UNITED STATES

REFINERY CAPACITY

A REPORT OF

THE NATIONAL PETROLEUM COUNCIL

1958

NATIONAL PETROLEUM COUNCIL

REPORT OF THE COMMITTEE ON

U. S. REFINERY CAPACITY

CHAIRMAN OF THE COMMITTEE: CLYDE T. FOSTER

NOVEMBER 12, 1957

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF OIL AND GAS
Washington 25, D. C.

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March 1, 1957

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

Dear Mr. Hallanan:

Significant technological advances in recent years have enabled domestic refiners to produce a larger proportion of higher quality products. Knowledge of the capabilities of U. S. petroleum refineries is essential to an evaluation by the Government of petroleum supply in peace or war.

It is requested that the National Petroleum Council undertake a study of the U. S. petroleum refining capacity by principal refining areas as of January 1, 1957, and submit a report thereon with appropriate recommendations. The study should include, in addition to crude oil throughput capacity, information on capacity for thermal cracking, catalytic cracking, thermal reforming, catalytic reforming, hydrogenation, and alkylation (aviation and motor).

It would be of great assistance if the National Petroleum Council would include in its report information showing anticipated increases in capacity resulting from facilities now under construction or facilities the construction of which has been announced.

Sincerely yours,

/S/ H. A. Stewart

Director

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UNITED STATES
DEPARTMENT OF THE INTERIOR
Oil and Gas Division
Washington 25, D. C.

August 2, 1957

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

Dear Mr. Hallanan:

In our letter to you of March 1, 1957, we requested that the National Petroleum Council undertake a study of the U. S. Petroleum refining capacity as of January 1, 1957.

Inasmuch as there has been unavoidable delay in getting the study underway, we are requesting that the effective date of the survey be changed to March 31, 1957. This will make the information more complete and up-to-date for our use.

All other terms of our request of March 1 remain unchanged.

Sincerely yours,

/S/ H. A. Stewart

Director

Report of:

Committee on U. S. Refinery Capacity

National Petroleum Council

November 12, 1957

This is the final report of your Committee appointed on March 29, 1957, to "study U. S. refinery capacity by principal refining areas as of January 1, 1957, showing anticipated increases in capacity resulting from facilities now under construction or facilities the construction of which has been announced. In addition to crude oil throughput, information on thermal and catalytic cracking, thermal and catalytic reforming hydrogenation and alkylation (aviation and motor) should be included."

A Working Subcommittee was appointed on May 28, 1957 to investigate the request and develop the necessary statistics. A list of the members of the Committee and Working Subcommittee is attached as Appendix I.

The purpose of this study is to provide the Military Petroleum Advisory Board with a portion of the data required to make a broad wartime emergency investigation requested by the Departments of Defense and Interior. In order to obtain all the information necessary for this emergency study, the Military Petroleum Advisory Board addressed a capacity questionnaire to refiners to gather those statistics not considered part of the work requested of the Committee. The Working Subcommittee, with the help of the Refining Technical Subcommittee of the Military Petroleum Advisory Board, defined the scope of the Committee survey so as to avoid duplicating effort and putting an unnecessary burden on refiners.

At the request of the Office of Oil & Gas, the starting date of the survey was moved from January 1, 1957 to March 31, 1957, to correspond to the starting date for the Council's Committee on Petroleum Storage Capacity.

In addition, survey dates, July 1, 1958 and July 1, 1959, were substituted in the original Committee assignment for the phrases, "showing anticipated increases in capacity from facilities now under construction or facilities the construction of which has been announced."

The principal refining areas are defined as Bureau of Mines refining districts with the East Coast, Indiana-Illinois-Kentucky, Minnesota-Wisconsin-North and South Dakota, and West Coast Districts broken down into sub-districts. Within a district or sub-district, figures are reported for capacity on tidewater. Definitions of total capacity on tidewater, refining districts and sub-districts are listed as Appendix II.

The American Petroleum Institute definition of operable refinery capacity was used as the basis to define charging capacity and production capacity.

Charging capacity is defined as the maximum barrels per day which can be processed on a calendar-day basis, with allowance for normal downtime for inspection, cleanout and repairs. This maximum capacity is based on normal yearly average operations when finishing

crude oil to the kind and types of products generally manufactured. This includes capacity that is shutdown but in operable condition. In addition, for crude oil distillation, capacity is based on charging 100% crude oil of the type or types of crude available or expected to be available, not on mixtures of crude oil and natural gasoline, distillates, etc. If, on the survey date, crude oil was being charged and is expected to continue to be charged directly to cracking units consistently, average or representative figures of such charges directly to cracking units are included as part of the total crude oil throughput capacity.

Production capacity is defined as the maximum production attainable stated on a calendar-day basis with allowance for normal downtime for inspection, cleanout and repairs. This maximum production is based on normal yearly average operations, when finishing crude oil to the kind and type of products generally manufactured.

Attached is a tabulation of figures for the total U. S. capacity, the total U. S. capacity on tidewater, and the capacity of each refining district and sub-district, including a separate breakdown for capacity on tidewater.

The total U. S. crude distillation capacity in 293 refineries as of March 31, 1957, was 8,939,896 barrels per calendar day. This compares favorably with the 8,931,400 barrel figure reported by the American Petroleum Institute, as of the same date, in the A.P.I. Bulletin #59 published on November 28, 1956. Of the total 293 refineries, 84 have access to tidewater with a total crude distillation capacity of 5,448,000 barrels per calendar day. This represents 61% of the total U. S. crude oil refining capacity on March 31, 1957.

