9		39
Granite State Gas Transmission, Inc.		8	48
TOTAL	0		48
Home Gas Company		6	474
		8	37
		10	54
		12	155
		14	4
		16	23
TOTAL	55		747
Houston Pipe Line Company		12	346
		14	31
		16	214
		18	283
		24	94
		30	352
TOTAL	190		1,320
Humble Gas Transmission Co.		2	4
		3	9
		4	19
		6	38
		8	90
		10	34
		12	42
		13	18
		14	95
		16	192
		18	6
		20	45
		22	255
TOTAL	117		847
Humble Oil and Refining Company		4	8
		6	19
		8	91
		10	120
		12	87
		14	64
		16	52
		18	3
		20	124
		24	25
		26	22
		30	348
		36	242
TOTAL	57		1,205
Illinois Power Company		8	55
		10	36
		12	57
		14	10
		16	5
TOTAL	305		163
Industrial Gas Supply Corp.		10	44
		12	3
		14	60
		16	92
TOTAL	77		199
Inland Gas Company, Inc.		10	7
		12	30
		16	66
TOTAL	8		103
Iowa-Illinois Gas and Electric Company		3	33
		4	53
		6	24
		8	35
		10	128
		12	42
		16	22
TOTAL	126		337
Iroquois Gas Corporation		8	96
		12	68
		16	59
		20	78
		22	21
TOTAL	80		322

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAIN SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Kansas-Nebraska Natural Gas Company, Inc.		1	2
		1-1/4	606
		1-1/2	23
		2	1,010
		2-1/2	37
		3	555
		4	612
		5	69
		6	671
		7	3
		8	496
		10	358
		12	873
		16	159
		18	40
TOTAL	961		5,514
Kansas Power and Light Company, The		2	19
		3	8
		4	37
		6	97
		8	306
		10	27
		12	84
		14	2
		16	280
		18	60
		20	149
		22	58
		24	4
TOTAL	44		1,131
Kentucky Gas Transmission Corporation		6	4
		8	37
		10	39
		12	120
		14	66
		20	183
		24	34
		26	20
TOTAL	53		503
Kentucky-West Virginia Gas Company		8	33
		10	21
		12	34
		14	4
		16	6
TOTAL	378		98
Lateral Gas Pipeline Company		2	28
		4	82
		6	34
TOTAL	0		144
Lone Star Gas Company		3	5
		4	77
		6	287
		8	588
		10	649
		12	761
		14	79
		16	660
		18	367
		20	601
		24	43
TOTAL	840		4,117
Lone Star Gathering Company		14	23
TOTAL	0		23
Louisiana-Nevada Transit Co.		6	34
		8	78
TOTAL	15		112
Louisville Gas and Electric Company		8	55
		12	24
		14	3
		16	71
		18	2
		20	41
		22	3
TOTAL	12		199
Manufacturers Light and Heat Company, The		3	3
		4	20
		5	7
		6	367
		8	512
		9	4
		10	303
		12	299
		14	126
		16	420
		20	389
		24	63
		26	38
TOTAL	466		2,551
Michigan Consolidated Gas Co.		3	11
		4	81
		6	187
		8	363
		10	180
		12	160
		16	137
		20	1
		24	299
		30	125
TOTAL	174		1,544
Michigan Gas Storage Company		8	23
		12	95
		16	81
		20	72
		22	105
		24	41
		26	137
TOTAL	26		554
Michigan Wisconsin Pipe Line Company		4	9
		6	55
		8	73
		10	77
		12	40
		14	41
		16	217
		18	2
		20	112
		22	479
		24	1,759
		26	35
		30	1,513
TOTAL	330		4,412
Midwestern Gas Transmission Company		3	7
		4	12
		6	20
		8	18
		10	2
		12	3
		16	3
		24	500
		30	354
TOTAL	65		919
Mississippi River Transmission Corporation		10	14
		12	30
		14	16
		16	9
		18	109
		20	7
		22	665
		24	239
		26	93
TOTAL	66		1,182
Missouri Public Service Co.		2	5
		3	12
		4	3
		8	44
		10	112
TOTAL	39		176

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAIN SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Montana-Dakota Utilities Co.		3	30
		4	76
		6	149
		8	294
		10	108
		12	1,241
		14	36
		16	54
TOTAL	446		1,988
Montana Power Company, The		3	50
		4	183
		6	228
		8	276
		10	204
		12	340
		16	124
		20	188
TOTAL	45		1,593
Mountain Fuel Supply Company		3	8
		6	43
		10	17
		16	157
		18	260
		20	244
		24	13
TOTAL	78		742
Natural Gas Pipeline Company of America		16	18
		20	310
		24	1,155
		26	1,384
		30	2,135
		36	834
TOTAL	403		5,836
Natural Gas Producers, Inc.		2	1
		4	36
		6	15
		8	3
		10	48
TOTAL	12		103
Natural Gas Pipeline Company of America - Storage Division		10	12
		20	14
		30	17
		36	31
TOTAL	0		74
Navgas, Inc.		6	26
TOTAL	0		26
New Jersey Natural Gas Co.		6	17
		8	77
		10	52
		12	6
TOTAL	92		152
Niagara Mohawk Power Corp.		6	6
		8	3
		10	132
		12	128
		14	16
		16	60
		18	19
		20	3
		24	50
TOTAL	1,124		417
North Carolina Natural Gas Corporation		4	26
		6	26
		8	33
		10	82
		12	100
		16	112
TOTAL	98		379
North Penn Gas Company		3	2
		4	74
		6	121
		8	27
		10	60
		12	4
		14	22
TOTAL	41		310
Northern Gas Company		6	112
		8	174
	40		286
Northern Illinois Gas Company		16	5
		22	118
		24	7
		30	48
		36	37
TOTAL	0		215
Northern Indiana Public Service Company		8	41
		10	174
		12	24
		14	7
		16	94
		20	29
		22	63
		30	50
		36	9
TOTAL	93		491
Northern Natural Gas Company		2	460
		3	695
		4	1,163
		6	1,391
		8	781
		10	653
		12	376
		14	79
		16	1,335
		18	142
		20	1,086
		24	1,242
		26	1,027
		30	1,283
TOTAL	210		11,713
Northern Utilities, Inc.		4	45
		6	166
		8	24
		10	194
		12	185
		14	44
		16	163
TOTAL	46		821
Ohio Fuel Gas Company, The		6	10
		8	148
		10	132
		12	342
		16	521
		18	177
		20	787
		24	185
TOTAL	232		2,302
Okaloosa County Gas District		6	31
		8	60
		10	38
TOTAL	40		129
Oklahoma Natural Gas Company		8	12
		10	19
		12	438
		14	22
		16	260
		18	7
		24	25
		26	43
TOTAL	150		826
Pacific Gas and Electric Co.		4	6
		6	72
		8	390
		10	446
		12	580
		14	1
		16	273
		18	51
		20	372
		22	138
		24	115
		26	15
		30	46
		32	19
		34	1,013
		36	338
TOTAL	55		3,875

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAIN SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Pacific Gas Transmission Co.		36	613
TOTAL	33		613
Pacific Lighting Corporation		8	211
		10	290
		12	183
		14	5
		16	375
		18	71
		20	153
		22	142
		24	51
		26	229
		30	875
		34	224
		36	135
TOTAL	229		2,944
Pan American Gas Company		3	2
		4	10
		6	27
		8	9
		12	43
		16	58
		18	10
TOTAL	33		159
Panhandle Eastern Pipe Line Company		3	46
		4	156
		5	14
		6	214
		8	186
		10	130
		12	302
		16	227
		18	106
		20	268
		22	819
		24	1,033
		26	921
		30	1,042
		36	29
TOTAL	420		5,493
Penn-Jersey Pipe Line Company		8	4
TOTAL	0		4
Pennsylvania Gas Company		8	138
		10	87
		12	147
TOTAL	54		372
Peoples Natural Gas Company, The		8	52
		10	39
		12	114
		14	45
		16	15
		20	137
		24	56
TOTAL	159		458
Petroleum Exploration, Inc.		4	40
		6	61
		8	41
TOTAL	5		142
Piedmont Natural Gas Company, Inc.		4	34
		6	38
		8	25
		10	54
		12	34
TOTAL	604		185
Pioneer Natural Gas Company		1	16
		2	212
		3	413
		4	855
		5	21
		6	403
		7	12
		8	402
		10	334
		12	180
		15	46
		16	82
		20	62
		22	20
		24	10
TOTAL	127		3,068
Plateau Natural Gas Company		2	234
		3	10
		4	300
		6	317
		8	182
		10	11
		22	88
TOTAL	68		1,142
Public Service Company of North Carolina, Inc.		3	3
		4	26
		6	36
		8	190
		10	49
		12	16
		14	18
		18	41
TOTAL	441		379
Rio Grande Valley Gas Co.		2	50
		4	70
		6	33
		8	51
		10	48
		12	119
		16	42
TOTAL	0		413
Roanoke Gas Company		8	28
		12	18
TOTAL	124		46
San Diego Gas and Electric Company		16	50
		20	7
		30	51
TOTAL	1		108
Shenandoah Gas Company		6	37
TOTAL	28		37
South Carolina Electric and Gas Company		4	63
		6	26
		8	123
		10	43
		12	101
		16	82
TOTAL	166		438
Southern Coast Corporation		4	8
		6	8
		8	6
		10	25
TOTAL	39		47
South Georgia Natural Gas Co.		2	7
		3	52
		4	145
		6	109
		8	26
		10	102
		12	104
TOTAL	49		545
South Jersey Gas Company		2	2
		4	3
		6	26
		8	29
		10	51
		12	53
		16	22
TOTAL	10		186
Southeastern Michigan Gas Co.		13	54
TOTAL	9		54
Southern Natural Gas Company		2	3
		3	11
		4	195
		6	370
		8	376
		10	259
		12	743
		14	407
		16	571
		18	480
		20	652
		22	478
		24	887
		26	73
		30	5
TOTAL	528		5,510
Southern Tier Gas Company		6	22
TOTAL	2		22
Southern Union Gas Company		3	3
		4	67
		5	86
		6	188
		7	17
		8	183
		10	78
		12	45
		14	32
		18	12
		20	28
TOTAL	180		739

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAIN SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Southwest Gas Corporation		4	20
		6	147
		8	161
		10	128
		12	111
		16	310
TOTAL	86		877
Standard Pacific Gas Line, Inc.		8	4
		10	3
		12	9
		16	10
		20	9
		22	48
		24	28
		26	121
TOTAL	18		232
Tennessee Gas Pipeline Co.		3	22
		4	32
		6	76
		8	84
		10	48
		12	28
		16	150
		18	3
		20	229
		24	2,434
		26	1,790
		30	3,904
		36	568
TOTAL	297		9,368
Tennessee Natural Gas Lines, Inc.		4	1
		6	1
		8	31
		10	8
		12	9
TOTAL	3		50
Texaco Inc.		6	21
		8	34
		12	31
		14	8
		16	190
		18	30
		20	92
		22	115
		30	41
TOTAL	2		562
Texas Eastern Transmission Corporation		6	1
		8	6
		10	12
		12	62
		14	3
		16	145
		20	979
		24	1,975
		26	158
		30	2,952
		36	370
TOTAL	231		6,663
Texas Gas Transmission Corp.		6	40
		8	123
		10	292
		12	362
		14	14
		16	169
		18	410
		20	321
		26	1,669
		30	614
TOTAL	254		4,014
Transcontinental Gas Pipeline Corporation		10	51
		12	51
		14	45
		16	50
		18	26
		20	58
		24	394
		26	93
		30	2,127
		36	1,861
		42	26
TOTAL	337		4,782
Transwestern Pipeline Company		20	61
		24	510
		30	645
TOTAL	65		1,216
Treasure State Pipeline		4	20
		6	18
TOTAL	4		38
Trunkline Gas Company		20	263
		24	275
		26	951
		30	715
TOTAL	442		2,204
Union Gas System, Inc.		4	25
		8	41
		10	68
		12	42
TOTAL	0		176
United Fuel Gas Company		4	2
		6	24
		8	81
		10	143
		12	161
		14	30
		16	99
		18	76
		20	407
		24	77
		26	29
		30	62
TOTAL	159		1,191
United Gas Pipe Line Company		4	17
		6	49
		8	45
		10	197
		12	978
		14	349
		16	1,142
		18	736
		20	1,005
		22	137
		24	375
		26	44
		30	1,319
		36	59
TOTAL	727		6,452
United Natural Gas Company		8	47
		10	3
		12	341
		16	7
		20	119
		22	20
TOTAL	319		537
Urbana Pipeline Company		4	8
TOTAL	0		8
Valley Pipeline, Inc.		12	35
		14	31
		16	72
TOTAL	7		138
West Ohio Gas Company		3	5
		4	14
		6	79
		8	140
		10	6
		12	5
		16	3
TOTAL	44		252
Western Slope Gas Company		2 & 2-1/2	113
		3	107
		4	184
		6	280
		8	339
		10	54
		16	35
TOTAL	86		1,112
Wyoming Gas Company		5	30
		6	27
TOTAL	4		57
GRAND TOTAL	17,958		161,174

TABLE 3

NATURAL GAS TRANSMISSION COMPANY

GATHERING SYSTEM PIPELINES

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY GATHERING SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Arkansas Louisiana Gas Co.		8	14
		14	19
		16	25
TOTAL	515		58
Arkansas Western Gas Co.		6	7
		8	81
TOTAL	30		88
Cabot Corporation (Oil and Gas Division)		6	17
		8	14
		10	26
TOTAL	3		57
Cities Service Gas Company		12	21
		16	110
		20	63
		22	13
		26	49
		30	21
TOTAL	195		277
Colorado Interstate Gas Co.		6	4
		10	11
		12	27
		16	46
		18	29
		20	51
		22	18
		24	8
TOTAL	36		194
Columbia Gulf Transmission Co.		12	59
		16	30
		24	1
TOTAL	92		90
Consolidated Gas Supply Corp.		10	25
		12	5
TOTAL	0		30
El Paso Natural Gas Company		1	1
		4	7
		6	51
		8	104
		10	255
		12	159
		14	47
		16	309
		18	82
		20	355
		24	33
		26	6
		30	93
TOTAL	408		1,502
Florida Gas Transmission Co.		6	33
		8	122
		10	97
		12	98
		14	49
TOTAL	100		399
Fort Smith Gas Corporation		4	40
		6	27
		8	14
TOTAL	0		81
Gas Transport, Inc.		6	27
TOTAL	9		27
Houston Pipe Line Company		6	17
		8	35
		12	94
		16	92
		18	57
TOTAL	190		295

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Humble Gas Transmission Co.		6	1
		8	27
		10	9
		12	29
		16	27
		22	6
TOTAL	117		99
Humble Oil and Refining Co.		6	27
		8	86
		10	15
		12	39
		14	11
		16	7
		20	14
		24	65
TOTAL	57		264
Illinois Power Company		8	2
		14	10
		16	17
		18	7
TOTAL	305		36
Industrial Gas Supply Corp.		6	12
		7	6
		8	39
		10	34
TOTAL	81		91
Inland Gas Company, Inc.		10	12
		12	12
TOTAL	8		24
Kansas-Nebraska Natural Gas Company, Inc.		1-1/4	1
		2	5
		3	6
		4	546
		5	2
		6	352
		7	3
		8	192
		10	44
		12	120
		14	1
		16	13
		20	15
		26	2
		30	1
TOTAL	961		1,303
Kansas Power and Light Company, The		8	11
		10	6
TOTAL	44		17
Kentucky-West Virginia Gas Co.		8	18
		10	8
		12	32
		14	4
		16	5
TOTAL	314		67
Lone Star Gas Company		4	9
		6	63
		8	46
		10	40
		12	37
		16	18
		18	19
		20	12
TOTAL	840		244
Lone Star Gathering Co.		6	26
		8	20
		10	5
		12	19
TOTAL	0		70

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY GATHERING SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Manufacturers Light and Heat Company, The		6	45
		8	14
		10	43
		12	7
		16	10
		20	2
TOTAL	466		121
Michigan Gas Storage Company		12	10
TOTAL	26		10
Mississippi River Transmission Corporation		16	89
		18	51
TOTAL	80		140
Montana-Dakota Utilities Company		3	60
		4	221
		6	74
		8	17
		10	5
		12	58
		14	7
TOTAL	446		442
Mountain Fuel Supply Company		3	2
		4	25
		6	7
		8	75
		10	44
		16	17
TOTAL	78		170
Natural Gas Pipeline Company of America		12	68
		16	103
		20	101
		24	95
TOTAL	238		367
Natural Gas Producers, Inc.		2	2
		3	2
		4	7
TOTAL	12		11
Northern Illinois Gas Company		24	7
		36	37
TOTAL	0		44
Northern Natural Gas Company		2	22
		3	23
		4	1,333
		5	7
		6	664
		8	436
		10	136
		12	255
		14	59
		16	136
		18	16
		20	118
		24	100
		26	21
TOTAL	178		3,326
Northern Natural Gas Pipeline Co.		3	15
		4	47
		6	17
		8	20
		12	28
		16	23
TOTAL	0		150
Northern Utilities, Inc.		6	15
TOTAL	46		15
Pacific Gas and Electric Co.		10	2
		12	43
		16	19
		18	4
TOTAL	55		68
Pan American Gas Company		2	2
		3	3
		6	3
TOTAL	33		8
Panhandle Eastern Pipe Line Company		6	15
		8	8
		10	14
		12	57
		16	115
		18	84
		20	27
		22	78
		24	201
		26	37
TOTAL	420		636
Peoples Natural Gas Co., The		10	16
		12	10
TOTAL	159		26
Phillips Natural Gas Company		3	25
		4	8
		8	43
		10	31
TOTAL	1		107
Pioneer Natural Gas Company		2	41
		3	31
		4	93
		5	5
		6	71
		8	46
		10	33
		12	4
		16	21
		22	3
TOTAL	21		348
Plateau Natural Gas Company		8	150
TOTAL	68		150
Rio Grande Valley Gas Company		6	22
		8	4
TOTAL	0		26
Southern Coast Corporation		4	4
		6	6
TOTAL	39		10
Southern Natural Gas Company		2	6
		4	55
		6	53
		8	13
		10	5
		12	7
TOTAL	0		139
Tennessee Gas Pipeline Company		8	6
		12	74
		16	230
		20	173
		26	214
TOTAL	97		697

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY GATHERING SYSTEM PIPELINES AS OF JANUARY 1, 1966

COMPANY	NUMBER OF EMPLOYEES	DIAMETER (INCHES)	LENGTH IN MILES
Texaco Inc.		6	20
		8	48
		10	21
		12	27
		14	37
		16	16
		18	26
		20	22
		22	8
		30	46
TOTAL	2		271
Texas Eastern Transmission Corporation		8	23
		10	49
		12	5
		14	128
		16	95
TOTAL	58		290
Texas Gas Transmission Corp.		10	20
		12	22
		16	15
TOTAL	0		57
Transcontinental Gas Pipeline Corporation		10	156
		12	81
		14	143
		16	284
		20	168
		24	243
		30	130
TOTAL	337		1,205
Treasure State Pipeline		4	8
TOTAL	4		8
Trunkline Gas Company		4	38
		6	35
		8	18
		10	55
		12	59
		14	6
		16	112
		18	24
		20	116
		26	78
TOTAL	442		541
United Fuel Gas Company		4	1
		6	70
		7	12
		8	143
		10	199
		12	64
		16	22
		18	6
		20	25
TOTAL	114		542
United Gas Pipe Line Company		4	10
		6	24
		8	16
		10	12
		12	132
		14	14
		16	78
		20	16
		24	18
TOTAL	727		320
Valley Pipeline, Inc.		12	8
TOTAL	7		8
Western Slope Gas Company		2 & 2-1/2	12
		3	30
		4	102
		6	25
		8	19
TOTAL	24		188
GRAND TOTAL	8,483		15,754