Refiners indicated that crude distillation capacity will increase 3% over March 31 of this year to 9,207,063 barrels per calendar day by July 1, 1958, and an additional 2.6% to 9,443,302 barrels per calendar day by July 1, 1959. The percentage of U. S. crude oil refining capacity on tidewater will decrease from 61% on March 31, 1957, to 60% on July 1, 1959, because of more rapid expansion of inland refineries.

While the country's crude oil charge capacity will increase 5.6% during the 2 1/4 year period covered by this survey, the capacity of processes which improve the quality and yield of gasoline per barrel of crude will expand at a much faster rate. Catalytic cracking charging capacity will increase 11.6% above the March 31, 1957 level of 3,870,710 barrels per calendar day. Catalytic reforming capacity is expected to expand 49% above the March 31, 1957 level of 1,176,960 barrels per calendar day, while the production of pentane-free alkylate will increase 35% from 260,980 to 351,627 barrels per calendar day by January 1, 1959.

The most significant capacity change for the 2 1/4 year period is the 84% increase from 922,776 to 1,693,346 barrels per calendar day reported for hydrogen treatment. Analysis of the figures indicates that 69% of this increase will be used to remove platinum catalyst poisons from catalytic reformer feed. 8% of the capacity expansion will be designed to upgrade other process unit feeds. The remaining 23% will be used primarily to remove sulfur from products, which is an indication that U. S. refiners expect the trend to higher sulfer content crude oils to continue.

The Committee desires to acknowledge its indebtedness to Messrs. H. A. Stewart and C. D. Fentress of the Office of Oil & Gas for their invaluable help in defining the scope of this work and to Mr. J. V. Brown of the National Petroleum Council for his efforts in securing and compiling the necessary basic information.

Respectfully submitted,

Committee on U. S. Refinery Capacity

Clyde T. Foster, Chairman

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

Total U. S. Capacity

Total Number Refineries: 293

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	8,939,896	9,207,063	9,443,302
2. Thermal Processes-Fresh Feed			
a) Reforming	278,000	216,250	209,050
b) Gas Oil Cracking*	610,095	622,080	599,880
c) Residuum Cracking	826,490	815,945	847,345
d) Coking	417,692	419,742	448,142
3. Catalytic Cracking			
a) Fresh Feed	2,992,845	3,089,127	3,283,118
b) Total Feed	3,870,710	4,040,100	4,320,371
c) Conversion - % on Fresh Feed	% 61	% 62	% 62
4. Catalytic Reforming			
a) Fresh Feed	1,176,960	1,648,521	1,754,333
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	585,285	1,008,578	1,121,718
b) Other Feeds	40,885	89,785	99,785
c) Product Treatment	296,606	404,193	471,843

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	119,817	121,257	122,007
b) Other Types	77,588	76,913	77,263
2. Butane Isomerization			
a) Isobutane	14,970	24,830	27,030
3. Catalytic Polymerization			
a) Butane-free polymer	125,631	129,642	131,921
4. Alkylation			
a) Pentane-free total	260,980	320,987	351,627
* Capacity included which may undergo residuum cracking in the alternative	199,450	204,250	199,250

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

Total U. S. Capacity on Tidewater

Total Number Refineries: 84

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	5,448,400	5,533,700	5,661.700
2. Thermal Processes-Fresh Feed			
a) Reforming	156,600	114,800	114,500
b) Gas Oil Cracking*	323,960	336,160	323,960
c) Residuum Cracking	651,550	638,350	665,350
d) Coking	156,050	154,250	180,450
3. Catalytic Cracking			
a) Fresh Feed	1,806,385	1,833,660	1,957,460
b) Total Feed	2.331,720	2,380,375	2,535,075
c) Conversion - % on Fresh Feed	% 60	% 61	% 61
4. Catalytic Reforming			
a) Fresh Feed	676,150	989,550	1,039,550
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	359,900	590,000	655,000
b) Other Feeds	17,500	62,500	72,500
c) Product Treatment	248,150	332,250	368,350

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	87,890	88,740	89,090
b) Other Types	53,350	53,350	53,350
2. Butane Isomerization			
a) Isobutane	8,840	13,340	15,540
3. Catalytic Polymerization			
a) Butane-free polymer	62,990	66,255	67,805
4. Alkylation			
a) Pentane-free total alkylate	175,530	203,060	221,160
* Capacity included which may undergo residuum cracking in the alternative	132,700	132,700	132,700

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: East Coast **

Total Number Refineries: 27

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,361,800	1,361,300	1,432,300
2. Thermal Processes - Fresh Feed			
a) Reforming	55,500	48,300	48,000
b) Gas Oil Cracking	9,000	9,000	9,000
c) Residuum Cracking	101,900	107,900	132,900
d) Coking	55,850	47,750	73,950
3. Catalytic Cracking			
a) Fresh Feed	477,600	452,300	472,800
b) Total Feed	667,800	626,400	667,400
c) Conversion - % on Fresh Feed	% 61	% 61	% 62
4. Catalytic Reforming			
a) Fresh Feed	161,600	251,400	270,400
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	94,200	136,200	174,200
b) Other Feeds	-0-	-0-	10,000
c) Product Treatment	104,750	140,800	140,800

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	13,850	13,850	13,850
b) Other Types	11,800	11,800	11,800
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	27,280	27,380	28,180
4. Alkylation			
a) Pentane-free total alkylate	28,930	38,610	41,210

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: East Coast
REFINING SUB-DISTRICT: New England **

Total Number Refineries: 4

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	54,500	59,500	99,500
2. Thermal Processes - Fresh Feed			
a) Reforming	4,000	4,000	4,000
b) Gas Oil Cracking	-0-	-0-	-0-
c) Residuum Cracking	9,000	9,000	9,000
d) Coking	-0-	-0-	9,200
3. Catalytic Cracking			
a) Fresh Feed	17,000	17,000	37,500
b) Total Feed	22,600	22,600	63,600
c) Conversion - % on Fresh Feed	% 58	% 58	% 70
4. Catalytic Reforming			
a) Fresh Feed	-0-	5,900	15,900
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	5,900	15,900
b) Other Feeds	-0-	-0-	10,000
c) Product Treatment	-0-	-0-	-0-

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	1,650	1,650	2,450
4. Alkylation			
a) Pentane-free total alkylate	-0-	-0-	2,600

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: East Coast
REFINING SUB-DISTRICT: North Atlantic **

Total Number Refineries: 17

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,256,300	1,246,800	1,257,800
2. Thermal Processes-Fresh Feed			
a) Reforming	51,500	44,300	44,000
b) Gas Oil Cracking	9,000	9,000	9,000
c) Residuum Cracking	92,900	98,900	123,900
d) Coking	46,850	38,750	55,750
3. Catlytic Cracking			
a) Fresh Feed	440,600	415,300	415,300
b) Total Feed	618,200	576,800	576,800
c) Conversion - % on Fresh Feed	% 61	% 61	% 61
4. Catalytic Reforming			
a) Fresh Feed	161,600	239,000	248,000
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	94,200	123,800	151,800
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	104,750	127,800	127,800

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	13,850	13,850	13,850
b) Other Types	11,800	11,800	11,800
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	23,330	23,430	23,430
4. Alkylation			
a) Pentane-free total alkylate	28,930	38,610	38,610

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: East Coast
REFINING SUB-DISTRICT: South Atlantic**

Total Number Refineries: 6

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day.

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	51,000	55,000	75,000
2. Thermal Processes - Fresh Feed			
a) Reforming	-0-	-0-	-0-
b) Gas Oil Cracking	-0-	-0-	-0-
c) Residuum Cracking	-0-	-0-	-0-
d) Coking	9,000	9,000	9,000
3. Catalytic Cracking			
a) Fresh Feed	20,000	20,000	20,000
b) Total Feed	27,000	27,000	27,000
c) Conversion - % on Fresh Feed	% 61	% 61	% 61
4. Catalytic Reforming			
a) Fresh Feed	-0-	6,500	6,500
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	6,500	6,500
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	-0-	13,000	13,000

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	2,300	2,300	2,300
4. Alkylation			
a) Pentane-free total alkylate	-0-	-0-	-0-

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Appalachian #1

Total Number Refineries: 14

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	107,971	114,471	118,971
2. Thermal Processes-Fresh Feed			
a) Reforming	5,850	5,850	5,850
b) Gas Oil Cracking	7,930	7,130	7,130
c) Residuum Cracking	-0-	-0-	-0-
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	26,600	30,100	31,600
b) Total Feed	33,700	39,200	44,800
c) Conversion - % on Fresh Feed	% 67	% 68	% 68
4. Catalytic Reforming			
a) Fresh Feed	25,385	25,785	26,285
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	17,575	25,975	26,475
b) Other Feeds	3,000	3,000	3,000
c) Product Treatment	1,250	1,250	1,250

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	6,102	6,102	6,102
b) Other Types	7,520	6,720	6,720
2. Butane Isomerization			
a) Isobutane	- 0 -	- 0 -	- 0 -
3. Catalytic Polymerization			
a) Butane-free polymer	2,240	1,790	1,830
4. Alkylation			
a) Pentane-free total alkylate	- 0 -	2,600	2,600

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT — Appalachian #2

Total Number Refineries: 3

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	101,000	99,500	99,500
2. Thermal Processes-Fresh Feed			
a) Reforming	-0-	-0-	-0-
b) Gas Oil Cracking*	10,900	14,900	14,900
c) Residuum Cracking	-0-	-0-	-0-
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	37,000	37,000	37,000
b) Total Feed	46,500	46,500	46,500
c) Conversion - % on Fresh Feed	% 68	% 68	% 68
4. Catalytic Reforming			
a) Fresh Feed	19,200	19,200	19,200
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	19,200	19,200	19,200
b) Other Feeds	3,000	3,000	3,000
c) Product Treatment	-0-	-0-	-0-

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	1,500	1,500	1,500
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	2,000	2,000	2,000
4. Alkylation			
a) Pentane-free total alkylate	-0-	3,000	3,000
* Capacity included which may undergo residuum cracking in the alternative	5,000	9,000	9,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Indiana-Illinois-Kentucky

Total Number Refineries: 52

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,584,695	1,636,395	1,716,995
2. Thermal Processes-Fresh Feed			
a) Reforming	79,900	61,500	56,600
b) Gas Oil Cracking*	137,110	137,110	132,110
c) Residuum Cracking	85,460	86,660	86,660
d) Coking	121,700	122,700	124,900
3. Catalytic Cracking			
a) Fresh Feed	549,850	569,650	629,850
b) Total Feed	677,250	702,510	805,830
c) Conversion - % on Fresh Feed	% 60	% 60	% 62
4. Catalytic Reforming			
a) Fresh Feed	244,065	296,765	315,465
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	130,910	218,810	247,810
b) Other Feeds	16,585	16,585	16,585
c) Product Treatment	9,100	19,600	28,600

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	11,230	11,230	11,230
b) Other Types	4,750	4,650	4,650
2. Butane Isomerization			
a) Isobutane	3,050	3,050	3,050
3. Catalytic Polymerization			
a) Butane-free polymer	25,805	24,681	25,635
4. Alkylation			
a) Pentane-free total alkylate	40,740	49,540	55,690
* Capacity included which may undergo residuum cracking in the alternative	27,000	27,000	27,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Indiana-Illinois-Kentucky
REFINING SUB-DISTRICT: Kentucky-Tennessee