TABLE 4

NATURAL GAS TRANSMISSION COMPANY

MAIN PIPELINE INTERCONNECTIONS

STATISTICAL DATA ON NATURAL GAS TRANSMISSION
COMPANY MAIN PIPELINE INTERCONNECTIONS
AS OF JANUARY 1, 1966

COMPANY	KIND OF CONNECTIONS	NUMBER OF CONNECTIONS
Alabama-Tennessee Natural Gas Co.	O	3
Algonquin Gas Transmission Company	E	5
" " " "	O	1
" " " "	P	2
" " " "	V	1
Arkansas Louisiana Gas Company	O	25
" " " "	V	1
Arkansas Western Gas Company	E	3
" " " "	O	6
Atlantic Richfield Company	O	2
Atlantic Seaboard Corporation	E	4
" " "	O	37
" " "	P	12
" " "	R	1
Blue Dolphin Pipeline Company	O	2
Brazos Oil and Gas Company	O	7
Cabot Corporation, G. L. Cabot Div.	O	4
Cabot Corporation, Oil and Gas Div.	O	3
California - Pacific Utilities Co.	O	7
" " " "	P	1
" " " "	R	1
Carolina Pipeline Company	O	2
Cascade Natural Gas Corporation	O	2
Central Hudson Gas and Electric Corp.	O	2
Central Illinois Public Service Co.	O	16
" " " "	P	9
Chicago District Pipeline Company	O	8
Cities Service Gas Company	O	19
Citizens Gas and Coke Utility	O	2
Colorado Interstate Gas Company	O	18
Columbia Gulf Transmission Company	E	3
" " " "	O	5
Commonwealth Natural Gas Corp.	O	2
Consolidated Gas Supply Corp.	E	14
" " " "	O	82
" " " "	P	13
Consumers Power Company	E	2
" " "	O	1
Cumberland and Allegheny Gas Co.	O	9
" " " " "	P	2
East Ohio Gas Company, The	E	3
" " " " "	O	11
East Tennessee Natural Gas Co.	E	2
" " " " "	O	17
" " " " "	P	2
Eastern Shore Natural Gas Co., Inc.	O	1
El Paso Natural Gas Company	E	2
" " " " "	O	150
" " " " "	P	29
" " " " "	V	6
Equitable Gas Company	E	6
" " "	O	10
Florida Gas Transmission Company	E	3
" " " "	O	12
Fort Smith Gas Corporation	E	3
" " "	O	3
" " "	P	3
Gas Transport, Inc.	O	4
Granite State Gas Transmission, Inc.	O	2
Home Gas Company	E	4
" " "	O	8
Houston Pipe Line Company	E	5
" " " "	O	9
Humble Gas Transmission Company	E	6
" " " "	O	5
Indiana Gas and Water Co., Inc.	O	16
" " " " "	P	1
Industrial Gas Supply Corp.	E	1
" " " "	O	8
Inland Gas Company, Inc.	E	2
" " " "	O	2
Iowa-Illinois Gas and Electric Co.	O	13
Iroquois Gas Corporation	O	7
Kansas-Nebraska Natural Gas Co., Inc.	O	14
Kansas Power and Light Co., The	O	1
Kentucky Gas Transmission Corporation	E	3
" " " "	O	26
" " " "	P	19
Kentucky-West Virginia Gas Company	O	6
Lateral Gas Pipeline Company	O	5
Lone Star Gas Company	O	3
Lone Star Gathering Company	O	1
Louisville Gas and Electric Company	O	2
Manufacturers Light and Heat Co., The	E	10
" " " " " "	O	198
" " " " " "	P	65
" " " " " "	R	7
Michigan Consolidated Gas Company	E	1
" " " "	O	6
Michigan Gas Storage Company	O	6
Michigan Wisconsin Pipe Line Company	E	10
" " " " "	O	9
Midwestern Gas Transmission Company	E	9
" " " "	O	33
" " " "	P	6
Mississippi River Transmission Corp.	E	4
" " " "	O	5
Missouri Public Service Company	O	3
Montana-Dakota Utilities Company	O	2
Montana Power Company, The	O	3
Mountain Fuel Supply Company	O	2
Natural Gas Pipeline Co. of America	E	10
" " " " "	O	1
Natural Gas Producers, Inc.	P	1
Navgas, Inc.	O	1
New Jersey Natural Gas Company	O	5
Niagara Mohawk Power Corporation	O	17
" " " "	P	2
" " " "	V	1
North Carolina Natural Gas Corp.	O	4
North Penn Gas Company	E	2
" " "	O	15
Northern Gas Company	O	2
Northern Illinois Gas Company	E	1
" " " "	O	4
Northern Indiana Public Service Co.	O	13
" " " " "	P	1
Northern Natural Gas Company	E	30
" " " "	O	9
Northern Natural Gas Pipeline Co.	O	2
Northern Utilities, Inc.	O	9
" " "	P	1
Ohio Fuel Gas Company, The	O	14
Ohio Gas Company	O	3
Okaloosa County Gas District	O	1
Oklahoma Natural Gas Company	O	3
Pacific Gas and Electric Company	O	36
" " " " "	V	27
Pacific Gas Transmission Company	E	1
" " " "	O	5
Pacific Lighting Corporation	E	7
" " "	O	3
" " "	V	4
Pan American Gas Company	E	3
" " " "	O	12
" " " "	V	2
Panhandle Eastern Pipe Line Company	E	22
" " " " "	O	152
" " " " "	P	13
Penn-Jersey Pipe Line Company	O	1
Pennsylvania Gas Company	E	6
" " "	O	5
Peoples Natural Gas Company, The	E	11
" " " "	O	16
" " " " "	P	5
Petroleum Exploration, Inc.	O	4
Phillips Natural Gas Company	E	1
" " " "	O	3
Pioneer Natural Gas Company	E	1
" " " "	O	16
Plateau Natural Gas Company	O	9
Public Service Company of N. C., Inc.	E	2
" " " " " "	O	12
Rio Grande Valley Gas Company	O	3
Roanoke Gas Company	O	2
South Carolina Electric and Gas Co.	O	1
South Georgia Natural Gas Company	O	2
South Jersey Gas Company	O	5
Southeastern Michigan Gas Company	O	3
Southern Coast Corporation	O	4
Southern Natural Gas Company	E	7
" " " "	O	11
Southern Tier Gas Company	E	1
" " "	O	1
Southwest Gas Corporation	O	5
" " "	P	1
" " "	R	1
Tennessee Gas Pipeline Company	E	19
" " " "	O	245
" " " "	P	43
Tennessee Natural Gas Lines, Inc.	O	3
Texaco Inc.	O	12
Texas Eastern Transmission Corporation	E	43
" " " "	O	150
" " " "	P	56
Texas Gas Transmission Corporation	E	12
" " " "	G	12
Transcontinental Gas Pipeline Corp.	E	3
" " " "	O	29
Transwestern Pipeline Company	O	2
Trunkline Gas Company	E	3
" " "	O	20
" " "	V	6
Union Gas System, Inc.	O	6
" " "	P	1
United Fuel Gas Company	E	15
" " "	O	70
" " "	P	51
United Gas Pipe Line Company	E	2
" " " "	O	37
United Natural Gas Company	O	25
Western Slope Gas Company	O	3
" " "	P	2
Wyoming Gas Company	O	1
GRAND TOTAL		2,604

NOTE: E = Emergency O = Orifice Meter P = Positive Meter R = Rotary Meter V = Gate Valve

TABLE 5

NATURAL GAS TRANSMISSION COMPANY

MAJOR RIVER CROSSINGS

TABLE 5

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY MAJOR RIVER CROSSINGS AS OF JANUARY 1, 1966

COMPANY	TYPE OF CROSSING	NUMBER OF CROSSINGS
Alabama-Tennessee Natural Gas Company	S	2
Algonquin Gas Transmission Company	S	8
Arkansas Louisiana Gas Company	O	2
" " " "	S	25
Arkansas Western Gas Company	O	6
" " " "	S	17
Atlantic Seaboard Corporation	S	19
Blue Dolphin Pipeline Company	S	1
Brazos Oil and Gas Company	S	11
Cabot Corporation, G. L. Cabot Div.	S	7
California - Pacific Utilities Company	O	1
Cascade Natural Gas Corporation	S	2
Central Hudson Gas and Electric Corp.	S	3
Central Illinois Public Service Company	O	1
Chandeleur Pipe Line Company	S	2
Chicago District Pipeline Company	S	16
Cities Service Gas Company	O	3
" " " "	S	13
Colorado Interstate Gas Company	S	13
Columbia Gulf Transmission Company	S	21
Commonwealth Natural Gas Corporation	S	2
Consolidated Gas Supply Corporation	S	10
East Ohio Gas Company, The	S	3
East Tennessee Natural Gas Company	O	2
" " " " "	S	22
Eastern Shore Natural Gas Company, Inc.	O	1
El Paso Natural Gas Company	O	30
" " " " "	S	20
Equitable Gas Company	S	4
Florida Gas Transmission Company	O	5
" " " "	S	8
Fort Smith Gas Corporation	O	5
" " "	S	10
Gas Transport, Inc.	S	2
Granite State Gas Transmission, Inc.	O	3
" " " " "	S	3
Houston Pipe Line Company	O	1
" " "	S	16
Humble Gas Transmission Company	S	8
Humble Oil and Refining Company	S	7
Industrial Gas Supply Corporation	S	3
Inland Gas Company, Inc.	O	1
" " " "	S	1
Iowa-Illinois Gas and Electric Company	O	2
" " " " " "	S	2
Kansas-Nebraska Natural Gas Co., Inc.	S	4
Kansas Power and Light Company, The	O	3
" " " " " "	S	17
Kentucky Gas Transmission Corporation	S	6
Lone Star Gas Company	O	23
" " " "	S	38
Lone Star Gathering Company	S	1
Louisville Gas and Electric Company	S	6
Manufacturers Light and Heat Company, The	O	3
" " " " " " "	S	67
Mighigan Wisconsin Pipe Line Company	O	1
" " " " "	S	16
Midwestern Gas Transmission Company	S	15
Mississippi River Transmission Corp.	S	26
Montana-Dakota Utilities Company	O	10
" " " "	S	12
Montana Power Company, The	S	1
Mountain Fuel Supply Company	O	2
" " " "	S	2
Natural Gas Pipeline Co. of America	O	5
" " " " " "	S	10
New Jersey Natural Gas Company	S	1
Niagara Mohawk Power Corporation	O	3
" " " "	S	12
North Carolina Natural Gas Corporation	S	9
North Penn Gas Company	O	1
" " " "	S	4
Northern Illinois Gas Company	S	2
Northern Indiana Public Service Company	O	3
" " " " "	S	4
Northern Natural Gas Company	O	9
" " " "	S	22
Northern Utilities, Inc.	S	3
Ohio Fuel Gas Company, The	S	9
Ohio Gas Company	S	1
Okaloosa County Gas District	S	5
Oklahoma Natural Gas Company	O	1
Pacific Gas and Electric Company	O	6
" " " " "	S	32
Pacific Gas Transmission Company	S	3
Pacific Lighting Corporation	O	23
" " "	S	30
Panhandle Eastern Pipe Line Company	O	2
" " " " "	S	69
Penn-Jersey Pipe Line Company	S	2
Pennsylvania Gas Company	S	3
Peoples Natural Gas Company, The	S	10
Phillips Natural Gas Company	O	1
Pioneer Natural Gas Company	O	1
" " " "	S	8
Plateau Natural Gas Company	S	5
Roanoke Gas Company	S	4
San Diego Gas and Electric Company	S	4
South Carolina Electric and Gas Company	S	4
South Georgia Natural Gas Company	S	3
South Jersey Gas Company	S	1
Southern Coast Corporation	S	1
Southern Natural Gas Company	S	78
Southern Union Gas Company	S	2
Southwest Gas Corporation	O	2
Standard Pacific Gas Line, Inc.	S	2
Tennessee Gas Pipeline Company	O	24
" " " "	S	130
Tennessee Natural Gas Lines, Inc.	S	1
Texaco Inc.	S	6
Texas Eastern Transmission Corporation	O	2
" " " "	S	140
Texas Gas Transmission Corporation	S	23
Transcontinental Gas Pipeline Corporation	O	4
" " " " "	S	45
Transwestern Pipeline Company	O	2
" " "	S	4
Trunkline Gas Company	S	14
United Fuel Gas Company	S	19
United Gas Pipe Line Company	O	9
" " " " "	S	208
United Natural Gas Company	S	4
Valley Pipeline, Inc.	S	2
Western Slope Gas Company	O	2
" " " "	S	22
Wyoming Gas Company	S	1
GRAND TOTAL		1,659

NOTE: S = Submerged Crossing O = Overhead Crossing

TABLE 6

NATURAL GAS TRANSMISSION COMPANY

STORAGE FIELDS

STATISTICAL DATA ON NATURAL GAS TRANSMISSION COMPANY STORAGE FIELDS AS OF JANUARY 1, 1966

COMPANY	STORAGE FIELD	POOL NAME	MAXIMUM DAILY MMCF	TOTAL SEASON MMCF
Arkansas Louisiana Gas Company	Chapman Reservoir	Marble Falls Limestone	2	80
	Collinson	Severy	10	450
	Lester Reservoir	Marble Falls Limestone	2	80
	North Ada Reservoir	Cromwell Sand	20	800
	Ulan	Vooch	13	1,000
Arkansas Western Gas Company	Carrollton Dome		5	36
	Carrollton Dome		5	36
Atlantic Seaboard Corporation	X-77	Glady	135	7,355
	X-56	Cleveland	25	1,490
	X-76	Terra Alta	255	11,580
Cabot Corporation, G. L. Cabot Div.	Paleigh Co.	Raleigh Co.	11	682
	X-1	X-1 - Heizer	75	1,610
	X-6	X-6	0	1,900
Central Illinois Public Service Company	Ashmore		15	300
Cities Service Gas Company	Alden	Alden	65	4,000
	Boyer	Boyer	2	300
	Colony	Colony	110	6,000
	Craig	Craig	32	1,000
	Elk City	Elk City	175	5,000
	McLouth	McLouth	45	2,750
	McLouth	McLouth	45	2,750
	North Welda	North Welda	60	5,000
	Piqua	Piqua	5	350
	Piqua	Piqua	5	350
	South Welda	South Welda	80	6,000
Citizens Gas and Coke Utility	Howesville	Howesville	55	840
	Linton	Linton	20	100
	Switz City	Switz City	23	400
	Worthington	Worthington	40	2,300
Consolidated Gas Supply Corporation		Bridgeport	82	4,590
		Ellisburg	162	3,672
		Fink	747	50,490
		Greenlick	26	2,040
		Harrison	127	9,527
		Kennedy	0	0
		Leidy	169	10,200
		Newberne	71	5,100
		Racket	0	0
		Sabinsville	316	15,759
		Sharon	12	1,530
		South Bend	255	6,447
		Tioga	204	6,936
		Woodhull	357	19,498
	Oakford	Murrysville Fifth Sand	285	30,600
Consumers Power Company	Ira		250	4,000
	Lenox		150	1,500
	Overisel		275	24,000
	Salem		150	10,000
East Ohio Gas Company, The	Chippewa	Chippewa	265	1,400
	Columbiana	Columbiana	35	1,700
	Gabor	Gabor	55	500
	Stark-Summit	Stark-Summit	500	24,300
El Paso Natural Gas Company	Rhodes	Yates	46	5,682
Equitable Gas Company		Bunola	179	3,100
		Comet	63	2,950
		Drain	4	145
		Finleyville	33	300
		Hayes	7	100
		Hunters Cave	29	1,200
		Logansport	60	2,000
		Maple Lake	14	850
		Mobley	35	800
		Pratt	30	1,600
		Rhodes	84	3,000
		Skin Creek	30	700
		Swarts	44	450
		Tepe	54	800
Fort Smith Gas Corporation	Lake of Woods	Lavaca	10	550
	Shibley N. W.	Shibley N.W.	3	97
Home Gas Company	Dundee		59	3,725
	Gilbert		5	150
	Greenwood		12	1,000
Houston Pipe Line Company	Bammel	Bammel	110	2,250
Illinois Power Company	Freeburg	Freeburg	30	1,830
	Gillespie-Benld	Gillespie-Benld	5	31
	Huntsman	Hookdale	18	231
	North Tilden	North Tilden	30	820
Indiana Gas and Water Co., Inc.	Greensburg		1	108
	Unionville		27	2,456
	West Point		7	600
Iroquois Gas Corporation	Appalachian	Bennington	45	1,800
	Appalachian	Colden	40	4,000
	Appalachian	Collins	30	1,400
	Appalachian	Derby	5	250
	Appalachian	Holland	25	900
	Appalachian	Keelor A	21	700
	Appalachian	Newberne	80	3,200
	Appalachian	Perrysburg	35	1,600
	Appalachian	Sheridan	25	1,100
	Appalachian	Zoar	40	600
Kansas-Nebraska Natural Gas Company, Inc.	Adolph	Adolph	20	1,800
	Huntsman	Huntsman J	30	3,000
	Springdale	Springdale	15	1,975