Total Number Refineries: 6

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	102,170	107,970	107,970
2. Thermal Processes-Fresh Feed			
a) Reforming	6,500	6,500	6,500
b) Gas Oil Cracking	11,260	11,260	11,260
c) Residuum Cracking	2,810	2,810	2,810
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	30,850	32,450	32,450
b) Total Feed	42,030	43,930	43,930
c) Conversion - % on Fresh Feed	% 65	% 64	% 64
4. Catalytic Reforming			
a) Fresh Feed	8,400	8,400	8,400
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	6,000	6,000	6,000
b) Other Feeds	3,000	3,000	3,000
c) Product Treatment	-0-	-0-	-0-

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	2,230	1,336	1,336
4. Alkylation			
a) Pentane-free total alkylate	-0-	3,000	3,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Indiana-Illinois-Kentucky
REFINING SUB-DISTRICT: Portions of Ohio in District and Michigan

Total Number Refineries: 23

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	463,225	479,925	525,325
2. Thermal Processes-Fresh Feed			
a) Reforming	16,900	15,900	10,900
b) Gas Oil Cracking	24,950	24,950	19,950
c) Residuum Cracking	25,350	26,550	26,550
d) Coking	32,300	33,300	34,000
3. Catalytic Cracking			
a) Fresh Feed	157,550	164,050	193,650
b) Total Feed	198,100	204,100	255,550
c) Conversion - % on Fresh Feed	% 64	% 64	% 64
4. Catalytic Reforming			
a) Fresh Feed	73,265	76,865	87,865
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	21,960	47,460	58,460
b) Other Feeds	13,585	13,585	13,585
c) Product Treatment	1,000	2,000	11,000

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	1,600	1,600	1,600
b) Other Types	900	900	900
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	10,450	10,220	11,174
4. Alkylation			
a) Pentane-free total alkylate	6,000	10,300	12,100

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Indiana-Illinois-Kentucky
REFINING SUB-DISTRICT: Indiana-Illinois

Total Number Refineries: 23

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,019,300	1,048,500	1,083,700
2. Thermal Processes-Fresh Feed			
a) Reforming	56,500	39,100	39,200
b) Gas Oil Cracking*	100,900	100,900	100,900
c) Residuum Cracking	57,300	57,300	57,300
d) Coking	89,400	89,400	90,900
3. Catalytic Cracking			
a) Fresh Feed	361,450	373,150	403,750
b) Total Feed	437,120	454,480	506,350
c) Conversion - % on Fresh Feed	% 57	% 58	% 61
4. Catalytic Reforming			
a) Fresh Feed	162,400	211,500	219,200
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	102,950	165,350	183,350
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	8,100	17,600	17,600

PART B - Production Capacity in Barrels (42 gal) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	9,360	9,630	9,360
b) Other Types	3,850	3,750	3,750
2. Butane Isomerization			
a) Isobutane	3,050	3,050	3,050
3. Catalytic Polymerization			
a) Butane-free polymer	13,125	13,125	13,125
4. Alkylation			
a) Pentane-Free total alkylate	34,740	36,240	40,590
* Capacity included which may undergo residuum cracking in the alternative	27,000	27,000	27,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Minnesota-Wisconsin-North and South Dakota

Total Number Refineries: 6

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	85,100	98,100	108,600
2. Thermal Processes-Fresh Feed			
a) Reforming	1,000	1,000	1,000
b) Gas Oil Cracking	1,300	1,300	1,300
c) Residuum Cracking	-0-	1,000	1,000
d) Coking	9,000	9,000	9,000
3. Catalytic Cracking			
a) Fresh Feed	32,200	32,800	36,200
b) Total Feed	51,000	51,900	57,500
c) Conversion - % on Fresh Feed	% 66	% 66	% 66
4. Catalytic Reforming			
a) Fresh Feed	11,150	15,750	15,750
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	4,800	9,100	9,100
b) Other Feeds	-0-	-0--	-0-
c) Product Treatment	10,000	11,500	11,500

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	5,485	5,575	5,815
4. Alkylation			
a) Pentane-free total alkylate	-0-	-0-	2,090

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Minnesota-Wisconsin-North and South Dakota
REFINING SUB-DISTRICT: Wisconsin

Total Number Refineries: 2

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	8,500	16,500	17,000
2. Thermal Processes-Fresh Feed			
a) Reforming	1,000	1,000	1,000
b) Gas Oil Cracking	1,300	1,300	1,300
c) Residuum Cracking	-0-	-0-	-0-
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	-0--	-0-	-0-
b) Total Feed	-0-	-0-	-0-
c) Conversion - % on Fresh Feed	-	-	-
4. Catalytic Reforming			
a) Fresh Feed	750	2,250	2,250
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	1,500	1,500
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	-0-	1,500	1,500

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0--	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	-0-	-0-	-0-
4. Alkylation			
a) Pentane-free total alkylate	-0-	-0-	-0-

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Minnesota-Wisconsin-North and South Dakota
REFINING SUB-DISTRICT: Minnesota

Total Number Refineries: 2

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	43,500	48,000	58,000
2. Thermal Processes-Fresh Feed			
a) Reforming	-0-	-0-	-0-
b) Gas Oil Cracking	-0-	-0-	-0-
c) Residuum Cracking	-0-	-0-	-0-
d) Coking	9,000	9,000	9,000
3. Catalytic Cracking			
a) Fresh Feed	20,100	20,700	24,100
b) Total Feed	29,600	30,500	36,100
c) Conversion - % on Fresh Feed	% 62	% 62	% 63
4. Catalytic Reforming			
a) Fresh Feed	4,800	7,600	7,600
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	4,800	7,600	7,600
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	10,000	10,000	10,000