STATISTICAL DATA ON NATURAL GAS TRANSMISSION
COMPANY STORAGE FIELDS
AS OF JANUARY 1, 1966

COMPANY	STORAGE FIELD	POOL NAME	MAXIMUM DAILY MMCF	TOTAL SEASON MMCF
Lone Star Gas Company	Ambassador	Mississippian Lime	17	1,176
	Hill Lake	Hill (Lake Sand)	40	4,000
	Leeray	Moran Sand	15	5,279
	New York City	Mississippian Lime	56	4,625
	Pecan Station	Pecan Station	40	321
	Pottsville South	Marble Falls	17	1,400
	Tri-Cities	Bacon Lime	173	19,405
	Tri-Cities	Rodessa Lime	173	8,820
	View	Flippen Sand	9	2,644
Louisville Gas and Electric Company		Bammel	0	2,200
	Doe Run	Doe Run	60	3,000
	Doe Run	Doe Run	6	1,400
	Magnolia	Magnolia	100	3,000
	Magnolia	Magnolia	6	1,500
	Muldraugh	Muldraugh	140	2,700
Manufacturers Light and Heat Company, The	Brinker		36	2,950
	Cross Creek		1	25
	Donegal		80	3,275
	Heard		19	2,350
	Holbrook		8	475
	Iowa		3	100
	Irwin		2	75
	Majorsville		138	8,075
	Munderf		1	25
	Victory		257	12,175
Michigan Consolidated Gas Company	Bell River Mills	Bell River Mills	300	11,000
	Croton	Michigan Stray	2	200
	Loreed	Loreed	100	6,500
	New Haven	Michigan Stray	45	7,800
	Six Lakes	Michigan Stray	900	43,100
	Winfield	Michigan Stray	5	300
Michigan Gas Storage Company	Cranberry Lake		94	8,300
	Riverside		33	3,100
	Winterfield		313	20,400
Michigan Wisconsin Pipe Line Company	Austin	Michigan Stray	600	13,000
	Goodwell	Michigan Stray	197	16,100
	Lincoln-Freeman	Michigan Stray	170	18,900
	North Hamilton	Michigan Stray	50	7,000
	Norwich	Michigan Stray	57	5,200
	Orient	Michigan Stray	31	5,000
	Reed City	Michigan Stray	223	15,300
Midwestern Gas Transmission Company	Elbridge	Devonian Lime	0	0
	Nevins	Devonian Lime	0	0
	State Line	Devonian Lime	0	0
Mississippi River Transmission Corporation	St. Jacob	St. Jacob	30	1,500
	Waterloo	Roubidoux-Gasconade-Dole	20	120
Montana-Dakota Utilities Company	Baker	Cedar Creek Anticline	60	3,518
	Billy Creek	Billy Creek	9	331
	Elk Basin	Cloverly Sand	46	3,633
Montana Power Company, The	Box Elder	Box Elder	12	350
	Cobb		35	250
	Madison	Madison	32	480
	Shelby	Shelby	7	250
Mountain Fuel Supply Company	Chalk Creek	Chalk Creek	30	0
Natural Gas Pipeline Company of America	Cairo	Cairo	25	923
	Cooks Mills	Cooks Mills	25	2,139
	Herscher	Galesville	75	21,443
	Herscher	Mt. Simon	100	16,863
North Penn Gas Company	Tioga	Tioga	100	13,000
Northern Gas Company	Oil Springs	Oil Springs	10	1,000
Northern Illinois Gas Company			50	260
	Troy Grove		580	23,600
Northern Indiana Public Service Company	Lake of Woods	Niagran Coral Reef	0	0
	Royal Centre	St. Peter-Trenton	120	3,500
Northern Natural Gas Company	Redfield	Mt. Simon	90	10,000
	Redfield	St. Peter-Elgin	100	8,000
Ohio Fuel Gas Company, The	Benton		250	15,000
	Guernsey		25	1,300
	Holmes		100	10,000
	Knox		20	1,600
	McArthur		100	5,000
	Medina		80	2,800
	Pavonia		230	16,000
	Weaver		470	33,000
	Wellington		210	6,800
	Zane		5	0
Oklahoma Natural Gas Company	Depew	Dutcher	450	18,100
	Edmond	Belmouth	0	0
	Haskett	Booch	60	3,100
	Osage	Burgess	70	1,300
	Sayre	Panhandle-Dolomite	0	0
Pacific Gas and Electric Company	Knoxdale	McDonald Island Sand	0	0
	Pleasant Creek	Peters Sand	6	650
Pacific Lighting Corporation	East Whittier		50	800
	Goleta		460	12,500
	Montebello		231	12,500
	Playa Del Rey		480	1,500
Panhandle Eastern Pipe Line Company	Howell	Howell	125	4,570
	Waverly	Waverly	150	5,293

STATISTICAL DATA ON NATURAL GAS TRANSMISSION
COMPANY STORAGE FIELDS
AS OF JANUARY 1, 1966

COMPANY	STORAGE FIELD	POOL NAME	MAXIMUM DAILY MMCF	TOTAL SEASON MMCF
Pennsylvania Gas Company	Elk County	Dumring	7	100
	Elk County	Owls Nest	12	700
	Eire County	Corry	17	200
	Eire County	Summit	75	2,000
	Ludlow	Deerlick	1	100
	Ludlow	East Branch	60	3,300
	Ludlow	Lanham	30	800
	Ludlow	Swede Hill	15	300
Peoples Nautral Gas Company, The		Blacktown	1	31
		Coluin	120	800
		Gamble-Hayden	46	1,100
		Mt. Royal	18	225
		Murrysville	110	1,500
		Patton	10	75
		Truittsburg	35	2,100
		Webster	35	540
South Jersey Gas Company	McKee City		1	20
Southeastern Michigan Gas Company			20	340
Southern Union Gas Company	Tignor	Red Sand	10	275
	Vandergriff-Keys	Queen	10	500
Tennessee Gas Pipeline Company	Colden	Medina Sandstone	92	5,100
	Ellisburg	Oriskany Sandstone	173	22,032
	Harrison	Oriskany Sandstone	187	10,037
	Hebron	Oriskany Sandstone	409	20,401
Texas Eastern Transmission Corporation	Accident	Accident	80	8,133
	Leidy	Leidy	272	15,300
	Oakford	Murrysville & Fifth Sand	224	30,601
Texas Gas Transmission Corporation	Alford	Alford	41	989
	Dixie	Dixie	101	2,575
	Graham Lake	Graham Lake	15	1,326
	Hanson	Hanson	31	3,570
	Leesville	Leesville	71	1,530
	Oaktown	Oaktown	9	623
	West Greenville	West Greenville	94	3,386
	Wilfred	Wilfred	37	2,193
Transcontinental Gas Pipeline Corporation	Leidy	Leidy	204	15,332
Union Gas System, Inc.	Bushfield	Buffalo	3	100
	Drumm-Dryer	Longton	1	100
	Fredonia	Fredonia	3	100
	Liberty	Liberty North	30	1,000
	Liberty	Liberty South	6	175
United Fuel Gas Company	X-1	Heizer	22	214
	X-2	Lanham	35	1,800
	X-4	Lake	15	745
	X-6	Derricks Creek	25	1,970
	X-7	Sissonville	7	543
	X-8	Grapevine A	2	242
	X-15A & B	Brownscreek A & B	30	1,210
	X-17	Reedy	1	317
	X-49	Poca	1	15
	X-52A	Coco A	175	18,040
	X-52B	Coco B	40	3,320
	X-52C	Coco C	110	7,850
	X-53	Greenlick	5	31
	X-54	Hunt	20	1,350
	X-58	Rockport	65	5,420
	X-59	Ripley	80	11,441
United Gas Pipe Line Company	Jackson	Jackson Gas Storage	98	2,600
United Natural Gas Company	Clermont	Wellendorf	15	310
	Ellisburg	Ellisburg	14	400
	Hebron	Hebron	25	2,500
	Henderson	Henderson	25	1,820
	Kane	Keelor	21	600
	Knoxdale	Bullers	1	40
	Knoxdale	Galbraith	20	860
	Knoxdale	Markle	15	60
	Queen		3	260
	St. Marys	Bennington	7	840
	St. Marys	Boone Mountain	12	1,000
	St. Marys	St. Marys	5	280
	Tuscarora	Tuscarora	45	2,700
	Wharton	Wharton	18	400
Western Slope Gas Company	Asbury		5	810
		GRAND TOTAL		1,122,943

TABLE 7

NATURAL GAS TRANSMISSION COMPANIES

LOCATION OF

GAS CONTROL AND DISTRIBUTION CENTERS

STATISTICAL DATA ON THE LOCATIONS OF GAS CONTROL AND DISTRIBUTION CENTERS OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

COMPANY	DISPATCHING CENTER	ADDRESS	CITY AND STATE
Alabama-Tennessee Natural Gas Company	M	E. Second Street	Sheffield, Alabama
Algonquin Gas Transmission Company	M	1284 Soldiers Field Rd.	Boston, Massachusetts
Arkansas Louisiana Gas Company	M	Slattery Bldg.	Shreveport, Louisiana
	S		Little Rock, Arkansas
	S		Oklahoma City, Okla.
Arkansas Western Gas Company	M	614 East Maple	Fayetteville, Arkansas
	S	Ozark Field Warehouse	Ozark, Arkansas
	S	White Compressor Sta.	Ozark, Arkansas
	S	W. Rush St.	Harrison, Arkansas
	E	28 East Center	Fayetteville, Arkansas
Atlantic Richfield Company	M	5900 Cherry St.	Long Beach, California
	M	S. Cuyama Plt. 10	New Cuyama, California
	S	Post Office Box 97	Ojai, California
	S	4121 S. H. St.	Bakersfield, Calif.
	S	N. Coles Lever Plt. 8	Bakersfield, Calif.
Atlantic Seaboard Corporation	M	1700 Mac Corkle Ave. SE	Charleston, West Va.
	S	Post Office Box 467	Herndon, Virginia
	E		Elkins, West Va.
Blue Dolphin Pipeline Company	M	Buccaneer Plant	Clute, Texas
	S	Platform A	Freeport, Texas
	S	Platform B	Freeport, Texas
Brazos Oil and Gas Company	M		Houston, Texas
	S		Bay City, Texas
	S		Angleton, Texas
	S		Stratton Ridge, Texas
Cabot Corporation, G. L. Cabot Div.	M	900 Union Building	Charleston, West Va.
Carnegie Natural Gas Company	M	Elliott St.	Dravosburg, Penn.
Carolina Pipeline Company	M	4445 Devine Street	Columbia, S. C.
Cascade Natural Gas Corporation	M	222 Fairview Ave. No.	Seattle, Washington
	S	120 East Alder Street	Walla Walla, Wash.
	S	218 Railroad Avenue	Rifle, Colorado
Central Hudson Gas and Electric Corporation	M	South Road	Poughkeepsie, New York
Central Illinois Public Service Company	M	Illinois Building	Springfield, Illinois
	S		Pana, Illinois
Chandeleur Pipe Line Company	M		Venice, Louisiana
Chicago District Pipeline Company	M	122 So. Michigan Ave.	Chicago, Illinois
Cities Service Gas Company	M		Oklahoma City, Okla.
	E		Bartlesville, Okla.
	E		Ponca City, Oklahoma
Colorado Interstate Gas Company	M	Post Office Box 1087	Colorado Springs, Colo.
	S	2951 Chambers Road	Aurora, Colorado
	S	Post Office Box 37	Masterson, Texas
Columbia Gulf Transmission Company	M	3805 West Alabama	Houston, Texas
	E		Delhi, Louisiana
Commonwealth Natural Gas Corporation	M		Richmond, Virginia
	S		Petersburg, Virginia
	E		Boswell Tavern, Va.
Consolidated Gas Supply Corporation	M	445 W. Main St.	Clarksburg, W. Va.
	M	2 Gateway Center	Pittsburgh, Penn.
	S		Sabinsville, Penn.
Consumers Power Company	M	1945 W. Parnell Rd.	Jackson, Michigan
Cumberland and Allegheny Gas Company	M	150 Hillside Dr.	Bethel Park, Penn.
	E	Ward Road	Elkins, West Virginia
East Ohio Gas Company, The	M	1717 E. 9th St.	Cleveland, Ohio
	S	Box 2276 Freedom Rd.	N. Canton, Ohio
	E	1020 Market St.	Canton, Ohio
East Tennessee Natural Gas Company	M	Kingston Pike	Knoxville, Tennessee
	E		Hockley, Texas
Eastern Shore Natural Gas Company, Inc.	M	North Dupont Hwy.	Dover, Delaware
El Paso Natural Gas Company	M		El Paso, Texas
	S		Farmington, New Mexico
	S		Jal, New Mexico
	S		Salt Lake City, Utah
	S		Tucson, Arizona
	E		Farmington, New Mexico
	E		Jal, New Mexico
	E		Salt Lake City, Utah
Equitable Gas Company	M	420 Blvd. of Allies	Pittsburgh, Penn.
	E	Ridge Rd., R.D.1	Finleyville, Penn.
	E	R.D.1	Finleyville, Penn.
	E	1st. St.	Waynesburg, Penn.
Florida Gas Transmission Company	M	1361 S. Orlando Ave.	Winter Park, Florida
	S	520 Bank of Commerce	Houston, Texas
Fort Smith Gas Corporation	M	5030 South S Street	Fort Smith, Arkansas
Gas Transport, Inc.	M	418 Avery Street	Parkersburg, W. Va.
	S		Gravel Bank, Ohio
Granite State Gas Transmission, Inc.	M	66 Market Street	Portsmouth, N. H.
	M	5 Temple Street	Portland, Maine
Home Gas Company	M	150 Hillside Dr.	Bethel Park, Penn.
	E	Ward Road	Elkins, West Virginia

NOTE: M = Main S = Sub E = Emergency

STATISTICAL DATA ON THE LOCATIONS OF GAS CONTROL AND DISTRIBUTION CENTERS OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

COMPANY	DISPATCHING CENTER	ADDRESS	CITY AND STATE
Houston Pipe Line Company	M	Rm. 1218, Pet. Bldg.	Houston, Texas
	S	9154 Up-River Road	Corpus Christi, Texas
Humble Gas Transmission Company	M		Baton Rouge, Louisiana
	S		Lawtell, Louisiana
	S		De Siard Sta.
	E		De Siard Sta.
	E		New Orleans, La.
Humble Oil and Refining Company	M		Baytown, Texas
	S		Baytown, Texas
	S		Rosenburg, Texas
	S		Corpus Christi, Texas
	S		Refugio, Texas
	S		Port Acres, Texas
	E	Mobil Stations	
Illinois Power Company	M	2701 N. Broadway	Decatur, Illinois
Indiana Gas and Water Co., Inc.	M	1630 North Meridian St.	Indianapolis, Indiana
	S	4th & Culbertson	New Albany, Indiana
Industrial Gas Supply Corporation	M	2021 Ch. of Commerce	Houston, Texas
	E	8543 Market Street Rd.	Houston, Texas
Inland Gas Company, Inc.	M	340 17th Street	Ashland, Kentucky
Iowa-Illinois Gas and Electric Company	M	206 East Second St.	Davenport, Iowa
	S	5 East Burlington St.	Iowa City, Iowa
	S	716 First St. S.E.	Cedar Rapids, Iowa
	S	302 S. Vine Street	Ottumwa, Iowa
	S	637 S. 22nd St.	Ft. Dodge, Iowa
Iroquois Gas Corporation	M	10 Lafayette Sq.	Buffalo, New York
	S	365 Mineral Spring Rd.	Buffalo, New York
	E	365 Mineral Spring Rd.	Buffalo, New York
Kansas-Nebraska Natural Gas Company, Inc.	M		Phillipsburg, Kansas
	S		Hastings, Nebraska
	E		Phillipsburg, Kansas
	E		Hastings, Nebraska
Kansas Power and Light Company, The	M	116 W. Iron	Salina, Kansas
Kentucky Gas Transmission Corporation	M	1700 Mac Corkle Ave.	Charleston, W. Va.
	E		Elkins, West Virginia
Kentucky-West Virginia Gas Company	M	Post Office Box 431	Prestonsburg, Ky.
	E	Maytown Comp. Sta.	Langley, Kentucky
Lone Star Gas Company	M	301 S. Harwood	Dallas, Texas
	S		Gainesville, Texas
	S		Groesbeck, Texas
	S		Abilene, Texas
	S		Ballinger, Texas
	S		Fox, Oklahoma
	E		Springtown, Texas
	E		Ranger, Texas
	E		Cayuga, Texas
Louisiana-Nevada Transit Company	M		Cotton Valley, La.
	S		Cotton Valley, La.
Louisville Gas and Electric Company	M	731 West Ormsby St.	Louisville, Kentucky
Manufacturers Light and Heat Company, The	S	Ward Road	Elkins, West Virginia
	M	150 Hillside Dr.	Bethel Park, Penn.
Michigan Consolidated Gas Company	M	One Woodward Ave.	Detroit, Michigan
	S	14 Mile Rd.	Detroit, Michigan
	E	Post Office Box 510	Big Rapids, Michigan
Michigan Gas Storage Company	M	1945 W. Parnell Rd.	Jackson, Michigan
Michigan Wisconsin Pipe Line Company	M	One Woodward Ave.	Detroit, Michigan
	E	Post Office Box 510	Big Rapids, Michigan
Midwestern Gas Transmission Company	M	Box 187	Plainfield, Illinois
	E		Hockley, Texas
Mississippi River Transmission Corporation	M	9900 Clayton Rd.	St. Louis, Missouri
	S		Perryville, Louisiana
Montana-Dakota Utilities Company	M		Glendive, Montana
	S		Baker, Montana
	S		Billings, Montana
Montana Power Company, The	M		Butte, Montana
	S		Cut Bank, Montana
	S		Shelby, Montana
	S		Absarokee, Montana
	E		Warm Springs, Montana
	E		Helena, Montana
	E		Bozeman, Montana
Mountain Fuel Supply Company	M		Salt Lake City, Utah
	S		Rock Springs, Wyoming
Natural Gas Pipeline Company of America	M	122 S. Michigan Ave.	Chicago, Illinois
	S		Houston, Texas
	S		Amarillo, Texas
	E	Box 908	Joliet, Illinois

STATISTICAL DATA ON THE LOCATIONS OF GAS CONTROL AND DISTRIBUTION CENTERS OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

COMPANY	DISPATCHING CENTER	ADDRESS	CITY AND STATE
New Jersey Natural Gas Company	S		Wildwood, New Jersey
	S		Dover, New Jersey
	M		Long Branch, N. J.
	S		Ocean City, New Jersey
	S		Toms River, New Jersey
Niagara Mohawk Power Corporation	M	Hiawatha Blvd. West	Syracuse, New York
	M	300 Erie Blvd. West	Syracuse, New York
	S	Hiawatha Blvd. West	Syracuse, New York
	S	1125 Broadway	Albany, New York
	E	Harbor Point	Utica, New York
	E	300 Erie Blvd. West	Syracuse, New York
North Carolina Natural Gas Corporation	M		Fayetteville, N. C.
North Penn Gas Company	M		Port Allegany, Penn.
	S		Port Allegany, Penn.
	S		Fryburg, Penn.
Northern Gas Company	M	441 South Center	Casper, Wyoming
	S		Laramie, Wyoming
Northern Illinois Gas Company	M	615 Eastern Ave.	Bellwood, Illinois
	E	St. Rt. 59	Warrenville, Illinois
Northern Indiana Public Service Company	M	Riley Rd.	E. Chicago, Indiana
	S	Hale Ave.	Fort Wayne, Indiana
	S	Penn. Ave.	South Bend, Indiana
	S	St. Rd. & Cook Ave.	Peru, Indiana
Northern Natural Gas Company	M		Omaha, Nebraska
	E		Hooper, Nebraska
Northern Utilities, Inc.	M	441 S. Center	Casper, Wyoming
	S		Sand Draw, Wyoming
Ohio Fuel Gas Company, The	M	99 N. Front St.	Columbus, Ohio
	E		Sugar Grove, Ohio
Ohio Gas Company	M	4th & Culbertson	New Albany, Indiana
Okaloosa County Gas District	M		Valparaiso, Florida
Oklahoma Natural Gas Company	M	624 S. Boston	Tulsa, Oklahoma
	S	112 N. 3rd St.	Ponca City, Oklahoma
	S	50th & Santa Fe	Oklahoma City, Oklahoma
	E		Depew, Oklahoma
Pacific Gas and Electric Company	M	245 Market St.	San Francisco, Calif.
	S	4th & Yuba St.	Marysville, Calif.
	S	Bridgehead Rd.	Antioch, California
	S	Concord Avenue	Brentwood, Calif.
	S	Alviso Rd.	Milpitas, California
	S	Cassen Ave.	Avenal, California
	S	Button & Thorne Sts.	Fresno, California
	S	Church & Center Sts.	Stockton, California
	S	50 Market St.	Oakland, California
	S	Humbolt & La. Sts.	San Francisco, Calif.
	S	1004 2nd St.	San Rafael, California
	S	Front & T Sts.	Sacramento, California
	S	Myrtle Avenue	Eureka, California
	S	105 N. Montgomery St.	San Jose, California
	E	First & B Sts.	Santa Rosa, California
	E	Concord Ave.	Brentwood, California
	E	Santa Ana Road	Hollister, California
	E	Alviso Road	Milpitas, California
Pacific Gas Transmission Company	M	E. 5105 3rd Ave.	Spokane, Washington
	E		Rosalia, Washington
	E		Samuels, Idaho
	E		Wallula Jct. Wash.
Pacific Lighting Corporation	M	3494 E. Pico Blvd.	Los Angeles, Calif.
	S	37 N. Mills Rd.	Ventura, California
	S	22245 Placerita Rd.	Newhall, California
Pan American Gas Company	M	900 Grant Ave.	Texas City, Texas
	S	2701 Palmer Hwy.	Texas City, Texas
	E	Tropical Motel	Pasadena, Texas
Panhandle Eastern Pipe Line Company	M	3444 Broadway	Kansas City, Missouri
	S	300 N. Lincoln	Liberal, Kansas
Pennsylvania Gas Company	M	449 Conewango Ave.	Warren, Pennsylvania
	S	349 E. Grandview Blvd.	Erie, Pennsylvania
Peoples Natural Gas Company, The	M	Two Gateway Center	Pittsburgh, Penn.
	E	Superior St.	Wilkinsburg, Penn.
Petroleum Exploration, Inc.	M		Corbin, Kentucky
	S	Clay Station	Oneida, Kentucky
Pioneer Natural Gas Company	S		Amarillo, Texas
	M		Lubbock, Texas
Plateau Natural Gas Company	M	Cheney Compressor Sta.	Kingman County, Kansas
	M		Lamar, Colorado
	S	3424 East G	Hutchinson, Kansas
Public Service Company of North Carolina, Inc.	M	400 Cox Road	Gastonia, N. C.
	S	310 East Main Street	Durham, North Carolina
Rio Grande Valley Gas Company	M	Weslaco	Cameron County, Texas
Roanoke Gas Company	M	615 7th Street N.E.	Roanoke, Virginia

STATISTICAL DATA ON THE LOCATIONS OF GAS CONTROL AND DISTRIBUTION CENTERS OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

COMPANY	DISPATCHING CENTER	ADDRESS	CITY AND STATE
San Diego Gas and Electric Company	M	59 Tenth Avenue	San Diego, California
Shenandoah Gas Company	M	121 S. Loudoun Street	Winchester, Virginia
	E	2 M.S.E.	Middletown, Virginia
South Carolina Electric and Gas Company	M	328 Main Street	Columbia, S. C.
	S	P. O. Box 390	Columbia, S. C.
Southern Coast Corporation	M	811 N. Carancahuz St.	Corpus Christi, Texas
	S	8525 No. 9 Highway	Corpus Christi, Texas
	S	301C Moore Street	Portland, Texas
South Georgia Natural Gas Company	M		Thomasville, Ga.
	E		Americus, Ga.
	E		Tifton, Ga.
South Jersey Gas Company	M	Union & Grove Streets	Glassboro, N. J.
	S	Mich. & Atl. Aves.	Atlantic City, N. J.
Southeastern Michigan Gas Company	M		Marysville, Michigan
Southern Natural Gas Company	M	Watts Building	Birmingham, Ala.
	S		Perryville, La.
	S		Gwinville, Mississippi
	E		Gallion, Ala.
Southern Tier Gas Company	M	Murray Avenue	Bath, New York
Southern Union Gas Company	M		Artesia Jct., N. M.
	M		Clovis, N. M.
	M		Kutz Canyon, N. M.
	M		Pecos, Texas
	M	Kutz Office	Bloomfield, New Mexico
	S		Albuquerque, N. M.
	S	Albuquerque M/L	Albuquerque, N. M.
	S		Carlsbad, N. M.
	S		Monahans, Texas
	S		Portales, N. M.
	E		Artesia, N. M.
	E		Star Lake, N. M.
Southwest Gas Corporation	M	2011 Las Vegas Blvd. S	Las Vegas, Nevada
Standard Pacific Gas Line, Inc.	M	245 Market Street	San Francisco, Calif.
	S	Bridge Head Road	Antioch, California
Tennessee Gas Pipeline Company	M		Hockley, Texas
	S	P. O. Box 7	Agua Dulce, Texas
	S	Rd. No. 4	Mercer, Penn.
	S	P. O. Box 286	Agawam, Mass.
Tennessee Natural Gas Lines, Inc.	M	800 2nd Avenue, N.	Nashville, Tenn.
	S	800 2nd Avenue, N.	Nashville, Tenn.
	E	800 2nd Avenue, N.	Nashville, Tenn.
Texaco Inc.	M	P. O. Box 123	Paradis, Louisiana
	E	1501 Canal Street	New Orleans, Louisiana
Texas Eastern Transmission Corp.	M		Shreveport, Louisiana
	S		Baytown, Texas
	S		Cuero, Texas
	S		Eagle, Penn.
Texas Gas Transmission Corporation	M	3800 Frederica St.	Owensboro, Kentucky
	S	5382 Weaver Road	Memphis, Tenn.
	S	P. O. Box 647	Eunice, Louisiana
	S	Compressor Sta.	Lafayette, Louisiana
	S	Oil Center	Lafayette, Louisiana
	E	3800 Frederica St.	Owensboro, Kentucky
Transcontinental Gas Pipeline Corp.	M	P. O. Box 1396	Houston, Texas
	S		Linden, N. J.
	S		Grover, N. C.
Transwestern Pipeline Company	M		Roswell, N. M.
Trunkline Gas Company	M	3000 Bissonnet	Houston, Texas
Union Gas System, Inc.	M	122 W. Myrtle St.	Independence, Kansas
United Fuel Gas Company	M	1700 Mac Corkle Ave.	Charleston, W. Va.
	E		Elkins, W. Va.
	S	127 S. Heber Street	Beckley, W. Va.
United Gas Pipe Line Company	M	1525 Fairfield Ave.	Shreveport, La.
	S	Post Office Box 548	Carthage, Texas
	S	12906 Zavalla St.	Houston, Texas
	S	Post Office Box 1020	Jackson, Mississippi
	S	Post Office Box 1843	Lafayette, Louisiana
	S	Post Office Box 1422	Monroe, Louisiana
	S	Post Office Box 1628	New Orleans, La.
	E	Post Office Box 218	Panola, Texas
United Natural Gas Company	M	308 Seneca St.	Oil City, Penn.
Urbana Pipeline Company	M		Caddo Parish, La.
Valley Pipeline, Inc.	M	Post Office Box 1188	Houston, Texas
	S	9154 Up-River Road	Corpus Christi, Texas
Western Slope Gas Company	M	3rd & Lipan St.	Denver, Colorado
	S	550 15th Street	Denver, Colorado
	E	3rd & Lipan St.	Denver, Colorado
Wyoming Gas Company	M		Thermopolis, Wyoming

TABLES 8A AND 8B

NATURAL GAS TRANSMISSION COMPANIES

INTERSTATE DELIVERIES

STATISTICAL DATA ON THE INTERSTATE DELIVERIES OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

FROM	TO		DAILY MCF	ANNUAL MMCF
Alabama	Florida		368,000	134,320
	Georgia		2,935,531	963,611
	Tennessee		1,594,055	581,830
		TOTAL	4,897,586	1,679,761
Arizona	California		2,591,860	926,029
	Nevada		101,150	36,920
		TOTAL	2,693,010	962,949
Arkansas	Mississippi		3,504,179	1,428,685
	Missouri		384,958	140,510
		TOTAL	3,889,137	1,569,195
Colorado	Utah		257,084	813,836
	New Mexico		101,150	36,920
	Nebraska		21,180	1,067
	Wyoming		44,369	16,195
		TOTAL	423,783	868,018
Connecticut	Rhode Island		355,000	129,575
Delaware	Maryland		1,500	700
Georgia	Florida		0	7,815
	South Carolina		1,901,962	687,257
		TOTAL	1,901,962	695,072
Idaho	Nevada		50,000	18,250
	Oregon		140,000	1,100
	Washington		135,611	49,493
		TOTAL	325,611	68,843
Illinois	Iowa		37,000	13,505
	Wisconsin		81,666	29,080
	Indiana		1,831,047	640,971
		TOTAL	1,949,713	683,556
Indiana	Michigan		265,300	96,834
	Ohio		2,957,423	1,010,756
	Illinois		458,050	10,238
		TOTAL	3,680,773	1,117,828
Iowa	Illinois		147,233	53,740
	Minnesota		848,218	309,599
	South Dakota		25,857	9,438
		TOTAL	1,021,308	372,777
Kansas	Missouri		2,105,200	725,109
	Nebraska		1,966,899	687,243
	Oklahoma		80,000	25,971
	Colorado		397,741	9,884
		TOTAL	4,549,840	1,448,207
Kentucky	Indiana		2,305,465	679,543
	West Virginia		2,386,758	795,676
	Ohio		1,789,936	612,761
	Illinois		936,000	341,640
		TOTAL	7,418,159	2,429,620
Louisiana	Arkansas		3,524,035	1,457,063
	Mississippi		6,176,693	2,141,499
		TOTAL	9,700,728	3,598,562
Maryland	Pennsylvania		1,226,044	446,361
	West Virginia		7,500	1,396
	Delaware		20,000	6,800
		TOTAL	1,253,544	454,557
Massachusetts	New Hampshire		2,500,000	0
	Rhode Island		2,000,000	0
		TOTAL	4,500,000	0
Minnesota	North Dakota		15,000	0
	Wisconsin		187,549	930
		TOTAL	202,549	930
Mississippi	Tennessee		4,525,027	1,631,446
	Alabama		5,493,091	1,852,282
	Illinois		586	209,819
	Arkansas		36,100	13,177
		TOTAL	10,054,804	3,706,724

STATISTICAL DATA ON THE INTERSTATE DELIVERIES OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

FROM	TO		DAILY MCF	ANNUAL MMCF
Missouri	Illinois		1,372,415	639,711
Montana	North Dakota		35,000	2,000
	South Dakota		50,000	9,000
		TOTAL	85,000	11,000
Nebraska	Iowa		1,453,603	530,565
	South Dakota		30,975	11,306
		TOTAL	1,484,578	541,871
New Hampshire	Maine		7,000	2,300
New Jersey	New York		917,513	334,892
New Mexico	Arizona		3,286,000	1,199,389
	Texas		213,435	77,904
	Oklahoma		2,000	200
		TOTAL	3,501,435	1,277,493
New York	Connecticut		421,000	153,665
North Carolina	Virginia		1,346,004	491,291
North Dakota	Montana		36,000	12,000
Ohio	Indiana		265,300	96,834
	Michigan		1,417,500	441,577
	Pennsylvania		26,200	5,814
	West Virginia		1,930,041	700,173
		TOTAL	3,639,041	1,244,398
Oklahoma	Kansas		2,796,305	984,374
	Missouri		30,000	10,031
	Colorado		217,375	516
	Arkansas		13,000	1,211
	Texas		246,324	89,908
		TOTAL	3,303,004	1,086,040
Oregon	Washington		120,000	43,800
	California		454	166
		TOTAL	120,454	43,966
Pennsylvania	Maryland		1,001,700	361,135
	West Virginia		155,630	34,536
	New York		1,332,192	478,310
	New Jersey		1,615,635	561,641
		TOTAL	4,105,157	1,435,622
Rhode Island	Massachusetts		297,000	108,405
South Carolina	North Carolina		1,621,582	591,877
Tennessee	Kentucky		6,268,580	2,109,846
	Virginia		17	4
		TOTAL	6,268,597	2,109,850
Texas	Oklahoma		1,835,930	585,449
	New Mexico		2,317,558	844,684
	Louisiana		2,153,190	818,516
	Arkansas		364,142	132,912
		TOTAL	6,670,820	2,381,561
Utah	Wyoming		236,760	86,417
Virginia	Maryland		1,866,034	578,314
	West Virginia		6,000	2,000
		TOTAL	1,872,034	580,314
Washington	Oregon		221,467	80,835
West Virginia	Virginia		1,167,700	255,151
	Ohio		1,520,512	387,343
	Pennsylvania		3,015,363	871,848
	Maryland		21,000	3,909
	Kentucky		150,000	38,400
		TOTAL	5,874,575	1,556,651
Wyoming	Colorado		200,371	475
	Idaho		257,000	93,805
	Montana		100,000	26,000
	Utah		169,653	61,923
		TOTAL	727,024	182,203

STATISTICAL DATA ON THE INTERSTATE DELIVERIES OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

TO	FROM		DAILY MCF	ANNUAL MMCF
Alabama	Mississippi		5,493,091	1,852,282
Arizona	New Mexico		3,286,000	1,199,389
Arkansas	Louisiana		3,524,035	1,457,063
	Oklahoma		13,000	1,211
	Texas		364,142	132,912
	Mississippi		36,100	13,177
		TOTAL	3,937,277	1,604,363
California	Arizona		2,591,860	926,029
	Oregon		454	166
		TOTAL	2,592,314	926,195
Colorado	Oklahoma		217,375	516
	Kansas		397,741	9,884
	Wyoming		200,371	475
		TOTAL	815,487	10,875
Connecticut	New York		421,000	153,665
Delaware	Maryland		20,000	6,800
Florida	Alabama		368,000	134,320
	Georgia		0	7,815
		TOTAL	368,000	142,135
Georgia	Alabama		2,935,531	963,611
Idaho	Wyoming		257,000	93,805
Illinois	Indiana		458,050	10,238
	Mississippi		586	209,819
	Iowa		147,233	53,740
	Missouri		1,372,415	639,711
	Kentucky		936,000	341,640
		TOTAL	2,914,284	1,255,148
Indiana	Kentucky		2,305,465	679,543
	Ohio		265,300	96,834
	Illinois		1,831,047	640,971
		TOTAL	4,401,812	1,417,348
Iowa	Illinois		37,000	13,505
	Nebraska		1,453,603	530,565
		TOTAL	1,490,603	544,070
Kansas	Oklahoma		2,796,305	984,374
Kentucky	Tennessee		6,268,580	2,109,846
	West Virginia		150,000	38,400
		TOTAL	6,418,580	2,148,246
Louisiana	Texas		2,153,190	818,516
Maine	New Hampshire		7,000	2,300
Maryland	Virginia		1,866,034	578,314
	West Virginia		21,000	3,909
	Pennsylvania		1,001,700	361,135
	Delaware		1,500	700
		TOTAL	2,890,234	944,058
Massachusetts	Rhode Island		297,000	108,405
Michigan	Ohio		1,417,500	441,577
	Indiana		265,300	96,834
		TOTAL	1,682,800	538,411
Minnesota	Iowa		848,218	309,599
Mississippi	Arkansas		3,504,179	1,428,685
	Louisiana		6,176,693	2,141,499
		TOTAL	9,680,872	3,570,184
Missouri	Kansas		2,105,200	725,109
	Oklahoma		30,000	10,031
	Arkansas		384,958	140,510
		TOTAL	2,520,158	875,650
Montana	Wyoming		100,000	26,000
	North Dakota		36,000	12,000
		TOTAL	136,000	38,000
Nebraska	Kansas		1,966,899	687,243
	Colorado		21,180	1,067
		TOTAL	1,988,079	688,310

STATISTICAL DATA ON THE INTERSTATE DELIVERIES OF NATURAL GAS TRANSMISSION COMPANIES AS OF JANUARY 1, 1966

TO	FROM		DAILY MCF	ANNUAL MMCF
Nevada	Arizona		101,150	36,920
	Idaho		50,000	18,250
		TOTAL	151,150	55,170
New Hampshire	Massachusetts		2,500,000	0
New Jersey	Pennsylvania		1,615,635	561,641
New Mexico	Texas		2,317,558	844,684
	Colorado		101,150	36,920
		TOTAL	2,418,708	881,604
New York	New Jersey		917,513	334,892
	Pennsylvania		1,332,192	478,310
		TOTAL	2,249,705	813,202
North Carolina	South Carolina		1,621,582	591,877
North Dakota	Minnesota		15,000	0
	Montana		35,000	2,000
		TOTAL	50,000	2,000
Ohio	Indiana		2,957,423	1,010,756
	West Virginia		1,520,512	387,343
	Kentucky		1,789,936	612,761
		TOTAL	6,267,871	2,010,860
Oklahoma	Kansas		80,000	25,971
	Texas		1,835,930	585,449
	New Mexico		2,000	200
		TOTAL	1,917,930	611,620
Oregon	Washington		221,467	80,835
	Idaho		140,000	1,100
		TOTAL	361,467	81,935
Pennsylvania	West Virginia		3,015,363	871,848
	Maryland		1,226,044	446,361
	Ohio		26,200	5,814
		TOTAL	4,267,607	1,324,023
Rhode Island	Connecticut		355,000	129,575
	Massachusetts		2,000,000	0
		TOTAL	2,355,000	129,575
South Carolina	Georgia		1,901,962	687,257
South Dakota	Montana		50,000	9,000
	Nebraska		30,975	11,306
	Iowa		25,857	9,438
		TOTAL	106,832	29,744
Tennessee	Mississippi		4,525,027	1,631,446
	Alabama		1,594,055	581,830
		TOTAL	6,119,082	2,213,276
Texas	Oklahoma		246,324	89,908
	New Mexico		213,435	77,904
		TOTAL	459,759	167,812
Utah	Colorado		257,084	813,836
	Wyoming		169,653	61,923
		TOTAL	426,737	875,759
Virginia	West Virginia		1,167,700	255,151
	Tennessee		17	4
	North Carolina		1,346,004	491,291
		TOTAL	2,513,721	746,446
Washington	Oregon		120,000	43,800
	Idaho		135,611	49,493
		TOTAL	255,611	93,293
West Virginia	Kentucky		2,386,758	795,676
	Maryland		7,500	1,396
	Pennsylvania		155,630	34,536
	Ohio		1,930,041	700,173
	Virginia		6,000	2,000
		TOTAL	4,485,929	1,533,781
Wisconsin	Minnesota		187,549	930
	Illinois		81,666	29,080
		TOTAL	269,215	30,010
Wyoming	Utah		236,760	86,417
	Colorado		44,369	16,195
		TOTAL	281,129	102,612

PART IV

ASSIGNMENT AND METHOD OF OBTAINING INFORMATION AND DATA

PART IV

ASSIGNMENT AND METHOD OF OBTAINING INFORMATION AND DATA

The request by the Government to determine current oil and gas pipeline transportation facility information and capabilities of the natural gas transmission industry was made by the Assistant Secretary of the Interior, J. Cordell Moore, on July 18, 1966. The National Petroleum Council on July 19, 1966 agreed to undertake the transportation study in response to the request. A subcommittee was authorized by the National Petroleum Council on February 28, 1967 to determine the major natural gas transmission facilities. To fulfill the assignment, the Subcommittee has gathered detailed information on all compressor stations above 1,000 horsepower, description of main and gathering pipelines, description of major river crossings, storage field data, main pipeline interconnections, pipeline communications systems, location of main, emergency and subgas dispatching centers, and interstate natural gas deliveries to and from individual states. The geographic locations of compressor stations, river crossings, storage fields and main pipeline interconnections were accurately determined and reported to the exact latitude and longitude in degrees, minutes and seconds.