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0--	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	1,120	1,210	1,450
4. Alkylation			
a) Pentane-free total alkylate	-0-	-0-	460

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Minnesota-Wisconsin-North and South Dakota
REFINING SUB-DISTRICT: North and South Dakota

Total Number Refineries: 2

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1,1958	July 1, 1959
1. Crude Distillation	33,100	33,600	33,600
2. Thermal Processes-Fresh Feed			
a) Reforming	-0-	-0--	--0-
b) Gas Oil Cracking	-0-	-0-	-0-
c) Residuum Cracking	-0-	1,000	1,000
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	12,100	12,100	12,100
b) Total Feed	21,400	21,400	21,400
c) Conversion - % on Fresh Feed	% 71	% 71	% 71
4. Catalytic Reforming			
a) Fresh Feed	5,600	5,900	5,900
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	-0-	-0-
b) Other Feeds	-0--	-0-	-0-
c) Product Treatment	-0-	-0-	-0-

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	4,365	4,365	4,365
4. Alkylation			
a) Pentane-free total alkylate	-0-	-0-	1,630

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Oklahoma-Kansas-Missouri

Total Number Refineries: 28

PART A - Charging Capacity in Barrels (42 gal.) per Calendar Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	710,100	744,800	749,800
2. Thermal Processes-Fresh Feed			
a) Reforming	12,500	11,200	11,200
b) Gas Oil Cracking*	58,225	55,600	55,600
c) Residuum Cracking	14,350	14,385	14,385
d) Coking	78,900	77,400	77,400
3. Catalytic Cracking			
a) Fresh Feed	278,630	297,660	298,700
b) Total Feed	393,250	420,950	421,450
c) Conversion - % on Fresh Feed	% 64	% 64	% 64
4. Catalytic Reforming			
a) Fresh Feed	101,930	144,600	161,550
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	30,000	80,800	80,800
b) Other Feeds	-0-	3,800	3,800
c) Product Treatment	2,200	2,200	2,200

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	12,225	12,225	12,225
b) Other Types	2,200	2,200	2,550
2. Butane Isomerization			
a) Isobutane	-0-	1,950	1,950
3. Catalytic Polymerization			
a) Butane-free polymer	16,030	16,311	15,831
4. Alkylation			
a) Pentane-free total alkylate	14,630	26,930	29,030
* Capacity included which may undergo residuum cracking in the alternative	9,000	9,000	9,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Texas Inland

Total Number Refineries: 29

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	312,350	347,800	348,950
2. Thermal Processes-Fresh Feed			
a) Reforming	11,750	11,000	11,000
b) Gas Oil Cracking*	34,320	33,150	33,150
c) Residuum Cracking	20,250	20,250	19,750
d) Coking	7,000	7,000	7,000
3. Catalytic Cracking			
a) Fresh Feed	120,800	135,726	136,144
b) Total Feed	142,300	175,226	181,144
c) Conversion - % on Fresh Feed	% 57	% 61	% 62
4. Catalytic Reforming			
a) Fresh Feed	62,050	74,253	77,525
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	16,100	20,600	21,000
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	11,500	11,500	11,500

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	3,080	5,490	5,490
3. Catalytic Polymerization			
a) Butane-free polymer	3,969	5,665	5,665
4. Alkylation			
a) Pentane-free total alkylate	20,470	22,709	24,557
* Capacity included which may undergo residuum cracking in the alternative	15,700	16,000	16,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Texas Gulf Coast **

Total Number Refineries: 23

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	2,112,500	2,168,300	2,171,300
2. Thermal Processes-Fresh Feed			
a) Reforming	70,100	40,700	40,700
b) Gas Oil Cracking*	189,760	192,260	178,760
c) Residuum Cracking	200,000	199,000	199,000
d) Coking	7,000	7,000	7,000
3. Catalytic Cracking			
a) Fresh Feed	687,285	724,160	800,060
b) Total Feed	797,320	858,375	939,375
c) Conversion - % on Fresh Feed	% 57	% 59	% 58
4. Catalytic Reforming			
a) Fresh Feed	306,600	408,400	432,400
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	175,500	270,500	290,500
b) Other Feeds	7,000	55,000	55,000
c) Product Treatment	97,500	152,000	177,100

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	40,740	40,740	40,740
b) Other Types	38,450	38,450	38,450
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	17,850	20,500	21,000
4. Alkylation			
a) Pentane-free total alkylate	66,350	80,850	80,850
* Capacity included which may undergo residuum cracking in the alternative	117,100	117,100	117,100

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Louisiana Gulf Coast**

Total Number Refineries: 12

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	762,000	777,000	786,000
2. Thermal Processes-Fresh Feed			
a) Reforming	14,800	14,800	14,800
b) Gas Oil Cracking*	38,500	42,200	42,200
c) Residuum Cracking	48,500	39,400	39,400
d) Coking	10,000	16,300	16,300
3. Catalytic Cracking			
a) Fresh Feed	307,200	316,400	318,800
b) Total Feed	410,600	431,600	434,300
c) Conversion - % on Fresh Feed	% 64	% 66	% 66
4. Catalytic Reforming			
a) Fresh Feed	58,050	102,050	102,050
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	20,000	20,000
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	-0-	3,250	3,250

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	17,000	17,850	18,200
b) Other Types	1,200	1,200	1,200
2. Butane Isomerization			
a) Isobutane	-0-	4,500	4,500
3. Catalytic Polymerization			
a) Butane-free polymer	9,900	10,400	9,650
4. Alkylation			
a) Pentane-free total alkylate	40,850	41,850	51,350
* Capacity included which may undergo residuum cracking in the alternative	5,600	5,600	5,600

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: North Louisiana - Arkansas

Total Number Refineries: 15

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	102,460	114,260	114,260
2. Thermal Processes-Fresh Feed			
a) Reforming	-0-	-0-	-0-
b) Gas Oil Cracking	5,200	5,200	5,200
c) Residuum Cracking	-0-	-0-	-0-
d) Coking	9,600	13,950	13,950
3. Catalytic Cracking			
a) Fresh Feed	28,500	36,972	36,972
b) Total Feed	38,200	61,500	61,500
c) Conversion - % on Fresh Feed	% 63	% 70	% 70
4. Catalytic Reforming			
a) Fresh Feed	5,900	11,800	16,300
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	11,800	16,800
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	-0-	1,187	1,187

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	1,000	1,000	1,000
b) Other Types	4,978	5,203	5,203
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	950	950	950
4. Alkylation			
a) Pentane-free total alkylate	2,690	4,938	4,938

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: New Mexico

Total Number Refineries: 6

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	21,400	24,107	27,496
2. Thermal Processes-Fresh Feed			
a) Reforming	-0-	-0-	-0-
b) Gas Oil Cracking*	1,550	1,550	1,550
c) Residuum Cracking	2,000	2,000	2,000
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	6,850	6,759	6,992
b) Total Feed	7,850	7,759	7,992
c) Conversion - % on Fresh Feed	% 57	% 62	% 62
4. Catalytic Reforming			
a) Fresh Feed	2,045	4,243	6,633
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	-0-	2,943	5,333
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	-0-	-0-	-0-

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	327	300	300
4. Alkylation			
a) Pentane-free total alkylate	-0-	1,290	1,642
* Capacity included which may undergo residuum cracking in the alternative	1,550	1,550	1,550

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: Rocky Mountain

Total Number Refineries: 33

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	301,490	331,000	329,900
2. Thermal Processes-Fresh Feed			
a) Reforming	5,700	6,200	4,200
b) Gas Oil Cracking*	27,100	27,480	22,480
c) Residuum Cracking	12,380	11,300	13,800
d) Coking	9,942	9,942	9,942
3. Catalytic Cracking			
a) Fresh Feed	106,030	108,800	112,200
b) Total Feed	148,940	154,180	158,580
c) Conversion - % on Fresh Feed	% 65	% 65	% 65
4. Catalytic Reforming			
a) Fresh Feed	23,660	47,550	54,550
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	6,800	16,750	25,600
b) Other Feeds	800	900	900
c) Product Treatment	14,406	24,706	42,256

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	570	760	760
b) Other Types	120	120	120
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	5,560	5,840	5,870
4. Alkylation			
a) Pentane-free total alkylate	5,920	5,920	5,920
* Capacity included which may undergo residuum cracking in the alternative	8,500	9,000	4,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: West Coast

Total Number Refineries: 45

PART A - Charging Capacity in Barrels (42 gal) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,377,030	1,390,030	1,439,230
2. Thermal Processes-Fresh Feed			
a) Reforming	20,900	15,700	15,700
b) Gas Oil Cracking*	89,200	95,200	96,500
c) Residuum Cracking	341,650	334,050	338,450
d) Coking	108,700	108,700	108,700
3. Catalytic Cracking			
a) Fresh Feed	334,300	340,800	365,800
b) Total Feed	456,000	464,000	494,000
c) Conversion - % on Fresh Feed	% 60	% 60	% 60
4. Catalytic Reforming			
a) Fresh Feed	155,325	246,725	256,225
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	90,200	175,900	184,900
b) Other Feeds	10,500	7,500	7,500
c) Product Treatment	45,900	36,200	52,200

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	17,100	17,500	17,900
b) Other Types	5,070	5,070	5,070
2. Butane Isomerization			
a) Isobutane	8,840	9,840	12,040
3. Catalytic Polymerization			
a) Butane-free polymer	8,235	8,250	9,195
4. Alkylation			
a) Pentane-free total alkylate	40,400	42,750	48,750
* Capacity included which may undergo residuum cracking in the alternative	10,000	10,000	10,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: West Coast - Capacity on Tidewater

Total Number Refineries: 22

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,212,100	1,227,100	1,272,100
2. Thermal Processes-Fresh Feed			
a) Reforming	16,200	11,000	11,000
b) Gas Oil Cracking*	86,700	92,700	94,000
c) Residuum Cracking	301,150	292,050	294,050
d) Coking	83,200	83,200	83,200
3. Catalytic Cracking			
a) Fresh Feed	334,300	340,800	365,800
b) Total Feed	456,000	464,000	494,000
c) Conversion - % on Fresh Feed	% 60	% 60	% 60
4. Catalytic Reforming			
a) Fresh Feed	149,900	227,700	234,700
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	90,200	163,300	170,300
b) Other Feeds	10,500	7,500	7,500
c) Product Treatment	45,900	36,200	47,200

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	16,300	16,300	16,300
b) Other Types	1,900	1,900	1,900
2. Butane Isomerization			
a) Isobutane	8,840	8,840	11,040
3. Catalytic Polymerization			
a) Butane-free polymer	7,960	7,975	8,975
4. Alkylation			
a) Pentane-free total alkylate	39,400	41,750	47,750
* Capacity included which may undergo residuum cracking in the alternative	10,000	10,000	10,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTIRCT: West Coast
REFINING SUB-DISTRICT: Washington-Oregon**