This facility information was compiled by the Emergency Advisory Committee for Natural Gas through the use of a questionnaire. Copies of the various questionnaire forms used are attached to this report as Exhibits 1 through 9. Exhibit 10 illustrates the manner in which the pipeline facility mapping data was prepared. At the time arrangements were being made for this last updating of the mapping information, the U.S. Strategic Maps used previously were found to be no longer available. A survey of the circumstances revealed that the basic series of Geological Survey Maps were practically identical to the Strategic Maps and could be used quite readily with no changes in procedures or instructions. The detailed information received through the questionnaire medium is confidential, and has been released only for the use of the Department of the Interior, Office of Oil and Gas, the defense agencies and the Emergency Advisory Committee for Natural Gas.

In addition to the facility information, the Subcommittee has updated ten sets of pipeline master maps. The natural gas transmission systems, based upon information furnished by the participating companies, were prepared on U.S. Strategic Maps and are interrelated with the questionnaires. The confidential map sets have been supplied the Department of the Interior, Office of Oil and Gas, and the Emergency Advisory Committee for Natural Gas as a primary part of the assignment of the Subcommittee.

The request for updating the original data was made by the Emergency Advisory Committee for Natural Gas on May 22, 1963. The questionnaires were mailed to the 103 companies who were originally contacted at the beginning of the project. The requests for facility information were also sent to 87 additional companies who had not been contacted before. A task force of 12 pipeline draftsmen was supplied by Trunkline Gas Company, Tennessee Gas Pipeline Company, Columbia Gulf Transmission Company, Transcontinental Gas Pipe Line Corporation, United Gas Pipeline Company, Transwestern Pipeline Company and the American Louisiana Pipeline Company. This first updating of the facilities data not only included revising the two original master map sets but also the constructing of eight additional such sets. All the facility information was processed by the Columbia Gulf Transmission Company for electronic data processing requirements needed for damage assessment and evaluation as was done for the original project. This first updating was completed January 24, 1964.

The second updating of the natural gas transmission facilities was requested by the Emergency Advisory Committee for Natural Gas to include January 1, 1966. Questionnaires were mailed March 18, 1966 to 78 of the original participating companies and 67 of those contacted at the time of the first revision. Questionnaires were also mailed July 7, 1966 to 166 companies that had not been contacted before. The ten master map sets and facility data of the electronic data processing requirements were updated in accordance with the material furnished by the participating companies. The task force for this second updating consisted of six pipeline draftsmen from Texas Eastern Transmission Company, Tennessee Gas Pipeline Company, Trunkline Gas Company, Transcontinental Gas Pipe Line Corporation, Columbia Gulf Transmission Company and the Columbia Gas System Service Corporation. The mapping assignment was completed April 1, 1967. The electronic data processing requirements were completed by the Tennessee Gas Pipeline Company and the Columbia Gas System Service Corporation at that same time.

For this entire project to date, 470 corporations and companies were checked for possible participation. Of this number, information was requested either directly or indirectly from 390. Of this number, 252 replied. Facility and mapping information was supplied for 139; 98 companies did not reply; 95 companies said the project was not applicable to their activities and 78 have been merged, sold, now out of business or otherwise lost their corporate identity. Two have withdrawn. A few others did not participate for various reasons.

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE FORM

COVER PAGE

Please attach one of these cover pages to each group of reports submitted. If your company has subsidiaries, provide a cover page for each subsidiary reported.

_____
(Date)

Number of Pages Attached _____

Reporting Company _____

Address: _____

_____

_____

Reporting Company person who should be contacted if questions arise: _____

EXHIBIT NO. 1

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM C-1

Pipeline System Originates _____ (County & State)

Pipeline System Terminates _____ (County & State)

TYPE OF FACILITY - COMPRESSOR STATION INSTALLATIONS ABOVE 1000 H. P.

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

(1) Station No. And/Or Name	(2) Type of Prime Mover	(3) Type of Compressor	(4) Units (No.)	(5) Installed Horse-power	(6) Design Pressure Suction	(7) Design Pressure Discharge	(8) Capacity (MMCF/Day)	(9) Automated (Totally)	(10) Employees (Number)	(11) Latitude (Deg.-Min.-Sec.)	(12) Longitude (Deg.-Min.-Sec.)	(13) County	(14) State	(15) Map No.

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 2

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM C-2

Pipeline System Originates _____ (County & State)

Pipeline System Terminates _____ (County & State)

TYPE OF FACILITY - COMPRESSOR STATION COMMUNICATION SYSTEMS

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

(1) Station No. and/or Name	(2) Microwave	(3) V.H.F. Radio	(4) Leased Wire Line	(5) Company Owned Wire Line

CHECK APPROPRIATE COMMUNICATION FACILITY

Enter additional clarifying or supporting information here.

EXHIBIT NO. 3

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM P-2

Pipeline System Originates _____ (County & State)

Pipeline System Terminates _____ (County & State)

TYPE OF FACILITY - MAIN AND GATHERING SYSTEM PIPELINE

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

(1) Purpose of Pipeline Section	(2) From (Facility)	(3) To (Facility)	(4) Length (Miles)	(5) Diameter (Inches)	(6) Maximum Allowable Operating Pressure (PSIG)	(7) Pipeline Section Design Capacity (MMCF/Day)	(8) Input Points (Number)	(9) Delivery Points (Number)	(10) Location of Employees	(11) Employees (Number)	(12) Map No.
						*	*	*	*	*	

* Please Show Total for Entire System

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 4

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM R-3

Pipeline System Originates _____ (County & State)

Pipeline System Terminates _____ (County & State)

TYPE OF FACILITY - MAJOR RIVER CROSSING

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

(1) Name of River	(2) Width of Channel (Feet)	(3) Length of Pipeline Crossing (Feet)	(4) Number of Lines	(5) Diameter (Inches)	(6) Type of Construction (Submerged-Overhead)	(7) Latitude (Deg.-Min.-Sec.)	(8) Longitude (Deg.-Min.-Sec.)	(9) County	(10) State	(11) Map No.

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 5

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM I-4

Pipeline System Originates _____ (County & State)

Pipeline System Terminates _____ (County & State)

TYPE OF FACILITY - MAIN PIPELINE INTERCONNECTIONS

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

(1) System (Name)	(2) Connected With (Sale or Purchase)	(3) Type of Connection	(4) Size of Connection	(5) Pressure Available (PSIG)	(6) Latitude (Deg.-Min.-Sec.)	(7) Longitude (Deg.-Min.-Sec.)	(8) County	(9) State	(10) Map No.

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 6

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM S-5

Pipeline System Originates _____ (County & State)

Pipeline System Terminates _____ (County & State)

TYPE OF FACILITY - STORAGE FIELDS

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

(1) Field Name	(2) Pool Name	(3) Surface Size (Acres)	(4) Maximum Daily Withdrawal (MMCF)	(5) Minimum Daily Withdrawal (MMCF)	(6) Total Seasonal Withdrawal (MMCF)	(7) Latitude (Deg.-Sec.-Min.)	(8) Longitude (Deg.-Sec.-Min.)	(9) County	(10) State	(11) Map No.

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 7

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

Form D-6

GAS CONTROL AND DISPATCHING LOCATIONS

FACILITIES ADDED FROM JANUARY 1, 1964 THROUGH JANUARY 1, 1966

		ADDRESS	LATITUDE (Degrees, Minutes, Seconds)	LONGITUDE (Degrees, Minutes, Seconds)	TYPE OF STRUCTURE *	IS CENTER CLASSIFIED FOR RADIATION FALLOUT PROTECTION (Yes or No)
MAIN GAS DISPATCHING CENTER						
SUB-GAS DISPATCHING CENTER	1.					
	2.					
	3.					
	4.					
EMERGENCY DISPATCHING CENTER	1.					
	2.					
	3.					

* Use code for type of structure:

Code No.

1. Multistory, reinforced-concrete frame building
2. Single story, reinforced-concrete frame building
3. Multistory, wood frame building
4. Single story, wood frame building
5. Multistory, unreinforced brick building
6. Single story, unreinforced brick building
7. Multistory, reinforced brick building
8. Single story, reinforced brick building
9. Multistory, reinforced precast concrete building
10. Single story, reinforced precast concrete building
11. Multistory, reinforced masonry block building
12. Single story, reinforced masonry block building
13. Multistory, industrial type steel frame building
14. Single story, industrial type steel frame building
15. Multistory, rigid steel frame building
16. Single story, rigid steel frame building
17. Multistory, self-framing steel panel building
18. Single story, self-framing steel panel building
19. Multistory, steel frame with concrete siding
20. Single story, steel frame with concrete siding

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 8

EMERGENCY ADVISORY COMMITTEE FOR NATURAL GAS FACILITIES SURVEY QUESTIONNAIRE

FORM V-1

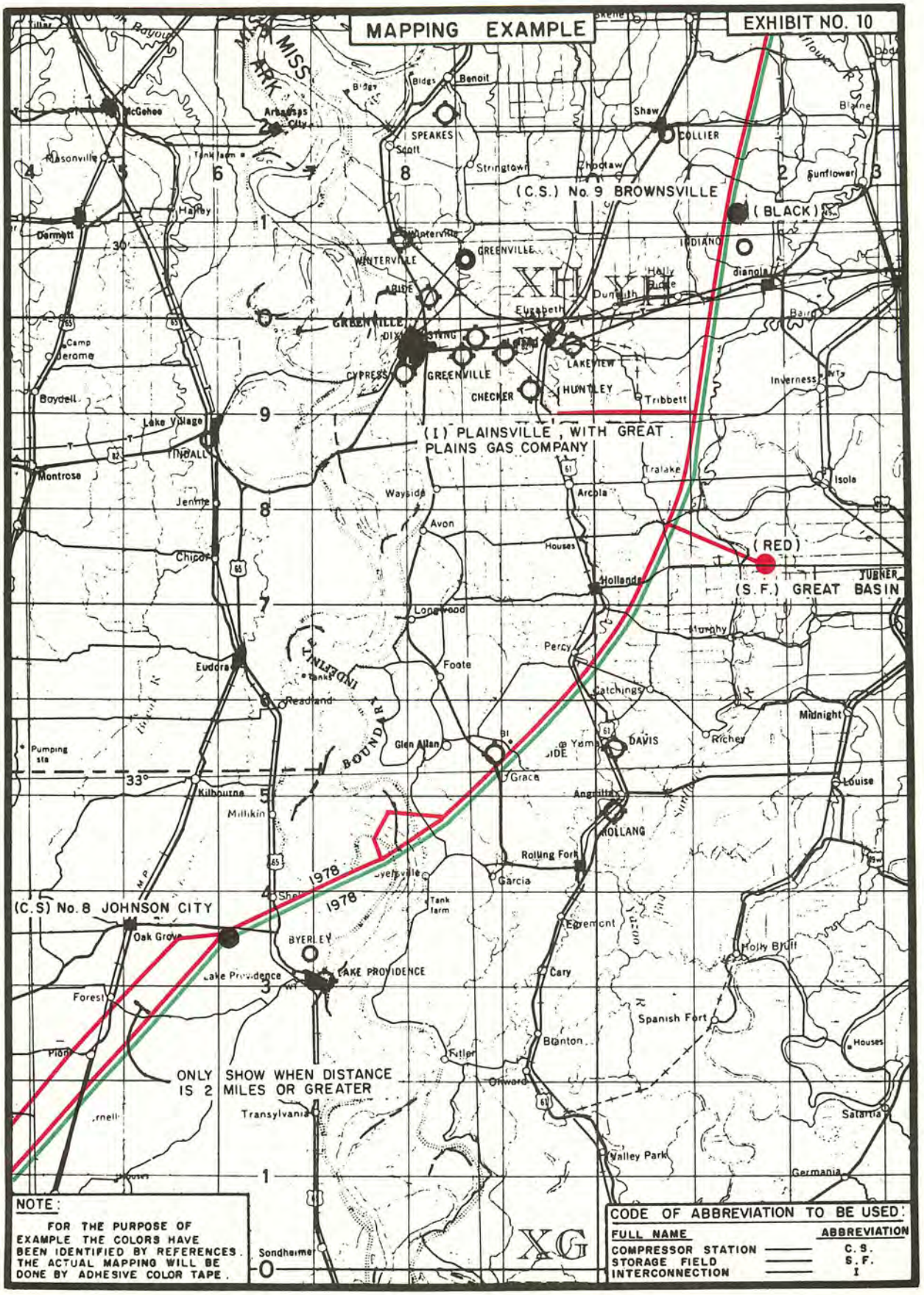
NATURAL GAS PIPELINE CAPACITIES BETWEEN STATES AS OF JANUARY 1, 1966

Name of State From	Name of State To	Daily Volume Mcf 14.73 psia	Annual Volume Mcf 14.73 psia

SEE INSTRUCTION SHEET

Enter additional clarifying or supporting information here.

EXHIBIT NO. 9


MAPPING EXAMPLE
EXHIBIT NO. 10
(C.S.) No. 9 BROWNSVILLE
(BLACK)
(I) PLAINSVILLE, WITH GREAT PLAINS GAS COMPANY
(RED)
(S.F.) GREAT BASIN
(C.S) No. 8 JOHNSON CITY
1978
1978
ONLY SHOW WHEN DISTANCE IS 2 MILES OR GREATER
NOTE:
FOR THE PURPOSE OF EXAMPLE THE COLORS HAVE BEEN IDENTIFIED BY REFERENCES. THE ACTUAL MAPPING WILL BE DONE BY ADHESIVE COLOR TAPE.
CODE OF ABBREVIATION TO BE USED:
FULL NAME
ABBREVIATION
COMPRESSOR STATION — C.S.
STORAGE FIELD — S.F.
INTERCONNECTION — I

MAJOR NATURAL GAS PIPELINES

AS OF JUNE 30, 1974

LEGEND

Pipelines

- Trunk
- Certificated or under construction
- Pending Commission action
- Number refers to capacity (1)

Gas Fields

- Generalized area of Natural Gas Source

FEDERAL POWER COMMISSION

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COMPANIES THAT PARTICIPATED IN THE NATURAL GAS PIPELINES FACILITIES SUBCOMMITTEE SURVEY

COMPANY	REMARKS
Alabama-Tennessee Natural Gas Company Box 380 Florence, Alabama B. F. Grizzle, President	
Algonquin Gas Transmission Company 1284 Soldiers Field Road Boston 35, Massachusetts George R. Copeland, President	
Arkansas Louisiana Gas Company Box 1734 Shreveport, Louisiana E. N. Henderson, Vice President and Chief Engineer	
Arkansas Western Gas Company 28 East Center Street Fayetteville, Arkansas Charles E. Scharlau, Executive Vice President	
Atlantic Richfield Company 555 South Flower Street Los Angeles, California 90054 Rollin Eckis, President (Casitas Pipeline Company) (Cheviot Hills Pipeline Company) (Cuyama Pipeline Company)	Facility data was supplied by Atlantic Richfield Company for their subsidiaries, Casitas Pipeline Company, Cheviot Hills Pipeline Company and Cuyama Pipeline Company.
Blue Dolphin Pipe Line Company P. O. Box 2099 Houston, Texas E. G. Christianson, President	
Brazos Oil and Gas Company 3636 Richmond Avenue P. O. Box 22468 Houston, Texas Wayne H. King, Pipeline Operations	Division of Dow Chemical Co.
Cabot Corporation G. L. Cabot Division 900 Union Building P. O. Box 1473 Charleston, West Virginia Louis W. Cabot, President	
Cabot Corporation Oil and Gas Division Box 1101 Pampa, Texas Joseph M. Daniel, Jr. Oil and Gas Division Oil and Gas Products Dept.	Formerly Cabot Carbon Co.
California-Pacific Utilities Company 550 California Street San Francisco 4, California L. E. Cooper, Vice President and Chief Engineer	
Carolina Pipeline Company 4445 Devine Street Columbia, South Carolina Earl Kightlinger, Vice President	
Cascade Natural Gas Corporation 222 Fairview Avenue North Seattle 9, Washington Edward Niederer, Jr., Vice President	
Central Hudson Gas & Electric Corporation Poughkeepsie, New York E. E. Althouse, Vice President	
Central Illinois Public Service Company 607 East Adams Street Springfield, Illinois J. R. Broderick, Vice President	
Chandeleur Pipe Line Company 4th & Walnut Streets Louisville, Kentucky 40202 W. C. Smith, President	Facility data was supplied by Chevron Oil Company.
Cities Service Gas Company Box 1995 Oklahoma City 1, Oklahoma John L. Gere, Vice President	
Citizens Gas and Coke Utility 2020 N. Meridian Street Indianapolis, Indiana J. R. Festermaker, President	
Colorado Interstate Gas Company Box 1087 Colorado Springs, Colorado N. R. Laubach, Vice President - Operations (Colorado Interstate Pipeline Co.) (Natural Gas Producers, Inc.)	Facility data was supplied by Colorado Interstate Gas Company and in addition for their subsidiaries, Colorado Interstate Pipeline Company and Natural Gas Producers, Inc.
Columbia Gulf Transmission Company P. O. Box 683 Houston, Texas L. O. Smith, Vice President	
Commonwealth Natural Gas Corporation 116 S. Third Street Richmond 19, Virginia Paul H. Riley, Vice President	
Consolidated Gas Supply Corporation 445 West Main Street Clarksburg, West Virginia 26302 E. Wayne Corrin, President	A part of Hope Natural Gas Company and New York State Natural Gas Corporation merged to form the Consolidated Gas Supply Corporation.
Consumers Power Company 212 W. Michigan Avenue Jackson, Michigan J. H. Campbell, President (Michigan Gas Storage Company)	Facility Data was supplied by Consumers Power Company and in addition for their subsidiary Michigan Gas Storage Company.
Cut Bank Gas Utilities 403 East Main Street Cut Bank, Montana Frank A. Whetstone, President	
East Ohio Gas Company, The East Ohio Gas Building 1717 E. Ninth Street Cleveland, Ohio 44114 T. R. Campbell, Chief Engineer	
Eastern Shore Natural Gas Co., Inc. Box 666 Dover, Delaware E. C. Burton, Vice President	
El Paso Natural Gas Company P. O. Box 1492 El Paso, Texas H. F. Steen, President	
Equitable Gas Company 420 Boulevard of the Allies Pittsburgh 19, Pennsylvania J. H. Marks, Vice President - Charge of Operations (Kentucky-West Virginia Gas Co.)	Facility data was supplied by Equitable Gas Company and in addition for their subsidiary Kentucky-West Virginia Gas Company.
Florida Gas Transmission Company P. O. Box 44 Winter Park, Florida D. B. Sprow, Executive Vice President	
Fort Smith Gas Corporation 355 Seventh Street Fort Smith, Arkansas J. W. Bland, Vice President	
Gas Transport Inc. Lancaster, Ohio John L. Gushman, President	
Houston Pipe Line Company Box 1188 Houston, Texas H. D. Carmouche, Vice President (Valley Pipeline, Inc.)	Facility data was supplied by Houston Pipe Line Company and in addition for Valley Pipeline, Inc. Both companies are subsidiaries of Houston Natural Gas Corporation.
Humble Gas Transmission Company Commerce Building New Orleans, Louisiana J. R. Dillon, Chief Engineer	Formerly the Olin Gas Transmission Corporation.
Humble Oil & Refining Company Box 2180 Houston 1, Texas H. W. Haight, Executive Vice President	
Illinois Power Company 500 S. 27th Street Decatur, Illinois R. A. Blakeney, Manager Gas Operations	
Indiana Gas & Water Co., Inc. 1630 N. Meridian Street Indianapolis, Indiana John W. Heiney, President (Ohio River Pipeline Corp.)	Facility data was supplied by Indiana Gas & Water Co., Inc. and in addition for their subsidiary Ohio River Pipeline Corporation.
Industrial Gas Supply Corporation 2001 Commerce Building Houston, Texas Walter B. Treybig, Jr. Vice President	
Inland Gas Company, Inc. Box 1180 Ashland, Kentucky W. A. Horne, Operations Supt.	
Iowa-Illinois Gas and Electric Co. 206 E. 2nd Street Davenport, Iowa Charles H. Whitmore, President	
Kansas-Nebraska Natural Gas Co., Inc. 300 N. St. Joseph Hastings, Nebraska H. H. Hollon, General Superintendent - Transmission	
Kansas Power & Light Company, The 800 Kansas Avenue Topeka, Kansas J. C. Rauch, Manager of Gas Engineering	

SECTION IV

REPORT OF

THE SUBCOMMITTEE ON INLAND WATERWAYS TRANSPORTATION

COMPANIES THAT PARTICIPATED IN THE NATURAL GAS PIPELINES FACILITIES SUBCOMMITTEE SURVEY

COMPANY	REMARKS
Lone Star Gas Company 301 S. Harwood Street Dallas 1, Texas John M. Kindle, Vice President - Transmission (Lone Star Gathering Company)	Facility data was supplied by Lone Star Gas Company and in addition for their subsidiary Lone Star Gathering Company.
Louisiana-Nevada Transit Company P. O. Box 398 Ada, Oklahoma 74820 D. L. Roberts, Vice President	
Louisville Gas & Electric Company Box 354 Louisville 1, Kentucky F. W. Russell, Vice President	
Manufacturers Light & Heat Company, The P. O. Box 1196 Pittsburgh 30, Pennsylvania James E. Coleman, President (Cumberland & Allegheny Gas Co.) (Home Gas Company)	Facility data was supplied by Manufacturers Light & Heat Company and in addition for their subsidiaries, Cumberland and Allegheny Gas Company and Home Gas Company.
Michigan Consolidated Gas Company One Woodward Avenue Detroit, Michigan J. L. Thompson	
Michigan Wisconsin Pipe Line Company One Woodward Avenue Detroit, Michigan R. D. McClintock, Vice President - Administrative Services	
Mississippi River Transmission Corp. 9900 Clayton Road St. Louis, Missouri H. O. Ziebold, Vice President - Operations	
Missouri Public Service Company 10700 E. 50 Highway Kansas City, Missouri R. C. Green, President	
Montana-Dakota Utilities Company Montana-Dakota Utilities Building 831 - 2nd Avenue, South Minneapolis 2, Minnesota H. M. Frederickson Assistant Vice President and Gas Engineer	
Montana Power Company, The 40 E. Broadway Butte, Montana L. S. Stadler, Vice President - Gas Operations	
Mountain Fuel Supply Company 180 E. 1st South Street Salt Lake City, Utah 84111 J. W. Allen, Vice President - Distribution	
National Fuel Gas Company 30 Rockefeller Plaza New York 20, New York W. H. Locke, President (Iroquois Gas Corporation) (Pennsylvania Gas Company) (United Natural Gas Company)	Facility data was supplied by Iroquois Gas Corporation and by Iroquois for United Natural Gas Company and Pennsylvania Gas Company. All companies are subsidiaries of the National Fuel Gas Company.
Natural Gas Pipeline Company of America 122 South Michigan Avenue Chicago 3, Illinois Keith Bentz, Vice President - Transmission and Engineering (Chicago District Pipeline Co.) (Natural Gas Storage of Illinois)	Facility data was supplied by Natural Gas Pipeline Company of America and in addition for their subsidiaries, Chicago District Pipeline Company and Natural Gas Storage of Illinois.
Navgas, Inc. 1875 Connecticut Avenue, N. W. Suite 936 Washington, D. C. 20009 A. Robert Leas, President	
New Jersey Natural Gas Company 601 Bangs Avenue Asbury Park, New Jersey David LaRue, Staff Assistant	
Niagara Mohawk Power Corporation 300 Erie Boulevard West Syracuse, New York F. J. Schneider, Vice President - Operations	
North Carolina Natural Gas Corporation Box 112 Fayetteville, North Carolina Volney H. Kyle, Jr., President	
North Penn Gas Company 76-80 Mill Street Port Allegany, Pennsylvania F. B. Gilmore, Executive Vice President	
Northern Gas Company 441 South Center Street Casper, Wyoming J. M. McIntire, President	
Northern Illinois Gas Company 50 Fox Street Aurora, Illinois Marvin Chandler, President	
Northern Indiana Public Service Co. 5265 Hohman Avenue Hammond, Indiana Carl D. Rees, Vice President - General Operations	
Northern Natural Gas Company 2223 Dodge Street Omaha 1, Nebraska J. T. Innis, Vice President - System Operations (Northern Natural Gas Pipeline Co.)	Facility data was supplied by Northern Natural Gas Company and in addition for their subsidiary Northern Natural Gas Pipeline Company
Northern Utilities, Inc. Box 1091 Casper, Wyoming J. M. McIntire, President & Director	
Ohio Fuel Gas Company, The 99 North Front Sreet Columbus, Ohio 43215 A. W. Lundstrum, President	
Ohio Gas Company 200 West High Street Bryan, Ohio C. B. Milton, President and General Manager	
Okaloosa County Gas District Box 548 Valparaiso, Florida T. Powell, Jr., President	
Oklahoma Natural Gas Company Box 871 Tulsa, Oklahoma 74102 P. K. Wallace, Vice President - Operations	
Pacific Gas & Electric Company 245 Market Street San Francisco 6, California Howard Fisher, Vice President - Gas Operations (Standard Pacific Gas Line, Inc.)	Facility data was supplied by Pacific Gas & Electric Company and in addition for their subsidiary, Standard Pacific Gas Line, Inc.
Pacific Gas Transmission Company 124 Beale Street San Francisco 6, California Charles Pennypacker Smith Vice President and Manager	
Pacific Lighting System 810 Flower Street Los Angeles 17, California R. R. Blackburn, Executive Vice President (Pacific Lighting and Supply Co.) (Southern California Gas Company) (Southern Counties Gas Co. of Calif.)	Facility data was supplied by Southern California Gas Company for themselves, Pacific Lighting and Supply Company, and Southern Counties Gas Company of California
Pan American Gas Company Box 591 Tulsa, Oklahoma F. G. Moore, President	
Panhandle Eastern Pipe Line Company P. O. Box 1348 Kansas City, Missouri Francis J. McElhatton, Vice President Gathering & Transmission	
Penn-Jersey Pipe Line Company 57 Hillside Avenue Short Hills, New Jersey 07078 H. E. Carver, President	
Peoples Natural Gas Company, The Two Gateway Center Pittsburgh, Pennsylvania 15222 R. E. Seymour, President	
Petroleum Exploration, Inc. Trico Building Sisterville, West Virginia J. C. Wright, President	
Phillips Natural Gas Company Bartlesville, Oklahoma J. L. Stubblefield	
Piedmont Natural Gas Company, Inc. 4301 Yancey Road Charlotte, North Carolina Buell G. Duncan, President and General Manager	
Pioneer Natural Gas Company Box 511 Amarillo, Texas T. S. Whitis, Vice President - Transmission	
Plateau Natural Gas Company Box 1357 Colorado Springs, Colorado 80901 S. W. Jervis, Executive Vice President	
Portland Gas Light Company 5 Temple Street Portland, Maine David E. Weber, Chief Engineer (Granite State Gas Transmission, Inc.)	Facility data was supplied by Portland Gas Light Company and for their subsidiary, Granite State Transmission, Inc.
Public Service Company of North Carolina, Inc. P. O. Box 1398 Gastonia, North Carolina 28052 B. E. Zeigler, President	

COMPANIES THAT PARTICIPATED IN THE NATURAL GAS PIPELINES FACILITIES SUBCOMMITTEE SURVEY

COMPANY	REMARKS
Rio Grande Valley Gas Company 355 W. Elizabeth Street Brownsville, Texas W. B. Wood, Vice President	
Roanoke Gas Company 123 Church Avenue, S. W. Roanoke, Virginia John C. Parrott, President	
San Diego Gas & Electric Company Box 1831 San Diego 12, California	
South Carolina Electric & Gas Co. Box 390 Columbia, South Carolina S. C. McMeekin, President (South Carolina Natural Gas Co.)	Facility data was supplied by South Carolina Electric & Gas Company and for their subsidiary, South Carolina Natural Gas Company.
South Georgia Natural Gas Company P. O. Box 1279 Thomasville, Georgia 31792 John O. Sholar, President	
South Jersey Gas Company 2001 Atlantic Avenue Atlantic City, New Jersey C. L. Silvius General Supt. of Operations	
Southeastern Michigan Gas Company 405 Water Street Port Huron, Michigan 48060 Cecil A. Runyan, President	
Southern Coast Corporation Southern Community Gas Company Box 478 Corpus Christi, Texas S. C. Lewis, Sr., President	
Southern Natural Gas Company Box 2563 Birmingham, Alabama O. W. Clarke, Senior Vice President - Operations	
Southern Tier Gas Company 1815 State Street Watertown, New York 13601 R. G. Donovan, President	
Southern Union Gas Company Fidelity Union Tower Dallas 1, Texas N. P. Chesnutt, Vice President	
Southwest Gas Corporation Box 271 Las Vegas, Nevada J. L. Sanders, Vice President - Engineering	
Tennessee Gas Pipeline Company Box 2511 Houston, Texas W. C. McGee, Jr., President (East Tennessee Natural Gas Co.) (Midwestern Gas Transmission Co.)	Facility data was supplied by Tennessee Gas Pipeline Company and for their subsidiaries, East Tennessee Natural Gas Company and Midwestern Gas Transmission Company.
Tennessee Natural Gas Lines, Inc. 1003 Nashville Trust Building Nashville, Tennessee T. W. Goodloe, President	
Texaco, Inc. P. O. Box 52332 Houston, Texas R. C. Shields, Division Manager	
Texas Eastern Transmission Corp. Box 1612 Shreveport 94, Louisiana E. T. Robinson, Senior Vice President	
Texas Gas Transmission Corporation Box 1160 Owensboro, Kentucky A. L. Roberts, Vice President	
Transcontinental Gas Pipeline Corp. Box 296 Houston 1, Texas W. H. Davidson, Vice President	
Transok Pipeline Company 306 Public Service Building Tulsa, Oklahoma R. D. Newman, Vice President	
Transwestern Pipeline Company Box 1502 Houston 1, Texas N. C. Turner, Vice President - Engineering and Operations	
Treasure State Pipe Line 407 Ford Building Great Falls, Montana Del Lowry, President	
Trunkline Gas Company P.O. Box 1642 Houston 1, Texas W. K. Sanders, President	
Union Gas System, Inc. 122 West Myrtle Street Independence, Kansas H. F. Johnson, President	
United Fuel Gas Company P. O. Box 1273 Charleston 25, West Virginia J. S. Phillips, President (Atlantic Seaboard Corp.) (Kentucky Gas Transmission Corp.)	Facility data was supplied by United Fuel Gas Company and for their subsidiaries, Atlantic Seaboard Corporation and Kentucky Gas Transmission Corporation.
United Gas Pipe Line Company Box 1407 Shreveport 92, Louisiana C. C. Barnett, Vice President	
Urbana Pipeline Company 1111 Mercantile Dallas Building Dallas, Texas 75201 James T. Hardy	
Washington Gas Light Company 1100 H Street, N. W. Washington 5, D. C. Donald S. Bittinger, President (Shenandoah Gas Company)	Facility data was supplied by Washington Gas Light Company and for their subsidiary, Shenandoah Gas Company.
West Ohio Gas Company 319 West Market Street Lima, Ohio A. C. Zoller, Jr. Vice President	
Western Slope Gas Company 550 15th Street Denver, Colorado W. W. Howell, Vice President	
Wyoming Gas Company P. O. Box 461 Basin, Wyoming J. T. Bishop President and General Manager	

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SUBCOMMITTEE ON INLAND WATERWAYS TRANSPORTATION
OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES (1966)

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Cleveland Tankers, Inc.

July 29, 1967

Mr. John E. Swearingen
Chairman, Committee on Oil and
Gas Transportation Facilities
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

Dear Mr. Swearingen:

Attached are the completed tables covering the propelled and non-propelled tank barges in the United States suitable for transporting petroleum and petroleum products in bulk on the inland waterways, the Great Lakes, and in some instances coastwise as of January 1, 1967. The information which we have gathered is obtained primarily from the U. S. Coast Guard, although the areas of operation and the equipment verification have been accomplished by the Subcommittee and its individual members.

In the layout of this report, the country has been divided into six areas of operation as follows:

1. The Mississippi River System and Gulf Intracoastal Waterway
2. The East Coast Waterways including the New York State Barge Canal
3. The West Coast
4. The Great Lakes
5. Alaska
6. Hawaii

The attached Summary Table gives a simplified listing of the entire barge petroleum fleet. The additional tables (Schedules 1-8) break down the fleet by construction years and are tied into the Summary Table by use of numerical outline designations.

It is apparent from the tables that the trend toward larger barges continues. It can also be seen that the total fleet capacity of 35,509,146 barrels is 32% higher than the 26,958,706 barrels of total capacity on January 1, 1961, which was the census date employed in the last report of this Committee. What may not be so apparent is that this increase has been devoted primarily to crude oil rather than refined products.

There has been a pronounced tendency along the Gulf Coast and in the Midwest towards refining crude oils close to the major refined product markets. While this has meant to normal increase in the transportation of crude oil by barge, there has been little or no increase in the barging of gasoline due to the proximity of the refineries to the markets.

There are refinements of petroleum barging operations by geographic area which are of interest in any comprehensive look at the industry. For instance, Mississippi River towing has reached a high degree of efficiency through the use of large barges made up into flotillas of 80,000 to 200,000 barrels capacity. These tows are pushed by twin screw diesel towboats of 2,000 to 6,000 horsepower with steadily improving engine room monitoring equipment, power winches for line handling and rigging, and advanced communication equipment used for dispatching and navigation. The monitoring, power aids and communication equipment contributing to greater safety and reduced crew sizes are also increasingly employed on the other waterways discussed in the following paragraphs.

The Gulf Intracoastal Waterway, which has a tow length restriction of 1150' and a tow width restriction of 55', has benefited from increased efficiency with the use of barges up to 30,000 barrels in calibrated capacity. Here, the towboats have not increased as much in horsepower because of the dimension restrictions. Tows range anywhere from a single 7,000 barrel barge up to about 80,000 barrels. Modern towing vessel design has reduced crew size and held prices at or below those prevailing in 1960, thus keeping a reasonable share of petroleum transportation along the Gulf Coast from going to the ever present possibility of pipelines.

The East Coast and West Coast are trending toward large oceangoing barges of 40,000 to 95,000 barrels capacity. These barges generally move singly in port to port transportation. Petroleum distribution is frequently handled by conventional inland barges where protected water systems exist along both Coasts.

On the Great Lakes, petroleum transportation is handled almost exclusively by self-propelled tankers ranging in size from 16,000 to 66,000 barrels. Smaller self-propelled units are used for bunkering ships in various Lakes harbors. Because of new pipelines, the Great Lakes petroleum fleet has not grown to any extent during the past seven years.

Many electronic devices have been developed for the use on the Inland Waterways since World War II. Perhaps most important of these is radar, which allows tows to continue to operate during periods of poor visibility. Prior to radar, it was impossible to operate safely in even a light fog. Depth recorders have been developed for Inland use since the War which have largely eliminated the use of the sounding lead.

The marine radio mobilphone and side band radio have been improved so that communication between towboats and shore bases has ceased to be a problem in the control of operations.

Great strides have been made in maintenance capabilities and procedures. At the end of World War II, it was a customary procedure to lay up a 600 or greater horsepower boat for fifteen days or more for periodic engine overhauls. It is not unusual now to completely overhaul the main engines of a large tug or towboat in three days.

Since the War mid-stream fueling has become a reality. Prior to that time it was necessary for a towboat to tie off its tow and proceed to a fuel dock for fuel, supplies and crew changes. This operation is now carried out while underway mid-stream with a tow.

Barge rake designs employing finer lines and increased length have lowered water resistance and improved speed. The larger new barges for inland use typically have forward rakes 60' to 90' in length. In some cases bow thrusters, remote controlled propulsion units have been installed in the forward section of large tows to obtain the highest degree of maneuverability.

The above-described advances have had the effect of increasing speeds, increasing carrying capacity, and reducing crew cost of the petroleum tows. In fact, most petroleum transportation rates by barge are as low as they have ever been and substantially lower than the O.P.A. ceiling rates of World War II and the rates that prevailed during the early 1950's.

Barge and towboat operators have been increasing their safety efforts over the years. In addition to the modern electronic equipment on the towboats, petroleum barges by their design have the built-in safety feature of multiple compartmentation, protected by a void space forward and aft. The void spaces act as collision bulkheads while the liquid tight compartmentation minimizes cargo loss and contamination problems when an accident occurs. Tankermen carried in the crew are trained in the handling of petroleum cargoes, as well as being skilled in fire fighting and other emergency procedures. Training of the officers and crews is regularly given by the safety engineers of marine underwriters in smaller barging companies and by full-time safety managers of the staff of larger lines.

One of the most important aspects of barging to the petroleum industry is its versatility in the rapid changes that can be made in both origin and destination of the cargoes. A pipeline is locked in on its route, but barges are able to move in any direction on the water route, handling peak loads or

concentrating into or away from designated areas. This flexibility, for instance, can be utilized to accommodate refinery downtime, sales or purchases from temporary over or under supply problems, and term sales of quantities which would not justify construction of a pipeline. Under emergency conditions it would be possible to move even greater quantities of petroleum by barge. This could be accomplished through central coordination of barge allocation together with scheduling that would produce a higher utilization factor than would ordinarily be achieved under normal commercial operation.

We believe that this report completes the work of our Subcommittee, but we stand ready to render other assistance or supply additional information, if needed.

Yours very truly,

/S/ GEORGE PETERKIN, JR.