Total Number Refineries: 6

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	March 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	95,500	108,500	148,500
2. Thermal Processes-Fresh Feed			
a) Reforming	-0-	-0-	-0-
b) Gas Oil Cracking	-0-	2,000	2,000
c) Residuum Cracking	5,900	5,900	5,900
d) Coking	-0-	-0-	-0-
3. Catalytic Cracking			
a) Fresh Feed	32,800	35,800	60,800
b) Total Feed	51,000	55,500	85,500
c) Conversion - % on Fresh Feed	% 73	% 73	% 70
4. Catalytic Reforming			
a) Fresh Feed	13,400	24,000	31,000
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	8,000	8,000	15,000
b) Other Feeds	-0-	-0-	-0-
c) Product Treatment	-0-	-0-	11,000

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	-0-	-0-	-0-
b) Other Types	-0-	-0-	-0-
2. Butane Isomerization			
a) Isobutane	-0-	-0-	-0-
3. Catalytic Polymerization			
a) Butane-free polymer	4,800	4,800	5,800
4. Alkylation			
a) Pentane-free total alkylate	-0-	2,350	4,350

** Total capacity is on tidewater.

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: West Coast
REFINING SUB-DISTRICT: Other West Coast

Total Number Refineries: 39

PART A - Charging Capacity in Barrels (42 gal.)per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,281,530	1,281,530	1,290,730
2. Thermal Processes-Fresh Feed			
a) Reforming	20,900	15,700	15,700
b) Gas Oil Cracking *	89,200	93,200	94,500
c) Residuum Cracking	335,750	328,150	332,550
d) Coking	108,700	108,700	108,700
3. Catalytic Cracking			
a) Fresh Feed	301,500	305,000	305,000
b) Total Feed	405,000	408,500	408,500
c) Conversion - % on Fresh Feed	% 58	% 58	% 58
4. Catalytic Reforming			
a) Fresh Feed	141,925	222,725	225,225
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	82,200	167,900	169,900
b) Other Feeds	10,500	7,500	7,500
c) Product Treatment	45,900	36,200	41,200

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	17,100	17,500	17,900
b) Other Types	5,070	5,070	5,070
2. Butane Isomerization			
a) Isobutane	8,840	9,840	12,040
3. Catalytic Polymerization			
a) Butane-free polymer	3,435	3,450	3,395
4. Alkylation			
a) Pentane-free total alkylate	40,400	40,400	44,400
* Capacity included which may undergo residuum cracking in the alternative	10,000	10,000	10,000

NATIONAL PETROLEUM COUNCIL
Committee on U. S. Refinery Capacity Questionnaire

REFINING DISTRICT: West Coast
REFINING SUB-DISTRICT: Other West Coast - Capacity on Tidewater

Total Number Refineries: 16

PART A - Charging Capacity in Barrels (42 gal.) per Calendar-Day

	Mar. 31, 1957	July 1, 1958	July 1, 1959
1. Crude Distillation	1,116,600	1,118,600	1,123,600
2. Thermal Processes-Fresh Feed			
a) Reforming	16,200	11,000	11,000
b) Gas Oil Cracking*	86,700	90,700	92,000
c) Residuum Cracking	295,250	286,150	288,150
d) Coking	83,200	83,200	83,200
3. Catalytic Cracking			
a) Fresh Feed	301,500	305,000	305,000
b) Total Feed	405,000	408,500	408,500
c) Conversion - % on Fresh Feed	% 58	% 58	% 58
4. Catalytic Reforming			
a) Fresh Feed	136,500	203,700	203,700
5. Hydrogen Treatment			
a) Catalytic Reformer Feed	82,200	155,300	155,300
b) Other Feeds	10,500	7,500	7,500
c) Product Treatment	45,900	36,200	36,200

PART B - Production Capacity in Barrels (42 gal.) per Calendar-Day

1. Lubricating Oil			
a) Solvent Extraction	16,300	16,300	16,300
b) Other Types	1,900	1,900	1,900
2. Butane Isomerization			
a) Isobutane	8,840	8,840	11,040
3. Catalytic Polymerization			
a) Butane-free polymer	3,160	3,175	3,175
4. Alkylation			
a) Pentane-free total alkylate	39,400	39,400	43,400
* Capacity included which may undergo residuum cracking in the alternative	10,000	10,000	10,000

- APPENDIX I -

NATIONAL PETROLEUM COUNCIL

COMMITTEE ON U. S. REFINERY CAPACITY

CHAIRMAN: Clyde T. Foster, President
The Standard Oil Company (Ohio)
Midland Building
Cleveland 15, Ohio

Robert O. Anderson, President
Malco Refineries, Inc.
P. O. Box 660
Roswell, New Mexico

Jacob Blaustein, President
American Trading & Production Corporation
American Building
Baltimore 3, Maryland

Reid Brazell, President and General Manager
Leonard Refineries, Inc.
East Superior Street
Alma, Michigan

Bruce K. Brown, President
Petroleum Chemicals, Inc.
P. O. Box 6
New Orleans 6, Louisiana

George T. Goggin, President
Independent Refiners Association of California, Inc.
c/o Douglas Oil Company of California
8622 East Compton Boulevard
Paramount, California

Guy B. Hunter, President
National Petroleum Association
c/o Quaker State Oil Refining Corporation
Oil City, Pennsylvania

W. W. Keeler, Chairman
Military Petroleum Advisory Board
c/o Phillips Petroleum Company
708 Phillips Building
Bartlesville, Oklahoma