George Peterkin, Jr., Chairman
NPC Subcommittee on Inland
Waterways Transportation

SUMMARY

TOTAL INDICATED U. S. INLAND WATERWAYS
PETROLEUM FLEET
JANUARY 1, 1967

WATERWAYS SYSTEM	FOR DETAILS SEE SCHEDULE NO.	OVER 5,000 BARRELS CAPACITY		UNDER 5,000 BARRELS CAPACITY		TOTAL BARRELS CAPACITY	
		NUMBER OF UNITS	TOTAL CAPACITY (BARRELS)	NUMBER OF UNITS	TOTAL CAPACITY (BARRELS)	NUMBER OF UNITS	TOTAL CAPACITY (BARRELS)
SELF-PROPELLED PETROLEUM TANK VESSELS:							
1. East Coast (Including New York State Barge Canal)	1	60	1,255,480	48	64,597	108	1,320,077
2. Mississippi River & Gulf Intracoastal Canal	2	3	66,901	0	0	3	66,901
3. West Coast	2	5	121,513	6	753	11	122,266
4. Great Lakes	2	16	587,021	8	10,004	24	597,025
5. Alaska	2	0	0	2	3,557	2	3,557
6. Hawaii	2	1	30,087	0	0	1	30,087
Total Section A		85	2,061,002	64	78,911	149	2,139,913
NON-PROPELLED TANK BARGES:							
1. Mississippi River & Gulf Intracoastal Canal	3	1,847	26,056,423	342	807,488	2,189	26,863,911
2. East Coast (Including New York State Barge Canal)	4	247	3,765,042	113	216,171	360	3,981,213
3. West Coast	5	91	1,467,751	30	61,718	121	1,529,469
4. Great Lakes	6	12	256,918	7	10,974	19	267,892
5. Alaska	7	3	21,900	37	53,066	40	74,966
6. Hawaii	7	2	37,776	0	0	2	37,776
Total Section B		2,202	31,605,810	529	1,149,417	2,731	32,755,227
LPG OR LIG * TANK BARGES:							
1. Mississippi River & Gulf Intracoastal Canal	8	43	612,600	2	1,406	45	614,006
Total United States		2,330	34,279,412	595	1,229,734	2,925	35,509,146

* Liquefied Inflammable Gas

SCHEDULE NO. 1

EAST COAST
PROPELLED PETROLEUM TANK VESSELS
JANUARY 1, 1967

YEAR BUILT	OVER 5,000 BARRELS CAPACITY NUMBER OF BARGES	OVER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)	UNDER 5,000 BARRELS CAPACITY NUMBER OF BARGES	UNDER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)
Prior to 1932	19	209,851	20	33,297
1932	1	5,053	0	0
1933	0	0	3	3,153
1934	4	75,011	2	3,950
1935	0	0	1	3,150
1936	0	0	1	4,910
1937	0	0	4	5,865
1938	3	47,905	0	0
1939	1	5,000	0	0
1940	2	169,839	0	0
1941	3	22,700	1	105
1942	2	169,840	0	0
1943	2	140,177	1	193
1944	5	64,739	0	0
1945	6	177,515	1	384
1946	1	15,000	1	544
1947	3	29,878	1	900
1948	1	10,476	1	354
1949	0	0	2	867
1950	0	0	1	1,227
1951	0	0	1	952
1952	0	0	0	0
1953	1	11,107	1	1,102
1954	1	9,000	1	1,200
1955	1	21,000	0	0
1956	1	13,950	1	452
1957	0	0	0	0
1958	2	51,739	1	1,000
1959	0	0	0	0
1960	0	0	1	131
1961	0	0	1	791
1962	0	0	1	70
1963	0	0	0	0
1964	1	5,700	0	0
1965	0	0	0	0
1966	0	0	0	0
Total	60	1,255,480	48	64,597

SCHEDULE NO. 2

MISSISSIPPI RIVER & GULF COAST,
GREAT LAKES, WEST COAST, ALASKA & HAWAII
PROPELLED PETROLEUM TANK VESSELS
JANUARY 1, 1967

SYSTEM	YEAR BUILT	OVER 5,000 BARRELS CAPACITY		UNDER 5,000 BARRELS CAPACITY	
		NUMBER OF VESSELS	TOTAL CAPACITY (BARRELS)	NUMBER OF VESSELS	TOTAL CAPACITY (BARRELS)
MISSISSIPPI RIVER AND GULF COAST					
	Prior to 1932	0	0	0	0
	1941	1	16,609	0	0
	1945	1	31,292	0	0
	1947	1	19,000	0	0
	Total	3	66,901	0	0
WEST COAST					
	Prior to 1932	0	0	4	485
	1934	0	0	0	0
	1944	1	9,287	0	0
	1945	1	31,880	0	0
	1947	0	0	1	65
	1951	1	31,864	0	0
	1954	0	0	1	203
	1957	1	30,087	0	0
	1959	1	18,395	0	0
	Total	5	121,513	6	753
GREAT LAKES					
	Prior to 1932	10	385,782	4	3,941
	1937	2	91,681	0	0
	1942	0	0	1	197
	1945	1	38,190	0	0
	1950	0	0	1	1,300
	1952	0	0	1	236
	1953	1	25,914	0	0
	1960	0	0	1	4,330
	1963	1	39,164	0	0
	1966	1	6,290	0	0
	Total	16	587,021	8	10,004
ALASKA					
	1954	0	0	1	447
	1963	0	0	1	3,110
	Total	0	0	2	3,557
HAWAII					
	1957	1	30,087	0	0

SCHEDULE NO. 3

MISSISSIPPI RIVER SYSTEM & GULF INTRACOASTAL CANAL
INLAND TANK BARGES
JANUARY 1, 1967

YEAR BUILT	OVER 5,000 BARRELS CAPACITY NUMBER OF BARGES	OVER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)	UNDER 5,000 BARRELS CAPACITY NUMBER OF BARGES	UNDER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)
Total Prior to 1932	11	98,061	42	85,727
1932	2	12,000	3	8,838
1933	4	31,961	7	15,920
1934	5	51,292	12	26,237
1935	5	92,950	7	16,749
1936	24	196,705	11	19,600
1937	36	288,410	9	18,070
1938	8	77,445	4	8,386
1939	28	257,009	7	20,023
1940	59	599,731	17	18,230
1941	87	908,318	2	2,552
1942	49	507,561	5	16,541
1943	40	383,813	3	9,400
1944	22	220,478	1	224
1945	37	411,737	10	33,582
1946	28	342,890	3	6,660
1947	53	697,840	6	11,354
1948	112	1,544,241	7	14,977
1949	65	1,082,611	8	13,794
1950	34	572,232	11	26,572
1951	84	1,615,036	15	45,913
1952	65	1,167,951	14	38,113
1953	21	366,969	8	23,905
1954	11	159,214	21	62,134
1955	67	1,043,463	12	36,492
1956	55	766,367	9	15,919
1957	77	1,144,559	15	20,015
1958	49	617,248	16	32,388
1959	65	844,255	8	23,051
1960	80	1,240,677	12	32,964
1961	94	1,289,474	7	19,921
1962	88	1,371,569	5	16,175
1963	108	1,664,125	7	14,076
1964	90	1,201,080	10	32,365
1965	86	1,308,351	3	5,489
1966	98	1,878,800	5	15,132
Total	1,847	26,056,423	342	807,488

SCHEDULE NO. 4

EAST COAST AREA
(INCLUDING NEW YORK STATE BARGE CANAL)
INLAND TANK BARGES
JANUARY 1, 1967

YEAR BUILT	OVER 5,000 BARRELS CAPACITY NUMBER OF BARGES	OVER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)	UNDER 5,000 BARRELS CAPACITY NUMBER OF BARGES	UNDER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)
Total Prior to 1932	9	81,466	26	54,454
1932	0	0	4	7,243
1933	1	13,418	1	4,238
1934	6	93,523	3	9,226
1935	1	17,085	3	6,195
1936	7	105,495	1	4,285
1937	16	198,193	8	25,035
1938	2	34,396	2	6,800
1939	4	29,555	1	4,285
1940	3	40,849	2	498
1941	9	84,700	3	5,383
1942	2	16,570	3	8,052
1943	4	39,354	3	9,093
1944	1	8,555	1	1,760
1945	13	172,100	5	8,680
1946	8	136,458	1	375
1947	8	157,857	4	7,339
1948	24	311,140	0	0
1949	23	311,571	2	2,588
1950	6	55,451	0	0
1951	10	186,743	2	2,540
1952	4	51,345	4	10,687
1953	3	54,270	0	0
1954	2	36,000	0	0
1955	7	113,150	1	3,196
1956	11	170,112	5	7,230
1957	12	194,872	2	778
1958	10	175,641	6	4,370
1959	10	165,819	1	428
1960	6	97,540	1	235
1961	5	126,620	5	9,402
1962	5	125,136	5	4,317
1963	9	189,917	2	1,771
1964	3	87,530	2	3,052
1965	1	52,411	2	2,000
1966	2	30,200	2	636
Total	247	3,765,042	113	216,171

SCHEDULE NO. 5

WEST COAST
TANK BARGES
JANUARY 1, 1967

YEAR BUILT	OVER 5,000 BARRELS CAPACITY NUMBER OF BARGES	OVER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)	UNDER 5,000 BARRELS CAPACITY NUMBER OF BARGES	UNDER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)
Total Prior to 1932	10	77,928	5	18,371
1938	1	8,342	1	1,620
1939	0	0	2	9,309
1940	1	5,800	2	2,319
1941	2	11,495	1	71
1942	2	14,779	0	0
1943	8	88,341	1	3,650
1944	9	72,148	1	325
1945	2	19,424	1	3,311
1946	4	41,500	0	0
1947	2	26,277	0	0
1948	4	42,025	0	0
1949	4	71,924	0	0
1950	1	26,220	0	0
1951	2	43,220	0	0
1952	3	58,884	2	5,136
1953	3	67,788	0	0
1954	4	104,196	1	4,160
1955	4	127,999	1	189
1956	1	39,359	0	0
1957	6	149,008	0	0
1958	1	26,286	0	0
1959	2	71,637	1	676
1960	3	75,737	1	286
1961	0	0	2	6,712
1962	1	11,084	0	0
1963	3	44,094	0	0
1964	2	62,341	0	0
1965	0	0	6	4,097
1966	6	79,915	2	1,486
Total	91	1,467,751	30	61,718

SCHEDULE NO. 6

GREAT LAKES AREA
TANK BARGES
JANUARY 1, 1967

YEAR BUILT	OVER 5,000 BARRELS CAPACITY NUMBER OF BARGES	OVER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)	UNDER 5,000 BARRELS CAPACITY NUMBER OF BARGES	UNDER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)
Total Prior to 1932	1	5,000	0	0
1934	0	0	1	4,762
1937	1	6,650	1	3,785
1941	1	18,000	0	0
1949	0	0	2	920
1957	2	39,134	0	0
1960	0	0	1	808
1962	2	58,000	0	0
1963	3	91,000	0	0
1964	0	0	2	699
1965	2	39,134	0	0
Total	12	256,918	7	10,974

SCHEDULE NO. 7

ALASKA & HAWAII
TOTAL INLAND TANK BARGES
JANUARY 1, 1967

	YEAR BUILT	OVER 5,000 BARRELS CAPACITY NUMBER OF BARGES	OVER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)	UNDER 5,000 BARRELS CAPACITY NUMBER OF BARGES	UNDER 5,000 BARRELS CAPACITY TOTAL CAPACITY (BARRELS)
ALASKA					
	Total Prior to 1932	0	0	1	191
	1937	0	0	1	191
	1939	0	0	2	564
	1941	0	0	2	3,033
	1943	0	0	1	297
	1944	0	0	1	260
	1946	0	0	5	4,047
	1948	0	0	3	3,830
	1950	0	0	1	890
	1951	0	0	7	9,305
	1952	0	0	2	1,764
	1953	2	14,300	0	0
	1956	0	0	3	8,860
	1957	0	0	2	2,604
	1959	0	0	1	2,200
	1961	0	0	2	5,419
	1962	0	0	1	4,394
	1964	1	7,600	2	5,217
	Total	3	21,900	37	53,066
HAWAII					
	1942	1	7,108	0	0
	1960	1	30,668	0	0
	Total	2	37,776	0	0

SCHEDULE NO. 8

MISSISSIPPI RIVER SYSTEM & GULF INTRACOASTAL CANAL
TANK BARGES WITH SPECIAL FEATURES
OR IN SPECIAL SERVICES
(LIQUEFIED PETROLEUM GAS OR LIQUEFIED INFLAMMABLE GAS)
JANUARY 1, 1967

YEAR BUILT	OVER 5,000 BARRELS CAPACITY		UNDER 5,000 BARRELS CAPACITY	
	NUMBER OF BARGES	TOTAL CAPACITY (BARRELS)	NUMBER OF BARGES	TOTAL CAPACITY (BARRELS)
1950	1	8,571	0	0
1951	1	9,306	1	1,400
1953	1	13,095	0	0
1954	1	13,095	0	0
1955	3	25,927	0	0
1956	2	19,053	0	0
1957	5	50,047	1	6
1958	7	71,504	0	0
1960	5	64,373	0	0
1961	6	78,766	0	0
1962	1	18,938	0	0
1963	2	62,828	0	0
1964	4	82,465	0	0
1965	3	74,818	0	0
1966	1	19,814	0	0
Total	43	612,600	2	1,406

SECTION V

REPORT OF

THE SUBCOMMITTEE ON TANK CAR TRANSPORTATION

August 1, 1967

Mr. John E. Swearingen
Chairman, Committee on Oil and
Gas Transportation Facilities
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

Dear Mr. Swearingen:

As Chairman of the Subcommittee on Tank Car Transportation of the National Petroleum Council's Committee on Oil and Gas Transportation Facilities (1966), I am pleased to attach your Subcommittee's report on tank cars available in the United States for the transportation of petroleum and petroleum products as of June 1, 1967. Attached to the report is a breakdown by types of cars, together with explanatory data.

Our Subcommittee members have asked me to express to you their appreciation for the privilege of serving this effort.

Respectfully submitted,

/S/ C. H. WAGER

C. H. Wager, Chairman
NPC Subcommittee on Tank Car
Transportation Facilities

SUBCOMMITTEE ON TANK CAR TRANSPORTATION
OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES (1966)

CHAIRMAN

C. H. Wager
General Traffic Manager
Shell Oil Company

CO-CHAIRMAN

Earl G. Ellerbrake
Office of Oil and Gas
U.S. Department of the Interior

SECRETARY

Vincent M. Brown
Secretary-Treasurer
National Petroleum Council

* * *

Ralph L. Andreas, Director
Purchasing and Traffic
American Oil Company

H. B. Brown
General Traffic Manager
Traffic Department
Mobil Oil Corporation

Richard Canham, Manager
Traffic & Distribution
Department
Standard Oil Company
of California

John S. Carlson*
General Manager
Shippers' Car Line Division
ACF Industries, Inc.

Lee A. Christianson
Director of General Traffic
Transportation Department
Sun Oil Company

Harry E. Colwell
Traffic Manager
Supply and Distribution
Department
Texaco Inc.

J. E. Donnelly, Manager
Transportation Division
Phillips Petroleum Company

N. C. Dunn
Traffic Manager
Supply & Transportation Department
Humble Oil & Refining Company

George F. Hall
Traffic Manager
Cities Service Oil Company

E. C. R. Lasher, President
North American Car Corporation

Robert Maguire
Traffic Manager
Atlantic Richfield Company

A. E. Rectorschek
Traffic Manager
Purchasing Division
Marathon Oil Company

J. R. Scanlin
Vice President
General American Transportation
Corporation

J. W. Van Gorkom, President
Union Tank Car Company

J. F. Wallace
General Traffic Manager
Transportation Department
Warren Petroleum Corporation

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* Vice President, ACF Industries, Inc.

REPORT OF

THE SUBCOMMITTEE ON TANK CAR TRANSPORTATION

There were 142,356 tank cars having a total capacity of 1.7 billion gallons suitable for carrying petroleum and petroleum products reported by United States based owners and carrying their reporting marks as of June 1, 1967. The total fleet was some 185,000 cars having a capacity of more than 2 billion gallons. A statement showing details is appended.

Group I embraces these 142,356 cars suitable for petroleum service and indicates in broad categories how these cars break out as to capacities. Additionally, it shows those in non-pressure and pressure classes as well as non-coiled and coiled. Generally speaking, the non-pressure, non-coiled cars would be suitable for hauling aviation fuels, gasolines and other fuel oils. The pressure, non-coiled cars would be used for butanes and propanes, and so on. Further refinements of these categories are available on short notice through existing computer systems.

Group II indicates 4,255 cars suitable for acid service. Cars of this type have not been specified separately in the past in these reports. They are shown because some need for the figures may occur at some time in refinery operations or otherwise and to illustrate what can be done with information methods now available. Group III covers 32,617 cars not suitable for petroleum use. Some of them could possibly be so used, but substantial, time-consuming modifications would be necessary and the number of such cars would be insignificant. Group IV involves an estimated 6,000 railroad-owned cars which in most instances are used by the carriers in their own diesel fuel service. They have been included in past reports in special categories as has been done here. They are, of course, supplemented by cars from industry and, as a practical matter, would have to be further supplemented in the event of an emergency because of increased needs for diesel fuel by the rail carriers.

Underlying data for the survey were provided by the central computer system of the Association of American Railroads. This method of procuring information was not available at the time the 1962 Report was prepared. That report, incidentally, shows a total fleet of 169,000 cars with a total carrying capacity of 1.6 billion gallons. The increased figures shown in this report are to be expected.

Two integration problems merit attention in dealing with the cars suitable for carrying petroleum: one involves oils and chemicals and the other involves United States and Canada, Mexico being also involved in a limited degree. Past reports have shown all privately owned cars and these in turn have been

broken out into oil, chemical, and other services. The basis for these breakouts were cars in the service of oil companies, cars in chemical company service, and so on. A reasonably accurate delineation was possible by this method. The picture has changed greatly in this connection, however, since the last report. Oil and chemical companies have integrated. Moreover, most oil companies are now in the petrochemical field. Demarcation lines previously existing have faded and come to be almost non-existent. Additionally, changes are occurring almost day by day.

A number of actions as to this feature would become necessary in the event of an emergency, an important one being the establishment of priorities. As to some cars suitable for petroleum, there would, of course, be no problem. As to the integrated fleets, however, the car-leasing companies and most shippers now have computer systems which complement the central system of the Association of American Railroads. These could be used to provide information on the fleets of the various shippers and the uses being made of the cars. It would be up to date and could be quickly obtained. Such means of dealing with these cars is about as realistic as can be devised at this time. These computer systems, incidentally, were not far along at the time of the last survey.

A situation closely allied to that just discussed exists regarding cars within Canada and crossing the border in both directions. The same is true in a lesser way with Mexico. Stepped-up production in Western Canada, the establishment of offices in Canada by United States based companies, and other developments there have a more important influence on tank cars than previously. Here, again, the situation is a changing one but should be borne in mind. The procedures proposed for the integrated oil-chemical fleets could well be considered for use as to these cars in the event of an emergency.

Another significant change since the last report is that the figures for the total fleet now show 17,596 cars each having capacities over 20,500 gallons. Very few cars with capacities in this range existed in 1961 and the trend of industry is toward the construction of these high-capacity cars. More of them will undoubtedly be available in the years ahead.

In many ways this survey could be designated as computer based because of its reliance on such information systems as distinguished from previous reports based on published data. It was felt that full advantage should be taken of the new methods now available and the advantages afforded by them. Staff representatives of the Office of Oil and Gas of the Department of the Interior and of the National Petroleum Council have been kept in touch with the work on the survey and are familiar with its innovations. The assistance of the Association of American Railroads has been invaluable and they have our sincere thanks for their cooperation.

TANK CAR SURVEY
SUBCOMMITTEE ON TANK CAR TRANSPORTATION
NATIONAL PETROLEUM COUNCIL
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES

As of June 1, 1967

	Gallon Capacities					Totals	
	8,499 and Less	8,500 to 13,499	13,500 to 20,499	20,500 to 30,499	Over 30,500	Cars	M Gals.
PRIVATELY OWNED CARS							
GROUP I							
Suitable for Petroleum							
Non-Pressure							
Coiled	26,762	28,402	3,657	3,848	46	62,715	645,464
Non-Coiled	16,504	19,000	554	3,629	17	39,704	411,162
						102,419	1,056,626
Pressure							
Coiled	29	141	-	-	-	170	1,680
Non-Coiled	1,426	27,644	641	2,080	7,976	39,767	639,574
						39,937	641,254
Sub-Total						142,356	1,697,880
GROUP II							
Suitable for Acid							
Coiled	211	98	-	-	-	309	2,538
Non-Coiled	2,502	1,079	365	-	-	3,946	35,578
						4,255	38,116
GROUP III							
Others Not Suitable							
Coiled	5,566	6,046	718	287	-	12,617	125,916
Non-Coiled	7,636	10,455	1,944	605	4	20,000	204,601
						32,617	330,517
Total - Privately Owned						179,228	2,066,513
RAILROAD OWNED CARS							
GROUP IV							
Principally in Own Fuel Service						6,000*	60,000*
GRAND TOTAL						185,228	2,126,513

* Estimated

SECTION VI

REPORT OF

THE SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION

August 16, 1967

Mr. John E. Swearingen
Chairman, Committee on Oil and
Gas Transportation Facilities
National Petroleum Council
1625 K Street, N. W.
Washington, D. C. 20006

Dear Mr. Swearingen:

Your Subcommittee on Tank Truck Transportation has completed its assignment, and I am pleased to transmit to you, herewith, our final report. We have presented overall totals by type of service, for all tank truck equipment in the United States having a capacity in excess of 2,000 gallons per unit.

In addition, in order to obtain accurate information on the type and specifications of tank truck and trailer equipment now being operated, the Subcommittee conducted a survey of 711 operators, to update the survey data obtained in 1962, and the results, containing detailed information on 34,441 units of equipment, are shown in the report.

We wish to extend our appreciation to all tank truck operators who participated in the Subcommittee's survey and especially to Frank C. Perry, Atlantic Richfield Company; C. Austin Sutherland, National Tank Truck Carriers, Inc.; and Vincent M. Brown of the National Petroleum Council for their efforts in making the completion of this assignment possible.

Sincerely yours,

/S/ S. F. NINESS

S. F. Niness, Chairman
NPC Subcommittee on Tank
Truck Transportation

SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION
OF THE
NATIONAL PETROLEUM COUNCIL'S
COMMITTEE ON OIL AND GAS TRANSPORTATION FACILITIES (1966)

CHAIRMAN

S. F. Niness, President
Chemical Leaman Tank Lines, Inc.

CO-CHAIRMAN

Earl G. Ellerbrake
Office of Oil and Gas
U. S. Department of the Interior

SECRETARY

Vincent M. Brown
Secretary-Treasurer
National Petroleum Council

* * *

C. H. Beard
Assistant to the Vice President
and General Traffic Manager
Union Carbide Corporation

D. A. Beldon, Manager
Highway Transportation
Transportation Department
Ashland Oil & Refining Company

A. C. Clark
Transportation Engineer
Manufacturing Chemists'
Association, Inc.

Charles E. Cranmer, President
Liquid Transporters, Inc.

W. E. Johnson, President
Rogers Cartage Company

F. M. Palmer
Coordinator Motor Transportation
Marketing Department
American Oil Company

Frank C. Perry
Supply & Transportation Division
Atlantic Richfield Company

C. Austin Sutherland
Managing Director
National Tank Truck Carriers, Inc.

REPORT OF
THE SUBCOMMITTEE ON TANK TRUCK TRANSPORTATION

The Subcommittee on Tank Truck Transportation submits herewith its report on the census of U.S. tank truck equipment in the United States at the conclusion of the year 1966.

This current study is to be considered together with the 1962 publication* in the light of updating that report to reflect current operating conditions and inventory.

This survey of tank truck equipment has been established on what is known as a "sampling basis" using substantially the same type of questionnaire that was used in the 1962 survey. Approximately 700 questionnaires were sent out to both for-hire and private carriers. About 70 percent were returned by the operators. The figures received from those who responded to our questionnaires (see Tables 3 and 4) were expanded to include the entire for-hire and private tank truck carrier industry (see Table 2).

We are in the position to note some significant figures and changes in the industry at this time based upon the completion of our survey.

During the past five-year period tank trailer manufacturers in the United States have produced a total of 32,170 over-the-road type trailers. Of this number 6,998 were produced for the transportation of dry bulk commodities; such as cement, flour, etc. Many of these units can be converted, if necessary, for the handling of liquids.

By applying an annual attrition basis to the 57,792 trailer units listed as the "Total Private and For-Hire Equipment--United States" in Table 1 of the 1962 survey, and adding to the adjusted total the 32,170 units produced during the past five years; we realize a total trailer fleet, including the dry bulk type of vehicles, of 61,600 units. With the inclusion of 19,700 unit tank trucks, the total tank truck and trailer fleet in the United States, as of January 1, 1967, is estimated at 81,300 units.

A significant point is the growing difference between the for-hire tank truck carrier fleet and the private carrier fleet.

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* Report of the Committee on Oil and Gas Transportation Facilities, October 4, 1962

The private carrier fleet is mainly devoted to transporting a limited number of products; namely, those products generally produced by the petroleum industry, aside from petrochemicals.

The for-hire carrier fleet is now being designed to handle a wide variety of commodities (estimated at over 900) in the complete tank truck transportation of petroleum products, chemicals, corrosive liquids, food products and dry flowables.

In connection with unit tank trucks there is noted a trend toward the utilization of aluminum and stainless steel units for both chemical, food, sanitary and general purpose service.

It was pointed out in the 1962 Report that only 50 percent of the states permitted a gross vehicle weight 70,000 pounds or more. The interstate highway system established a gross vehicle weight at the present federal standard of 73,280 pounds, except in those states which had a higher weight limit at the time the interstate highway legislation was first put into effect.

An examination of the size and weight laws of the various states shows that today all but five of the states (including Alaska and Hawaii) can transport 73,280 pounds gross weight or greater. It is also worth noting that there is a continuous increase in the number of tank vehicle units that are being constructed of aluminum alloys rather than carbon steel--thus the tendency to a lighter trailer and a consequent increase in net pay load. Stainless steel is also playing a more important part in tank truck transportation, particularly in the for-hire carrier field, giving greater versatility in the use and efficiency of a particular unit.

Table 1 shows the details of the U.S. fleet of tank truck equipment. The Subcommittee estimates that on January 1, 1967 there were 81,300 tank truck and trailer units in the United States in private and for-hire service, with an aggregate capacity of 497,283,000 gallons. Total fleet capacity of all equipment has increased 18.3 percent since December 31, 1961, and the total number of units has increased 8.3 percent. The fleet capacity of units hauling chemical, food and sanitary items increased 163 percent in the same period; the high pressure fleet carrying liquid petroleum gases, anhydrous ammonia and other liquefied gases increased 51 percent since December 31, 1961; and the dry bulk fleet increased 79 percent.

Table 2 sets forth in detail the total tank trailer and semi-trailer equipment in the United States, by PAD Districts. Of the 81,300 units (over 2,000 gallon capacity), 32,097 (or 40 percent) are operated by private carriers; and the for-hire carriers are operating 49,203 units (or 60 percent).

SURVEY OF TANK TRUCK EQUIPMENT

In 1962 the Subcommittee conducted a survey by direct mail questionnaire, which was sent to nearly 10,000 private and for-hire operators throughout the United States. In the 1967 study, the Subcommittee felt the data previously obtained could be updated by a "sampling" method. 711 private and for-hire tank truck operators were contacted in the current survey, of which 497 responded with data on 34,441 pieces of equipment, or 40 percent of the total U.S. tank and trailer fleet. Accordingly the Subcommittee, by this updating process, is able to present again a detailed report on tank truck design, the various types of equipment in use (including types of lining, pressure, ICC specification, etc.), location and capacity (see Tables 3 and 4).

The current survey covered 34,441 units of tank truck equipment, including 26,029 general purpose type tanks, 1,350 corrosive liquid tanks, 2,885 pressure tanks, 3,591 dry bulk tanks, and 586 other type tanks. 58.8 percent of the equipment reported in the survey is operated by for-hire carriers, and 41.2 percent by private operators.

The same geographical distribution of equipment, and the private versus for-hire operators breakdown indicated by the large sample of data obtained in the survey, was applied to the U.S. fleet totals, to obtain the information shown on Table 2.

ALL TANK TRUCK EQUIPMENT IN UNITED STATES
PRIVATE AND FOR-HIRE
COMPARISON BETWEEN PREVIOUS NPC REPORTS AND REPORT OF JANUARY 1, 1967

	JULY 1, 1957		DECEMBER 31, 1961		JANUARY 1, 1967		TOTAL CAPACITY (THOUSAND GALLONS)			PERCENT INCREASE IN CAPACITY	
	TRAILERS	UNIT TANK TRUCKS	TRAILERS	UNIT TANK TRUCKS	TRAILERS	UNIT TANK TRUCKS	1957	1961	1966	1961 Over 1957	1966 Over 1961
General Purpose Non and Low Pressure (Under 30 psi)	37,068	4,769*	45,948	12,500*	44,325	13,050*	242,719	348,987	358,044	44.0*	2.6
Chemical, Food and Sanitary	2,799	1,226	5,046	1,679	7,325	2,550	13,211	22,700	59,674	72.0	162.9
High Pressure (250 psi and over) - LPG, Anhydrous Ammonia, Chemical	1,051	2,276	2,595	3,118	3,750	4,100	9,054	24,713	37,296	173.0	50.9
Dry Bulk - Cement, Flour, Feed, Fertilizer, etc.	**	-	4,203	-	6,200	-	**	23,642	42,269	-	78.8
TOTALS	40,918	8,271	57,792	17,297	61,600	19,700	264,984	420,042	497,283	58.0	18.3

* The 1957 NPC study was confined to over-the-road tank truck equipment having a capacity of 3,000 gallons or over. The 1961 and 1967 NPC studies, however, cover all tank truck equipment in excess of 2,000 gallons.

** Not reported in 1957 study.

TABLE 2

TOTAL TANK TRUCK, TRAILER AND SEMI-TRAILER EQUIPMENT IN THE UNITED STATES (OVER 2,000 GALS. CAPACITY)

(AS OF JANUARY 1, 1967)

PAD DISTRICT	PRIVATE CARRIERS			FOR-HIRE CARRIERS			U. S. FLEET		
	NUMBER OF UNITS	CAPACITY (THSD. GALS.)	AVERAGE UNIT CAPACITY	NUMBER OF UNITS	CAPACITY (THSD. GALS.)	AVERAGE UNIT CAPACITY	NUMBER OF UNITS	CAPACITY (THSD. GALS.)	AVERAGE UNIT CAPACITY
DISTRICT NO. 1									
Unit Tank Trucks Semi-Trailers & Trains	7,478	20,191	2,700	2,340	8,190	3,500	9,818	28,381	2,891
	7,264	47,579	6,550	15,798	109,006	6,900	23,062	156,585	6,790
TOTAL	14,742	67,770	4,597	18,138	117,196	6,461	32,880	184,966	5,625
DISTRICT NO. 2									
Unit Tank Trucks Semi-Trailers & Trains	5,033	13,086	2,600	1,277	4,086	3,200	6,310	17,172	2,721
	6,201	46,942	7,570	15,359	110,969	7,225	21,560	157,911	7,324
TOTAL	11,234	60,028	5,343	16,636	115,055	6,916	27,870	175,083	6,282
DISTRICT NO. 3									
Unit Tank Trucks Semi-Trailers & Trains	719	2,930	4,075	53	217	4,100	772	3,147	4,076
	2,126	15,201	7,150	7,460	49,982	6,700	9,586	65,183	6,800
TOTAL	2,845	18,131	6,372	7,513	50,199	6,682	10,358	68,330	6,597
DISTRICT NO. 4									
Unit Tank Trucks Semi-Trailers & Trains	288	1,354	4,700	692	3,598	5,200	980	4,952	5,053
	354	2,549	7,200	1,755	14,110	8,040	2,109	16,659	7,899
TOTAL	642	3,903	6,079	2,447	17,708	7,237	3,089	21,611	6,996
DISTRICT NO. 5									
Unit Tank Trucks Semi-Trailers & Trains	863	3,676	4,260	957	4,115	4,300	1,820	7,791	4,281
	1,771	13,513	7,630	3,512	25,989	7,400	5,283	39,502	7,477
TOTAL	2,634	17,189	6,025	4,469	30,104	6,737	7,103	47,293	6,658
UNITED STATES									
Unit Tank Trucks Semi-Trailers & Trains	14,381	41,237	2,867	5,319	20,206	3,799	19,700	61,443	3,119
	17,716	125,784	7,100	43,884	310,056	7,065	61,600	435,840	7,075
TOTAL	32,097	167,021	5,203	49,203	330,262	6,712	81,300	497,283	6,113

NATIONAL PETROLEUM COUNCIL'S 1967 SURVEY OF TANK TRUCK EQUIPMENT

— as of January 1, 1967 —

(Being made at request of U. S. Department of Interior)

QUESTIONNAIRE FORM NO. 1

NOTE: A copy of this form should be used to report all your tank truck equipment having a 2000 gallon or more capacity.
Read all footnotes carefully before filling in your data.

Water Capacity of Tank (Gallons)	GENERAL PURPOSE TYPE TANKS (Item 1)								CORROSIVE LIQUID TANKS					PRESSURE TANKS		OTHERS (Item 4)	DRY BULK TANKS (Item 5)	FLEET TOTALS
	ICC Specification Numbers MC-300, 302, 303, 304, 305 or 306 (Item 2)						Non-ICC Types (Item 3)		ICC Specification Numbers MC-310, MC-311 or MC-312 (Item 2)					MC-330 or MC-331 (Item 2)		(Describe on Separate Sheet)	TOTAL	
	Mild or High Tensile Steel		Aluminum		Stainless Steel				Mild or High Tensile Steel			Aluminum	Stainless Steel	Under 251 psi	Over 251 psi			
	Non-insulated	Insulated	Non-insulated	Insulated	Non-insulated	Insulated	Non-insulated	Insulated	Unlined	Lined: Rubber	Lined: Other	—	—	—	—	—	—	—
TRUCKS: (Item 6)																		
(a) 2000 Gals. and Over	4,606	272	334	27	34	10	47	44	22	-	-	-	-	832	274	37	13	6,552
SEMI-TRAILERS: (Item 7)																		
(a) 2000 - 3000	60	29	5	3	-	6	8	50	54	10	14	-	13	13	51	101	-	417
(b) 3001 - 5000	773	244	27	54	88	274	112	471	215	172	144	12	225	56	42	26	108	3,043
(c) 5001 - 7500	3,675	721	1,512	539	439	1,139	320	1,168	30	89	10	8	188	103	40	370	2,716	13,067
(d) 7501 - Over	583	295	5,535	143	24	10	17	62	26	1	1	68	6	477	862	32	685	8,827
TRAINS: (Item 8)	538	295	947	227	110	62	21	69	11	1	-	-	30	95	40	20	69	2,535
TOTAL	10,235	1,856	8,360	993	695	1,501	525	1,864	358	273	169	88	462	1,576	1,309	586	3,591	34,441

1. General Purpose Type Tanks—Tanks, such as conventionally used for petroleum products, and non-corrosive chemicals, etc., generally top-filling, bottom-unloading; designed for moderate or no pressure.

2. MC-300, 302, 303, 304, 305, 306, 310, 311, 312, 330 and 331—These designate the ICC specifications. If designed to comparable specifications such as NFPA 385, insert in comparable ICC specification column.

3. List here only if not designed to ICC or ICC type specifications. Examples of such tanks are those used for asphalt, road oil, greases, and edible products.

4. Others—List tanks not covered by other columns; for example tube trailers and novel designs such as cryogenic tanks.

5. Dry bulk tanks—Tanks designed for cement, flour, granulated sugar, etc. Convert cubic feet capacity to gallons by multiplying by 7.5; viz. 1000 cubic feet—7500 gallons; and list opposite appropriate gallonage.

6. List unit tank trucks of 2000 gallons and over. Do *NOT* list tank trucks operated as part of a train. (See Item 8)

7. List, on appropriate line, the number of semi-trailers *operated* (both owned or leased) by you as part of a tractor semi-trailer combination. This includes spare semi-trailers. See Item 8 for listing of semi-trailers used in "trains."

8. List the total number of "trains" (truck-full trailers or tractor-semi-trailer-full trailer combination) *operated* (both owned and leased) by you. Count each "train" as only one unit. Do not count either tank trucks or semi-trailers included in these "trains" when listing your unit tank trucks or semi-trailers above.

TABLE 4

GENERAL LOCATION AND CAPACITY OF TANK TRUCK AND TRAILER UNITS REPORTED IN NPC SURVEY

(AS OF JANUARY 1, 1967)

PAD DISTRICT	PRIVATE CARRIERS			FOR-HIRE CARRIERS			TOTAL		
	NUMBER OF UNITS	TOTAL CAPACITY (GALLONS)	AVERAGE UNIT CAPACITY (GALLONS)	NUMBER OF UNITS	TOTAL CAPACITY (GALLONS)	AVERAGE UNIT CAPACITY (GALLONS)	NUMBER OF UNITS	TOTAL CAPACITY (GALLONS)	AVERAGE UNIT CAPACITY (GALLONS)
DISTRICT NO. 1									
Unit Tank Trucks	3,246	8,789,887	2,708	162	789,205	4,871	3,408	9,579,092	2,810
Semi-Trailers & Trains	3,308	21,678,847	6,553	7,161	49,409,665	6,900	10,469	71,088,512	6,790
TOTAL	6,554	30,468,734	4,648	7,323	50,198,870	6,855	13,877	80,667,604	5,813
DISTRICT NO. 2									
Unit Tank Trucks	2,183	5,669,265	2,597	89	283,200	3,182	2,272	5,952,465	2,620
Semi-Trailers & Trains	2,781	21,044,455	7,567	7,032	50,810,104	7,225	9.813	71,854,559	7,322
TOTAL	4,964	26,713,720	5,381	7,121	51,093,304	7,175	12,085	77,807,024	6,438
DISTRICT NO. 3									
Unit Tank Trucks	294	1,197,835	4,074	3	10,500	3,500	297	1,208,335	4,068
Semi-Trailers & Trains	918	6,555,077	7,141	3,430	22,988,705	6,702	4,348	29,543,782	6,792
TOTAL	1,212	7,752,912	6,396	3,433	22,999,205	6,699	4,645	30,752,117	6,620
DISTRICT NO. 4									
Unit Tank Trucks	102	479,000	4,696	49	256,440	5,233	151	735,440	4,870
Semi-Trailers & Trains	189	1,362,850	7,211	710	5,709,943	8,042	899	7,072,793	7,867
TOTAL	291	1,841,850	6,329	759	5,966,383	7,861	1,050	7,808,233	7,436
DISTRICT NO. 5									
Unit Tank Trucks	359	1,529,300	4,259	65	231,280	3,558	424	1,760,580	4,152
Semi-Trailers & Trains	824	6,287,210	7,630	1,536	11,302,417	7,358	2,360	17,589,627	7,453
TOTAL	1,183	7,816,510	6,607	1,601	11,533,697	7,204	2,784	19,350,207	6,951
TOTAL U.S.									
Unit Tank Trucks	6,184	17,665,287	2,856	368	1,570,625	4,268	6,552	19,235,912	2,935
Semi-Trailers & Trains	8,020	56,928,439	7,098	19,869	140,220,834	7,057	27,889	197,149,273	7,069
TOTAL	14,204	74,593,726	5,251	20,237	141,791,459	7,006	34,441	216,385,185	6,282

APPENDIX MAP

APPENDIX
MAP OF PAD DISTRICTS

PAD—Petroleum Administration for Defense