Grover Kilgore, President
Petroleum Equipment Suppliers Association
c/o Halliburton Oil Well Cementing Company
Duncan, Oklahoma

M. J. Rathbone, President
Standard Oil Company (N.J.)
30 Rockefeller Plaza
New York 20, New York

M. H. Robineau, President
The Frontier Refining Company
4040 East Louisiana and Colorado Boulevard
Denver 2, Colorado

Roland V. Rodman, President
Anderson-Prichard Oil Corporation
1000 Liberty Bank Building
Oklahoma City 2, Oklahoma

Reese H. Taylor, Chairman of the Board
Union Oil Company of California
617 West Seventh Street
Los Angeles 17, California

Robert E. Wilson, Chairman of the Board
Standard Oil Company (Indiana)
910 South Michigan Avenue
Chicago 80, Illinois

NATIONAL PETROLEUM COUNCIL

WORKING SUBCOMMITTEE ON U. S. REFINERY CAPACITY

CHAIRMAN: E. B. McConnell
The Standard Oil Company (Ohio)
Midland Building
Cleveland 15, Ohio

SECRETARY: E. E. Ebner
The Standard Oil Company (Ohio)
Midland Building
Cleveland 15, Ohio

J. C. Ducommun
Standard Oil Company (Indiana)
910 South Michigan Avenue
Chicago 80, Illinois

K. E. Kingman
Union Oil Company of California
Union Oil Building
Los Angeles 17, California

R. N. Sears
Phillips Petroleum Company
Bartlesville, Oklahoma

C. A. Larson
Standard Oil Company (N. J.)
30 Rockefeller Plaza
New York 20, N. Y.

J. Pfarr
Leonard Refineries, Inc.
East Superior Street
Alma, Michigan

- APPENDIX II -

DEFINITIONS OF TOTAL CAPACITY ON TIDEWATER, REFINING DISTRICTS AND SUB-DISTRICTS

TOTAL CAPACITY ON TIDEWATER - Refining districts of Texas Gulf Coast, Louisiana Gulf Coast, East Coast and portions of the West Coast district with access to tidewater.

EAST COAST - District of Columbia and the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, and the following counties of the State of New York; Cayuga, Tompkins, Chemung and all counties east and north thereof. Also the following counties in the State of Pennsylvania; Bradford, Sullivan, Columbia, Montour, Northumberland, Dauphin, York, and all counties east thereof.

NEW ENGLAND - The States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.

NORTH ATLANTIC - District of Columbia and the States of New Jersey, Delaware, Maryland, and the following counties of the State of New York; Cayuga, Tompkins, Chemung and all counties east and north thereof. Also the following counties in the State of Pennsylvania: Bradford, Sullivan, Columbia, Montour, Northumberland, Dauphin, York, and all counties east thereof.

SOUTH ATLANTIC - The States of Virginia, North and South Carolina, Georgia and Florida.

APPALACHIAN #1 - The State of West Virginia, those parts of the States of Pennsylvania and New York not included in the East Coast District.

APPALACHIAN #2 - The following Counties of the State of Ohio: Erie, Huron, Crawford, Marion, Delaware, Franklin, Pickaway, Ross, Pike, Scioto, and all counties east thereof.

INDIANA - ILLINOIS - KENTUCKY - The States of Indiana, Illinois, Kentucky, Tennessee, Michigan, and that part of the State of Ohio not included in the Appalachian District.

KENTUCKY - TENNESSEE - The States of Kentucky and Tennessee.

PORTIONS OF OHIO IN DISTRICT AND MICHIGAN - The State of Michigan and the portions of the State of Ohio not included in the Appalachian #2 District.

INDIANA- ILLINOIS - The States of Indiana and Illinois.

MINNESOTA - WISCONSIN - NORTH AND SOUTH DAKOTA - The States of Minnesota, Wisconsin, North Dakota, and South Dakota.

WISCONSIN - The State of Wisconsin.

MINNESOTA - The State of Minnesota.

NORTH AND SOUTH DAKOTA - The States of North and South Dakota.

OKLAHOMA - KANSAS - MISSOURI - The States of Oklahoma, Kansas, Missouri, Nebraska and Iowa

TEXAS INLAND - The State of Texas except the Texas Gulf Coast District.

TEXAS GULF COAST - The following counties of the State of Texas: Newton Orange, Jefferson, Jasper, Tyler, Hardin, Liberty, Chambers, Polk, San Jacinto, Montgomery, Harris, Galveston, Waller, Fort Bend, Brazoria, Wharton, Matagorda, Jackson, Victoria, Calhoun, Refugio, Aransas, San Particio, Nueces, Kleberg, Kennedy, Willacy, and Cameron.

LOUISIANA GULF COAST - The following parishes of the State of Louisiana: Vernon, Rapides, Avoyelles, Pointe Coupee, W. Feliciana, E. Feliciana, Tangipahoa, Washington, and all parishes south thereof. Also the following counties of the State of Mississippi: Pearl River, Stone, George, Hancock, Harrison, and Jackson. Also the following counties of the State of Alabama: Mobile and Baldwin.

NORTH LOUISIANA - ARKANSAS - The State of Arkansas and those parts of the States of Louisiana, Mississippi and Alabama not included in the Louisiana Gulf Coast District.

NEW MEXICO - The State of New Mexico.

ROCKY MOUNTAIN - The States of Montana, Idaho, Wyoming, Utah, and Colorado.

WEST COAST - To include the States of Washington, Oregon, California, Nevada and Arizona.

WASHINGTON - OREGON - The States of Washington and Oregon

OTHER WEST COAST - The States of California, Nevada and Arizona.